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MASSACHUSETTS AGRICULTURAL COLLEGE

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

No. 26.—1871.] SATURDAY, JULY 1. Registered at the General Post Office as a Newspaper. Price 5d. POST FREE, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for 12 months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

NOTICE.—FLOWER SHOW, FRUIT and FLORAL COMMITTEE MEETING, on WEDNESDAY NEXT, July 5, at 11 o'Clock. GENERAL MEETING at 3. Band of the Royal Horse Guards from 4. Admission 5s.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

GREAT ROSE SHOW, on WEDNESDAY NEXT, July 5. Tickets (bought before the day, at all the usual Music-sellers, or at the Gardens), Friends of Fellows, 3s. 6d.; on the day, 5s., which include Admission to the INTERNATIONAL EXHIBITION.

ROYAL BOTANIC SOCIETY, Regent's Park.—EXHIBITION of PLANTS, FLOWERS, FRUIT, and FLORAL TABLE DECORATIONS, WEDNESDAY and THURSDAY, July 12 and 13. Tickets 5s. each, to be obtained at the Gardens; and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, Piccadilly. The NEXT MEETING for the ELECTION of NEW SUBSCRIBERS, SATURDAY, July 8.

BIRMINGHAM ROSE SHOW, JULY 6 and 7.—For PRIZE LISTS apply to Mr. A. FORREST, Secretary, Cherry Street, Birmingham. ENTRIES CLOSE JULY 1.

MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.

GRAND ROSE and FRUIT SHOW, JULY 7 and 8.

ENTRIES CLOSE on JULY 3.

Schedules are ready, and may be had on application to the Undersigned.

Botanic Garden, Manchester. BRUCE FINDLAY.

Royal Botanic Gardens, Regent's Park.

JOHN WATERER AND SON'S EXHIBITION of RHODODENDRONS is NOW ON VIEW, DAILY, at the above Gardens. Orders of Admission can be obtained from Fellows of the Society, or by production of Card, at Waterer's Gate, West of the Botanic Gardens, Sundays and Wednesdays excepted.

EVERY GARDEN REQUISITE KEPT in STOCK at CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

G. ROELINK, Sole Agent for E. DE BOER, Jun., CULTIVATOR of FLOWER ROOTS, Uitgerst, near Haarlem, Holland, announces to the Trade that CATALOGUES will be sent free per post on application to the

London Office, 14, John Street, Minories, E.C.

Hyacinths, Tulips, &c.

J. ROEST, FLORIST, Voorschoten, near Haarlem, Holland, begs to call the attention of the Trade to his CATALOGUE of DUTCH BULBS, which can be had post free of his Agents, Messrs. BETHAM AND SON, 9, Lower Thames Street, London, E.C.

To the Trade only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have published their NEW WHOLESALE CATALOGUE of BULBS for the season, and will be glad to forward it to Nurserymen, Seedsmen, and Florists only, free, upon application.

Hyacinths, Tulips, Crocus, &c.

P. VAN WAVEREN, JUN., AND CO., FLORISTS, Hillegom, near Haarlem, Holland, beg to call the attention of the Trade to their CATALOGUE of DUTCH BULBS, which may be had, post free, on application to their Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

Dutch Bulbs.—Season 1871.

A. E. BARNAART, FLORIST, Vogelenzang, Haarlem, Holland, begs to inform Nurserymen and the Trade generally that his NEW CATALOGUE of HYACINTHS, TULIPS, &c., for the coming season is now ready, and may be had, post free, of Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

"The most complete and detailed List out, upwards of 1500 sorts being mentioned and described."

To the Trade.

CALCEOLARIA, saved with the greatest care, from one of the choicest and most pleasing strains in the country. Price on application.

JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton Nurseries," Chester.

Calceolaria, Cineraria, Primula.

F. AND A. SMITH are now sending out NEW SEED of the above, from their well-known superior strains, in packets, at 1s. and 2s. 6d. each.

The Nurseries, West Dulwich, near London.

Gold, Silver, and Bronze Variegated Geraniums.

F. AND A. SMITH'S large COLLECTION of the above are now in fine condition, including many specimens of the most approved varieties, forming a display unrivalled for colour and extent.

The Nurseries, West Dulwich, near London.

CUTTINGS of GERANIUMS, &c.—100 Geraniums, in 30 choice varieties, including Tricolor, Gold and Bronze, Variegated Zonal, Nosegay, and Ivy-leaf, for 10s.; 50, 5s. 6d.; 25, 3s. 24 Fancy Pelargoniums, 3s. 6d.; 12, 2s. 24 CHRYSANTHEMUMS, 2s. 6d.; 12, 1s. 6d. 24 POMPONS, 2s. 6d.; 12, 1s. 6d. 24 FUCHSIAS, 2s. 6d.; 12, 1s. 6d. All post free. CATALOGUES, one stamp.

J. COOMBS, The Ferns, Enfield.

CHOICE GERANIUMS, strong Plants.—Golden Tricolors, Gold and Bronze, Silver Variegated, good Doubles, all good varieties, at 2s. 6d. and 3s. per dozen; 20s. and 22s. per 100; cheaper by the 1000.

PURPLE KING VERBENA, 12s. per 100; good FUCHSIAS, 3s. per dozen, all in single pots, package free. A LIST, with prices, post free, on application to

W. POTTEN, Seedsman and Florist, Sissinghurst, Staplehurst, Kent

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SIXTY THOUSAND DWARF TEA-SCENTED ROSES, in pots, also specimen TEA ROSES, in 6-inch pots, for Greenhouse Culture or Exhibition. CATALOGUES now ready.

WM. WOOD AND SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

DWARF ROSES, in pots, by the dozen, 100, 1000, or 10,000. The largest stock of Roses in the Kingdom. CATALOGUES on application.

WM. WOOD AND SON, Woodlands Nursery, Maresfield, Uckfield, Sussex.

ROSES, in pots.—All the finest in cultivation, strong, in pots, for Bedding or Conservatory Decoration. Five Thousand disposable. Priced CATALOGUES free.

W. KNIGHT, Floral Nursery, Hailsham, Sussex.

Dwarf Roses in Pots.

FRANCIS & ARTHUR DICKSON & SONS can supply strong healthy Plants for present planting, of all the finest varieties in cultivation, including the new ones of 1871. Descriptive Priced CATALOGUE sent post free on application.

F. & A. D. & SONS respectfully invite inspection of their extensive COLLECTION of ROSES, which is NOW in FULL BLOOM.

Upton Nurseries, Chester.

Paul & Son's Roses in Bloom.

PAUL AND SON'S COLLECTION is NOW finely in BLOOM, and worthy of a visit. Trains leave Bishopgate at 6.45, 8, 9.30, 10.45 A.M.; 12.45, 2.45, 3.45 P.M.; St. Pancras: 7.52 A.M.; 2.35, 4.53 P.M.

The "Old" Nurseries, Cheshunt, one mile from Cheshunt Station, Great Eastern Railway.

New English Roses and Conifers.

PAUL AND SON, The "Old" Nurseries, Cheshunt, N., have now ready for delivery their New Climbing H.P. ROSE, Victor Verdier. (First-class Certificates, Royal Horticultural Society and Royal Botanic Society.) Plants 7s. 6d. each.

Mr. LAXTON'S NEW ROSES.—Princess Louise (First-class Certificate Crystal Palace Rose Show), the new hardy White Rose; plants 10s. 6d. each. Prince of Wales (First-class Certificate Birmingham Rose Show), new in shape and colour; plants 10s. 6d. each. Coloured Plate, post free, 1s. 6d. each.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready in April. Descriptive LIST on application.

Nurseries, King's Acre, near Hereford.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Pines.

B. S. WILLIAMS has recently rebuilt and enlarged his PINE HOUSES, and can now offer splendid grown PLANTS of all the best kinds. Prices on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

To Noblemen, Gentlemen, and Nurserymen.

PINE SUCKERS for SALE of the following varieties: Queens, Moscow Queens, Black Jamaica, Providence, Smooth Cayenne, Antigua.

For price apply to J. SMITH, Back Common, Turnham Green, S.W.

HIGHEST MARKET PRICES GIVEN for MELONS, PINES, PEACHES, NECTARINES, APRICOTS, PLUMS, TOMATOS, GRAPES, &c., in any quantity.

W. PATERSON, Fruit, Flower, and Vegetable Merchant, 85, West George Street; and 116 and 118, Buchanan Street, Glasgow.

WANTED, New and Rare SUCCULENT PLANTS.

J. T. PEACOCK, Sudbury House, Hammersmith, S.W.

Larch Stakes.

WANTED, LARCH STAKES, 6 to 9 feet long.

J. R. PEARSON, Chilwell, Nottingham.

Wanted, Seeds of Choice Strains.

MR. WILLIAM BULL will require NEW SEEDS, when ripe, of the following:—

Auricula, self	Cineraria	Pinks
Auricula, show	Pelargonium, fancy	Polyanthus
An[illegible]rhinum	Pelargonium, show	Pentstemon
Ca[illegible]tion	Pansy, fancy and show	Violas

And Seeds of other choice Florist Flowers.

State [illegible]antities and prices per ounce. Satisfactory proof must be given that the strains of the above seeds are all of the first quality.

Apply to WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

SUTTON AND SONS, Seedsmen to the Queen, Reading, Berks.

For Sowing after Haycart.

SUTTONS' RENOVATING MIXTURE of fine GRASSES and CLOVERS for improving Pastures deficient of bottom herbage, may be sown after the hay is carried with advantage; 6 to 12 lb. required per acre. Price 9d. per lb., or cheaper by the cwt.

SUTTON AND SONS, Seedsmen to the Queen and H.R.H. the Prince of Wales.

Royal Berkshire Seed Establishment, Reading.

New Catalogue.

JOHN H. LEY, Exotic Nursery, Croydon, S.E., will be happy to forward, post free on application, his NEW CATALOGUE (price very low) of PALMS, FERNS, STOVE PLANTS, &c.

Seeds for 1871.

WM. CUTBUSH AND SON'S Descriptive Priced CATALOGUE contains every requisite for the Garden. Post free on application.

Highgate Nurseries, London, N.

B. S. WILLIAMS' SPRING CATALOGUE of NEW and RARE PLANTS is now ready, in which will be found a selection from all the best Plants of recent introduction; and in addition, descriptions of some very fine Plants, which B. S. W. now offers for the first time. Post free to all applicants.

Victoria and Paradise Nurseries, Upper Holloway, N.

Summer Flowering and other Ornamental Plants.

PETER LAWSON AND SON will be glad to forward their NEW CATALOGUE, just published, free upon application. It contains all the leading Hothouse and Greenhouse Plants, Bedding-out Plants, and many novelties well worthy of a place in every Flower Garden.—Edinburgh and London, May, 1871.

Viola cornuta Perfection.

GEORGE SMITH is now sending out this beautiful hardy Blue Spring and Summer Bedding Plant, at 3s. per dozen; £1 per 100. Wilton End Road, Salisbury.

Hollyhock Seed.

WM. PAUL'S COLLECTION of 12 finest named sorts, 5s.; fine mixed seed, 1s. to 2s. 6d. per packet. All other seeds for present sowing of best quality.

PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

To the Trade.

TWENTY THOUSAND HYBRID RHODODENDRONS, 1 and 2-yr. grafts, in about Fifty leading varieties. LISTS of sorts, and price per 100 or 1000, on application.

ALEXANDER BROWN, Millport Nurseries, near Glasgow.

New Verbenas and Fuchsias.

W. KNIGHT solicits orders for the above, which he has now ready in extra good, clean Plants, by the dozen, 100, or 1000. Priced CATALOGUES free.

Floral Nurseries, Hailsham, Sussex.

Verbenas, Verbenas—6s. per 100, 50s. per 1000.

WILLIAM BADMAN offers VERBENAS from store pots, well hardened off, Purple, White, Scarlet, Rose, Crimson, &c., at 6s. per 100, 50s. per 1000; in single pots, same colours, 1s. 6d. per dozen, 12s. per 100. Package included. Terms cash.

Cemetery Nursery, Gravesend.

BEGONIA SEDENI.—Fine young plants of this, the best and finest flowering Begonia in cultivation, 3s. 6d. each.

SILVER TRICOLOR, MRS. COL. WILKINSON, 5s. each; 55s. per dozen. Usual discount to the Trade.

J. JANES, North Road, Highgate, N.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading.

GRIGOR'S AQUILEGIA GLANDULOSA.—Seeds of this splendid Plant can now be forwarded free at 2s. 6d. per packet, or for stamps of that value. Plants will be ready for sending out from September till April 1, at from 4s. to 12s. per dozen. For a description of this rare and beautiful Columbine, see the *Gardeners' Chronicle*, and the "Gardeners' Magazine" of June 10.

JOHN GRIGOR AND CO., Nurseries, Forres, N.B.

ORCHIDS.—Visitors to Manchester during the season would do well to VISIT our NURSERIES at FAIRFIELD, and examine for themselves our plan of GROWING ORCHIDS in PINE STOVES; also the New House we have put up, embodying this plan of supplying moisture by continual precipitation, without any disadvantage as regards neatness in the appearance of the house. Descriptive CATALOGUES on application.

JAMES BROOKE AND CO., 16, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s. 6d. per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

Wright's New White Grove Celery Plants.

W. WRIGHT can offer a few thousands of the above splendid variety, strong, healthy, transplanted, 6d. per score, 2s. 3d. per 100, 20s. per 1000. Also WRIGHT'S EARLY MARKET CABBAGE, 6d. per packet, 4s. per dozen packets.

WILLIAM WRIGHT, Market Square, Retford.

New Turnip Seed, 1871.

DEVONSHIRE GREY STONE TURNIP (the TRUE VARIETY).

ROBERT T. VEITCH has just completed harvesting a fine pure stock of this most excellent TURNIP, the best variety for either early or late sowing. It has been selected with great care, and is very strongly recommended.

Price per bushel or cwt. on application. Quantities of half bushel or quarter cwt. and upwards forwarded carriage free.

54, High Street, Exeter.

ROYAL HORTICULTURAL SOCIETY.

GREAT SHOW OF FRUIT AND FLOWERS, IN THE PARK, NOTTINGHAM.

JUNE 27 to JULY 1, 1871.

AWARDS OF THE JUDGES.

PLANTS and FLOWERS.

Class 1.—20 STOVE and GREENHOUSE PLANTS, distinct, in pots not exceeding 12 inches in diameter. (Open.)
1st Prize, Messrs. Jackson & Son, Nurserymen, Kingston, Surrey, £10.
2d, Mrs. E. Cole & Sons, Withington, Manchester, £8.

Class 2.—9 STOVE or GREENHOUSE PLANTS, distinct. (Open.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate, £9.
2d, Mrs. E. Cole & Sons, Withington, Manchester, £7.
3d, Messrs. G. & W. Yates, Manchester, £5.

Class 3.—6 STOVE or GREENHOUSE PLANTS, distinct. (Amateurs.)
1st, Mr. J. Stevenson, Lark Hill, Timperley, £6.
2d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Leicester, £5.
3d, Mr. T. Mitchell, Gr. to T. Cross, Esq., Ruddington Hall, Notts, £4.

Class 4.—9 FINE-FOLIAGED or VARIEGATED PLANTS, distinct. (Amateurs.)
1st, Mr. Baines, £7.
2d, Mr. W. Cruickshank, Gr. to Lord Belper, Derby, £5.
3d, Mr. J. Woodfield, Gr. to J. S. Foljambe, Esq., Osberton Hall, Worksop, £3.
4th, Mr. Stevenson, Gr., Lark Hill, Timperley, £2.
Extra 4th, Mr. J. Bolton, £2.
Extra 4th, Mr. F. Thompson, Gr. to P. Charlesworth, Esq., Leicester, £2.

Class 5.—9 FINE-FOLIAGED or VARIEGATED PLANTS, distinct. (Nurserymen.)
1st, Mr. B. S. Williams, Victoria Nurseries, £6.
2d, Mr. W. E. Dixon, Norwood Nursery, Beverley, £4.
3d, Mrs. Cole & Sons, Withington, £3.
Equal 3d, Messrs. Bell & Thorpe, Stratford-on-Avon, £3.

Class 6.—6 FINE-FOLIAGED or VARIEGATED PLANTS, distinct. (Amateurs.)
3d, Capt. H. Farmer, Lenton, £2.

Class 7.—9 EXOTIC ORCHIDS, distinct. (Open.)
1st, Mr. B. S. Williams, Victoria Nurseries, £9.
2d, Messrs. W. Rollisson & Son, Tooting, £7.

Class 8.—6 EXOTIC ORCHIDS, distinct. (Amateurs.)
1st, Mr. E. Mitchell, Gr. to Dr. Ainsworth, Broughton, £6.
2d, Mr. J. Stevenson, Gr., Lark Hill, Timperley, £5.

Class 9.—6 EXOTIC ORCHIDS, distinct. (Nurserymen.)
1st, Mr. B. S. Williams, Victoria Nurseries, £5.
2d, Messrs. James Brooke & Co., Manchester, £4.
3d, Mr. W. E. Dixon, Beverley, £3.

Class 10.—6 PALMS, not fewer than three kinds. (Open.)
1st, Mr. B. S. Williams, £5.
2d, Messrs. Bell & Thorpe, £4. | 3d, Messrs. G. & W. Yates, £3.

Class 11.—6 FUCHSIAS, distinct, in 13-inch pots. (Amateurs.)
2d, Mr. R. J. Beard, Forest Road, Nottingham, £3.
3d, J. E. Mapplebeck, Esq., Moseley, near Birmingham, £2.
4th, Mr. F. Thompson, £1.

Class 12.—6 FUCHSIAS, distinct, in 13-inch pots. (Nurserymen.)
1st, Mr. George Edwards, York, £3.

Class 13.—9 SHOW PELARGONIUMS, distinct. (Open.)
1st, Mr. G. Edwards, York, £6.
2d, Mr. Charles Turner, Slough, £4.
3d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £3.

Class 14.—6 SHOW PELARGONIUMS, distinct. (Amateurs.)
3d, Mr. T. Mitchell, Gr. to T. Cross, Esq., Ruddington Hall, £2.

Class 15.—6 FANCY PELARGONIUMS, distinct. (Amateurs.)
1st, Mr. T. Mitchell, Gr. to T. Cross, Esq., Ruddington Hall, £4.

Class 16.—6 FANCY PELARGONIUMS, distinct. (Nurserymen.)
1st, Mr. George Edwards, York, £4.
4th, Messrs. G. Small & Sons, Ilkeston, £1.

Class 17.—6 ZONAL PELARGONIUMS, distinct, excluding Variegated sorts. (Amateurs.)
2d, Mr. J. Tomlinson, Gr. to H. Smith, Esq., Nottingham, £3.
3d, Mr. J. Cox, Bradford, £2.

Class 18.—6 ZONAL PELARGONIUMS, distinct, excluding Variegated sorts. (Nurserymen.)
1st, Messrs. Bell & Thorpe, Stratford-on-Avon, £3.
2d, Mr. G. Edwards, York, £2. | 4th, Messrs. G. Small & Son, £1.

Class 19.—6 DOUBLE-FLOWERED PELARGONIUMS, distinct. (Open.)
1st, Messrs. Bell & Thorpe, Stratford-on-Avon, £5.
2d, Mr. F. Perkins, Leamington, £4.
3d, Mr. G. Edwards, York, £2.
4th, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £1.

Class 20.—6 VARIEGATED PELARGONIUMS, distinct. (Open.)
1st, J. E. Mapplebeck, Esq., Woodfield, £3.
2d, Messrs. Bell & Thorpe, Stratford-on-Avon, £2.

Class 21.—6 VARIEGATED ZONAL PELARGONIUMS, distinct. (Open.)
1st, Mr. C. Turner, Slough, £3. | 3d, Mr. G. Edwards, York, £1.

Class 22.—9 HERBACEOUS CALCEOLARIAS. (Open.)

Class 23.—6 CALADIUMS, distinct. (Open.)
1st, Capt. H. Farmer, Lenton, £4.

Class 24.—4 DRACÆNAS or CORDYLINES, distinct. (Open.)
1st, Mr. B. S. Williams, Victoria Nurseries, £3.
2d, Messrs. Bell & Thorpe, Stratford-on-Avon, £2.
3d, Mr. G. Lamb, Gr. to G. Davy, Esq., Colston Basset Hall, £1.

Class 25.—12 EXOTIC FERNS. (Amateurs.)
1st, T. M. Shuttleworth, Esq., Golden Hill, Preston, £6.
2d, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £4.
3d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £3.

Class 26.—9 EXOTIC FERNS, distinct. (Nurserymen.)
1st, Mr. B. S. Williams, Victoria Nurseries, £4.
2d, Mr. G. Cooper, Derby, £3.
3d, Mr. W. E. Dixon, Beverley, £2.
4th, Messrs. Bell & Thorpe, Stratford-on-Avon, £1.

Class 27.—6 EXOTIC FERNS, distinct. (Amateurs.)
1st, Mr. J. Stevenson, Gr., Lark Hill, Timperley, £3.
2d, J. E. Mapplebeck, Esq., Woodfield, £2.

Class 28.—20 BRITISH FERNS, distinct. (Amateurs.)
1st, J. E. Mapplebeck, Esq., Woodfield, £5.

Class 29.—12 BRITISH FERNS, distinct. (Amateurs.)
1st, Mr. F. Thompson, Gr. to T. Charlesworth, Esq., Leicester, £3.

Class 30.—12 BRITISH FERNS, distinct. (Nurserymen.)
1st, Mr. R. Edwards, Nuthall, £3.
2d, Messrs. G. Small & Son, Ilkeston, £2.
3d, Mr. W. Yates, Manchester, £1.

Class 31.—Pair of TREE FERNS. (Open.)
1st, Mr. B. S. Williams, Victoria Nurseries, £3.

Class 32.—6 LYCOPODIUMS, distinct. (Open.)
1st, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £3.
2d, T. M. Shuttleworth, Esq., Golden Hill, Preston, £2.
3d, Messrs. Bell & Thorpe, Stratford-on-Avon, £1.

Class 33.—6 AGAVES, distinct. (Open.)
1st, Mr. B. S. Williams, Victoria Nurseries, £3.
2d, Mr. W. E. Dixon, Beverley, £2.

Class 34.—RHODODENDRONS, 18 cut trusses, distinct. (Open.)

Class 35.—9 GREENHOUSE ERICAS, distinct. (Open.)
1st, Messrs. Jackson & Son, Kingston-on-Thames, £9.
2d, Mrs. Cole & Sons, Withington, £7.
Equal 2d, Mr. G. Cooper, Derby.

Class 36.—6 Greenhouse ERICAS, distinct. (Amateurs.)

Class 37.—6 Greenhouse AZALEAS, distinct. (Amateurs.)

Class 38.—6 Greenhouse AZALEAS, distinct. (Nurserymen.)

Class 39.—24 Bunches of CUT FLOWERS, each bunch distinct, to be staged in the same manner as Roses. (Open.)
1st, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £3.
Equal 1st, Mrs. Cole & Sons.
2d, Mr. F. Perkins, Leamington, £2.

Class 40.—12 Bunches of CUT FLOWERS, each bunch distinct, to be staged in the same manner as Roses. (Amateurs.)
1st, Mr. D. Lumsden, Gr. to Rt. Hon. R. C. N. Hamilton, Bloxholm Hall, £2.
2d, Mr. W. Peachey, Gr. to H. E. Hole, Esq., Quorndon, £1.
3d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, 15s.

Class 41.—6 ANTIRRHINUMS, distinct, in 8-inch pots. (Open.)

Class 42.—6 PYRETHRUMS, distinct, in 8-inch pots. (Open.)
1st, Mr. B. S. Williams, Victoria Nurseries, £2.

Class 43.—12 PINKS, distinct, cut blooms. (Open.)
1st, Mr. C. Turner, Slough, 10s.
2d, Mr. D. Pizzey, Gr. to Sir E. Perry, Fulmer, Slough, 7s.
3d, Mr. Taylor, Sneinton, 5s.

Class 44.—12 ZONAL PELARGONIUMS, distinct, cut flowers, in bunches of three trusses each. (Open.)
1st, Messrs. G. Small & Son, Ilkeston, £1.
2d, Mr. W. Peachey, Gr. to H. E. Hole, Esq., Quorndon, 15s.
3d, Mr. H. Cannell, Woolwich, 10s.
4th, Mr. D. Knight, Nottingham, 5s.

Class 45.—12 Double ZONAL PELARGONIUMS, six sorts, single trusses.
1st, T. Laxton, Esq., Stamford, £1.
2d, Mr. F. Perkins, Leamington, 15s.
3d, Messrs. Bell & Thorpe, Stratford-on-Avon, 10s.
4th, Mr. H. Cannell, Woolwich, 5s.

Class 46.—24 CUT ROSES, distinct. (Amateurs.)
1st, Mr. T. Laxton, Stamford, £1.
2d, Rev. E. N. Pochin, Silsby Vicarage, £2.

Class 47.—24 CUT ROSES, distinct, three trusses of each. (Nurserymen.)
1st, Messrs. Paul & Son, Cheshunt, £4.

Class 48.—12 CUT ROSES, distinct. (Amateurs.)
1st, Mr. G. Johnson, Nottingham, £2.
2d, Rev. E. N. Pochin, Silsby Vicarage, £1 10s.
3d, Mr. T. Green, Nottingham, £1.

Class 49.—6 CUT ROSES, distinct. (Amateurs.)
1st, Mr. R. Timson, Nottingham, 15s.
2d, Mr. W. Wise, Nottingham, 10s.
3d. Mr. M. A. Hoe, Nottingham, 5s.

Class 50.—12 Hardy Deciduous TREES and SHRUBS, shown for the beauty of their foliage, distinct. (Open.)
1st, Messrs. W. Barron & Son, Borrowash, £6.

Class 51.—12 Hardy Evergreen TREES and SHRUBS, distinct. (Open.)
1st, Messrs. W. Barron & Son, Borrowash, £6.

Class 52.—20 Hardy VARIEGATED ALPINE and HERBACEOUS PLANTS, distinct. (Open.)
1st, Mr. B. S. Williams, Victoria Nurseries, £3.

Class 58.—MISCELLANEOUS, for Plants not contained in any of the above Classes. (Open.)
1st, Messrs. J. Veitch & Sons, Chelsea, for Collection, £2 10s.
2d, Mr. B. S. Williams, Victoria Nurseries, for Collection, £2.
3d, Messrs. J. Veitch & Sons, Chelsea, for Bed of Plants arranged for effect, £1 10s.
4th, Messrs. H. Lane & Son, Great Berkhampstead, for 12 Pyramidal Ivies, £1.
Extra, J. Kaye, Esq., Manchester, for Group of Skeleton Leaves, &c.

FRUIT.

ALL OPEN CLASSES.

Class 59.—COLLECTION of FRUIT, 12 dishes, 6 distinct kinds.
1st, Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe House, £6.

Class 60.—3 PINE-APPLES.
1st, Mr. G. T. Miles, Gr. to Lord Carrington, £3.
2d, Mr. J. Simpson, Gr. to Lord Wharncliffe, Worsley Hall, £2.

Class 61.—PINE-APPLE, any variety.
1st, Mr. J. Simpson, Gr. to Lord Wharncliffe, Worsley Hall, £2.
2d, Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe Abbey, £1 10s.

Class 62.—BLACK GRAPES, single dish.
1st, Mr. R. I'Anson, Gr. to — Statter, Esq., Manchester, £3.
2d, Mr. M. Henderson, Gr. to Sir G. H. Beaumont, £2.
3d, Mr. G. Sage, Ashridge Gardens, Berkhampstead, £1.

Class 63.—WHITE GRAPES, single dish.
1st, Mr. W. Holah, Gr. to Capt. Saville, Rufford Abbey, £[illegible]
2d, Mr. W. Peachey, Gr. to H. E. Hole, Esq., Quorndon, [illegible]
3d, Mr. M. Henderson, Gr. to Sir G. H. Beaumont, £1.

Class 64.—Basket of GRAPES, 12 lb.
1st, Mr. J. Smith, Gr. to Earl Gainsborough, Exton Park, £5.
2d, Mr. M. Henderson, Gr. to Sir G. H. Beaumont, £3.
3d, Mr. W. Broadbridge, Walton House, Warwick, £2.

Class 65.—PEACHES, single dish.
1st, Mr. T. Jack, Gr. to Duke of Cleveland, £2.
2d, Mr. G. Sage, Gr., Ashridge Gardens, £1.
3d, Mr. G. Lamb, Gr. to G. Davy, Esq., Colston Basset Hall, 10s.

Class 66.—NECTARINES, single dish.
1st, Mr. P. Hope, Gr. to C. Clarke, Esq., Vinery House, Liverpool, £2.
2d, Mr. W. Lynn, Gr., Maidenhead, £1.
3d, Mr. J. Browne, Gr. to Earl Howe, 10s.

Class 67.—FIGS, single dish.
1st, Mr. J. Browne, Gr. to Earl Howe, 15s.
2d, Mr. G. Sage, Gr., Ashridge Gardens, 10s.
3d, Mr. J. Miller, Gr., Worksop Manor, 7s.

Class 68.—CHERRIES, single dish.
1st, Mr. J. Miller, Gr., Worksop Manor, 15s.
2d, Mr. G. T. Miles, Gr. to Lord Carrington, 10s.
3d, Mr. Garland, Gr. to Sir T. D. Acland, Bart., 7s.

Class 69.—STRAWBERRIES, six dishes, distinct kinds.
1st, Mr. G. T. Miles, Gr., Wycombe Abbey, £3.

Class 70.—STRAWBERRIES, single dish.
1st, Mr. W. Staples, Braunstone, 15s.
2d, Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe Abbey, 10s.
3d, Mr. T. Mitchell, 7s.

Class 71.—MELON, Green-fleshed.
1st, Mr. G. Lamb, Gr. to J. Davy, Esq., Colston Basset Hall, £1.
2d, Mr. T. Mitchell, 15s.
3d, T. M. Shuttleworth, Esq., Golden Hill, Preston, 10s.

Class 72.—MELON, Scarlet-fleshed.
1st, Mr. R. Gilbert, Stamford, £1.
2d, Mr. A. Meikle, 15s. | 3d, Mr. T. Mitchell, 10s.

Class 73.—MISCELLANEOUS, for Fruits not mentioned in Schedule.
1st, Mr. C. Frisby, £1 10s.
2d, Mr. J. Garland, £1. | Extra, Mr. Tillery.

Class 74.—COLLECTION of VEGETABLES, including Laxton's Supreme, Carter's Hundredfold, Laxton's Quality, Dwarf Waterloo, and two other varieties of Peas.
(Prizes offered by Messrs. James Carter & Co.)
1st, Mr. J. Garland, Gr., Killerton, £10.
2d, Mr. D. Lumsden, Gr., Bloxholm Hall, £2.

LOCAL PRIZES.

Prizes offered by G. E. Paget, Esq.
Class 75.—Specimen STOVE PLANT, in Flower. (Amateurs.)
1st, Mr. T. Paines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Mr. W. Peachey, Gr. to H. E. Hole, Esq., Quorndon, £1 10s.
3d, Mr. J. Stevenson, Gr., Lark Hill, Timperley, £1.
4th, Mr. J. Woodfield, Gr. to J. S. Foljambe, Esq., Osberton Hall, 10s.

Prizes offered by W. B. Paget, Esq.
Class 76.—Specimen GREENHOUSE PLANT, in flower. (Amateurs.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £1 10s.
3d, Miss S. Smith, Nottingham, £1.
4th, Mr. W. Wright, Sandiacre, 10s.

Prizes offered by C. Paget, Esq.
Class 77.—Specimen ANTHURIUM SCHERZERIANUM. (Open).
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Mr. B. S. Williams, Victoria Nursery, £1 10s.
Equal 2d, Mr. G. Lamb.

Prizes offered by A. Brodhurst, Esq.
Class 78.—Specimen ORCHID. (Amateurs.)

Prizes offered by W. F. Webb, Esq.
Class 79.—Specimen PITCHER PLANT. (Open.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Mr. B. S. Williams, Victoria Nursery, £1 10s.

Prizes offered by Henry Smith Wright, Esq.
Class 80.—Specimen ORNAMENTAL FOLIAGE PLANT. (Amateurs.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Mr. J. Stevenson, Gr. to B. H. Jones, Esq., Lark Hill, Timperley, £1 10s.
3d, Mr. J. Woodfield, Gr. to J. S. Foljambe, Esq., Osberton Hall, £1.
4th, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, 10s.
Extra, Mr. G. Daniells, Gr. to M. Mundy, Esq., Derby.

Prizes offered by Henry Sherbrooke, Esq.
Class 81.—Specimen EXOTIC FERN. (Amateurs.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Mr. G. Daniells, Gr. to A. Mundy, Esq., Shipley Hall, £1 10s.
3d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £1.
4th, H. Farmer, Esq., Lenton, 10s.

Prizes offered by Sir Henry Bromley, Bart.
Class 82.—Specimen ADIANTUM (or MAIDENHAIR FERN.) (Amateurs.)
1st, Mr. T. Allsop, Gr. to C. T. S. B. Reynardson, Esq., Holywell Hall, £2.
2d, Mr. W. Cruickshank, Gr. to Lord Belper, Kingston Hall, £1 10s.
3d, Mr. F. Thompson, Gr. to T. Charlesworth, Esq., Leicester, £1.
4th, Mr. W. Peachey, Gr. to H. E. Hole, Esq., Quorndon, 10s.

Prizes offered by C. Seely, Esq.
Class 83.—Specimen HEATH. (Open.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £2.
2d, Messrs. Jackson & Son, Kingston-on-Thames, £1 10s.

Prizes offered by the Local Committee.
Class 84.—Specimen CROTON. (Open.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £1 11s. 6d.
2d, Mr. J. Stevenson, Gr., Lark Hill, Timperley, £1 1s.
3d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, 10s. 6d.
Equal 3d, Mr. J. Woodfield, Gr. to J. S. Foljambe, Esq., Osberton Hall, 10s. 6d.

Prizes offered by Richard Milward, Esq.
Class 85.—GOLDEN TRICOLOR ZONAL PELARGONIUM, the best variety to be sent out this year, or not yet in commerce. (Open.)
1st, Mr. C. Turner, Slough, £1.
2d, Messrs. Bell & Thorpe, Stratford-on-Avon, 13s.
3d, Mr. C. Frisby, Gr. to H. Chaplin, Esq., Blankney Hall, 7s.

ROYAL HORTICULTURAL SOCIETY.

AWARDS OF THE JUDGES—*Continued.*

Prizes offered by J. T. Edge, Esq.

CLASS 86.—SILVER TRICOLOR ZONAL PELARGONIUM, the best variety to be sent out this year, or not yet in commerce. (Open.)
1st, Mr. C. Turner, Slough, £1.
2d, Mr. C. Frisby, Gr. to H. Chaplin, Esq., Blankney Hall, 13s.

Prizes offered by His Grace the Duke of St. Albans.

CLASS 87.—4 ORCHIDS. (Amateurs.)

Prizes offered by the Right Hon. Earl Manvers, and the Local Committee.

CLASS 88.—10 ORCHIDS. (Amateurs.)

Prizes offered by Mr. B. Walker, the Local Committee, Henry Heymann, Esq., and Thomas Adams, Esq.

CLASS 89.—9 STOVE and GREENHOUSE PLANTS, in Flower. (Amateurs.)
1st, Mr. J. Stephenson, Gr., Lark Hill, Timperley, £10.
2d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £7.

Prizes offered by the Loughborough Horticultural Society.

CLASS 90.—4 PLANTS in FLOWER.
1st, Mr. R. J. Beard, Nottingham, £3.
2d, Mr. R. Cooper, £2.

Prizes offered by the Local Committee.

CLASS 91.—6 ACHIMENES. (Open.)
1st, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £4 4s.

Prizes offered by Sir E. S. Walker, Kt., the Hon. Arthur Strutt, and the Hon. Mrs. Hudson.

CLASS 92.—6 HERBACEOUS CALCEOLARIAS. (Open.)
1st, Mr. E. Smith, Nottingham, £2.

Prizes offered by Thomas Bayley, Esq., and R. Birkin, Esq.

CLASS 93.—6 Erect-flowering GLOXINIAS. (Open.)
1st, Mr. J. Fellowes, Esq., Beeston Fields, £3.

Prizes offered by Thomas Cross, Esq., and Captain Parry.

CLASS 94.—6 Pendant-flowering GLOXINIAS. (Open.)
1st, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, £3.

Prizes offered by J. W. Leavers, Esq., Henry Smith, Esq., the Local Committee, and J. H. Lee, Esq.

CLASS 95.—Four LILIUM AURATUM. (Open.)
1st, Mr. C. Turner, Slough, £4 4s.
2d, Messrs. W. Rollisson & Son, Tooting, £3 3s.
3d, Messrs. G. & W. Yates, Manchester, £2 2s.
4th, Mr. G. Edwards, York, £1 1s.

Prizes offered by T. W. Evans, Esq.

CLASS 96.—Six CLEMATIS. (Open.)

Prizes offered by the Right Hon. Lord Belper, F.R.S., &c.

CLASS 97.—TRICOLOR ZONAL PELARGONIUMS, the six best varieties not yet in commerce, or sent out in 1871. (Open.)
1st, Mr. C. Turner, Slough, £3.
2d, Mr. C. Frisby, Gr. to H. Chaplin, Esq., Blankney Hall, £2.

Prizes offered by Saul Isaac, Esq., and R. Evans, Esq.

CLASS 98.—ZONAL PELARGONIUMS, for Bloom, six best varieties not yet in commerce, or sent out in 1871. (Open.)
1st, Messrs. Bell & Thorpe, Stratford-on-Avon, £3.

Prizes offered by Samuel Morley, Esq., and the Local Committee.

CLASS 99.—NOSEGAY PELARGONIUMS, for Bloom, six best varieties not yet in commerce, or sent out in 1871. (Open.)
1st, Messrs. Bell & Thorpe, Stratford-on-Avon, £3.

Prizes offered by Col. Holden, and J. Manning, Esq.

CLASS 100.—SHOW PELARGONIUMS, six best varieties not yet in commerce, or sent out in 1871. (Open.)
1st, Mr. C. Turner, Slough, £3.

Prizes offered by the Right Hon. Lord Belper, F.R.S.

CLASS 101.—Twelve distinct MAIDENHAIR FERNS (Adiantums). (Open.)
1st, T. M. Shuttleworth, Esq., Golden Hill, Preston, £6.
2d, Messrs. Bell & Thorpe, Stratford-on-Avon, £5.

Prizes offered by E. J. Lowe, Esq. F.R.S.

CLASS 102.—10 best New Varieties of BRITISH FERNS, not yet in commerce (Open.)
1st, J. E. Mapplebeck, Esq., Woodfield, £2 10s.
2d, Mr. F. Thompson, Gr. to T. Charlesworth, Esq., Leicester, £1 10s.

Prizes offered by L. Rolleston, Esq., and Mrs. Manning.

CLASS 103.—3 PLATYCERIUMS. (Open.)
1st, Mr. W. E. Dixon, Beverley, £3.
2d, Mr. B. S. Williams, Victoria Nursery, £2.

Prizes offered by H. Cunliffe Shawe, Esq., and the Local Committee.

CLASS 104.—4 TODEAS or HYMENOPHYLLUMS. (Open.)
1st, Mr. B. S. Williams, Victoria Nursery, £3.

Prizes offered by H. R. Clifton, Esq.

CLASS 105.—12 distinct CALADIUMS, in pots not exceeding 9 inches across. (Open.)
1st, Messrs. Bell & Thorpe, Stratford-on-Avon, £4.

Prizes offered by Henry Akroyd, Esq., and Rev. C. Hudson.

CLASS 106.—4 MARANTAS. (Open.)
1st, Mr. G. Lamb, £3. | 2d, Messrs. Bell & Thorpe, £2.

Prizes offered by F. C. Smith, Esq., M.P., and Rev. F. Morse.

CLASS 107.—4 ALOCASIAS. (Open.)
1st, Mr. G. Lamb, Gr. to G. Davy, Esq., Colston Bassett Hall, £3.

Prizes offered by Col. Boddam-Whetham, and G. Davy, Esq.

CLASS 108.—Collection of HARDY and HALF-HARDY VARIEGATED and ORNAMENTAL FOLIAGE PLANTS. (Open.)
1st, Mr. B. S. Williams, Victoria Nursery, £4.
2d, Mr. W. E. Dixon, Beverley, £3.
3d, Messrs. G. & W. Yates, Manchester, £2.

Prizes offered by F. J. Savile Foljambe, Esq., and the Local Committee

CLASS 109.—Twelve AUCUBAS, for Diversified Foliage. (Open.)
1st, Mr. W. E. Dixon, Beverley, £3.

Prizes offered by the late M. Jacoby, Esq., Albert Heymann, Esq., and the Local Committee.

CLASS 110.—Six NEW PLANTS, any class. (Open.)
1st, Messrs. J. Veitch & Sons, Chelsea, £6.
2d, Messrs. W. Rollisson & Sons, Tooting, £5.
3d, Messrs. G. & W. Yates, £4.
4th. Mr. B. S. Williams, Holloway, £3.

Prizes offered by the Local Committee, and the Rev. J. Woolley.

CLASS 111.—Six HARDY EXOTIC FERNS. (Open.)
1st, Mr R. Edwards, Nuthall, £3.
2d, T. M. Shuttleworth, Esq., Golden Hill, Preston, £2.

Prizes offered by the Local Committee.

CLASS 112.—Three PITCHER PLANTS. (Open.)
1st, Mr. T. Baines, Gr. to H. L. Micholls, Esq., Southgate House, £3.
2d, Mr. B. S. Williams, Victoria Nurseries, £2.

Prizes offered by the Local Committee, and Thomas Bishop, Esq.

CLASS 113.—Collection of SUBTROPICAL PLANTS, suitable for the summer decoration of gardens. (Open.)
1st, Mr. B. S. Williams, £5 5s.

Prizes offered by Messrs. Percy Goodall & Brown, and the Hon. and Rev. C. J. Willoughby.

CLASS 114.—Three EUCHARIS AMAZONICA. (Open.)

Prizes offered by James Thorpe, Esq. (High Sheriff), J. B. Taylor, Esq., and J. Watson, Jun., Esq.

CLASS 115.—Specimen CATTLEYA MOSSIÆ. (Open.)

Prizes offered by the Local Committee.

CLASS 116.—Collection of HARDY EVERGREEN TREES and SHRUBS. (Open.)
1st, Messrs. W. Barron & Son, Borrowash, £10.

Prizes offered by the Local Committee.

CLASS 117.—Collection of SUCCULENTS. (Open.)
1st, Mr. B. S. Williams, Victoria Nursery, £3.
2d, Messrs. Bell & Thorpe, Stratford-on-Avon, £2.

Prizes offered by Mr. Tillery.

CLASS 118.—Three Dishes of STRAWBERRIES, distinct varieties. Fifty fruit on a dish. (Open.)

Prizes offered by Mr. W. Edgcumbe Rendle.

CLASS 119.—Four Dishes of STRAWBERRIES, distinct varieties. Fifty fruit on a dish. (Open.)

Prizes offered by Mr. Thomas Forman.

CLASS 120.—Six Bunches of one or more varieties of GRAPES, the produce of Vines more than 25 years old. (Open.)
1st, Mr. R. I'Anson, £5. | 2d, Mr. M. Henderson, £3.
3d, Mr. W. Lynn, Gr., Maidenhead, £2.

Prizes offered by F. Wright, Esq., Rev. S. Cresswell, Rev. J. L. Prior, F. G. Rawson, Esq., and the Local Committee.

CLASS 121.—Four Varieties of GRAPES, two bunches of each. (Open.)
1st, Mr. B. Broadbridge, Gr., Walton House, Warwick, £4 4s.
2d, Mr. W. Cruickshank, Gr. to Lord Belper, Kingston Hall, £3 3s.

Prizes offered by Col. I. C. Wright, and C. Wilde, Esq.

CLASS 122.—Six kinds of FRUIT (Pines excluded.) (Open.)
1st, Mr. T. Mitchell, Gr. to T. Cross, Esq. Ruddington Hall, £3.
2d, Mr. W. Holah, Gr. to Capt. Saville, Rufford Abbey, £2.

Prizes offered by A. Munday, Esq., and H. H. Carter, Esq.

CLASS 123.—Four Varieties of PEACHES and NECTARINES. Six fruit on a dish. (Open.)
1st, Mr. G. Jackson, Gr., Tixall Hall, Stafford, £3 3s.
2d, Mr. J. Miller, Gr., Worksop Manor, £2 2s.

Prizes offered by T. Close, Esq., W. Newton, Esq., and the Local Committee.

CLASS 124.—Two Varieties of MELONS. (Open.)
1st, Mr. T. Mitchell, Gr. to T. Cross, Esq., Ruddington Hall, £2 2s.
2d, Mr. W. Holah, Gr. to Capt. Saville, Rufford Abbey, £1 1s.

Prizes offered by the late S. T. Cooper, Esq., the Local Committee, and T. F. A. Burnaby, Esq.

CLASS 125.—Two PINE APPLES. (Open.)
1st, Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe Abbey, £2 2s.
2d, Mr. J. Simpson, Gr. to Lord Wharncliffe, Wortley Hall, £1 10s.

Prizes offered by T. R. Starey, Esq., and the Local Committee.

CLASS 126.—Brace of CUCUMBERS. (Open.)
1st, Rev. C. L. Ellison, £1 1s.
2d, Mr. J. Bolton, Gr. to W. Worswick, Esq., Birstall Hall, 15s.
3d, Mr. T. Mitchell, Gr. to T. Cross, Esq., Ruddington Hall, 10s.
4th, Mr. J. Thompson, Gr. to T. Charlesworth, Esq., Leicester, 5s.
Extra, Mr. D. Lumsden, £5.

Prizes offered by the Right Hon. Earl Brownlow, and the Local Committee.

CLASS 127.—A Group of 25 PLANTS, arranged for effect, including fine-foliaged plants, stove and greenhouse flowering plants, Ferns, Orchids, and Mosses, in pots of from 6 to 12 inches across. (Open.)
1st, Messrs. W. Rollisson & Sons, £10 10s.
2d, Messrs. Bell & Thorpe, £5. | 3d, Mr. W. E. Dixon, £3.

Prizes offered by the Local Committee.

CLASS 128.—Six PLANTS suitable for DINNER-TABLE DECORATION, in pots not exceeding 7 inches across. (Open.)
1st, Mr. F. Perkins, Leamington, £2 12s. 6d.
2d, Capt. H. Farmer, Lenton, £1 11s. 6d.
3d, Mr. W. Peachy, Gr. to H. E. Hole, Esq., Quorndon, £1.
4th, Mr. J. Bolton, Gr. to W. Worswick, Esq., Leicester, 10s.

Prizes offered by Rev. J. C. Girardot, and the Local Committee.

CLASS 129.—HAND BOUQUET. (Open.)
1st, Mr. F. Perkins, Leamington, £2 10s.
2d, Mr. J. House, Peterborough, £1 5s.
3d, Mr. D. Wotton, The Hall, Wirksworth, £1.
4th, Mr. J. Smith, Loughborough, 10s.

Prizes offered by George Fellows, Esq., and the Local Committee.

CLASS 130.—GENTLEMAN'S BOUQUET. (Open.)
1st, Mr. J. House, Peterborough, £1 1s.
2d, H. Farmer, Esq., Lenton, 15s.
3d, Mr. D. T. Fish, Gr., Hardwicke House, Bury-St.-Edmund's, 10s.
4th, Mr. F. Perkins, Leamington, 5s.

Prizes offered by the Local Committee.

CLASS 131.—Group of Three VASES for DINNER TABLE (Fruit and Flowers). (Open.)
1st, Mr. W. Cruickshank, Gr. to Lord Belper, Kingston Hall, £4.
2d, Mr. Perkins, Leamington, £3.
3d, Mr. S. Taylor, Nottingham, £2.

Prizes offered by Mr. J. R. Pearson, and the Local Committee.

CLASS 132.—Six PEACHES and NECTARINES, in pots. (Open.)
1st, Mr. J. R. Pearson, Chilwell, £5 5s.

Prizes offered by the Local Committee.

CLASS 133.—Six ORCHARD HOUSE TREES, in pots (excluding Peaches, Nectarines, and Grapes). (Open.)
1st, Mr. Pearson, Chilwell, £4.

Prizes offered by the Local Committee.

CLASS 134.—Three VINES, in pots (the fruit to be ripe). (Open.)
1st, Messrs. H. Lane & Son, £3.

Prizes offered by Thomas Laxton, Esq., and the Local Committee.

CLASS 135.—Premier Dish of POTATOS. (Open.)
1st, Mr. J. Taylor, Malpas, Cheshire, £1.
2d, Mr. G. Craddock, Compton Verney, Warwick, 10s.
3d, Mr. H. Biddle, Loughborough, 5s.

Prizes offered by the Rev. S. R. Hole, and the Local Committee.

CLASS 136.—Twelve CUT ROSES, distinct varieties (one truss of each. (Open.)
1st, Messrs. Paul & Son, Cheshunt, £10 10s.
2d, Mr. H. Merryweather, Southwell, £3.
3d, Mr. G. Edwards, York, £2.
4th, Mr. G. Johnson, Nottingham, £1.

Prizes offered by Mr. Alfred Page, the Local Committee, and J. Fellows, Esq.

CLASS 137.—Forty-eight CUT ROSES (one truss of each). (Nurserymen.)
1st, Messrs. Paul & Son, Cheshunt, £5 5s.
2d, Mr. H. Merryweather, Southwell, £3 3s.
3d, Mr. G. Edwards, York, £2 2s.

Prizes offered by Sir Henry Bromley, Bart.

CLASS 138.—Twelve CUT ROSES (one truss of each). (Artisans.)
1st, Mr. H. Grundy, Nottingham, £4. | 3d, Mr. R. Rogers, £2.
2d, Mr. H. Biddle, £3. | 4th, Mr. W. Hail, £1.

Prizes offered by Thomas Laxton, Esq., and the Local Committee.

CLASS 139.—PREMIER ROSE (to be shown as a single flower). (Open.)
1st, Messrs Paul & Son, Cheshunt, £1.
2d, Mr. G. Burnham, Nottingham, 15s.
3d, Mr. J. Brown, Sneinton, 10s. | 4th, Mr. W. Wise, 5s.

Prizes offered by Mr. W. Edgcumbe Rendle.

CLASS 140.—Twelve CUT ROSES, three trusses of each. (Open.)

Prizes offered by the Local Committee.

CLASS 141.—CARNATIONS (12 blooms). (Open.)

Prizes offered by the Local Committee.

CLASS 142.—PICOTEES (12 blooms). (Open.)

CLASS 143.—The Gardener's Prize of Eight kinds of VEGETABLES and Four of SALAD.
1st, Mr. R. Gilbert, Burghley House, Stamford, £6.
2d, Rev. C. C. Ellison, £4.
3d, Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe Abbey, £2.
4th, Mr. G. Craddock, Compton Verney, Warwick, Chapman's Case.

Prizes offered by the Loughborough Horticultural Society.

CLASS 144.—Four Dishes of POTATOS (four varieties, twelve on a dish. (Cottagers and Artisans.)
1st, Mr. H. Biddle, Loughborough, £2. | 2d, Mr. J. Nicholson, £1.
3d, Mr. J. Montiney, Loughborough, 15s.
4th, Mr. G. Basford, Loughborough, 13s.

Prizes offered by the Loughborough Horticultural Society.

CLASS 145.—Four Dishes of POTATOS (four varieties, twelve on a dish.)
1st, Mr. T. Pickworth, Loughborough, £1.
2d, Mr. J. Nicholson, Collingham, 15s.
3d, G. Heaftord & Son, Loughborough, 10s.

Prizes offered by the Loughborough Horticultural Society.

CLASS 146.—Six kinds of VEGETABLES (Potatos excluded), to be shown on trays not exceeding 30 inches square.
1st, G. Heafford & Son, Loughborough £2.
2d, Mr. W. S. Draper, Dorrington, Sleaford, £1.
3d, J. Nicholson, Collingham, 15s.

Prizes offered by the Loughborough Horticultural Society.

CLASS 147.—Six kinds of VEGETABLES (Potatos excluded), to be shown on trays not exceeding 30 inches square. (Cottagers and Artisans.)
1st, Mr. G. Basford, Loughborough, £3.
2d, Mr. H. Biddle, Loughborough, £2.
3d, Mr. Clarke, Loughborough, £1 10s.
4th, Mr. J. Lacy, Gr., Bloxham, Sleaford, £1.

Prizes offered by Mr. W. Edgcumbe Rendle.

CLASS 148.—Two Varieties of CUCUMBERS, a pair of each.
2d, Mr. F. Wotton, 17s. 6d.

Prizes offered by W. Windley, Esq., E. Patchett, Esq., and by the Local Committee.

CLASS 149.—Twenty-four Cut ROSES, one truss each. (Open.)
1st, Mr. H. Frettingham, Beeston, Notts, £3 3s.
2d, Mr. G. Johnson, £2 2s.

NEW PLANTS.

FIRST-CLASS CERTIFICATES.

From G. F. Wilson, Esq., Lilium californicum, L. puberulum, L. penduliflorum, L. canadense flavum.

From Mr. C. Turner, Pelargoniums Achievement, Zephyr, Cæsar, Pompey, Charlemagne.

From E. J. Lowe, Esq., F.R.S., Scolopendrium vulgare, vars. perfectum, virginale, acceptum, cochleatum, tumulum, Mooniæ, innocuum, Davyi, kraspedon, Thaumaston, kephaloton, Fellowsii, Smeei, omnilacerum Lowei, keratophoron, dichotomum, præcinctum; Asplenium marinum, vars. Thompsoniæ, admirabile, capitatum; Pleopeltis (Microsorium) irroides, var. cristata, Lastrea Filix-mas, vars. Belperi, depauperata Padleyi, variegata; Athyrium Filix-fœmina, vars. Gullsoniæ, Bellairsiæ, invincere, trossulum, Lowei, triumphale, Alexandræ, secule, Lawsonii; Lastrea dilatata, vars. Calomelanos, spectabile ramosa; Polystichum angulare, vars. transforme, ariprepes; Adiantum Capillus-Veneris, vars. amabile, daphnite, perfectum; Hymenophyllum unilaterale, var. Kinahani.

From Messrs. Veitch & Sons, Begonia Chelsoni, Dieffenbachia Bausei, Dracænas Wisemani and amabilis.

From Mr. B. S. Williams, Trichomanes auricularium.

From Messrs. Fisher, Holmes, & Co., Thymus citriodorus aureomarginatus.

From J. E. Mappleback, Esq., Pteris acquilina, vars. incurvum, grandiceps, cristata Gloveri; Lastrea Filix-mas var. revolvens; Athyrium Filix-fœmina, vars. dilatatum, Mapplebeckii, rectangulare, caudiculatum, ceratophyllum, flabellifolium tenue, Gillsoniæ, Craigii glomeratum; Blechnum spicant var. crispatum.

SILVER FLORA MEDAL.

CLASSES 1, 2, 4, 7, 8, 25, 28, 35, 46, 59, 60, 62, 63.

In the above Classes a Silver Flora Medal was awarded to the winners of the First Prize.

BRONZE MEDAL.

CLASSES 3, 13, 15, 19, 20, 21, 23, 27, 29, 31, 39, 40, 61, 65, 66.

In the above Classes a Bronze Medal was awarded to the winner of the First Prize.

IMPROVED THICK-LEAVED DANDELIONS.—The above may be sown now, and blanched similar to Seakale.

"In our opinion this is equal to, if not superior to Endive."—*From the Editor of the Gardeners' Chronicle.*

"The leaves sent are 18 inches long, and broad in proportion, and the midrib is nearly half an inch broad and a third of an inch thick. As the common Dandelion when blanched is one of the most delicate-flavoured and wholesome of Salads, this vigorous growing fleshy-leaved variety of Messrs. STUART & MEIN must be a desirable plant for the kitchen garden."—*From the Editor of the Gardeners' Magazine.*

New Seed, 1s. per packet.

STUART AND MEIN, Seedsmen to the Queen, Kelso, N.B.

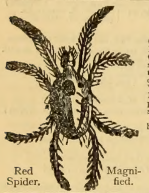
Blight.

GARDENERS TROUBLED WITH THE ABOVE, WOULD DO WELL TO TRY "WILKIE'S BLIGHT COMPOSITION" for their DESTRUCTION. It offers a safe and speedy remedy, and at a moderate price. Taken in quantities, A. W. would be happy to make a considerable reduction. Sold in 1 and 2-gallon jars at 3s. 6d. and 6s. each. It bears being considerably diluted. Post Office orders from unknown Correspondents.

WILKIE'S CONDENSED COMPOSITION, in bottles at 2s., 3s. 6d., and 6s. each.

The above articles may be had through all the principal Nurserymen and Seedsmen, and wholesale of

A. WILKIE, Oak Lodge Gardens, Addison Road, Kensington, W.



GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

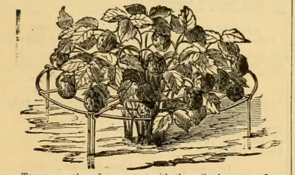
For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, E.C.

Keep your Strawberries Clean by using

PAXTON'S REGISTERED STRAWBERRY CRINOLINE.



To preserve them from contact with the soil, slugs, superfluous moistures, and other nuisances. Exposes the Fruit more freely to the sun. Effects a considerable saving of Fruit, and testimonials inform us the Fruit is also improved.

The CRINOLINE is in the form of a Table in two halves, made of Galvanized Iron 16 inches in diameter.

The contrivance is by the late Sir Joseph Paxton, who after testing them in his own garden at Rock Hill, Sydenham, gave his approval of their usefulness. The right to Manufacture them was transferred to

R. HOLLIDAY, Horticultural Wire Worker, 2A, Portobello Terrace, Notting Hill Gate, W.

Manufacturer of Arches, Flower Stands, Baskets, Trellis Work, Roseries, Wire Work Screens, &c. Conservatories fitted up with all kinds of Wire Work.

Illustrated Catalogue and Testimonials on application and stamp.

JAMES PHILLIPS AND CO.

beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15s. 0d.	19s. 6d.
Third quality	16s. 0d.	22s. 6d.
Seconds	18s. 6d.	26s. 0d.
English	20s. 0d.	27s. 0d.

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.

Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths. s. d.	3rds. s. d.	2nds. s. d.
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..	16 to 17 oz. to the foot.		
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

6 by 4	6½ by 4½	7 by 5	7½ by 5½	12s. 6d.
8 by 6	8½ by 6⅜	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	13s. 6d.

Boxes 2s. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without, E.C.

Ferns, Ferns, Ferns.

TO THE TRADE and OTHERS.

LOMARIA GIBBA, 9d. each, 6s. per dozen.

GYMNOGRAMMA LAUCHEANA (best Gold Ferns), 9d. each, 6s. per dozen.

GYMNOGRAMMA WETENHALLIANA, beautifully crested Silver Fern, 1s. each.

DICKSONIA ANTARCTICA (beautiful Tree Fern), 2s. each, 18s. per dozen.

All the above healthy-growing young Plants.

THAMNOPTERIS AUSTRALASICA (Bird's Nest Fern), fine strong plants, in 48-size pots, 2s. 6d. each.

PTERIS LONGIFOLIA, strong plants, in 48-size pots, 1s. each.

ASPLENIUM BULBIFERUM, do., do., 1s. 6d. each.

SELAGINELLAS, strong plants, in 60-size pots, 6s. per dozen.

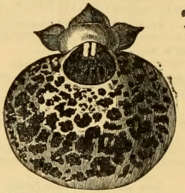
NEW FUCHSIAS of last year, own selection, 3s. 6d. per dozen, good plants.

DOUBLE GERANIUMS, Four First-class sorts, extra strong plants, 2s. 6d. per dozen.

Also other Plants as Advertised June 10 and 24.
All package free, and for cash only
Post orders payable at Huntingdon.

KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Suttons' Superb Hybridised Florist Flower Seeds.



SUTTONS' SUPERB CALCEOLARIA.

MESSRS. SUTTON AND SONS have received NEW SEED of their superb varieties of FLORISTS' FLOWERS, HYBRIDISED, and saved from the Finest Strains in Cultivation.

SUTTONS' Superb CALCEOLARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb CINERARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb PRIMULA, per packet, 2s. 6d., post free.
Ordinary Varieties, per packet, 1s. 6d., post free.

From Mr. GEO. BOND, *Gr. to the* Earl of Powis, *Walcot Gardens.* May 23, 1871.—"The flowers of the Calceolaria and Cineraria seed I had of you are splendid.

From Mr. CHAS. WARCROFT, *Gr. to* A. R. Hudson, Esq., *Pershore.* April 19, 1871.—"My Cinerarias from your last year's seed are very good, nearly two feet across.

SUTTON AND SONS, Seedsmen to the Queen, and H.R.H. the Prince of Wales, Reading.

KING'S UNRIVALLED SEEDS
TRADE MARK

Established 1793.

JOHN K. KING, SEED GROWER, Coggeshall,* Essex, will be happy to supply his unrivalled Hardy Prize Stocks of MANGEL WURZEL, SWEDES, and other TURNIP SEEDS (carefully selected from large roots), at moderate prices.

Large purchasers supplied at special moderate prices.

FARM SEED LISTS post free.

Carriage free on orders of 20s. and upwards.

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Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

New and Choice Flower Seeds, Post Free.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

	Per packet.—	s.	d
Williams' superb strain of PRIMULA, Red, White, or Mixed	1s. 6d., 2s. 6d., 3s. 6d., and	5	0

Plants from this seed have always been awarded First Prizes wherever exhibited.

		s.	d.
Neill's extra choice CALCEOLARIA	1s. 6d., 2s. 6d., 3s. 6d., and	5	0
Weatherill's extra choice CINERARIA	1s. 6d., 2s. 6d., 3s. 6d., and	5	0
Wiggins' prize strain of CYCLAMEN	1s. 6d., 2s. 6d., and	3	6
ECHEVERIA METALLICA		2	6
HOLLYHOCK, from Chater's finest varieties	1s. and	2	6
HUMEA ELEGANS PURPUREA, new		1	0
LAPAGERIA ROSEA, new seed		1	0
MYOSOTIS SYLVATICA, true		0	6
PANSY, finest show varieties	1s. and	2	6
POLYANTHUS, Wiggins' prize strain	1s. and	1	6
PYRETHRUM GOLDEN FEATHER		1	0
East Lothian STOCKS, per collection of three colours		2	6
SOLANUM HYBRIDUM COMPACTUM, new, awarded a First-class Certificate by the Royal Horticultural Society, March 16, 1870	3s. 6d. and	5	0
Williams' Improved Hybrid SOLANUM	1s. 6d. and	2	6
SWEET WILLIAM, Hunt's Auricula-eyed		0	6
VIOLA CORNUTA var. PERFECTION	1s. 6d., 2s. 6d., and	3	6
VIOLA ODORATA LAUCHEANA, new, superior to the old Russian Violet		2	6
WALLFLOWER, Saunders' fine dark variety		1	0

Choice Seeds for Present Sowing, Free by Post.

JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton" Nurseries, Chester.

	Per packet.—	s.	d.
ANTIRRHINUM, choice mixed	6d. and	1	0
AURICULA, from choice varieties	1s. and	2	6
CALCEOLARIA, herbaceous, saved from a magnificent collection of choice flowers	1s. 6d., 2s. 6d. and	5	0
CARNATION, from prize flowers	1s. and	2	6
CENTAUREA, candidissima and Clementei	1s. and	2	6
CINERARIA, from newest named flowers	1s. 6d., 2s. 6d. and	5	0
CYCLAMEN, Wiggins' prize strain	1s. 6d. and	2	6
GLOXINIA, erect and other varieties	1s. and	2	6
HOLLYHOCK, from choice named sorts	1s., 2s. 6d. and	5	0
HUMEA ELEGANS	6d. and	1	0
„ „ PURPUREA		1	0
MIGNONETTE, Parsons'.			
MYOSOTIS DISSITIFLORA		1	0
PANSY, from prize flowers	1s. and	2	6
PETUNIA, from choice varieties	6d. and	1	0
PINKS, from choice named sorts	1s. and	2	6
POLYANTHUS, from a choice strain	1s. and	2	6
PYRETHRUM AUREUM, Golden Feather	6d. and	1	0
PRIMULA SINENSIS FIMBRIATA ALBA	1s. 6d., 2s. 6d. &	5	0
„ „ „ RUBRA	1s. 6d., 2s. 6d. and	5	0
„ „ „ Mixed	1s. 6d., 2s. 6d. and	5	0
„ „ „ FILLICIFOLIA ALBA	1s. 6d., 2s. 6d., and	5	0
„ „ „ „ RUBRA	1s. 6d., 2s. 6d. and	5	0
„ „ „ „ Mixed	1s. 6d., 2s. 6d. and	5	0
SOLANUM, of sorts	2s. 6d. and	3	6
STOCK, Brompton, finest German	1s., 2s. 6d. and	3	6
„ East Lothian, collection of three colours		2	6
WALLFLOWER, finest Double German	1s., 2s. 6d. and	3	6

The following, for early Spring blooming, can be supplied by weight, or in packets, 3d. and 6d. each:—

Alyssum saxatile
Calandrinia, of sorts
Candytuft, of sorts
Collinsia, of sorts
Erysimum, of sorts
Iberis sempervirens
Limnanthus, of sorts
Lupinus, of sorts
Myosotis, of sorts
Nemophila, of sorts
Saponaria, of sorts
Shortia californica
Silene, of sorts
Sweet William, fine mixed
Viola, of sorts
Wallflower, fine mixed

CATALOGUES of SEEDS and PLANTS post free on application.

HERBACEOUS, ALPINE, AND BULBOUS PLANTS.

OSBORN & SONS' CATALOGUE

of the above is now ready, and may be had on application.

FULHAM NURSERY, LONDON, S.W.

"The finest silvery-foliaged Plant for general usefulness that has ever been introduced." *See "The Gardener," for February,* 1871.

SENECIO ARGENTEUS.

FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY.

"Will enjoy an immense popularity, and be much sought after by Flower Gardeners of all grades."—*G. G., in "Gardeners' Magazine."*

Price 5s. each; 50s. per dozen.

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NOBLE'S HARDY CLEMATISES.

See Special Report of the Bath and West of England Societies' Meeting, Guildford, *County Times,* June 3, 1871:—"The Prince of Wales admired very greatly the numerous floral wonders, particularly the Clematises exhibited by Mr. Noble, of the Sunningdale Nurseries, Bagshot, who had the honour of describing their peculiarities to his Royal Highness. The Prince expressed his desire to purchase some specimens, which we believe will be added in a few days to the collection of his Royal Highness."

ALBERT VICTOR, 10s. 6d.; LADY LONDESBOROUGH, 10s. 6d.; and MISS BATEMAN, 15s. each.

The Three for 31s. 6d.

For robust constitution, exquisite shape, size, texture, freedom of flowering, and colour they are unequalled. Coloured Plates of the Set, 1s. 6d.

CHARLES NOBLE, BAGSHOT, SURREY.

New and Rare Musas.

MR. WILLIAM BULL can now offer :—

MUSA AFRICANA.—This majestic species is of sturdy habit, and appears likely to become a rival to the deservedly popular Musa ensete. Price two guineas.

MUSA ASSAMICA.—This elegant species, being comparatively dwarf and of moderate stature, is exceedingly handsome, from its exotic aspect, for table and general decoration. Price one guinea.

MUSA SUPERBA.—This noble plant is fine for subtropical gardening and all other ornamental purposes, where broad and handsome foliage is desirable. Price two guineas.

For full description of these and other NEW PLANTS, *vide* Mr. WILLIAM BULL'S NEW PLANT CATALOGUE.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

WM. PAUL'S ROSES are NOW in BLOOM; inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

Miscellaneous Plants,

SUITABLE for BEDDING and DECORATIVE PURPOSES, &c.

ROBERT PARKER begs to announce that he can supply, in large or small quantities, all the best varieties of BEDDING PANSIES, HARDY and GREENHOUSE SUCCULENTS, DOUBLE PYRETHRUMS, SWEET VIOLETS, &c.

Priced and Descriptive LISTS are published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

LOUGHBOROUGH HORTICULTURAL SOCIETY.—EXHIBITION, JULY 12.

SPECIAL ROSE PRIZES (Open to all England).

1st, For the best Collection of 72 Roses (72 varieties), single trusses: 1st Prize, £5 5s.; 2d, £4 4s.; 3d, £3; 4th, £2 10s.; 5th, £1 10s.; 6th, £1.

2d, For the best Collection of 48 Roses (48 varieties), single trusses: 1st, £3 3s.; 2d, £2 2s.; 3d, £1 10s.; 4th, £1.

3d, For the best Collection of 24 Roses (24 varieties), single trusses: for Amateurs only: 1st, £2 2s.; 2d, £1 10s.; 3d, 15s.; 4th, 10s.

4th, For the best Collection of 12 Roses (12 varieties), single trusses, for Amateurs only: 1st, 15s.; 2d, 10s.; 3d, 8s.

SPECIAL PRIZES for PLANTS.

For the best 12 Stove or Greenhouse Plants (distinct varieties), six foliage and six in flower (Orchids excluded): 1st, £10; 2d, £7; 3d, £4; 4th, £2.

The Society offer £25 to be competed for at the Royal Show at Nottingham. Rules and Regulations may be obtained of

WM. PALLETT, Secretary.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:— Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A.; and E. J. LOWE, F.R.S.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

The Gardeners' Chronicle

SATURDAY, JULY 1, 1871.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	July 3	—Entomological	7 P.M.
WEDNESDAY,	— 5	Royal Horticultural (Fruit and Floral Committees), at S. Kensington	11 A.M.
		Ditto (Scientific Committee)	1 P.M.
		Ditto (General Meeting)	3 P.M.

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NOTHING seems wanting, at the moment we write, to secure the full success of the ROYAL HORTICULTURAL SOCIETY'S VISIT TO NOTTINGHAM, but a continuance of the glorious weather of the opening day, when a large and fashionable company was drawn together to regale upon a feast of flowers. To say it was a thoroughly good display, would convey but half the truth, for we may fairly add, there has been no more effective show than this since the great International, which we all look back upon with so much pride and pleasure. The capacious tent under which the main part of the display took place, permitted a picturesque plan of arrangement, which only needed to be appreciated and seconded by the exhibitors themselves, to have been a paradise of flowers. Here, however, was the greatest defect of the exhibition, from an æsthetic point of view, and we feel the exhibitors need only to have it pointed out to remedy the evil for the future. What we allude to, and specially deprecate, is the sloping of the plants, a plan which has come into vogue through the plants having in most cases to be staged in narrow lines with a background, but which is utterly and entirely inappropriate when, as in the present case, the plants come into view in all directions. In some instances the effect of the mode of staging was painful in the extreme, whereas if a more natural grouping had been adopted, the picturesque effect which Mr. GIBSON aimed at in his design would have been secured, and the plants, instead of looking well from one point of view only—which seems to be the main object of sloping them – would have looked well from every point. This was especially evident in the case of some Ferns with fine spreading fronds, and which, had single plants been brought forward and elevated on pedestals near the prominent points of the ground, would have added wonderfully to the effect.

Of the plants themselves, we cannot speak too highly. Foliage plants, Palms, flowering specimens were alike good, and by no means too elephantine in their proportions, though many of them were of great size. Ferns of all kinds were extremely well represented, both as to the selection and the cultivation. Fruit was not so plentiful as might have been expected and could have been wished, which is probably to be attributed to the duration of the show. For the rest, our detailed report, and the view and plan of the tent which Mr. SMITH has prepared for us, will give all further necessary information.

The show was opened with due honours by Lieut.-Col. SCOTT, R.E., C.B., in the absence of the President, the Duke of BUCCLEUCH, and in presence of the Mayor of Nottingham and the representatives of the Corporation; and the Mayor gave a promenade concert to the season ticket holders in the show grounds on Wednesday evening. Tuesday evening was taken up by the Gardener's Dinner, a truly important feature, but into which we would gladly have seen more life and reality infused. It certinly did not strike us as so successful as it should have been, though doubtless the committee and the chairman did what they could to make it so.

WE may supplement our recent remarks on the EFFECTS of FROST on VEGETATION by the following notes, extracted mainly from a recent publication by Prof. GŒPPERT, of Breslau. It appears that during the unusually severe winters of 1828-9, and 1829-30, the Professor made many observations and experiments on the influence of low temperature on vegetation, and published the results of his researches in a pamphlet of 244 pages, with numerous statistical tables. The winter of 1869-70 offering another good opportunity, he resumed his labours in this direction, of which the following is an epitome.

1. All plants in the open air would eventually be killed by continued frost, according to their bulk, or the more or less fluid contents of their cells. Cellular tissue, therefore, sooner than ligneous tissue, and herbaceous plants sooner than shrubby plants.

The cell-contents, or protoplasm, as confirmed by NÄGELI and SACHS, manifests great changes. The cell-walls and vessels, on the contrary, are not torn or fractured, even in plants killed by cold; hence the free extravasation of water on the surface of frozen plants. Chemistry is everywhere active. Cellulose and chlorophyll are decomposed, hence the discolouring and ultimate blackening of leaves—the commencement of humification. This change takes place also in the medullary rays, subject to a higher degree of frost, causing the trunk to split through to the medullary sheath; and, as these clefts never unite (merely grow over), the process at length extends to the wood fibres and vessels. Naturally, all the other organic constituents of the cell-contents suffer like changes, as, for example, the change of starch to sugar in frozen Potatos.

2. Individual constitution alone governs the different degrees of susceptibility evinced by plants, for which we have at present insufficient explanations.

Plants never become accustomed to an absolutely lower temperature than is natural to them in their homes. We often see plants of this description in cultivation, but we have never succeeded in habituating them to frost. Witness Dahlias, cultivated for upwards of sixty years, and even now as tender as when first introduced. Even plants from countries equally cold, or colder, than ours, but with later or earlier seasons, do not readily adapt themselves to the change. For instance, Robinia Pseud-Acacia (Pennsylvania) has been cultivated in Germany some 200 years, but has not become thoroughly acclimatised.

Our spring is earlier than in Pennsylvania, but the Robinia does not vegetate so early as our native trees, and does not lose its leaves until the frost kills them, and in consequence of this it is often killed by a degree of cold that would not injure it in its native habitat. Gleditschias and even young Planes occasionally succumb from the same cause.

3. There are many local and occasional causes to which this susceptibility of plants may be ascribed.—(*a*), difference in fluid contents; (*b*), winds; (*c*), changes of heat and cold; (*d*), degree of frost; and (*e*), situation.

Brassica oleracea and Helleborus fœtidus (with perhaps Crambe maritima), are the only native German plants with herbaceous stems that withstand the ordinary winters.

Winds injure, as is well known, through cold currents, and also, which is not so well known, through the drying up or evaporation of the ice or frozen fluids of the cells, which in the frozen condition cannot be replaced.

Frequent changes of heat and cold are ultimately fatal to very hardy plants. Such plants as Lamium purpureum, and Senecio vulgaris, will bear rapid changes of freezing and thawing five or six times, but not more frequently.

The degree of frost which vegetation is capable of withstanding has not been satisfactorily proved, chiefly owing to the neglect of modifying conditions. MIDDENDORF estimates it at 23—19° F.; ROBERT KANE, in lat. 78° 37′ N., measured —43°.5 R.; and MCCLURE even—47° R. Beyond this latitude, up to 82° N., KANE found luxuriant vegetation, though only herbaceous. The limits of trees are much lower—the highest latitude in Siberia (Taimyrlande), 72° 30′ N., for Larix sibirica; Europe, 70° N.; North America, between 68° and 69° N.[*]

Great importance must be attached to the fact that the lower parts of trees and seeds and herbaceous plants altogether, are protected by snow. KANE found, in 78° 50′ N., a temperature of 27° in snow, at a depth of 2 feet, 17°; at 4 feet, 13°.03; at 8 feet, 1°.06; probably ground only 1°. Prof. GŒPPERT made the first connected series of observations on the temperature of snow in the coldest winter—1829-30—of the present century, and again in February of 1870. With the snow very equally distributed at about 4 inches deep, after three of the coldest days (20° to 21°) it was 5° to 6°; 4 inches in the ground 2° 12 inches below the surface 0° Reaumur.

From all these observations it appears that plants in high latitudes, and also on the higher Alps, are not exposed to very intense cold, for snow invariably falls in quantity before severe frosts set in, preventing radiation and ensuring a gradual and more uniform degree of cold. And it may be inferred that luxuriant vegetation exists even at the North Pole.

Snow practically is the best covering for alpine plants in gardens, the absence of this may explain the cause of many dying in our gardens. Nevertheless, the snow covering does not prevent the roots from being frozen. Growth takes place in winter only when we are free from frost for some time, and then slowly. Bellis perennis and Helleborus niger freeze and thaw without injury whilst the roots remain frozen.

Lastly, it may be mentioned that plants can bear different degrees of temperature at different parts without injury. MIDDENDORF saw Willows in North Siberia (Taimyrlande) in flower whilst the lower portions were still frozen.

—— THE DELPHINIUM NUDICAULE, recently introduced by Mr. THOMPSON, of Ipswich, proves to be a much finer garden plant than was at first supposed. It is a tuberous-rooted and hardy species, with the usual finger-lobed leaves; but what is most remarkable about it are the brilliant scarlet flowers, which contrast so strongly with the usual blue tint which pervades the genus. We have indeed already had a scarlet Larkspur in the D. cardinale, but in that the flowers were of a dull red only, and the plant itself seemed unmanageable. Here, on the contrary, the colour is bright and effective, and the plant appears to grow freely enough planted out in moderately light soil. The flowers with these rosy spurs are very suggestive of some brilliant Tropæolum, such as T. tricolorum, only that the mouth of the calyx is more widely spreading than in the flowers of that plant, approaching in size and form very nearly to those of D. sinense. Everyone should try if this fine novelty will thrive under the conditions which his garden affords; and those who find that it will do so, will discover that they have added a gem to their collection. There is an opinion abroad, formed possibly from the exhibition of indifferent examples, that the plant is far less meritorious than it really is seen to be when growing in the garden; and Mr. THOMPSON informs us that he has himself been surprised at the different effect produced by bringing the plant into an ordinary sitting-room. In the open ground, whether in strong or weak light, the colour is glowing, and in a mass very striking, but in a room it is dull. Our own opinion, formed from watching the development of the plant in the open ground, is that it is really a good garden plant.

—— At the dinner given to the judges after the Rose show at the Crystal Palace on Saturday last, the Rev. H. H. DOMBRAIN presented to Mr. WILKIN-

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[*] MIDDENDORF enumerates all trees and shrubs found in North Siberia, in his work, "Reise durch Sibirien"

SON, the General Manager of the PALACE, a very beautiful silver claret jug and cup, bearing the following inscription :—" Presented to ISAAC WILKINSON, Esq., by Judges and Exhibitors at the Crystal Palace Flower Shows, as a mark of their appreciation of his unvarying kindness and courtesy." Mr. DOMBRAIN, on behalf of the subscribers, tendered their thanks to Mr. WILKINSON, and expressed their regret that, owing to the increased duties devolving on him as General Manager of the Palace, they should not be brought into such close contact with him as formerly. Mr. WILKINSON acknowledged the gift in suitable terms.

—— A few weeks ago some specimens were sent to us of CAMELLIAS, which very unaccountably lost their leaves. As it seemed possible that something might be made out of the case if we had an opportunity of watching how one of the plants which had a pretty good root might go on if re-potted, the attempt was made; but the remaining leaves fell, no fresh roots were made, and as the plant was evidently slowly dying, we thought it well to examine its condition before death had made the several parts undistinguishable. Accordingly on making a section we found that in consequence of death of the portion of the wood of the stock in contact with that of the graft, disease had extended downwards, quite sufficiently to account for the unhealthy state of the plant. This adds confirmation to the views entertained by Mr. ANDREW MURRAY, in a late communication to the Scientific Committee of the Horticultural Society,—a communication which well deserves the attention of all propagators. *M. J. B.*

—— The extreme MAXIMUM TEMPERATURES in England during the week ending June 24 ranged from 72°.9 at Blackheath to 65° at Leeds, with a mean for all stations of 68°.8, and in Scotland from 73° at Perth to 64° at Dundee, with a mean for the several stations of 67°.5. The extreme MINIMUM TEMPERATURES in England were 38° at Hull and 40°.9 at Wolverhampton, and in Scotland were 39° at Edinburgh, 39°.5 at Paisley, and 40° at Dundee and Perth : the means for the two countries being, for England 43°.9, and for Scotland 41°.8. MEAN TEMPERATURES.—58°.2 at Portsmouth, and 56°.2 at Blackheath, were the chief of these values recorded in England, and 54°.9 at Greenock, and 53°.9 at Perth were the chief in Scotland, the means for the two countries being 54°.1 and 51°.9 respectively for England and Scotland. The RAINFALL in some parts of England was very heavy during the week, and thunderstorms, accompanied by vivid lightning, occurred at most of the stations, particularly those in the midland counties. Wolverhampton is credited with the largest fall at any of the stations, viz., 2.11 inches, Birmingham and Salford being next with a fall of 1.74 inch at both places. In Scotland, where the mean for all stations was 0.38 inch, the largest falls took place at Glasgow (with 0.76 inch) and at Perth (0.73 inch). The mean for all stations in England was 1.37 inch. (See Mr. GLAISHER'S Tables in our present issue.)

—— The second annual exhibition of the METROPOLITAN FLORAL SOCIETY will be held at the Crystal Palace on August 24 and 25, when prizes to the amount of £170 will be given. Schedules are being prepared, and may be had on application to the Hon. Sec., the Rev. H. HONYWOOD DOMBRAIN, Westwell Vicarage, Ashford, Kent.

—— We give the following statement, attributing a FUNGOID ORIGIN to WHOOPING COUGH, and which appeared in the *New York Tribune*, for what it is worth :—

"Dr. LETZERICH, the pathologist, who some time ago published his observations on a Fungus, supposed by him to produce diphtheria, has more recently made a series of experiments with another form of fungoid growth, which he believes to be the cause of the very infectious disease, whooping-cough. The spores found in the expectorated mucus, causing the irritation and coughing, were allowed to vegetate into large masses, and small portions were then introduced into young rabbits by an opening in the windpipe. The wounds thus made soon healed, but the animal became affected with a violent cough. Several animals thus diseased were killed, and the air-passages in each were found to contain very large quantities of similar Fungus. These observations, so important to the advocates of the germ theory, have not, as yet, been confirmed by other investigators in the same field."

—— Mr. TILLERY records in the "Florist and Pomologist" an interesting cross between Rhododendron Aucklandii and the Veitch's Stella Azalea, Stella being the female parent. The pollen from the short anthers of Aucklandii was used in effecting the cross. The young plants from seeds so produced are now growing vigorously, and are expected to flower next year. At present all the difference visible is that they are stronger in growth and with larger foliage than that of other young seedling Azaleas sown at the same time. Stella was selected for experiment in this case, on account of its being a very strong-growing variety and of fine habit.

—— Africa appears to be capable of supplying the wants of all our PAPER-MAKERS, since it furnishes, besides the Esparto-grass and the bark of the Adansonia, a fibre-producing plant called Diss-grass, which, though difficult to work and not so valuable as the better-known Esparto, can yet be obtained in such quantities and at such a price as will render it a useful luxury. The dwarf Palm can be obtained in almost any quantity in Algeria, but the cost of collection is rather more than that of Esparto, as each leaf is picked separately, and its manufacture into paper is more difficult and expensive, the texture of the fibre varying in different parts of the leaf, one portion of which contains some yellowish wax or resin, extremely difficult to kill, and almost impossible to detect till it is discovered on the hot rollers and the paper is spoilt. The rivers of South Africa are in many places choked with a plant known as the Palmete, a kind of large rush, 8 or 10 feet in height, of which large quantities can be obtained, and which in all probability will be found of use in the fabrication of ropes and paper.

New Garden Plants.

MASDEVALLIA ATTENUATA, *n. sp.*

Affinis Masdevalliæ floribundæ Lindl. Foliis longe petiolato-attenuatis lineari-ligulatis acutis (apice scilicet minutissime tridentato), pedunculos bene excedentibus ; pedunculo tenui ; bractea vaginata ovarium pedicellatum longe non æquante ; mento angulato, cupula subcylindracea ; sepalorum parte libera a triangula basi caudata, caudis carnosulis crassiusculis deflexis ; petalis supra basin unguiculatam antice semihastatis ligulatis acutis uninerviis ; labello ligulato antice subacuto crenulato carinis depressis a basi in discum anticum ibi in lineas callosas subparallelas excurrentibus ; columna apice postice in dentem retusum extensa, utrinque juxta antheram rotundata.

A small-flowered little plant, with whitish flowers, having orange-yellow tails, and a greenish hue on the white of the flower. The petals are white, with a green middle nerve. The column is greenish. The lip yellow, with an orange-coloured base and apex. It is one of the recent introductions from Costa Rica, obtained by Messrs. Veitch.

We must state a very surprising fact, viz., that our wild flowers are quite even inside, while the fresh ones have a very thin but quite obvious cover of velvet inside. We should not have been astonished so much if the dry flowers had been scabrous, the fresh ones quite glabrous, for we have observed that very often, and particularly in Masdevallias. *H. G. Rchb. fil.*

ONCIDIUM CUCULLATUM DAYANUM, *n. var.*

I have lately obtained this lovely variety from J. Day, Esq. It has quite white flowers, with beautiful violet blotches on the sepals and petals, and on the inferior part of the lip. Thus it becomes, indeed, much like Oncidium Phalænopsis. That, however, is widely distinct by the three long reeds at the base of the lip. It appears to be very rare. *H. G. Rchb. fil.*

THE NATURAL HISTORY OF A FLOWERING PLANT .

[The following is a report of the second of Professor Thiselton Dyer's course of lectures on "The Natural History of a Flowering Plant," in the theatre of the Royal College of Science, Stephen's Green, Dublin.]

IN the course of his remarks on "The Root," the lecturer said :—

The transition from the consideration of the leaves to the root of a plant is less abrupt than it appears at first sight. Foliage is spread abroad into the atmosphere so as to bring the largest possible plant-surface into contact with it ; the leaves are feeding organs, and their food is taken hold of in the gaseous form. The roots are also widely spread, and expose in their aggregate a considerable surface, though not all equally absorbent : they are, in fact, another feeding system, complementary to that formed by the leaves. The two are joined together by the axis, or main stem, which breaks up, therefore, above and below, into ramifications terminating in parts specially adapted to collect plant food from the different media in which they are placed. External circumstances have given each their special character. A somewhat perverse experiment made by Duhamel, an industrious investigator of plant life, will illustrate this. He bent down the stem of a young Willow, and buried the crown of branches in the ground ; the branches ceased to produce leaf-buds, but developed rootlets. Willows are tenacious of life ; the internal resources of the young plant supplied for a time the want of leaves. Finally, when Duhamel disinterred the original roots and elevated them into the air, the inversion became complete, and they bore buds and leaves. All plants are not quite so complaisant as this ; but the great majority of them will develope from fragments of the stem, more rarely from fragments of the root, the parts needed to make the plant complete. It is a great part of the art of the gardener to make use of this interchangeableness to multiply plants which it may not be convenient or possible to raise from seed ; not that the process can always be effected in the same way : individual peculiarities of constitution intervene, and various artifices have to be employed to get a successful result. As a general rule, cuttings root with less facility in proportion as the stems they are taken from are hard-wooded and old ; the vitality of such portions is less active. Plants which are propagated on a large scale for sale are often made to produce, by exposing to heat while diminishing the light, a number of young shoots which can be easily rooted. The study of plant life is a science, while the practice of horticulture is an art involving no very recondite scientific principles, but requiring often in their application no small amount of skill and ingenuity. The immense amount of destructive friction which would otherwise be involved, confines the growth of roots to their extremities, just within which the formation of new cells takes place. The tip of every rootlet has this growing point protected by a kind of cap, which is continually abraded and renewed, but which is easily to be seen in many water plants, such as Duckweed. The newest parts of the roots are covered with delicate hairs, formed by tubular prolongations of the cells forming the surface ; these become inserted between the smallest particles of the soil, and are bathed by any matter in solution it contains. This, consequently, passes by absorption into their interior, and, by a repetition of the process, from one cell to another. Generally speaking, roots will not grow unless a plant has also active leaves : this is not universally true, as the colourless protoplasm of the root cells can nourish itself on nutrient material already stored up in the plant, and in plants the result of nutrition is growth. The points of growing rootlets once destroyed, they will not grow again, but new rootlets have to be formed ; this is the cause of the shock plants sustain when they are transplanted, and of the often irreparable injury a plant sustains from having its supply of water neglected. A great deal has been stated as to the direction of plant growth ; one observer thought all roots were directed by centripetal force towards the earth's centre. The true explanation would seem to be that roots travel in the direction where they can feed most easily. It is easy to see this in the case of the hedgerow timber of cultivated fields. The roots of an Ash have been found running beneath the well fed surface for 95 feet ; in the same way they will develope enormously in water-pipes and drains. The roots of an Elder stopped up completely the 6-inch main of the Berwick waterworks. Roots, it must also be remembered, are organs of support. The habit of taking a deep hold upon the ground will, of necessity, be impressed upon them ; and this will operate disadvantageously in the end, if, as sometimes happens, they strike down too vigorously into a bad soil. Fruit trees, which are to have their roots kept superficial, so as to be well fed, must, as a consequence, be grown of small size. The extent of feeding ground occupied by roots is very great. In a tree, it far exceeds the spread of the branches. Schubert traced the roots of Wheat to a depth of 7 feet. The access of air to roots has been found essential to their health. Trees, the roots of which are too deeply buried when any change is made in the surface of the ground, are apt to die in consequence ; and, when trees are planted in towns, a space should be left unpaved immediately round them, which will allow them also to be watered in very dry weather. While the leaves are the means by which carbon is introduced into the plant, it is by the root that the other elements of its food are secured. These are dissolved, as saline and mostly highly oxidised substances in the water which permeates the soil, and in this form they pass by a purely physical process into the roots ; thence, by means to be traced hereafter, they are transferred to the upper parts of the plant. In the leaves the excess of water is got rid of by exhalation. Hales found that a Sunflower with a leaf surface of 39 square feet exhaled 22 ounces of water in 24 hours ; and in the Pea every 100,000 grains of water which passes through the plant carries about 40 grains of solid matter with it. The sulphur, phosphorus, and nitrogen contained in these matters are, in the leaves, torn from the oxygen with which they are combined. But the disposition of the plant food would again be treated of in the next lecture.

EARLY PEACHES IN ORCHARD HOUSES.

THOUGH the season is too little advanced to speak decidedly on early Peaches in unheated orchard-houses, and, in spite of the heavy rain which has been falling lately, I cannot refrain from expressing my admiration for that most valuable Peach, Early Rivers. Well did my friend know its value when he adopted it by his own name. I have now some half-a-dozen trees of each of his earliest seedlings, and among these—up to this—there is none I like so well as Early Rivers. It has all the merits a Peach should possess ; it is fragrant, juicy, early, and prolific. It was raised from the Early Silver Peach, which with me is delicious, but not a first-early, rather a second-early, and which was itself raised from the white Nectarine. Any one purchasing Early Rivers should note that it has large flowers and kidney glands, and is not very liable to mildew. This adverse season it has actually ripened on the 15th of the present month, on a diagonal cordon against the back wall. In 1869 it ripened on July 1, and in 1870 on the 10th, so that this is an enormous advance. Accustomed as I am to see my fruits advance, from 10 to 20 days in 10 years or so, this is considerably more. The fruits are not so large as last season, there being too many on the trees.

Thus, in an unheated house, we have Peaches at a time when they are half-a-crown each at Covent Garden, and, as to Algiers, there are not generally any as early in the Paris market in the very best of seasons. In 1869 Early Beatrice ripened here on June 12, but as the tree subsequently died, this was an abnormal case. It is, however, quite coloured, but small, and not ripe this season yet. At Sawbridgeworth, Early Rivers is ripe at about the middle of July, so that here we are just one month in advance. Has any one ever ripened Early Beatrice as early as the 12th, and Early Rivers as early as June 15, in an unheated house before this?

If any one could witness our generally late and cold springs, he would be speedily disabused of the fallacy that our climate is the sole cause of early ripening. Cornwall sends Potatos, Strawberries, and Rhubarb to the London markets quite as early as do the Channel Islands. Though our winters are comparatively mild, they are often severe, and always stormy and damp, while our springs are notoriously late. To what, then, is this early ripening of this Peach due? I answer without hesitation, after a longer experience than any man in England or in these islands in pure cordon training, that it is due chiefly to the peculiar advantages of the diagonal cordon on the back wall of a solid lean-to orchard-house. These houses are more than a week earlier than the span-roofed. The diagonal cordon is so easy to train and expose to the sun's rays, and the roots are so naturally restrained, that a just balance is established between root action and the parts in bearing which is eminently favourable for fruit culture. Thin out rigorously, water freely, and no other system of training can surpass—I think excel is the right word—the diagonal cordon.

I may add here, that Early Louise presents a very fine appearance, and is colouring freely. My half dozen trees of this sort are all very well cropped. It is a prolific variety evidently. Early Leopold seems a second early at present. Rivers' Early York will be an acquisition, for, side by side with Early York, while the last is slightly mildewed the seedling is perfectly free from it.

On the whole it bids fair to be a good season under glass, but on the walls we hear many complaints. *Th. C. Bréhaut, Richmond House, Guernsey, June* 17.

DARLINGTONIA.

ONE of the plants which attracted most attention at Nottingham, was the singular Darlingtonia exhibited by Messrs. Veitch. This plant is a native of California, where it was recently met with by Mr. Robinson, who communicated an account of it to the Linnean Society a short time since. The plant had, however, been previously well known to botanists, and had indeed been exhibited by Messrs. Veitch at the Royal Horticultural Society. It is a near ally of the Sarracenias, but differs in several technical points, and amongst others in the singular tails which spring from the mouth of the pitcher. The floral conformation is like that of the Sarracenia, but the stigmas are comparatively small, and do not present the large umbrella-shaped expansion so characteristic of the Sarracenias. Moreover, as lately pointed out by M. A. De Candolle, the five lobes of the ovary alternate with the sepals, instead of being placed opposite them. We have not ourselves yet had the opportunity of verifying this statement, of the correctness of which, however, we entertain no doubt. The leaves of this plant are 12—18 inches long, tubular, twisted, veined, of a dull reddish colour above, and curved at the apex into a hood, from which proceed the two curious processes before alluded to. The flowers are borne singly at the end of a long stalk, and are bent downwards, each one about 2 inches across. The sepals are greenish-yellow, the petals purple. The stamens are 15—20 in number, the ovary is 5-lobed. It is one of the most interesting plants in cultivation, and, as it naturally grows in damp places, exposed to extreme cold, or extreme heat, according to the season, it would hardly seem to need the coddling treatment to which it is sometimes subjected in this country.

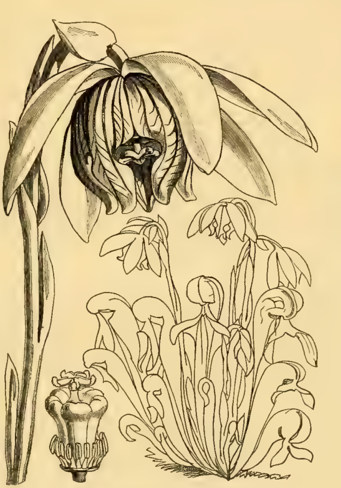

FIG. 171.—DARLINGTONIA CALIFORNICA.

THE LORANTHACEÆ OF ANGOLA.

[The following paper was read by Dr. Welwitsch before the Scientific Committee at the last meeting of the Royal Horticultural Society.]

THE singular beauty and richness of the gay-coloured flowers of the numerous species of Loranthus, which enhance in so considerable a degree the variety and charm of tropical forests, is noticed and acknowledged by every attentive traveller in the torrid zone; and the introduction and culture of these interesting parasites form worthy objects of attainment by skilful and persevering horticulturists. I beg, therefore, to offer some brief observations on the occurrence and distribution of the species of this order in south-west tropical Africa, and to add a hint to encourage, and perhaps to facilitate, their future introduction into Europe.

During my travels in Angola I collected about 30 species of Loranthus, but only one species of Viscum. The number of species, and also that of individuals of the same species, I found to increase progressively from the sea-coast towards the highlands of the more distant inner regions, and to culminate in the mountainous forests of the districts of Pungo Andongo and Huilla, at an elevation of between 4000 and 5000 feet above the sea.

Nearly all the species I encountered are erect, or more or less spreading shrubs, from 1 to 2, or 2½ feet high, with the exception of one species, which forms a pendulous bush, with slender branches, 4 to 6 feet long.

Most of the species of Loranthus, and also the single species of Viscum I met with, were growing on the lower or higher, or even on the top branches of evergreen trees, less often on trees with deciduous leaves; but a few of the most brilliantly flowering species I encountered in the burning and treeless coast region, growing at the base of small low shrubs of Barlerias and Sidas, very much in the same manner as Cytinus hypocistus occurs on Cistuses in the sandy plains of Portugal. Sometimes in the hot littoral region, a beautiful Loranthus is met with, growing, not at the base, but on the middle branches, or even on the main stem of low slender twiggy shrubs; and in such instances the natural combination of the bright green and broad-leaved parasite and its gay crimson flowers with the more tender and differently shaped foliage of the foster plant, forms one of the most striking features of parasitic vegetation along the sea coast of Benguella and Mossamedes; so in one instance I was most agreeably surprised to find a small bush of Gossypium microcarpum, only between 2 and 3 feet high, bearing several stems of a pink-flowered Loranthus, nearly a foot long, on its slender branches: whilst on another occasion I met with several low shrubs of the intensely glaucous Tamarix articulata, of which nearly every main branch was adorned by dense patches of a pretty Loranthus, with splendid yellow flowers.

The greater number of the Angolan Loranthus glitter with flowers of a more or less pink or scarlet hue, but about half-a-dozen of the species are adorned with golden or orange-coloured blossoms, and nearly all the species are exceedingly free flowering. The principal flowering season of the Loranthaceæ coincides in Angola with the spring, that is, from September till November, but many of the finest species continue their blooming almost during the whole summer, when they may be found not unfrequently covered with ripe fruits at the base while they are still in full bloom at the top of one and the same branch of the respective foster tree. The yellow-flowered kinds, however, seem to begin their season much later, for I met with several golden-blooming species in the months of June and July, which time in Angola is the very middle of the dry and chilly winter season.

All the species have fleshy and rather broad leaves, which, however, vary considerably in colour, being on some species of a dark shining green, in others glaucous green, and, in a few species, they are covered with a greyish tomentum. Although some few species evince a decided predilection for particular species of trees, I not unfrequently found the same species of Loranthus growing on trees pertaining to very different species, genera, or even orders of plants; but the pendulous species of Loranthus I observed exclusively on species of Ficus, whilst the Viscum I found constantly growing on an arborescent Composite, a species of Tarchonanthus. The forest trees most frequently inhabited by Loranthuses are the Adansonias, several of the larger trees of the orders of Mimoseæ, Combretaceæ, Sterculiaceæ, and Sapindaceæ, as well as most of the different Fig trees, whilst in the southern parts of Benguella, and near Cabo Negro, many beautiful Loranthus may be observed on the Tamarix articulata; on the contrary, I seldom or never saw a Loranthaceous parasite on trees belonging to the orders Anonaceæ, Hypericaceæ, Zanthoxyleæ, and Euphorbiaceæ, although every one of these orders is rather copiously represented by large and mostly evergreen trees in the woods of the Angolan highlands; but I have frequently seen some scarlet flowering Loranthuses investing introduced trees of Citrus Aurantium and Citrus Limonum, and also those of Ficus Carica: and it seems to me that this curious parasite immigrates with a kind of predilection from the original habitation to the neighbouring fruit trees, for on one occasion I saw a whole orchard of Orange trees invaded with a blood-red flowering Loranthus, and in another instance I met with a plantation of Fig trees (Ficus Carica), most of them covered not with Figs but with a grey-leaved Loranthus, with yellow flowers. It seems also that the quality of the sap or juice of a tree exercises little or no influence upon the vegetation of Loranthaceæ, for in several instances I found one and the same species growing, equally vigorously, on Adansonia, which has a watery juice, and at another time on Fig trees, of which the sap is milky and glutinous.

These two latter circumstances seem to hint at the probability and perhaps even facility of the future culture of these pretty parasites in European gardens, wherein such an introduction would vary the rather wearying "Pelargonism" and "Orchidism," or, at any rate, these plants would be contrasted with many new and graceful forms and strange-looking productions of the tropical zone, never yet seen in a living state in Europe, and until now only admired and praised by travellers.

THE AMATEUR GARDENER.

The Strawberry.—The amazing difference which often appears at this season between the Strawberry beds of one gardener and another, and even between two beds in the same garden, is matter of notoriety, and leads to inquiry as to the cause. We want to know how it is that one man has such a profusion of fruit, while another is disappointed and vexed by the scantiness of his crops; and while, in some instances, there may be reasons of an apparently arbitrary kind, which even science cannot discover, the cause which produces such diverse results are sufficiently patent. Sometimes half the plants in a bed may be barren, and if the cultivator lets them remain, in the hope that next year the loss will be made up by increased fruitfulness, he may again be disappointed. Our own method of guarding against this, is at once to pull up every barren plant, and to take fresh runners only from those which have borne well. We have generally found this plan effectual, though not to the extent of making every plant in a row prolific. Three years ago we had a new bed of Underhill's Sir Harry, and only three of the plants bore fruit. We took early shoots from these, and the next year they all bore as well as their parent stocks.

Some growers lay stress on the second or third shoot in a runner, but we always take the first. It is a common practice to let the runners root as they will, and in the autumn to take up promiscuously as many plants as are wanted for new beds; but this is a careless mode of proceeding. We are now getting shoots rooted as fast as we can, and we remove them, immediately they are ready, to a nursery bed, where, in about six weeks, they are fit to be planted out where they are to remain. They have thus four or five months to perfect their growth, and will be finishing plants next year. A whole season is thus saved. As soon as a runner has a plant at its terminus, we peg it down or confine it in a fixed position by a stone or oyster-shell; the latter is the best, because the white shell indicates the place in the path where the runners are, and in gathering the fruit they need not be disturbed. The runner is prevented from growing any further, and all the possible strength is thrown into the young offset. We hope to have our new beds filled in this way by the first week in August.

There is a great temptation to allow too little room for growing Strawberries, but it should be resisted, and not less than 4 square feet should be given to each plant. This will seem too much when the plants are young, but, by the second year, when they will be in their perfection, it will be found not to be too much. In some cases we allow runners to root as they please the third year, and the year following dig up the bed as soon as the fruit is gathered and sufficient offsets secured for a new plantation. The soil should be rich, and deeply dug before planting, after which there should be only a surface stirring, as disturbance of the roots is to be avoided. We find the barbarous custom is not yet obsolete of cutting off all the foliage of Strawberry beds in the autumn. If there were no other objection to this, it would be sufficient that the crowns of the plants are thus deprived of their natural protection during the winter, and barren plants will be very common. If all runners are removed as they grow, the plants will need very little trimming up. The old leaves will gradually die away as the young foliage advances in the spring, until all marks of decay will be gradually obliterated.

A thin layer of short rotten manure, such as an old Cucumber bed furnishes, should be spread over the plants in the late autumn, and worked among the leaves with the fork. We place the same in the alleys also, and, if the proper kind of dung is selected, it will, when the time of fruiting arrives, be found sufficient to keep the fruit clean. In the very heavy rains we have had in the last fortnight, the fruit lying on this stratum has seldom been soiled. There are many contrivances to secure the same object, but we know no better one than this. The fruit may be forwarded in the ripening by tiles or slates placed under it. Slates, about 5 inches wide, put in a row on each side of the plant, make a tidy and effectual protection from the splashings of the rain in wet weather.

We will say little about the sorts of Strawberries which best repay cultivation, for they are very numerous, and the best plan is for a grower to visit the beds of his friends when fruiting, and make his own selection. More things have to be considered than the kinds of fruit, some kinds having a more compact and dwarf habit, which makes them more suitable for small gardens. We have been for some years contented with Keens' Seedling, British Queen, Underhill's Sir Harry, and a late Pine, of which we have forgotten the name. We must not omit to mention that Strawberries often do well along garden edges, and when so planted the fruit is easily gathered. *H. B.*

Home Correspondence.

The Condition of the Peach and Nectarine Trees.—I fear the statement made in your leading article at p. 770 is but too true of the above trees out-of-doors. Such as I have seen and heard of are in a miserable condition, some describing their trees as in a moribund state, and others as in the condition described by Mr. Barnes, namely, "blistered, covered with green aphis, and spiders." None of this is the case here out-of-doors. I live on the apex of the parish, wholly open for miles to the south and south-west, unprotected towards the east, and with only a low, 5, 6, or 7 feet brick wall to keep off the west wind, and the north wind, which latter comes from the Wiltshire hills some 20 miles off, with nothing but here and there an Elm tree to defend my trees. The winter here was Siberian, and the spring very severe, but I had not to cut from 112 of the above trees more damaged wood than would amount to 1 foot. This arises mainly from being a short-pruner in summer. I have seen long-pruned trees this spring with as much dead as living wood. The crops of Peaches and Nectarines are excellent on south walls, very good on the west walls, but, with four or five exceptions, bad on the east walls, owing to the severe May frosts, accompanied by the biting east or north-east wind. The trees are all in most vigorous health, the foliage is free from blister, curl, aphides, and red spiders; it is as good as could be desired. Between 600 and 700 people have been here in the last ten days, chiefly to see the Roses, and amongst them several gentlemen's gardeners. To them the Peach and Nectarine trees were the great attraction, and subject of astonishment. Their account of their trees put me in mind of Milton's lazar-house—

> "Dives' oft the tossings, deep the groans,
> Despair the sick doth tend."

There is no wonder connected with it. I look after them myself all the year round, and I will not suffer severe winter or spring, red spiders, or aphides to blister, curl, or afflict my trees. The miserable state of the Peach and Nectarine trees out-of-doors in England is a disgrace to science, and the result of neglect and gross ignorance. I hope some of the readers of this article will come and review my trees. *W. F. Radclyffe, Okeford Fitzpaine, Blandford.*

Marechal Niel Rose.—In the Belfast Botanic Gardens I saw a sample of this Rose under very good culture. It was growing in a square tub at one end of a show house, and was trained under the glass for a considerable distance. During the time of my visit at the first North of Ireland Flower Show, held in the gardens in May (not the first show of the year, but the first show of the kind held in May in these parts), the roof was literally covered with flowers. There could not be less than a couple of hundred expanded at one time, and you would require at least to multiply that by two to get at the sum total of the blooms at that period. The Lord-Lieutenant and party formally opened the show, and the Countess Spencer was so delighted with the "Maréchal," that a bouquet of the flowers was presented to her. My principal object in notifying this is to state that the Rose had been budded on the Brier, and, not contented with the food supplies which that stock sent up, had taken root itself, and quite eclipsed in time its foster parent. One might judge from this it would do best on its own roots, but Mr. Johnson, the curator, observed that it seemed to prefer the help of the Brier stock in its younger stages, and that by earthing it up past the junction of stock and scion it would set away roots for supplies on its own account. The Manetti does not seem a good stock for it at all; it would soon die were it forced to live upon the resources which that stock can supply, and it would seem that the proper way to grow it well is to treat it as Mr. Johnson has done. The pale yellow shade of colour is not shown to advantage against "blinded" glass of the ordinary character. It would be better, therefore, to have a screen of, say, light blue, which is an agreeable eye colour against bright white. This would, in such a case as that we have described, exhibit its beauties to much greater perfection. It is really a grand Rose, seen under such culture as I saw it. I know there are a few other places where it has been equally well done, even in Ireland, but your readers generally may be none the worse of hearing of this particular case, and some of them may profit by the information given. *Jas. Anderson.*

Watson's Lawn Sand.—I think few can form any conception of the wonderful effect that takes place after a dressing of this sand on a bad lawn. When I say bad, I mean that the lawn contains every sort of weed and bad varieties of grass, for such was the one here, with the exception of about 2 acres, until I obtained Watson's lawn sand. Being somewhat doubtful of the effect, from the flowing description given in a circular sent, I only tried the smallest quantity sent out by the vendor, namely, 36 lb., the result being as follows:—I selected a place in the middle of the lawn where the grass was as bad as it was almost possible to be, giving it a dressing at the rate of 4 oz. to the square yard; and at the first appearance everything seemed to have been burned, the grass becoming brown while the weather kept dry; but as soon as rain came everything seemed to change, the coarse grass and Daisies giving way to grass of a far finer character, Clover also making its appearance; and although the whole of the Daisies did not disappear after the first dressing, yet, after applying about 2 oz. more to the square yard, they did so—the result being so highly satisfactory that I have used 6 cwt. of it, and we have now as fine a lawn of grass as could possibly be wished for as far as the dressing has been used, but where none has been used it is nothing but moss and filth of almost every description. *James Stewart, Bellsfield House, Windermere.*

Viola cornuta Perfection.—Permit me to say that I have grown this plant to perfection for three years past. I have now a "star" bed with a 3 feet band of Violas, which are a complete mass of bloom. One can hardly put a finger between the blooms without touching them. It is undoubtedly a first-class bedding plant, and I shall be happy to show my flowers to any person who may be making a "pilgrimage" to the quaint old church of pious George Herbert, only a few yards distant. *E. Lampard, Gr. to Rev. W. P. Pigott, Bemerton, Salisbury.*

Buds below the Seed-leaves.—These are produced very quickly in the common Pimpernel—Anagallis arvensis. When the top of the young stem with the cotyledons is cut off, minute protuberances arise on the sides of what was before the smooth and naked stem, and from these issue buds with leaves. In seedlings of Dodecatheon Meadia, I find that the cotyledons remain for a considerable time fully expanded without the least trace of a bud showing itself in the axil; but at length a bud breaks forth through a longitudinal cleft in the apparent stem, just above where the radicle enters the earth: in this case, which is quite different from that of the Anagallis, the stem which supports the cotyledons may be only their united prolonged bases, in which the bud is immersed, as it is in some American Compositæ, which expand their cotyledons above the surface of the earth supported upon an apparent stem, which is, however, tubular, and the bud really arises from a point below the surface of the ground, and pushes its leaves up through the axil. *W. Mitten, Hurstpierpoint, June 27.*

Pear Grafted on Apple.—M. Carrière's statement respecting the Pear growing on the Apple is quite correct. Last summer, while budding some young seedling Apples, the thought occurred to me, Why should not the Pear grow on the Apple? I then inserted two buds, viz., Marie Louise and Fondante d'Automne, on the Apple, both of which are growing vigorously. This season I intend carrying the experiment into a wider field. Last spring I grafted a St. Michael's and Blood Oval Oranges on seedling Shaddocks, to see what influence the stock will have on the scion. The foliage is looking remarkably healthy. *A. Hossack, Ashburnham Place, Battle.*

Ivy.—Allow me to add a word to the testimony of "H. B." at p. 772. Ivy does harm to growing timber. I cut down some large Larch this spring, some of which were tightly compressed in folds or coils of strong Ivy, and the boles of the Larch could not swell. When sawn, the grain of the Larch was remarkably close and fine—like pitch Pine, while that of trees free from Ivy was coarse. This, I conceive, would arise partly from compression of the Ivy not permitting the bole of the tree to enlarge itself, partly, perhaps, from robbery of nutriment at the roots of the Larch by the roots of Ivy. Ivy does good and not harm to good walls—adds to their dryness. *Mem.* It must be a good wall to be entrusted with Ivy upon it. My old vicarage barn gable was covered with Ivy of a century's growth. On re-roofing the barn I found the gable leaned over inwards so much that it was necessary to rebuild it. We could not understand why the gable had got out of the perpendicular in this way, till we discovered the roots of the Ivy had got into the wall, and, as it were, wedged up the stone-work. The mortar was very bad. The roots had not come through the wall, or the lift would have been uniform throughout. Some 25 years ago we had an archdeacon who was under the impression that Ivy injured all walls, and so ordered the churchwardens everywhere to remove Ivy from our old Norman church towers around. As the walls are 6 and 8 feet thick, and the mortar like adamant, the Ivy could do no harm, and we have lost a very picturesque feature of our neighbourhood. *W. M. R., Bishop's Castle Vicarage, Salop.*

Phormium Flowering.—Two years ago I flowered in my nurseries the Phormium tenax fol. aureo-marginatis, a fine plant, with a stem of about 4 yards high, and with many flower-spikes, but which did not give me any seed. I kept the plant all the time indoors, in a well-aired cool span-roofed house shaded with laths. This year the Phormium Colensoi fol. argenteo marginatis, is about to flower. The stem is upwards of 1½ yard high. It is a fine plant, very healthy, and at present is kept in a span-roofed house devoted to cool Palms, as Latania borbonica, Corypha australis, Chamærops Fortunei, Phœnix reclinata sp. *P. de G., Steenbaugge.*

The Setting of Grapes.—Within the whole range of horticulture nothing can be of more import than the proper setting of Grapes. Mostly setting freely of themselves, at times a failure occurs that ruins the crop. I regret that amid those experimented upon (see p. 737) one or two of the most irregular setters are omitted. These are, Lady Downe's, in certain places; West's St. Peter's, now and then, and especially the Canon Hall Muscat. Should an opportunity offer, perhaps, the latter especially will be subjected to careful examination. The most striking and, at the same time, most provoking peculiarity about it is, that while a few of the berries seem over-set, the majority are not set at all. What I mean by over-setting is this—some berries, or parts of berries, have one or more seeds abnormally developed, so much so that these seeds press against the rind of the berry so forcibly as to induce premature decay. In these instances of excessive development the seeds are likewise unsound and of a darker colour than usual. The flesh of the berry also adheres to them, almost as tenaciously as the flesh of a clingstone Peach or Plum does to the stone. Moreover, the berries are frequently misformed, bulged out of shape by the size of the seed. It is seldom that such berries have the usual number of seeds; more frequently only one or two of such monstrous seeds are found. Can these malformed seeds be the result of compound fertilisation, or is there any explanation of their origin? Again, is their unusual size the cause or product of their unsoundness? Also, why are they most frequently found on Vines that are shy setters, such as, pre-eminently, the Canon Hall Muscat, and the Dutch Wilmot's Hamburgh, which sets much less freely than the common Hamburgh? There is another curious coincidence connected with these monstrous berries. It is this, that they are generally, if not always, found on the same bunch with unset and seedless berries. How often, for instance, are the bunches of Canon Hall Muscat Grapes seen with a few large berries like Golden Champion at their largest, only rounder, and all the other fruit on the bunch about the size of the Corinth or Currant Grapes? It seems as if the large berries had absorbed all the seed-bearing power of the plant, and concentrated enough for all into one or two monstrous growths. Can there be such a thing as an intercommunion of seed-bearing force between different portions of the same bunch? Explain it as we may, the coincidence of abnormally large and small seedless berries on the same bunch is well nigh constant, and is perhaps most commonly seen in the Wilmot's Hamburgh and the Canon Hall Muscat varieties. But the abnormal growth of particular seeds is likewise common among Muscat of Alexandria. Wherever found it proves injurious to the quality of the Grape. I have scarcely ever met with an abnormally large seed without the quality of the fruit being lowered thereby; the flesh is coarse, or incipient decay is set in, and, as already stated, these big seeds are mostly unsound. There are exceptions, however, to this. But there is another peculiarity about large seeds of Grapes, which is constant as far as my experience goes. They are scarcely ever found in their right position. Of course it may be held, that their size must needs throw them out of place; but their displacement is greater than can be thus accounted for. It almost seems as if the displacement were the cause of their extraordinary development, rather than that their mere size was the reason of the altered position. It would be interesting to inquire into the effect of a change in the position of seeds or stones in reference to external influences upon their size and quality. Would the mere bringing of them out from the centre of the fruit and placing them close to the rind affect the changes we find in misplaced seeds or stones? Are the instruments of change—external or internal accidents from without or vital alterations of structure springing forth from within, the offspring of external errors or injuries or the legitimate development of misformed or differently formed gemmules. These queries have an important practical bearing upon the setting of Grapes, for the variations of normal structure proceed from some latent power of variation implanted in vitality itself: we may not alter them. But if not, greater knowledge, higher skill, especially of the mysteries of setting time, may enable us in future to prevent such freaks, and all others incident to that critical season of the plant's life. That is a most suggestive saying in your leader (p. 737), that the gardener wants the Grapes, not not the Vine itself. And doubtless this shy setting, or not setting, or setting a few berries only on a bunch, are all fair weapons given to the Vine by Nature to enable it to protect itself from our grasping greed and short-sighted improvidence. Probably a moderate crop is almost the best antidote to shy setting. *David Tell Fact.* [Among the causes of bad setting not mentioned at p. 737 may be set down the following: the formation of a gummy substance on the stigma, and the presence of a small dipterous insect, which eats up the pollen which may gain access to the stigma. EDS.]

—— When reading your leader on this subject, at p. 737, I was struck with the theory there laid down, viz., "That syringing can at least do no harm" [under the particular circumstances alluded to], such being opposed to an opinion in which I felt to have been educated. It brought to my mind a fact which came under my notice some 16 years or more since: I was passing through a vinery with the gardener at the time of thinning, and, speaking of the tedious straight-jacket affair it was, he took me to another house, more forward, and on which little or no labour had been bestowed in that matter, at the same time remarking, "These I gave a good syringing at a certain stage of blooming, as is usual with me to do, and save the trouble of thinning." Now the result here obtained would prove it a great risk, and probably the total failure of the crop, if syringing was the constant practice during the flowering period. I have always looked on a rainy time, when trees or flowers were blossoming, to be detrimental to a crop of fruit or seed; and I am further reminded of boyhood days by hearing a fruit grower, of near fourscore years, say, after three or four rainy days at the time of Peaches, &c., blossoming, "Not much fruit this year; too much wet." *Josiah Elcombe, Exeter Nursery, Southampton.*

Bats.—My church is infested by these creatures. We never see them, but their droppings are swept up a quart measure at a time. How could I attack them with any hope of expelling or destroying them? Could I fumigate them? With what? or how? The roof where they lodge is very lofty. *W. M. R., Bishop's Castle Vicarage, Salop.*

A Cool Orchid-house.—I now propose to lay before your readers a practical illustration of the home treatment of cool Orchids, by giving a short description of the cool house of which I have the charge, also the names of many of the plants grown in it. The Odontoglossum house is a lean-to; it is built on the north side of a wall running east and west, or nearly so. The house is a rather large one, being 45 feet long, 10 feet wide, 9 feet high at the back, and 4 feet 6 inches in front. It is heated by four 3-inch pipes. They go along the front only, and there is no other pipe, flue, or anything of the kind in the house except this 180 feet of piping. The back table is 3 feet 6 inches in width. It is simply a pit filled with rubble, and finished with a presentable surface. The path comes next—2 feet 6 inches wide; the front table is 3 feet 10 inches wide. It is not carried close up to the wall in front, but a space of 2 inches in width is open all along the front for free circulation of warm air from the pipes below. Under this table and close to the pipes there are a number of shallow (cemented) water-tanks running the whole length of the house, and presenting a surface of about 80 square feet of water, thus insuring a constantly moist atmosphere in the house under all circumstances. There are 18 ventilators, six of them opening on the pipes, and these last are opened a little when the outside temperature is 50°. More air is given as the outer temperature increases; and, when it rises to 65°, not only all the ventilators, but the door also is opened, and an outer canvas door closed to break a rush of air, keep out insects, &c. The plants are carefully shaded from the sun; but, as both ends of the house are glazed down to the tables, and there are front sash-lights about 2 feet deep, they get plenty of light, and, owing to the position of the house, no shades are required from the third week in October to the second week in March, and it is during this time that the young leaves acquire the ruddy brown and Copper Beech colour mentioned by me at p. 677. Your readers will see from this rough description that his house very nearly agrees with Mr. Bateman's idea of a cool house, mentioned by Mr. Anderson at p. 741, and six years' experience convinces me that it is very nearly correct for the plants named below. The collection of Orchids grown in this house is a rather large one, numbering upwards of 550 plants, and more than 70 distinct species, 64 of which are here given, and about 100 plants have not yet bloomed. Allow me to add that, in the present letter, and in that given at p. 712, will be found much of the information asked for by "G. H." at 615, when he desires to know "what this cool treatment really consists of?" and I am sure it would be very interesting to many of your readers if he will tell us how many of this list he grows in the "stewpan."

Ondontoglossum Alexandræ
,, bictonense
,, cariniferum
,, cordatum
,, *coronarium
,, crocidipterum
,, cristatum
,, Galeottianum
,, gloriosum
,, grande
,, Hallii
,, hastilabium
,, Insleayii
,, læve
,, luteo-purpureum
,, Lindleyanum
,, maculatum
,, membranaceum
,, nævium
,, nebulosum
,, Pescatorei
,, Phalænopsis
,, pulchellum
,, *ramulosum
,, Reichenheimii
,, *retusum
,, Rossii
,, roseum
,, *Schlimii
,, triumphans
,, Uro-Skinneri
,, Warscewiczii

Helcia sanguinolenta
Oncidium bifolium
,, cruentum
,, cucullatum
,, excavatum
,, nubigenum
,, serratum
,, graminifolium
,, *macranthum
,, unceum
Lycaste cruenta
,, Deppei
,, gigantea
,, lanipes
,, Schilleriana
,, Skinneri
Barkeria Skinneri
,, spectabilis
,, Lindleyana
Lælia albida
,, furfuracea
,, majalis
Cattleya citrina
Nanodes Medusæ
Epidendrum *erubescens
,, vitellinum
Polystachia pubescens
Sophronitis cernua
,, grandiflora
,, violacea
Maxillaria venusta
Disa grandiflora

Those marked thus * have not bloomed. *Ex-Cantab.*

The Past Winter.—I think we may safely consider all trees and shrubs that stood the past winter without protection as hardy. At this place there are a great number of Conifers which have been planted at different times within the last quarter of a century. With a few trifling exceptions they stood the past winter uninjured. The soil varies considerably. In some places it is a sandy or gravelly loam, resting on a gravelly subsoil; and in others, a clay loam resting on a subsoil of strong retentive clay. The plants do well in all situations where the soil is not too light or strong. They do remarkably well where there is a good depth of gravelly loam, and many of them are now beautiful specimens. The last three hot dry summers have been very favourable for ripening the wood. They have broken finely this season, and are now making splendid growths; and most beautiful objects they are, the newly born foliage contrasts so strikingly with the old. The few that suffered a little were either too near other trees, or the soil a little too wet; the injury done was trifling—a little browning of the foliage on a few of the branches. As it would take up too much space to give the names of all the kinds, I may mention that all the more ornamental and hardy kinds are planted, some by scores and others by hundreds. Other trees and shrubs have suffered little. Laurustinus, that in 1860-61 was killed to the ground, was very little hurt. Berberises have stood well, with the exception of Wallichii, which seems very tender, it being much injured in every situation. Hares are very destructive to B. japonica; indeed, it is scarcely worth planting where hares have access to it. I noticed among standard Roses one or two have had their heads killed, but the stocks are alive, and one has put out strong shoots. Fruit trees were not in the least injured by the frost of last winter. In 1860 and 1861 many a fine Peach tree was killed. One valuable lesson we may learn from the past, and that is, whatever we plant, or in whatever situation we plant anything, to secure well ripened wood. If we do this, we have little to apprehend from the severity of our ordinary winters; but if we plant in such places, and under such conditions as cause late growths and succulent unripened wood, then we may expect serious injury from the first severe frost that sets in. Formerly Conifers were planted in confined, sheltered situations, which caused late growths and unripened wood, which the first severe frost invariably injured. These matters are now better understood, but still there is always a desire to see trees grow away freely and vigorously, and sometimes people are tempted to plant in circumstances favourable to rapid strong growth: but as we cannot ensure fine hot weather always to ripen such growth, it is much better to be content with moderate growth, well matured. *M. Saul, Stourton, Yorkshire.*

Grafted Potatos.—When last I wrote to you upon this topic, I believed Potato grafting to be all "leather bottel;" but I am neither afraid nor ashamed to confess that my views on the subject are now somewhat altered, and that experience has convinced me that changes are produced in the Potato by means of grafting, thus showing physical connection between the scion and the stock, but whether these changes are likely to prove beneficial or otherwise time alone can show. My conversion began when, last August, I paid a visit to that persevering apostle of the Potato grafting theory, Mr. R. Fenn, of Woodstock, who pointed out to me such certain differences and divergences of character produced by grafting that I at once threw up the sponge and cried "peccavi." But Mr. Fenn meant that I should become well grounded in my new faith, and to this intent he sent hither to me, that I might grow them under my own eyes, some 12 tubers or so each of five grafted kinds that were originally worked in 1869, consequently this is the third year of trial. All the sets were large and plump, and very equal in started growth and appearance, and were planted in two lines side by side, so as to bring the respective kinds into close comparison. The kinds worked originally were Fenn's Onwards, Yorkshire Hero, Milky White, and Fluke—several tubers of each of these kinds being also sent to make the test of growth and character more perfect. The whole were planted in the first week in May, and the notes taken of their growth on June 3 and 17 respectively will tell their own tale. 1. Earliest in growth of grafted sets are Yorkshire Hero in Onwards, having Lapstone foliage a shade lighter than Yorkshire Hero; through the ground as early as Onwards and several days before Hero. A further comparison on June 17 showed that the leafage of the grafted form was narrower and more pointed than that of the parent Hero. 2. Yorkshire Hero grafted into Fluke showed a growth about equal to Hero, and with no special divergence. 3. Onwards in Yorkshire Hero presents a marked change of character, as the growth on June 3 was not only several days behind Onwards, but on June 17 it is made apparent that the haulm is not only not more than one-half the height of the parent, but also that it is very short-jointed, leafage about the same. 4. Milky White, grafted into Yorkshire Hero on June 3, was in growth a few days behind Milky White; another comparison on June 17 shows that the leafage is smaller than is that of Milky White, and that the haulm in its growth exhibits that upright character so peculiar to the Lapstone tribe. 5. Milky White, grafted into Fluke June 3, about even in growth with the Fluke. June 17 showed haulm less robust than either parent, and having an intermediate shade of green also. These are my latest observations, and I doubt if I shall find any other special peculiarities until the time of maturation arrives. Any differences that may be observable in the tubers shall also be carefully noted. *Alex. Dean, Bedfont.*

Horticultural Boilers.—Many of your readers have been misled by the expression, turning the flow into the return, and *vice versâ.* It will be seen on reference to the sketch accompanying Mr. Cannell's letter, that the pipe rising from the top of the boiler is (as it must always be) the flow in both cases, the only difference being, that in one case, that on the left hand side, the water rises to its highest point soon after leaving the boiler; on the other, the right hand side, it gradually rises to its highest point, and then descends quickly into the boiler by the return-pipe. I had a short and rather hurried conversation with Mr. Cannell at Woolwich, and quite agree with him in what he says up to a certain point. He however, in my opinion, errs in the opposite extreme, and impedes the circulation nearly as much by making the water rise continuously through too many yards of pipe, as those do who make the highest point on the flow-pipe too near the boiler. The whole motive-power of water in a horticultural boiler is due to the difference of weight between equal volumes of water at different temperatures. As every one knows, water when heated is lighter than cold water, because under the action of heat it expands; but it is not generally known that the difference in the rate of expansion is greater the nearer the water approaches the boiling point; thus 1000 parts of water at boiling point when cooled 36°, or at a temperature of 176°, occupy only the bulk of 986 parts. When cooled 144° F. below boiling, or at 68°, these 1000 parts will have become 960 in bulk, that is, it is reduced $\frac{16}{1000}$, while losing 36° of heat, and $\frac{24}{1000}$ while losing the next 108° of heat, the difference in contraction being twice as rapid during the loss of the first 36° as it is while losing the next 36°. Mr. Cannell is quite right, therefore, in saying it shows a quick circulation to have the flow and return pipes nearly equal in point of temperature, and the higher that temperature is maintained the more perfect is the command that the boiler has over the system of water in circulation, though it is not practically so good for plants to have the temperature of pipes too high. Any person who has ever studied the laws of radiation of heat will know that Mr. Fish (p. 710) is wrong when he says that it is a proof of rapid circulation to find the return much colder than the flow. Heat radiates off equally in every direction, and under similar circumstances each foot of piping will radiate off the same amount of heat from the water in the pipes during equal periods of time. The rapidity with which the water flows through the pipes will not in any way affect the amount of radiation from the pipes, but the slower the motion through the pipes the colder the water will be on its return to the boiler, because the iron pipes, acting as conductors of heat, have conducted so much more heat away from it in proportion to the time it has been in the pipes; the only difference being, that it parts with its heat more rapidly the greater the difference between the heat of the water and the heat of the house in which the pipes are placed. The reason, I think, Mr. Cannell has erred in making his pipes continue to rise too far is this :—Supposing the water to leave the boiler, we will say, at 180°, and to return at 120°, after passing through 300 feet of piping, it will have cooled 60°, or 1° on an average for every 5 feet of piping. The specific gravity of the water has gone on increasing as the water has contracted by cooling in about the ratio, roughly at those temperatures, of .980 to .960, so that the tendency of the water at the last is not to rise but to fall back, and so impede the circulation. It is far better to make the pipes rise gradually till they reach a point half way of the total length of pipes, and then gradually to fall again till they reach the boiler. It is better to avoid confusion in the meaning of words, only to call the actual junctions at the top and bottom of the boiler the flow and the return, and to consider the rest of the pipes merely as so many yards of pipe to be heated, or to convey the heated water. Many persons make a great mistake in thinking that the pressure of water in the pipes has anything to do with the motive-power. The water in the old system of boiler and pipes is in a state of equilibrium or rest before the heat is applied by the fire at the boiler. When the heat is applied, the water in the boiler gradually expands and rises as its specific gravity becomes less, and colder water supplies its place below. "A Practical Hand," p. 712, is wrong if he thinks, because the bottom of Mr. Cannell's boiler is hottest, that consequently the water there is hotter than the water at the top of the boiler, and that consequently its tendency would be to rise up the return. As water must rise when heated, and as the return is at the bottom, it cannot, after once it begins to rise in the boiler, find its way again into the return, but as it continues to rise so it acquires additional heat both by convection and also by direct conduction from the iron superficies of the boiler; and will continue to acquire additional heat so long as the temperature of the heated air in the flues of the boiler is greater than that of the water. I am not going to say much on the merits or demerits of Mr. Cannell's boiler, I think it is a good one in its way, but it does not seem in my mind to economise the heat which might be given to the outside of the boiler, and also in the drawings the connecting pipes are too small. Too many persons consider that water in horticultural boilers is heated by convection only, just as water is boiled in a kettle, or steam produced in a steam-boiler; forgetting that the water in a horticultural boiler is always in a state of motion, that colder water comes in at the return and rises hotter through the flow, and during its passage through the boiler is continuously impinging on the iron sides of the boiler, and will obtain heat by direct conduction from the iron, whether that heat is transmitted by vertical or horizontal flues on the upper or under surface of the boiler; in short, in whatever way you can heat the iron sides of the boiler, and the more thoroughly you can surround it with flues, the greater the saving of fuel, and the more thoroughly will the boiler do its work. Again, it ought to be borne in mind, that as the whole circulation in boilers depends on the difference of the specific gravity of water, under different temperatures, the motive-power is by no means great, so that no obstruction should be placed to circulation, by using small pipes as junctions to the boilers, or by sudden bends, such as going up and down under pathways, or again by running long lengths of pipe continuously at the same level. Pipes do not vary in the measure of their capacity in the direct ratio as their diameter, or radius, but as the squares of their radius; thus, a 4-inch pipe does not contain only twice as much water as a 2-inch, but four times as much water; and if an inch pipe is used as a junction into the boiler, and 4-inch pipes used in the heating system, the water has to pass 16 times as quickly through the inch pipe as through the 4-inch. As a rule, whatever sized pipes are used to heat the houses, the same sizes ought to be used for all bends, junctions, &c., and no unnecessary impediment should be placed in the circulation. I do not know what Mr. Fish means when he says he is not prepared to give up specific gravity, which costs nothing, in favour of caloric, which costs so much. Does Mr. Fish reflect that the difference in specific gravity cannot be produced without this costly caloric? It is the common mistake of confusing cause and effect. Motion in hot-water pipes is caused by the heat through the effect of specific gravity, which difference of specific gravity is due to the expansive powers of heat. The boiler which heats most rapidly will not necessarily cool most rapidly; that boiler which secures the most perfect and rapid circulation, and in which the difference between the heat of the flow and return is least, must be the best for night purposes, because, if (as Mr. Fish wishes to make out) a hot flow and a cold return is a proof of rapid circulation, the water when it returns to the boiler must be acted on by a very hot fire, if it is to be heated to this difference between flow and return during this its rapid transit through the boiler; whereas if the circulation is good and the difference between flow and return is small, less fire is required to bring the water again up to the heat it has lost, and the slighter the difference between flow and return the better will be the boiler for night purposes. A boiler which can be heated quickly with full force of fire will keep up its heat best with a small amount, the great secret of success being to have a boiler large enough to work the pipes with a small amount of fuel. A cheap and small boiler is generally the most costly in the end. I suppose nearly every one has his pet boiler. I like Ormson's concentric and convoluted boilers when properly set, and one of the best cheap boilers is one which I have recently put up for a friend, and which does its work perfectly—Jones's "Double L" saddle boiler. The first boiler I ever set, I set on the principle which I now advocate, of making the highest point of the pipes half-way in the length of pipes; I have set every boiler since on the same principle, always making the pipes rise gradually about 2 to 3 inches in 10 feet, sometimes more. I see nothing consequently very novel in Mr. Cannell's plan, except that of making the water rise up to the furthest point, which, as I have before tried to explain, is a mistake; and in his sketch, unless he surrounds his boiler with a flue, he is wasting a great amount of heat from the external radiating surface of his boiler. *C. P. Peach.*

A Visit to the Gardens of Manley Hall.—It was my good fortune to be in Manchester during the Whit-week exhibition, and hearing that the famed garden of S. Mendel, Esq., could be seen by any one connected with the profession, I availed myself of this opportunity to see what is undoubtedly one of the finest gardens in the three kingdoms; and it occurred to me the few notes made during my visit might prove interesting to those who have not had the advantage of a personal inspection. In the first place there are 44 houses, with an area of 75,000 feet of glass. Entering the conservatory a charming sight meets the view, for here is what I consider the *beau-idéal* of what a conservatory should be,—large ornamental-leaved plants, such as Araucarias, Tree Ferns, Aralias, Dracænas, Yuccas, &c., are planted at intervals, and make a basis for the general arrangement. Between these are placed various flowering plants, which are brought from the other houses, and which are removed as their beauties fade. The adjoining house is called the stove fernery, and here a magnificent sight meets the view—deep rocky chasms and large boulders of rock, beautifully covered with Ferns and Lycopods in great variety, with water trickling over and about them, the whole relieved by Ferns of larger growth, which prevent it having too rough or rugged an appearance, altogether quite a fairy scene Amongst the finest plants thus placed were beautiful examples of Cyathea princeps, dealbata, and medullaris, Alsophila contaminans, Dicksonia antarctica, and Todea africana; a few Palms also were luxuriating here, such as Seaforthia elegans, Areca lutescens and Baueri, Caryota urens, with its large bipinnate leaves, and the beautiful fan-leaved Thrinax elegans. In another house, devoted to ornamental-leaved plants, were many grand specimens, the most striking of which were a pair of Anthurium Scherzerianum, with upwards of 30 of its curious flower-spathes on each plant, the spathes large, deep brilliant scarlet, and measuring nearly 6 inches in length, Another fine Anthurium, called acaule, is far too little grown, its large, bold, dark green leaves, making a noble ornament; and, as it can be used with advantage in the subtropical garden, it is doubly valuable. Alocasia intermedia, one of the Messrs. Veitch's hybrids, was in grand order, with large and beautiful leaves upon footstalks upwards of 4 feet high. Another Alocasia, for which we are indebted to the energy of Messrs. Low (A. metallica), was represented by a superb plant upwards of 8 feet in diameter, its large deep bronzy leaves contrasting beautifully with such plants as A. macrorhiza variegata and A. Jenningsii, Caladiums, Anthuriums, and various Marantas; but the crowning plants of this house were three Palms of surpassing beauty: first a glorious Cocos Wedelliana, and with some 30 of its beautifully arched, pinnate, dark green leaves, which were about 5 feet long, undoubtedly the most graceful Palm at present in cultivation; next, a very fine grown plant of Phœnicophorium sechellarum, bearing 10 leaves, which were in the blade alone 5 feet in length; and a very fine Geonoma Seemanni, with its broad, bifid, plaited, dark-green leaves. Here also is a house devoted to the genus Gymnogramma; it was, however, a little too early in the season to see this at its best, but the hundreds of young fronds just unfolding gave promise that these alone would amply repay a visit in the course of a month or two. Next came a house devoted to greenhouse plants, remarkable for the beauty of their leaves. Here, amongst good examples of Dasylirions, Yuccas, Dracænas, and Cordylines, was a truly grand plant of Phormium tenax variegata, measuring about 14 feet in diameter, with the broad leaves beautifully variegated, and the remains of an enormous flower-spike which it produced last year. Gleichenias, which are looked upon as the aristocrats of the Filices, have here a house devoted to their culture, and all the kinds in cultivation are to be found in this collection, amongst them some extremely well-grown plants, such as G. speluncæ, 10 feet diameter, 6 feet high; G. flabellata, 8 feet diameter, 6 feet high; G. dichotoma, 8 feet diameter; G. rupestris, 6 feet diameter; and many others, all of which were in the most robust health, and a sight of which would fill the heart of any lover of Ferns with rapture. Amongst the many fine greenhouse flowering plants the following were blooming most profusely:—Erica Massoni major, geminiflora superba, tricolor rosea, eximia superba, and a very fine Cavendishiana, in which a pair of thrushes had built a nest and reared a brood of four young ones this spring. Blandfordia nobilis was also very fine, although it had been flowering some two months, a fact which speaks volumes for its decorative properties. Several plants of Darwinia tulipifera and fuchsioides were in superb health and densely flowered. A grand plant of Acrophyllum venosum, with flowers and foliage to the pot, measuring 5½ feet in height and 5 feet in diameter, but which showed no sign of being worn out, although of such elephantine proportions. An immense plant of Dracophyllum gracile was also charming, with hundreds of its pure white heads of bloom contrasting beautifully with the rich colours of the many finely grown and flowered Azaleas by which they were surrounded, but these I was just a few days too late to see in all their beauty. Again we pass into some warm houses, and really it seems that the collection of plants is inexhaustible; here were some very fine plants of Crotons, such as maximum, Veitchii, and interruptum, besides richly coloured examples of the commoner kinds; a magnificent Cycas revoluta, and the curious but rarely seen Vriesia Glazouiana in flower. Several varieties of Pandanus, whose peculiar spiral growth render them very attractive, were growing vigorously, as also was a very fine collection of all the Sarracenias in cultivation, including the curious Darlingtonia californica, all showing signs of being handled by a thorough master of his art; the new and beautiful Cochliostema Jacobianum, and many grand Ixoras, amongst which was a specimen of I. coccinea, with 150 trusses of bloom. Allamandas and Dipladenias were lending a profusion of their large trumpet-shaped flowers to complete the grand effect of this glorious display. Achimenes and Gloxinias are grown here largely, and, I need scarcely say, they are grown well; they are lovely plants for decoration or for cutting for vases, and I sincerely hope they will not be discarded from our stoves, although I have sometimes thought there is a growing tendency to neglect them. Leaving these, we turn to the Orchids, which are such a speciality at Manley Hall, and, taken as a whole, they seem to be growing well, although some still retain the evidence of having been in bad health. The collection comprises, as far as I could see, the majority of the best species and varieties, the following of which were blooming during my visit:—Lælia majalis, bearing three splendid flowers 6½ inches in diameter; Pescatorea cerina, a superb plant, with 16 of its beautiful yellow and creamy-white flowers fully expanded; a fine variety of Cattleya Mossiæ, bearing 16 flowers, known amongst Orchid growers as the Manley Hall variety; it has large and broad sepals and petals, and a spreading dark rich rosy-purple lip; Odontoglossum hastilabium, a fine plant with extra large flowers; many plants and numerous varieties of the charming Barkeria spectabilis; Oncidium crispum, bearing large branching spikes and an immense quantity of its rich brown flowers; a fine Saccolabium ampullaceum, with eight fine spikes; a grand plant of Epidendrum prismatocarpum, with fine long spikes of its curious and sweet scented blooms; the old but very showy Promenœa citrina, Trichopilia crispa, Anguloa uniflora superba and Clowesii, the latter with six flowers; Oncidium ampliatum, Odontoglossum Pescatorei, Miltonia festiva, Dendrobium formosum giganteum, a grand specimen of Vanda teres, literally covered with its large rich rosy blossoms; Aerides crispum, Oncidium Lanceanum, Renanthera Lowii, bearing two long spikes, the singularity of which species is that the two flowers nearest the base of the spike are yellow instead of cinnamon-brown; Dendrobium M'Carthiæ, of which there are several good plants, one of which had 26 of its superb cherry-coloured flowers fully expanded; a superb variety of the rare Dendrobium Wardianum, and another of D. Falconeri, with growths 5 feet long; a nice plant of Phalænopsis Luddemanniana, bearing upwards of 40 blooms; Saccolabium guttatum, a plant which bids fair to be a giant in its family, it has 13 growths, and although not well established, had produced six good spikes; a good Thunia Bensoniæ, with six good heads of flowers; Vanda tricolor Leopoldi, which is one of the very best, its rich deep violet-purple lip rendering it most distinct; Epidendrum vitellinum majus; and some fine Cypripediums, amongst which were caricinum, Stonei, and barbatum grandiflorum. Amongst the things which are grown as specialities for winter blooming, the Calanthes Veitchii and vestita (both red and yellow eye), hold first rank, for the large specimen pots of these may be counted by dozens, and are said to yield a fabulous quantity of bloom, which can be used either in vases or for bouquet making, and always with a pleasing effect. The last but not the least house which I shall notice is the tropical and temperate fernery, the former being 70 feet long, 26 broad, and 17 high; and the latter 96 feet long, and the same breadth and height as the tropical one. They are separated by a glass partition, and the interior has been most artistically laid out with large and massive boulders of rock, and winding walks and small lakes, in which aquatics thrive beautifully. Between the crevices, and in the niches, Ferns, Lycopods, and many Mosses are growing luxuriantly; and larger plants, such as Ferns, variegated Begonias, and coloured-leaved Dracænas, occupy positions more suitable to their proportion. Large specimens, also, stand in various places throughout the place, and comprise splendid examples of Cyathea medullaris and princeps, Angiopteris evecta, Sciadocalyx pulcher, Theophrasta imperialis, and Alocasia violacea, &c. Before passing into the temperate fernery one is introduced to a little rugged rocky recess called the Todea and Filmy Fern house, which although but recently established bids fair to become the gem of the establishment. It has a beautiful little waterfall, and in the water which runs along the floor are large stepping-stones, so that one may easily imagine they are really in a rich Fern valley in a state of Nature. In and about the tufa rocks, of which this is composed, are fine specimens of the filmy fronded Todeas, such as superba, pellucida, pellucida compacta, and Fraseri, as well as numerous Hymenophyllums and Trichomanes, the gems of which are certainly T. auriculatum and T. Luschnathianum. The larger plants occupying prominent positions are a good Marattia Cooperi and Thyrsopteris elegans, Asplenium myriophyllum, Cyathea dealbata and Dicksonia squarrosa. The cool fernery is entered by crossing a rustic bridge over a small stream, in the vicinity of which are fine examples of Todeas, Trichomanes reniforme, radicans and pyxidiferum. Jungermannias, Marchantias, and a great variety of British Mosses clothe the masses of rock, from amongst which many seedling Ferns have sprung, forming beautiful groups. In various recesses are good plants of Hymenophyllum caudiculatum, crispatum, æruginosum, dilatatum, unilaterale, tunbridgense, and many others; and among the large specimens are many Dicksonia antarctica and squarrosa, Cyathea dealbata and medullaris, Alsophila australis and excelsa, and the largest plant of Asplenium caudatum I ever saw; it has a stem, and its long fronds are beautifully arched, and fall gracefully down, looking somewhat like a broad-leaved Weeping Willow. Of the forcing houses and kitchen garden I shall say nothing more than that the latter in particular was in the highest state of cultivation I ever saw—the crops good, and not a weed of any description to be seen; in fact, the whole of this princely establishment is in a first-class condition, and reflects the greatest credit upon Mr. Petch for the skilful and systematic manner in which everything is done. Everything is neat, clean, and polished, indoors and out, from the tool sheds and stokehole to the conservatory and lawn; indeed, no matter where one looks, every place is fit for inspection, even by the most severe disciplinarian. *W. H. G.*

Societies.

Royal Horticultural, AT NOTTINGHAM.

June 27 *to July* 1.—The first independent visit of the Royal Horticultural Society to the provinces, so far as we can judge up to the time at which we write, must be looked upon in no other light than as a decided success; for we are quite certain in our own minds that, with the notable exception of the famous International Exhibition of 1866, there has never been held such a fine one as that which commenced with great *éclat* on Tuesday and concludes to-day, in the ancient and picturesque town of Nottingham. The weather on Tuesday was as brilliant as could be desired, and the ceremony of opening the exhibition brought together a brilliant crowd of visitors. A procession of the Mayor, the Sheriff, the Council of the Society, accompanied by a guard of honour of the famous Robin Hood Rifles, and the band of that regiment, was formed at the Castle Lodge, near to the show ground, at a quarter to 1 o'clock. The mayor and other local officials were all attired in their robes of office, and the procession slowly defiled into the show ground and marched to the lawn in front of the archery pavilion. The Robin Hoods were drawn up in line on a slight eminence 50 yards away, and a ring was formed, the spectators standing round.

The Mayor then read the following address:—Colonel Scott, my Lords and Gentlemen, Members of the Council of the Royal Horticultural Society,—It is my pleasure and privilege, as Mayor of the borough of Nottingham, to offer you, in the name of the inhabitants of this district, a hearty welcome on the occasion of your exhibition in this park. The peculiar nature of our manufactures has been the means of creating and fostering amongst our artisans a love of horticulture, as in its principal branch, periods of work, followed by corresponding periods of leisure, have furnished them with opportunities of cultivating this taste. The result has been that in the immediate neighbourhood of Nottingham more than 10,000 gardens of small size are held principally by the workmen of the borough and suburbs, who find during the cessation of their own duties a relaxation that is at once invigorating to the body and elevating to the mind. We trust that your meeting in Nottingham Park may strengthen and elevate this taste still further, and we hope that while the Society is benefited pecuniarily, we may gain a corresponding advantage by serving and trying to emulate the brilliant specimens of horticultural excellence which your Society's influence collects. I trust you will open an exhibition brilliant in character and satisfactory to us all in its results.

Colonel Scott, in reply, said: Worshipful sir, and ladies and gentlemen—In the name of the Council of the Royal Horticultural Society I thank you most sincerely for the kind welcome which you have given us to-day. You have received us with such great honour, that we cannot suppose it is paid to us as individuals, but only because we represent, as the parent, all of those numerous societies which have of late years sprung up in this country, and which give so much delight and satisfaction to all engaged in gardening. When first the idea of holding country shows was mooted, we feared to make the attempt single-handed, and for the last four years we have supposed it unwise to separate ourselves from the Royal Agricultural Society; this year, however, we decided to adopt a bolder policy, and determined to do what we could of our own strength. Amongst the towns which invited us for this year was the town of Nottingham, and I assure you that we did not hesitate for one moment to accept the offer. It is well known that whatever Nottingham undertakes she carries out with vigour and determination. Whether it is manufactures or horticulture it is the same, and I may perhaps even venture to say that in politics you show the same vigour. I believe that in horticultural matters some of your "lambs" become something like lions. I have noticed that among your allotment gardens—which are so well managed, and make such a noise in the world—the chief man is a Knight of St. Ann's, and the best budder of roses a General Jack. All these symptoms are indications of vigour, which we thought would lead to success if came amongst you; and, from what I have seen so far, I believe our success will be as great as the weather is glorious. I regret that the task of opening the exhibition has not fallen into worthier hands. His Grace the Duke of Buccleuch, the President of our Society, would have been present to-day, but he is prevented by his military duties. The Royal Prince connected with our Society, whose visit we anticipated with so much satisfaction, has been commanded by Her Majesty to attend a State ball to-night; and Mr. Wilson Saunders, one of our most honoured members, and, as we consider him, the father of horticulture, is too much indisposed to attend. I am quite certain, however, that although we have been disappointed in this respect, you will more than make up for any deficiences on our part. From the vigour displayed by Mr. Lowe, who, we are glad, is now a member of the Council, we are convinced the show will be a success, and in the name of the Duke of Buccleuch and the Royal Horticultural Society I have great pleasure in declaring it open.

Following this announcement there was a general rush of visitors to the immense marquee, which was laid out as a model garden, and which contained as fine a lot of plants as could well be brought together. The general arrangement and the principal features of the display will be better seen than we can describe from the annexed views and plan of the ground.

Coming now to more detailed particulars, we must commence with the *Stove and Greenhouse Plants*, which were a very prominent feature of the large marquee. In the first-class for 20, distinct, in 12-inch pots, the competition was confined to Messrs. Jackson & Son, Kingston, and Mrs. E. Cole & Sons, Withington, near Manchester, the prizes being awarded in the order named. Nothing remarkable was shown in either group, the former of which consisted of young half specimens, fairly grown, of Ixoras, Darwinias, Dipladenias, Pimeleas, &c., the most notable examples from the Messrs. Cole being a nicely flowered plant of the rarely seen though very beautiful Roella ciliata, and a similar one of Ixora amboinensis. The best 9 in the open class came from Mr. T. Baines, gr. to H. L. Micholls, Esq., Southgate House, Southgate, and a very good lot they were, though certainly not so fine as the collection which he staged at the Crystal Palace at the first spring show. His most perfect specimens were those of Dipladenia amabilis, well grown and fairly flowered, these being of excellent colour; a capital plant of Dracophyllum gracile, well flowered and fresh; Dipladenia splendida, very beautiful and immensely attractive; Ixora coccinea, well bloomed and large; Erica Cavendishiana, E. æmula, a fine example of Darwinia tulipifera, and a grandly flowered Allamanda nobilis, &c. Mrs. Cole & Sons were second, their collection containing a very good example of Ixora salicifolia, well grown and well bloomed, and a very nice Dipladenia amabilis, &c. In the amateurs' class for 6, the 1st prize was taken by Mr. J. Stevenson, Lark Hill, Timperley, Cheshire, who had, amongst others, a very good Ixora coccinea, and Clerodendron Balfourianum, a healthy plant, well flowered. In the 2d prize group, which was contributed by Mr. J. Bolton, gr. to W. Worswick, Esq., was a well-finished specimen of Rhynchospermum jasminoides. The special prize, offered by G. E. Paget, Esq., for the best specimen stove plant, was also won by Mr. Baines, with a wonderfully fine specimen of Ixora javanica, 5 feet high, and 3 feet through, well clothed with foliage to the pot, and superbly bloomed; a remarkably well shown Bougainvillea glabra, from Mr. W. Peachey, coming in 2d. Specimens of Anthurium Scherzerianum were staged by Mr. Baines and Mr. B. S. Williams, in competition for the prizes given by C. Paget, Esq., Ruddington Grange; the first going to the former for a specimen on which were about 14 magnificent spathes. Heaths were very fairly contributed, considering the lateness of the season. The best 9 greenhouse kinds in the open class came from Messrs. Jackson & Son, who had, amongst others, E. jasminiflora alba, E. tricolor coronata, E. Vernonii, E. tricolor speciosa, E. Paxtoni, and E. depressa, &c., in nice condition. The next best lot came from Messrs. Cole & Son, whose collection, though uneven in size, had much merit to recommend them. The finest single specimen in the show was a wonderfully fine one of E. obbata, large, very healthy, and perfectly bloomed, and staged by Mr. Baines to compete for the prize given by C. Seeley, Esq., M.P., Brookhill Hall; Messrs. Jackson coming in 2d with a very good example of E. retorta major. The prize for 9 stove and greenhouse plants, given by Mr. B. Walker, Lenton, was won by Mr. J. Stevenson with a very good group, including very nice specimens of Dipladenia acuminata, D. amabilis, both well flowered and of good colour, and a remarkably fine plant of Ixora alba, &c. The 2d prize, given by the local committee, was taken by Mr. J. Bolton, who had a first-rate specimen of the old Cassia corymbosa, and another of the beautiful scarlet Clerodendron fallax.

Fine-foliaged Plants, including *Ferns*, were very numerously contributed, and of excellent merit too, more especially the Ferns, which were altogether much better than we have seen at any exhibition for a long time. The best four Dracænas, or Cordylines, came from Mr. B. S. Williams, as well as the best collection of 9 fine-foliaged or variegated plants amongst nurserymen, which contained remarkably handsome specimens of Palms, Cycas revoluta, Encephalartos latifrons, probably the finest specimen in the country, a good example of Pandanus elegantissimus, and the same of Cordyline indivisa, &c. Next to Mr. Williams came Mr. W. E. Dixon, showing, amongst others, one of the finest specimens of Phormium tenax variegata we have ever seen, a handsome plant of Cyathea dealbata, and a specimen of Gleichenia Mendelii, about 5 feet through. Messrs. Bell & Thorpe were a good 3d. In the corresponding class for amateurs, Mr. Baines again stood 1st, having large handsomely furnished specimens of Stevensonia grandiflora, Croton variegatum, Dasylirion acrotrichum, &c. Mr. W. Cruickshank, gr. to Lord Belper, Kingston Hall, was 2d, with an excellent group, comprising some grand Tree Ferns, a splendid specimen of Phœnicophorium sechellarum, a gigantic plant of Alocasia gigantea, a remarkably good A. metallica, and a beautifully coloured Croton angustifolium, &c. Mr. J. Woodfield, gr. to J. S. Foljambe, Esq., was 3d with notable examples of Sanchezia nobilis variegata, a fine bush about 5 feet through, suffering a little through the cold, and Dieffenbachia maculata, &c. The best specimen Croton, one of C. angustifolium, about 5 feet high and 4 feet through, splendid both in foliage and colour, came from Mr. Baines; the next best being a large, well grown and coloured C. variegatum, from Mr. J. Stevenson; Mr. J. Bolton being 3d with a good C. angustifolium. Mr. J. Woodfield, Osberton, sent a beautiful pyramidal trained plant, about 8 feet high and received an extra prize. From Mr. B. S. Williams came the best 6 Palms, grand trees, of Sabal Blackburnianum, Areca lutescens, Latania borbonica, Thrinax elegans, Phœnix sylvestris, &c.; Messrs. Bell & Thorpe being 2d with smaller but well furnished specimens of Pritchardia Martii, Dæmonorops plumosa, &c., and Messrs. G. and W. Yates, Manchester, 3d. Mr. Baines took the prize given by Henry Smith Wright, Esq., Lenton Hall, with a grand example of Sarracenia flava, about 3 feet through; Mr. J. Stevenson being 2d with a grand Alocasia Lowii, about 3 feet high, and finely developed. Mr. Baines also staged the best 3 Pitcher plants, as well as the best single specimen; Mr. B. S. Williams being 2d in the latter class.

Orchids were not by any means so numerous or so good as might have been expected. Mr. B. S. Williams took the 1st prize for 9 and 6 in the former class with Oncidium incurvum, a nice plant, with eight spikes; Lælia purpurata, Cypripedium superbiens, with 16 fine flowers; and a nice example of Anguloa Clowesii, &c.; and in the latter with Sobralia macrantha, a large, very healthy plant, sparsely flowered; Vandas, Cattleyas, Cypripediums &c. Messrs. Rollisson & Sons were 2d in this class, with, amongst others, a plant of the rarely seen Brassia Wrayii; while in the former the 2d and 3d awards were taken by Messrs. J. Brooke & Co., Fairfield Nursery, Manchester, and Mr. W. E. Dixon. The amateurs were only represented by Mr. E. Mitchell and Mr. J. Stevenson.

Exotic Ferns were remarkably well shown. The best 6 amongst amateurs came from Mr. J. Stevenson, amongst which were a very large and handsome specimen of Gleichenia semivestita, another of G. flabellata, and capital examples of Leptopteris superba, Acrophorus immersus, and Leucostegia chærophylla, &c. The 2d prize was taken by Mr. J. E. Mapplebeck, Moseley, near Birmingham, with a collection containing nice specimens of Neottopteris australasica, Dicksonia squarrosa, and Cibotium regale, &c. In the collection of 6 hardy exotic kinds, contributed by Messrs. R. Edwards & Son, were very fine plants of Struthiopteris pennsylvanica and S. germanica. Mr. Baines took the prizes given by H. Sherbrooke, Esq., Oxton Hall, for a single specimen, with a plant of Gleichenia rupestris, over 4 feet in height and the same through, an exceedingly well-grown specimen; and Mr. G. Daniells, gr. to A. M. Mundy, Esq., came 2d with a first-rate example of Gymnogramma calomelanos. The best specimen of Adiantum was a handsome plant of A. farleyense, shown by Mr. T. Allsop, gr. to C. S. T. B. Reynardson, Esq., Holywell Hall; Mr. Cruickshank being second with a good specimen of A. tenerum. In the amateurs' class for 12, Mr. T. M. Shuttleworth, Golden Hill, Preston, came first with Cyathea princeps, very handsome, beautiful large specimens of Alsophilla excelsa, Cibotium Schiedei, and C. regale, Gleichenia dichotoma, Todea superba, &c.; Mr. Baines being 2d, and Mr. Bolton 3d. Mr. J. Bolton had the best 6 Lycopodiums, and Mr. B. S. Williams the best pair of Tree Ferns. In the nurserymen's class for 9, the last-named exhibitor was 1st again, with handsome specimens of Cyatheas, Cibotiums, Gleichenias, Todeas, &c. Mr. G. Cooper, Derby, being 2d, Mr. W. E. Dixon 3d, and Messrs. Bell and Thorpe 4th. Twelve distinct Maidenhair Ferns were contributed by Mr. T. M. Shuttleworth and Messrs. Bell & Thorpe, in the former of whose collection was a pretty pair of Adiantum assimile.

Of *British Ferns*, a magnificent collection was exhibited by E. J. Lowe, Esq., F.R.S. In the nurserymen's class for 12, Messrs. R. Edwards & Son, Nottingham, came in 1st, and the best 10 new varieties not yet in commerce came from Mr. J. E. Mapplebeck; Mr. F. Thompson, gr. to T. Charlesworth, Esq., The Hollow, Leicester, coming in 2d.

A collection of subtropical plants, suitable for the summer decoration of gardens, consisting of medium-sized Palms, Dracænas, Musas, Azaleas, Beaucarneas, and others, was contributed by Mr. B. S. Williams. Messrs. Lane & Son, Berkhampstead, sent a much admired group of neatly trained pyramidal plants of Ivies, which are exceedingly useful for decorating halls and corridors in the summer time, and even the conservatory in winter. Mr. B. S. Williams also exhibited 6 good specimens of Agaves, especially of A. filifera major, A. heteracantha, A. geminiflora, and A. americana variegata, &c., for which he was awarded the 1st prize; and the best collection of hardy and half-hardy variegated and ornamental foliaged plants, which included some fine young Palms, Yuccas, Conifers, Eurya latifolia, and Euonymus albo-marginata, and E. japonica aureo-variegata—both very beautiful and useful subjects for the flower garden. Messrs. Barron & Son, Borrowash Nurseries, Elvaston,

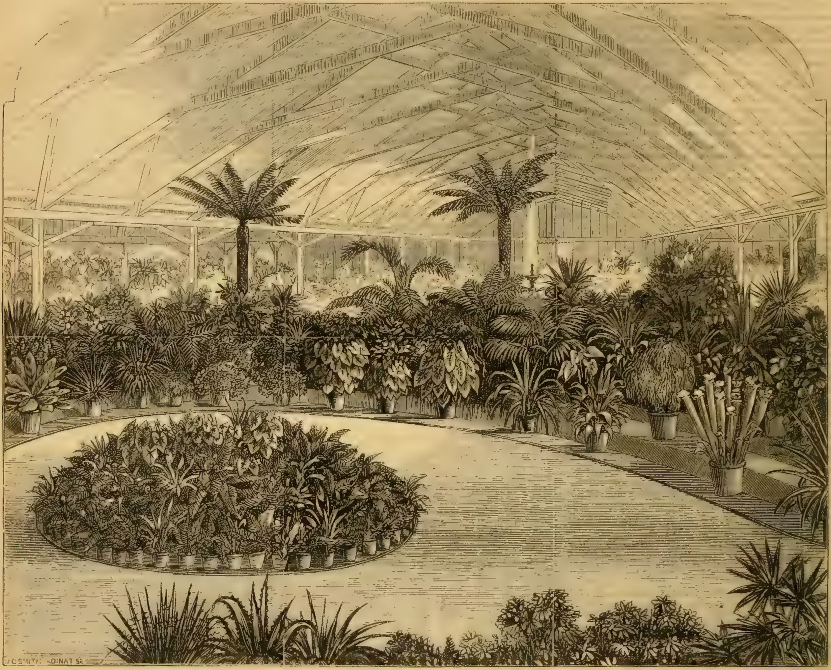

FIG. 172.—INTERIOR OF "MODEL GARDEN" AT THE NOTTINGHAM SHOW. (Looking South).

exhibited a very excellent assortment of hardy trees and shrubs, for which they received the 1st prize. For four specimens of Lilium auratum, Mr. Turner was 1st, with fine plants, Messrs. Rollisson & Sons coming in 2d, and Messrs. Yates 3d. The only exhibitor of 6 Pyrethrums was Mr. B. S. Williams, and to him the 1st prize was awarded. Messrs. Veitch & Sons had a remarkably fine group of *New* and interesting *Plants* which was much admired, they also took the first prize for 6 new plants, with a beautiful specimen of the elegant Paullinia thalictrifolia, and Dieffenbachia Bausei, one of the handsomest of its class, Dracæna amabilis, Aralia Veitchii, Croton Wisemani, and a nice little plant of the beautiful Todea Wilkesiana. In their large group were many Orchids, new Dracænas, Marantas, Dieffenbachias, Palms, some beautiful Darlingtonias (see p. 835) and Sarracenias, a collection of succulent plants, and a charming specimen of the handsome Davallia Mooreana, figured at p. 964, 1869.

In that department of the exhibition including the classes for *Florists' Flowers*—a designation which, as the Rev. S. R. Hole justly asserts, denotes a little restrictiveness that is not true in fact, but which it is expedient to retain for the sake of convenience—some of the points were rather weak. Fuchsias, for instance, were very inadequately represented; so indifferent were they in the amateurs' class for 6 varieties that one would not have been surprised if the leading prizes had not been awarded. Mr. Bolton, gr. to W. Warswick, Esq., Leicester, had the best group; and in the nurserymen's class for the same number, Mr. George Edward, York, staged very fairly grown and bloomed plants of Vesta, Avalanche, Encounter, Rose of Castille, Schiller; and Blue Beauty; and there was no other competitor. It is really too bad that Fuchsias were so poorly shown, seeing how easily they can be cultivated. Some fine young pyramidal plants would have filled up several places at the sides of the great tent that were occupied by small plants dwarfed almost to insignificance. The best 9 show Pelargoniums also came from Mr. George Edward, of good size, and trained after the usual fashion. They consisted of Beacon, Royal Albert, Desdemona, Clarissa, Virginie, Mary Hoyle, Lord Clyde, Pericles, and Charles Turner. Mr. Turner, Slough, had the next best group, consisting of nice young upright plants of about the second season's growth, that were beautifully bloomed, and comprised such fine new varieties as Regent, Eldorado, Sunshine, Magnificent, Emperor, Nabob, Lady of the Lake, Example, and Congress. The quality of the flowers borne on these small plants was something remarkable. The show Pelargoniums for amateurs were so indifferent that only a 3d prize was awarded Mr. T. Mitchell, gr. to Thomas Cross, Esq., Ruddington Hall, had the only 6 fancy Pelargoniums. They consisted of Marginata, Queen of the Ocean, Ann Page, Evening Star, Matilda, and Mr. Horner; they were fairly grown, and received the 1st prize. Mr. George Edwards had 6 nicely grown plants, and received the first prize in the open class, with Madame Sainton-Dolby, Juliet, Tormentor, Brightness, Zoe, and Ann Page. A 4th prize was awarded to Messrs. G. Small & Son, for some apologies for specimen plants. The Zonal Pelargoniums furnished by amateurs in class 17, were so indifferent that no 1st prize was awarded. H. Smith, Esq., Nottingham, received a 2d prize for six huge specimens, that might be 4 or 40 years of age. There was something better in the nurserymen's class for the same number, and here Messrs. Bell & Thorpe, Stratford-on-Avon, were first with the Queen of Beauties, John Thorpe, of a dull orange-red hue, Fairy Princess, Lord Derby, Indian Yellow, and Mrs. William Paul, very prettily flowered. Mr. George Edwards was second with Glow, Mrs. William Paul, Enchantress, Shirley Hibberd, Clipper, and Alphonse Karr; these bore excellent quality of flower, but were not well grown. Messrs. Bell & Thorpe had the best 6 double varieties, consisting of Delight, Marie Lemoine, Wilhelm Pfitzer, Miss Evelyn, Victor Lemoine, and Madame Lemoine; strongly grown, but not particularly well-bloomed plants. In fact, there was a marked falling off from the excellent quality of the double Pelargoniums shown at Oxford last year. Mr. F. Perkins, Leamington, was second, with Capitaine L'Hermitte, Madame M. Buckner, and four of the foregoing. Variegated Pelargoniums in the open class were of moderate quality. J. E. Mapplebeck, Esq., Woodfield, Birmingham, had the best, consisting of Miss Kingsbury, Flower of Spring, Silver Star, Queen of Queens, Stella variegata, and Oriana.

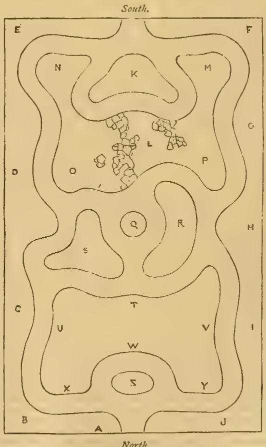

FIG 173.—PLAN OF THE GROUND.

A, B, C, D, and E, Fine-foliage and flowering plants; F, G, H, I, Stove and greenhouse flowering plants, Heaths, &c.; J, British Ferns; K, Pelargoniums, Lilies, &c.; L, Rockwork; M, N, Exotic Ferns; O and P, Orchids; Q, Fountain; R, Pelargoniums and Orchids; S, New plants (Veitch); T, New plants (Williams); U, V, W, X, and Y, Fine-foliage plants and exotic Ferns; Z, Group of British Ferns, &c.

There was a considerable quantity of *Cut Flowers*, and they made a very effective display in the fruit and Rose tents. In class 39, for 24 bunches of cut flowers, each bunch distinct, Mrs. E. Cole & Sons, Withington, Manchester, were 1st with a very choice collection, comprising Saccolabium Blumei Dayii, Allamanda grandiflora, and A. cathartica; Erica Jubata rubra, E. Exquisite, E. Vernonii, E. ventricosa Bothwelliana, Dipladenia amabilis, Ixora coccinea, I. amboinensis, I. Colei, Phalænopsis grandiflora, Cypripedium Stonei, C. barbatum, Dipladenia crassinoda, Lælia purpurata, Oncidium leucochilum, and Bougainvillea glabra. Mr. J. Bolton, gr. to W. Worswich, Esq., was made equal 1st, his stand being nicely set up, the bunches were backed with Maidenhair Fern, and rested on green Moss. Among his flowers were Clerodendron fallax, Stephanotis floribunda, Begonias, Pentas rosea, Plumbago capensis, Salvia patens, &c. Mr. F. Perkins, Leamington, was 2d, his stand containing Petunias, Kalosanthes coccinea, Bouvardia jasminoides, Tacsonia Van Volxemi, Statice purpurea, &c.

In the class for 12 bunches, Mr. D. Lumsden, The Gardens, Bloxholm Hall, Sleaford, was 1st with Sobralia macrantha, Aerides odoratum, Aphelexis macrantha purpurea, Stephanotis floribunda, Gloxinias, Brassia vernicosa, Cattleya Mossiæ, Calanthe veratrifolia, Pimelea Hendersoni, Erica ventricosa superba, Allamanda Hendersoni, and Æchmea fulgens. 2d, Mr. Peachey, gr. to H. E. Hole, Esq., Quorndon, who had Medinilla magnifica, Bougainvillea glabra, Dipladenia amabilis, Clerodendron fallax, &c. Mr. Bolton was 3d, and in his stand were some glorious blooms of Hibiscus sinensis, Pleroma elegans, Franciscea, &c. There was an excellent competition in this class, and it is a useful one also, inasmuch as it is educational in the matter of taste in elegant arrangement. The best 12 Pinks came from Mr. C. Turner, and consisted of Rev. Geo. Jeans, Marmion, Christabel, President, Dr. Maclean, Prince Frederick William, Eustace, Delicata, Attraction, Bertram, Lord Kirkcaldy, and a seedling. Mr. D. Pizzey, gr. to Sir E. Perry, Fulmer, Bucks, was 2d, with good flowers of Diadem, Lord Herbert, Victory, President, Geneviève, and some of the foregoing. Mr. J. Taylor, Sneinton Road, Nottingham, was 3d. Messrs. G. Small & Son, Ilkeston, were 1st with 12 cut trusses of Zonal Pelargoniums, which comprised J. F. Nunn, Blue Bell, Hydrangea, Arthur Pearson, and others, the best part of the names being lost. Some very fine flowers were in this lot. Mr. Peachey was 2d: his stand contained Blue Bell, very finely coloured, Mrs. William Paul, Hecla, Clipper, Charlotte Corday, Le Grand, and Violet Hill Nosegay. Mr. Turner also contributed a capital stand, which appeared to have been disqualified through containing 13 varieties. They were remarkably fine, and included some of the newer Continental varieties, such as Mons. Gibhard, Madame Hoste, pale pink; Avocat Gambetta, a fine orange-scarlet; Mons. Joinville, Wilhelm Wick, Mons. Ricul, George Sand, Victor Milo, La Tournaise, Marie Stuart, Marquis de Hufford, and Gladiator. The best 12 double *Zonal Pelargoniums* came from Mr. Thomas Laxton, Stamford, who had The Beacon, a seedling pink variety; Wilhelm Pfitzer, Victor Lemoine, very fine; Gloire de Nancy, The Marchioness, a seedling pink; Marie Lemoine, Triomphe, Victor de Lyons, of a very fine shade of violet, but does not expand well; Emille Lemoine, Madame Lemoine, and E. J. Lowe, vivid red, very distinct in colour, and as double as can be; quite an acquisition, as it is a shade of colour much needed. 2d, Mr. F. Perkins—Madame de St. Jean, scarlet; Madame Rudolph Apell, deep pink; and Madame Michel Buckner, bright pale pink; in addition to some of the foregoing. Messrs. Bell & Thorpe and H. Cannell also competed, the latter staging some very fine trusses of the high-coloured Zonal Jean Sisley.

On the whole the *Roses* were very good, considering what a trying season it has been. Mr. Thomas Laxton, Stamford, was 1st in the amateurs' class for 24 varieties, having capital blooms of Devoniensis, Maréchal Niel, Coupe d'Hebe, L'Enfant Trouvé, Le Pactole, Annie Laxton, a seedling H.P. of a pale rose colour; Gloire de Santenay, Madame Knorr, Baronne de Noirmont, Oliver Delhomme, Marguèrite de St. Amand, Maréchal Vaillant, Madame Rivers, Madame Julie Daran, Souvenir de Mons. Poiteau, Charles Lawson, Francois Lacharme, Mrs. B. Ker, Francois Arago, Général Jacqueminot, Pierre Notting, Thorin, Madame Bonnaire and Sénateur Vaisse. The Rev. E. N. Pochin, Silsby Vicarage, Loughborough, was 2d, the best flowers being Céline Forestier, Madame Bosanquet, Xaxier Olibo, La France, Horace Vernet, John Hopper, Sénateur Vaisse, and Madame Bonnaire. Messrs. Paul & Son were the only exhibitors of 24 Roses in the nurserymen's class, having very fine examples of Souvenir d'un Ami, Sénateur Vaisse, Madame C. Wood, Modèle de Perfection, Abel Grand, Xavier Olibo, Nardy Frères, Baronne de Rothschild, Dr. Andry, Centifolia rosea, La France, Maurice Bernardin, Duke of Edinburgh, Miss Ingram, La Fontaine, Général Jacqueminot, Marguèrite de St. Amand, Dupuy Jamin, Camille Bernardin, Marquise de Mortemart, Madame C. Joigneaux, Duke of Wellington, Charles Lefebvre, and Marie Baumann. In class 48, for 12 cut Roses, for amateurs, some fine flowers were staged. Mr. George Johnson, 28, Peas Hill Road, Nottingham, was 1st, with capital flowers of Elie Morel, Madame C. Wood, La France, Charles Lefebvre, Jean Goujon, Maréchal Niel, Horace Vernet, Princess Mary of Cambridge, Abel Grand, Duc de Rohan, John Hopper, and Exposition de Brie. The Rev. E. N. Pochin was again 2d, the best flowers being La France, Maurice Bernardin, Souvenir de Malmaison, Gloire de Dijon, and Laurent Descourt, the nearest approach to a purple Rose exhibited; 3d, Mr. T. Green, Nottingham.

Turning to the *Special Prize* List, for the best Golden Tricolor Variegated Pelargonium in class 85, Mr. C. Turner was placed 1st, with Baroness Burdett Coutts, a small but finely-coloured plant. Messrs. Bell & Thorpe were 2d, with Macbeth; and Mr. C. Frisby, Blankney Hall Gardens, with Magnet. Mr. Turner had the best Silver Tricolor in Mrs. Rousby, well grown and coloured; and Mr. Frisby was 2d with Lizzie Frisby, a very promising stiff-habited variety. The best 6 herbaceous Calceolarias came from Mr. Smith, Nottingham, the varieties pretty good. The prizes offered by Mr. T. W. Evans, for 6 Clematises, did not bring any competition, notwithstanding the adaptability of these useful plants for cultivation in pots. The leading prize, given by Lord Belper, for the best 6 Tricolor Zonal Pelargoniums not yet in commerce or sent out in 1871, was taken by Mr. C. Turner, who had Miss Morris, Miss Rutter, Baroness Burdett Coutts, and Mr Rutter, golden-edged; and Mrs. Rousby and Mrs. Brooke Brydes, silver-edged. These were nicely grown and well-coloured plants. Mr. C. Frisby was 2d, with Magnet, Lady Folkestone, Hermit, and Reine des Beautés, golden-edged; Miss H. Bouverie, and Lizzie Frisby, silver-edged. The best 6 Zonal Pelargoniums, shown under the same conditions, were staged by Messrs. Bell & Thorpe, but they did not call for any particular remark. The best 6 new Nosegay varieties came from the same exhibitors, and were a poor lot also. Their new Nosegay variety, David Garrick, standing by the side of the group, was much superior to anything it contained. The best 6 new show Pelargoniums came from Mr. Turner, and consisted of Sunset, Black Prince, Charlemagne, Imperator, Brigand, and Zephyr—every plant containing some very finely formed flowers. J. Fellowes, Esq., Beeston, had 6 very nice forms of erect flowering Gloxinias, and Mr. J. Bolton the same number of pendant flowering kinds. Mr. Turner had the best group of 4 Liliums, carrying over 50 flowers. Messrs. Rollisson & Sons, Tooting, London, were 2d; Messrs. G. & W. Yates, Manchester, 3d; and Mr. Geo. Edwards, York, 4th. It will be seen each group came a considerable distance, but they had travelled well, and greatly helped the exhibition. Mr. B. S. Williams had the best collection of succulents in class 117, Messrs. Bell & Thorpe being 2d. These comprised Aloes, Agaves, Echeverias, Sempervivums, Cacti, &c. The best hand bouquet came from Mr. F. Perkins, Leamington, elegantly arranged and handsome; the next best from Mr. John House, Peterborough. The gentlemen's "button-holes" were a very attractive feature; Mr. J. House, Peterborough, was 1st with a sprig of a delicate Erica, another of scarlet Bouvardia, and a bit of Fern; the 2d best was from Mr. H. Farmer, Lenton, and consisted of Erica, two blossoms of a pale Fuchsia, and Fern; Mr. Cruickshank, Kingston Hall Gardens, was 3d, with a beautiful flower of Gardenia Fortunei. In several cases these button-holes were much too bulky.

The handsome Silver Cup, given by the Rev. S. Reynolds Hole, for 12 cut Roses, was won by Messrs. Paul & Son, who had magnificent blooms of Léopold Hausburg, La Fontaine, Duke of Edinburgh, Miss Ingram, Maurice Bernardin, La France, Marie Baumann, Centifolia rosea, Joseph Fiala, Nardy Frères, Camille Bernardin, and Dr. Andry. The next best 12 came from Mr. H. Merryweather, Southwell, who had good examples of John Hopper, Madame C. Joigneaux, Jules Margottin, Marguèrite de St. Amand, Céline Forestier, Exposition de Brie, Gloire de Dijon, Sénateur Vaisse, Charles Lefebvre, Prince Camille de Rohan, Abel Grand, and Madame Boutin. Six collections competed for this handsome Rose trophy. The best 48 cut Roses in class 137 also came from Messrs. Paul & Son, a very fine lot, that were much admired. Here were fine examples of Madame Hector Jacquin, Madame Marie Rady, La France, Annie Wood, Marquise de Mortemart, Léopold Hausburg, Miss Ingram, Dupuy Jamin, Madame C. Joigneaux, Duke of Edinburgh, Lælia, Madame A. Wood, Souvenir d'Elise, Camille Bernardin, &c. Mr. Merryweather was again 2d, and Mr. George Edwards, 3d. The leading special prize for 12 cut Roses, to be shown by artizans, given by Sir H. Bromley, Bart., was taken by Mr. H. Grundy, 21, St. Ann's Well Road, Nottingham, who had remarkable examples of Charles Lefebvre, Dr. Andry, La France, Camille Bernardin, John Hopper, Marquise de Mortemart, Comtesse d'Oxford, Elie Morel, Pierre Notting, Madame Marie Cirodde, Francois Lacharme, and Gloire de Santenay. 2d, Mr. H. Biddles, Park-lane, Loughborough; the flowers unnamed. 3d, Mr. R. Rodgers, Welford Street, Nottingham, who had nice flowers of La France, Charles Lefebvre, Madame Vidot, Madame Hector Jacquin, Mons. Noman, John Hopper, Gloire de Dijon, &c. There were 9 capital collections in this class, and it served in a remarkable degree to illustrate what beautiful Roses can be produced by the artizans in the allotment gardens round Nottingham, as well as at Loughborough. The premier Rose, shown as a single flower, in competition for the prizes offered by Mr. T. Laxton, was a fine example of Duke of Edinburgh, shown by Messrs. Paul & Sons. The next best was Marquise de Mortemart, shown by Mr. George Burnham, of the Scots Greys' Inn, St. Ann's; the 3d, President, from Mr. J. Brown, Sneinton: the 4th, Elie Morel, from Mr. W. Wise, Newcastle Street, Nottingham.

The desire to possess the patent plant protectors, offered by Mr. W. E. Rendle for 12 cut Roses, three trusses of each, appeared to have awakened no ambitious desires in the breast of any rosarian, as no competition took place, or at least no signs of it could be found. It was much too early for cut blooms of Carnations, and the only Picotees staged was a stand of 12 blooms of Prince of Orange, from Mr. Perkins, Leamington.

A very fine stand of Verbenas came from Mr. C. Turner, also a stand of 24 fine Pinks; Mr. Cannell also contributed Verbenas, and Messrs. Downie, Laird & Laing stands of English and fancy Pansies, the superb colouring of the latter exciting much admiration.

The chief of the novelties shown for certificates consisted of two fine groups of seedling Ferns, from Mr. E. J. Lowe and Mr. J. E. Mapplebeck. A few other subjects were, however, selected from the fine miscellaneous collection of the Messrs. Veitch & Sons, amongst which were too new Dracænas which will be welcome additions to this fine decorative genus, namely, D. Wisemani, a bronzy-leaved plant, with red margins, and breaking out into white in the younger growth; and D. amabilis, a broader-leaved form than D. Guilfoylei, and much superior to it, the leaves green, variegated with pink and white. These came from the South Sea Islands. Dieffenbachia Bausei, another of the same group, is perhaps the finest of all the Dieffenbachias. It is a stocky-growing broad-leaved variety, of hybrid origin, with leaves of a yellowish-green, irregularly edged and blotched with dark green, and also spotted with white, the marking being particularly effective. Begonia Chelsoni is another pretty hybrid form, with light red flowers of a different tint from those of the related B. Sedeni. In Mr. Williams' group was a nice plant of Trichomanes auricularium, a very elegant creeping-stemmed tropical filmy Fern. Mr. G. F. Wilson had cut specimens of four rare Lilies, namely, californicum, the flower reflexed, deep red with dark spots, a broad-leaved kind, the leaves somewhat whorled; puberulum, of Torry, orange-red reflexed flowers, spotted with black, and whorled broad leaves; pendulifolium, with the flowers of puberulum, but having narrower scattered leaves; and canadense flavum, a very pretty bell-shaped flower, tawny-yellow, spotted with black. All the foregoing received First-class Certificates. Messrs. Veitch had also a very curious Orchid, Epidendrum pseudepidendrum, a species with leafy stems and small panicles (in this case two-flowered) of very remarkable flowers, the sepals and petals being a deep green, and the lip expanded and deep orange-coloured, appearing to stand out on a long stalk. Mr. E. J. Lowe had also a curiosity in the shape of a variegated Rose (? Gen. Jacqueminot) which, if thoroughly fixed, would be a real acquisition, the leaves being handsomely marked with creamy white, and the younger ones also stained with red.

Mr. Turner, of Slough, staged several of the fine new Pelargoniums which had been already exhibited at the London meetings, and the following amongst them were in a condition to receive first-class awards, viz., Achievement, a lovely tint of rose, with blotched upper petals; Pompey, Cæsar, Zephyr, all high-coloured sorts, and Charlemagne, a soft rose. Imperator had remarkably high-coloured lower petals.

Of *New Ferns* the name is legion, and we can only indicate some of the more striking. The following forms of Scolopendrium vulgare, shown by Mr. Lowe, were particularly good:—Fellowsii, with tall, recurved sculpturate fronds; Smeei, tall and erect, with a narrow sculpturate line within the smooth undulated edge, perfectum, dwarfer, recurved and sculpturate; acceptum, dwarf, broad, multifidly-lobed and sculpturate; Davyi, narrow, erect, and sculpturate; præcinctum, dwarf tufted growth, sculpturate, with a frilled excurrent line; virginale, bold and divergent lobed; dichotomum, irregular and ramose; eochleatum, undulate, with the top spirally twisted; Mooniæ, a very well marked supralineate form; innocuum, broad arching fronds, transversely plicate, and deeply crenato-lobate, the apices less divided; kraspedon, very broad and bold, somewhat frilled at the end; thaumaston, dwarf and undulated, the apex recurved and divergently lobate; tumulum, narrow base, broad, spreading, flat multified apex; keratophoron, short, broad, with a pocket-like apex, and forked excurrent horns; omnilacerum Lowei, one of the obtusidentate set, but broader and more deeply cut. Lastrea dilatata calomelanos and spectabilis ramosa, two pretty, finely cut dwarf forms, in the way of cinca; Lastrea Filix-mas Belperi, a narrow, irregularly fringed form of cristata, analogous to Craigii, amongst Athyriums; L. F.-m. depauperata Padleyi, with curious dilated apices to the pinnæ; L. F.-m. variegata, greyish white, as if invaded by thrips; Polystichum angulare ariprepes, a deeply toothed form, in the way of grandidens; P. ang. transforme, a drooping crested form; Asplenium marinum Thompsoniæ, the gem of the whole collection, with fine, symmetrical bipinnatifid fronds; A. m. admirabile, dwarf, and very ramose; A. m. capitatum, dwarf, and finely cristate-lobate; Adiantum Capillus-Veneris admirabile, a fine, spreading-habited sort, with cuneate-trapeziform pinnules; A. C. daphnites, dwarf, and crested with very large concave pinnules; A. C. perfectum, a very free-growing, large-fronded variety; Pleopeltes iridioides cristata, a grandly multifid cristate form of this well-known stove Fern; and the following forms of Athyrium Filix-fœmina:—Gullsonæ, with the fronds partially cruciate; Alexandra, a subsymmetrical form of Victoriæ, fimbriately toothed, and crested; invincere, in the way of Pulleri, very neat; decorum, a large, subsymmetrical form, with laciniate pinnules; trossulum, like a robust flabellifolium, with a multifid-cristate head; Loweæ, full, deeply-toothed, and symmetrical; Triumphale, a dwarfish and somewhat irregular form of Victoriæ; Bellairsiæ, large and subsymmetrical, and laciniate; Lawsoni, a very elegant narrow-lanceolate form, with few toothed pinnæ and cristate apex. These, with a Hymenophyllum Kinahani, said to be intermediate between unilaterale and tunbridgense, but with the habit and aspect of the former, all received First-class Certificates, and were shown by Mr. E. J. Lowe. A smaller, but select collection, came from Mr. J. E. Mapplebeck. The most remarkable amongst them were the crested forms of Pteris aquilina, namely, incurva, tasselled, but with the bunches encurved; cristata Gloveri, regular, with the pinnæ nicely crested at the ends; and grandiceps irregularly dilated into large crested heads, and without symmetry. Mr. Mapplebeck had several good Athyriums—to wit, Mapplebeckii, symmetrical in outline but irregular in the pinnules, which are deeply cut, the pinnæ being forked or tasselled; Gillsoniæ, symmetrical, with flabellate, lacerate, refracted pinnules, and caudate apex; Craigii glomeratum, a narrow glomerately crested form of Craigii; rectangulare, a large symmetrical frond, with distant pinnules, both them and the lobes set at right angles with their base; dilatatum, large and symmetrical, with short, closely set, dilated, almost bifid pinnules; caudiculatum, irregularly ramose and bunched, with nearly caudate pinnæ; flabellifolium tenue, a pretty small form, with a few normal pinnæ at the base, and the rest of the frond like Asplenium flabellifolium; also Lastrea Filix-mas revolvens, with the pinnæ singularly recurved; and Blechnum spicant crispatissimum, a dwarf dense form, 2 inches high, with narrow imbricated fronds, twisted, and sometimes forked at the apex. These all received First-class Certificates.

The *Fruit Show* was not so extensive as it was either at Manchester or at Oxford, but the arrangements were different here from either of the above places, inasmuch as the fruit and vegetables on this occasion were staged in the same tent; and, as the vegetables were shown better here than at any former show of the Society, the two made an excellent display of themselves. A striking feature at the entrance of the tent was a fine stand of seeds, &c., shown by Messrs. Carter & Co., in which was also included their prize cup for vegetables. Down the centre of the tent, which separated the fruit from the vegetables, were the splendid specimens of Peaches and Nectarines in pots shown by Messrs. Pearson & Son, of the Chilwell Nurseries, and the pot Vines staged by

Messrs. Lane & Son of Berkhampstead, in competition for the prize offered by the local committee.

For the prizes offered for a collection of *Fruit*, 12 dishes, 6 distinct kinds, there was only one exhibitor, Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, Bucks, and to him the 1st prize was awarded. He had two very handsome Queen Pines, weighing about 5½ lb.; 3 bunches of Black Hamburgh, fine in size, if deficient in colour; a fine dish of Foster's White Seedling, excellent Violette Hâtive Peaches and Murray Nectarines, Mr. Radclyffe and Sir Charles Napier Strawberries, and Black Circassian and Bigarreau Napoléon cherries. A collection of fruit was also staged by Mr. Brown, fruiterer, Nottingham, apparently not in competition for these prizes. Pine-apples were not very numerously shown, but they were of excellent quality. The best three came from Mr. Miles, gr. to Lord Carrington, consisting of a very large Providence, weighing 11 lb. 5 oz., and 2 Queens, averaging 5½ lb. each; Mr. Simpson, gr. to Lord Wharncliffe, Wortley Hall, coming in 2d with handsome Queens, weighing about 4 lb. 12 oz. In the next class, for a single fruit of any variety, Mr. Simpson came in 1st with a beautiful Queen, Mr. Miles being 2d with a capital specimen of the same variety. In the class for 2 specimens, Mr. Miles was again 1st, taking the special prize offered by the late S. T. Cooper, Esq., with magnificent Queens, Mr. Simpson securing the 2d prize, given by the local committee, with admirable representatives of the same variety, weighing about 4 lb. Grapes made a very interesting exhibition. The best single dish of Black Grapes came from Mr. R. I'Anson, gr. to T. Statter, Esq., Stand Hall, Manchester, good both in bunch, berry, and colour, and more noteworthy still from the fact that they were cut from Vines 27 years old, and grown on the restrictive system. The second honours were secured by the veteran Mr. Henderson, gr. to Sir George Beaumont, Bart., Cole Orton, with examples not over large in bunch, but perfection in size of berry and general finish; Mr. Sage, gr. to Earl Brownlow, Ashridge, was 3d, with a very good sample. A very good sample was also contributed by Mr. G. Daniells, gr. to A. M. Munby, Shipley Hall, Derby. A very good dish of Muscat of Alexandria, perhaps hardly as ripe as they might be, from Mr. W. Holah, gr. to H. Saville, Esq., Rufford Abbey, Notts, was 1st in the class for White Grapes, Mr. W. Peachey, gr. to H. E. Hole, Esq., Quorndon Lodge, Loughborough, being 2d with Golden Champion, of splendid size but bad colour; and Mr. M. Henderson 3d, with nice examples of Buckland Sweetwater. Mr. Smith, gr. to the Earl of Gainsborough, Exton Park, Oakham, sent the best basket of Grapes, which consisted of six very handsomely finished bunches of Black Hamburgh, Mr. Henderson coming in 2d with smaller but equally well finished examples, and Mr. W. Broadbridge, gr. to Sir C. Mordaunt, Bart., Walton Hall, Warwick, was 3d. Mr. Forman's prizes for six bunches of one or more varieties of Grapes, the produce of Vines more than 25 years old, brought out a most interesting display. The 1st prize was awarded to Mr. R. I'Anson, who had large bunches, with good berries of excellent colour. These also were cut from Vines 27 years old, grown on the single rod system. Mr. M. Henderson came in 2d with small but highly finished examples of Black Hamburgh cut from Vines 39 years old, planted and grown on the extension system; Mr. Lynn, gr. to Lord Boston, Hedsor, being 3d with handsome bunches of Black Prince, Black Hamburgh, Buckland Sweetwater, and General de la Marmora, an early White Grape of considerable merit—they were, however, scarcely ripe enough, and no information was given as to which of the rival systems they had been grown upon. From Mr. Simpson, Wortley, came some capital Black Hamburghs, cut from Vines more than 50 years old, which are restricted to one rafter, and pruned to the best bud. Mr. G. Craddock, gr. to Lord Willoughby de Broke, Compton Verney, Warwick, sent admirable specimens of Muscat of Alexandria, Black Prince, and Black Hamburgh, from Vines which were grown on the restrictive system, on their own roots, and which have produced Grapes that have regularly taken a 1st prize for the last 12 years. Mr. A. Meikle, gr. to S. Howard, Esq., Read Hall, Whalley, had Black Hamburgh, and a small Red Grape cut from Vines grown on the moderate extension system, and there were several other productions of which no particulars were furnished. For the prizes given by Colonel J. C. Wright, Stapleford Hall, for 6 kinds of fruit, Pines excluded, there was only one competitor—Mr. W. Holah, who had good-shaped bunches of Canon Hall Muscat, with immense berries, some fine Golden Hamburghs, Ruddington Hall Seedling, and King of Melons, a capital dish of Apples, and the same of Lee's Perpetual Figs, Peaches, Nectarines, &c. Peaches and Nectarines were not by any means numerous, but of excellent quality. The best single dish in the former class was a handsome dish of Bellegarde, shown by Mr. P. Hope, gr. to F. C. Clarke, Esq., Vinery House, Allerton, Liverpool; Mr. Sage, gr. to Earl Brownlow, Ashridge, coming in 2d with the same variety; and Mr. Lamb, gr. to G. Davy, Esq., Colston Basset, 3d, with very fine Galande. Mr. Jack, gr. to the Duke of Cleveland, Battle Abbey, Sussex, also sent admirable specimens of Bellegarde; Mr. Brown, Gopsal, and Mr. Lynn had Royal George, and Mr. Miles had Violette Hâtive. Mr. P. Hope was also 1st for Nectarines, with Elruge, wonderfully fine in size and colour; Mr. Lynn being 2d, with exceedingly handsome Violette Hâtive, and Mr. Brown 3d, with the same variety. The same kind was also shown by Mr. Brown and Mr. Henderson, and Mr. Lamb and Mr. Miller, gr., Worksop Manor, competed with good specimens of Elruge. Capital dishes of Brown Turkey Figs were shown by Mr. Brown, Mr. Sage, and Mr. Miller, the prizes being awarded in the order named—Mr. D. Lumsden, gr. to the Hon. R. C. Nesbit Hamilton, Bloxholm Hall, also competing with the same variety. The best single dish of Cherries was one of Black Circassian, of excellent quality, from Mr. Miller, Mr. Miles coming in 2d with Bigarreau Napoléon; and Mr. Garland, gr. to Sir T. Dyke Acland, Bart., Killerton, was 3d, with capital specimens of Elton. The same exhibitor also sent a dish of the Black Tartarian; Mr. Miles had another one of Black Circassian; and Mr. J. Woodfield, gr. to F. J. S. Foljambe, Esq., Osberton, and Mr. Lydiard, Batheaston, had May Duke. In the class for 6 dishes of Strawberries there was only one exhibitor, Mr. Miles, and he received the 1st prize. The best green-fleshed Melon came from Mr. G. Lamb, Colston Basset, a handsome high-flavoured fruit, named Colston Basset Seedling; Mr. T. Middleton, gr. to G. T. Cross, Esq., being 2d, with Ruddington Hall Seedling; and Mr. T. W. Shuttleworth, Golden Hill, Preston, 3d, with Gilbert's Improved Victory of Bath. The best scarlet-fleshed variety was a small fruit of Scarlet Gem, shown by Mr. Gilbert, gr. to the Marquis of Exeter, Burghley; Mr. A. Meikle coming in 2d, and Mr. T. Mitchell 3d; Mr. Woodfield, Mr. Holah, Mr. Miller, Mr. Cox, Mr. Calder, and Mr. D. Lumsden, also competed. Mr. Frisby, gr. to H. Chaplin, Esq., Blankney, sent three dishes of Apples, and from Mr. Garland, gr. to Sir T. Dyke Acland, Bart., came three nice dishes of Currants and Raspberries. Mr. Henderson, Cole Orton, exhibited the Black Mammoth Grape, a large variety, raised in Australia; and Mr. Miles had a Providence Pine-apple, weighing 10 lb. 14 oz., and an Enville, 8¾ lb. in weight. Mr. Tillery, Welbeck, sent a collection of Strawberries. Mr. G. Lamb had a brace of the Sooly Qua Cucumber, of immense size; and Mr. Woodfield, Osberton, exhibited fruit of Vanilla planifolia, of the years 1870 and 1871.

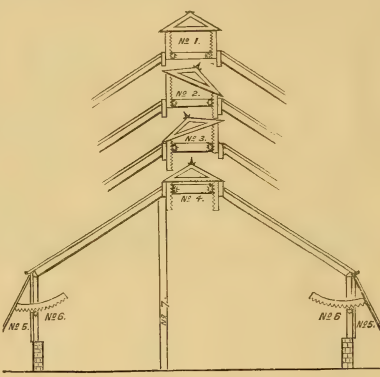

FIG. 174.—VOICE'S PATENT HOTHOUSE.

At no previous provincial exhibition of the Society have *Vegetables* been shown in such magnificent condition as they were here. Indeed, considering the season we have had, we doubt if a larger, cleaner, and better grown lot could be brought together. The great centres of attraction were the splendid collections shown in competition for "The Gardeners' Prize," subscribed amongst the gardeners of Great Britain and Ireland, with £5 added by the Marquis of Exeter, and the handsome silver cup given by Messrs. Carter & Co. for a collection, including Laxton's Supreme, Carter's Hundredfold, Laxton's Quality, Dwarf Waterloo, and two other varieties of Peas. This prize was won in the most satisfactory manner by Mr. J. Garland, gr. to Sir T. Dyke Acland, Bart., Killerton, Devon, who staged a collection which roused to enthusiasm the admiration of his brother gardeners, and which, besides splendid examples of the specialities mentioned, contained 50 heads of Asparagus, weighing 7½ lb., and of an average length of 8 inches, the largest sample we ever saw from the garden of an English amateur, though at the same time we do not consider it the most useful size for satisfying the requirements of a gentleman's table; and perfect examples of Cabbages, Lettuce, Onions, Parsnips, Celery, Carrots, Broad Beans, Turnips, and Beet, &c. It is only fair perhaps to state that Mr. Garland procured the seeds of these remarkably fine vegetables from the firm who gave the prize. The 2d prize was taken by Mr. D. Lumsden, also with a capital lot, in which were admirable Globe Artichokes, Onions, Broad Beans, Cabbage, Leeks, Potatos, and a fine dish of the Rat-tailed Radish. Mr. Gilbert, gr. to the Marquis of Exeter also competed in this class, though unsuccessfully, he having thrown his greatest efforts into the competition for the Gardeners' Prize, which was suggested by him in these columns some months ago, and which he now won very cleverly. When he made the suggestion, Mr. Gilbert made some observations upon the generally rough and primitive manner in which the "cook's favourites" were staged, and we have much pleasure in stating that Mr. Gilbert set an admirable example here, by showing them with a shallow box, with a garniture of beautifully curled Parsley, an arrangement which we should be pleased to see generally followed on all future occasions. There is an old proverb, that "good wine needs no bush," and so in the matter of good vegetables many gardeners hold the opinion that they require no other setting off than that which is afforded by white plates; but as the production of good vegetables is, or ought to be, a matter of the first importance with every gardener, we think it strange that those gardeners should have such a poor regard for their hardly gained productions. Mr. Gilbert's box of vegetables and salads contained, in the first place, the cleanest and most perfectly developed Cauliflowers in the show, and the same may be said of his dish of Orangefield Tomatos, which were excellent in size and perfect in colour; a capital dish of Mushrooms, the same of Globe Artichokes, and Fulmer's Early French Bean, as well as a nice dish of Laxton's William the First Pea, &c. His salading materials consisted of a beautiful brace of Telegraph Cucumbers, Beet, Cabbage and Cos Lettuce, and Mustard and Cress. The competition for the other prizes was particularly close, the Rev. C. C. Ellison taking 2d honours with a collection deserving much praise. Following him came Mr. Miles, gr. to Lord Carrington, and Mr. G. Craddock, the latter of whom secured the patent exhibiting case, given by Mr. Chapman, of Gloucester. First-rate collections were also staged by Mr. Lumsden, Mr. Frisby, Mr. T. Mitchell, Mr. F. Soar, Mr. W. Holah, Mr. W. Peachey, and Mr. A. Meikle. The prizes given by the Loughborough Horticultural Society were also very well contested. More Cucumbers were shown than is usually seen at an exhibition, and amongst them were excellent representatives of most of the leading kinds. For the prizes offered by T. R. Stavey, Esq., and the local committee, there were 12 competitors, the 1st prize being won by the Rev. C. C. Ellison, Bracebridge, Lincoln, with a very nice brace of a white-spined variety, aptly named "Lickemall," Mr. J. Bolton coming in 2d, with very good specimens of Telegraph, and Mr. Mitchell 3d, with Berkshire Challenge. Mr. J. Allan, Norton Hall, Sheffield, had a brace of Hamilton's British Challenge, over 30 inches long. Mr. D. T. Fish sent a nice brace of Telegraph, and so did Mr. A. Meikle. Pearson's Long Gun was represented by Mr. A. Parr, and Mr. D. Lumsden sent an immense brace of the new Chinese Cucumber, Sooly Qua. There was also a brisk competition for the prizes given by Mr. W. Edgcumbe Rendle, but nothing calling for special comment was contributed.

First in importance among *Horticultural Buildings* are hot-houses, though the field seemed left to the provincial builders—Messenger, of Loughborough; Denman, of Chelmsford; Foster, of Beeston; Wheeler & Humfrey, of Nottingham. These are well known, and call for no special remark. Ayres' imperishable house, which has been previously noticed in these columns, appeared in much better condition than at Oxford, and now seems a business-like, useful structure. It is formed of iron, glass, and a composition hard and, said to be, durable as stone, the stages and side walls being thus rendered imperishable. Ample provision is made for ventilation, and the inventor says the cost will not exceed that of the best wooden houses; if so, these houses ought to take. It must be a boon to have imperishability and cleanliness combined with cultural facilities and structural merits of the highest order.

Mr. Bickley, of Birmingham, likewise exhibits an ingenious mode of glazing. He reverses the usual order of the roof bars, and runs them across the house. On narrow slips of wood, deeply serrated strips of zinc are nailed; a few of these saw-like teeth are reversed, so as to hold the glass firmly, and the squares abut side or lengthways. On steep pitched roofs no water will get in, and even on those of ordinary character, it is said, the attraction of the two edges prevents drip. If the immunity from drip at ordinary angles can be ensured, these roofs will prove exceedingly light and cheap.

Another novelty in ventilation is exhibited by Mr. Voice, of Harcross in Sussex. The house is furnished with a centre cap or lantern, one or both sides of which can be elevated rapidly with a rack and screw at pleasure (fig. 174—1 to 4). By this mode ventilation can always be given on the end side of the wind, while, by lifting up the entire top, the heated air can escape at once. Side ventilation is given in the ordinary way under the wall-plate (fig. 175—5 and 6). Mr. Foster seems to have brought the mechanical contrivances for the movement of ventilators to a high state of perfection. By a peculiar arrangement of bevelled gear and screw, the heaviest ventilator can be moved with the utmost facility. The open ventilator is elevated by a horizontal movement which throws it up, so that air is given while the rain is kept out. The houses and pits of this builder have wooden sides and iron feet, which makes the tenant's fixtures removable at pleasure.

Mr. Richardson, of Darlington, likewise exhibits models of his patent hothouses. The improvements shown by Mr. Rendle in his plant protectors bring some of them almost within the category of houses. The old forms are still retained, while new facilities for the removal of the glass are afforded by a movable coping, that is simply laid on the upper edge of the glass. Nothing could be more simple. The protectors are also shown in more pretentious size and form; glass walls and miniature houses, in which zinc is used for grooves and wood for sides, instead of bricks and tiles. The Peach-case and amateur's plant-case have folding backs of wood, which are let down to tend the trees or plants, while the top is also movable. The cordon frame has a hole at the end, to admit the tree, and there can be little doubt of their worth, with the efficient shelter these cordon cases provide. We hear a good character of these protectors on all hands, and no one can doubt their special adaptation for the purposes intended. As lately remarked in these columns, the great want of modern gardening is more glass, and we hail every attempt to provide it cheaply and in useful forms.

A good specimen of Beard's glass walls, strong, substantial, and business-like, was also shown here.

From glass structures we naturally turn to the means of heating them. Boilers were not numerous, and there is no great novelty among them.

Mr. Weeks showed his upright tubular, and Mr. Ormson put up some substantial-looking convoluted saddle and flued saddles, and a new form in which the fire is swept through the centre and four spaces around it. There can be no question of the power and the durability of these boilers.

The Witley Court boiler was likewise shown, with its furnace door and everything complete. Its chief features are the semi-detached end, to receive the full force of the fire, the deep pan in the ash-pit to be kept supplied with water, and the fact that it is not proposed to carry the fire around the outside. It looks capable of heating any amount of water that may be required; but the semi-detached end seems to us a defect.

Mr. Ormson showed a double-flued saddle—with the water carried under the bars, and a solid end that seems to combine most of the advantages without the complications of the Witley Court Boiler.

Among miscellaneous exhibits, a fine lot of pottery, including vases, fountains, baskets, and pots, was shown by Mr. John Matthews, of Weston-super-mare; garden chairs with shades, in endless variety; engines, mowing machines, sewing machines, fancy stationary, carriages, perambulators, *ad libitum;* rollers, vases, and even reapers; steam-engines—and, last, though in many respects by no means least, as an adjunct of the time, a printing machine, driven by steam-power, to print the Guides and Prize Lists of the Royal Horticultural Society on the grounds.

The Dinner at the Exchange Hall.—On Tuesday evening a public dinner was held in the Exchange. The Rev. S. R. Hole, M.A., vicar of Caunton, presided, and among those present were the Mayor, Colonel Scott, Major Trevor Clarke, Messrs. Pearson, of Chilwell; Stevens, of Trentham; Stevenson, of Timperley; Fish, of Bury St. Edmund's; Ingram, of Belvoir; Cole, of Withington; W. Barron, Elvaston; Rollinson, Tooting; Veitch, London; Turner, Slough; Lane, Berkhampstead; Laing, Forest Hill; Barron, Chiswick; Williams, Holloway; Dickson, Chester; Baines, Southgate; Dean, London; Paul, Cheshunt; Gadd, Wollaton; W. Paul, Waltham Cross, &c.

The Chairman gave "The Health of the Queen," and afterwards proposed "The Prince and Princess of Wales, and the rest of the Royal Family." He remarked that, as an individual, he was glad to see that his Royal Highness had missed 12 pigeons in succession. He trusted that his Royal Highness would seek healthier pursuits, and among them horticulture, especially Roses, and among them the Rose of Denmark. He should like to mention, in connection with this toast, the amiable and excellent Prince who presided over the dinner of the Gardeners' Benevolent Institution. He then proposed the toast "The Prince and Princess of Wales and the rest of the Royal Family."

The Chairman again rose and said, he had never said grace with more satisfaction than he had done that day. He was not an epicure, but he felt somewhat as the poet expressed it—"Fate cannot harm me, I have dined to-day." Englishmen used to have no difficulty about dining; but somehow or other there had been some difficulty previously in holding a gardeners' dinner at these annual meetings. They had previously wanted the presence of those who were at the head of the Society, but here they were to-night. They had had the best show to-day that ever the Society had had in the provinces, and there had been no want of harmony in making it a happy one throughout. The gardeners who came to these meetings had great sympathy and fellowship with each other; they wanted to cement their old friendships, and to meet men they had heard about all their lives. Did not our painters wish to know a Millais, or a young soldier a Napier? He had known the time when he would have gone 40 miles to meet Thomas Rivers, of Sawbridgeworth. What they wanted was unity, and they had it to-day more than they ever had it before. He gave them the "The Health of the Chief Magistrate of the Town," who had done so much to insure the success of the meeting, and he might congratulate him on the happy day this had been for Nottingham and on the grand exhibition over which he had, so to speak, presided. (Cheers.)

The Mayor, in reply, said he felt that, as one who filled the honourable office of Mayor of Nottingham, he should have been a recreant to the trust confided in him if, when an important Society like this paid the town a visit, he had not done all he could to promote the harmony and success of the meeting. The Mayor then proposed the Council of the Society, coupling with the toast the name of his friend Colonel Scott.

Colonel Scott, in reply, said it was a great honour to reply to the toast, and went on to observe that the Society had done much to humanise mankind. Mr. Hole had made some comments upon the difficulties in connection with this dinner. He did not know the ins-and-outs of the question, but he reminded them that the Society had a great many difficulties to contend with. It was made up of heterogeneous elements. There was first the florist, who looked at a flower in relation to its regularity; then they had the horticulturist proper, who delighted in looking at everything in the light of colour or beauty of form; then there was the botanist, who thought that it was the most important thing that a flower should have its right name given to it; and then the physiological horticulturist, who thought of nothing but the scientific point of the question. Besides these classes, however, they had the outside public to consider. Horticulture was like painting, there were wanted not only the artists, but the people to admire the works that were produced. Many of those present were men of business, and they were pretty well aware that, in a mundane point of view, the absence of the public would be the worst thing that could befall them. Still, he did not think the Horticultural Society needed any apology; they were doing their duty manfully and well. He dwelt on the progress the Society was making, and said the show in Nottingham was one which would bring thousands to see it. He could not help referring to the local committee, who had worked so hard to secure a success, and he wished also to acknowledge the efforts of those who had brought together so large a number of plants, also to those who had judged them so well, but who, for the next three or four days, would not have a very happy life of it. Last, but not least, they returned their thanks to the Mayor for the honour he had done them, and also for the courtesy and geniality and all those qualities for which they had been indebted to so great an extent for the success of the exhibition. He thanked them from his heart for the way in which they had been received, and hoped this would be one of a series of meetings at which they would meet together. (Cheers.)

The Chairman, in giving the next toast, proceeded to refer to a few names which had not been previously mentioned in the first list of "scientific persons" attending the meeting in Nottingham, mentioning Mr. Gruntley, Mr. Thomas Baines, Mr. Cole, Mr. Stevenson, and also Mr. E. J. Lowe. With reference to the latter gentleman, he remarked that, whatever differences might have arisen, he thought they should do all honour to their secretary for his energy and activity in bringing about this great success. He then mentioned Mr. George Eyles and Sergeant Johnson, and concluded by saying that the show of flowers and plants he had seen that day was the best he had ever seen in his life. He then called on Mr. Baines to reply to the toast of the exhibitors.

Mr. Baines, in reply, made some practical observations upon the growing of plants.

The Mayor, in proposing the health of the Chairman, referred to the good will he had shown in promoting the meeting, also to his being an excellent clergyman and an excellent gardener, who looked from Nature up to Nature's God. Mr. Hole was really and truly, and in the highest sense of the word, a gardener, who cultivated not only his own garden, but the souls of those who lived in his parish, and he was glad of his presence that night. He hoped he would long continue in his Christian work, and in the promotion of horticulture, and grace by his pleasant and agreeable presence many such meetings as this.

The Chairman, in reply, said he should look back upon this day as one of the happiest in his life. This was the first day in which they had bridged over a little chasm which had existed between science and practical gardening. He did not pretend to be anything but a lover of flowers. He loved every flower that was grown—that was his idea. The man who could not admire every flower in a wood as well as any Orchid was not a true gardener. If he did so, however, he was a true florist. The Chairman then told a very droll anecdote. In a village nine miles from Nottingham there lived a clergyman, and there also used to live a clerk. We were getting rather tired in this age of the conversational duet between the parson and the clerk, and so the latter race was not quite so flourishing. But there lived in this village a clerk, and he did not think he was offending against propriety when he stated that his name was Kemp. Kemp was a tailor, and he played on the violin. All things went very happily, the clergyman employing the clerk to make clothes for himself and livery for his man, and he (Mr. Hole) thought it right that native talent should be thus encouraged. Unfortunately, one day there came to the clergyman a new groom, who declared that he would not have his clothes made by Kemp. The clergyman weakly and thoughtlessly listened to the council of the groom, and allowed him to go to a very excellent man and tailor, whom they all liked—Mr. Finn. The man went to Mr. Finn, and the next Sunday when the clergyman gave out the hymn the fiddle of Kemp made no sign. Again the clergyman gave out the hymn, repeating the first verse, but the fiddle made no sign. There was consternation in the heart and countenance of the parson, and he turned to that part of the church from which the music ought to have proceeded for an explanation, and after a pause there was a messenger sent, and the reply was, "If you please, sir, Kemp says as Finn may fiddle." He hoped that in the same way that working gardeners would not be put on one side for science, or they might reply "Science may fiddle." He said to the Council of the Royal Horticultural Society, "Come to us, as you have done to-night, in a kind and friendly way, and be friends with the British gardener." He then warmly thanked the company for the way in which they had drunk his health.

Major Trevor Clarke and Col. Scott both denied that the Council of the Royal Horticultural Society was in any way inimical to the practical gardener.

Mr. Baines proposed the Judges, to which Mr. Fish replied, and said the Council of the Society might be practical gardeners individually, but they did not seem to understand the gardeners, nor did they understand them. The only way to get out of the difficulty was to put their Chairman on the Council, and there would then be an end of the difficulty for ever.

The Chairman proposed the health of Mr. E. J. Lowe, and said the success which had attended this day's proceedings must have entirely obliterated any objection anybody might have held to any particular view he had taken. They must all feel gratitude to Mr. Lowe for the energy he had displayed in bringing this meeting to so happy a issue.

Mr. Lowe, in reply, said any little labour he had bestowed was amply repaid by the promise of success which he saw before him, for he always noticed that when the first day started well they were sure to go on prosperously to the end. He assured them that he had both the Horticultural Society and the success of the gardeners equally at heart. He pointed to his production of British Ferns as a proof that he was a practical gardener—(Cheers)—and after some further observations resumed his seat amid applause.

Mr. Fish in proposing the next toast, said that practical men laid the elements of science, and the difference between them and the bookmen was, that whilst the latter put their science into books, the former put it into plants and flowers. He proposed "Success to Horticulture," to which Mr. Ingram, of Belvoir, replied in an appropriate speech.

The Chairman gave the Horticultural Press, and coupled with it the name of an old gardener—Mr. W. P. Ayres. Mr. Ayres might have been a little venturesome in his zeal for horticulture, but if they looked through his writings, they would find him an advocate of the gardeners. Mr. Ayres had made many valuable suggestions both in print and in private about this show, and his (the Chairman's) only regret was, that he had not been working with them, when his heart lay so much in the cause.

Mr. Ayres said there was no one living who was willing to do more for horticulture than he was, and he really thought he was doing good, although some might think he was doing harm. He was no truckler; he should always pursue an independent course, and do that which he considered to be right.

The Mayor then proposed the ladies, to which Mr. Pearson, of Chilwell, replied in a humorous speech.

The proceedings shortly after terminated.

CRYSTAL PALACE, ROSE SHOW: *June* 24.—The extremely unfavourable state of the weather, was the reason assigned by many of the most noted rosarians, who flocked to this popular place of resort on Saturday last, for the shortcomings of this exhibition. In the first place, it was not so large as usual, and, in the second, the blooms, as a whole, were below the average merit, being, with the exception of those sent up from the south-west country, stunted in growth and poor in colour—an attendant consequence of the late heavy rains. In the first four classes, which were confined to nurserymen, the honours may fairly be said to have been divided between Messrs. Paul & Son and the veteran florist from Salisbury, Mr. John Keynes, seeing that the former came in 1st for 72 distinct varieties, and the latter for collections of 48 and 24, three trusses of each. Messrs. Paul & Son's best blooms were of Centifolia rosea, Alba rosea, Général Jacqueminot, the best of the lot; Dupuy Jamin, a Rose which was shown well in all the leading groups; Jean Goujon, a beautiful red; Léopold Hausburg, very fine; John Hopper, Charles Rouillard, Madame Rivers, Felix Genero, Madame Julie Daran, bright red, a fine, globular-shaped variety; Marie Baumann, and that old favourite, Comtesse de Chabrillant, a variety which, like Général Jacqueminot, Charles Lawson, Jules Margottin, and others, will probably hold its own as long as Rose shows are in existence. Mr. Keynes came in 2d in this class, and a good one too. His flowers were as bright in colour as of old, if they were not quite so even, especially those of Madame Clémence Joigneaux, a first-class show Rose; Mdlle. Eugène Verdier, Nardy Frères, a new variety, of excellent merit, rose, with a shade of violet, large and full; Elie Morel, Dupuy Jamin, Alfred Colomb, very fine, Camille Bernardin, and Maréchal Niel. Next to Mr. Keynes came Mr. J. Mitchell, of Piltdown, followed by Messrs. E. P. Francis & Co., of Hertford. Mr. John Durbin, Englishcombe, near Bath, was also a competitor.

Mr. Keynes had his revenge in the class for 48, three trusses of each, Messrs. Paul & Son being here placed 2d. His collection contained large and well-coloured examples of Ferdinand de Lesseps, Devoniensis, Madame Willermoz, Maréchal Niel, first-rate, Alfred Colomb, also excellent, La France, Louise Peyronny, Souvenir d'Elise, and Edward Morren, finer and of better form than we have seen it before, but a little deficient in colour. Messrs. Paul & Son had the following in capital order:—Beauty of Waltham, Dr. Andry, Dupuy Jamin, Modèle de Perfection, John Hopper, Camille Bernardin, Centifolia rosea, and La France. Mr. Turner was 3d, and Mr. Mitchell 4th.

In the next class, for 24, three trusses of each, the first three prizes were taken by the same exhibitors, and in the same order. The best flowers in the three groups were examples of Marguèrite de St. Amand, Madame Clémence Joigneaux, Marquise de Castillane, Abel Gand, Duke of Edinburgh, Léopold Hausburg, Nardy Frères, Miss Ingram, Camille Bernardin, and Miss Poole, a new variety, staged by Mr. Turner, delicate rose, large, and of good form.

For 24 varieties, one truss of each, Mr. Walker, Thame, Oxon, was 1st; Mr. G. Cooling, Bath, whose collection was very unsatisfactorily labelled, 2d; Mr. Parker, Rugby, 3d; and Mr. Knight, Hailsham, 4th,—four others also competing.

The freshest and brightest Roses in the exhibition were contributed to the amateur classes by Mr. R. N. G. Baker, Heavitree, Devon, who was pre-eminently first, for 48, 36, and 24 varieties respectively. Amongst his 48, of which all were large and good, the following especially were splendid in colour:—Madame Marie Rady, Alfred Colomb, Maurice Bernardin, Marie Baumann, Madame Rothschild, Centifolia rosea, Mrs. Charles Wood, and Antoine Ducher. In this class Mr. W. Ingle, gr., Round Hall, Colchester, was 2d, with, amongst others, grand blooms of Maréchal Niel, Rubens, Madame Crapelet, Maréchal Vaillant, Gloire de Dijon, and Cloth of Gold; Mr. Chard, Clarendon Park, Salisbury, 3d, and the Rev. G. Arkwright, Pencombe Rectory, Bromyard, 4th. In the class for 36, Mr. Baker beat fifteen other competitors with a collection of great excellence, comprising especially good blooms of Dr. Andry, Duc de Wellington, La France, Duke of Edinburgh, Louise Peyronny, Fisher Holmes, and Charles Lefebvre. Mr. Chard came 2d, Mr. Excell, gr. to J. Hollingshead, Esq, Maidstone, 3d; and Mr. J. Davis, Wilton, Salisbury, 4th. Next to Mr. Baker, for 24, came Mr. T. Gravely, Crawfield, Mr. J. Davis, and Mr. Stoddart, gr., Wivenhoe Park, Colchester. The best 12 single trusses, distinct, were contributed by Mr. J. E. Cavell, Walton Manor, Oxford.

In the open class for 12 trusses of any new Rose of 1868, Mr. Keynes staged Marquise de Castellane; Mr. J. Durbin, Madame Rothschild; Mr. Turner, Duke of Edinburgh; and Messrs. Paul & Son the latter and Marquise de Mortemart. Messrs. Paul & Son had the best collection of 24 new Roses of 1868-9, one truss of each, including a fine seedling from Duke of Edinburgh, named Robert Marnock, deep maroon; and staged excellent representatives of the former variety and Centifolia rosea, in the class for 12 blooms of any single variety. Mr. Keynes was 2d in the former class. In the latter class Mr. Ingle staged Jules Margottin; Mr. F. May, Braintree, Essex, Devoniensis; Mr. F. W. Bridge, of the same place, Maréchal Niel and Souvenir d'un Ami; Rev. G. Arkwright the last named variety, and Mr. Keynes La France. The best collection of yellow Roses also came from Mr. Keynes, a very fine lot of Maréchal Niel; Messrs. Paul & Son coming in 2d with Céline Forrestier and Gloire de Dijon.

In addition to the Roses, prizes were also offered by the Metropolitan Floral Society for Ranunculuses and Pinks, two classes of each; the Rev. H. H. Dombrain winning both first prizes for the former flowers, Mr. Turner having the best Pinks. Mr. Hooper, Bath, and Mr. A. Evans, Marston, Oxford, took second honours for Ranunculuses, and the first named was 2d for Pinks, Mr. D. Pizzey, gr. to Sir E. Perry, Fulmer, Slough, being 3d. In the class for miscellaneous productions were 11 fine boxes of Roses from. Mr Turner, a large and effective group of fine-foliaged and flowering plants, including some well grown pot specimens of garden Phloxes from Messrs. Downie, Laird & Laing, boxes of Pinks and Ranunculuses from Mr. Hooper, Bath, a nice group of pot Roses from Messrs. Paul & Son, and a group of new Zonal Pelargoniums, including Lord Lorne, bright scarlet, pip large, round, and smooth, and Frances, Countess of Waldegrave, a lighter scarlet, with a white eye, from Messrs. Burley & Martin, nurserymen, Brentwood.

Notices of Books.

The Honey Bee, its Natural History, Physiology, and Management. By Edward Bevan, M.D. Revised, enlarged, and illustrated by William Augustus Munn, F.R.H.S. London: Van Voorst. With 21 plates, 8vo, 1870.

The common hive bee, Apis mellifica, together with its various local or geographical varieties, and a few other distinct species, found in tropical countries, have, from the earliest ages, attracted the attention of mankind; and probably there is scarcely any subject upon which a greater amount of ingenious trifling has been bestowed than in inventing and modifying receptacles for their domicile, with greater or less facilities for robbing the inmates of their honied stores. Dr. Bevan's work, published in 1838, has ever since that period been the standard English work upon the honey bee. After 32 years it has been deemed advisable to publish a new edition of it, in which it was intended that the many new and curious facts relating to the physiology and economy of the insect, which have lately been recorded, as well as the various improvements in the construction of the hive itself, should be brought together and described.

This task was undertaken by Major Munn, an enthusiastic bee-keeper, and inventor of a peculiar kind of hive, which attracted much attention in the Great Exhibition in Hyde Park, where so many differently constructed hives from various parts of the world were brought together.

We regret that it is our conscientious duty to state that this task has not been satisfactorily performed. That the arrangement of the various chapters has been transposed is not very material, although we think that Dr. Bevan's plan of giving the description of the insect at the commencement of the work was more judicious than placing it in the middle, where we find it in the new edition; but we are justly entitled to complain that throughout the work the editor has thought it proper to introduce words and passages and even chapters into the work, altering also the original text in many places, without the slightest indication of what was original, or what has been altered or added by the editor.

We will confine ourselves in this review to the description of this hive (as illustrating the practical portion of the subject comprised in Part I.) and to the manner in which the editor has treated the physiological or scientific division of the work (Part II., to which, however, he has injudiciously transposed several of Dr. Bevan's practical chapters).

With reference to the origin of bar and frame hives, we read in the original edition (pp. 106, *et seq.*):—

> "It has been said that Huber borrowed from the Candiotes the first idea of his leaf-hive. These *descendants of a highly intelligent* people, *without being aware of the principle of their proceeding, continue the practice of their ingenious predecessors, in so far as simply* surmount*ing* their hives with loose bars *can be considered as a continuation of it,* and are thereby enabled occasionally to raise artificial swarms and sometimes to practise partial deprivation, in a very easy and simple manner, but there is much casualty in their proceedings, little of science, *for in answer to enquiries, which I have repeatedly instituted through the medium of persons residing in the Archipelago, I have learned that the attainment of either of the advantages referred to is liable to great uncertainty; the mere removal of loaded combs among the Greek apiarians, so far from being at all times a simple and easy process, to use the language of one of my informality, often involves a very delicate and difficult operation.* Huber extended and rendered the system more complete, probably approximated it more nearly to that of its ancient Greek inventors. * The experiments, *however, of Mr. Golding, myself, and others, already detailed,* have shown that this hive admitted of still further improvement, *the leaves are too narrow to be applicable to all purposes, and the hive altogether has been so much simplified by Mr. G. that I shall confine myself to a description of the particular form and dimensions which he has adopted.* As to the quality and thickness of the wood, &c."

Then follows a description of Mr. Golding's hive, with its various bars or leaves, and which the author concludes by saying, that it will "constitute what, I think, will be found an improved modification of the hive of Huber."

The whole of the passages printed above in italics have been left out by the editor, who thus sacrifices an instance of Dr. Bevan's careful research, as well as the doctor's appreciation of Mr. Golding's success. He has altered the passage commencing above with a * thus—"Later experiments, however, have shown that this hive admitted of still further improvement, and the hives of Du Beauvois' construction [exhibited in the Great Exhibition in 1851] are the best and most useful," and then instead of describing De Beauvois' (not Du Beauvois') hive, he copies the whole of Dr. Bevan's description of Mr. Golding's, commencing "As to the quality and thickness of the wood," &c., pp. 305, 306. We see, therefore, that the idea of compelling the bees to store their honey in separate leaves of frames, capable of being removed for examination or deprivation, has been known in all ages, and several modifications of the principle were exhibited by De Beauvois, Golding, and Munn, in the Great Exhibition in 1851. The last-named, however, claims (p. 37) to have first used his hive in 1834, to have patented it in Paris in 1838, and to have published a description of it in 1844, but unfortunately no copy of this description can now be found. As exhibited it was certainly one of the most ingenious and at the same time most complicated of the hives then assembled, resembling rather "a lady's work-box with a stand and ornamental fittings," as was said of it by Prof. Hamet in his report on the Paris Exhibition of 1867, than a working beehive. It was in fact a triangular box of mahogany enclosing seven movable frames, each fixed by a hinge at one of the angles, so that it could be drawn up, when the top of the box was lifted off and received into a larger sized "observation frame" with glass sides of the same triangular shape. Not only, however, has the inventor found, as he admits, that the triangular form is inconvenient, but that for practical purposes the glass observation frame is an incumbrance, and hence the hive which he exhibited at the horticultural show in Oxford in 1870, was square in shape, inclosing square frames without any "observation" apparatus, and thus scarcely varying, except in some slight details, from those of De Beauvois and Golding. In his work the editor dwells much on having made the floor of the hive slant downwards from front to back, which enables any dead bees or other refuse to fall out of the hive at the entrance, which extends along the whole width of the back of the hive, and to reach which entrance the bees have to crawl up a second and lower alighting board of the whole width of the hive slanting upwards in the opposite direction from front to back. We consider this arrangement a very unnatural one, as bees invariably select a hole with a small entrance aperture, when left to themselves in swarming and choosing a place of abode; moreover, they certainly have the instinct to clear away any objectionable matter lying within the hive.

As to the name "honey-trough," which the editor has applied to his hive, it is a simple delusion, being simply applicable to a flat tin box, with perforated zinc cover extending over the greater portion of it, used for feeding the bees from a bottle placed neck downwards in communication with the perforated portion—and which is placed on the top of the bars when it is necessary to feed the bees.

In his description of the plates representing his hive, the editor says that the "bar-frame principle consists in having a 'bar with a frame' to carry each separate comb in a hive where the combs can be attached by the bees to the sides of the frames, and not to the sides of the hive, *as in all Grecian and other bar-hives or boxes.*" This statement is not, however, correct, since De Beauvois' hive consisted of nine four-sided frames, for as many combs enclosed within a square box of wood with a movable roof, which is precisely the principle of Major Munn's hive, although he triumphantly remarks, on p. 45, that "a law suit in America has quite decided the question of the bar-frame hive being the invention of an Englishman, and not French, German, or American, as has been supposed; and I am rejoiced to revive the question with such evidence in favour of the 'bar-and-frame hive.'"

Turning now to the scientific, or second part of the work, we find that the editor has adopted various opinions quite at variance with those of the more advanced and philosophic naturalists of the day. Thus his description of the young larva of the bee, and the manner in which it is nourished, is a strange jumble of fact and fiction, the fact being found in the reprinted description of Dr. Bevan (pp. 9 and 10), and the fiction being the additions of the editor (pp. 175, 176). Take, for instance, the following passage from the latter:—

> "It is a question which will be fully explained when treating more fully of the larva state, whether it is not supported, in combination with vital force [!], by *endosmosis*; for the quantity of food left by the queen [!] in the larva cells, whilst the young is in the pupa [!] state, is nearly twice as much as the whole weight of the larva, and it seems to be the more solid parts of the food left from the mere [!] bee bread and honey (by the result of capillary attraction, according to the theory of Mons. Dutrochet), taking up the sugar and water and more liquid parts of the mixture."

And yet, although adopting this idea of endosmosis, or nourishment by absorption through the pores of the skin, he tells us in the next line that the larva is fed with farina or bee-bread; and in the next page (p. 176) how eagerly the young larva opens its lateral pincers [mandibles] when in want of food, of which a most liberal supply is given to it by the nursing bees, which calculate the quantity which will be required so nicely that none remains in the cell when the larva is transformed to a nymph. Again, at p. 346, he reasserts the principle of endosmosis, stating that "*there is no mouth* developed in the larva, but the point of the spinnaret [*sic*] at the head, which enables the larva to spin itself into its own cocoon." This spinnaret is the nipple at the extremity of the labrum or lower lip, the action of the mandibles is above alluded to, and a careful examination with a lens clearly shows the rudimental upper lip (labrum), and a pair of rudimental lower jaws (maxillæ). This completes the parts of the growth of a mandibulated insect. In fact, how is it possible for a larva to feed upon bee bread without a mouth? The structure of the bee larva is, indeed, precisely similar to that of the wasp—larva which has no means of feeding on honey or sugar and water, but only on solid food. The question of endosmosis is far too difficult to be treated in the cursory manner adopted by Major Munn. We had further marked the long passage descriptive of Plate H, at the end of the volume, in which a magnified figure is given of the larva of a male bee, as every line exhibits either an error in grammar or science; it is, however, too long for extract.

The doctrine of parthenogenesis, or the power of the queen to deposit eggs which produce male insects, without any previous fecundation by the male, is as easily discarded as that of endosmosis is accepted by the editor. Every entomologist, however, knows that female insects occasionally produce fertile eggs under similar conditions, and every bee-keeper knows that queen bees only produce male eggs if not impregnated by the twentieth or twenty-first day after her having hatched from the eggs, or if not impregnated at all; so is it equally certain that the queen must have the power of depositing male or female (worker) eggs at will on arriving at male or worker cells. All these facts are explained by parthenogenesis, which principle has now been further applied to explain the singular anomalies exhibited in the propagation of other insects, such as the Polistes amongst wasps, and the Strepsiptera. Major Munn, on the contrary, believes that in all these cases impregnation had really taken place. If such, however, had been the case, the anomaly in the production of nothing but male eggs would not have occurred. We have not space or inclination to enter into further detail on this subject, but would advise Major Munn to study Signor Bulbiani's paper on the development of the aphides in the last published part of the "Annales des Sciences Naturelles," and its beautiful figures, where he will be able to discover the proper name, structure, and functions of the organ which, in the description of Plate K, he has misnamed the "spermathetica," and then, perhaps, he will also be ashamed of having given to the world such a set of caricatures as are to be found in some of his own plates.

—— Under the title *Beiträge zur Systematischen Pflanzenkunde* (Observations on Systematic Botany), Professor Reichenbach has recently published a series of articles chiefly relating to Orchids, and specially interesting as containing a descriptive catalogue of the Orchids of Brown's "Prodromus."

Obituary.

We greatly regret to announce the death, in his 71st year, of M. Charles Lemaire, till lately editor of the "Illustration Horticole," a gentleman distinguished for his special knowledge of succulent plants and well versed in general botanical knowledge, as also in classical literature. M. Lemaire died in Paris, where he remained throughout the siege, suffering from a painful disease, and, we are sorry to add, in impoverished circumstances. We have received from his successor, M. André, a feeling tribute to his memory, which we shall have the melancholy satisfaction of publishing in our next issue.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, June 24, 1871.

Names of Stations.	Temperature of the Air.							Fall of Rain.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	71.2	47.0	24.2	69.4	50.7	18.7	58.2	0.95
Blackheath ..	72.9	47.5	25.4	66.4	51.4	15.0	56.2	1 50
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	68.8	44.3	24.5	62.1	49.3	12.8	53.9	1.74
Wolverhampton	67.7	40.9	26.8	62.0	47.9	14.1	53.1	2.11
Leicester ..	71.7	44.7	27.0	63.1	49.4	13.7	54.4	1.06
Norwich ..	70.0	42.0	28.0	63.2	48.2	15.0	53.9	1.42
Nottingham ..	70.7	44.5	26.2	64.6	49.2	15.4	55.1	0.98
Sheffield ..	66.0	43.6	22.4	59.8	48.1	11.7	52 1	1.39
Liverpool ..	65.2	44.4	20.8	60.6	49.0	11.6	53.0	1.48
Manchester ..	68.0	45.2	22.8	62.4	49.7	12.7	54.2	1.25
Salford	66.5	42.8	23.7	61.7	47.8	13.9	52.7	1 74
Bradford ..	70.0	44.0	26.0	61.8	48.4	13.4	53.3	1.27
Leeds	65.0	45.0	20.0	59.6	49.1	10.5	52.6	1.35
Hull	70.0	38.0	32.0	63.1	45.3	17.8	55.3	0.90
Newcastle ..	..	..	..	..	..	..	..	..
Edinburgh ..	66.7	39.0	27.7	..	..	..	50.0	0.60
Glasgow ..	69.0	43.0	26.0	..	..	..	52.9	0.76
Dundee.. ..	64.0	40.0	24.0	..	..	..	50.9	0.15
Aberdeen ..	64.9	42.3	22.6	..	..	..	50.8	0.02
Paisley	69.5	39.5	30.0	..	..	..	50.2	0.20
Greenock ..	67.0	48.0	19.0	..	..	..	54.9	0.07
Leith	66.0	42.8	23.2	..	..	..	51.6	0.50
Perth	73.0	40.0	33.0	..	..	..	53.9	0.73
Dublin	68.9	37.0	31.9	..	..	..	53.1	?

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, June 28, 1871.

1871. Month and Day.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
June.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
22. Thurs. .	29.77	51.9	51.0	50.1	94	4.1
23. Friday .	29.66	58.4	56.4	54.6	87	4.8
24. Satur. .	29.90	56.6	51.7	47.3	71	3.7
25. Sunday.	29.99	53.0	47.0	41.0	64	2.9
26 Monday	30.10	57.2	51.5	46.4	67	3.5
27. Tues. .	29.91	62.8	55.2	48.4	60	3.9
28. Wednes	29.51	64.1	60.5	57.6	79	5.1

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
June.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
22. Thurs. .	60.4	51.3	9.1	53.5	— 6.8	N.E.	165	0.45
23. Friday .	65.8	49.0	16.8	55.0	— 5.7	N.	235	0.12
24. Satur. ..	60.9	47.5	13.4	52.4	— 8.8	N.N.E.	250	0.00
25. Sunday.	60.6	41.7	18.9	49.4	—12.2	N.	325	0.00
26. Monday	65.4	42.7	22.7	52.2	— 9.5	N.	195	0.00
27. Tues. ..	69.1	40.0	29.1	52.7	— 8.0	WSW	225	0.00
28. Wednes	69.8	49.9	19 9	58.1	— 3 4	W.	415	0.03

June 22.—Overcast throughout. Rain fell continuously from 3 P.M. till midnight.
— 23.—Rain fell from midnight till 5 A.M. Generally cloudy during the day.
— 24.—Cloudy till night. Fine and nearly cloudless after 8 P.M. A few drops of rain fell occasionally.
— 25.—Variable amounts of cloud prevalent. Generally fine.
— 26.—A very fine day. Generally cloudless after 7 P.M.
— 27.—Variable but fine throughout. A cloudless night.
— 28.—Showers of rain fell in the early morning. Variable amounts of cloud were prevalent. Fine after noon.

JAMES GLAISHER.

Miscellaneous.

JUNE, 1871.*

MONTH of delights!—so poets tune
Their lyres to make them all appear;
But all these pleasant things, this year,
Were of the scantiest kind in June.

Sheep-bells did tinkle as of yore,
And scythes were whetted to cut hay;
But when in swathes, O, lack-a-day!
No chance to shake or turn it o'er.

June, in whose course we look with hopes,
And watch the tender swelling fruits;
But grubs and aphis on the shoots
Have this year nearly spoil'd the crops.

Month set apart for bedding out
The tenderest of our gaudy flowers;—
But cold east winds, and some hail showers,
Did all their earliest beauties flout.

Few midges danced above the streams,
Nor dragon-flies show'd on the wing;
And beetles nestled, shivering,
For want of the sun's brightening beams.

Snow-capp'd, at times, the higher hills,
And hoar frosts glitter'd in low sites,
With heavy rains and chilly nights:—
So June has brought us many ills. *W. T.*

THE ASPLENIUM LUCIDUM of New Zealand is regarded by the natives as a sacred plant, and Dr. George Bennett gives some interesting details of its superstitious uses. It is used by the Tohunga or priest when he is praying over a sick person, and endeavouring to avert the anger of the gods, to whose influence the illness of the individual is attributed; he waves a frond of this Fern over the patient, and, should it happen to break, it is regarded as a fatal omen. When the Tohunga consults the gods, previous to engaging in any war enterprise, he also waves a frond of this Fern whilst he offers up prayers to the spirits: if it breaks, it is supposed that the gods are averse to their engaging in war, and the enterprise is abandoned. It is also used by the natives as a badge of mourning: when a wife mourns for her husband, she sits wailing in her hut, with a frond of this Fern bound as a fillet around her head; and a husband performs the same ceremony when he loses his wife. They are careful not to burn this plant. It is also used when the chief has his hair cut: after the operation is performed, the chief holds a frond of this Fern in his hand, meanwhile the priest prays over him, taking the frond and shaking it; after which it is dipped in water, and shaken over the chief: if it breaks, it is regarded as a sign that he will not live long; and if one of the leaflets should break off, it is regarded as an omen that one of the family of the chief will soon die, but should the frond remain entire, it indicates success, health, and long life.

Garden Operations,

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THE earliest flowering plants of *Cape Pelargoniums*, whether of show or fancy varieties, will have passed their best, and will now need attention in regard to pruning back, as a preliminary to another season's active campaign. Cut them down somewhat severely, but with an eye to secure as many well-placed eyes on the old matured wood as possible. After this operation has been performed place them in a cold frame or similar position, and where rain cannot reach them. They should be kept somewhat dry at the root for two or three weeks to come, and until some little progress is made in the formation of young shoots. Seeds of that very showy greenhouse biennial, the *Schizanthus*, should be sown within the next week or two. Sow the seed in a rich unctuous fibrous loam, with a little sand, peat, and thoroughly pulverised cowdung intermixed. Seeds of *Herbaceous Calceolarias* should also be sown now, if not already done. Place the pans in a cool, shady frame, and where drips or heavy rain-showers cannot reach them. *Chrysanthemums*, where moderate bushy specimens are formed, may be again pinched back, though it is not desirable to pinch any back very severely after the first week in July, as this not unfrequently tends to decrease the size and beauty of the blooms. Afford manurial waterings alternately, and proceed with staking and tying, so as to be prepared for any wind storms that may occur. Repot *Vallotas* in equal parts of good peat, fibrous loam, with a dash of silver sand and well decomposed manure intermixed, in all instances where the roots require fresh soil or larger root space. Water them with moderate freedom during the next few months, and, indeed, until they push forth their blooms in or about August. Be particular at this season to keep *Tuberous Tropæolums* which are at rest dry at the root. The best way is to turn the pots containing the tubers upon their sides in a cool, moderately dry situation. Let me again draw attention to the fact that when bright sunshine does come, shading should be resorted to in most glass structures to which but a moderate quantity of air is admitted. This is the more necessary, owing to the fact that we have had so much dull weather of late. As soon as the weather becomes at all settled, it will be well to attend to any repairs, and painting and glazing that may be needed in greenhouses, cool pits, &c. Proceed with the potting of all plants requiring that process. The many delicate or newer varieties of plants that we have been unwilling to shift at an earlier date, may now be operated upon with greater freedom from risk, as these will now have time to make fresh roots, and re-establish themselves before the dull autumn months set in.

FORCING HOUSES.

Pines which are now advancing to the fruiting condition, or such as have undergone the preliminary stage to an early show, must now be regularly attended to, in regard to root-watering. It is difficult to say how frequently individual batches may need such attentions, as so very much depends upon the size of the pots they may be in, the texture of the loam, bottom-heat, &c. Should the weather prove dry and hot, however, they will need moderate supplies every three days or so, according to the dryness of the air and the amount of actual sun-heat. Those *Pines* which are about to ripen their fruit must be kept rather drier, from the time when, by imparting an agreeable odour to the air, and by a slight change of colour, they exhibit symptoms of ripening. Give air always during mild periods as freely as possible, but maintain such a degree of heat as has been suggested in past Calendars. *Vines* which are ripening their crops evenly and kindly may be permitted to grow a few young shoots, if they push forth freely and are not likely to give too much shade to the older and more matured foliage. By so doing, the necessary preparations for the future season's wood supply may be more successfully carried out. It has been previously suggested that late Grapes should be thinned more than those which may be termed mid-season ones, in view of their keeping better during the winter months, when a cold and necessarily damp atmosphere will often pervade the most carefully attended structures. Attend to the "root wants" of all *Young Vines* that are planted out. By neglecting to give periodical surface-waterings to such when they are planted out within-doors, we induce them to root too deeply, when, by greater attention, the roots may be maintained nearer the surface. *Orchard-house Trees* should now have a good mulching with rich, thoroughly-decomposed manure, and should be watered very frequently. Many kinds, such as *Peaches*, *Nectarines*, and *Plums*, will now have finished stoning, and should be treated very liberally in regard to syringing, so as to aid them as much as possible in the final swelling process.

HARDY FRUIT GARDEN.

In any case where the usual pruning, nailing, and thinning operations, connected with wall fruit trees, and which generally demand our greatest attention during the month of June, have not been completed, bring up all arrears with the utmost dispatch, for although the weather continued cold so long, and many things are backward in their growth in consequence, the year nevertheless does not loiter, and our routine of operations must keep pace with the seasons if we are to be prepared for the arrival of winter. The *Aphis pests*, especially black fly, seem to increase with amazing rapidity, even now when the young foliage has attained to a greater amount of consistency, and is more matured to withstand their attacks. Thin out the strongest breast wood or young shoots upon wall, espalier, and pyramidal *Pears*, *Apples*, &c., and shorten the points of the stronger ones remaining for a future season's tree increase.

HARDY FLOWER GARDEN.

Proceed with the layering of *Pinks*, *Carnations*, *Picotees*, and *Cloves*. Pegs should be prepared from old birch brooms, or similar material, some 3 or 4 inches in length, and nicely pointed. Provide a rich open compost, consisting of three parts loam and one each of decayed leaf-mould and sand. Clear away all litter from around the old plants, hoeing the soil deeply subsequently. Place a moderate mound of fresh soil around the plant, and proceed to prepare the shoots selected. First, pull off, without injury to the shoots, all old or injured leaves at the base of the young leaves of the current season's growth; then shorten the points of those young shoots selected. Now with a sharp knife make a slit from beyond a well matured joint upwards to the next one, which is nearer the growing point, and slanting inwardly at least half way, if this can be done without injury to the other half of the shoot. Having made the fresh soil moderately firm, make an opening therein some 2 inches deep, and place the shoot therein, choosing a peg and fixing down securely in such a manner as to leave the wound open, and so that some of the finer soil may fall within the cut, which is done by raising the point of the shoot gently upwards as the peg is being fixed firmly over its lower portion. Whilst the shoot is being held in its position place more soil firmly over and around it, and so proceed until all are done, when a nice gentle soaking of water from a fine-rosed watering-pot will nicely settle the soil amongst the whole. I have been somewhat more explicit, from a desire to aid those who, being uninitiated in the practice, nevertheless would like to perform this simple operation. Seedlings of either of the above may likewise be planted out permanently now. Be careful in doing so not to bury them too deeply, yet plant them permanently, notwithstanding. Bring *Box Clipping* to a close. Should a dry period follow the late changeable weather, remove the temporary lights from *Auriculas*, clearing from around their base any decaying leaves, and giving them every requisite attention in regard to root-watering during dry weather. *Belladonna Lilies* may now be transplanted where necessary, though it is not advisable to do so oftener than every three or four years. Propagate *Double Rockets* and *Scarlet Lychnis* by aid of the matured growths at the base of each bloom-spike, and, when properly prepared, dibble them into a cool, shady border.

KITCHEN GARDEN.

Following the late rains, transplant permanently more *Celery*, *Endives*, *Autumn Cauliflowers*, such as *Walcheren*, *Coleworts*, &c., for early winter supply. Plant out *Cardoons* in rows about 50 inches asunder, the plants being at a like distance apart in the rows. Thin out finally all *Salsafy*, *Scorzonera*, *Beet*, *Hamburgh Parsley*, grown for the roots, and *Rampion*, to the customary distances apart. Make sowings of *Cabbage* and *Colewort Seeds* for use, by means of successional transplantings, during the months of October, November, and December, when they will prove very useful. Seedling plants of *Thyme*, *Sweet Marjoram*, *Savory*, *Hyssop*, *Burnet*, *Borage*, *Angelica*, *Sorrel*, and all similar *Herbs*, for which a demand occurs, may likewise be permanently planted out on to a sheltered favourable border. Make an effort to master all weeds thus early, and so insure immunity from them during the season. *W. E.*

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* See page 811.

Notices to Correspondents.

ASPARAGUS SPINACH: *Tayler.* Chenopodium Quinoa. Certainly different from ordinary Spinach, or from Goosefoot, and acceptable for variation sake.

CHINESE MUSTARD: *Tayler.* We believe this to be a variety of the White Mustard, Brassica alba. Nos. 2 and 3 are also forms of B. alba. No. 4 is B. nigra, the Black Mustard.

FUNGUS: *W. M.* We have little doubt that your Fungus is that state of Agaricus disseminatus which occurs occasionally in grass plots. It is doubtless very near Coprinus, but dries up rather than melts. *M. J. B.* —*W. M.* The latest memoir on Penicillium that has fallen within our notice is that by E. Loew, in "Jahrbucher für Wissenschaftliche Botanik." Pringsheim. Vol. vii., part 4, p. 472—511. 1870. *M. J. B.*

GUN LICENSE: *H. R. V.* Yes, he must have a license to do so.

INSECT ON LAWN: *H. E., Greenaway.* The insect is the common tick, Ixodes Ricini. Their profusion on the lawn is probably due to the sheep which fed on it having been much infested, and dispensed them liberally around. For the sheep, the best remedy is careful washing with any good sheep wash, such as Girdwood's, or carbolic acid of proper strength. For the lawn we do not think you can use a better application than that you propose, a good dose of slack lime.

INSECTS: *T. M.* The insects on your Verbenas are one of the many species of Thrips. *I. O. W.*

MASDEVALLIA: *K. V.* You do not state the temperature, nor describe the atmospheric conditions or treatment. Probably the decay may arise from moisture hanging too continuously about the young tender growths. Masdevallias are essentially "cool" Orchids.

MEAN TEMPERATURE: *P. G.* For your purposes it will suffice to take the maximum and minimum twice a-day, add the sums together and divide by four, which will give you sufficiently nearly the mean temperature of the day; or, simpler still, observe the temperature between 9 and 10 A.M., at which time the thermometer indicates nearly the mean temperature of the day.

NAMES OF PLANTS: *A. W.* Orchis conopsea. We do not recognise the Fir.—*K. & L.* If wild, Geranium pratense.—*March.* Geum urbanum.—*D. A.* Deutzia scabra.—*A. G.* Sisymbrium officinale.—*C. W. S.* Oncidium triquetrum.—*E. C. C. D.* Scrophularia aquatica.

PASSION-FLOWER: *R. B.* There are some 200 species—which is the one you mean? None are poisonous, but only a few worth eating.

PITCHERS ON CABBAGE: *T. W.* These are not uncommon.

ROSES: *W. F.* Your Roses seem to have a complication of diseases. We observe Coleosporium pingue and Lecythea Rosæ, two leaf parasites, against which no remedy has been discovered. It is possible that there may be other fungal pests, but the specimens did not arrive in a good condition. *M. J. B.* We have also received, without any comment, specimens of the rootlets of some Moss (the old Conferva castanea), directed to King's Cliff instead of Sibbertoft.—*A. McM.* It would not be right to exhibit Noisette Roses for Tea Roses.

COMMUNICATIONS RECEIVED: C. C. H. G.—W. T. (original).—Constant Reader.—J. Hunter.—E. M.—E. F.—A. R. T.

Markets.

COVENT GARDEN.—June 30.

Markets generally have somewhat improved with the change of weather, importations being heavy, and comprising a large assortment of the articles usually sent at this season. Hothouse fruit is very plentiful, and of excellent quality.

FRUIT.

	s. d.		s. d.		s. d.		s. d.
Apples, per doz. ..	1 6	to	3 0	Oranges, per 100 ..	6 0	to	10 0
Grapes, per lb. ..	4 0	—	8 0	Peaches, per doz. ..	12 0	—	24 0
Lemons, per 100 ..	6 0	—	10 0	Pine-apples, per lb.	5 0	—	8 0
Nectarines, per doz.	10 0	—	15 0	Strawberries, p. lb.	0 6	—	2 6

VEGETABLES.

	s. d.		s. d.		s. d.		s. d.
Asparagus, p. bundle	4 0	—	6 0	Herbs, per bunch ..	0 2	to	0 4
Beet, per doz. ..	2 0	—	3 0	Horse Radish, p. bun.	3 0	—	5 0
Cabbages, p. doz. ..	1 3	—	1 9	Lettuces, per score ..	1 6	—	2 0
Carrots, p. bunch ..	0 8	—	1 0	— French Cos, each	0 9	—	..
				Mushrooms, p. pott.	2 0	—	3 0
— French, per bundle	1 0	—	2 0	Onions, per bunch ..	0 4	—	0 9
Cauliflowers, p. doz.	1 6	—	6 0	Parsley, p. bunch ..	0 4	—	0 6
— spring, each	0 6	—	1 0	Peas, per quart ..	1 6	—	2 0
Celery, red, p. bun.	1 6	—	2 0	Radishes, long, p. bun.	0 1½	—	..
— white, do. ..	1 0	—	1 6	— round, do. ..	0 2	—	..
Cucumbers, each ..	0 9	—	1 0	Rhubarb, p. bundle	0 3	—	0 6
French Beans, p. 100	2 0	—	3 0	Shallots, per lb. ..	0 8	—	..
Gooseberries, per				Spinach, per bushel	2 6	—	3 0
quart	0 4	—	0 6	Turnips, p. bunch ..	0 9	—	1 6

Potatos, New Round, 9*s.* to 13*s.*; Kidneys, 13*s.* to 20*s.* per cwt.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.
6, Bankside, Southwark, London, S.E.

JAMES BOYD AND SONS, HORTICULTURAL BUILDERS and HEATING ENGINEERS, Paisley, N.B.
CONSERVATORIES, GREENHOUSES, VINERIES, FORCING HOUSES, PITS, and every description of Horticultural Building, manufactured in Wood or Iron by Steam power Machinery, and erected in any part of the United Kingdom. Manufacturers of Hot-water Apparatus for Heating Churches, Mansions, Warehouses, &c.
Plans and estimates on application.

BICKLEYS' PATENT HORIZONTAL SASH BARS require neither Paint nor Putty, and are the cheapest and best for Orchard-houses, Greenhouses, and Roofs of all kinds.
One hundred feet can be firmly glazed or unglazed in one hour. An ORCHARD HOUSE constructed with these Bars will be Exhibited at the Royal Horticultural Society's Show at Nottingham, June 27; also at Wolverhampton, July 8.
Made only by the Inventor and Patentee, THOMAS A. BICKLEY, 70, Smallbrook Street, Birmingham.

THE ACME GARDEN FRAME and GROUND VINERY.
The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
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Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

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For Mowing Machines,

APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free

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J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from 2*d.* to 5*d.* per yard, advancing ¼*d.*
54-inch Hessian and Scrim, 3*d.*, 3½*d.*, 4*d.*, 4½*d.* and 5½*d.*
72 " " " 4½*d.*, 5½*d.*, 6*d.*, 6½*d.*, and upwards.
J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

WASPS.—HAYTHORN'S HEXAGON and CHISWICK GARDEN NETS are guaranteed to Protect all kinds of Fruit from Wasps, Birds, Flies, &c. They are used and recommended by all the principal Gardeners.—For Patterns and Prices, free by post, please direct to Mr. HAYTHORN, Nottingham.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING for Protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards, 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards, 20*s.* NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¾-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard. Also TIFFANY. Can be had in any quantity of
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EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at 1*d.* per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.
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WOOL NETTING, 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1*s.* 9*d.* per yard.
Three yards wide	2*s.* 8*d.* per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.
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WANTED, an active, trustworthy MAN, to take the entire Management of a Retail Seed Business.—Apply, stating terms, to J. SCOTT, Merriott, Somerset.

WILLIAM SCALING, WILLOW NURSERYMAN, is in WANT of a competent WORKING FOREMAN. He must be expert at Budding.—Apply, in own handwriting, stating age and wages required, to W. SCALING, Basford, Notts.

WANTED, a GROUND FOREMAN; must be a good Budder, Grafter, and Packer. A single Man preferred. Wages, 25*s.* per week.—Applicants to state age and experience to ALEXANDER BROWN, Millport Nurseries, near Glasgow.

WANTED IMMEDIATELY, a general NURSERY FOREMAN, PROPAGATOR and good PLANT GROWER, well up in all branches of the Trade. Good reference indispensable.—SAM DYER, The Nurseries, Bridgwater.

WANTED IMMEDIATELY, a practical NURSERY FOREMAN.—One that thoroughly understands Shrubs, Fruit Trees and general Nursery Stock.—Apply by letter, stating reference and wages required, to J. SALTMARSH AND SON, The Nurseries, Chelmsford, Essex.

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REPORT and ANALYSIS by DR. A. VOELCKER. Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need therefore hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully.

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

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SILVER SAND and PEAT, in any quantity.—This Sand is acknowledged by Florists to be the best yet obtained. Price Lists on application to Mr. JOHN ARNOLD, Builder, 29, Clarendon Square, St. Pancras, N.W. Small orders executed at the Wharf, Maiden Lane, North-Western Railway Depot.

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"PHYTOSMEGMA," or PLANT CLEANSER, destroys Scale, Mealy Bug, Red Spider, &c., without injury to Plants; *6d.* and 1*s.* per bottle.

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TO BE LET, on a 20 years' Lease, from Michaelmas next, 13½ ACRES of good LAND, very favourably situated, close to the London and South-Western Railway Station, Ashford, Middlesex. B. B., Post Office, Staines.

TO BE SOLD, by Tender, pursuant to an Order of the High Court of Chancery, made in a cause of Meldrum *v* Hayes, with the approbation of the Vice-Chancellor Bacon, at the Office of Mr. John Bolton, of Kendal, in the County of Westmoreland, Solicitor, on TUESDAY, the 25th day of July, 1871, at 3 o'Clock in the afternoon precisely (unless previously disposed of by Private Contract), the GOODWILL and STOCK in TRADE of the BUSINESS of NURSERYMAN and SEEDSMAN of the late JAMES MELDRUM deceased, now carried on by his Executors, at the Nurseries, at Castle Street, Mints Feet, Canal Head and Skewbarrow Garden, at Kendal aforesaid, and at the Shop and Premises situate in the Market Place, Kendal. The said Nurseries consist of about 14a. or. op., of Land laid out as Gardens and well stocked.

Particulars of the Stock, and particulars and conditions of Sale and Forms of Tender may be had gratis of the said Mr. JOHN BOLTON, of Kendal, aforesaid, and of Mr. JOHN WILSON, Solicitor, Kendal.

Dated this 23d day of June, 1871.

JOSHUA BIRD ALLEN, Chief Clerk.

NICOL & SON, 88, Queen Street, Cheapside, London,
Plaintiff's Solicitors.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

SEED BUSINESS, in Yeovil, Somerset, for SALE: worth £500 per annum. Situate in the best corner shop of the town, and close to the Market House, and commands one of the best countries in the West for Farming and Gardening. It consists of Stock in Trade, Fixtures, and Lease (7 years unexpired, and low rent). The Balance-Sheets and Books for the last 12 years can be examined. Reason for sale is that the present Manager, who has been so for the last 11 years, is about to leave; and the Proprietor, having an extensive Nursery business, has not the requisite time to attend to the Seed Department. Price £1200.

J. SCOTT, Merriott, Somerset.

Pine-apple Place, Maida Vale, Edgware Road.

MR. J. C. STEVENS begs to announce that he has received instructions to offer for SALE, by Private Contract, the LEASE (38 years unexpired), STOCK, and GOODWILL of the old and well-known NURSERIES of Messrs. ARTHUR HENDERSON & CO., which have been established upwards of a century.

Full particulars can be obtained of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, London, W. C.

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Imported and Established Orchids, Palm Seeds, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, July 4, at half-past 12 o'Clock precisely, Several COLLECTIONS of ESTABLISHED ORCHIDS, including many fine plants; an importation of ORCHIDS and BULBS from India; 112,000 SEEDS of PALMS, and other Plants, from Petropolis; and a variety of choice GREENHOUSE FERNS.

On view the morning of Sale, and Catalogues had.

Rare Orchids.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, July 6, at half-past 12 o'Clock precisely, a magnificent importation of RARE ORCHIDS, including Vanda Cathcarti (rare), V. Roxburghi, V. Roxburghi cœrulea, V. cristata (rare), V. Batemanii, Dendrobium taurinum, Aerides Lindleyana, A. Warneri, Saccolabium giganteum, S. Harrisoni, fine new Aerides in the way of maculosum, with spotted leaves; Cattleya Aclandæ, &c., all in the finest possible health.

On view the morning of Sale, and Catalogues had.

Orpines, Wateringbury, Kent.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD is favoured with instructions to announce for SALE by AUCTION, without reserve, at Orpines, on WEDNESDAY, July 5 next, 45 Head of First-class SHORTHORN HEIFERS and YOUNG BULLS, from Messrs. F. Leney & Son's renowned Herd, which has been bred with great care, and without regard to cost, from the best sources. They are chiefly by Bulls of the unrivalled Duchess and Oxford blood, and from Cows of the favourite Knightley strain, including Charmers, Fawsleys, Sweethearts, and other very choice tribes. Fully half the Stock are by 15th Grand Duke (21,852), who has proved himself a Sire of the very first class, and they do credit to this favourite line of blood. Amongst the Bulls will be found a very promising rich roan Calf, from the magnificent 7th Duchess of Geneva; and the whole can be recommended with confidence to the favourable notice of purchasers.

Catalogues, with Pedigrees and other particulars, may be had on application to Mr. STRAFFORD, 13, Euston Square, London; or of Messrs. LENEY AND SON, Orpines, Wateringbury, Kent.

Smeeth, near Ashford, Kent.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions from Mr. F. Murton, of Smeeth, near Ashford, Kent, to announce for SALE by AUCTION, without reserve, on THURSDAY, July 6 next, his entire Herd of Pure-bred SHORTHORNS, consisting of about 40 Head of Bulls, Cows, and Heifers, that have been bred from good and fashionable herds, such as Lord Feversham's, Messrs Clayden, Langston, Wells, and other noted breeders The Young Stock are chiefly by King Oberon (26,511) and Safeguard (27,409); the latter is now in service. Also will be offered 25 very superior KENTISH RAMS, for which Mr. Murton is so famed as a breeder.

Catalogues, with Pedigrees and other particulars, may be had on application to Mr. MURTON, Smeeth, Ashford, Kent; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Biddenham Annual Sale.

MR. STRAFFORD is instructed by Mr. Charles Howard, of Biddenham, near Bedford, to announce that the ANNUAL SALE by AUCTION will take place on FRIDAY, July 28, and will consist of about FIFTY OXFORDSHIRE DOWN SHEARLING RAMS and a few OLDER SHEEP.

Luncheon at 1 o'Clock; the Sale immediately afterwards.

Biddenham is within a mile of the Midland Station at Bedford, where conveyances will meet the trains.

London: 13, Euston Square, N.W.—July 1.

Important Shorthorn Sales.

MR. JOHN THORNTON will SELL by AUCTION the following HERDS of PURE-BRED SHORTHORNS, several of which are of a very first-class and choice character.

THURSDAY, August 3, the second day of the Yorkshire Show, in a field adjoining the Railway and the Show Ground, at BOOTHAM, Stray, York, about FORTY HEAD, from the Rev. J. D. Jefferson's herd, including some of the Waterloos, Daisy, J, and other choice tribes, crossed with bulls of Bates blood.

WEDNESDAY, August 23.—The celebrated and first-class HERD bred by the late Thos. Barnes, Esq., at WESTLAND, Kells, Co. Meath, Ireland, from the best Booth blood for the last 30 years. The small select HERD, the property of R. W. Reynell, Esq., will be SOLD at the same time and place.

FRIDAY, August 25.—The first-class HERD bred by J. G. Grove, Esq., at CASTLE GROVE, Letterkenny, Ireland, including several of the Fame family, crossed with Mr. Booth's bulls for many years.

TUESDAY, September 12.—At BROCKTON HOUSE, Eccleshall, Staffordshire, Mr. T. Bell's entire HERD, bred for 32 years from the far-famed Bates blood.

THURSDAY, September 14.—Messrs. Dudding's entire HERD, at PANTON HOUSE, Wragby, Lincolnshire, comprising about 100 head, including several prize winners. Mr. Booth's Manfred (26,801) is now in use.

FRIDAY, September 22.—The first-class herd at CHAPEL BRAMPTON, Northampton, the property of J. N. Beasley, Esq., consisting of the favourite J tribe, crossed with first-class Bates blood.

TUESDAY, September 26.—About 40 HEAD, including several of the Blanche and Nonpareil tribes, crossed with Bates blood, belonging to Mr. Wm. Ashburner, at NETHERHOUSES, Ulverstone.

The late Sir John Rolt's HERD will also be SOLD during the autumn at OZLEWORTH PARK, Wootton-under-Edge, Gloucestershire.

JOHN THORNTON, 15, Langham Place, Regent Street, W.—July 1.

The Royal Agricultural Show, Wolverhampton, 1817.

STAND 348.

SUTTON AND SONS, SEEDSMEN by appointment to the Queen and H.R.H. the Prince of Wales, will exhibit their—

SEED MUSEUM of AGRICULTURAL, HORTICULTURAL, and FLORICULTURAL PRODUCE,

Including 1000 Separate Varieties of Seeds, 250 Specimens of Dried Natural Grasses, and some of Suttons' Improved Italian Rye-grass 6 feet 3 inches in height.

All Goods Carriage Free. 5 per cent. allowed for cash payment.

Priced Descriptive CATALOGUES on application to

SUTTON AND SONS, Stand 348, Show Yard, Wolverhampton; and Royal Berks Seed Establishment, Reading.

THE LANDS IMPROVEMENT COMPANY.
(Incorporated by Special Acts of Purliament.)
Drainage, Reclamation, Farm Buildings, Labourers' Cottages, &c.

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The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

UTILISATION of SEWAGE.—The Company also advances money for the purpose of Works of Sewage Irrigation.

The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

No investigation of title is required.

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Agricultural Improvements of every kind are executed by the Company, or the outlay thereon repaid to Landowners who prefer carrying out the works by their own agents.

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Special arrangements will be made with Boards of Health, Sewer Authorities, and others, for undertaking Works of Sewage Irrigation, together with all Works incidental thereto. The outlay in respect thereof may be repaid either by a sum in gross, or by a terminable yearly payment, discharging in a fixed period the principal amount with interest thereon.

Application to be made to ARTHUR MILMAN, Esq., the Secretary, at the Offices of the Company, 22, Whitehall Place, S.W.

MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY.—Prize Lists for the Show at Liverpool in SEPTEMBER NEXT may be had on application to the Secretary. Upwards of THREE THOUSAND POUNDS are offered in PRIZES, including £100 for the best Hunter, £80 for the best Short-horned Bull, upwards of £220 for Dogs, £250 for Poultry, upwards of £225 for Pigs, and £300 for Sheep. ENTRIES CLOSE AUGUST 1.

Winsford, Cheshire. THOMAS RIGBY, Secretary.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.

WOLVERHAMPTON MEETING, 1871.
SHOW of HORSES, CATTLE, SHEEP, PIGS, and IMPLEMENTS.
SATURDAY, July 8, to FRIDAY, July 14.

Admission—Saturday (Implement Yard only), 2*s.* *6d.* Entire Showyard—Monday, 5*s.*; Tuesday and Wednesday, 2*s.* *6d.* Thursday and Friday, 1*s.*

Season Tickets, price 10*s.* *6d.*, available from July 8 to July 14, may be obtained of Messrs. SOLLOM AND BARNETT, Wolverhampton; or of

H. M. JENKINS, Secretary.
12, Hanover Square, London, W.

The Agricultural Gazette.

SATURDAY, JULY 1, 1871.

MEETINGS FOR THE TWO FOLLOWING WEEKS.

July 3 to July 8	Agricultural Society's Meeting at Wolverhampton—Trial of Steam Cultivators.
July 10 to July 14	Agricultural Society's Meeting at Wolverhampton—Showyard open on Monday for open judging.

IT is a curious illustration of the way in which an engrossing subject gathers food from every quarter, that a recent article in the *Daily News* on the Census of 1871 ends in a discussion of THE SEWAGE QUESTION as its proper issue and conclusion. The population is more and more massing itself in towns. Rivers—the natural drainage system of the country—are thus becoming more and more polluted. The town which robs the country of its power for cultivation robs it also of one great means of its fertility. Man, the best "farm stock" in the world, is, by the force of circumstances, being more and more turned to wasteful and even to mischievous account. The water supply of our great towns is being perfected—the water-closet is everywhere adopted, and the sewerage of house and street is carrying valuable manure to waste—and the whole evil is growing with the growth of population and of improved town management.

Meanwhile the hopes of those who imagine that from the ton of sewage which, in ordinary circumstances, proceeds every ten days from each member of a town population, it may be possible to precipitate the small quantity of fertilising matter which it contains, so as to obtain a solid manure suitable to ordinary farm management, have been aroused by the announcement of a company using Dr. FORBES' patent for this purpose. A phosphate of alumina, insoluble, and therefore useless in its natural condition, has been found in large quantities in a West Indian island. This is decomposed by sulphuric acid, and the mixture of phosphoric acid and alum thus obtained is passed into the sewage as it flows from the mouth of any town drain. The alum, decomposed by the lime in the dirty water, throws down its clay, and this flocculent precipitate carries with it all the suspended matter of the sewage, which is thus clarified and dismissed in a clear and an apparently clean condition. Moreover, to the stream in which the mixture of alum and phosphoric acid flows to mix with the sewage, a small trickle of milk of lime is added; and this unites with the phosphoric acid, and the neutral phosphate of lime, in extremely fine division, also falls, and thus helps both to hasten the precipitation of the sewage and to increase the value for agricultural purposes of the precipitated material. A sediment composed of the mud of sewage, to which 20 to 30 per cent. of phosphate of lime has been added, is a valuable manure, and though it has been hitherto true that the mud of sewage as thrown down by the "A. B. C." and other precipitating processes has been of little value, yet now that the precipitant contains a large quantity of phosphate of lime, it is probable that sewage mud may have a considerable marketable value. If this result should be obtained along with a purification of the sewage, enabling it to run with impunity into any stream or river course, it would certainly be a fact of great importance towards the achievement of a satisfactory plan of sewage utilisation. Unfortunately we are not yet able to say that it is. The effluent water goes off clear, but not necessarily—and, indeed, not probably—clean. Unless some result very different from all hitherto known results of alum precipitation be in this case obtained, the effluent water, though clear, will not prove to be clean—it will be still putrescible. Containing organic matter in solution, this will putrify in hot weather, and the nuisance will not be abated.

We fear, therefore, we are no nearer, even yet, to the achievement of any success in sewage purification by precipitation. The only plan by which sewage can be utilised at the same time that it is purified, is by offering it to the roots of growing plants. They will feed on its filth, converting it into useful food, and the water will thus go from them purified. The supremacy of sewage irrigation, including within its single agency as it does all the methods, whether of treatment by mass of earth, or treatment by intermittent mixture in the earth with air, or treatment by bringing to bear upon its contents the influences of the various chemical substances which the soil contains—at the same time that all the while the main and leading agency of using the filth directly as plant food is in full operation—seems to be more and more established. Every other scheme results more or less in failure. This alone has always been more or less a success, and towns, large and small,—Norwich, Bury, Chelmsford, Croydon, Norwood, Worthing, Reading, Merthyr, Birmingham, Blackburn,—are being gradually driven to its adoption. In this way, ultimately, we may hope that some return may at length be made by the town to the country for that process of depletion and exhaustion which, our census returns show to us, have been for so long a time in constantly increasing operation.

WE shall not be able to give our readers any serviceable account of the proceedings of the great agricultural meeting at Wolverhampton until Saturday next. These proceedings have, however, really begun this week—and a staff of stewards, judges, and officials have been engaged, at first under difficult, but latterly under more favourable circumstances, in subjecting the various steam-cultivating machinery which has been entered in competition for the Society's prizes to the preliminary trial, which will no doubt have the effect of weeding the list of the less efficient implements, so as to enable a concentration of the testing process next week upon the smaller number which survive the trials that are now proceeding. The prolonged examination thus given cannot fail, we should think, to increase the confidence of those who are intending to adopt steam cultivation, and who may be waiting for an authoritative verdict for their guidance. The competition for Lord VERNON'S prize of £100, offered for the best combination of machinery for the cultivation of the soil by steam-power, the cost of which shall not exceed £700—the engine to be locomotive, and adapted for threshing and other farm purposes—is not a very extensive one: Messrs. HOWARD and Messrs. FOWLER alone having entered for it; but it is an extremely interesting one, and no doubt many are waiting the issue of the trial.

The prizes offered by the Society are (1) for the best combination of machinery for the cultivation of the soil by steam-power, £100 and £50; (2) for the best combination of machinery for the cultivation of the soil by steam-power, the weight of the steam-engine not to exceed 10 tons, £50 and £25; (3) for the best combination of machinery for the cultivation of the soil by an ordinary agricultural engine, whether self-propelling or portable, £50 and £25; (4) for the best windlass, £20; (5) for the best snatch-block, £10; (6) for the best plough suitable for steam cultivation, £25; (7) for the best subsoiler suitable for steam cultivation, £20; (8) for the best digger, £25; (9) for the best cultivator, £25; (10) for the best steam-plough or scarifier, £20; (11) for the best roller suitable for steam cultivation, £10; (12) for the best harrow, £10; (13) for the best drill, £10; (14) for the best root or stone extractor, £10; (15) for the best combination of those implements not qualified to compete in classes 1, 2, and 3, £10; (16) for the best implement or part of tackle suitable for steam cultivation of any other description not qualified to compete in the preceding classes, £20; (17) for the best agricultural locomotive engine applicable to the ordinary requirements of farming, £50; and (18) for the best waggon for agricultural purposes, to be drawn by an agricultural locomotive engine, £20. For these several prizes there are entries in the various classes varying from three to thirteen in number.

No one will deny the merit of great completeness to the scheme by which it has been thus attempted to cover the whole field of steam cultivation with motive to improvement: and we are glad to see that a very large number of the agricultural machine-makers of the country come forward to compete. Messrs. FOWLER & Co., and Messrs. HOWARD & Co., are, of course, the largest competitors. Messrs. RANSOME, TUXFORD, AVELING, AMIES & BARFORD, BARROW, BURRELL, COLEMAN, HAYES, ROBY, WILLIAMS, and others, in alphabetic order, are also present; and the list of judges, including names both new and old—Messrs. BRAMWELL, HEMSTEY, HICHIN and SHERBORN, among the former, Messrs. MENELAUS, of Dowlas, Major GRANTHAM, Messrs. KAY, of Darlington, and KIMBER, of Abingdon, among the latter, is ample and strong enough to give confidence in their decisions.

The trial is being held on the farm of Mr. TAYLOR, Barnhurst, rather more than a mile from Codsall Station, and nearly three miles from Wolverhampton. It commenced on Tuesday morning with Messrs. FOWLER'S two 20-horse power engines and their 13-tine cultivator, by which, after some little difficulty, owing to the quantity of Couch in the land, 3 acres of land were torn up and cultivated 9 inches deep within an hour. Another pair of engines of less power afterwards did some good work with a smaller cultivator, and a single engine subsequently worked a 7-tine balance cultivator, taking a width of 6 feet. There was a fourth set of FOWLER'S tackle tried later in the day, in which a 7-tine turning cultivator was worked with an 8-horse power double-drum engine and disc anchor.

The Ravensthorpe Iron Company then exhibited at work FISKEN'S patent process, in which, as our readers know, a light rope driven at 10 times the rate of the implement that is being drawn, gives the requisite speed to the plough or cultivator, which thus makes its way to and fro across the field with a comparatively small strain on any rope or anchorage on which it pulls. These occupied the judges on Tuesday. On the following day Messrs. HOWARD'S double engine set of tackle and Messrs. BARROWS & STEWART'S roundabout tackle were submitted to similar tests, in the presence of Messrs. MENELAUS, C.E., and Messrs. HEMSLEY and SHERBORN; and the other judges were engaged in testing the ploughs and other implements in classes 4 to 16. An accident to one of Messrs. HOWARD'S engines has had the effect of postponing a portion of the competition in which they are engaged, until the final trial on the stiff land provided for it near Stafford.

The whole of these trials will be described in detail next week, when we hope also to lay before our readers some account of the other contents of the showyard.

A NORTH LANCASHIRE correspondent supplies us with a satisfactory explanation of that NON-INCREASE of the AGRICULTURAL POPULATION which successive census returns reveal. The decrease of the agricultural class in England may to some extent be attributed to the introduction of farm machinery — threshing, mowing, reaping, hay-making, pulping, and turnip-slicing machines. The greater part of these are now in general use, not only on large holdings, but almost on every farm, from 30 acres upwards, throughout the country. Before the common use of these machines, which are now regarded as an indispensable part of the equipment of a farm, all the uses to which they are devoted were performed by hand labour. By their aid the holder of a few acres, who kept but two men-servants, is now enabled to work his little farm with the assistance of a boy; and whatever his acreage may be, the agriculturist is enabled to dispense with a proportionate amount of manual labour. Some years ago, in the districts of North Lancashire and Yorkshire, where the time of hay and grain harvest varies a little, the harvestmen used to go in large companies from one county to the other; and a farm of 500 or 600 acres required from 50 to 100 additional hands to get in the harvest, the time employed varying from a fortnight to a month or six weeks, according to weather, and every room and available outbuilding was brought into requisition as a lodging. Those drones of harvestmen are now things of the past, and by the aid of machinery harvest operations are usually now completed in a very short time. The old adage, "As one door shuts another opens," has had its application here. North Lancashire, from an isolated agricultural district a few years ago, is now become one of the most important iron-mining and iron-producing districts of the kingdom, and the agricultural labourer, driven from his legitimate employment, finds better wages and shorter hours of labour at the mines and the blast furnaces.

The above reasons for the decline of the agricultural population apply with equal force to the counties of Yorkshire, Westmoreland, North Lancashire, Cumberland, and some of the border districts of Scotland. At the recent agricultural hirings, held in these counties, the following have been the average rates of wages paid for the half year:—Best men, £13 to £16; second class, £9 to £11; boys, £4 to £6;—first-class women, £6 to £10; second class, £5 to £7—(domestic servants, ranging from girls of 16—maids of all work—to experienced cooks, varied from £4 to £15); to this, of course, is added a good dietary, all found by the master. The food in farmhouses is plain, but of the best and most substantial kind: breakfast of good milk porridge, and bread and cheese—bread and cheese and beer in the forenoon—substantial meat and Potato dinner, with pudding and bread and cheese and beer—supper of milk porridge, and bread and cheese, or, very frequently, bread and meat (cold from dinner) and beer: tea on Sundays. On these terms the utmost difficulty is experienced in procuring farm servants. It is thus only that the agricultural labourer can be kept in the fields and homesteads of the North. How much easier is it not to account for the phenomenon of a reduced agricultural population in the South, where agricultural wages are so much lower.

—— PRICES have been unchanged, with, however, rather a downward tendency, in Mark Lane during the past week. There has been a very small supply of English Wheat offered, but the receipts from abroad were more liberal. —— In the Metropolitan Cattle Market the number of beasts has been larger, that of sheep shorter, than usual; a fair clearance of both has been effected, and prices have been maintained.

—— The Act of last session, requiring a TEN SHILLINGS LICENCE to be taken out yearly by every person carrying a gun, came into operation last August. Before the close of the financial year on March 31, 1871, 93,679 licences were issued—83,048 in England, 7615 in Scotland, and 3016 in Ireland. 965 cases were reported to the Excise of guns without licences, and 710 prosecutions were instituted.

—— Messrs. SUTTON, of Reading, send us a single ear and straw of their Italian Rye-grass, 5 feet 6 inches long, together with a note from Mr. J. SNOOK, of the Irrigation Farm, Norwood, in which he states that the average weight of the first cut there this year is no less than 28 tons per acre!

—— If any one would appreciate the conservative effect upon the soil of a vegetable coating, whether of grass or cultivated crops, by witnessing the extraordinary POWER of ORDINARY RAINFALL under circumstances fatal to the growth of plants, he should visit the neighbourhood of Swansea. The sulphurous gas from the copper smelting works in that neighbourhood has involved woodland, crop-land and pasture in one common destruction. The visible plant has disappeared, and the root accordingly is dead and gone. The consequence appears in fields, once cultivated and yielding large and valuable produce, now entirely bare; while, even where the slopes are not excessive, the whole surface is furrowed and seamed so as only an excessive flood or waterfall could, under ordinary circumstances, have shown its power. There is nothing to hold the soil together, and the fine particles are washed away. The gravel in the midst of the soil at length is bared, and, by-and-by, the fainfall collecting into rills upon this gravel surface, furrows out deeper channels for itself, until at length that which was a fertile meadow, or a market garden, is scored and seamed, and covered with *débris* of rock, as if the victim of an avalanche of stones, such as one sees in upland Alpine valleys. When the slopes are greater the result is even more extraordinary; and it appears as if the tender roots of grass, which are here destroyed, were the only safeguard which hinders in our climate the conversion of our hill sides into cliffs, and our lower slopes into barren wastes of gravel.

—— The Rev. M. J. BERKELEY would be much obliged if Mr. ODAMS' friend, whose specimens of diseased Wheat have reached him after considerable delay, would be good enough to forward further specimens to him at the Horticultural Society, South Kensington.

OUR LIVE STOCK.

CATTLE.

THE sale of Alderneys at Buckhurst Farm, Berks, noticed in a recent impression, came off on the 23d ult., when Mr. Thornton sold 13 pure-bred animals. One lot, *Minnie*, brought £20 10*s.*; lot 2 brought £18 10*s.*, and other heifers made from £10 10*s.* to £15, according to age.

—— The following Booth cattle were shipped from Liverpool on board the Magellan, last May, for Messrs. Delgado Brothers & Sons, of Callao, Peru:—VISCOUNT, calved April 8, 1870, bred by Mr. E. J. Smith, Islanmore, County Limerick, got by THE EARL (27,623), and out of *Lunette* by BEST HOPE (23,413); *Charming Nell*, bred by Mr. Jefferson, Preston Hows, got by KING CHARMING (22,033), and of the "Gwynne" or "Princess" tribe; and, lastly, *Dainty Dame*, also bred by Mr. Jefferson, by CHARMING (22,033), and descended from *Duchess* by CLEVELAND LAD (3407). VISCOUNT won the 3d prize in a class of 135 animals at the Royal Dublin show this year. His sire, THE EARL, stood 2d at the same show three years in succession, and was out of the dam of the well-known SOVEREIGN. *Charming Nell* is in calf to Mr. Booth's VAIN HOPE (23,102) by LORD OF THE VALLEY (14,837), the sire of *Lady Fragrant*. *Dainty Dame* is in calf to KNIGHT OF THE SHIRE (26,552) by COMMANDER-IN-CHIEF (21,451), the 1st prize bull at the Royal Agricultural Society of England's meeting in 1868.

—— The Smeeth sale takes place on Thursday, July 6, the day after the Wateringbury sale, and will be conducted by Mr. Strafford. *Myra*, lot 1, the first cow in the catalogue, is by PHOTOGRAPH (20,492), and from *Mint* by CAPTAIN SHAFTO (6833), a good strain, which traces through such well-known names, as *Titania*, *Zinc*, *Roguery*, and *Pageant*, to stock long bred by Mr. Mason of Chilton. Four heifers and a young bull, all from this cow, will be sold. Lot 2, *Kentish Lassie* by THE DON (18,980), is the first of a group of 16 individuals which owe their origin to *Miss Beau* by THE BEAU (12,182), a son of BELLEVILLE (778), from Mr. Bates' *Cambridge Rose 6th* by 3D DUKE OF YORK. Lot 3, by THE DON (18,980), is the first of four representatives of *Juventus* by LOCKSLEY (4240), and *Juventus* by STANHOPE (5315); *Princess* by the DON, and out of *Red Empress* by CAMBRIDGE GRAND DUKE (15,722) comes of the *Verbena* by CEDRIC tribe; *Wanton*, by KENTISH LAD (22,027, is a grand-daughter of *Wanton* by MAMELUKE (13,289), and the female section of the catalogue contains other well bred animals. In the bull section are SAFEGUARD (27,409), by GRAND DUKE OF ESSEX 4TH (24,068), and out of *Surmise 4th* by 2D DUKE OF KENT, and some young bulls of the tribes above noticed. Most of the cows and heifers are in calf to the last named bull, and he is included in the sale. Smeeth station adjoins the farm, and is four miles from Ashford, a central station on the South-Eastern line from London to Folkestone and Dover.

—— The Farnley Hall sale, in which the entire herd, so long bred by the late F. H. Fawkes, Esq., is to be disposed of, takes place on August 1. Mr. Strafford informs us that the present herd has been bred with "great care and judgment" for 40 years, and that it commenced with animals from the herds of Messrs. J. Whitaker and R. Booth—"NORFOLK (2377) by Mr. Bates' 2D HUBBUCK (1423) was purchased from the former in 1832, and was followed in the succeeding year by Mr. Booth's *Medora* and *Verbena*." Other ancestresses of the herd were *Laura* by BOUGHTON (2868), bred by the Duke of Buccleuch; *Spots* by GARTON (2052), and *Thornasine* by STILLINGTON. Upon examining the catalogue further we find these good strains of blood have been further improved by the use of NORFOLK (2377), SIR THOMAS FAIRFAX (5196), LAUDABLE (9282), BORROWBY BOY (9980), BEAUFORT (9943), LORD MARQUIS (10,459), REFORMER (18,687), LORD COBHAM (20,164), and REFORMER (24,930). The young stock are principally by LORD DARLINGTON (26,633), a son of DUKE OF DARLINGTON (21,586), and *Anemone* by DUKE OF KENT (19,619), and of the *Acomb* by BELVEDERE tribe.

ON FACILITATING THE TRANSFER OF LAND.

THE heavy expense of investigating the title to real estate has long been felt; and though Parliament has often made attempts to remedy the grievance, nothing effectual has yet been done.

I have drawn, in outline only, a scheme which would, I think, reduce to a minimum the labour, and consequently the expense, of investigating titles. The substance of it is far from new, and may be stated in a single sentence. It is simply to give absolute power of sale to the person or persons in whom the legal estate vests. The purchaser, then, would need only to see that this estate really vests in the vendor.

Now the proposition will be met, at the outset, by two objections. 1st, That it will jeopardise trust property; 2d, That it will injure the lawyers.

In reply to the first, why should trustees be more likely to deal fraudulently with land than with consols? No one fears putting consols into trust, though the trustees have absolute power of sale, and the sale of land is a more public transaction than the transfer of stock. I have, however, endeavoured to give security against a wrongful sale by trustees.

The second objection is founded on truth, for what the parties gain the lawyers will lose. But for the comfort of the latter I would state that my plan is not one which, like magic, is to convert bad titles into good. Though it sows the seeds of a better state of things, it will not produce its full fruit for many years.

Now then for details. Let a "Commissioner of Landed Estates" be appointed, with deputies where needed. The use of this Commissioner will appear hereafter. His office may, by fees, be made self-supporting.

The first case of transfer which presents itself is the sale by a freeholder. This can hardly be simplified. The Act would, however, give a form (No. 1), containing, 1st, the names of the parties; 2d, the consideration; 3d, description of the land; and, 4th, notice of fee-farm rents or other liabilities. A copyholder would convey by a similar deed, specifying heriots and alienation fees.

Perhaps it would be convenient to hold, in accordance with the principles of Roman law, that a deed executed according to the prescribed form implied covenant for good title, and that vendors who wished to avoid this liability must enter into a separate agreement with the purchaser.

The second case is that of mortgage with power of sale. Here the form (No. 2) would differ from No. 1 only in reciting,—"In consideration of £——, secured by a mortgage deed of even date herewith." If it be objected that two deeds will thus be required instead of one, I reply that the transfer deed being copied from the Act will cause no appreciable expense, and that the two together are not to bear more stamp duty than is now levied on one. Most mortgage deeds contain a clause that the mortgagee may sell without proving to the purchaser that the mortgagor has made default, so that, practically, the mortgagor will lose no security by the change. Mere equitable mortgages, where the legal estate remains with the borrower, would not be within the purview of the Act. Upon repayment of a mortgage, the reconveyance would be by form (No. 3), differing from No. 1 in reciting "In consideration of the repayment of £——advanced on mortgage."

The third case is that of trustees. Here the transfer deed (No. 4) would recite "In consideration of a deed of trust of even date herewith," and the trustees, if they finally sold, would adopt form No. 1, or if they made over the property to any one named in the trust, would only have to recite, instead of a pecuniary consideration, "In conformity with the provisions of a deed of trust under date," &c.

If the parties beneficially interested chose to take an invidious security against the dishonesty of their trustees, they might be empowered to compel the latter to deposit with the Commissioner the deed under which they hold the legal estate, until certain events shall have taken place. Deprived of the possession of this deed, the trustees could not sell.

The fourth case is that of land inherited or bequeathed. I propose that when any one dies, seised of land, the legal estate should not pass direct to the heir or legatee, but, like personal property, to the executors or administrators, and that they should by a deed (No. 5), bearing only a nominal stamp, transfer it to the proper party. In the case of a will, where there may be some patent or latent ambiguity, it is easier for executors to decide, or to bring the point to a decision, than for a purchaser, who is a stranger to the family, to investigate the subject in after years; and such deed by executors should bar action of ejectment against a purchaser for value, the claimant being left to his remedy against the executors.

In the case of intestacy, the argument for throwing the *onus* upon the administrator is still stronger. For we have, in England, three distinct rules of descent. In some places all sons inherit equally, in others the eldest alone, in others the youngest. To prove any one to be the youngest, that is, that there is none younger, is like proving a negative. Surely, then, it is for the administrator, while the heir or heirs are living, and the facts recent, to ascertain and record those facts, by making the land over to the legal claimant.

When a testator creates an estate tail, the executors could not, of course, transfer the legal estate absolutely to the life tenant. The law therefore should require, that in order to effect an entail a testator must appoint trustees, to whom the executors can transfer.

The above four cases comprehend the commonest transfers. Others, such as the transfer of a bankrupt's estate to assignees, may suggest themselves, and be disposed of in analogy with the preceding cases, and as to any peculiar case not provided for by the Act, the Commissioner might have the power of sanctioning a form.

No person should be compelled to adopt the new forms in the case of ordinary sale, mortgage, or trusts. It will take time to reconcile the public to them. But a gentle pressure might be put on by charging higher duties on all other forms.

Next, let us see the practical working of the scheme. You have purchased land with the condition that the title shall commence with A., who died, at a reasonably remote period, intestate, leaving an only son, B. C. administered to the estate; B. mortgaged to D., who put the mortgage into trust with E. and F. Subsequently B. repaid the loan, and now offers the land for sale. He produces—1. Letters of administration to C.; 2. Transfer from C. to B.; 3. Transfer from B. to D.; 4. Transfer from D. to E. and F.; 5. Transfer from E. and F. to B.

To look over these short deeds would not take half an hour, and any one of moderate intelligence, with sufficient knowledge of the stamp duties, might trace the title himself. If a professional man were employed, the charge would be a mere trifle compared with an ordinary bill of the present day.

The above scheme differs from most others in not requiring registration or parish maps, the continual alteration of which would be a source of great expense. I would, however, allow the Commissioner to register deeds drawn in conformity with the Act, and provide that in the event of the originals being destroyed, copies attested by him should be received as evidence.

While desirous of avoiding matters extraneous to the scheme, I would just remark that the present mode by which copyholders can compel enfranchisement is too expensive to be generally useful. An Act should lay down principles on which might be valued not only fixed annual payments, as quit-rents, but also more uncertain dues, as heriots and alienation fees. The chance of escheats is perhaps too small to have an appreciable value. The copyholder, then, having calculated, according to the Act, such charges on his estate as were therein specified, and having added, for any particular charges not so specified, a reasonable sum, should tender the same to the parties interested, and upon their offering, either actively or passively, any opposition to the proposed enfranchisement, the copyholder might petition the Commissioner, who, after hearing the other side, should have power to determine both as to the subject-matter and as to costs. Freeholders might be allowed to extinguish fee-farm rents in the same manner. *G. Sparkes.*

AGRICULTURE AND CHEMISTRY.

IN the year 1866 I made an experimental trial of the plan lately proposed by Mr. Marshall Hall. I then commenced a series of 40 lectures to a class of farmers' sons at Kingscote, a village about 15 miles from the Agricultural College. The lectures were given under the auspices of the well known Kingscote Agricultural Association, a thriving and enlightened farmers' club. The class, numbering something like 20, was quiet, regular in attendance, and passed a fair examination at the close of the course, which extended over two years. The lectures were devoted to inorganic, organic, and agricultural chemistry, the subjects being taken in this order, that a good scientific basis for the agricultural application of chemistry might be secured. At the same time an agricultural bias was given, even to the earlier lectures, by illustrative experiments, made, as far as possible, with substances produced on the farm or useful to the farmer, with plants, soils, and manures. More than this, the pupils of my class were encouraged to repeat the chief experiment shown in the lectures, and several of them actually fitted up little laboratories of their own at home. I regret that I have not been able to repeat so encouraging an experiment, but the great difficulty was in the distances which both students and teacher had to travel in order to reach the place of meeting. My own journeys, during this course, give a total length of 1200 miles, and, owing to the absence of a railway, had to be performed under peculiar difficulties. But I am convinced that the system which I carried out in 1866-7, and which Mr. Marshall Hall has just suggested in his letter to the *Devizes Gazette*, may, when suitably modified in accordance with local circumstances, be carried out with immense advantage to the general farming interest. I ought to add that the scheme above described owed much to the suggestion and help of the Principal of the Agricultural College. I hope, on another occasion, to develope further a method of scientific instruction for young farmers, and to describe a plan for the creation in England of agricultural experimental stations where chemistry might be brought to bear upon agriculture in several directions.

I would now ask for a little more space, in order to describe briefly one of the most obvious aspects of the manure question. How is it that manufactured manures, such as the different varieties of superhosphate of lime, are often sold to farmers at a price so much higher than that at which their crude constituents can be purchased? We know that the process of manufacture is not tedious or troublesome, and that its cost is small. And we know also that many manufacturers of superphosphate supply manure dealers wholesale with fair qualtities of this manure on terms which allow the latter a broad margin of profit, but that the farmer has to pay not the manufacturer's charges only, but those of the dealer as well. Mr. Little has pointed out one of the ways in which a farmer may get a manure for, say, £4 per ton, which shall be guaranteed to contain 26 cent. of "soluble phosphate," and for which he would have to pay, in the ordinary course, from 5 to 6 guineas, if not more. But it is only fair to point out that two manures may analyse equally well, and yet differ in their effectiveness very considerably. This remark applies with especial force to nitrogenous manures, in which the nitrogen may exist in various degrees of availability. It is, on the other hand, highly probable that the soluble part of a mineral superphosphate, provided some decomposing carbonaceous matter be present, is as useful as the corresponding constituent of bone superphosphate. Thus, the argument for difference of price, which manufacturers urge by reason of their employment of the best materials, must not be pushed too far. An instance in point may serve to illustrate my meaning clearly.

In the spring of this year some samples of manure were sent to me for examination. I was subsequently informed that the price charged for them was £8 8*s*. per ton. Now, on analysis, I could only rate them at about £5 5*s*. per ton, assuming their several manurial elements to have been derived from the most valuable crude materials. But what was the argument against my valuation which Messrs. A. & Co., the well-known manufacturers of this manure, urged with the farmer who had purchased the manure? It was to the following effect:—"Our manures are the final result of long-continued thought and experiment; they have been successfully submitted in the field to the severest trials by numerous farmers; we have sunk thousands of pounds in arriving at our present processes of manufacture, &c., and, moreover, our manures are compounded and mixed in such admirable proportions, and with such exquisite skill, that they must not be judged of by the inadequate test of chemical analysis." Let us pursue this admirable argument a step farther: let us apply it to an animal's food instead of a plant's food. Only mix stones with bread, with a sufficient amount of exquisite skill, and anxious thought, and long experience, and the innutritious stone or other rubbish becomes a most useful material for sustaining life!

Unfortunately, the farmer has not only to deal with mixed manures (which too often justly deserve the epithet "nostrum" which Mr. Little uses in this connection), but he has to suffer from the gross frauds of purposed adulterations. We shall not easily forget the revelations as to the ochre-grinding machine at a Liverpool guano works, nor the *exposés* which are continually made in our agricultural journals. But most manures are tempting subjects for adulteration. After all, they won't crystallise and won't distil, and so come under the great class of "dirts." Here is an analysis of a very dirty dirt indeed, which was analysed in my laboratory last week, having been purchased for a good superphosphate, at a good price, by a deluded agriculturist.

Analysis of Superphosphate, from Mr. ——, May 24, 1871.

Water	17.33	per cent.
Organic matter and combined water (containing nitrogen equal to 0.372 per cent. ammonia) ..	16.31	,,
Monocalcic phosphate (corresponding to 2.31 per cent. bone earth made soluble)	1.74	,,
Tricalcic phosphate	5.02	,,
Calcium sulphate	12.92	,,
Common salt	16.82	,,
Sand	19.00	,,
Alumina, ferric oxide, and alkaline salts ..	10.86	,,
	100.00	,,

It is evident that in making this exquisite mixture the zeal of the operator had outrun his discretion: he had evidently scraped the floor a little too hard. *A. H. Church, Royal Agricultural College, Cirencester, in the "Chemical News."*

AGRICULTURAL STATISTICS.

STATEMENT OF THE ESTIMATED AVERAGE YIELD PER STATUTE ACRE OF THE PRINCIPAL CORN CROPS, AND OF POTATOS, IN VARIOUS BRITISH COLONIES.

Colonies.	Years (ended March 31 in some colonies).	Wheat.	Barley.	Oats.	Maize.	Potatos.
		bushels.	bushels.	bushels.	bushels.	tons.
New South Wales	1868-9	10.88	14.80	13.58	31.27	1.88
	1869-70	16 90	16.24	23 16	38.12	3.16
Victoria	1868-9	16.28	15.23	19.65	19.75	2.21
	1869-70	19.75	24.55	25 98	20.50	3.10
South Australia	1868-9	9.71	14.65	14.07	..	2.36
	1869-70			Not received.		
Tasmania	1868-9	14.13	15.79	19.75	..	3.43
	1869-70	16.10	23.09	25.71	..	3.68
New Zealand	1868-9	25.10	24.49	31.22	..	4 89
	1869-70	27.27	31.14	33.47	..	5.44
Natal	1868	12 21	The produce of these crops is partly cut green for fodder.			125.8 bush.
	1869	12.27				131.3 ,,
Cape of Good Hope	1865	6.87	8.92	4.35	6.48	..

STATEMENT OF THE NUMBER OF LIVE STOCK IN VARIOUS BRITISH COLONIES AT THE END OF EACH YEAR.

Colonies.	Years ended.		Horses.	Cattle.			Sheep and Lambs.	Pigs.
				Cows.	Other kinds.	Total.		
			No.	No.	No.	No.	No.	No.
New South Wales	March 31	1869	280,818	..	..	1,761,411	15,080,625	176,901
		1870	280,304	..	..	1,795,904	14,989,923	175,924
Victoria	,,	1869	143,934	181,854	511,828	693,682	9,756,819	136,206
		1870	161,830	179,661	512,857	692,518	9,923,663	111,464
South Australia	,,	1868	74,228	..	..	122,200	4,477,445	89,304
		1869	75,409	..	..	123,213	4,987,024	82,306
Western Australia	Dec. 31	1868	18,924	..	..	46,211	599,756	18,891
		1869	22,093	..	..	45,867	648,683	17,203
Queensland	,,	1868	66,878	..	..	968,279	8,921,784	26,185
		1869	71,530	..	..	994,600	8,646,243	29,466
Tasmania	March 31	1869	22,512	..	..	105,450	1,715,617	55,222
		1870	22,583	..	..	95,097	1,531,187	49,524
New Zealand	December,	1867	65,570	..	..	312,337	8,409,919	114,781
Mauritius	Dec. 31	1868	14,637*	..	..	11,853	18,057†	17,559
		1869	16,014*	..	..	15,300	16,767†	21,214
Natal	,,	1868	17,636	..	..	435,010	281,486‡	17,740
		1869	19,939	..	..	453,944	332,832‡	16,321
Cape of Good Hope	,,	1865	226,610	..	..	692,514	9,836,065‡	78,666
Canada (Dominion of) ..	,,	1861	703,470	959,951	1,296,108	2,256,059	2,399,799	1,189,613
Newfoundland	,,	1869	3,764	..	..	14,726	23,044	19,081
British Columbia	,,	1868	5,779	..	..	24,079	11,959	11,239

* Including mules and asses. † Including goats. ‡ Including African sheep.

SEWAGE IRRIGATION AT RUGBY.

THE question of sewage irrigation, after being long regarded by the public at large as the hobby of a few enthusiasts, has of late years taken to a greater extent its proper place as a subject of national importance—indeed, as one which can no longer with safety be neglected. The public, ever slow to adopt new ideas, has come to see and acknowledge the necessity of dealing with the sewage of cities and towns upon recognised principles. These are, that impurities of all kinds shall be removed from the centres of population in a prompt and effectual manner, and without contaminating our rivers and streams. Legislation has made the latter point imperative, and no excuse will now be accepted for the continuous pollution of streams. This being so far settled, the question presents itself how sewage impurities can be prevented from becoming a nuisance, and their fertilising properties preserved and used for the best. This question I now propose to consider, assuming, in the first instance, the necessity of dealing with sewage in a strictly sanitary point of view, and viewing the subject by the light of the experience acquired at Rugby. The subject seems to divide itself at the outset into three propositions:—

1. The application of natural principles indicates water as the readiest and best means of removing animal impurities.

2. Dilution, within certain limits, presents the fertilising properties of sewage in the best possible form for assisting the growth of vegetation.

3. The medium of communication between the fertiliser and the plant, namely, the soil, at once extracts all valuable properties, and affords the only effectual means of purification.

The question would therefore appear to shape itself into an inquiry how these natural principles can best be carried into effect. And here it may be said that no "hard and fast" line can be drawn, no "rule of thumb" laid down, which shall apply to any and every case. General principles being agreed upon, they must be subject to modification according to locality and surrounding circumstances. It will be well to indicate the conditions which are requisite, and the causes likely to render modifications necessary.

The first requisite is an ample and regular supply of water. In considering the quantity of water, it should be noted that while 20 to 25 galls. per day for each unit of the population will suffice for sanitary purposes, it may become necessary, for the purposes of irrigation, to increase the quantity to 35 or 40 galls. Happily, we have been enabled at Rugby to secure an abundant and unfailing supply from the river Avon.

And here we reach the important question of separation of rainfall from sewage. It is an immense advantage in every way when the quantity of sewage to be dealt with day by day can be ascertained and provided for. In a warm, dry season, like that of last year, when greater dilution would be desirable, the rainfall fails to accomplish it; while in a rainy season the fall upon the land may make it advantageous to reduce the dilution. This is essentially the case in winter, when vegetation is nearly or quite at a standstill, and when excessive dilution by rainwater reduces the temperature of the sewage. The balance of advantages would seem to be in favour of separation when required.

Nothing in the shape of storage is permissible. The sewage must be distributed at the earliest possible moment, to prevent decomposition and consequent nuisance, as well as to secure its full value to the land. Mechanical filtration is necessary to remove the solid parts. This is readily effected by tanks, with screens through which the liquid freely flows. A simple mechanical contrivance for agitating the more solid parts of the sewage before it enters the tanks would, I think, add materially to the value of the liquid.

Next in order would appear to be the question of suitable land. It may be laid down as an axiom, that the better the land in the first instance, the better the results to be looked for from irrigation. Sandy or gravelly soils are a mistake if better can be got. A good loamy soil, 15 to 18 inches deep, with some admixture of clay, and a gravelly subsoil, may be said to be the best. It will produce a greater variety of crops, of finer quality, and will more readily absorb and retain the valuable ingredients of the sewage, than any other soil. It must not, however, be understood that only this description of land will produce good results. Experience tends to prove that irrigation may be employed with advantage, under proper arrangements, no almost any kind of soil. The most important consideration, in an economical point of view, is to select land upon which the sewage can be made to flow by gravitation. Unless this can be accomplished, I consider it more than doubtful if sewage irrigation in ordinary seasons can be made a source of profit.

Ordinary pasture land is not fit for irrigation, nor is any other land without more or less of special preparation. This fact having been ignored, has led to most of the so-called irrigation failures. Due consideration must be given to the natural formation of the land, and all inequalities of the surface carefully levelled, or stagnation of the sewage, which means destruction of the crop, will ensue.

The distribution is generally recommended upon one of two different systems—the "Catch-water," or the "Pane and Gutter" system. Much has been said for and against the catch-water system, but my experience leads me to regard it as by far the best system for distribution.

Under the catch-water system, the sewage is brought to the head of the field or section of land to be irrigated. "Carriers" are then laid out across the fall of the land, at distances apart regulated by the gradient and general contour. Then, by means of sluices and stop-boards, the sewage in the carriers is made to overflow at such points as may be requisite, or along the whole line of carrier. Some distance below it is received into a smaller carrier or "catch-water," from which precisely the same process is repeated, until the bottom of the hill is reached, and the effluent water thoroughly purified.

The "pane and gutter" system consists of a main carrier running at the head, and small ones or "grips" running with the fall of the land. In these latter the sewage is intercepted by stop-boards, and made to overflow right and left, until it finds its way to the lowest level.

Under almost all circumstances, a modification of both systems is to be preferred. Under the first system, pure and simple, the section next the main carrier always gets the first dressing of sewage, the next section always the second dressing, and so on, until by the time the lower levels are irrigated, nearly all valuable properties have been absorbed by the higher land. To remedy this obvious defect it is necessary so to lay out the land that each piece in turn can receive a first dressing. This I have done in several instances, with the best results. This being done, the width of the sections should be progressively increased, the widest being at the lowest level, to ensure proper purification. Unless the land is of very slight gradient, this system is to be preferred to the "pane and gutter." Where the latter system is necessary, the "grips" or downward carriers should not be of great length, but should be crossed by intercepting carriers, to admit of the advantages of first dressing, and consequent proper equalisation.

The advantages to be derived from these modifications are, that a smaller quantity of sewage is necessary, a shorter period of application suffices, and the crops are equalised over the whole surface.

Next in order will come the consideration of the kind of crop, and the times and modes of planting. The results of my experience show that Italian Rye-grass must be the staple, at least in extent of cultivation. The best season for sowing is early in September. The land must be first well irrigated, then ploughed, and properly levelled. This being done, and the best seed selected, about 6 bush. to the acre should be sown. In an open season the grass will spring in eight or ten days, but no sewage should be applied until there is a good growth over the whole surface. A slight irrigation will then suffice. Another dressing in the spring, preferably in mild weather, will prepare the crop for the first cutting. After cutting a copious dressing of sewage should be given at once, and again after each cutting during the season. It is usually considered that one sowing suffices for three years; but, if the sewage is properly applied, and the seasons reasonably favourable, the growth will be so luxuriant as to exhaust the plant, or nearly so, in two years. After Rye-grass a root crop should be substituted on land of a flat gradient, but on a steeper surface cereal crops may be best grown, due regard being paid to the nature of the soil, and the aspect. My experience is that all root crops should be sowed on ridges, high enough for the sewage to be carefully applied in the intervening furrows without touching the plants. The number of dressings must be varied, according to the season and the dictates of experience. The rule of ridging applies to all crops, except Rye-grass and cereals, and almost any vegetable may be advantageously grown, as Cauliflower, Cabbage, Carrots, Mangel Wurzel (which gives a specially good result), Onions, &c.

After one root crop the land may again be laid down in Italian Rye-grass. If the land is poor, and of steep gradient, successive sowings of Italian Rye-grass may be made, with no root crop between.

The solid deposit from the filtration tanks is of great service, if applied to the land immediately after removal. It will very much enrich poor soils, and increase their capacity for retaining the more valuable parts of liquid sewage.

It is a great point in favour of irrigation, that, in growing large crops and selling them to be consumed off the land, a sewage farm directly promotes, to a very large extent, the fertility of the surrounding district.

It must be borne in mind, in conclusion, that the mere application of sewage to a given quantity of land will not of itself ensure success. In this, as in every other pursuit in life, watchful care and untiring perseverance in applying the results of experience will be needed to secure the great benefits to be derived. Granted these are given, then experience proves that sewage irrigation may be made to yield the most astonishing and lucrative results. *John E. Palmer, Town Surveyor, Rugby.* [We understand that Mr. Taylor, tenant of Barnhurst, on which the Agricultural Society's trials are this week being held, is to receive the sewage of Wolverhampton on his land; and Birmingham is about to lay out large sums in the purchase of land for the abatement of the nuisance it creates. All these places have to come to Rugby, Croydon, Barking, and the other pioneers, to learn their lessons. Mr. Palmer's opinion is therefore of great value.]

LABOURERS' COTTAGES.

MESSRS. BAILY DENTON, SON & NORTH'S COTTAGES.

THE above cottages (the design for which appeared in your issue of May 13) are a very fair sample of the modern style, and unquestionably contain all the conveniences you mention. But to my mind there are one or two slight defects which might be easily remedied without additional expense.

The primary objects in designing a labourer's cottage ought to be comfort and convenience, both of which are, in a great many instances, sacrificed to external appearance. I do not allege that this has been done to any great extent in the design under criticism, yet I think that without much detriment to outward symmetry the internal arrangements might be improved.

In illustration of my meaning I submit to you a design for a pair of cottages (of which fig. 175 is an elevation, and fig. 176 ground and chamber plans), occupying almost precisely the same space as those above referred to. In comparison with them I admit that mine are less pleasing to the eye, but, estimated by success in attaining the main purposes of such erections, I think that they have more than counterbalancing advantages. It will be seen at a glance that the door being placed at the extreme side, and the omission of a second upper window, are faults in point of taste; but my contention is that the designer of labourers' cottages must be prepared to forego the gratification of his own taste whenever by so doing he can add to the comfort and convenience of those who are to be the inmates. If proprietors insist on buildings which shall in no way strike the observer as faulty, they ought to be prepared to pay for their satisfaction without making their tenants suffer.

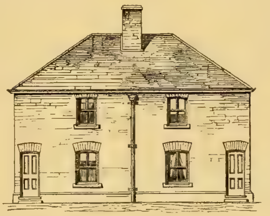


FIG. 175.—MR. MAKINS' COTTAGES.

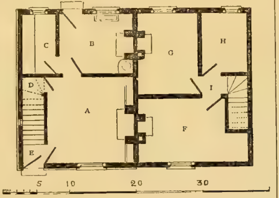


FIG. 176.—GROUND AND CHAMBER PLANS.

You will observe in Messrs. Denton & Co.'s design that the front door, so well placed for outward effect, opens directly on to the foot of the stairs, and would have to be closed before anyone could pass up or down. The stairs themselves are much too narrow and awkwardly twisted. They cannot fail to be inconvenient for general use, and on exceptional though inevitable occasions will, I fear, be useless. I remember a case in the North, in which it was necessary to lower a coffin from a window in the upper room. Possibly this might be avoided by dexterity, but I see no necessity for the stairs in their present form, when, by a different arrangement, they can be made more convenient.

The windows appear to be casements, which are preferred by many for the sake of appearance, but are never so convenient as sashes, and are seldom, if ever, made water-tight. I have already noticed the omission in my design of a second upper window, another could be added if thought desirable, but it is not necessary, as I have appropriated the space over the entrance to the front bedroom, which is already well lighted.

Messrs. Denton & Co.'s pantry is much too small, and, taking into consideration that it has to serve the purpose of larder as well, it is placed too near the living-room fireplace.

I would also point out there is no provision made for cupboards, and there is not a single bedroom completely rectangular, the landing robs them all.

I have omitted in my design a fireplace in one of the bedrooms. The third room being necessarily small is better without one, if well ventilated in the ceiling. Messrs. Denton & Co. in giving three have exceeded the requirements of the Inclosure Commissioners, who only stipulate for two.

Below I give comparative Tables of cubical space contained within the cottages. Owing to the larger size of my fireplaces, my total amount is less than Messrs. Denton & Co.'s by 20 feet, but by the space saved in staircase, landing, &c., I still gain 351 feet in the rooms, distributed thus—living-room, 91 feet; scullery, 34 feet; pantry, 136 feet; bedrooms, 90 feet.

By making the cottages deeper I save a great deal of frontage, and in consequence economise in various expenses incidental thereto, such as road-making, superior workmanship, material, &c. Of course wherever (as is often the case) eligible frontage is limited, there would be the additional advantage of being able to build a greater number by one-fourth:—

TABLES OF CUBICAL CONTENTS.

Denton & Co.

		Feet.
A		1200
B		688
C		224
D	146	966
E and I	820	
F	846	2172
G	688	
H	638	
Total		5250

"W. A. M."

		Feet.
A		1291
B		722
C		360
D, E, and I		595
F	998	2262
G	792	
H	472	
Total		5230

Reference.—Ground Plan (A to E): A, Living-room with Dwarf Cupboards; B, Scullery; C, Pantry; D, Fuel Closet under Stairs; E, Stairs. Chamber Plan (F to I): F, G, H, Bedrooms; I, Landing.

W. A. Makins, Charing Cross, June 23.

Home Correspondence.

Quantities of Sewage Applied per Acre by the Metropolis Sewage Company at Barking.—I am surprised that one who is so ready to attack others should complain of my vindication of my statements as an unjustifiable attack on himself. Mr. Hope publicly—and, as I submit once again, without reason—asserted that my statistics were totally incorrect, and I publicly, and after inviting investigation by independent practical engineers, brought forward the results of Mr. Hassard's tests in support of what I had stated. In opposition of this, Mr. Hope desires your readers to believe that, owing to the lengthened experience which he claims to possess, his simple contradiction is sufficient to negative any statement he disapproves—very especially those which emanate from the secretary of the Sewage Company, who, in his letter of June 4, he speaks of as his pupil—and that should anything more be necessary to cast doubt upon my figures, it is to be found in an occasional possible interference with the working of our machinery. Mr. Hope must not, however, rely too much upon the help which this last affords him, because we have little or no interruption from the causes he cites, and should any arise to interfere with the proper delivery of sewage on to the farm, or cause a temporary suspension of the flow altogether, it would be at once detected and attention given to it. Neither can Mr. Hope be permitted to mislead your readers without my offering a distinct denial to his statement as regards my pupilage, since it is perfectly well known that when this farm was taken and placed for the purposes of experiment in the hands of Mr. J. C. Morton, both Mr. Hope, the manager of the International Financial Society, and I, the secretary of the Sewage Company, were alike ignorant, in common with most others, of everything connected with practical sewage farming. However much, then, I may regret to deprive Mr. Hope of the honour attaching to the position, I must say that it is worse than absurd in him to plume himself upon having been ever my master. With regard to the use of decimals, to which Mr. Hope attaches so much importance, as to admit that had I confined myself to round numbers he would probably not have questioned my figures, I am quite ready to admit that, although the breaking of gross quantities into numerous subdivisions necessarily entails fractions, the use of the one place in decimals, of which I was guilty, might have been dispensed with without really affecting the general results, although no doubt the want of exactness exhibited by the figures would have led to hypercritical objections similar to those which Mr. Hope now takes. I do not propose to trespass further on your indulgence than is necessary to express my thanks to you for the opportunity you have afforded me of endeavouring to show your readers that the statistics we have collected are practically correct, and to suggest that Mr. Hope's claim to superior practical experience in sewage farming, so constantly asserted, requires to be supported by detailed statements, such as we have annually presented, extending over and through those years in which he states that he had the start of me. *Henry Morgan,* *Lodge Farm, Barking, June* 21. [The discussion seems to us to have been permitted long enough. Our readers may now be safely left to draw their own conclusions as to the risk of inaccuracy attendant on the methods by which successive managers of the Lodge Farm have honestly endeavoured to report the quantity of sewage which they have annually used, and the proportionate quantities which reached the different plots to which the sewage was applied during the year.]

Nature's Enactments and Acts of Parliament.—By reading your late articles on land tenure (in which I am glad to recognise the handwriting of one of your oldest and ablest correspondents), I am forcibly reminded of the old distich :—

> " Of all the ills the human race endure,
> How few that laws or kings can cause or cure !"

and have been led to think that if the owners and occupiers of land would study the laws of Nature more, and Acts of Parliament less, they would come to the conclusion that of all the remedies offered to us as panaceas by the different land doctors the most homœopathic would prove the best, in short, that all artificial barriers are more or less erroneous. And first, as regards ownership : When the inhabitants of these islands emerged from barbarism, and the population had become sufficiently numerous to occupy and cultivate all the best of the soils, it became a matter of necessity that the occupier who had reclaimed, fenced, and tilled the land, and perhaps built a house for his family and houses for his cattle, should have a permanent property in his outlay,—a fixity of tenure subject only to the services, quit-rents, tithes and other charges which the feudal laws, whereever they prevailed, or the Saxon customs in other places imposed on landed property, that being the only property that existed in a tangible shape. Hence the law of inheritance became also a necessity, and the power of making wills and settlements, otherwise no one would have taken the trouble to make these permanent improvements ; the desire of founding and perpetuating a family being one of the most natural passions, and most conducive to the improvement of property. True that in times of civil war and uncertainty these precautions were multiplied by the invention of entails and uses to an extent now become unnecessary, and which have been to a great extent repealed ; and I doubt whether any further removal of restrictions would have much effect in bringing more land into the market, or in reducing the price, in the face of the passion I have just alluded to, by which rich men are tempted to give 30 or 40 years' purchase for a property—a price no person of moderate income could afford. At the same time there is no lack of land to be purchased in small quantities in the neighbourhood of towns and railway stations, where land jobbers, either individuals or companies, are universally buying up properties and subdividing them into small occupations, either for building suburban villas or for market gardeners and cowkeepers. Near these centres of population and industry the present owners are easily tempted to part with their land ; at a distance from them small occupations would be ruinous to any owner or occupier. So that, as far as I can see, any law that interfered with the natural law of supply and demand would be either inoperative or mischievous. 2dly, The laws which govern the occupier are more simple. His security should be ample so long as he farms with justice to the farm and with profit to himself, in the interest both of his landlord and himself ; when he loses his capital and when he deteriorates his farm, this security should cease. His rent must be something more than the owner could make after paying the expenses of a bailiff or steward, otherwise he would farm himself. The size of his occupation is limited by his means. He must not hold less than will produce him the means of livelihood according to his station after paying all outgoings. He must not hold more than his capital will enable him to stock and manage to the best advantage. Other things being equal, the larger the farm he can thus take, the larger in proportion will be the profit. The modern and expensive appliances, such as steam cultivators, &c., will be often remunerative on 1000 acres, while they would be ruinous upon only 100 acres. Nevertheless the size of farms in England is, from the natural causes above referred to, gradually decreasing—the proportion of tenants holding 5 acres and under being one-half, and of those holding less than 100 acres being four-fifths of the total occupiers of land. And if the wealth of England continues to increase the size of farms must go on diminishing. More land will be taken every year for villas, for pleasure farms, for market gardens, &c. ; and from the same causes continuing to act on a lessened area, it will follow that the value of land must increase irrespective of any farming profits. Gentlemen will continue to purchase and rent land regardless of the interest it pays, for the sole pleasure of occupying, as they do now in the neighbourhood of London and large cities. This natural law will, I apprehend, gradually prevail, whether we like it or not, whether we try to modify it by Acts of Parliament or not. It has already cut up one-half of the area of England into plots of less than 100 acres, and will flow like a tide, gradual, but resistless, over the remaining half. In the meantime, let neither owner nor occupier of land be discouraged, but make the most of their present opportunties. Prices keep up, especially of meat and all perishable produce. High farming is paying very fairly. Let us cease to pester Parliament for new laws, or agitate for what is unattainable, while we neglect the advantages within our reach. *J. B. M.*

Gardening and Farming.—I could never understand why there should be any difference between the two as regards draining, deep cultivation, and abundance of manure and produce. I have asked why there should be any difference, and I am told by farmers :—1. That it would not pay to treat the garden as they do the farm—they would not grow enough. 2. When I say that is the strongest argument for gardening the land, I am told by the same parties that they have neither manure nor capital enough ; they don't mean acreable capital enough, but, in plain English, they admit that they hold too much land in proportion to their capital. Now there is nothing so easy as to double a farmer's acreable capital. I often say to my farming friends who have 600 acres of land, and complain of want of capital, "Take a farm of only 300 acres, and you will at once double your acreable capital, and from my practical experience I can assure you that you will thus considerably increase your percentage of profit." That question of increased acreable farm capital is one of the questions of the day, undergoing revision and solution, and the time is fast approaching when the important question will be, not how many acres do you farm, but how much is your acreable capital. I am daily more and more convinced that from £16 to £30 per acre is not too much on arable farms. I know several who have that amount, and thus make farming pay more than the common rate of profit. A cottage gardener who fattens his one hog on 20 rods of ground, absolutely makes at the rate of 640 lb. of meat per acre, or eight times as much as an ordinary farmer, therefore he also thus makes eight times as much manure. The result must be obvious. Therefore the quantity of meat a farmer makes on his farm, especially with food not the production of his own land, is a measure of his crop-producing powers. Britain is not half farmed, nor will it be until the acreable capital of both landowner and tenant is vastly increased. *J. J. Mechi, Tiptree, June*, 1871.

Agricultural Experiences. — I got two roots to-day of Rye-grass, each the produce of a single grain, on one of which I counted the stems—193 ; the other not so large, and I suppose it to number about 150. It grew in a place manured for Parsnips, which failed. I enclose a stem. I had last season, and have it still, a root of Wheat which grew in a thin place in the field, the produce of one grain, that had 55 stems, and of these 42 had good ears, another had 37. I conclude this will not be credited ; but I have them, and would send them if I had an opportunity. I consider both cases a most extraordinary increase—beyond anything I have ever seen. *J. M. E.*

Co-operative Prices of Phosphate Manure.—Will you kindly grant me space to answer the questions asked by Mr. W. Gurdon in your number of June 17 ? Mr. W. Little, of Heckington, Hull, is the representative member on our Council of the Licolnshire Association, and the price named by him is quite correct. It refers to mineral superphosphate of lime ordered by members of the Lincolnshire Society (and of our allied Association) in the preceding autumn, and delivered in bulk anywhere within a given area (of which I shall be glad to give Mr. Gurdon a map). The manure being ordered in advance, and paid for before delivery, the Society only puts 1*s.* per ton profit upon it, to cover cost of analysing and other expenses. The higher price quoted by Mr. Gurdon, from the May number of the *Agricultural Economist*, is a price for manure ordered out of stock at the busiest time of the year. To supply such orders the Association has to incur considerable expenses of warehousing, &c., and the rule, therefore, is to charge the current market price of the day, and then return to the members all the surplus profits after providing for working expenses and payment of 5 per cent. per annum interest on capital. If Mr. Gurdon will refer to the June number of the *Agricultural Economist* he will see that the price has already been reduced to £5 per ton, and if he deducts from this price 12*s.* per ton for the average return to members, and 5*s.* 6*d.* per ton for the bags, he will find the nett cost of the manure to members is now about £4 2*s.* 6*d.* per ton, delivered out of stock and carted free to rails. Whilst I am writing, perhaps you will permit me to answer a very serious charge against us, made in Mr. Spooner's letter in the following terms (p. 658 of the *Agricultural Gazette*) :—

> " It is the aim of co-operative societies also to pander to this 'craving for cheapness,' and to attract by such plea. A superphosphate of lime is wanted to contain so much per cent. of soluble phosphate, and nothing more, save that it must be low in price. A manufacturer who wishes to supply it, of course, in order to secure some profit, buys a very cheap and low class phosphatic material, and treats it with sufficient acid as to secure the amount of solubility required ; and it is a fact that raw materials vary to the extent of 45 to 75 per cent. Thus undue stimulus is given to the inferior material, and the fair-dealing manufacturer is injured to the extent of the business he is deprived of."

Having thus fairly quoted Mr. Spooner at length, I now assert that the entire aim and scope of true co-operative societies (not omitting our own) is of a totally opposite nature, both in theory and practice. Their object is not to pander to the "craving for cheapness," but in all cases to supply an honest article at a fair and reasonable price, of reliable quality, and without adulteration or trickery of any kind. They promote the true interests of producers as well as consumers, all honest interests being identical. The rule of our Association is to buy the best articles of each kind, and we refuse to deal in inferior or adulterated ones. As regards cheapness, all we do is to economise the cost of retailing the goods. An agent or broker adds nothing to the quality or value of goods, whether he is paid 1*s.* or £1 or £2 per ton for selling them ; and if by the union of our members we can distribute manures, and at an average 4 per cent. instead of 20 or 25 per cent. profit, that is a clear gain to the public—all political economists from Adam Smith to the present time proving it. Nor do we seek to attract customers by such pleas, as the "cheapest" articles are in most cases entirely excluded from our list. Thus genuine (second quality), (third quality), marked and unmarked oil cakes, we do not deal in, only the pure article. Then as regards superphosphates, if we want a mineral superphosphate for our members we act on Dr. Voelcker's advice, "Pay only for soluble phosphate ;" but we stipulate for the highest percentages obtainable, the use of the best materials by the contractors, and perfectly dry condition. What is more, we take care that we get what we bargain for, and Mr. Spooner will not venture to deny the force of the following statement. Seven analyses by Dr. Voelcker and Professor Sibson of our stocks of mineral superphosphate, taken at different times from September, 1870, to April, 1871, showed an average of 27.60 of soluble phosphate and only 14.37 of moisture. Mr. Spooner knows as well as I do that it would be impossible to get such high results of so permanent a nature out of the low-class phosphates he speaks of. I may add, that when we want dissolved bones we stipulate for the insoluble phosphates and ammonia as well as for the soluble phosphates, and tie the contractor to make the manure out of pure steamed bones. We pursue the same policy in all our contracts, and so far from stimulating the taste for spurious cheapness, we claim for our co-operative system that it induces a demand for high-class goods ; our members know that they get unadulterated articles when they pay for them, a certainty they cannot always have when they buy in the outside markets. *Edward Owen Greening*, 35, *King Street, Westminster, S. W.*

Professors Gamgee and McBride.— Having given insertion to "A Practical Farmer's" letter in yours of the 3d, you will probably think it only fair to give insertion also to so much of the enclosed, from the *Wilts and Gloucestershire Standard* of to-day, as shows that Professor McBride has never sought to rob Professor Gamgee of any honour that is due to him, but, on the contrary, has spoken highly of him, as he deserves. I observe in your paper of to-day, that Professor McBride does not allude to this point, thinking, no doubt, that it is sufficiently well known that he is not honestly liable to "A Practical Farmer's" charge ; but all persons may not know this, and the charge having been made, its refutation should have equal publicity. *George Walters, Clifton, Bristol, June* 24. [The following is the extract referred to :—"We are very pleased to see 'A Practical Farmer' stand up so bravely for one who has deserved so well of his country in general and of agriculture in particular, as Professor Gamgee, and we much regret that he should be left to experience in his own person that 'virtue is its own reward,' but it is rather hard upon Professor McBride to attack him on this subject, since there are few men in the kingdom who more heartily appreciate the benefits which Professor Gamgee has conferred upon the farmers ; and perhaps the best answer to the above will be to print an extract from Professor McBride's lecture on Cattle Diseases at our Cirencester Chamber of Agriculture, as reported in the *Wilts and Gloucestershire Standard* of May 14, 1870, in which he said—

> 'Many veterinarians have drawn the attention of those interested to this subject, but none to the extent of Professor Gamgee, or with the same originality of thought. Since 1858, till the cattle plague appeared, he never failed to point out what must ultimately be the result of the traffic in foreign cattle. Strange to say, one of the most influential agricultural bodies in this country would hardly listen to him ; they put him down as an enthusiast, a theorist, an idle dreamer. When he told them that if they persisted in introducing foreign stock, we should be certain to have a visit from the dire destroyer, cattle plague, he was laughed at. In fact, he was said to be suffering from a peculiar form of madness —his hallucination being that this country would soon suffer from a plague which would destroy nearly all our cattle. Agriculturists said it could not occur—it was sensational—a myth—a mere shadow ; and further, when he informed you how cattle plague could be stayed, I firmly believe if Lynch law had been an English custom, the cattle dealers and others interested would have made an example of one who was, and is still, your best friend. Such has been the recompense that one of the most talented members of our much-abused profession received at your hands ; and why? Because he knew more than

his contemporaries, and because stock-holders were not sufficiently educated to receive the truths he communicated. I take this opportunity of saying that he has the most comprehensive view of all that pertains to epizootics. What did he do for Wiltshire? Stopped small pox. I am not aware of anyone, who has written or lectured upon this subject, advancing anything that he did not advise years ago. They but echo his words, without giving him the honour of being the first to suggest such measures. Government adopted his suggestion for cattle plague, after the loss of millions, but neither agriculturists nor the Government have either recognised or remunerated his valuable services. Every profession has had its martyrs, and I expect ours is no exception to the rule. However, gentlemen, it is satisfactory to know 'that it is never too late to mend.'

Could any recognition of Professor Gamgee's services be more complete, or any appreciation heartier? 'A Practical Farmer' has probably not seen this, or he would hardly have dragged Professor McBride's name before the public as an individual depreciator of Mr. Gamgee, because he is not perpetually acknowledging in every word that he writes how much veterinary science is indebted to that gentleman. Let it suffice to say, that if every one did Professor Gamgee as much justice as our worthy veterinary professor here, he would not have gone so long unrewarded. *Wilts and Gloucestershire Standard*."]

Utilisation of Sewage.—Taking, as I do, a great interest in this question, in common with so many who advocate the use of town sewage, may I ask Mr. Mechi to add to the obligations we already owe him, by informing us whether the sewage of Romford, about which there appeared a paragraph from him in the *Times* of June 26, averages as much as 100 tons per head of the contributories, and whether in that case it nevertheless pours over the farm in a black state? Taking the figures set down, nearly 600,000 tons of the sewage are delivered in one year on to a farm not exceeding 120 acres, and when a deduction is made on account of buildings, yards, roads, gardens, &c., it will be near enough for the present purpose if we assume that 100 acres are under sewage cultivation—each would, on an average, receive 6000 tons per annum. The population of Romford, as regards the farm, is said to be no more than 6000, so that each acre of land receives the sewage of 60 people, which is paid for at the rate of 2*s*. per head, or £6 for 6000 tons, or something less than a farthing per ton. I lately noticed in your journal a statement by Mr. Hope, the lessee of the Romford sewage farm, that the pump upon it was worked continuously night and day; but whether this is so always or not, Mr. Mechi tells us that the results are the same as regards the annual quantity of sewage pumped and disposed of. I also noticed that, in Mr. Hope's opinion, the value of the sewage of each head of our population is 8*s*. Now, what I would ask Mr. Mechi is, whether, in his opinion, one-fourth of the value of sewage is all that I, were I to become a sewage farmer to-morrow, could afford to pay? or whether, in other words, I must have the benefit of three-fourths of it to recoup me for the expenses attending the working of a sewage farm? Unless I am altogether wrong in my quantities, and I do not think I am, I cannot reconcile them and the price paid for the Romford sewage, with the price which I have always been assured sewage will fetch, namely, 1*d*. per ton, and at which price the Romford farm would now be paying £2500 a-year, or £25 per acre. The value of the Romford people, 6000 by 8*s*. per head, nearly approaches this sum, being £2400; but the quantity of sewage which Mr. Hope is obliged to take is double that which it is considered safe to estimate as the average due to the population of towns generally. *F. P., June* 20.

Societies.

HIGHLAND AND AGRICULTURAL.

At the general meeting, held in the Society's Hall, George IV. Bridge, Edinburgh, on Wednesday of last week, Sir JAMES GARDINER BAIRD, Bart., in the chair: 194 new members were elected.

Mr. MURRAY, of Dollerie, moved the adoption of the byelaw No. 2, altered as follows:—"That proprietors farming the whole of their own lands, whose assessment on the valuation roll does not exceed £500 per annum, and all tenant-farmers, office-bearers of local agricultural associations, resident agricultural factors, land stewards, foresters, agricultural implement makers, and veterinary surgeons, none of them being also owners of land to an extent exceeding £500 per annum, shall pay at admission, and afterwards annually in advance, the sum of 10*s*., with the option and power of redeeming the same by payment of 5 gs., as the purchase of a life subscription, and which life subscription may be so purchased, under deduction of any annual payments that the member may have previously made, with this limitation, that at no time shall a member have the power of redeeming the annual payments for a less sum than £3." The alteration was agreed to.

Mr. KINLOCH, yr., of Gilmerton, said he had to report that he had been given to understand that the arrangements for the next show at Perth were progressing satisfactorily. The following was a comparative statement of the entries:—

	Perth, 1871.	Perth, 1861.
Cattle	380	335
Horses	180	155
Sheep	630	616
Swine	60	77
Poultry	290	360
Dairy produce	80	91
Implements	1500	850
	3120	2484

Mr. KINLOCH said he had to state the result of what the directors had agreed to in reference to the following motion, which was proposed by Mr. Munro, and seconded by Mr. Ord last January: "That a class of implements for competitive trial be annually fixed on, the implements to be exhibited at the show, and the trial to be held at the time of year best suited for testing the strength of the implements and the work performed. That the trial be extended over a longer time than has hitherto been the practice, and that it be remitted to the directors to make arrangements with the manufacturers as to the manner in which the trials may be most satisfactorily carried out." Mr. Munro was kind enough to withdraw his motion on the assurance being given that the subject would receive the consideration of the directors. The directors sent the matter to the general show committee and to the machinery committee. These committees had had a meeting with Mr. Munro, and at that meeting they went over the whole of the ground on which the present system was founded, which was embodied in a report and approved of by the Society in January, 1862. They resolved unanimously to adhere to the present system, but they agreed, as an experiment—and only as an experiment, which they did not at all approve of—to recommend that it would be competent for the local committee of the general show to select any description of machinery for special trial, the competition to be held when and where they might appoint. One year the implements chosen might be reaping machines, another potato lifters, another double-furrow ploughs, and so on. The directors undertook to give prizes for the competition, but they washed their hands altogether of the competition otherwise. They had very good reasons for doing that, inasmuch as they found it exceedingly difficult to manage on previous occasions. The report of the committee was approved of by the directors, and it was remitted to Mr. Menzies to submit the matter to the local committee at Perth. He did so last week, and he had told him that the local committee at Perth declined the responsibility of choosing the implements, but they were willing to do so with the aid of the machinery committee. The local committee also undertook the management of the competition.

The Chemical Department.—Dr. ANDERSON gave in a verbal report on the experiments carried on in this department. In the first place he had to thank the Society for the leave of absence they had granted him during his protracted illness. He might mention, however, that during the period referred to he had personally conducted the whole of the correspondence of the laboratory, which was not little. During the last six months the business of the laboratory had been unusually large—the number of the analyses had been greater than in any previous half-year—and it had embraced analyses of all kinds. He had had an unusual amount of adulterated and inferior manures brought under his notice, while there had been two or three cases of suspected poisoning of cattle, sheep, and dogs, which had been examined into, but only in one case did he find poison. Specimens of water had also been examined, and he had seen enough to satisfy him that care was required in the erection of new farm buildings, and that attention should be paid to the position of wells, so as to provide against the possibility of their becoming contaminated. With reference to the adulterated and inferior manures, Dr. Anderson stated that he would not have brought them under the notice of the Society had it not been that the specimens examined were bought from manufacturers of the highest reputation—gentlemen who were making thousands a year from the business. In conclusion, he mentioned that he was at present engaged in an investigation of the scab in Potatos—a disease which had of late occasioned very considerable loss to the farmers.

Mr. MENZIES said, with regard to the minutes of the special committee of the Chemical Department, that the board approved of the following suggestions, and resolved to act upon them as opportunity occurred, in any re-arrangement of the Chemical Department:—"1. That the chemist should have his laboratory at the headquarters of the Society in Edinburgh, and reside there. 2. That in fixing the salary of the chemist the scale of prices for analyses should be revised, with the view of reducing the rates. 3. That the field experiments carried on by the Society should have the chemist's special attention. The publication of the results to be periodical, and under his entire charge and control."

Mr. HARVEY wished to know when the re-arrangement was likely to occur? The minute said "When an opportunity occurs." He had been speaking about it for the last ten years. In other ten years he might be somewhere else.

A long discussion followed, but no resolution was put on the subject.

Mr. MENZIES reported that the following premiums had been awarded since the general meeting in January:—1. The gold medal or £10 to A. H. Church, Professor of Chemistry, Royal Agricultural College, Cirencester, for a Report on the Cultivation of Sugar-Beet; 2. The gold medal or £10 to W. J. Moscrop, agent for the Earl of Zetland, Oliver, Richmond, Yorkshire, for a Report on the Best Modes of Housing Fattening Cattle.

Steam Ploughing.—Professor WILSON laid on the table the following memorandum as to ploughing at Dunmore, by Thompson's traction engine and Gray's balance plough, on February 28:—

"The ploughing took place in a large field at Dunmore Park, which had lain about 40 years in grass, and was nearly level. The soil was a strong clay, and in good order for ploughing. The engine is of 8-horse power, and weighs 7¼ tons, with vertical boiler and cylinders. It runs on three wheels, with indiarubber tyres, each 2 feet broad, and covers a space 7 feet wide. The steam-guage, when the engine was drawing the plough, indicated a pressure of from 120 lb. to 125 lb. per square inch. Five cwt. of coal and 700 gallons of water are stated to be consumed in a day of nine hours. The plough is a balance-plough, made by Gray of Uddingstone, and is the first of the kind which has been constructed. The plough had three mouldboards. The engine travels on the unploughed land, dragging the plough behind it. The length of furrow was 12½ chains, or 275 yards. The furrows made by the plough were 6 inches deep by nearly 9½ inches broad, and were fairly turned, considering that the ploughman had not much experience of the work. A heading 20 yards wide was left at each end of the field for turning the engine. To travel the distance of 275 yards and to turn the engine, and attach it to the plough ready for the return journey, occupied a space of eight minutes; and this required considerable activity on the part of the engine-driver when turning the engine. The engine was driven by one man, with a boy to attend the fire and watch the pressure and water-guages. The engine carried a supply of coals sufficient for four hours' work, and four hours' supply of water. The plough was steered by one man, whose duty also was to hook and unhook the engine to the plough at the commencement and end of each journey. At the rate at which the engine and plough were working, viz., three furrows 28 inches wide and 275 yards long, or 214 square yards, in eight minutes, the time required to plough an imperial acre was within a small fraction of three hours; and supposing the plough to work nine hours a-day, which, taking the average length of days in the ploughing season, is a full allowance, it would turn over 3 imperial acres per day, or about what three pairs of horses would have done. It was observed that while the three ploughs turn over a space of 28 inches wide, the engine-wheels cover a space of 7 feet wide, so that the wheels of the engine pass three times over the land before it is turned by the plough. It was also noticed that the engine passing over the land depressed the surface about 1½ inch, and the soil was also compressed to this extent. The Highland Society's self-registering dynanometer, made by Messrs. Easton, Amos & Anderson, of London, was tried on the engine and three-furrow plough, and indicated a draught of 21 cwt. A common swing-plough, drawn by two horses, was tried to ascertain the difference in draught on the land in its natural state and where the engine had passed over, and it was found that the land, where compressed by the engine, required an additional power equal to the draught of 1 cwt., the single plough making 6 cwt. on the unpressed land, and 7 cwt. on that which the engine had passed over. The committee were desirous of seeing the engine and plough at work on stubble or ploughed land, but Lord Dunmore had no field on which it could be shown. The committee would also wish to see the engine and plough tried in a field with a considerable slope. Lord Dunmore handed to the committee the following statement of the cost of his apparatus and of the daily expenditure in working it:—

Cost of engine, 8-horse power	£700	0	0
Cost of ploughs, three-furrow	70	0	0
Cost of water-tank..	30	0	0
	£800	0	0
Interest on 8-horse power engine at 5 per cent... ..	£35	0	0
Depreciation in value and wear and tear, 7 per cent...	49	0	0
	£84	0	0
Allowing engine to be under steam four days a week = 208 days, which gives 8*s*. 1*d*. as daily cost for engine	£0	8	1
Ploughs, cost £70, at 5 per cent. on outlay, and 5 per cent. for wear and tear = £7 per annum, and for 100 working days that would be 1*s*. 5*d*. per diem ..	0	1	5
Tank would cost £30, which at 10 per cent. = £2 per annum, would give for 100 days	0	0	7
Engine-driver's wages at 24*s*. for 6 days	0	4	0
Boy, at 1*s*. per diem	0	1	0
Ploughman, at 2*s*. 6*d*. per diem	0	2	6
Coal, at 4*d*. per cwt., 5 cwt.	0	1	8
Oil and waste	0	0	6
	£0	19	9

Autumn stubbles—in 10 hours ploughing we could do 7 acres easily—equal to 2*s*. 9*d*. per acre; spring ploughing lea, 5 acres—equal to 3*s*. 10*d*. The committee cannot close their minute without an expression of thanks to Lord Dunmore for his kindness when they went to inspect his lordship's apparatus, and the gratification that it gave them to see his lordship interesting himself in such an important subject as steam cultivation, in which they trust he may be successful."

Professor Wilson submitted the undernoted report on Fisken's system of steam-tillage :—

"Having, together with Professor Macquorn Rankine, been appointed by the Society as a deputation to inspect the working of the 'Fisken system' of steam tillage, we proceeded (April 10) to the farm of Offerton Hall, near Sunderland, in the occupation of Mr. H. M'Laren, where the 'system' has been in operation during the past winter, 440 acres, we were informed, having been ploughed or cultivated on the farm since October last. Professor Macquorn Rankine was unfortunately unable to attend. The farm is of an undulating surface of about 500 acres in extent, and lying on the magnesian limestone. The fields appeared to have been deeply tilled, and the soils, of varying textures, were in a dry and friable condition. When wet, their tenacity would be greatly increased. There were no stones or other obstables met with while the work was under our observation. Before giving the results of our inspection, it will be well briefly to describe the peculiarities of the 'Fisken system' of working : as, although it has been before the public for several years, from various circumstances it has not hitherto taken a prominent position in the competitive trials of steam tillage which have from time to time been held. The 'system' differs materially from the other 'roundabout' modes of applying steam-power to tillage purposes. The engine which gives off the power may be placed in any convenient spot adjoining the land to be ploughed, on a roadway, or by a spring of water, for instance, and the power given off is conveyed by means of a light hemp rope (½ inch diameter) travelling at a high velocity—say 25 to 45 miles per hour—round the area to be operated upon, and communicating with two windlasses placed on opposite sides (headlands) of the land to be tilled. This high velocity, when communicated to the windlasses, is, by a simple mechanical arrangement, reduced to any desired speed—say 2 to 3 miles per hour. This change of velocity being necessarily associated with the corresponding increase of tension of the ropes in the exact ratio of the rate of reduction of velocity (less, of course, the amount consumed by friction, &c.) Thus an initial velocity of 30 miles an hour, when reduced at the windlass to 2 miles an hour, would correspond to an increase of tension (hauling power) equal to the rate of reduction—or 15 to 1. A strain or pull of 1 cwt. on the hemp travelling rope at the engine is therefore increased to a strain of 15 cwt. on the hauling rope (steel wire) working between the windlasses. In the transmission of power from the engine to the working implement a loss will always take place, greater or less in proportion to the extensibility and elasticity of the travelling rope, and to the friction of the various moving parts of the engine and tackle. The implement—whether plough, cultivator, or harrow—is drawn by the steel wire rope backwards and forwards between the windlasses at any speed that may be desired. The mechanical arrangements of the windlasses enable the man in charge to haul them forward at the end of each 'bout,' and also to stop and start the implement at work the required distance with perfect precision, without communicating with the engine-driver. Owing to some delays in reaching the farm, we found the work already commenced on a 14-acre field, of an irregular parallelogram shape, with a slight but increasing gradient along the line of working. The engine was placed near the entrance, and close to a water-course, from which it pumped its own supply. The engine was one of Clayton & Shuttleworth's 12-horse power double cylinder traction engines, with 8.25-inch cylinders, and a 12-inch stroke, and having a 'grooved' fly-wheel 5 feet in diameter, round and by which the travelling rope was driven at the same speed as that of the periphery of the wheel itself. The engine consumed about 1½ cwt. of coal per hour when at full work. The 'travelling' rope was half an inch in diameter, and made of the best Manilla Hemp expressly for the work, in lengths of 250 yards, each length weighing about 112 lb. Five lengths were required for the field. The rope, 1250 yards in length, and weighing about 5 cwt., was carried round the field at a height of about 3 feet from the ground on light porters, with friction pulleys placed at distances apart of 50 yards on the tight and 30 yards on the slack side of the windlass. The proper tension of the rope was regulated by a tightening pulley under the control of the engine-driver. While at work we timed the speed of the travelling rope, and found it varying from 35 to 40 miles an hour. The 'hauling' rope was of steel wire, ⅜ in. thick, and 800 yards long, equal to a straight draught (furrow) of nearly 400 yards long. The implement at work was one of Fowler's reversing cultivators, working 7 tines, and covering a breadth of 6 feet, and set at a depth of 8, increasing to 11 inches. The field had been steam-ploughed with a 10 by 8 furrow in autumn, and was now being cultivated for Potatos. The distance between the windlasses (headlands) was about 200 yards, and the average length of furrow was 190 yards. The double 'bout,' including the turning at both ends, took from 4½ to 5 minutes, according to the depth of working, giving a working rate of about 2 acres per hour. (The wire-hauling rope, we noticed, was allowed to trail on the ground, Mr. M'Laren considering that the friction and extra wear and tear of rope was not equivalent to the cost of porters and attendants.) The work was done in a perfectly satisfactory manner ; no hitch or difficulty was experienced in any of the movements of the implement or of the machinery. The fly-wheel made from 180 to 200 revolutions per minute, and the pressure increased from 60 lb. to 75 lb. per square inch, as the depth of working was increased. Every part of the machinery appeared to be under perfect and immediate control. At our request, the cultivator was stopped several times while working 11 inches depth, and started immediately, without any apparent difficulty or strain on the machinery. The number of persons engaged was four—two windlass men, one ploughman, one engineman. From these data it is seen that (at 70 lb. pressure) the engine was giving off a power equal to about 20 horses, while the cultivator was at its work. Not having any means (dynamometer or friction breaks) at our command to see how this power was consumed—that is to say, divided between the working of the engine itself, of the 'travelling,' and of the 'hauling' rope, and of the windlasses, we could only obtain information from our Mr. M'Laren, who gave us the following as the result of his practical observations : -The engine, when working at the rate of 160 revolutions per minute, required a pressure of 8 lb. per square inch to set its own parts in motion, and an increasing pressure of 12 lb. per square inch, or 20 lb. in all, to give motion to the full length (1600 yards) of the 'travelling' rope. This would be equivalent to a consumption of rather more than 2-horse power by the engine, and of 3-horse power by the rope, or a loss of at least 5-horse power before the strain or pull reaches the windlasses. These details require to be tested by direct and careful experiment, as also does the power consumed by working the windlasses, before any just estimate of the effective force or actual working efficiency of the tackle can be arrived at. Another important element for consideration, which has a direct money equivalent in the calculations, is the time required to set and adjust the tackle, to take it down again, and shift it to another locality. Mr. M'Laren informed us that they could begin to work in two and a half hours after the engine and tackle reached the spot, and that they could take all up again in one and a quarter hour, or about four hours in all. Mr. M'Laren also informed us that he had ploughed a field of 33 acres without having to shift the tackle at all, and another of 55 acres without having to move the engine, which was placed advantageously close to a supply of water. We were also informed that the engine and the whole of the tackle had remained out in the fields during the whole of the winter, and certainly without any apparent deterioration to rope or machinery. The main advantages claimed for the 'system,' simplcity and economy of working arrangements and of first outlay, and general adaptability to fields of varying size and shape, appear to be substantially borne out by the practical success it has achieved on Mr. M'Laren's farm. Until, however, it has been ascertained by direct and careful testing what amount of power is consumed by friction, &c., and what amount of time is consumed by the arrangement of the tackle, it is not possible to give any judgment as to the practical efficiency of the 'system,' or its comparative economical application. If the verdict on these points be satisfactory, we shall no doubt soon see another and a powerful competitor for public favour in the field of steam tillage, and Mr. Fisken will be entitled to the thanks of the agricultural community for having successfully worked out a new mode of applying steam-power to the mechanical forces of the farm.

"P. B. Swinton, Holyn Bank.
"John Wilson, Edinburgh.

"Edinburgh, April 28, 1871.

"*Note.*—Although we have said that the rate of working of the apparatus when under our observation was about 2 acres per hour, it is right to mention, that having left the field for about an hour, on our return we found that the amount of work done in our absence was only equal to one and a quarter acre per hour. From whatever cause this arose, there did not appear to be any want of steam-power, as when the engine was stopped steam immediately blew off from the safety-valve.

"P. B. Swinton."

Mr. Mitchell (Alloa) reported that a proposal by the Marquis of Tweeddale to form a committee on the general improvement of land in Scotland was approved of at a meeting of the board of directors on February 1, when the following gentlemen were appointed :--The Marquis of Tweeddale ; Mr. Dickson, of Corstorphine ; Mr. Smith, Whittingham Mains, Mr. Swinton, Holy Bank ; Mr. Young, Keir Mains ; Mr. Elliot, Laighwood ; Mr. Stephens, Redbrae ; Mr. Mitchell, Alloa ; Mr. Hunter, of Thurston—the Marquis of Tweeddale, convener. The committee had a meeting on February 15, when a memorandum on the subject prepared by the Marquis was read. After some conversation as to how the committee should take action, it was resolved that a copy of the memorandum should be sent to each member of committee for consideration, and that the meeting should be adjourned till a future day convenient for his lordship, by which time it was hoped that each member would be prepared with his own views of the best mode of improving land, and of the course to be recommended to the directors.

Miscellaneous.—The memorial of the Privy Council anent the transit of animals, the report on prizes offered by Lady Burdett Coutts with reference to humanity to animals, appointment of committee to consider as to a register for farm servants, petition to House of Commons in regard to the gun-tax, and the appointment of committee with power to form an entomological collection, were agreed to. In submitting the petition anent the gun-tax,

Mr. Hunter, Thurston, said he had had some correspondence with the authorities in London as to the definition of game. From the correspondence, it appeared foxes, badgers, dogs, polecats, &c., could be shot without a gun licence, but no bird whatever could be killed without a licence.

Cutting Turf by Steam-power.—The following communication, by Mr. Henry Trench, of Cangort Park, Roscrea, Ireland, was laid on the table :—"It is proposed that a premium be offered for a machine by which steam-power may be used to supersede the use of the slane in cutting turf or peat for fuel—the machine to cut sods of turf similar to those cut by the ordinary upright or breast slane, and to leave them spread on the bank in the usual way. The operation of cutting and spreading is at present more than half the total cost of turf, and is therefore the chief thing to be economised. It is not proposed to make any change in the method of drying the turf, which could be done by natural means, as at present. The time for saving could thus be largely extended, and the cost of turf lowered to such a rate as to limit the use of coal, which is now superseding turf in many public and private establishments. This plan seems never to have been yet attempted, in this country at least, previous efforts for the economical manufacture of peat fuel having been chiefly directed to the process of drying it by compression or by artificial heat. I am in hopes the matter may be considered sufficiently important to be taken up by an agricultural or other scientific society. Meantime, I am willing to offer a premium of £10 (if you will kindly award it), for the best machine, if any can be produced, having practical merit. The machine to be exhibited in Dublin next August, at the same time as the Royal Agricultural Show, and I will gladly double the amount in case the judges of the Royal Agricultural Society may be good enough to relieve you of the trouble of the award."

A vote of thanks to the Chairman terminated the proceedings.

NORFOLK.

At the annual meeting and show of the Norfolk Agricultural Society last week, at Dereham, Mr. C. S. Read, M.P., presided, and spoke upon the administration of the Cattle Diseases Act in Norfolk. The show was well attended—the receipts at the showyard having much exceeded the average of the last few years. We have not room for the prize list. There were good classes of Norfolk cattle, and a fair show of horses. The 1st prize for yearling Shorthorn bulls, including the Prince of Wales' prize of £10 10*s*., was taken by Mr. J. Upson's Prince Lincoln. The Southdown classes suffered from the absence of Lord Walsingham's usual contribution.

After Mr. C. S. Read's speech on the Veterinary Department of the Privy Council, Mr. W. Jones and Mr. J. T. Mott spoke for the successful and unsuccessful candidates.

Sir W. Jones, Bart., in responding to the toast of the "Successful Cattle Exhibitors," said : We may divide the pastures of Norfolk into two categories. The rich pastures in Marshland and in the valleys will grow Shorthorns extremely well, and there I have often found specimens reared ; but I do not think that your light land grasses would enable you profitably to breed Shorthorns. Fat them we can, and better than any other people in the world, because we know better how to use Turnips and cake. But it is quite a different thing to breed animals upon thin and wiry grasses. Moreover, I do not think it would be possible to satisfactorily breed Shorthorns upon our upland farms. You would have to keep a succession of Vetch crops growing in summer, for somehow a cow will have succulent food or she will not give her calf the milk which it requires. Where a county has a speciality, where it has a particular class of stock that bears its name, that is known to be found within its borders, and is a marketable commodity which elsewhere obtains an advanced price, that stock ought to be cultivated. If our Norfolk stock becomes fashionable, as I believe it will—if it be taken up by the high and mighty—and the Prince of Wales intends to have one of the principal herds in Norfolk,—we may depend upon it that many people will come here for bulls and cows, and we shall drive a profitable trade, which, after all, is most important. I think we should not do well if we were to dispense with the prizes we give to cattle and sheep. The use of prizes is that by competition it affords persons who want animals, either male or female, the opportunity of knowing where to find the best, and the best will achieve supremacy, for to that buyers will resort. Therefore I say that if any of these shows were dropped it would become a question as to where the best Southdowns, home-breds, or Shorthorns could be found, a great advantage would be taken from the purchaser, and a man would not get the profit he deserves for the care and expense he has bestowed upon his flock or his herd. I am altogether opposed to the removal of the rewards now given for the successful breeding and rearing of animals, because I am far from thinking that we have yet reached perfection. I am a great believer in Darwinism ; I think that you may modify an animal to almost anything. I will just throw out a question to be solved by the next meeting, namely, who will tell us of a plant that will give us a good crop of hay, and afterwards a sure crop of Wheat. We know that if we have a good plant of Clover we get a good plant of Wheat, but then we do not get a good plant of Clover afterwards. There is also a nut which I will give the members of Parliament to crack. The farmer and the labourer both produce genuine unadulterated goods ; but the groceries bought by the one and the oilcake and manures purchased by the other are sadly adulterated ; and, therefore, I suggest to the hon. members around me that they should find out some means of checking this state of things. It is checked in America, where adulteration is made a penal offence, the consequence being that the oilcake there is worth £2 a ton more than the English cake. Many of you would not object to buy a ton of American cake without seeing it, but would not like to buy a ton of English cake without seeing a sample.

Mr. J. T. Mott gave "The Unsuccessful Exhibitors." In the course of a humorous speech he said: I will not stop to tell you how I burnt my fingers in dissolving bones, or how many big-bellied carboys of sulphuric acid I consumed—that did not pay—and the stench was not agreeable. So I determined to purchase my superphosphate from a manufacturer; my first 10 tons were so satisfactory that the following year I took the trouble of carrying a pot of this savoury compound to Professor Voelcker in London; the analysis cost me 20*s*., but that was no object to an enterprising farmer. The report was most favourable; the analysis was printed on the handbills of the manufacturer as a voucher of quality. I gave an extensive order, everything promised well, the Turnip ground was like a garden, the season was most favourable; but, alas! by some mysterious process, the article, which was called genuine, had lost its virtue, my Turnips never came to the hoe, I dropped £250, and my bullock account did not look quite so well probably as the return of my friend, the manufacturer of manures. This was, as I said, many years ago, and it taught me never to deal with advertisers, and I have never been victimised since; but I think we must all allow that in no article is there so much deception, so much difficulty in securing your money's worth, as in the purchase of manures. I am sure that the old proverb, "Muck is the mother of money," does not apply to all the infallible specifics which are thrust upon the farmer every market day. I am not going to produce my balance-sheet, but I will say that after holding 1200 acres for twelve years I let 800 to one of the best tenants in the country at double the original rent. He has now held it for eight years, and has just taken a new lease, so I don't think farming such a bad business after all. Before I sit down I would make one more observation. A showyard is very much like a public school, where a cocky boy gets well licked, and soon finds his level. An exhibitor here soon discovers that his own animal is not the perfect beauty he imagined, "not all that fancy painted her, so lovely, so divine." He comes here to have the conceit knocked out of him, and goes home a wiser if not a happier man. This is one of the most wholesome practical results of these exhibitions. After what he had said they would readily understand that he felt considerable sympathy with the toast that had been placed in his hands—that of the unsuccessful exhibitors.

HANTS AND HERTS.

THIS Society held its tenth meeting the other day at Portsmouth, under very difficult circumstances. The weather was extremely unpropitious, and a very excellent show was thus unable to attract the usual number of visitors. The following is the list of judges and their awards:—

JUDGES.

SHEEP.—Mr. Henry Fooks, Whitechurch, Blandford; Mr. E. Olding, Woodford Cottage, Salisbury; and Mr. H. Bone, Avon, Ringwood.

HORSES.—Mr. J. B. Spearing, Kilburne Lodge, Hurst, near Wokingham; Mr. W. Wheatly, Reading; and Mr. W. C. Spooner, Eling, Southampton.

BULLS and COWS.—Mr. A. Craddock, Lambourne, Berks; Mr. William Champion, Reading; and Mr. Garne, Church Hill, Chipping Norton.

PIGS.—Messrs. Craddock, Champion, and Garne.

POULTRY.—Mr. J. Baily, 113, Mount Street, Grosvenor Square, London.

MOWING-MACHINE COMPETITION.—Mr. W. Chalcraft, Liphook; and Mr. Chas. Clark, Olanfield, Horndean.

PLOUGHING.—Mr. John Turvill, Hartley, Mandit, Alton; and Mr. George Pittis, Wymering.

SHEEP.

Hampshire and West Country Down.

Rams of any age.—1st, £5, A. Morrison, Esq.; 2d, £3, Mr. James Rawlence, Bulbridge.

Shearling Ewes.—2d, £5, Mr. Anthony Budd, Overton, Hants (only entry).

Shearling Ewes of the same flock, which have never been housed and clean shorn.—1st, £10, Mr. W. E. Fitt; 2d, £5, Mr. John Barton.

Ram Lambs.—1st, £8, A. Morrison, Esq.; 2d, £5, Mr. John Moore; 3d, £3, Mr. W. F. Bennett, Chilmark, Salisbury.

Ewe Lambs.—1st, £5, Mr. F. S. Schwann; 2d, £3, Mr. A. Budd, Overton, Hants.

The whole of the animals in this class were commended.

Southdown.

Shearling Rams.—1st, £10, Mr. J. E. and A. Heasman; 2d, £5, Messrs. Heasman; 3d, £3, Mr. H. Penfold, Selsey, Chichester.

Ram of any age.—1st, £8, Mr. H. Penfold, Selsey; 2d, £5, Mr. H. Penfold; 3d, £3, Mr. A. T. Newman, executor of the late Mr. J. A. Pinnie, Westdean, Chichester.

Shearling Ewes.—1st, £10, S. W. Seward, Esq., Weston, Petersfield; 2d, £5, Mr. G. Pittis, Wymering, near Cosham.

Oxfordshire Down.

Shearling Rams.—1st, £10, Mr. George Wallis, Old Shifford, Bampton, Farringdon; 2d, £5, A. F. M. Druce, Esq., Burghfield, Reading.

Shearling Ewes.—£5, A. F. M. Druce, Esq. (only entry).

Shropshire Down.

Shearling Rams.—1st, £10, Lord Chesham; 2d, £5, H. Wood, Esq., Woolley House, Romsey.

Shearling Ewes.—1st, £5, Lord Chesham.

Cotswold.

Shearling Rams.—1st, £10, the Executors of the late Mr. T. Gillett, Kilkenny, Faringdon, Berks; 2d, £5, do.

Leicester.

There were two classes for shearling rams and ewes, but no entry was obtained.

Somerset and Dorset Horned.

Shearling rams.—Both 1st and 2d prizes were awarded to Mr. Henry Mayo, Coker's Farm, Dorchester.

HORSES.

Cart Horses.

Stallion, foaled before 1869.—No prize awarded.

Stallion, foaled in 1869.—1st, £10, Mr. John Butler, Sherfield Court, Basingstoke; 2d, £5, Messrs. J. E. and A. Heasman, Angmering.

Mare and foal.—1st, £10, S. H. Terry, Esq., Western Patrick, near Oldham.

Three-year-old Filly.—1st, £8, Mr. A. P. Martin (only entry).

Mare or Gelding.—1st, £5, Mr. J. Lancashire, Warren Farm, Micheldever: extra prize, Mr. J. Stubbs, West Tisted, Alresford.

Hunters.

Mare or Gelding, of any age.—1st, £10, Mr. T. R. Hulbert, Old Alresford, Hants; 2d, £5, Mr. J. Canning, Sutton Scotney, Micheldever.

Hacks.

Mare or Gelding, not exceeding 15 hands high, and calculated to carry 12 stones.—1st, £10, Mr. E. W. Snook, Middleton House, Bognor; 2d, Mr. J. Turvill, Hartley Park Farm, Alton.

Ponies.

Mare or Gelding, not exceeding 10 hands high.—1st, £6, Mr. W. Perkins, Southampton: 2d, £3, Mr. W. D. King, Chiltley Farm, Liphook.

Mare or Gelding, not exceeding 14 hands high.—1st, £6, Mr. S. Warrell, Portsmouth; 2d, £3, Mr. A. Ede, Swarthling, near Southampton.

BULLS AND COWS.

Shorthorn Bull.—1st, £10, Mr. R. Soffe, Hams, Eastleigh, near Southampton; 2d, £5, W. Nicholson, Esq., Basing Park, Alton, Hants.

Shorthorn Bull, under 3 years.—1st, £5, John Walter, Esq., M.P., Bearwood; 2d, £3, Marquis of Aylesbury.

Shorthorn Cow in calf, or if in milk, having had a calf within 6 months next preceding June 21.—1st, £10, Mr. J. A. Mumford, Chilton Park Farm, Thame; 2d, £5, W. Nicholson, Esq., M.P.

Sussex Bull, any age.—1st, £5, Messrs. Heasman; 2d, £3, Mr. John Turvill, Alton.

Sussex Cow in calf, or if in milk, having had a calf within 6 months.—1st, £5, Messrs. Heasman; 2d, £3, Mr. J. Turvill.

Devon Bull of any age.—1st, £5, Mr. W. Taylor, Westham, Sussex (only entry).

Devon Cow.—1st, £5, Mr. W. Taylor, Glynley, Westham (only entry).

Channel Islands Bull, any age.—1st, £5, Lord Chesham; 2d, Mr. H. Drewitt, Millvill, Titchfield.

Channel Islands Cow.—1st, £5, Lord Bolton, Hackwood Park, Basingstoke; 2d, Mr. Henry Drewitt, Millvill, Titchfield.

Channel Islands Heifers.—1st, £5, Lord Chesham; 2d, £3, Mr. Henry Drewitt.

PIGS.

Boar, any age.—1st, £5, Mr. H. Humfrey, Kingstone Farm, Shrivenham; 2d, £3, Mr. C. Barton, Sherborne, Basingstoke.

Breeding Sow, any age,—1st and 2d, Mr. H. Humfrey. The whole class generally commended.

Pair of Sows, under 6 months.—1st, £4, Mr. H. Humfrey; 2d, £3, Messrs. Wheeler & Sons.

Boar of any age, large breed, not being Berkshire.—1st, £5, Messrs. R. E. Duckering & Sons; 2d, £3, Messrs. J. Wheeler & Sons.

Breeding Sow, any age.—1st, £5, Messrs. Duckering; 2d, £30, Messrs. J. & S. Wheeler.

Boar, any age, small breed, not being Berkshire.—1st, £5, Messrs. Duckering & Son; 2d, A. F. M. Druce, Esq.

Farmers' Clubs.

EAST LOTHIAN.

Injury Done to Grain in Threshing.—At the late monthly meeting of this Club, held on Friday, the 2d ult., Mr. DOUGLAS, Athelstaneford, presiding, said Mr. Cunningham, brewer, Athelstaneford, had kindly sent a detailed communication with reference to the deteriorating effect for malting purposes of bruising or breaking grain in the process of threshing. On the same point, Mr. Punton, Aberlady Mains, wrote:—

"As regards the overdressing of Barley, a serious loss is the consequence in malting, particularly in the spring months. When the pickles are broken or bruised they do not germinate, and when only a few days in operation they become quite mouldy and sour. The damaged grains also contaminate the sound ones, and the whole 'floor' has to be thrown on the kiln before the malting process is half-finished, and the quality of the malt is consequently very much deteriorated. I observe that Barley threshed with the English high speed mills is very often a good deal broken and bruised, but I cannot say whether it is caused by the action of the drum, or by having the hummeller too close set, possibly both of these may have something to do with it. I may mention the machinery we have here (the old style of rollers and hummeller) threshes the Barley without breaking or injuring a single pickle, and the weights during the past season ran from 57 lb. to 59 lb. per bushel. I have no experience of Wheat. No doubt overdressing will act against it too, but not to such an extent, I should think, as with Barley."

With regard to the mechanical aspect of the question, Mr. Bridges, engineer, North Berwick, wrote:—

"This evil has been brought on by the introduction of drums running at high speeds. First, there were the peg mills, a few of which I erected in this county about 1850, and were discontinued principally on this account. Then immediately followed the present high-speed drums, which are not free of the same fault. From 1852 to 1860, I made a considerable number of them in this county, and tried various plans to overcome this defect, but had not at this period availed myself of any of the English patents, but rather avoided them. The greatest advantage I found was in making the concave as open as possible, particularly at the entrance, where the bulk of the grain was knocked out, so as to allow it to escape more readily the instant it was out of the bar. For the last 10 years, the concave I have been using has carried out this principle more effectually than before, having substituted malleable for cast iron. I have used drum beaters of various kinds, and for several years past have used only the patent serrated beaters, which are now made of steel as well as of iron, and during this period—viz., the last ten years—I have had no complaints made. As an evidence of the effects of the improved concave, there were lately complaints made of two mills I had erected in 1858 bruising the grain. The old beaters on the drum were replaced by the patent serrated beater without making any material improvement. The concaves were next replaced by new ones, which entirely remedied the defect. But beside this construction, a careful millman is indispensable for the proper working, and keeping these mills in the best order. Several cases of bad management have come under my notice, considerably affecting the bruising of grain. In putting Barley through the mill a second time, in cases of smut, when the hummeller cannot be used, it is highly needful to screw back the concave a little; also, when rough elevators discharge into the drum, no more grain should be allowed to come up than is necessary. I do not recollect of any case where the hummeller was at fault in bruising grain, where it was not found to be running too close at some part of the casing."

On the same branch, Mr. Munro, agricultural engineer, Dunbar, wrote:—

"The subject you name has had a great amount of my attention for several years back, namely—the evils arising from the breaking of corn by machinery. The causes of the same are not few, from which I may mention two or three. 1st, the kind of drum used; 2d, the way the drum and concave are adjusted and kept in order. 3d, the state the corn is in when threshing. In dry seasons, the drum must be kept in first-rate order to prevent breaking. The thing suggests itself to me, that if the farmers would get their millwrights at shorter intervals to examine and adjust their drums, instead of their own men shifting them, we would see less broken corn than at present. In this district, where the drums are not meddled with, there are no complaints of broken corn. In making this suggestion I do not mean to blame the men in charge of them. On the contrary, I think they deserve credit for the way that they manage them. The only kind of drum I use is Goucher's patent drum, with grooved beater plates.

Mr. CUNNINGHAM, Athelstaneford, after a few introductory remarks, said:—First, then, as you are aware, the object sought in malting is to change the starchy substance of the grain into grape-sugar. This is accomplished by steeping the Barley in water, for a longer or shorter period, to produce fermentation. When the grain begins to vegetate, it is extended on the floors, and kept there from 10 to 20 days, the time varying with the condition of the grain and the temperature of the atmosphere. During this period the plumule or acrospire, which springs from the root end of the seed—the future stem of the plant, in fact—gradually ascends until it emerges from the seed at the end opposite the root. Now, it is found that the chemical change effected by the gradual extension of the acrospire—viz., that of changing the starch into sugar—is limited to that portion of the corn up which the acrospire has crept, and no further—the upper part of the corn not covered with the acrospire still retaining its starchy consistence. It is evident, then, that the secret of malting consists in promoting, by natural and regular process, the growth of the acrospire until it reaches the end, or very nearly the end, of the corn, because when it extends further it extracts the substance of the seed. Now, it will be evident, I think, from what I have stated, that when grain is damaged to any extent, it is more than useless for malting purposes. In the first place, the broken and crushed corns not only do not grow, but they change colour, and become mouldy. The crushed corns, by absorbing moisture internally, rapidly decompose and putrify when exposed long to the temperature of the working floor; whilst those grains that are rubbed, although they do spring, rapidly discolour and decay before being ready for the kiln. The loss thus sustained in malting damaged Barley consists first in paying duty for a portion of grain incapable of undergoing the necessary chemical change for producing malt, in the loss of quality and flavour by the damaged corns becoming mouldy with decay; and, lastly—and this is the greatest loss connected with the handling of the article—in being obliged to hurry the floors to the kiln before the sound grains have had time to mature, thereby leaving the acrospire only half developed, and a considerable part of the corns still retaining their starchy consistence, leaving the malt hard and flinty, in place of coming out crisp and flowing in texture, as good malt should be. I may remark here that these observations are applicable to all Barley which has sustained damage in the way indicated, when used for malting; but of course the evil is modified by the degree to which the evil has extended. Some of the Barley may be only slightly rubbed, while some may be both broken, crushed, and rubbed, and the results I have explained will follow in the proportion to which the damage has extended. Let me say, that a good deal of damage may be sustained by grains which can only be discovered by looking somewhat closely into it. And buyers, on some market days, have little opportunity to inspect the grain as it should be. A number of farmers, with the view of improving the colour of their Barley, when they had much smut, were in the habit, in the early part of the season, of putting their Barley twice through the mills—a most pernicious practice, as the Barley was so damaged as to be very unsafe for malting purposes. I have on more than one occasion bought parcels of Barley coloured to some extent with the dust of the smut, and I have found that by putting the water into the steep first, and giving the Barley an extra water, a considerable quantity of the smut came off. So long as the body of the corns have sustained no damage, something may be made of them. The evil maltsters above all things deprecate is the damage of corn by breaking or bruising it. I mentioned in the first part of my letter that the evils resulting from damaged Barley date from the introduction of high-speed mills into East Lothian. Such is my experience. The particular phase of the complaint was contemporaneous with their introduction into the county. I am quite aware that the high-speed mill, with all the necessary apparatus for finishing the grain for the market as it comes from the machine, is a most desirable implement. It threshes quicker, it threshes cleaner, it turns out the straw in a whole state, it has many recommendations, and, I believe, cannot be dispensed with now. I consider, however, that much of the evil resulting from their use is the result of faulty construction or mismanagement. I often get Barley threshed with high-speed mills perfectly free from any damage whatever. If one farmer can use it to good purpose, it is surely possible for all to do it; the effort is worth trying. I know that parties whose grain is known to be sound and good not only command a more ready sale in the market, but invariably get, I believe, a higher price. My object in writing this is more to point out the evils resulting from defective threshing, leaving to others the task of devising the remedy; but I may remark that I think the damage is often sustained by the grain in passing through the mill, the concave of the drum being screwed too close to the convex of the frame. I cannot otherwise account for the rubbing and crushing of the corn. It is the opinion of some that the hummeller is the cause, but the grain runs through the hummeller in a thin stream. The knives, indeed, are sharp, and may possibly cut the grains. They sometimes appear as if they had been cut, so clean across does the division appear, without a dimple or break on either side of the grain. If such should be the case, is it not possible to alter the hummellers as they come in connection with the old beating drum, viz., to have the machine placed vertically instead of horizontally, the knives blunted, and the speed very much reduced? There would then be a solid body of grain to act upon, and although the inlet and outlet would require some nicety of regulating, that might be accomplished. Another defect with some high-speed drums consists in their being screwed without any guage to regulate the distance of the drum from the frame. Consequently the space for the grain and straw to pass between is regulated with no certainty —sometimes it may be closer and sometimes wider, as inclination or accident may determine. The great bulk of the Barley grown in East-Lothian being bought for malting purposes, and the climate, soil, and means of the farmer combining to produce a first-class article, so far as the raw material is concerned. I think there can be no doubt that it is greatly the interest of farmers to study the requirements of the trade (the malting trade), and prepare the grain in such a way that its value may be in no way deteriorated by the process of preparing it for the market—I repeat, the interest of farmers. I might suggest an appeal to your professional reputation, and say that while East Lothian can boast of a class of farmers who have led the van in the march of improvement, and been foremost in utilising any discovery in science applicable to their particular domain, it seems like a stigma on their character—their professional character —that grain of such superior quality should be spoiled in the dressing. But I feel persuaded that, were buyers assured of greater security against damaged grain, coming as they now do from all quarters, a spirit of confidence would be implanted, and they would be the more prepared to give the utmost value for the article. I know, from conversation with parties in the trade, that the feeling has been that rubbing is one of the drawbacks to East Lothian Barley. As I remarked, in many cases it is very slight, in some there is no defect; still there must have been a considerable amount of mischief when the feeling extends to the whole district. Had there been no such feeling, it is probable prices might have been better. I must say that when I have pointed out the evil to any of my friends engaged in farming, they have invariably admitted it, and expressed a most anxious desire to remedy the evil did they know how. The difficulty lay in applying a sufficient amount of friction to separate the awn without damaging the grain. I hope that some wiser heads will be able to devise a remedy, and that no such subject will need to be discussed next year. In these remarks I have confined myself to Barley as applied for malting purposes. Other kinds of grain are broken and bruised, but I would suppose that, unless used for seed, or stored for a length of time, the damage sustained is nothing like so great in the way of destroying the value of the grain as in the case of Barley making into malt, the rest being all manufactured in a dry state.

The CHAIRMAN (Mr. Douglas) said that after the statement of Mr. Cunningham, it could not be doubted that an evil connected with the dressing of both Wheat and Barley did exist, which in the one case deteriorated its value as seed, and in the other for malting purposes. Farmers would be glad if practical men could fall upon some expedient to remedy the evil. It was their desire not only to get the best price for their grain but that the purchaser should have the full value from it, and not be subjected to the waste which it had been shown had sometimes to be borne by the maltster. A threshing-mill should, above all things, thresh clean, for they could not afford to throw away any of the grain, seeing that they had little enough of it on the straw. A good deal of the evil complained of, he thought, arose from the hummeller, to which much attention should be paid. Some of the hummellers were too horizontal. He considered the upright action the best, because it was more under control. There ought also to be some scale for regulating the speed of the drum. As showing the importance of a properly working mill, he mentioned a case in which a farmer threshed a portion of a stack, and its weight in the market was 16 st. 11 lb. His mill then underwent some alterations, and the rest of the stack was threshed. This portion only weighed 16 st. 6 lb., but in consequence of the improved mill not having broken so much, it sold 3*s.* per quarter higher than the heavier sample.

Mr. HOPE, Fenton Barns, as bearing out the statements of Mr. Cunningham, said he had been told by an extensive brewer in Edinburgh that he frequently got over the fingers by buying Barley from parties he did not know. There were some farmers, this gentleman said, from whom they could buy with perfect security; and when the Barley was unbroken, he had no hesitation in giving 2*s.* or 3*s.* more a quarter for it. Sometimes, too, he had been told, that when severely bit, brewers had recourse to laying in a quantity of foreign Barley. These things showed the necessity for farmers paying attention to this subject. For his own part, he believed the evil had arisen in a great measure from the high-speed drums; but at the same time he thought it arose often from the inattention of the farmers themselves. They left the matter to men who, in order to get through a good day's work, put too much grain in the hummeller, which he found always caused broken grain. A good portion of the injury arose from too much hummelling. As to smut, he might mention that the first sample of Barley he threshed in his high-speed mill was quite white when it went into the hummeller, and quite black when it came out. He stopped the mill at once, and put the Barley through the fanners, and he found by that process the smut was blown away, and the sample came out quite clean.

Mr. HARVEY said he had no wish to speak disparagingly of high-speed drums; but about 30 years ago it was an uncommon thing to see broken grain coming into the market, and there was no doubt that broken grain had increased since their introduction. He admired the fine action of the high-speed drums; but when the grain came out broken where was the benefit? Mismanagement had been blamed for this; but what did that mean? It meant that these mills needed to be superintended by men accustomed continually to the same mill.

Mr. HALLIDAY, engineer, said he commenced to make high-speed threshing-machines 16 years ago, and before doing so he had gone to England to see the machines in use there. After inspecting several at work, he came to the conclusion that they had all the fault of breaking the grain. The result of what he saw made him think that the system of regulating the concave by six or eight screws was a very awkward thing to put into the hands of farm servants. He had therefore constructed a system of regulating the concave, whereby any gentleman could regulate it with his dress-coat on, and without stopping the mill. If the mill was not threshing clean, the attendant had nothing to do but to turn a small handle, and the whole concave was regulated from one point. He found this expedient of great benefit. He had put up a mill for Mr. Tod, Bearford, about 12 years ago, and after it was in operation they had to search the whole "bing" over to try to get a broken pickle. He thought there was a good deal in the width of the concave. He made the concave of Mr. Tod's mill pretty wide, to allow the grain to get down after being threshed—to allow it to escape from the drum whenever the grain was taken from the ear. He found that with the concave being so wide there were portions of the heads which went down without the pickle being taken out. He therefore commenced to straighten the concave to prevent these half heads getting through the concave; but this, he thought, had a greater tendency to break the grain, and he therefore agreed in the concave being wider to let the corn get out. He believed, also, that the speed of the drum had something to do with the breaking of the grain. When the grain was very dry the velocity of the drum would cause this breakage—the mere contact of the drum would break very dry corn. The drum acted as a disintegrator when the speed was very high. To obviate this he had put two speeds on the drum, so that in threshing Beans and Wheat the speed of the drum could be reduced, while the rest of the machine was going at the full rate. He had done this to several mills, by putting on another pulley for threshing Wheat, and he believed that since then there had been a great improvement. As to the hummeller, his were all horizontal, and delivered at the top instead of the bottom. They were not worked full. The velocity of the drum keeps the grain always on the outside. I admit that it does not look very natural, but nevertheless it is the fact. When it stops there is no more grain in the hummeller than there would be if it was delivered at the bottom.

Mr. PATON believed the complaints made by Mr. Cunningham to be well founded. For his own part, he thought the whole fault lay in the setting of the drum. If farmers would look well after that, and see that the drum was equally set, there would be less breakage. He had seen mills working with one side quite open and the other quite close; and in such a case it was quite impossible that the Barley could be threshed properly. He held that, with a well-set drum, nothing could beat the high-speed mills.

Mr. DURIE was still working with the old Scotch mill, and he was never bothered with either broken Wheat or Barley.

Mr. HALLIDAY—I neglected to say, with regard to the Goucher beater, that I believe it is far too closely grooved, and that if it were wider it would have more tendency to let the grain get through undamaged.

The CHAIRMAN summed up the discussion, which he said had brought out some very valuable information, and that upon the whole it had shown that it was not desirable to dispense with high-speed drums. Speed and safety, he believed, were both quite attainable in the use of these mills; and by the application of skill and the results of experience on the part of engineers, and careful attention on the part of farmers, they might hope in the course of time to get a stop put to the evil which had given rise to the discussion.

Farm Memoranda.

HARVEY'S DAIRY, PORT DUNDAS, GLASGOW.—The establishment about to be described is situated on the very top of Hundred Acre Hill, at Port Dundas, Glasgow. Whatever *rôle* Nature may have intended for Port Dundas, it is now about the most unlikely spot in the world for the locality of a monster dairy. Rope-walks and anchor-foundries, dirt and dry docks, seem in their element. But the dairy is also there, and, until the outbreak of the cattle plague, a very notable establishment it was. From 800 to 1000 cows in milk were then the usual number, and were the *raison d'être* of a series of long wooden sheds that stand, as black as coal-tar can make them, in long parallel rows, with their gables abutting against an open space in front of an engine-house. The latter structure belongs to a distillery, to which the dairy is most extensively indebted. By means of its engine, liquid manure from the cow-sheds is pumped into tanks erected on the highest eminences on the farm belonging to the Dairy Company, and the distillery refuse is a nutritious and milk-producing food, which is used in considerable quantity.

The following description, extracted from the late Mr. H. H. Dixon's "Field and Fern," will give an idea of what this dairy was a few years ago:—

> "Mr. Harvey's byres are distinguished by different names—'The Parlour,' 'The Thistle,' 'The Halloween,' 'The Waterloo,' 'The Malakoff,' and so on. There were some 1700 cows and queys in all, and about 1000 of them in milk, and feeding on Turnip, cut straw, and distilled grains. The bulls, which stand with them, are mostly Shorthorns, and so are 300 of the milch cows; the rest are Ayrshires, with the exception of a few polls, and recently a sprinkling of Dutch. They stand in long ranks tail to tail, and the scourings fall into the gutters behind them, which are duly flushed down. Hence each beast has to be very accurately told off, on her arrival, into a byre, whose stallage exactly suits her length. In some of the byres there is only one line of cows, and the calves are in small partitions opposite them.
>
> "About 50 of the queys are kept each year, and go as yearlings and 2-year-olds to parks down the Clyde, and the rest are dismissed as 'slink veal' (to adopt the term of the trade) to the butcher soon after they are calved. Thirteen cows are allotted to each milker, seven of whom live on the spot, and the rest of whom arrive at milking hours from Glasgow."

Since the cattle plague the dairy has dwindled but not decayed. Not more than 150 cows are now housed in the home shippons; but the Company contracts with the neighbouring farmers for the supply of a very large quantity of milk, which raises the total amount of the saleable commodities up to the estimated produce of 800 cows. Ayrshire cows and Shorthorn bulls are preferred at the homesteading.

Cows are bought just previous to calving, to replace those which have gone to the butcher; and in 1869 about 50 passed through the manager's hands in this way. Those of their own breeding are kept on for four, five, or six years; and those that are bought are retained according to the age at which they come in. March, April, and May are the months most preferred for bulling, as they suit the winter trade; but great care is taken to have a sufficient number of late calvers, as many of the earlier cows run dry suddenly towards the fall of the year. A cow should become dry at least five or six weeks before calving, and the late calves should all be dropped by the middle of May. No cows are put to the bull in September and October, nor in the early part of November, as June and July calves are not wanted; therefore the season preferred commences about the end of November or beginning of December.

Calves get 2 galls. of milk each every day for about five or six weeks, and then skim-milk for the same length of time. In summer they are turned out very early, but a large proportion are winter-calves, and require the above treatment, especially as the Ayrshire and Shorthorn cross gives a heavy calf that requires a good deal of feeding.

In some years, when food is plentiful or milch cows are dear, a certain number of stirks are bought; and similarly when feeding-stock is cheap the cows are kept longer.

The cows are milked three times a day, and about one-half of the produce is set for cream. As the Dairy Company do a "family trade," a large quantity of cream is sold in the ordinary course of things; and there is a good demand for skim-milk among the working classes. On an average, the quantity of milk to be dealt with is 1500 galls. daily, of which about 800 are set for cream. The morning milk is all sent away warm, the afternoon yield is about half set, and cream is taken away from the whole of the evening produce. This practice is necessary because, although 12 salesmen are employed, there are but two deliveries daily, although there are three milkings, and the last delivery is over by 4 o'clock in the afternoon. Wooden tubs, as shallow as possible, are preferred to set the milk in; and it is liked to let the milk remain as long as possible, in the shallowest possible tubs, so as to obtain the maximum yield of cream.

In June and July, a certain proportion of the produce is churned, as about this time of year there is a slack demand for milk during six weeks or thereabouts. Milk, cream, and skim-milk are mixed together before churning, this being considered the most profitable method. All the milk is soured, and about 1 lb. of butter to 3 galls. of milk is regarded as an average return. Three of the old-fashioned Scotch churns are used, if necessary, and about 300 galls. can be dealt with at one time. The butter comes in about an hour and a-half, including the time occupied in taking off the butter once or twice and brashing; the actual churning, therefore, does not occupy more than about an hour.

About the first ten days of October it is reckoned that the grass land requires the cows to be taken off, and after that time they remain entirely in the shippons until about the latter end of April or the beginning of May. During these seven months the daily food commences with draff (distillery refuse) about 4 or 5 o'clock in the morning, mixed with bean, pea, or Indian meal, but preferably the first-named, unless Beans are too dear, when mixed kinds of meal are substituted. Linseed cake is occasionally given at this time to cows beginning to run dry, and also in spring to those that require a little laxative. After the first milking, viz., about 7 o'clock in the morning, as much distillery refuse as they can take is freely given; and at 8 o'clock either oat-straw or hay (if possible). The latter is generally Rye-grass hay off the irrigated fields to be described presently. The next feed consists of raw Turnips or Cabbages, given about 10 o'clock, and at 11 the cows are milked for the second time. The afternoon meal is given at 2 o'clock, and consists of steamed meal, Turnips, and draff. At 4 o'clock some fodder, generally straw in the afternoon, is placed in the mangers, and between 4 and 5 more draff is run in. Some Turnips are always put in the steamed food. At 5 o'clock the cows are milked for the third time, and are afterwards made up for the night.

During the summer the cows get nothing in the shippons except a little draff in the morning, when they come in to be milked, except towards the fall of the year. They are then allowed some fodder at mid-day; and in a bad season they get a little meal with their draff in the morning. They are kept on the pastures all day, but are brought up to the steading to be milked at about 11 o'clock, as well as at night.

The solid manure from the shippons is sold to the neighbouring farmers; but the liquid manure is pumped to a fountain-head a few feet above the highest part of the farm, and distributed by gravitation to auxiliary tanks by two branches, which run east and west from the main receptacle. The pipes (2½ inches in diameter) run underground, and are furnished with stopcocks, so that the manure may be shut off from any portion of the farm and diverted to any other. The engine begins pumping in the morning after churning, and continues as required. Irrigation is done on the well-known Kennedy system, which at one time took some hold in the south of Scotland, and is probably better known, as it is certainly more favoured, in France and Belgium than it is in England. The method is briefly as follows:—An iron pipe is connected with the nearest tap to the portion of land to be irrigated; and to this ½-inch iron pipes, in lengths of 6 feet, with spike and faucet joints, are connected so as to reach the farthest point to be dealt with. To the last piece of tubing a hose and jet are attached, the sewage is turned on, and the land "watered" by the man in charge, who has a boy with him to carry pipes to and fro, lay them in their places, turn taps on or off, and do other odd jobs. When the land within reach of the hose has been sufficiently saturated, a certain number of lengths of pipe, generally about 100, are detached, and the terminal length with the hose shifted accordingly. By this system a man and a boy can irrigate 2 acres per day of 10 hours, the expense for this portion of the work being 1*s.* 6*d.* per acre.

The great objection to the Kennedy system is the large initial outlay in underground pipes, and laying them down. Another objection, which would be more serious on an ordinary farm than it is there, is the expense of pumping the sewage every day to the fountain-head. The interest on the first outlay, added to the continuous expenditure included under the second head, probably requires a larger margin of profit to cover them than can be reckoned upon, except under special circumstances.

Nearly 500 imperial acres are held in connection with the dairy, and are farmed under the following rotation: (1) Oats, (2) roots, (3) Wheat, and (4) seeds left for two or three years, or sometimes four. There are about 300 acres of seeds and grass, and the extent of land in corn and roots ranges from 160 to 170 acres. The Wheat crop is sold, and the straw used for litter. A large quantity of the Oat crop is required for the horses, of which about 25 are kept, on dairy and farm; the remainder is ground and sold as oatmeal, and the oat-straw is used for fodder.

Irrigation commences with the Oat stubble, which gets two runnings in the autumn, one before and one after the autumn ploughing. In the spring a running is again given after the spring ploughing, and for Turnips another at seed-time if possible. Potatos are not irrigated after autumn, as it tends to make them soft. The root course is generally one-sixth Cabbages, one-half Turnips, and one-third Potatos. The latter crop is sold off the farm, with the exception of the small and diseased tubers.

The green crops being grown on the ridge, the last irrigation is done by running the liquid manure down the furrows. The Turnip land is generally left strong enough for Wheat; and even the Potato land, unless it happens to be a very poor field, gets nothing from the last irrigation before the Potatos are planted until the February after the Wheat is harvested.

In February the liquid manure is turned on the Rye-grass for cutting, say about 50 acres; it is then sent on to the land being cropped, and during the summer it irrigates the pasture land in rotation, one or two fields being done at a time. From 30 to 50 acres of hay are got every year, three cuttings being obtained if required; but pasturing is always preferred as far as it is practicable. The mixture of seeds generally sown is about 3 bush. of perennial Rye-grass, and from 3 lb. to 4 lb. each of red, white, and Alsike Clovers per imperial acre. Italian Rye-grass is too soft for dairy cattle, and is therefore never sown. *Mr. Jenkins' Report on some Features of Scottish Agriculture.*

Obituary.

WE sincerely regret to announce the death of Mr. J. C. ADKINS, of Milcote, Stratford-on-Avon. Few men in the midland counties were more widely known and more universally esteemed. His portly form and manly bearing, his cheerful smile and apt and wise sayings, will long live in the memory of many sorrowing friends. He was the thorough type of the English gentleman—straightforward, courteous, hospitable. Of an eminently social disposition, he delighted to gather his friends about him. In his oak-panelled sanctum, during many pleasant and instructive hours, his privileged friends have listened to the outpourings of his powerful and well-cultivated mind, and felt the influence of his great and kindly heart. He certainly possessed the power which only great and good men have, of moulding the opinions and character of those with whom they come in contact. He was well-read in a wide range of varied subjects, including literature, art, science, and the current topics of the day—no subject came amiss to him. He was possessed of great clearness of perception, and much readiness and humour. He was an uncompromising enemy of deceit, hypocrisy, and cant; and with good-humoured satire would often raise the laugh against humbug, folly, and empty pretension. He was equally at home amongst agriculturists, mechanicians, racing authorities, medical men, and *savants*. On endless subjects connected with farming, with Shorthorns, and even on commercial matters, he was applied to for advice. His sound sense and varied experience were ever at the service of his neighbours; and as a clear-headed judicious adviser he will be missed by many. He was too diffident of himself to meddle much with public affairs; he eschewed farmers' clubs, meetings of Chambers of Agriculture, and other such gatherings. Although no man was better qualified, he persistently refused to act as judge either at the Royal or any local shows, but with considerable persuasion was, some years ago, induced to become one of the directors of the Stratford-on-Avon Railway. His admirable powers of observation, and his determination to do well and thoroughly whatever he undertook to do, have long made Milcote one of the model farms of the midland counties. He early made use of steam cultivation; he was a great advocate for modern and efficient farm implements and machinery; thorough and clean cultivation he considered prime essentials of good arable farming; in the selection of his seed-corn he was particularly careful, and by employing pedigreed sorts he had recently greatly increased the quality and yield of his barley. Ever since he followed his elder brother as tenant of Milcote, now nearly forty years ago, he bred Shorthorns. Robert Colling's favourite strains were his early choice; his Charmers and Sweethearts at his own and other Shorthorn sales have realised such prices as abundantly testify to the judgment and skill of their founder. The Milcote down sheep, which have occupied a large share of the breeder's attention of late years, now promise to be almost as celebrated as the Milcote Shorthorns.—*Stratford-on-Avon Herald.*

The Week's Work.

JULY 1.—*Buckwheat* or *Vetches* may yet be sown, where other crops have failed. Anything is better than the exposure of the earth's surface to the wasting influence of the weather. What is it but the scorching sun that has turned immense tracts of Africa and Asia into barren deserts of drifting sand, &c.? Brankmeal makes excellent seasoning for cattle food, and the Vetch is one of our best forage plants.

Cabbage, where Buckwheat and Vetches do not suit, may be planted. The weather has been favourable, in some districts, for planting. If too late for Drumheads and the hearting sorts, try the leaf-producing varieties, with plenty of manure, if possible, in a liquid form.

Turnips sow after forage crops of Rye, Vetches, &c. The practice of preparing the land for the seed is as diversified as farm practice generally is in different places and on different soils, much depending upon the condition the land is in, the manure to be used, whether the crop is to be grown on the flat or in stetches, and, last of all, the weather. If the land is clean, and the crop to be grown on the flat, with farmyard manure, and if the weather is dry, well soak the manure from the liquid manure-tank, pond, or river, before it is carted; and, after it is spread, keep the water-cart going ahead of the plough. Plough in with the sap, harrow fine, sow, and roll down hard; if the weather is rainy, the water-cart will not be needed. If to be grown on the flat with superphosphates, in dry weather, well water the land before ploughing, and sow as above, remembering that water is the best manure that can be applied in dry weather. If some means could be devised for throwing in a good stream from a hose, just behind the furrow horse, it would be much superior to sprinkling it over the surface, as all poaching would be obviated, and the newly turned furrow-slice would drink up the water by capillary attraction, and thus supply the roots of the plants at a very early age. It would not take many water-carts to keep a plough going, and, where there is plenty of water at hand, why not thus manure the land?

Turnip Hoeing.—The early sowings prosecute as soon as the plants will stand singling. In some places the braird is equal, in others patchy, but, upon the whole, complaint, this year, is below an average. Where there are gaps, they should be re-sown with a gaping drill, well watering the ground before sowing if the weather is dry. Keep the horse-hoe going, is an old familiar rule, from the time the plants will stand it up to when they meet in the drills. The thicker the plants braird in the rows the sooner they require to be singled, for, when they are allowed to spindle, the stem takes a set from the injury it receives by blanching and pulling, and the crop consequently cannot bulb well, and the bulbs thus produced are of inferior quality. There is great art in growing a Turnip, and to begin training early is the sure road to success. In the northern counties, where sowing is earlier, the second hoeing may by this time be finished. As you remove weeds, well loosen the soil about the plants. All the Brassica family are grateful for fresh air at the bottom, if there is anything in the land to work upon. When done by the drill or acre, by task, the work is too frequently skimmed over, doing more harm to the plants than good to the land. As soon as the leaves begin to rise off the ground, and the bulbs to form, the last horse-hoeing should be given, the double-mouldboard plough following, which concludes the work. When the land is thoroughly drained, and the crop to be eaten off with sheep, or to be pulled and stored, some do not set up with the double plough, or, if they do, only very lightly.

Haymaking, which commenced here (Surrey) about the middle of last month, will, in some places, be later than was at one time expected. The season has been favourable for the growth of "Buttercup," "Sorrel," and other weeds, so that the heating of the haystack will be attended with greater difficulty; and, when overtaken by rain in the making, more loss will be sustained. Where there is a command of town sewage or river water, the hay stubble should be irrigated the moment the hay crop is carried, so as to set up a rapid growth, either for pasturage or a second cutting for soiling or hay.

Mangels, Sugar-Beet, and Kohl Rabi should receive an early second hoeing, more especially when much rain has fallen, so as to loosen the soil and let in fresh air to the roots; and to do the work effectually the surface should be dry. Practically speaking, the hoes should keep themselves clean. In wet weather, when weeds grow plentifully, the work is attended with no little difficulty; but just so much the more need is there to persevere. If the land is clean, it is better to defer the hoeing until the surface dries sufficiently to leave the soil open behind the hoes. Hoeing the land immediately after a shower when it sticks to the hoes, consolidates it, thereby excluding air and favouring the growth of weeds where seed is present, as it too generally is. And even when the land is clean and free from the seeds of the ordinary weeds, by poaching the surface with the hoes and the feet of the hoers the land gets into an unhealthy state, forming a favourable nursery for the growth of plants whose spores float in the atmosphere. In common language, the surface of the ground becomes covered with a green coating of moss—the worst class of weeds in the world, as they readily take root in all decaying animal and vegetable matters in the land. The season at the time we write is extremely favourable for their production, and therefore their growth should by every means be guarded against. They are the sure ruin of all our root crops, their presence indicating the very reverse of what Turnips require.

Sheep Washing and Clipping continues into this month in the Cheviot and Blackfaced flocks of the North. A pool in a clear running stream, with a pebbly shore, is chosen for washing, a large fold being made on each side to hold the flock. From being annually washed for four or five seasons old sheep become accustomed to it, take the water freely, the younger following, jumping in between the shepherds as fast as allowed, or as they swim across and walk out into the fold on the other side. A few times across the pool completes the operation of washing without a hand being put upon the sheep. Shearing commences immediately the wool is dry. In the large hill flocks of the North it is common for shepherds to join, shearing first one flock and then another, each flock being thus put through the shears in less time than were they to be shorn each by its own shepherd.

Sheep Folding on all forage crops attend to. If compelled to eat the fold bare, and are consequently turned into a fresh break of Vetches, Rape, or Clover when thus hungry, the flock may sustain very serious injury. In warm, moist weather, the best plan is to mow such crops, cut them into chaff with a little dry hay or straw, season with a sprinkling of corn-meal and salt, and feed in troughs. In dry weather the newly mown forage may be allowed to dry sufficiently in the sun before it is cut into chaff alone, and then seasoned as above with meal and salt. If all three crops are grown they should be mixed together, and if Sainfoin and Lucerne can be added, so much the better—sheep like savoury food. Our down and hill pastures, that yield the healthiest flocks and best mutton, furnish a practical recipe at the present time what they require. *W. B.*

Markets.

ENGLISH WOOL.

During the last week Wool has been in good demand, and prices are still gradually hardening, and we anticipate considerably higher rates after the bulk of the clip has come to market. Colonial Wools are 25 per cent. dearer than this time last year, and sometimes even more, and fully 10 to 15 per cent. dearer than last month. The Americans, who have not been in the market to any extent for some years, are now buying largely, and must have taken 15,000 bales of Australian, weighing about 400 lb. each, within the last three months; this new competition alone will account for part of the rise.

HOPS.

Borough Market, June 29.

Messrs. Pattenden & Smith report that the accounts this morning from all parts of the plantations are decidedly worse, and on the Continent the prospects for the coming crop are as unfavourable as our own. The market is very firm, without any great amount of business passing, but good healthy Hops are gradually becoming absorbed.

HAY.—Per Load of 36 Trusses.

Smithfield, Thursday, June 29.

PrimeMeadowHay	140s. to	150s.	Clover, old	150s.	160s.
Inferior do.	120	130	Inferior do.	130	140
New Hay	60	120	Prime new do.	120	130
Inferior do.	—	—	Inferior do.	—	—
Straw	40	50			

Cumberland Market, Thursday, June 29.

Sup. Meadow Hay	160s. to	170s.	Inferior Clover	130s. to	138s.
Inferior do.	130	147	Prime 2d cut do.	—	—
New do.	90	132	New do.	—	—
Inferior do.	—	—	Straw	44	49
Superior Clover	168	175			

Joshua Baker.

METROPOLITAN MEAT MARKET, June 29.

Best Fresh Butter .. .. .. 15s. per dozen lb.
Second do. do. .. .. .. 13s. ,,

Small Pork, 4s. 4d. to 4s. 10d.; Large Pork, 3s. 4d. to 3s. 8d. per 8 lb.

METROPOLITAN CATTLE MARKET.

Monday, June 26.

We have a larger number of Beasts than on Monday last, and of fair average quality; trade is active, however, and prices not lower; a fair clearance is effected. The supply of Sheep is unusually small for the time of year; choicest qualities are readily disposed of, and in some instances our top quotations are rather exceeded. Trade is rather better also for choicest Lambs and Calves. Our foreign supply consists of 1920 Beasts, 8500 Sheep, 410 Calves, and 35 Pigs; from Scotland there are 70 Beasts; from Norfolk and Suffolk, 1500; and 540 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c.	5 10 to 6 0	Best Long-wools	.. to ..
Best Shorthorns	5 8—5 10	Do. Shorn	5 10—6 2
2d quality Beasts	4 4—5 4	Ewes & 2d quality	.. — ..
Best Downs and Half-breds	.. — ..	Do. Shorn	5 0—5 6
Do. Shorn	6 4—6 8	Lambs	6 8—7 4
		Calves	3 8—6 0
		Pigs	3 4—5 0

Beasts, 4030; Sheep and Lambs, 21,550; Calves, 445; Pigs, 130.

Thursday, June 29.

There are a few more Beasts than on Thursday last; choicest descriptions, however, are by no means plentiful, and make about the same as on Monday. Inferior qualities are rather lower, but a fair clearance is effected. The supply of Sheep is much shorter, the falling off being principally in foreign. The trade is not so brisk as on Monday, and prices on the average are not quite so good. Choice Lambs and Calves fully realise Monday's quotations. Our foreign supply consists of 280 Beasts, 2700 Sheep, and 733 Calves.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c.	5 8 to 6 0	Best Long-wools	.. — ..
Best Shorthorns	5 6—5 8	Do. Shorn	5 8—6 0
2d quality Beasts	4 0—5 0	Ewes & 2d quality	.. — ..0
Best Downs and Half-breds	.. — ..	Do Shorn	5 0—5 4
Do. Shorn	6 2—6 6	Lambs	6 8—7 4
		Calves	3 8—6 0
		Pigs	3 4—5 0

Beasts, 855; Sheep and Lambs, 11,910; Calves, 825; Pigs, 55.

MARK LANE.

Monday, June 26.

There was a very small supply of English Wheat to this morning's market, which was sold at the prices of this day se'nnight. The attendance was good, and holders of foreign Wheat were not disposed to accept lower prices, and a fair consumptive business was done on last week's terms. Barley was dull, Beans 1s. per qr. cheaper, Peas unchanged in value. Oats were 6d. per qr. cheaper; inferior qualities sold at very irregular prices. There was no change in the value of Flour.

Price per Imperial Quarter.	s. s.		s. s.
Wheat, Essex, Kent, Suffolk..White	47—60	Red.....	55—60
— fine selected runs ....do.	59—65	Red.....	59—62
— Talavera	62—66		
— Norfolk	—	Red.....	—
— Foreign	48—65		
Barley, grind. & dist., 30s to 34s..Chev.	43—46	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
Oats, Essex and Suffolk	26—28		
— Scotch and Lincolnshire..Potato	28—30	Feed	—
— Irish ....Potato	27 29	Feed	25—28
— Foreign ......Poland and Brew	25—27	Feed	20—23
Rye	34—36	Foreign ..	33—36
Rye-meal, Foreign..................			
Beans, Mazagan.... 37s. to 47s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian .	42—44
Peas, White, Essex, and Kent..Boilers	38—40	Suffolk ..	40—42
— Maple, 40s. to 44s. ....Grey	36—40	Foreign ..	36—40
Maize	—	Foreign ..	33—36
Flour, best marks, delivered..per sack	42—50		
— 2d ditto ....ditto	36—42	Country ..	36—42
— Foreign ....per barrel	25—29	Per sack ..	38—60

Wednesday, June 28.

The grain trade to-day was exceedingly quiet, the tendency of prices being unfavourable. The show of English Wheat was small, but the receipts from abroad were more liberal. Transactions in both red and white produce were restricted, but no material change took place in value. Barley sold quietly, on former terms. Malt was dull, but unaltered in value. Oats, the supply of which was large, experienced a slow demand, at declining prices. Beans were dull, at Monday's reduction. Peas were in limited request, at about late rates. Flour was depressed, and generally cheaper to sell.

Arrivals of Grain, &c., into London by Water Carriage.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	390	—	—	—
Irish ..	—	—	—	—
Foreign ..	13,560	1940	42,600	2350 — brls.
	13,950	1940	42,600	

Liverpool, June 27.—At this day's market there was a fair attendance of the town and country trade, but owing to the more genial weather little disposition to buy, except for the supply of immediate wants. Wheat and Flour met with a slow retail sale, at the prices of this day week. In Oats and Oatmeal there was little done, and no quotable change in value. The same may be said of Barley, Beans and Peas.

Averages.

	Wheat.	Barley.	Oats.
May 20 ..	58s10d	37s 7d	27s11d
— 27 ..	59 11	36 3	27 2
June 3 ..	60 0	36 11	27 7
— 10 ..	59 9	38 6	25 11
— 17 ..	59 7	35 11	26 10
— 24 ..	59 11	36 10	27 8
Average ..	59 8	37 0	27 2

SEED MARKET.

The weather during the past week has been changeable, but more favourable on the whole to the growth and maturity of seeds. Our trade is still in the same unsettled state noted in our last report; holders seem inclined to raise their pretensions, and buyers being unwilling to accede to their demands, transactions are in consequence limited to the few articles actually required for present use, such, for instance, as Mustard and Rape seed, both of which are firm. Bird seeds move off steadily, at unaltered rates.

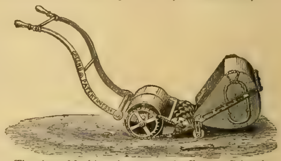
John Shaw & Sons, Seed Merchants,
16, Water Lane, London, E.C.

COALS.—June 28.

Holywell Main, 17s.; West Hartley, 16s. 6d.; Walls End Thrislington, 16s. 3d.; Walls End Hetton, 18s.; Walls End Hawthorn, 15s.; Walls End Original Hartlepool, 18s.; Walls End South Kelloe, 16s. 9d.; Walls End Tees, 17s. 9d.—Ships at market, 24; sold, 15; unsold, 9; at sea, 10.

Great Reduction in Prices for 1871,
OF
GREEN'S
PATENT SILENS MESSORS
OR
NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices:—

To cut		Price £ s. d.	
8 inches	..	£2 10 0	Can be worked by one person.
10 ,,	..	3 0 0	
12 ,,	..	4 0 0	
14 ,,	..	5 0 0	
16 ,,	..	6 0 0	This can be worked by one person on an even Lawn
18 ,,	..	7 0 0	By Man and Boy.
20 ,,	..	7 10 0	,,
22 ,,	..	8 0 0	,,
24 ,,	..	8 10 0	,,

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED
PATENT ROLLER,
FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£ s. d.	Diameter.	Length.	£ s. d.
30 in.	32 in.	7 10 0	20 in.	22 in.	3 10 0
24 in.	26 in.	4 10 0	16 in.	17 in.	2 15 0

PRICES of ROLLERS, fitted with Shafts,
Suitable for Pony or Horse-power.

Diameter.	Length.	£ s. d.	Diameter.	Length.	£ s. d.
30 in.	32 in.	10 0 0	30 in.	60 in.	15 10 0
30 in.	36 in.	10 15 0	30 in.	72 in.	17 10 0
30 in.	42 in.	11 15 0	30 in.	84 in.	19 10 0
30 in.	48 in.	13 10 0			

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

		£ s. d.
24 inches by 26 inches	..	£4 0 0
20 ,, 22 ,,	..	3 2 6
16 ,, 17 ,,	..	2 10 0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN and SON, Smithfield Iron Works, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

FOLLOWS & BATE'S

PATENT "CLIMAX" BACK-DELIVERY

LAWN MOWER FOR THE MILLION.

Price 25s.

THE TIMES, *December* 10, 1869.

"FOLLOWS & BATE, of Manchester, bring out the latest little wonder in Lawn Mowers, which is a machine cutting only 6 inches wide, being propelled with surprisingly little force, and costing almost a fractional price as compared with the large machines."

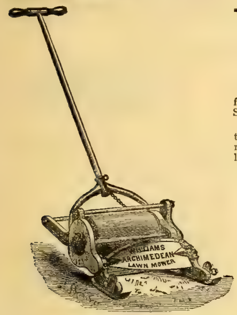
These Machines having no roller in front of the knives, cut LONG or short Grass just as it grows, do not miss the bents, and never choke, however wet the Grass may be.

They are specially applicable for Slopes and Steep Embankments, and are the only Lawn Mowers that can be used effectually with or without the Box.

Between **3000** and **4000** of the "CLIMAX" have been Sold this season. Every Machine is warranted, and a trial allowed.

CATALOGUES, with Testimonials and full particulars of other sizes, on application to any respectable Ironmonger or Dealer in Horticultural Machinery, or sent Post Free from the PATENTEES and MANUFACTURERS,

FOLLOWS AND BATE, MANCHESTER.



THE "ARCHIMEDEAN" AMERICAN LAWN MOWER.

The only Lawn Mower that Cuts Wet or Long Grass (as well as dry) without Clogging,

Leaving the Cuttings in small particles, evenly scattered, never looking untidy, serving as a Mulch to Protect the Roots from Heat and Drought, and Fertilising the Sod, which cannot fail to invigorate and beautify the Lawn. Perfectly adapted to SLOPES, UNDULATING LAWNS, RIDGES and VALLEYS; and for the CROQUET GROUND is invaluable.

NOTICE.—**GREAT REDUCTION in PRICES for 1871.**—We have great pleasure in stating that owing to the unprecedented success our "Archimedean" Lawn Mower met with last year, we have increased our facilities for manufacturing, and notwithstanding that several important improvements have been made in the machine, yet we have made a large Reduction in Prices for 1871.

"Far superior to any of ours."—Vide *The Field.*

"We feel bound to recommend it to our readers as one of the best Mowers we have as yet made acquaintance with."—Vide *Floral World.*

"Remarkably easy to work."—Vide *Gardeners' Magazine.*

"The quickest, most simple, and most efficient Mower ever used."—Vide *Gardeners' Chronicle.*

Numerous Testimonials from the highest authorities in horticulture have been received.

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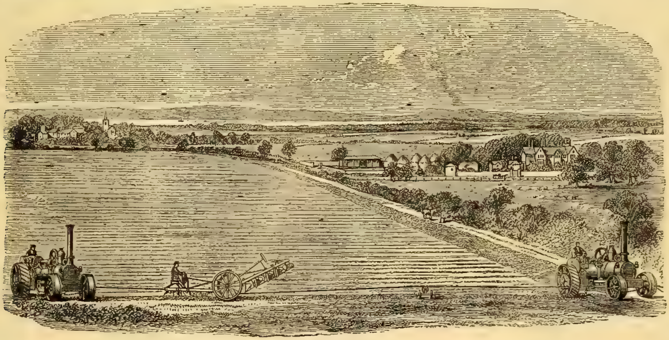

JOHN FOWLER & CO.,

EXHIBIT AT THE

ROYAL AGRICULTURAL SHOW, WOLVERHAMPTON, JULY, 1871,

FIVE DIFFERENT SETS OF STEAM PLOUGHING AND CULTIVATING MACHINERY,

Adapted for all circumstances and conditions of the Soil; with their

NEWEST PLOUGHS, CULTIVATORS, HARROWS, ROLLERS, VANS, WATER-CARTS, &c.

TRACTION ENGINES, of various horse-power; and **WAGGONS,**

of corresponding strength and size.

Some of these Engines will be fitted with INDIA-RUBBER TYRED Wheels, and others with Plain Wheels.

No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c, they have no rival The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½*d.* per yard run
No. 2.—54 inches wide	at 7*d.* per yard run.
No. 3.—54 inches wide	at 5½*d.* per yard run.
No. 4.—51 inches wide	at 4*d* per yard run.
No. 5.—51 inches wide	at 5½*d.* per yard run.

In pieces of about 30 yards each, or any longer lengths when specially ordered Nett cash in 30 days from date of Invoice.

WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON & CO.,

IMPORTERS AND MANUFACTURERS.

NEW LIST of PRICES for MAY, transmitted or furnished on application.

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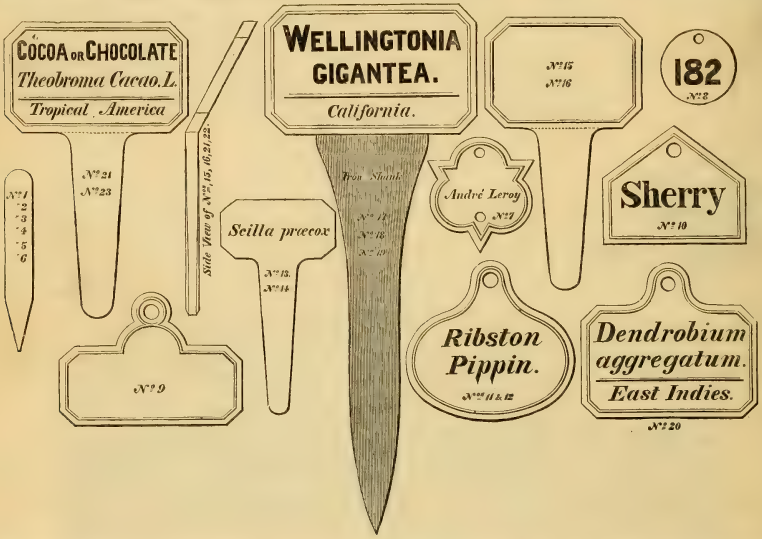
BY HER MAJESTY'S ROYAL LETTERS PATENT.

TO MEET A WANT WHICH HAS BEEN LONG FELT BY THE HORTICULTURAL PUBLIC,

MAW & CO.'S PATENT IMPERISHABLE TERRA-COTTA PLANT MARKERS

Are offered as a cheap and permanent substitute for WOODEN and ZINC TALLIES for the Labelling of Plants in Pots and in the Open Border, and for suspending to Roses, Orchids, Ferns, Fruit Trees, &c. These Labels, unlike Wood and Zinc, combine perfect durability with a lasting legible inscription, and form an elegant adjunct in the Garden and Conservatory for the naming of Horticultural and Botanical Collections. They are also invaluable for the labelling of Wine Cellars and for general use to situations where other materials are perishable by damp.



Commended by the Editors of the *Gardeners' Chronicle*, and the Floral Committee of the Royal Horticultural Society. (See *Gardeners' Chronicle*, July 11, 1868.)
Can be procured from the Manufactory, or through any Nurseryman, Seedsman, or Ironmonger.

Specimens sent Post Free on application.

No. 1	3½ by ½ inch.
No. 2	4½ ,, ⅝ ,,
No. 3	5½ ,, ¾ ,,
No. 4	6 ,, ⅞ ,,
No. 5	7 ,, ⅞ ,,
No. 6	8 by 1 inch.
No. 7	2¼ ,, 2 ,,
No. 8	1¼ inch diam.
No. 9	3¼ by 2½ inch.
No. 10	2¾ ,, 2¼ ,,
No. 11	3½ by 3 inch.
No. 12	5 ,, 4½ ,,
No. 13	2 ,, 4 ,,
No. 14	3 ,, 5 ,,

Can be seen in use at the Royal Gardens, Kew; the Gardens of the Royal Horticultural and Royal Botanic Societies, Battersea Park, the Royal Botanic Garden at Edinburgh; and Botanic Gardens, Glasnevin, near Dublin, &c.

Directions for Writing on the Labels with Black-lead Pencil.—Apply a little white-lead paint thinly over the part to be written upon, and *whilst wet*, write with a hard fine-pointed black-lead pencil. The writing will be perfectly indelible and unaffected by wet immediately the paint is set.

Black Enamel Writing on the Labels.—All the above sizes can be supplied in several colours, ready written upon, with black enamel, having the appearance of jet black ink, but perfectly permanent. On receipt of Lists of Names, Estimates of Cost will be sent for any quantities of Pot or Border Labels, Suspending Labels for Orchids, Roses, Ferns, Fruit Trees, &c. Consecutive Sets of Numerals printed on the Labels, and Labels for Wine Bins, ready written with Enamel, kept in stock.

MAW & CO.'S ENCAUSTIC TILE and GEOMETRICAL MOSAIC PAVEMENTS and WALL LININGS

FOR CONSERVATORIES, GREENHOUSES, ENTRANCE HALLS, VERANDAHS, DAIRIES, &c.

Printed Patterns of various Designs suitable for the above will be forwarded on application, and Drawings, free of charge, of any of the Designs adapted to the given dimensions of spaces proposed to be Paved, will be supplied, accompanied by estimates of cost, including the expense of laying or otherwise. Applications for Estimates should be accompanied by an exact plan of the space drawn to scale, with all the dimensions marked in figures, and care should be taken that the size and position of all door-entrances and recesses that have to be paved are correctly represented; and when the walls are not exactly parallel, the measurements between the *opposite* angles, as well as along each wall, should be given. WHITE GLAZED TILES for DAIRIES, &c.

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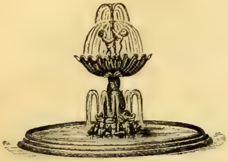
The Telegraph and Railway Station at Ironbridge, on the Severn Valley (Great Western) line is within three minutes' walk of the Works.

VASES AND FOUNTAINS FOR THE GARDEN AND CONSERVATORY.



ILLUSTRATED CATALOGUE, containing Prices and full information concerning FOUNTAINS and VASES, and with 30 large Pages of beautifully Lithographed Designs, Post Free for 12 stamps, which will be allowed if an Order is given.

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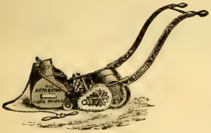

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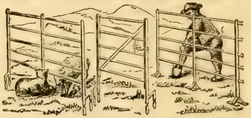

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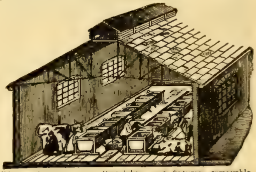

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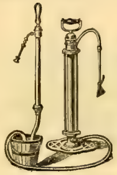

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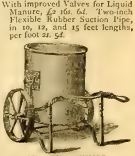

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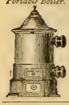

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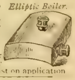

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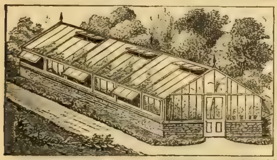

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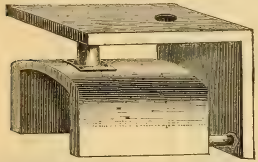

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

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High.	Wide.	Long.	Feet.	£ s d.
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20 "	18 "	24 "	450	6 0 0
20 "	18 "	30 "	600	7 0 0
24 "	24 "	24 "	700	8 0 0
24 "	24 "	30 "	850	10 0 0
24 "	24 "	36 "	1,000	12 0 0
24 "	24 "	48 "	1,400	15 0 0
28 "	28 "	60 "	1,800	20 0 0
30 "	30 "	72 "	2,600	30 0 0
36 "	36 "	96 "	4,500	50 0 0
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Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

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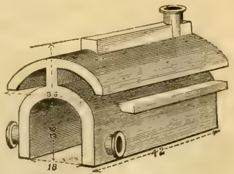

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TESTIMONIALS.

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I remain, dear Sir, yours truly,
"THOMAS SPEED.
"Mr. Ellis."

"Westbourne Gardens, Sheffield, October 27, 1870.

"DEAR SIR,—Your Patent Double-Arch Boiler, that you have put down for us lately, to heat the whole of our houses, answers admirably. Its heating surface exceeds all others which I am acquainted with. The small amount of fuel required, the way it is set, and the arrangement of soot-doors, renders it the most complete and economical Boiler I have had to do with.—Believe me, Sir, yours truly,
"W. H. BIRD.
"Mr. Ellis, Norfolk Foundry, Sheffield."

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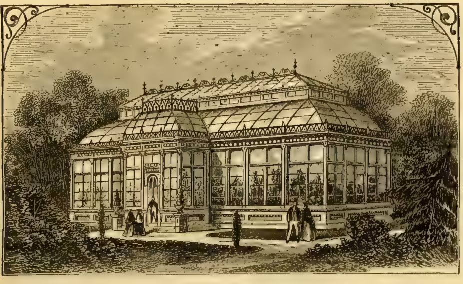

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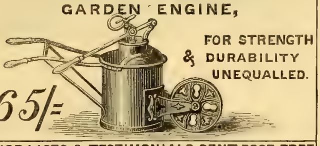

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V. MUSIC, ITS ORIGIN AND INFLUENCE.
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Beware of imitations, and see the names of LEA & PERRINS on the bottles and labels.

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They require no restraint of diet or confinement during their use, and are certain to prevent the disease attacking any vital part.

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THE SAFEST FAMILY APERIENT,
In boxes, at *1s. 1½d.*, *2s. 9d.*, *4s. 6d.*, and *11s.*

COCKLE'S ANTIBILIOUS PILLS.—These Pills consist of a careful and peculiar admixture of the best and mildest vegetable aperients, with the pure extract of the flowers of the Camomile. They will be found a most efficacious remedy for derangement of the digestive organs, and for torpid action of the liver and bowels, which produce indigestion and the several varieties of bilious and liver complaints. They speedily remove the irritation and feverish state of the stomach, allay spasms, correct the morbid condition of the liver and organs subservient to digestion, promote a due and healthy secretion of bile, and relieve the constitution of all gouty matter and other impurities, which, by circulating in the blood, must injuriously affect the action of the kidneys; thus, by removing the causes productive of so much discomfort, they restore the energies both of body and mind. To those who indulge in the luxuries of the table, these Pills will prove highly useful, occasioning no pain in their action, unless they meet with an unusual quantity of acrid bile, and acid matter in the stomach and bowels. To Europeans on their arrival in India or China they are recommended as a preservative against the fatal disorders peculiar to tropical climates. Their occasional use, if combined with the strictest attention to diet, will be frequently found to remove at once, by their influence over the secretions, that congestive and unhealthy condition of the liver which is so often the earliest antecedent of severe febrile and constitutional disturbance. It must be understood that these Pills are not recommended as containing any new or dangerously active ingredients; on the contrary, they are characterised by a remarkable simplicity of combination, and whatever merit they may be found to possess depends as much upon the selection of pure drugs, and the unusual labour and attention bestowed upon their subsequent preparation, as upon the acknowledged peculiarity of their composition. They are not recommended as a panacea, nor are they adapted to all complaints; but as a mild and efficacious aperient and tonic in the various forms of indigestion it will not, perhaps, be an exaggeration to state that they have been resorted to under all systems of diet, changes of climate, or atmospheric alternations, with an extraordinary degree of success, for upwards of *70 years*. This celebrated Family Aperient may be had throughout the United Kingdom, in boxes, at *1s. 1½d.*, *2s. 9d.*, *4s. 6d.*, and *11s.*, as well as in India, China, New Zealand, and the Australian Colonies.

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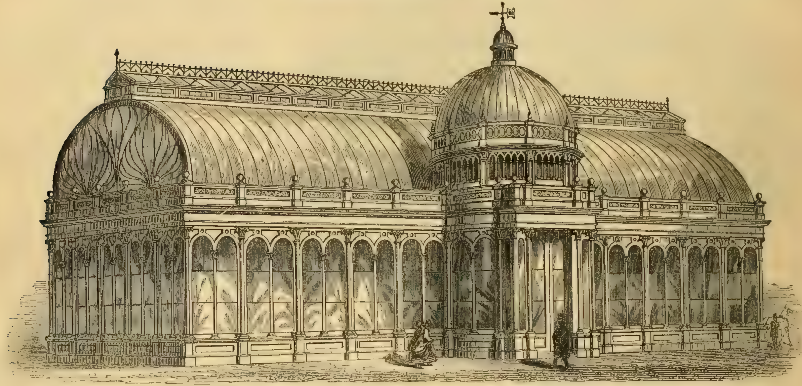

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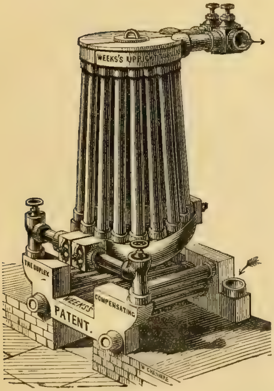

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, July 1, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 27.—1871.]

SATURDAY, JULY 8.

Registered at the General Post Office as a Newspaper.

Price 5d. Post Free, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3*s.* 10*d.* for 12 months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

Royal Agricultural Society's Show at Wolverhampton.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for JULY 15 will contain a FULL and ILLUSTRATED REPORT of the SHOW; also PORTRAIT and MEMOIR of J. B. LAWES, Esq., Rothamsted.

Copies may be obtained on Friday, July 14, at STAND 345, Implement Yard; and at Messrs. W. H. SMITH AND SON'S Bookstalls. Prics 5*d*; post free, 5½*d*.

Published by W. RICHARDS, 41, Wellington Street, W.C.

ROYAL BOTANIC SOCIETY, Regent's Park.—EXHIBITION of PLANTS, FLOWERS, FRUIT, and FLORAL TABLE DECORATIONS, BOUQUETS, &c., WEDNESDAY and THURSDAY NEXT, July 12 and 13. Tickets, 5*s.* each, to be obtained only by Vouchers from Fellows of the Society; at the Gardens; and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, Piccadilly. Gates open at 2 o'Clock.

WOLVERHAMPTON HORTICULTURAL SOCIETY.—A GRAND FLOWER SHOW will take place on TUESDAY, WEDNESDAY, and THURSDAY, July 11, 12, and 13, for PLANTS, FRUIT, ROSES, &c. ENTRIES CLOSE on July 5. Admission, first day, from 12 to 3 o'Clock, 5*s.*; from 3, 2*s.* 6*d.*; on Wednesday, 1*s*, and Thursday, 6*d*.

Further particulars and Schedules may be obtained from Mr. R. LOWE, Queen Square; or Mr. W. A. GREEN, 21, Darlington Street, Wolverhampton.

ROYAL NORTHERN HORTICULTURAL SOCIETY.—The SUMMER SHOW of this SOCIETY will be held in a MARQUEE, on the LINKS, at ABERDEEN, on THURSDAY, July 20. Amongst the Prizes are the following:—

For 24 Roses, dissimilar, 25*s.*, 15*s*, 10*s.* 6*d.*
For 18 do. do., Silver Cup, 10*s.* 6*d.*, 5*s.*
For 12 do., three of which must be Tea or Noisette Tea, Sugar Basin, 7*s.* 6*d.*, 2*s.* 6*d.*
For 6 do., 5*s.*; &c.

Schedules can be had from the Secretary, JOHN T. HENDERSON, 130, Union Street.

LOUGHBOROUGH HORTICULTURAL SOCIETY.—EXHIBITION, JULY 12.

SPECIAL ROSE PRIZES (Open to all England).

1st, For the best Collection of 72 Roses (72 varieties), single trusses: 1st Prize, £5 5*s.*; 2d, £4 4*s.*; 3d, £3; 4th, £2 10*s.*; 5th, £1 10*s.*; 6th, £1.
2d, For the best Collection of 48 Roses (48 varieties), single trusses: 1st, £3 3*s.*; 2d, £2 2*s.*; 3d, £1 10*s.*; 4th, £1.
3d, For the best Collection of 24 Roses (24 varieties), single trusses: for Amateurs only: 1st, £2 2*s.*; 2d, £1 10*s.*; 3d, 15*s.*; 4th, 10*s.*
4th, For the best Collection of 12 Roses (12 varieties), single trusses, for Amateurs only: 1st, 15*s.*; 2d, 10*s.*; 3d, 8*s.*

SPECIAL PRIZES for PLANTS.

For the best 12 Stove or Greenhouse Plants (distinct varieties), six foliage and six in flower (Orchids excluded): 1st, £10; 2d, £7; 3d, £4; 4th, £2.

The Society offer £25 to be competed for at the Royal Show at Nottingham. Rules and Regulations may be obtained of

WM. PALLETT, Secretary.

Hollyhock Seed.

WM. PAUL'S COLLECTION of 12 finest named sorts, 5*s.*; fine mixed seed, 1*s.* to 2*s.* 6*d.* per packet. All other seeds for present sowing of best quality.

PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2*s.* 6*d.* per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

Roses in Bloom.

PROTHEROE AND MORRIS' first-class COLLECTION of ROSES is NOW in BLOOM. An inspection respectfully solicited. The Nurseries are easily reached by train from Fenchurch Street, or Bishopsgate Street, to Leytonstone Station. Entrance from the Platform.

American Nurseries, Leytonstone, E.

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.

Floral Nurseries, Hailsham, Sussex.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready in April. Descriptive LIST on application.

Nurseries, King's Acre, near Hereford

Dwarf Roses in Pots.

FRANCIS & ARTHUR DICKSON & SONS can supply strong healthy Plants for present planting, of all the fines, varieties in cultivation, including the new ones of 1871. Descriptive Priced CATALOGUE sent post free on application.

F. & A. D. & SONS respectfully invite inspection of their extensive COLLECTION of ROSES, which is NOW in FULL BLOOM.

Upton Nurseries, Chester.

Paul & Son's Roses in Bloom.

PAUL AND SON'S COLLECTION is NOW finely in BLOOM, and worthy of a visit. Trains leave Bishopgate at 6.45, 8, 9.30, 10.45 A.M.; 12.45, 2 45, 3.45 P.M.; St. Pancras: 7.52 A.M.; 2.35, 4.53 P.M.

The "Old" Nurseries, Cheshunt, one mile from Cheshunt Station, Great Eastern Railway.

New English Roses and Conifers.

PAUL AND SON, The "Old" Nurseries, Cheshunt, N., have now ready for delivery their New Climbing H.P. ROSE, Victor Verdier. (First-class Certificates, Royal Horticultural Society and Royal Botanic Society.) Plants 7*s* 6*d.* each.

Mr. LAXTON'S NEW ROSES.—Princess Louise (First-class Certificate Crystal Palace Rose Show), the new hardy White Rose; plants 10*s.* 6*d.* each. Prince of Wales (First-class Certificate Birmingham Rose Show), new in shape and colour; plants 10*s.* 6*d.* each. Coloured Plate, post free, 1*s.* 6*d.* each.

SIXTY THOUSAND DWARF TEA-SCENTED ROSES, in pots, also specimen TEA ROSES, in 6-inch pots, for Greenhouse Culture or Exhibition. CATALOGUES now ready.

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CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to

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ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

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M. ROCHFORD, Market Gardener, Page Green, Tottenham, N.

PINES.—The Subscriber can now supply fine clean healthy Pine Plants, both Fruiting and Succession, including the best variety of Smooth Cayenne, Jamaicas and Queens. Terms on application.

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F. AND A. SMITH are now sending out NEW SEED of the above, from their well-known superior strains, in packets, at 1*s.* and 2*s.* 6*d.* each.

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Gold, Silver, and Bronze Variegated Geraniums.

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SUITABLE for BEDDING and DECORATIVE PURPOSES, &c.

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LYGODIUM SCANDENS, the most beautiful of all Climbers. Can be supplied by the dozen at 6*s.* to 9*s.*; 40*s.* to 60*s.* per 100, all nice plants. Package gratis for cash.

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To the Trade.

STOVE PLANTS, in 50 or more choice and new varieties, at 9*s.* to 12*s.* per dozen; 50*s.* to 75*s.* per 100. Package gratis for cash. Names on application for CATALOGUE.

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ASPLENIUM GERMANICUM.—Very nice plants of this scarce Fern, in 60-pots, for 6*s.* per dozen.

JOHN H. LEY, Lansdowne Road, Croydon, S.E.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

WANTED, New and Rare SUCCULENT PLANTS.

J. T. PEACOCK, Sudbury House, Hammersmith, S.W.

WANTED, BUDS for BUDDING, of SOUVENIR DE LA MALMAISON, MARECHAL NIEL, LAMARQUE, DEVONIENSIS, and other Tea and Noisette ROSES. State quantity and price.

L. WOODTHORPE, Munro Nursery, Sible Hedingham, Essex.

EVERY GARDEN REQUISITE KEPT in STOCK at CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

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Highgate Nurseries, London, N.

B. S. WILLIAMS' SPRING CATALOGUE of NEW and RARE PLANTS is now ready, in which will be found a selection from all the best Plants of recent introduction; and in addition, descriptions of some very fine Plants, which B. S. W. now offers for the first time. Post free to all applicants.

Victoria and Paradise Nurseries, Upper Holloway, N.

Summer Flowering and other Ornamental Plants.

PETER LAWSON AND SON will be glad to forward their NEW CATALOGUE, just published, free upon application. It contains all the leading Hothouse and Greenhouse Plants, Bedding-out Plants, and many novelties well worthy of a place in every Flower Garden.—Edinburgh and London, May, 1871.

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Forwarders to all parts of the World.

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LOAM.—Loam, unequalled for Fruit and Plant Culture. See Report of New Vineries, Gunnersbury. For price, &c., apply to

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WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading.

CUTTINGS of GERANIUMS, &c.—100 Geraniums, in 30 choice varieties, including Tricolor, Gold and Bronze, Variegated Zonal, Nosegay, and Ivy-leaf, for 10*s.*; 50, 5*s.* 6*d.*; 25, 3*s.* 24 Fancy Pelargoniums, 3*s.* 6*d.*; 12, 2*s.* 24 CHRYSANTHEMUMS, 2*s.* 6*d.*; 12, 1*s.* 6*d.* 24 POMPONS, 2*s.* 6*d.*; 12, 1*s.* 6*d.* 24 FUCHSIAS, 2*s.* 6*d.*; 12, 1*s.* 6*d.* All post free. CATALOGUES, one stamp.

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CHOICE GERANIUMS, strong Plants.—Golden Tricolors, Gold and Bronze, Silver Variegated, good Doubles, all good varieties, at 2*s.* 6*d.* and 3*s.* per dozen; 20*s.* and 22*s.* per 100; cheaper by the 1000.

PURPLE KING VERBENA, 12*s.* per 100; good FUCHSIAS, 3*s.* per dozen, all in single pots, package free. A LIST, with prices, post free, on application to

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GRIGOR'S AQUILEGIA GLANDULOSA.—Seeds of this splendid Plant can now be forwarded free at 2*s.* 6*d.* per packet, or for stamps of that value. Plants will be ready for sending out from September till April 1, at from 4*s.* to 12*s.* per dozen. For a description of this rare and beautiful Columbine, see the *Gardeners' Chronicle*, and the "Gardeners' Magazine" of June 10.

JOHN GRIGOR AND CO., Nurseries, Forres, N.B.

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E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have to offer an unusually large and fine stock of very strong 3-yr. old CONVALLARIA CLUMPS. Price on application. Plants will be sent out in October next.

To the Trade only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have published their NEW WHOLESALE CATALOGUE of BULBS for the season, and will be glad to forward it to Nurserymen, Seedsmen, and Florists only, free, upon application.

Hyacinths, Tulips, &c.

J. ROEST, FLORIST, Voorschoten, near Haarlem, Holland, begs to call the attention of the Trade to his CATALOGUE of DUTCH BULBS, which can be had post free of his Agents, Messrs. BETHAM AND SON, 9, Lower Thames Street, London, E.C.

G. ROELINK, Sole Agent for E. DE BOER, Jun., CULTIVATOR of FLOWER ROOTS, Uitgerst, near Haarlem, Holland, announces to the Trade that CATALOGUES will be sent free per post on application to the

London Office, 14, John Street, Minories, E.C.

Dutch Bulbs.—Season 1871.

A. E. BARNAART, FLORIST, Vogelenzang, Haarlem, Holland, begs to inform Nurserymen and the Trade generally that his NEW CATALOGUE of HYACINTHS, TULIPS, &c., for the coming season is now ready, and may be had, post free, of Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

"The most complete and detailed List out, upwards of 1500 sorts being mentioned and described."

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"The leaves sent are 18 inches long, and broad in proportion, and the midrib is nearly half an inch broad and a third of an inch thick As the common Dandelion when blanched is one of the most delicate-flavoured and wholesome of Salads, this vigorous growing fleshy-leaved variety of Messrs. STUART & MEIN must be a desirable plant for the kitchen garden."—*From the Editor of the Gardeners' Magazine.*

New Seed, 1*s.* per packet.

STUART AND MEIN, Seedsmen to the Queen, Kelso, N B.

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ROBERT T. VEITCH has just completed harvesting a fine pure stock of this most excellent TURNIP, the best variety for either early or late sowing. It has been selected with great care, and is very strongly recommended.

Price per bushel or cwt. on application. Quantities of half bushel or quarter cwt. and upwards forwarded carriage free.

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Large purchasers supplied at special moderate prices.

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PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
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SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

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ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO BI-PHOSPHATE (or prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited), consisting of Tenant-Farmers occupying upwards of 80,000 Acres of Land.

Chief Offices—109, Fenchurch Street, London, E.C.
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This Company was originally formed by, and is under the direction of Agriculturists, circumstances that have earned for it another title, viz., "THE TENANT-FARMERS' MANURE COMPANY."

Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held.

Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.

Of all Nurserymen and Seedsmen.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy all the Insects, and not injure the Plants, and burns without the assistance of blowing. Price 3*s.* 6*d.* per lb., carriage free. A reduction in price for large quantities.

To be had of Messrs. R. ROBERTS AND SONS, 112, St. John Street, Clerkenwell, London, E.C.; and of all Seedsmen and Nurserymen.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Caution.

F. J. DRECHSLER'S ADDRESS is now, and has been for several months past, No. 63, ARLINGTON STREET, LONDON, N.W., and not North Street, &c.

See this year's PORTABLE WINNOWING-MACHINES, FUMIGATORS, SEMINATORS, &c.

No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½*d.* per yard run
No. 2.—54 inches wide	at 7*d.* per yard run.
No. 3.—54 inches wide	at 5½*d.* per yard run.
No. 4.—54 inches wide	at 4*d.* per yard run.
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In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

Great Reduction in Prices for 1871,

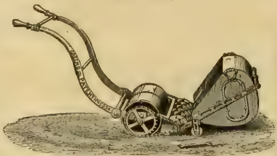
OF

GREEN'S PATENT SILENS MESSORS

OR

NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices:—

To cut		Price	
8 inches	..	£2 10 0	Can be worked by one person.
10 ,,	..	3 0 0	
12 ,,	..	4 0 0	
14 ,,	..	5 0 0	
16 ,,	..	6 0 0	This can be worked by one person on an even Lawn
18 ,,	..	7 0 0	By Man and Boy.
20 ,,	..	7 10 0	,,
22 ,,	..	8 0 0	,,
24 ,,	..	8 10 0	,,

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED

PATENT ROLLER,

FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS, Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	7	10	0	20 in.	22 in.	3	10	0
24 in.	26 in.	4	10	0	16 in.	17 in.	2	15	0

PRICES of ROLLERS, fitted with Shafts,

Suitable for Pony or Horse-power.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	10	0	0	30 in.	60 in.	15	10	0
30 in.	36 in.	10	15	0	30 in.	72 in.	17	10	0
30 in.	42 in.	11	15	0	30 in.	84 in.	19	10	0
30 in.	48 in.	13	10	0					

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

24 inches by 26 inches	£4 0 0
20 ,, 22 ,, ...	3 2 6
16 ,, 17 ,, ...	2 10 0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.

Portable Boiler.

Elliptic Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

W. S. BOULTON AND CO., Norwich, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.

These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES.—Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10¼ feet long by 6 feet wide..	£3 0	24¼ feet long by 6 feet wide..	£7 0
17¼ feet long by 6 feet wide..	£5 0	31¼ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.

PLANT PRESERVERS.

Illustrated Catalogues free on application.

Rose Lane Works, Norwich.

Under Royal Patronage.

PHILLIPS' ROYAL POTTERY, WESTON-SUPER-MARE.

ESTABLISHED 1836.

JOHN MATTHEWS, late PHILLIPS, Manufacturer of STATUARY, FOUNTAINS, FLORAL ARBORETTES, VASES, EDGING TILES, &c. Plain and Ornamental GARDEN POTS. POTS, with movable bottoms, made to order.

Book of Drawings and Price List on application

See Specimens in the EXHIBITION, No 4321, and STAND at the Royal Horticultural Gardens.

JOHN MATTHEWS, Royal Pottery, Weston-super-Mare, Somerset.

VASES and FOUNTAINS for the GARDEN and CONSERVATORY.

Illustrated Catalogue, containing prices and full information concerning FOUNTAINS and VASES, and with 30 large pages of beautifully Lithographed Designs, post free for 12 stamps, which will be allowed if an order is given.

A. HANDYSIDE AND CO., Britannia Works, Derby.
London Office—32, Walbrook.

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

Hot-Water Pipes and Boilers.

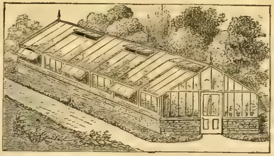
J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.
6, Bankside, Southwark, London, S.E.

Midland Horticultural and Hot-Water Engineering Works, Loughborough.

T. G. MESSENGER will be happy to prepare Plans and Estimates from instructions sent him; or, if preferred, will wait personally on any Ladies or Gentlemen at their residences.

T. G. M. does not confine himself to his Patented mode of construction, but will carry out the designs of Architects according to their details, or he will apply his principles of construction to their designs. The satisfactory completion of all work undertaken is guaranteed.

T. G. M. solicits Public attention to his PATENTED BOILER, which is exceedingly powerful and economical in fuel. His Patented Valve gives complete satisfaction in every case. Many thousands are at work. Prices on application. A richly Illustrated Catalogue forwarded post free for 33 postage stamps.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

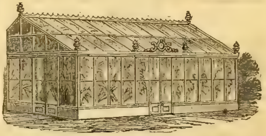
3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in. thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

Estimates given for Conservatories or Greenhouses to any Design.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
353, Old Kent Road, London, S.E.



200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.

JOHN WARNER & SONS, HYDRAULIC ENGINEERS,

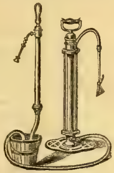
Bell and Brass Founders to Her Majesty, Manufacturers of Hydraulic Machinery of every description, Wind Engines, Water Wheels, Water Rams, Deep Well Pumps and Frames for Horse or Hand Power, Garden Engines, Swing Barrows, &c., &c. Branch Pipes for Rubber Hose, with Jet and Spreader, or with Haswell's Patent Director, from 3s. 6d. Syringes from 5s., or, fitted with Haswell's Director, 12s. 6d. Lists sent on application.

8, CRESCENT, CRIPPLEGATE,
LONDON, E.C.

FOUNTAIN JETS,
In great variety, from 3*s.* 6*d.*

No. 547A.
GARDEN ENGINE.

12 Gallons	£3 0 0
16 "	3 16 0
24 "	5 1 0
30 "	5 13 0



WARNERS'
AQUAJECT.
Useful for every variety of purpose—in watering or washing Flowers or Trees in Gardens, Conservatories, &c.; also for washing Carriages or Windows, laying Dust, &c.

Price complete	£1 8 0
Small size for the hand, as an ordinary Syringe ..	0 15 0

THE CRYSTAL PALACE
GARDEN or FIRE ENGINE.

No. 35.
CAST-IRON PUMPS.

2½ inches ..	£1 9 0
3 "	1 18 0
3½ "	2 7 0
4 "	2 15 6

No. 42.
PORTABLE PUMP,
With improved Valves for Liquid Manure, £2 16*s.* 6*d.* Two-inch Flexible Rubber Suction Pipe, in 10, 12, and 15 feet lengths, per foot 2*s.* 5*d.*

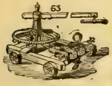
No. 579½.—SWING
WATER BARROW.

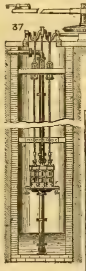
Galls.		Galls.	
20	£2 2 0	38	£3 18 0
30	2 14 0	50	5 14 0

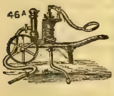
S. OWENS & Co.,

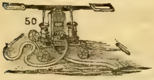
HYDRAULIC ENGINEERS,

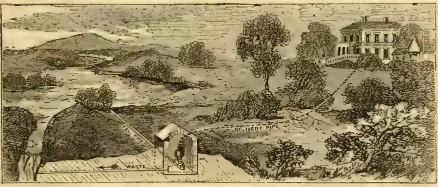
WHITEFRIARS STREET, LONDON, E.C.

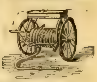


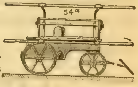












THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
No. 63. PORTABLE IRRIGATORS with Double or Treble Barrels for Horse or Steam Power.
No. 46*a*. IMPROVED DOUBLE ACTION PUMPS on BARROW for Watering Gardens, &c.
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No. 50 and 54*a*. FARM and MANSION FIRE ENGINES of every description.
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No. 39*b*. IMPROVED HOSE REELS for Coiling up Long Lengths of Hose for Garden use.

S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GAS WORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c. *Particulars taken in any part of the Country. Plans and Estimates furnished.*

ILLUSTRATED CATALOGUES CAN BE HAD ON APPLICATION.

NEW DOUBLE GERANIUMS, &c.—12 fine varieties Double Geraniums, 4s ; 12 vars. new Double Geraniums of 1870, 12s. ; 12 fine new Zonal Geraniums of 1870, 6s. ; 12 superb vars. Gold and Golden Bicolor Geraniums, 6s. 12 vars. new FUCHSIAS (1870), 3s. ; 12 best select Fuchsias, 2s. 12 select COLEUS, 2s. 12 select PHLOXES, 3s 12 new CHRYSANTHEMUMS (1870), 2s 12 new VERBENAS of 1870, 2s. 12 vars. new CHILEAN MIMULUS, 3s New AGARATUMS :—White Tom Thumb, 6d. ; White Imperial Dwarf, 6d. ; Tom Thumb's Bride, the best white, 1s. 6d ; Sultan, the darkest blue, 1s. 6d ; the above four new Ageratums, 3s. ; 12 vars. Ageratums, including the above, 5s.

B W KNIGHT, Florist, Battle, Sussex.

WM. PAUL'S ROSES are NOW in BLOOM ; inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

New and Choice Flower Seeds, Post Free.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Per packet.—	s.	d.
Williams' superb strain of PRIMULA, Red, White, or Mixed 1s. 6d, 2s. 6d., 3s. 6d., and	5	0
Plants from this seed have always been awarded First Prizes wherever exhibited.		
Neill's extra choice CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., and	5	0
Weatherill's extra choice CINERARIA, 1s. 6d., 2s 6d, 3s. 6d, and	5	0
Wiggins' prize strain of CYCLAMEN 1s. 6d., 2s. 6d., and	3	6
ECHEVERIA METALLICA	2	6
HOLLYHOCK, from Chater's finest varieties .. 1s. and	2	6
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PANSY, finest show varieties .. .. 1s. and	2	6
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PYRETHRUM GOLDEN FEATHER	1	0
East Lothian STOCKS, per collection of three colours	2	6
SOLANUM HYBRIDUM COMPACTUM, new, awarded a First-class Certificate by the Royal Horticultural Society, March 16, 1870 .. .. 3s. 6d. and	5	0
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SWEET WILLIAM, Hunt's Auricula-eyed	0	6
VIOLA CORNUTA var. PERFECTION 1s. 6d., 2s. 6d., and	3	6
VIOLA ODORATA LAUCHEANA, new, superior to the old Russian Violet	2	6
WALLFLOWER, Saunders' fine dark variety	1	0

Our New Fuchsias.—Ten Varieties for £1.

MESSRS. HOCK AND CO. beg to call attention to their FUCHSIA NOVELTIES, which were offered for the first time in this country on April 1. The Fuchsias have been raised by the well-known cultivator, Mr Weinrich, who has succeeded in the last two years in raising, in this highly appreciated species, something really new and splendid, consisting in size, colour, and profuse blooming, giving a beauty to that kind never known before. Descriptions of them will be given in English, on application to Messrs. HOCK & Co., The Rhine Nursery, Castel, opposite Mainz, Germany

HOCK & Co.'s newest and best GERMAN CALCEOLARIA, CINERARIA and PRIMULA SEED.

Per packet.—	s.	d.
CALCEOLARIA HYBRIDA GRANDIFLORA PUMILA COMPACTA, new	3	0
CALCEOLARIA HYBRIDA GRANDIFLORA PUMILA COMPACTA TIGRINA, varieties, new	3	0
CINERARIA HYBRIDA, choicest mixed	1	6
" " NANA	1	6
" " " KERMESINA	1	0
" " " extra dwarf, globe form	2	6
" " " new, ex. dwarf, carmine	2	6
PRIMULA NOVELTIES.		
PRIMULA CHINENSIS FIMBRIATA ALBA GLOBOSA, snow white, large flowered variety	3	0
PRIMULA CHINENSIS FIMBRIATA RUBRA, large flowered variety	3	0
" " PUNCTATA ELEGANTISSIMA ..	2	6
" " COCCINEA NOVA	2	6
" " FIMBRIATA FILICIFOLIA RUBRA	2	6
" " " " ALBA..	2	6

Best PRIMULA SEED, older varieties, 1s. per packet :—

Primula chinensis rubra
" " flore-alba
" " cupreata
" " filicifolia alba
Primula chinensis filicifolia rubra
" " fimbriata rubra
" " " Kermesina
" " splendens
Primula chinensis flore-alba.

HOCK AND CO., The Rhine Nursery, Castel, opposite Mainz, Germany.

"PHYTOSMEGMA," or PLANT CLEANSER, destroys Scale, Mealy Bug, Red Spider, &c., without injury to Plants ; 6d. and 1s. per bottle.

The NEW SHOWERER, for applying the above, 6d., 1s. and 3s. 6d. each.

Wholesale of T. A. POOLEY, Sussex Wharf, Wapping, E. ; and Retail of all Nurserymen, Seedsmen, and Florists.

Choice Seeds

For PRESENT SOWING.

LEE'S CHOICE CALCEOLARIA, from James's, Dalkeith, and other choice strains, carefully selected and hybridised. Unsurpassed for colour, habit and form. In packets, 2s. 6d. and 5s. each.

LEE'S CHOICE CINERARIA, from our own collection of named flowers. In packets, 2s. 6d. and 5s. each.

LEE'S CHOICE PRIMULA FIMBRIATA, in separate colours or mixed. In packets, 2s. 6d. and 5s. each.

Do. do., 6 distinct varieties for 10s. 6d.

JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

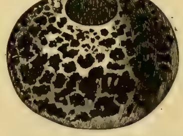
CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

Per packet.—	s.	d.
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d. ; smaller packets ..	1	6
" finest Spotted, 2s. 6d. ; smaller packets ..	1	6
Saved with the greatest care, and from one of the largest collections in the kingdom.		
CINERARIA, choicest Mixed ; saved from a splendid collection of named varieties, and cannot be surpassed	2	6
PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.		
PRIMULA, choicest Mixed Fringed, 2s. 6d. ; smaller packets..	1	6
" dark Carmine	2	6
" new Scarlet	2	6
" Rose Fringed	2	6
" choicest White Fringed	2	6
" choicest Fern-leaved Carmine	2	6
" choicest Fern-leaved White	2	6

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free. Five per cent. discount for cash.

JAMES CARTER AND CO., The Royal Seedsmen, 238, High Holborn, London, W C.

Suttons' Superb Hybridised Florist Flower Seeds.



SUTTONS' SUPERB CALCEOLARIA.

MESSRS. SUTTON AND SONS have received NEW SEED of their superb varieties of FLORISTS' FLOWERS, HYBRIDISED, and saved from the Finest Strains in Cultivation.

SUTTONS' Superb CALCEOLARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb CINERARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb PRIMULA, per packet, 2s. 6d., post free.

Ordinary Varieties, per packet, 1s. 6d., post free.

From Mr. GEO. BOND, *Gr. to the* Earl of Powis, *Walcot Gardens.*

May 23, 1871.—"The flowers of the Calceolaria and Cineraria seed I had of you are splendid."

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April 19, 1871.—"My Cinerarias from your last year's seed are very good, nearly two feet across."

SUTTON AND SONS, Seedsmen to the Queen, and H.R.H. the Prince of Wales, Reading.

MUSA ENSETE (THE GREAT ABYSSINIAN BANANA).

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HAS RECEIVED A SMALL

IMPORTATION OF THE ABOVE KING OF THE BANANAS.

MUSA ENSETE is sufficiently known as one of the most Ornamental Plants, either for the Greenhouse or for Subtropical Gardening out-of-doors in Summer.

Price, strong imported Plants, sufficiently established in pots, **2** and **3 Guineas** each. Order immediately of

JEAN VERSCHAFFELT, THE NURSERIES, 134, FAUBOURG DE BRUXELLES, GHENT, BELGIUM.

THOMAS THORNTON,

HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES ; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS ; a large stock of Green and Variegated HOLLIES, VINES, &c. : all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS

will soon be ready, and can be had on application.

ROYAL HORTICULTURAL SOCIETY

SHOW OF ROSES AND TABLE DECORATIONS, &c.

July 5, 1871.

AWARDS OF THE JUDGES.

CLASS 1.—Group of three PLANTS, suitable for Dinner-table Decorations.

1st Prize, Mr. J. W. Chard, Gr. to Sir F. Bathurst, Bart., Clarendon Park, Salisbury, £3.
2d, Mr. W. Bull, Nurseryman, King's Road, Chelsea, £2.
3d, Messrs. E. G. Henderson & Son, Nurserymen, St. John's Wood, £1.

CLASS 2.—Three Groups suitable for the Decoration of the Dinner-table, to consist of either Flowers, or Fruit, or Flowers and Fruit combined, at the option of the Exhibitor.

1st, Messrs. W P. & G. Phillips & Pearce, 155, New Bond Street, £5.
2d, Mr. J. W. Chard, £3.
3d, Miss Hassard, St. Roman's, Church Road, Upper Norwood, £1.
Extra, Mr. W. Soder, Gr. to O. Hanbury, Esq., Howe Hatch, Brentwood, 10s.

In the above Two Classes, the Prizes are offered by His Grace the Duke of Buccleuch, K.G., F.R.S., President of the Society.

CLASS 3.—72 ROSES, distinct, 1 truss of each. (Nurserymen.)

1st, Messrs. Paul & Son, Old Nurseries, Cheshunt, N., £6.
2d, Messrs. E. P. Francis & Co., The Nurseries, Hertford, Herts, £4.

CLASS 4.—48 ROSES, distinct, 3 trusses of each. (Nurserymen)

1st, Messrs. Paul & Son, £6.
2d, Mr. C. Turner, Royal Nurseries, Slough, £4.

CLASS 5.—24 ROSES, Hybrid Perpetuals only, distinct, 3 trusses of each. (Nurserymen)

1st, Messrs. Paul & Son, £4.
2d, Mr. J. Fraser, The Nurseries, Lea Bridge Road, Leyton, N E., £3.
3d, Mr. C. Turner, £2.
4th, Messrs. E. P. Francis & Co., £1.

CLASS 6.—24 ROSES, distinct, 1 truss of each. (Nurserymen.)

1st, Mr. C. Turner, £3.
2d, Mr. J. Walker, Nurseryman, Thame, Oxon, £2.
3d, Messrs. J. Veitch & Sons, Royal Exotic Nursery, Chelsea, £1.

CLASS 7.—48 ROSES, distinct, 1 truss of each. (Amateurs)

1st, Rev G. Arkwright, Pencombe Rectory, Bromyard, Worcester, £6.
2d, Thomas Laxton, Esq., F.R.H.S , Stamford, £4.
3d, Mr. J. W. Chard, £3.
4th, Mr. R. N. G. Baker, 9, Salutary Mount, Heavitree, Exeter, £2.

CLASS 8.—36 ROSES, distinct, 1 truss of each. (Amateurs)

1st, Mr. W. Ingle, Gr. to Mrs. Round, Birch Hall, Colchester, £5.
2d, Mr. J. W. Chard, £3.
3d, Mr. R. N. G. Baker, £2.
4th, Mr. P. Stoddart, Gr. to H. J. G. Rebow, Esq., Wivenhoe Park, Colchester, £1 10s.

CLASS 9.—24 ROSES, distinct, 1 truss of each. (Amateurs.)

1st, Mr. J. Skinner, Gr. to Capt. Christy, Westerham Hill, Kent, £4.
2d, Mr. W. Soder, £3.
3d, Mr. J. Wakely, Rainham, Kent, £2.
4th, R. B. Postans, Esq., Brentwood, Essex, £1.

CLASS 10.—12 ROSES, distinct, 1 truss of each. (Amateurs.)

1st, Mr. J. C. Quinnell, Brentwood, Essex, £2.
2d, Rev. C. C. Ellison, Bracebridge Vicarage, Lincoln, £1 10s.
3d, Mr. J. Wakely, £1.
4th, Mr. W. Soder, 10s.

CLASS 11.—12 ROSES of 1869 or 1870, single trusses, distinct kinds. (Open.)

1st, Messrs. Paul & Son, £2.
2d, Mr. C. Turner, £1 10s.

CLASS 12 —12 trusses of any ROSE of 1869-70. (Open.)

1st, Messrs. Paul & Son, £1 10s.
2d, Mr. C. Turner, £1.

CLASS 13.—6 trusses of any ROSE of 1869-70. (Open.)

1st, Messrs. Paul & Son, £1.

CLASS 14.—Collection of YELLOW ROSES, not fewer than 12 trusses. (Open.)

1st, Messrs. Paul & Son, £3.
2d, Mr. P. Stoddart, £2.
3d, Mr. F. May, Gower's Farm, Stisted, near Braintree, Essex, £1.

CLASS 15.—12 Tea-scented and Noisette ROSES, single trusses. (Amateurs.)

1st, Mr. H. Thornycroft, Floore, Weedon, Northampton, £2.
2d, Mr. P. Stoddart, £1 10s.
3d, Mr. J. Tranter, Upper Assindon, Henley-on-Thames, £1.

CLASS 16.—12 Tea-scented and Noisette ROSES, single trusses. (Nurserymen.)

1st, Messrs. Paul & Son, £1 10s.

CLASS 17.—6 Tea-scented ROSES, single truss, in bud. (Open.)

2d, Mr. J. W. Chard, 10s.

CLASS 18.—6 ROSES (Tea and Noisette excluded), flowers, good of their kind, to be judged for their perfume. (Open.)

1st, Mr. J. W. Chard, 15s.
2d, T. Laxton, Esq., F.R.H.S., 10s.

CLASS 19.—6 Tea or Noisette ROSES, flowers, good of their kind, to be judged for their perfume. (Open.)

1st, Mr. J. W. Chard, 15s.
2d, Mr. H. Smith, 7, Claverton Place, Lycombe, Bath, 10s.

CLASS 20.—12 ROSES, distinct, single blooms. (Open.)

1st, Mr. C. Turner, £1 10s.

CLASS 21.—24 ROSES, in pots, not fewer than 10 varieties, the pots not to exceed 8 inches in diameter. (Open.)

1st, Mr. C. Turner, £6.
2d, Messrs. Paul & Son, £4.
3d, Messrs. J. Veitch & Sons, £3.

Prizes offered by Mr. Wm. Paul, F.R.H.S.

CLASS 22.—Three Blooms of ROSES, Princess Christian. (Amateurs.)

Prizes offered by Messrs. James Carter & Co.

CLASS 23.—Six Dishes of PEAS, to include Laxton's Supreme, Carter's Hundredfold, and Laxton's Quality.

1st, Mr. W. Cox, Gr. to Earl Beauchamp, Madresfield Court, Great Malvern, £2 2s.
2d, Mr. C. Frisby, Gr. to H. Chaplin, Esq., Blankney Hall, Sleaford, Lincoln, £1 1s.

MISCELLANEOUS.—EXTRA PRIZES.

Mr. W. Denning, Gr. to Lord Londesborough, Grimston Park, Tadcaster, York, Collection of Orchids.
Mr. W. Bull, Group of New and Rare Plants.
Mr. C. Turner, Group of Seedling Pelargoniums.
Messrs. J. Veitch & Sons, Group of Roses in Pots, and Collection of Cut Roses.
Messrs. W. Rollisson & Sons, Nurserymen, Tooting, Group of Plants.
Messrs. E. G. Henderson & Son, Group of Tricolor Pelargoniums and Petunias.
Mr. H. Hooper, Vine Nursery, Widcomb Hill, Bath, Cut Blooms of Pansies, Carnations, Cloves, and Pinks.

ORCHIDS.—Visitors to Manchester during the season would do well to VISIT our NURSERIES at FAIRFIELD, and examine for themselves our plan of GROWING ORCHIDS in PINE STOVES; also the New House we have put up, embodying this plan of supplying moisture by continual precipitation, without any disadvantage as regards neatness in the appearance of the house. Descriptive CATALOGUES on application.

JAMES BROOKE AND CO., 16, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a GENERAL MEETING of the MEMBERS of this INSTITUTION, held on WEDNESDAY, July 5, for the purpose of ELECTING THREE PENSIONERS on the FUNDS, the following was the result of the Ballot:—

CANDIDATES.

NAME.	AGE.	VOTES.
JOHN GIBSON	72	912
WILLIAM KATES	65	615
WILLIAM BROWNE	73	742
DANIEL DEWDNEY	78	145
OWEN OWENS	64	324
CHARLES WHITEHURST	71	781
WILLIAM CAWLEY	74	36
RICHARD HUSSEY	68	305
JOSEPH ODD	71	37
FRANCIS PRITCHARD	59	209

The Meeting then declared JOHN GIBSON, CHARLES WHITEHURST, and WILLIAM BROWN, as having the greatest number of Votes, duly elected Pensioners.

EDWARD R. CUTLER, Secretary.

14, Tavistock Row, W.C., July 6, 1871.

Royal Agricultural Society's Show at Wolverhampton.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for JULY 15 will contain a FULL and ILLUSTRATED REPORT of the SHOW; also PORTRAIT and MEMOIR of J. B. LAWES, Esq., Rothamsted.

Copies may be obtained on Friday, July 14, at STAND 345, Implement Yard; and at Messrs. W. H. SMITH AND SON'S Bookstalls. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, W.C.

The Gardeners' Chronicle

SATURDAY, JULY 8, 1871.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, July 11 { Royal Horticultural (Examination of Gardeners) .. .. .. 10 A.M.
WEDNESDAY, — 12 } Royal Botanic (Exhibition of Plants,
THURSDAY, — 13 } Flowers, and Fruit).

◆

THE most COMMON OBJECTS in NATURE are often those which are the least generally understood. This is certainly the case with the grains of such everyday plants as Wheat, Oats, and Barley. Few questions are more frequently set in examination papers than "Describe the structure of a grain of Wheat and the process of germination," and yet it is very rarely that one gets a tolerable answer. We have ourselves lately looked over upwards of 300 papers, in not one of which was there any true account of the structure. It is quite certain that many of the teachers must themselves have a very imperfect knowledge of the case, which certainly is not pardonable, as there is an excellent account, with diagrams, in LINDLEY'S "Vegetable Kingdom," with the different views which are entertained on the subject.

The fact is, that there is in these grains either a peculiar organ, or a peculiar state of the cotyledon, which for a long time imbibes nutriment from the starch contained in the seed, and which has been sometimes considered as a part of the primary root, a view which was held by RICHARD, while NEES VON ESENBECK regarded it as a special organ. We were ourselves at one time inclined to RICHARD'S view, as we believe the terms exorhizal and endorhizal greatly misunderstood. In the greater part of monocotyledons the primary root is quite as naked as in dicotyledons, the secondary roots being adventitious; and we were therefore inclined to an opinion that in Gramineæ the representative of the naked root in other monocotyledons was the organ in question. On considering, however, the germination of an Onion, and the mode in which the albumen conduces to nourish the young plant, we find something so analogous to what takes place in cereals, that we are now inclined to Dr. LINDLEY'S views, and to consider the organ in question a true cotyledon, with the peculiar function of absorbing nutriment from the storehouse to which it is joined. What takes place in the germination of an Onion is simply this: the seed, as is well known, is carried up by the cotyledon, which assumes the form of a loop. If a spot of any colouring matter which will not injure the young plant is placed at the point where the cotyledon bends, it will be found that it remains stationary. The tip of the cotyledon remains immersed in the albumen, and is very tender, and as long as it is wanted conveys nourishment downwards to the young plant. We have here then a cotyledon performing the same function as the peculiar organ in grasses, and the obvious inference is, that that also is a cotyledon. If this is true, the grasses alone are truly endorhizal.

It was stated some time since, at one of the scientific meetings of the Royal Horticultural Society, that the seed of Tropæolum is endorhizal. This surprised us so much, that we immediately sowed some seed to ascertain how the case really stands. If a section be made in the seed through the thick cotyledons when it is just ready to germinate, it will be found that the base of the cotyledons united below extends beyond the primary radicle, which is perfectly distinct, forming a sort of coleorhiza. This indeed is indicated in the vertical section of Tropæolum majus in the "Vegetable Kingdom." *M. J. B.*

THERE ought to be appointed without delay a public officer to be called CONSERVATOR of TREES, if London is to be supplied as it ought to be with healthy thriving examples of arboreal vegetation. Pending such appointment, the vestries ought to charge themselves in their respective districts with the duties indicated by the above title. Ought, we said, but they do not. What, for instance, have the local authorities of Chelsea—if there be any—been doing to suffer a gas company to risk the destruction of those beautiful trees—beautiful for London, if not equal to those in the country—which convert Cheyne Walk into a luxurious shady promenade on a summer's day? The public roadways are, in all conscience, sufficiently bored with drains and conduits to make it a hard struggle for the poor trees which have the ill-luck to be planted near; but here in Cheyne Walk the footway has been invaded, an old, small, shallow gas-pipe taken away, and a big one sunk some two or three feet lower, the excavation cutting through the roots which before had escaped, and had laid hold of the undisturbed soil. Here and there big roots, as thick as one's arm, have been cut off within a few feet of the trunk; at other points masses of fibrous roots have been remorselessly torn up and cleared away. The adornment of this riverside thoroughfare, soon to form part of the great metropolitan northern esplanade, with fine old trees like this, is, of course, altogether beneath the notice of such "enlightened" bodies as gas companies; but there should be some official whose duty it should be to look to the preservation of such relics of the good old times, or, if not, the omnipotent local Parliament—officious and meddlesome enough in matters of far less consequence—should stir itself, and put a *veto* on all such vandalism.

The office we have indicated would be no sinecure if the officer did his duty, for, not in Chelsea only, but on every hand, the same kind of ruthless destruction is from time to time to be met with; and though the necessities of the population may be pleaded as an excuse for the new works, in which engineers and surveyors and contractors seem leagued together to kill every green thing, yet, as in the present case, for example, and doubtless in many others, there is no necessity to break up fresh ground when the consequences are likely to be so disastrous, and the remedy is so easy—in this case merely to have laid the pipes on the other side of the trees. If the local Parliament will not arouse itself, and act, the Imperial Parliament should abridge its power, and get such necessary work done for it. By all means let us have a public conservator of trees, armed at least with as summary powers as those of the officer of health or the inspector of nuisances. Most large towns and cities need such an officer, fully as much as the metropolis itself.

WE are now able to add to our previous remarks on the ROYAL HORTICULTURAL SOCIETY'S SHOW AT NOTTINGHAM that it has been in every way a grand success. The receipts at the doors exceeded £1900, and this, with some £600 for season tickets, made a total of £2507 1*s.* 2*d.* received from visitors to the show. The several days receipts were as follows:—

June 27	Tuesday	£150	7	6
June 28	Wednesday (2*s.* 6*d.*)	395	2	0
June 29	Thursday (1*s.*)	624	0	7
June 30	Friday (1*s.*)	343	17	10
July 1	Saturday (6*d.*)	393	13	3

Such a financial success was due partly to the splendid weather which prevailed during the greater part of the time the exhibition was open, and partly to the fact that the inhabitants of Nottingham are enthusiastic supporters of horticulture.

—— ONE of the floral treats to be met with in the neighbourhood of Nottingham, during the period of the recent show, was Mr. PEARSON'S splendid strain of ZONAL PELARGONIUMS, some of which are of a most remarkably attractive character. They are mostly of the semi-nosegay class, but with particularly large flowers, and immense trusses freely produced on plants of stocky growth—a feature which seems to be inherent in the breed. Miss Sanders, a crimson with a strong blue shade, resplendent in colour, is particularly rich; and Rose Peach, a deep, bright rose, is a highly attractive flower. Corsair, a rich scarlet, of faultless form, is so fine in habit, truss, and substance, as to leave Lord Derby far behind; and Amaranth, a free, plain-leaved, compact-trussed, blue-tinted deep rose, seems likely to take the lead as the highest colour in the Christine class. Rose Bradwardine, a lovely rose, is remarkable for the abundance of its cheerful-coloured flowers; and Thomas Adams, a large, bright carmine, has a noble truss. There are others of equal merit, perhaps, but these struck us as decided advances in the class of decorative plants. Mr. PEARSON has also been paying particular attention to the breeding of the Golden Variegated Zonals, and has suceeeded in gaining not only brilliant colours, but a remarkably even border of colour. Lady Manvers is a particularly fine variety in this way, and another, called William Sandys, has not only high colour, but a remarkably free habit of growth.

—— We understand that it was proposed amongst the exhibitors assembled at the Royal Horticultural Society's recent show at Nottingham, to PRESENT Mr. GEORGE EYLES, the Superintendent of the Show, with some mark of their esteem, and also of their appreciation of the courteous and able manner in which he has always discharged the somewhat onerous duties which fall to the lot of a manager of flower shows. No one is more entitled to such a public mark of recognition than is our friend EYLES, as the very effective and efficient arrangements at Nottingham bear testimony. We need, therefore, scarcely add that the above-named resolve has our full sympathy, and we trust it will be carried out with energy by such a committee as will command the general support of horticulturists interested in flower shows. The movement is all the more opportune at this moment, as Mr. EYLES has recently retired from the general superintendence of the South Kensington Gardens, and will confine his attention more exclusively to the departments of flower shows and landscape gardening.

—— A meeting of market gardeners, nurserymen, and farmers, was held at the Bedford Head Hotel, Covent Garden, on Tuesday morning last, for the purpose of receiving a sub-committee from the MARKETS IMPROVEMENT COMMITTEE of the City of London, and inspecting plans of the proposed improvements at Farringdon Market. There was a good attendance of large growers. The chair was occupied by Mr. HENRY MEYERS, the President of the Market Gardeners' Association, who, in introducing the business, alluded to the great inconvenience which he and other growers had had to put up with in consequence of the want of accommodation at Covent Garden, and the decided refusal of the Duke of BEDFORD to offer greater facilities to the producers using the market. Mr. RUDKIN, of the Corporation, produced drawings of the new market proposed to be constructed in place of the present inconvenient and little-used market of Farringdon, and the meeting was engaged for nearly an hour in discussing and advising upon the necessary alterations. A motion was eventually passed to the effect that the meeting approved of the scheme so far as it had been put before them, and pledged itself to assist by all means in its power the efforts of the City committee in establishing the new market. The plans are to be definitely settled at a meeting to be held at the latter end of this month.

—— A most unfortunate circumstance happened during the removal of the plants from Nottingham. It appears that Messrs. BELL & THORPE, from motives of kindness and disinterestedness, took charge of a specimen plant of Croton, belonging, as they thought, to Mr. BAINES, and which they supposed to have been left by an oversight. On reaching home they informed Mr. BAINES of what they had done. It turned out, however, that the plant was the property of some other gentleman, who took such stringent measures to secure the return of his plant, that Messrs. BELL & THORPE (who acted, we are assured, with perfect *bona fides*) naturally felt much aggrieved. Messrs. BELL & THORPE, who had previously written to Mr. BAINES, but not posted their letter, express great regret for their unlucky mistake, and we trust that their explanation may be accepted as amply satisfying the justice of the case.

—— From the "Gartenzeitung," we learn that Herr ARNOLDI, of Gotha, the celebrated modeller of fruits and flowers, has just commenced issuing a series of sets of FUNGI MODELLED in PAPIER-MÂCHÉ, accompanied by printed descriptions, and all necessary information respecting the properties and habitats of each species. Each species where desirable will be represented in different stages of growth, and all the models will be of the natural size and colour of the species they represent. Indeed those already exhibited by ARNOLDI are said to be so true to Nature, that it is impossible, without handling, to distinguish them from living specimens. Each set or issue will consist of models of 12 to 18 species, with printed matter, and three or four sets will appear in the course of a year. The sets will contain alternately specimens of edible and harmless species, and suspicious, hurtful, and poisonous species. The ostensible object of these models is to familiarise the masses, who have neither time nor opportunity to study descriptions and plates, with this class of plants, and enable them to distinguish and use the really good sorts, without any risk of confounding them with the noxious species, from which many uninformed persons have suffered. The models will be made under the supervision of Dr. GONNERMANN, Dr. DANNENBERG, and other well-known German mycologists. The price of a set of 12 specimens, with printed matter, will be about 7*s.* 6*d.*, and they may be had through any foreign bookseller. The whole, or any part of the specimens, may be had. If these models prove to be as exact as reported, we think it would be well that local museums and other establishments should be provided with them.

—— The MAXIMUM TEMPERATURES in England during the week ending Saturday, July 1, ranged from 74°.2 at Leicester to 68°.6 at Birmingham, with a mean for all stations of 71°.2, or about 5° above the mean of the several stations in Scotland, where the extremes were 70° at Perth, and 64° at Greenock. The MINIMUM TEMPERATURES in England were, as a rule, lower than those in Scotland; in the former country, 34° (at Hull) and 36.°8 (at Nottingham) were the lowest; and in the latter 39° (at Edinburgh), 39°.2 (at Aberdeen), and 39°.5 (at Paisley), held the same position. The means for the several stations in the two countries were 40° (for England), and 41°.6 (for Scotland). MEAN TEMPERATURES.—The mean for the southern country is about 1°.7 above that of the northern, the values being 55°.2 and 53°.5, respectively. In England, Manchester, with 56°.7, was the highest, closely followed by Blackheath and Liverpool, with 56°.6, and Portsmouth, with 56°.5; and in Scotland, Perth, with 55°.9, was nearly 1° higher than the second, viz., Greenock, with 55°.1. RAINFALL.—The principal falls which took place during the week ending July 1, were chiefly in Scotland, the largest in amount being 0.96 inch at Greenock, and 0.92 inch at Glasgow; the mean for the country was 0.54. In England, 0.56 inch at Salford takes first place; with 0.48 inch at Hull, second; and 0.43 inch at Bradford, third. The mean for the whole country was 0.27 inch. Saturday last was the commencement of another month, and, let us add, we hope also of summer, for up to the present the weather has been most unseasonable, showers of a March and April character having been experienced at the beginning of July. The month of June, 1871, will long be remembered for the low temperatures which prevailed all over the country, and in many of the districts in the north of England falls of snow are reported to have taken place. During the present century there are only seven occasions on which the mean temperature of the month has been as low or lower than in the month which has just passed, they are:—June, 1860, with 54°.8; 1824, with 55°; 1821, with 54°.1; 1816, with 53°.1; 1814, with 53°.4; 1812, with 54°; and 1805, with 54°.5. The mean temperature of the month under discussion was about 55°.

—— The *Scientific Review* notices a metallic paint for the PRESERVATION of WOOD and IRON SURFACES, brought into use by Messrs. TARR & WONSON, of Gloucester, U.S. They take about 40 gall. of wood tar (preferably the best Stockholm tar), to which they add 40 gall. of naphtha, of about 18° Beaumé specific gravity, or so much naphtha as shall render the tar of the consistency, or nearly so, of boiled linseed oil. The fluids are mixed carefully, and about 24 hours are allowed for subsidence. The purified tar mixture is then drawn from the dregs, which may be drained. To 40 gall. of this purified tar they add about 30 lb. of dry ochrey iron ore (commonly known as bog iron ore) in very fine powder, which must be thoroughly incorporated with the tar. When this has been done they add about 40 lb. of commercial white arsenic and 160 lb. of oxide or sub-oxide, and when the whole is reduced to a thick paint by a mill or otherwise, the preparation is ready for use as a protective paint.

—— Those of our readers interested in SCHOOLS and SCHOOL TEACHING, should make a point of visiting the Swedish School House in the International Exhibition. The comfort and physical welfare of the scholars are evidently sedulously cared for, while the appliances for teaching, and the apparatus, models, diagrams, &c., are admirable. It is quite clear that if this is a sample of how children are taught in Sweden, that their education is far more thorough and useful than that of the students at our great public schools or universities, if we except classics and mathematics. Instead of being made to learn from dry and often badly compiled books unintelligible abstract propositions, the Swedish child is so taught by eye, ear, and touch, that comparatively abstruse matters are rendered intelligible to the child's comprehension, and he is put into possession of a mass of facts, the value and importance of which he is made at once to appreciate, instead of being crammed with an ill-arranged farrago of hard words, conveying no meaning to his mind, but which he has nevertheless to learn by heart. Botanists would do well to inspect the beautifully prepared collections of common plants and the accompanying diagrams. These things make us wish it had been our lot to have learnt our rudiments in a Swedish school.

—— A brilliant *conversazione* was held on Tuesday evening last in the great conservatory of the Horticultural Society. The company was distinguished and numerous, including most of the foreign delegates to the horticultural section of the Exhibition. One extraordinary omission occurred,—so extraordinary that, did we not know it for a fact, we should have deemed it incredible—we allude to the absence of hosts! Hosts of guests, truly, but no one to receive them.

—— The WATER RICE (Zizania aquatica) is abundant in Wisconsin, and other parts of North America, on the swampy margins of streams in shallow water. A gently flowing current, where the water is from 2 to 6 or 8 feet deep, is the most favourable *habitat* for this plant, which forms an important article of food among the Indian tribes. They obtain it by paddling a canoe among the plants, when, with a hooked stick, they draw the stems over the canoe and beat off the grain. The harvest only lasts for a very few days, as when ripe the grain is shaken off by the slightest touch, and if the wind should blow hard for a day or two the Rice is all lost. It is gathered both "in the milk" and after it is mature. The Indians take it to their camp and put it into pans, when it is roasted until the husk becomes dry and reddish; they then place it in sacks and pound it by striking on the outside, so as to separate the grain from the husk. It is winnowed, and is then ready for use. Those who have tried it prefer the Zizania to the ordinary Rice of commerce.

—— The accompanying woodcut (fig. 177) represents a contrivance which will be found extremely useful for the application of liquid insecticides. It is called the HORTICULTURAL VAPORIZER, and is, in fact, a modification of the vaporizer used at the toilet for the dispersion of scented liquids, but adapted by these modifications for horticultural use. By means of this apparatus, any kind of liquid may be diffused over plants in a state of minute division, or fine spray, in sufficient quantity to thoroughly moisten them, without ruffling or disturbing the most delicate flower or foliage; and at the same time with a great saving of the liquid as compared with the ordinary process of syringing. It is said that a table-spoonful applied by the Vaporizer is equal to a pint applied by means of a sponge, or the ordinary methods in use. The Vaporizer may be used either by blowing, or by the use of a pair of bellows, fastened by means of a small piece of india-rubber tube to the mouth-piece. As a disinfectant distributor for sick rooms it is also useful. Messrs. PARR & ATHERTON, of Nottingham, are the inventors.

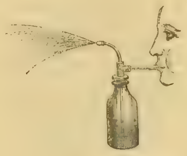

FIG. 177.—HORTICULTURAL VAPORIZER.

CHARLES LEMAIRE.

CHARLES ANTOINE LEMAIRE (whose death on the 22d ultimo we noticed in our last issue) was born in Paris in 1801, and pursued his studies with distinction in the university of that city, where he remained Professor of Classical Literature for some years. On two separate occasions he endeavoured, without success, to establish a school; one of these establishments happened to be in the Rue Buffon, near the Jardin des Plantes. Here the love of botany was kindled in him, and here he made the acquaintance of M. Neumann, the elder *chef des serres* at the museum, and who exercised a great influence on his scientific career. A nurseryman, M. Mathieu, whose establishment was close by the portion of the Jardin des Plantes now superintended by M. Carrière, began to get together, with the aid of M. Lemaire, a collection of Cacti, which the latter studied with ardour, and which became the dominant passion of his life. About the year 1835 M. Cousin, a Parisian publisher, conceived the idea of establishing a horticultural journal, and he entrusted its editorship to M. Lemaire. For many years the "Jardin Fleuriste" and "L'Horticulteur Universel," were almost entirely the work of his pen. He there passed in review the plants newly introduced into France, and which were more numerous in those days than at present. This descriptive talent recommended him to M. Van Houtte, who had recently established at Ghent the "Flore des Serres et des Jardins de l'Europe." After several years passed in the publication and description of the plants introduced by M. Van Houtte, M. Lemaire undertook the editorship of the "Illustration Horticole," a horticultural and botanical journal, then belonging to M. Ambroise Verschaffelt, of Ghent, which post he occupied for 16 years, until M. Linden became the possessor of M. Verschaffelt's establishment, and with it of the above-mentioned journal, the editorship of which was then confided to the present writer. From that time (January, 1870) to the time of his death, M. Lemaire lived in Paris with his devoted daughter, who never left him until his death. In addition to the editorship of the journals we have already mentioned, M. Lemaire collected the materials for a systematic monograph of the Cactaceæ, of which fragments only have been published owing to the want of a Mæcenas to undertake the publication of the book. Latterly, however, the Librairie Agricole de la Maison Rustique of Paris commissioned him to draw up two little volumes, one on Cactaceæ, the other on succulent plants. These two books (reviewed in these columns, pp. 140, 994) were of too restricted a character to allow their author to devote much space to his favourite subjects; but the book on Cacteæ contains a synonymy and a reformed nomenclature very useful to botanists studying these plants. Lemaire paid but little attention to the minute anatomy and physiology of plants. With the exception of broaching a theory concerning pollen tubes, which he brought before the Congress at Amsterdam, and which found but few adherents, his studies were principally confined to descriptive botany. His determinations were often accompanied by lengthy dissertations of a very learned and detailed description, appreciated by classical scholars, but having little attraction for those not devoted to philological studies. Lemaire was somewhat of a purist as regards nomenclature; he never ceased to call attention to the numerous barbarisms and solecisms committed by his colleagues, and in general he was right, though he complained much at the indifference with which his complaints were received. If he did not succeed in reforming everything that is erroneous in the orthography and etymology of botanical names, he at least called attention to many errors, and pointed out the right path to be followed by young students of the science. Unfortunately, 40 years' devotion to botany did not lead him on to fortune. Devotees rarely live by science—they often die for it. The example of M. Lemaire is not a solitary one, and we might cite many others equally unsatisfactory. The only compensation for such privations lies in the satisfaction experienced by the discovery and contemplation of so many of Nature's marvels. Posterity will esteem M. Lemaire more highly than did his contemporaries. Man passes away, his work remains. M. Lemaire's name will be honoured and respected by all the botanists who have occasion to consult his numerous publications, and who will reap the benefit of the materials laid up for them during a long career wholly passed in the study of those charming creations which furnish a compensation for many of the misfortunes incident to human nature. *Edouard André.*

New Garden Plants.

HUMATA TYERMANII, *Moore, n. sp.*

Fronds deltoid, acuminate, glabrous, coriaceous, tripinnate; basal pinnæ obliquely-deltoid, the posterior portion larger, and again divided; secondary rachides narrowly winged; pinnules oblong, deeply pinnatifid, the lobes oblique, bearing usually a single sorus, with an external tooth; sori transversely oblong, terminal or seated in a fork of the venules; rhizome creeping; clothed with white, narrow, tapered, slightly-toothed scales; stipes semiterete.—*Hab.* West Coast of Africa.

This elegant little Davallia, which has been received by Mr. Tyerman from Western Africa, bears in many respects a close resemblance to D. bullata, the size, outline, and division of the fronds being very similar to those of that plant, but the fructification is quite different, being that of the Humata, not that of the Eu-Davallia, group, while the rhizome, instead of being clothed with rich, golden-brown scales, as in D. bullata, has the scales of a silvery whiteness. The fronds, moreover, are not deciduous, as in D. bullata, but persistent, as in the related Davallia dissecta, and D. decora of Java. The African plant bears, indeed, a striking first-sight resemblance to the Indian Davallia Griffithii, which has fronds of the same form, combined with a white-scaled rhizome, but it is altogether larger, and the fructification is different.

The plant now before us (fig. 178), though a small-growing species, is much the largest of the Humatas, and with its elegant form, evergreen fronds, and white-scaled rhizomes, will be quite an acquisition for our Fern stoves, being especially suited for basket culture. The fronds measure about 7 inches in length from the setting on of the basal pinnæ to the apex, and are about 7 inches in width across the base; the basal anterior pinnule of the lowest pinnæ is barely an inch long, the basal posterior one an inch and a half, while the average length of the pinnules on the second pair of pinnæ is about half an inch. The stipes, which is reddish-brown towards the base, is, as well as the rachides, and both surfaces of the frond, quite glabrous, rounded behind, flat, with a rim at each margin in front. The veins are prominent on both surfaces, and the position of the sori is marked by boss-like protuberances on the upper surface. The short broad sori are covered by scale-like indusia, attached by the base only.

Mr. Tyerman, the excellent curator of the Liverpool

Botanic Garden, himself a pteridologist of long standing, who has been the medium of introducing this charming plant to our gardens, well merits the compliment of having his name associated with it. Though technically a species of Humata, it is in a wider sense a Davallia, and will no doubt become best known to cultivators as Davallia Tyermanii. *T. M.*

FRUIT-BEARING CONIFERÆ AT LINTON.

[The following paper, which accompanied a very interesting collection of Coniferæ in fruit, exhibited by Mr. Robson, and to which an Extra Prize was awarded at Nottingham, and which, moreover, was sent in anticipation of a Horticultural Congress, has been handed to us for publication by the local secretary, E. J. Lowe, Esq.]

The collection of Conifers from whence the fruit exhibited was taken occupies a position about mid-way down the southern slope of a ridge of hills of about 400 feet elevation, the ground occupied by the Pinetum being from about 220 to 290 feet above the sea level. The soil is a dry loam, of good depth, and more or less mixed with stone partaking of the Kentish rag character, but that stone is not found in quantity near the surface, but a partly decomposed substitute of it, locally termed hassock, forms the principal ingredient in the subsoil, and is of so inviting a nature to the roots of most kinds of indigenous trees, that they find their way to a great depth amongst it, and grow quickly and attain a great size. The surface soil, however, though good, would not be regarded by a farmer as being remarkably so, being better adapted for the growth of trees, hedges, and plants of established character than such farming crops as depend on the surface soil alone for their subsistence. Nevertheless, most things thrive tolerably well, especially those having a liking for calcareous matter, with which it is charged. It may be added that it is dry, but not sandy, water being only obtained at the depth of 50 or more feet. With these preliminary observations, and a further remark that the Conifers are mostly scattered over the dressed grounds, some 25 acres, surrounding the mansion, and pretty well sheltered from the north, but in a general way open to the south-west, from whence we have our highest winds, I may leave other points to be indicated when the individual species are treated of. It may, however, be proper to mention that, with the exception of the Araucaria bearing fruit, which has been planted about 40 years, none of the others have been more than 27 in their present position, and all were small when planted. It will thus be seen that the site suits many of them, Pinus insignis, for instance, being nearly 60 feet high, and others exceeding 50 feet.

Pinus excelsa. — There are evidently two varieties of this, if not two distinct species, included under the name, one having its spring leaf-buds covered with green scales, the other with the same of a deep rosy-crimson hue. The fruit seems alike, but the habit of growth is different, one being much more spreading than the other, the largest specimen at Linton having a spread of branches of 47 feet, although only 38 feet high, the branches resting on the ground to within a yard of their tips. The other variety has a height and width of about 35 feet. Both have the same long hanging foliage of a glaucous hue, and neither of them have been at any time injured in the least by our hardest winters.

Pinus insignis.—The largest tree is 59 feet high, with a spread of branches of 49 feet, and doubtless this tree would have been higher, but it lost its leader about 20 years ago, and remained four or five years without one; this perhaps accounts for the great spread of its lower branches, for the upper part of the tree is more conical. Its growth, after again forming a leader, was, I need hardly say, most rapid, and the bole, now that it has attained timber-like proportions, does not show that it had ever lost one. Its circumference at 4 feet from the ground is 7 feet 8 inches, the bark very rugged, more so than either the Stone Pine or Pinaster. I may further add, what may perhaps surprise many, that it does not appear to have suffered in the least from any of the hard winters we have had, although a smaller tree of the same species, not more than a stone's-throw from it, was much cut in the winter of 1866-67, and has been slightly injured again in the present winter; but I may observe that the rich, dense, deep green hue, which enhances the beauty of this tree when in a young state, or, say up to the height of from 30 to 40 feet, seems to leave them then—the great number of abortive blossom buds of a dull yellow colour, and the husky remains left after they fall, detracting much from the rich emerald-green the tree previously possessed; it is, however, a tree of fast growth. Near to the largest example of P. insignis a belt of common Scotch and Spruce Firs was planted at the same time for protection to the Pinetum, but none of them approach by long odds the size of P. insignis. I may farther add, that amongst some of the latter species that were planted in 1855, one that I incidentally measured is 40 feet high, healthy and vigorous, and, like all the other Pines we have, excepting P. ponderosa, clothed to the ground with foliage.

Pinus austriaca.—A deserving species, more upright-growing than P. insignis, and when young more densely clothed with foliage than P. ponderosa, or macrocarpa, but as it gets older, its lower limbs, like those of the two kinds mentioned, get thinner of leaves. In outline, however, it is a fine tree, and in colour next to insignis. It grows fast, outstripping some Scotch Firs in the same plantation; but I should doubt if its timber is as good. It appears to like a dry stony soil, stands the wind better than the Spruce tribe, and in many respects is deserving of more extensive planting, being certainly one of the hardiest of the long-leaved class. Our best tree is upwards of 50 feet high.

Picea Webbiana.—The beautiful colour of the cones of this species seems to be its principal merit, for it is seldom that a healthy, vigorous specimen is met with. Amongst several we had here, planted at the time alluded to, viz., 1844, only one has attained the height of 36 feet, and is moderately healthy, with a spread of branches of 25 feet. Its great fault is that it commences growth so early in the season that its tips get destroyed by our spring frosts; hence, rival leaders are formed, and distorted branches, to be repeated, perhaps, the next year; otherwise its broad fine foliage, of a rich green above and fine silvery whiteness below, would render it a great favourite. As it is, it can only be recommended for particular situations, P. Nordmanniana being its superior in many respects, especially so in point of hardiness.

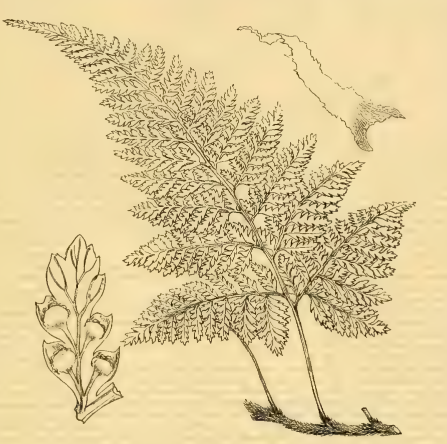

FIG. 178.—HUMATA TYERMANII.

Picea nobilis.—Much as this has been praised, I do not think too much has been said in its favour, for its thickly set foliage, of a rich sea-green colour, gives it a character quite its own, so that in most places it is a favourite. Unfortunately, the best one we have at Linton, after being planted some five or six years, accidentally lost its leader, and remained seven or eight years without one, when it formed two, one of which being removed, the other has rushed up very rapidly, and as straight as a gun-barrel, and is uniformly, but not thickly, furnished with branches, forming a fine tapering cone, very handsome and effective. It is now 38 feet high, and might probably have been 15 more but for the mishap in its early days. Like most of the Piceas, young trees of it do not start very quickly into growth, so that patience ought to be exercised in the case of their remaining a year or two in a round stumpy form. All the Silver Fir tribe, more or less, seem to do this.

Picea cephalonica.—A sturdy species, much inclined to spread its branches, and liable to form several leaders. It seems, however, to be very hardy, and its timber may also be good. In outline it is more irregular than any other Picea I know, but its branches are thickly set with foliage of the darkest green, and these being much longer and more pointed than those of P. Pinsapo, it may be easily distinguished from that species, with which it has been sometimes compared; it contrasts strongly with P. nobilis, and, in fact, with most others. In a collection it well deserves a place, combining as it does a sort of a feathery outline with a dense foliage. The tree from whence the cones were taken is 46 feet high, and nearly 36 feet in the spread of the branches.

Cryptomeria japonica.—A fine tree of this was broken by the wind in 1867, and had to be removed, the tree at the time it was broken being 36 feet high, as upright as it was possible to wish, and clothed to the ground, forming a beautiful cone, slender and tapering, the diameter of its branches at the bottom being not more than 12 feet. As will be seen by the section, which has been lying outdoors since 1867, it has begun to form heart timber, so that there is reason to believe it may be a useful tree in this respect. Its great drawback is the liability it has to turn a sort of sickly brown in some places; but it does not do this much at Linton. It is, however, too prone to produce fruit, which checks its growth, otherwise it is a fine-looking tree when well grown. C. Lobbii seems to be only a variety of this, if it be not identical with it. I have not been able to detect any difference, the supposed more robust habit of the last-named being more ideal than real; and I believe situation and other circumstances have much to do in preparing the plant to stand our winters.

Cryptomeria elegans.—If the two above-named be identical, there can be no question about this one being distinct, and a great acquisition to the Pinetum, as the rich brown hue it assumes in autumn increases its beauty rather than otherwise, especially when (as is often the case) it is associated with other trees, as the reddish-brown tint comes on long before cold weather sets in, and here at least it has stood several winters without the least injury, and fully exposed. This is the first season it has fruited here; but as none of our plants much exceed 10 feet in height, there is plenty of time yet. It also seems to withstand the winter pretty well, and is in many respects a desirable plant.

Cupressus Vervæneana.—A graceful, pretty-looking addition to this comprehensive genus, but the plants are yet too small to offer an opinion upon it.

Cupressus Lambertiana.—If it were not for one great drawback, this would be a more desirable species, but the liability it has to be torn up by high winds is sadly against it. The largest one we have at Linton has attained the height of 38 feet, although only planted in 1854, being then not more than a foot high—the best size to plant this tree, as I believe the best safeguard it has against high winds is a good tap-root, to the formation of which the soil here is favourable. The winter of 1860-61 did not in the least affect it, but that of 1866-67 browned it, the tree not showing it until April or later. The past winter has not taken any effect whatever. Its heavy massive foliage, of the darkest shade of green, entitles it to a place in every collection. In outline it is more of a bulbous cone than a pyramidal one, as its greatest diameter of branches is at some distance from the ground, the one here being 23 feet across at 5 feet up. I fear, however, it must be admitted that this tree is more handsome in a young than in an old state, specimens of 20 feet high or thereabouts looking better than when double that size; the foliage gets thinner, and the presence of fruit is no improvement to its appearance.

Cupressus macrocarpa.—A synonym of the last. I cannot perceive any difference. Both transplant badly.

Cupressus funebris.—The flourish of trumpets with which this was ushered in was speedily hushed; for, instead of a handsome graceful tree, it was found to form a kind of unwieldy bush, never likely to exceed 20 feet in height, and, in addition, hard winters cut it up in exposed places.

Cupressus Lawsoniana.—I expect to be found fault with when I say that this has been over-praised, for beautiful as some trees or parts of others may be, there are comparatively few that do not show a defect somewhere — a nakedness of branches in some place or other; out of upwards of 200 trees we have here, there are not many but are faulty in that respect. Another evil is, that they seem so persistently covered with fruit that I fear they will never attain anything like the proportions they are expected to do. Neither will they endure the wind so well as the two Thujas, Lobbii and borealis; but the foliage is handsome, and the tree generally admired. We have no large trees of this species, 15 or 16 feet being the highest, and these do not improve by age. The tree however appears to be quite hardy.

Cupressus Knightiana.—This differs widely from the last, but it is not so hardy. It is, however, a fast grower, but, like the Italian Cypress and some others, is addicted to forming a multitude of leaders; and, while deserving a place in a large collection, it may be omitted in a small one. Quickness of growth is its principal merit. A small tree, planted here in 1865, is now 18 feet high and 7 feet through the branches; but it is no easy matter to keep the number of its leaders down—for not only two or three strive for the honours, but a host of them.

Cupressus Corneyana.—This seems to differ much from the others named, its branches, or rather branchlets, being pendulous rather than upright, while it seems to confine itself to one stem generally. In a collection it forms a distinct feature, and is well worth growing. Its average yearly growth exceeds 2 feet, and its outline is good.

Abies Morinda (*Smithiana*).—A fine pyramidally-formed tree, upwards of 45 feet high, and feathered to the ground, as are all the specimens of this tree, which is more symmetrical in this respect than even the common Spruce. It grows also quite as fast, and promises to retain a good appearance longer than that species, for with us Spruce Firs look shabby at 30 years old. It is also widely distinct from that Fir, its foliage being more pendulous, and the contrast between the new shoots and the old wood very pretty in early summer.

Abies Menziesii.—A silvery form of the Spruce with the outline of Morinda, but differing from both, as will be seen by the cones; nevertheless, I am far from certain whether this is the true A. Menziesii, as I have seen another one of different character under that name; but I believe it to be correct. The tree is 29 feet high, and 16 feet in diameter of branches.

Abies canadensis (Hemlock Spruce).—This is only introduced to add variety to the collection. The tree is not so much patronised as it deserves to be, growing as it does very well in the shade of other trees, and contrasting well with the Yew in such a position.

Araucaria imbricata.—If this tree could be induced to grow as rapidly as some others do, and to withstand the cold of our hardest winters, there is no question but it would it be a prince amongst its class, but its hardihood was severely put to the test in 1866-67, and found wanting in so many places that it has not been so popular since. None of our trees suffered at that time, neither before nor since, and the largest one we have has borne cones for some years, but not having a male plant with flowers on until the present year, the seed did not mature, although the cone, as will be seen by the example of 1869, attained a good size. The tree producing these cones was planted upwards of 40 years ago, and is a fine specimen, being about 40 feet high, and pretty well furnished with branches; some of the lower ones are gone, and some few more show an inclination to follow ere long, but the top of the tree is as healthy and vigorous as can be wished for, the outline being more cylindrical than conical, the top being rounded. The formation of cones has hardly begun, as will be seen by comparing the young with the old—the latter not so large as some we have had. The tree producing the male cones is much younger and smaller, not more than 20 feet high; these cones are also not half-grown; but I believe, from what I have seen at other places, that the male plant produces flowers at an earlier age than the female, a common occurrence with other things, as was evinced the past spring with a seedling Aucuba, several male plants but no females flowering amongst a batch raised here.

Retinospora pisifera.—The promise which this plant gave of becoming a large tree by its free and tree-like growth, has been marred by its propensity to produce seed-vessels—it being loaded more freely than even Cupressus Lawsoniana, otherwise it is, I think, destined to be a useful tree, its dark green foliage and graceful form entitling it to a place in most collections. As it has not been introduced long into this country there are no large trees of it; the one from which the fruit exhibited was taken is 12 feet high, and about 7 feet through the branches.

Retinospora obtusa.—Of dwarfer habit than the foregoing, and perhaps more graceful in outline, the colour a bright pea-green. I should expect this tree to be more likely to spread laterally than to get upwards, but in small gardens it may be pronounced a gem.

Retinospora leptoclada.—A slow-growing pyramidal plant, a fitting companion to Abies pygmæa, or a small stunted Juniper, and well adapted for a position in small geometric gardens, and where it is not likely to outgrow the required size, as the one the accompanying fruit comes from has been planted four or five years, and is now only 1½ foot high.

Wellingtonia gigantea.—Much difference of opinion seems to exist as to the merits of this tree. In one respect I may coincide with those who decry it, and that is on the score of its timber not being likely to be of any use; but on the score of beauty, hardihood, and adaptability to all kinds of soil, I have not a word to say against it; on the contrary, much in its favour. There is, however, one point which I am not quite satisfied about, and that is its constitutional vigour. True it grows fast enough, withstands the winds when in an isolated position better than any evergreen tree I know of, and grows quicker than most trees; but the fact of the finest tree we had at Linton dying in 1869, and some other trees I have seen elsewhere showing a sickly condition, implies a doubt whether it is destined to be so long-lived a tree as could be wished. The specimen from which the accompanying section is cut was planted in 1858, being then about 2½ feet high, and the site a favourable one; it made good progress, and towards the middle of the hot summer of 1868, when it ceased growing and showed signs of distress, it was 26 feet high, and the circumference of the bole at the collar was 5 feet 9 inches. Thinking it might be suffering from the extreme drought of the summer, a good watering was given it, but it only lingered on, and died the following year. All the other trees, however, that we have are very healthy, and none of them disposed to form cones but that from which the accompanying sprigs are taken, which is a perfect model of the pyramidal form of tree, 23 feet high, and upwards of 16 feet in diameter of branches. We have larger trees, but not in fruit. One peculiarity of this tree consists in its very shallow rooting, and on that account the ground ought not to be disturbed where it is growing. Although it will succeed pretty well on poor ground, it does better in a more generous soil. It is not the best tree to transplant when it has attained some size, but it is unquestionably the best of all the Pines for making a fresh leader when one has got broken or destroyed. It seems well adapted for an avenue, but I would not recommend its being planted as a memorial tree until its constitutional capacity has been more tried, though as a symmetrical tree, in an open situation when the soil is good, it has few equals, and certainly no superiors.

Thuja Lobbii.—Next to the Wellingtonia I would regard this as the most important addition made to our Pinetums during the last quarter of a century, as it promises to be something more than a mere shrub; in fact, it bids fair to eclipse the mammoth tree of the far West in rapidity of growth, upwards especially. It forms a nice clean stem or bole, tapering like a fishing-rod, and its slender graceful growth is still further enhanced by the bright green Fern-like spray with which it is clothed, not standing vertically, like so many of the Arbor-vitæ class, but horizontally, curving over towards the beholder in the loveliest manner possible, so that I imagine the tree must be a general favourite. It is also very hardy, as our severest winters do not seem to have taken any effect on it, and, as before observed, it grows very fast; our largest specimen is 31 feet high, its yearly growth averaging 3 feet, and on two consecutive years its leader was lengthened 7 feet 8 inches: it has certainly a sheltered position, but other trees fully exposed grow almost as fast. I would recommend it as one in a collection that was limited to six species.

Thuja Menziesii.—I can only look on this as being a synonym of the last, and I believe it is now generally regarded as such.

Thujopsis borealis.—A very deserving species of the tree type, and, although not so fast-growing as the last named, it is quite as hardy, and its extremely dark green hue contrasts well with plants of a lighter colour. The tree the fruit was taken from is 20 feet high, and about 7 feet in diameter of branches.

Taxodium sempervirens. Athough hardy, yet the tips of its leaves in most cases show an injured condition. The peculiar spongy character of its bark, when it attains some size, is very remarkable, having a sort of pincushion-like feel. The tree seems strongly inclined to spread out laterally, its lower branches resting on the ground and spreading out some distance, but when surrounded by other trees it gets up; the specimen here being in the open its width is nearly the same as its height, 35 feet each way, and the circumference of the bole at 3 feet from the ground is about 5 feet 11 inches. Where the number of trees are limited to a small quantity I would not recommend this to be one, but in a collection it is indispensable, having features peculiarly its own.

Picea Pinsapo.—This tree, certainly the finest in the collection at Linton, is 40 feet high, and its branches spread above 28 feet, resting on the ground, from whence to the height of 20 feet there is only one place where the bole of the tree can be seen without putting the branches aside, so densely is it clothed, and so upright and faultless is it, as a pointed cone pyramid. It has only once had cones upon it, a circumstance not to be regretted, as the too early fruiting of such trees denotes an early maturity, and consequently a limited growth. This tree, however, bids fair to rival native ones. The short stout leaves, thickly set all around the shoots, instead of only on two sides of them, gives it a distinctive character, added to which its dense green hue and symmetrical form are all that can be desired. A small sprig of it is in the collection, being the only one without fruit.

In a paper of this kind it would be wrong to conclude without saying something as to the absence from the collection of some three or four popular members of this family. First of these is the deservingly favourite Douglas Fir, *Abies Douglasii*, which somehow has never done so well at Linton as most other kinds; the cause I attribute to the large quantity of calcareous matter in our soil, as I have seen this species do best where Rhododendrons and such-like plants grew well, which they will not do where the bulk of our Pinuses are. *Picea Nordmanniana* does better, and we have some good-sized trees of it, but none of them have fruited, neither do I wish to see them do so for some years to come, as the tree cannot be improved by being checked in growth by bearing cones. *Picea lasiocarpa* is too young yet, our largest plant not being more than 12 feet high, and growing very fast, with long leaves. I believe this to be identical with P. Lowii, and, perhaps, P. Parsonsii; but several of the species (so-called) of this genus run into each other so gradually that it is likely when they become old the number of names will be much reduced. My purpose, however, is not to go into this question just now, but to apologise for absentees; and the next is *Cedrus Deodara*, of which we have several approaching 50 feet in height, and between 30 and 40 feet in width, but none have yet shown fruit-bearing cones, though male catkins have been produced for many years. Some healthy, vigorous Cedars of Lebanon several years older have never yet shown cones. I attribute this to their vigorous growth, as smaller trees are often met with in a fruitful condition, but the trees in question are exceedingly healthy. I may here remark, what has been already stated elsewhere, that these two varieties—for they can only be regarded truly as such—are gradually blending into one; in other words, the Deodar will become a Lebanon in course of years. Some trees that we have here are difficult to distinguish at any time, while one is a Deodar in summer and Lebanon in winter; another is a compound of the two at all times—one part of each kind, while others retain their Deodar character still, and may do so for a few years longer than the others. If I were asked which of them I gave the preference to, I would not hesitate a moment giving it to the Lebanon. The fine old specimens to be met with in different places give a dignity to all around them, and a fine old Cedar of Lebanon and an equally noble Scotch Fir will not be easily excelled amongst the host of new trees of recent introduction. Both have been tried and proved good, and I am not sure but the Lebanon will do the best service in most places in the south of England, and perhaps the other in the far North.

Pinus ponderosa is also amongst the important trees of which there are no cones. This is, in my opinion, the best of all the long-leaved class, its tufts of foliage resembling a chimney-sweeper's machine brush; it bids fair also to become a useful timber tree. The one we have at Linton is 50 feet high, with an expanded top, something like the Scotch Fir when settling into the condition of an aged tree. It has never yet borne fruit, but is a tree much admired; as is also *Pinus Cembra*, an upright, cylinder-shaped tree, of moderate diameter, but very beautiful, owing to its silvery foliage. This is also nearly 50 feet high, and has never shown symptoms of fruiting. Neither have I noticed any on *Libocedrus chilensis*, which, by-the-by, suffered with us in the winter of 1866-67, but a healthy tree of some 12 feet high shows no signs of fruit of any kind.

Amongst those of which I cannot give a favourable report is *Araucaria brasiliensis*, which, although surviving some twenty-six winters out-of-doors, is not by any means happy in its position there, although it is one of the best we have. The fact is, it is not an outdoor tree, although it has struggled on and attained the height of 31 feet; its only merit is in showing its capability of living outside. As to thriving, it has no pretensions thereto; at all events, it does not thrive well. One or two Mexican Pines are also in much the same condition, only less able to stand cold winters, suffering more than the Araucaria does on these visitations. In fact, I am not sure but the want of success in the Araucaria arises from the soil not suiting it, for a severe winter makes no more change in it than a mild one.

In conclusion, I may be allowed to apologise for the imperfect growth of many of the cones exhibited, the fact being that it is a month too soon for them. Some of them, as Picea nobilis, Webbiana, and cephalonica, have not attained half their proper size; and as they had to be cut on June 21, some may doubtless be shriveling up ere the exhibition is over; whereas at a later period their appearance is better, and it is needless to say they keep better. This will be readily understood by all who take any interest in such matters, and to such the collection is more especially dedicated, and not to ordinary sightseers. *John Robson, Linton Park, Maidstone.*

BOTANY FOR BEGINNERS.—XI.

In selecting our illustrations we have been guided, first, by the desire to call the student's attention to such plants as may be in bloom at the time the articles are published, and to such as are readily accessible to all within reach of a garden or a field; and, in the next place, to select those which afford the best illustrations of the leading principles of floral construction.

For these reasons we began in spring with *incomplete* flowers of the simplest construction, such as those of the Willow, Elm, Poplar, and Ash; and from these we proceeded to flowers of gradually increasing complexity, such as those of the Tulip, Hyacinth, Apple, Rose, &c., pointing attention in each case to the particular circumstances which produced the modification or complexity of structure. We began thus with flowers of the simplest construction, proceeded to those, such as the Poplar, in which a slight degree of modification was produced by the mere *addition* of parts, till we came to the Tulip, in which the flower is said to be *complete*, because it possesses all the constituent parts which a perfect flower should have, viz., a *perianth* of two rows, the outer one called *calyx*, the inner one called a *corolla* ; then the stamens, surrounding the central pistil. Our next step was to show how the parts of the flower were modified by what is termed *cohesion*, which is, as previously explained, more generally want of separation than absolute union of previously separate parts. *Adhesion*, or union of dissimilar organs, was exemplified in the case of the Apple, p. 581 ; *irregular growth* by the stamens of the Wallflower, p. 645, or the petals of the Laburnum ; *suppression* of parts was exemplified in the case of the pistil of the Laburnum, p. 676, and the flowers of the Willow or Ash, p. 480, destitute as these latter are of perianth. *Multiplication* of parts was illustrated by the Rose, and also the *substitution* of one part for another—of petals, for instance, for stamens, as in so many double flowers, while the St. John's Wort, p. 805, yielded an illustration of *compound stamens.* Incidentally in every case we have alluded to any salient features that the plant presented ; but our special object was to show the student how flowers are constructed, and to induce him to ascertain for himself what are the leading structural peculiarities in any particular flower he may happen to gather. Of course when we use the words complete or incomplete, perfect or imperfect, we do so for convenience of arrangement only. So far as the plant itself is concerned, the simplest and least complex flower is as complete as one of greater complexity. What it has pleased the Creator to make is assuredly complete for the purposes for which it is designed. A complete symmetrical flower, then, in a botanist's sense, is very often merely an artificial device constructed by the botanist for his own convenience as a standard of reference. Nevertheless, very many flowers do really conform almost precisely to the standard in their infantile condition, though, as they emerge from babyhood they become altered in some one or more of the ways we have above alluded to. Again, some few flowers do throughout their whole life maintain their original *symmetry*. As this word symmetry is used in different senses, it may be well, before proceeding further, to state that by symmetry we here understand the due proportion of the parts of a flower one to the other, thus we have a *symmetry of form and size* in which all the parts of the same kind, all the sepals of the calyx, all the petals of the corolla, and so on, are alike in shape and dimensions ; a *symmetry of number*, according to which all the parts are in equal numbers, say five sepals, five petals, five stamens, or some multiple of those numbers, as five petals, ten (twice five) stamens, and so forth ; a *symmetry* of arrangement, according to which all the several parts are separate one from the other, and disposed in their proper order. In our previous articles we have given several illustrations, showing how this symmetry of form, number and arrangement may be interfered with in various cases, and it may now be well to put before the student a flower in which the symmetry of form and number is perfect, or nearly so, but which presents some deviation from the symmetry of arrangement. Such a flower is offered to us by the common Stonecrop, *Sedum acre* (fig. 179). The branches of this hardy little perennial are round or cylindrical, throwing out here and there fine threads or roots, and bearing a number of closely set *alternate sessile* leaves. Funny things, too, these leaves are to look at—little fat conical masses of spongy tissue filled with watery sap. In truth the Stonecrops belong to what the French call *plantes grasses*, fat plants. Our term succulent, though longer, is more correct, for the tissues are filled with watery juice, not with fat. These leaves are covered with a thick rind, or skin, which does not allow the juice to evaporate very readily from the surface, and so we find these succulent plants can grow and thrive in hot dry situations, where plants with a more scanty provision of watery sap in their storerooms, or with a thinner rind, would perish from drought. Our particular Stonecrop is obliging enough to live in almost any situation, but, when truly wild, it will be found on dry walls or rocks where little else will grow. The student must not imagine that all succulent plants are Sedums, or even near relatives of Sedum. Cactuses, Spurgeworts, indeed a very large number of the family groups into which plants are divided, have some succulent representatives, which keep up the honour of the family name in quarters where the ordinary representatives could not do so—another hint, this, not to trust to external similarity only. Not to be too discursive, we come back to the leaves of our Stonecrop. Notice on the branches which have no flowers how crowded they are, and then look at a branch which is bearing flowers, and see how the leaves are scattered at short distances one from the other. In fact, the stem between each leaf and its neighbour has perceptibly lengthened. Moreover, if the leaves be looked at attentively they will be seen to be arranged *spirally* round the stem.

The student should take any leaf near the base of a branch, and mark it in some way, then cast his eye carefully up the branch till he finds a leaf higher up, and which stands immediately above the leaf first marked. It will now be seen, by tracing the leaves one after the other, from the marked one below to that which is immediately above it, that the leaves are arranged in a spiral coil. Now, this spiral arrangement of parts is extremely common in plants, and when the eye is once accustomed to look for it, few things are more readily discerned. A Fir cone will show this arrangement at a glance. In all plants where the leaves or other parts are *alternate* (p. 480), this spiral arrangement necessarily occurs. If the observer is of a geometrical turn of mind, he will find the study of these spirals will open up to him a new and most interesting object of research ; but the subject is one too complex for the majority of beginners, and hence we shall not pursue it further. The inflorescence of the Stonecrop is definite, as in the St. John's Wort (p. 805). Coming now to the flower, we find it in some respects a model of symmetry ; the parts are symmetrical in number, form, and, with some exceptions, in position. We have already sufficiently explained the alternate, the spiral, and the opposite arrangement of leaves and other organs. This Stonecrop flower gives us an opportunity of saying something on the *whorled* or *verticillate* arrangement of parts.

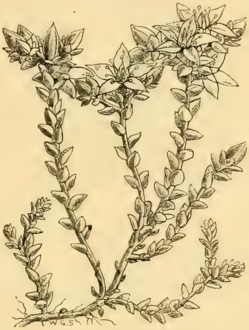

FIG. 179.—SEDUM ACRE (STONECROP).

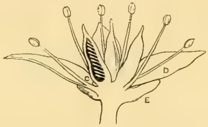

FIG. 180.—SECTION THROUGH THE FLOWER.

The five sepals of the Sedum are in a ring or whorl, as also are the five petals, the ten stamens, and the five carpels. One sepal or one petal is not placed at a different level from the rest, but all come off at the same level. In the case of *opposite leaves* already referred to, p. 480, there are but two leaves in the whorl or ring ; here in the Stonecrop there are five sepals in a whorl, and so on. In this plant, then, we have the leaves alternately and spirally arranged, while the parts of the flower are whorled. The symmetry of arrangement is thus different in the case of the leaves and of the parts of the flower ; but in other cases, as for instance the Bedstraw (*Galium*), the whorled arrangement is found in the leaves and parts of the flower both. In the Stonecrop, then, we have a whorl of five separate sepals, a whorl of five separate petals, and so on. Now, notice that though there is no alternation between individual sepals or petals, yet if the whole ring of sepals be compared with the whole ring of petals that there is alternation between them, thus one petal comes between two sepals. The petals *alternate*, as it is said, with the sepals. Five stamens alternate (and these are longer than the others,) with the sepals, five other stamens alternate with the petals.

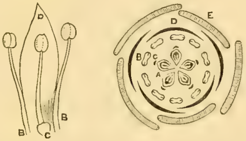

FIG. 181.—DIAGRAM SHOWING THE ARRANGEMENT OF THE PARTS OF THE FLOWER.

A, Carpels ; B, Stamens ; C, Gland ; D, Petal ; E, Sepal.

So far the alternation is perfect, but when we come to the carpels we find them, as it were, out of place ; they should alternate with the petals, but they do not. In this particular then the *law of alternation*, as it is called, is not followed. The diagrams at fig. 181 will exemplify what we have been saying, but we may perhaps make this matter even simpler by the following scheme, representing arrangement of parts in a flower where all the parts alternate, and wherein S represents the sepals, P the petals, st the stamens, and C the carpels :—

S		S		S		S		S	
	P		P		P		P		P
st		st		st		st		st	
	st		st		st		st		st
C		C		C		C		C	

Now in the Stonecrop the arrangement is :—

S		S		S		S		S	
	P		P		P		P		P
st		st		st		st		st	
	st		st		st		st		st
	C		C		C		C		C

The explanation of this peculiarity, as also of certain little glands, C, fig. 181, which also deviate from the proper alternate position, is a problem for the advanced botanist to solve rather than the beginner, and hence we confine ourselves now to the mere mention of the fact.

DOUBLE HYACINTHS.

AT p. 384 I find some remarks upon the question of classifying some double Hyacinths, like Koh-i-noor, so as to separate them from *bonâ fide* double varieties, like the Lord Wellington (rose). I do not think that the term "double" is a good one to apply to such varieties as Lord Wellington, although it has been the custom for many years to call every Hyacinth which is not single, "double." It would, I think, be better to follow the example of the growers of the last century, and make a more correct distinction. In the "Treatise on the Hyacinth," by George Voorhelm, London, 1753, they are divided into classes called "single," "double," and "full," and this I consider to be the best system of classification, the terms indicating clearly the quality of the flower. Intermediate forms could be indicated as "half or semi-double," or "half or semi-full." I have already adopted these terms for years in my nursery lists.

As regards the time when double Hyacinths were first cultivated (see p. 451), I may say that I think it probable that some double varieties were obtained from seed, and grown very soon after the introduction of the Hyacinth into Europe. It is also, I think, quite certain that Peter Voorhelm (Voerhelm or Footlem), was not the first grower of them. The Marquis de St. Simon, in his work on Hyacinths (1786), states that Peter Voorhelm for some time neglected the cultivation of double sorts, and gave preference to the single, double flowers being considered as monsters unworthy of attention. These remarks can be depended upon, as St. Simon seems to have been well acquainted with George Voorhelm (grandson of Peter), the writer of the above-named treatise, at least there is in St. Simon's book a list of the Hyacinths planted in George Voorhelm's parade-bed. It is strange, however, to read in St. Simon that before the time of Peter Voorhelm there was neither cultivated nor estimated any double Hyacinth, and also that in "Swertius' Florilegium," printed at Arnheim, 1620, no double Hyacinth is figured. I have never seen this Arnheim edition of the "Florilegium," but I have before me several Amsterdam and Frankfort editions, of which the first is dated 1612, and in all of them is figured a double Hyacinth at pl. 12, described as a violet-blue one—a poor thing, however, with only eight bells, but well double. Other works of that time give also figures of double Hyacinths.

In the famous "Hortus Eystettensis," of Besler (1613) there are figured three double sorts, viz., Flore cœruleo-pleno with three full bells, and candidissima flore-pleno with one very full bell at the top of the stem (ord. ii. pl. 14) ; both engravings are apparently taken from young plants, so that the same sorts may have produced more bells later. These two varieties seem to be described here for the first time. On the following plate (ord. ii. pl. 15) is figured Hyac. orient. flore duplici, a strongly grown bulb, with 15 true double blue flowers. This variety has been mentioned before by Clusius in "Curis Posterioribus," fol. 18 (1611). In the "Hortus Floredus" of Passaens (1614), on plate 11 of the first book containing spring flowers, is figured a Hyacinth noted as double, but nothing double is to be found in the bells, though in one instance two bells are grown partly together ; and in consequence of this the epithet double may have been given to the flower. The description given of this flower in the English edition of the said work is as follows :—

"But this double oriẽtall Iacinth has at his first cominge greene flowers w^{ch} afterwards appeare somewhat blewish, and being full blowne, are whyte yet somewhat greenish, yet those stripes or veines that go through the leaves are very greene."

Popular writers of that time speak of double Hyacinths as being most esteemed by amateurs, and even preferred to singles; at least Petrus Hondius, in his treatise on gardening, &c., called "Moufeschans" (1621), and written in Dutch verses, gives them more praise than all the others. In "Laurenberg's Apparatus Plantarius" (1631), three varieties of double Hyacinths are mentioned; but in the catalogue of the Leiden garden, edited by P. Hermann (1687), seven different double full Hyacinths are described. These facts prove sufficiently that double Hyacinths were cultivated long before Peter Voorhelm, a fact to which Charles Morren, in his *historique essai* on bulbs (1842), has already drawn attention. It seems that in the middle of the 17th century bulb amateurs gave their attention by preference to the Tulip, and that it was a century later before the Hyacinth became the preferred florists' flower. A curious Dutch book at that time ("Flora's Bloem-warande in Holland") (1734), appeared in consequence of this, and for the same season the pamphlet on the Tulipomania ("Flora's Samenspraken") were printed again.

At that time double Hyacinths were grown by preference, and it may be that Peter Voorhelm was the person who brought them again into fashion after their culture had been neglected, and the singles had for some time been the most popular. The figures given at this time, for example those in "Buc'hoz Jardin d'Eden" (1781), represent double Hyacinths, chiefly of the late sorts, with very full bells. George Voorhelm, in his treatise above-named (1753), gives a list of 244 double and 107 single best sorts, and among the doubles the following are named as surpassing all others: Full Hyacinths with white grounds:—Chandelier o' the Church, Comptroller-General, Etat-Général, Flos Solis, Gloria Florum alba, Gloria Florum suprema, Illustrious Beauty, Miroir, Mount Etna, Mount Vesuvius (extra), Optimus.

Full Hyacinths with blue grounds:— Aspasie Panachée, Baillif d'Amstelland, Bouquet de Fleurs, Directeur-Général, Duke of Courland, Duke de Kenmerland, Flora Perfecta, François Premier, Globe Terrestre, Gloria Florum (blue), Gloria Mundi (blue), extra; Illustrious of Holland, La Grande Violette, La Plus Belle du Monde, L'Impératrice, Aspasie, Louis Quinze Triomphant, Merveille du Monde, Paix Douce, Passe non Plus Ultra (blue), Passe all, Rien ne me surpasse, Sanspareil Panaché, Trésorier-Général.

Full Hyacinths, with red grounds:—Coralin, Crown of Roses, Gloria Mundi rubra, Gloria Rubrorum, La Princesse Impèriale, L'Assemblage des Beautés, Monarch of the World, Mount Hecla, Pontife Romain, Révisoir-Général, Riche Paix, Rose d'Hollande, Rose du Roi, Rose de Parade, Rose Sacrée, Soleil d'Or.

A few of these sorts are at present found in some collections.

In this list is also noted a Roi de la Grande Bretagne among the full Hyacinths with white grounds, but not marked as superior. St. Simon, however, considers this Hyacinth to be the oldest in cultivation (it may be of the second period of double Hyacinth growing), and supposes it to have been obtained in 1698. This variety was originally preferred above many others, and sold at a high price, much surpassing 1000 guilders. This bulb, continues the learned writer, grows much better in warm countries than at Haarlem; it grows equally well in pots and in glasses, but perishes in cold and wet grounds.

There is still to be found in some Dutch collections of the present time a sort of the name of King of Great Britain, a late flowering variety of no merit, which answers to the description of the old renovated sort, and which may be the same. At the end of the former century double Hyacinths were much preferred to single ones in England. The treatise on Hyacinths in the "Florists' Directory," by James Maddock, begins in these terms:—

> "Double Hyacinths, which are much more beautiful and estimable than those which produce single flowers, are, like the latter, known by the general distinction of reds, whites, and blues, with a few kinds of yellow, more recently obtained from seed. In many instances double Hyacinths have a peculiar advantage of a beautiful contrast of colour in the eye or centre of their bells, which the single sorts cannot possess."

We may conclude, from these remarks, that the cultivation of double Hyacinths was at the time of the introduction of this plant an object of great interest to florists. In later times (before 1700), the preference was given to singles; then, again, doubles had the preference, till, perhaps 20 years or longer after, singles again became the favourites. The reasons for these changes must be sought for in the fine novelties introduced in different periods in the double and single class, in the way of showing them, sometimes in show beds in the open ground, at another time forced in pots, and by the different system of bedding-out practised at different times, in the more or less scientific direction of horticulture, and perhaps in other circumstances. *J. H. Krelage, Haarlem, Holland.* [It is doubtless the closeness and the symmetry of the spike which has led to the modern preference for single Hyacinths as compared with double ones, which latter, however, like most double flowers, continue longer in bloom. EDS.]

Home Correspondence.

Orchid Cultivation.—I think if your correspondent "Scrutator" will read my letters again, and then his own, he will find that he is not justified in the construction he has put upon them. I did not arrogate to myself the right to advance my opinion unsupported by experience, nor did I deny him the privilege of quoting instances of success because they were not his own. There was no ambiguity about what I said, and as I repeated it a second time, there should be no excuse for perverting the sense. If you have no case abuse the plaintiff or his attorney, is an old law maxim. I am also just a little afraid that your correspondent "Ex-Cantab" is making the defence of cool treatment too personal a matter. Let us flatter ourselves that there are a few lookers-on, who read our letters, and that they enjoy a smart hit now and then; so far so good, I have no objection, but we should not forget that argument requires examples to the point, to convince. I have read with great interest the account of the Odontoglossum house at Ferniehurst, and note that "F. W. B.," who furnishes the report, says, that the winter temperature of this house is a minimum of 40° and a maximum of 50°, or a mean of 45°. Now this is the first time that I recollect having read such a statement, and it was to bring out such an one, if anyone could make it, that induced me to write at p. 310: "I have never tried growing them for any length of time, say 3 or 4 months, at a temperature of 40° to 45° for a minimum; nor has any one else, in my opinion, without seriously injuring his plants." Mr. James Anderson, at p. 171, only gave us the mean of his minima as 49°.19, and "Scrutator," in his letter at p. 274, only says that the house at Ferniehurst would average a minimum of temperature of from 40° to 45° during the late severe weather. I, therefore, thought I had a right to take exception to such partial accounts being considered as proving anything, and pointed this out in my letter at p. 310. The words I used were—"We have not before us, that I am aware of, either Mr. Anderson's practice, or that followed at Ferniehurst; under these circumstances there can be no discussion." I am glad that they can be grown so cold; such has not been my practice, and that a greater heat suits O. Alexandræ was shown by one bulb furnishing 28 full-sized flowers; "F. W. B." also adds O. citrosmum as wanting a warm corner. Am I right in concluding that a gardener of even Mr. Culley's lengthened experience, dare not trust his house down to 42°, without its being sheeted up?—the term used is "covered up for the night." If this surmise is correct, it is a very important element, and it should not be passed lightly over; the lower the heat the less moisture can the atmosphere retain, and the greater is the danger of frost by radiation. I gave Mr. Purdie's experience of 40° under radiation, but it was at 10,000 feet of elevation; and as Odontoglossums do not come from that elevation, our gardeners may congratulate themselves they are not required to attend to their charges with their teeth chattering, for a minimum; and, as they neither came from 8000 feet, need they fear a maximum, that will burst a thermometer in a man's pocket, because it will only register 130°: see also Mr. Purdie's letters, as confirmed by M. van Volxem, at p. 584. I was much pleased to see this explanation of the great height thermometers mark in the sun at high elevations in the tropics, for I mentioned Mr. Purdie's experience rather in fear, yet hoping he was right,—for the disbelief I had expressed, that Odontoglossums came from such elevations, greatly depended on his veracity. "Ex-Cantab" need not fear that I shall advise any one to follow Nature in the matter of temperatures, even in countries where such extremes are unheard of. Since writing the above I have read Mr. Anderson's letter in your journal (at p. 741), and am glad that he is willing to join in the discussion; the cool treatment has certainly a chance of being heard, and as I am to be in such a minority, I must ask them to be careful that they do not make me say what I did not. "Ex-Cantab" says, I recommend a mean winter temperature of 70°, and Mr. Anderson repeats it; once or twice more, and it will be considered proved. I have been very careful in advising any treatment. I have given my own practice, that I might create discussion, but I have not given a mean of 70° in winter as even my own practice, that I am aware of. Mr. Anderson begins like a lawyer summing up; I am obliged for the flattering way in which he says I can write upon subjects that are not his own particular pet subjects, but he must for the present allow me to think that his advice to your readers, and such as seek instruction from your pages, is a little premature. He may be right "that I totally misunderstood the climate necessary for the cultivation of Odontoglossums," and that during the trip he speaks of he may have mastered the subject; but I hope he will be willing to give us the proof, and then I shall have some little consolation for the humble pie I must eat, in the information I have obtained. Perhaps in this I may be wrong, and it may already have appeared in your pages. As I am to have so many against me, I must mark my points, and claim what credit is due to me. Will Mr. Anderson tell me where he learned that 6500 feet is the elevation from which these plants come? Mr. B. S. Williams, in his 4th edition, p. 213, says O. Alexandræ grows at an elevation of 7000 to 8000 feet in Bogota. "Ex-Cantab" says that he advises, at p. 712 of the 3d edition, a winter temperature 45° to 50°, and in summer 50° to 60°. "F. W. B." says that the Ferniehurst house has a winter temperature of 40° to 50°, in summer the natural temperature; and then quotes Mr. Warner's practice at Broomfield—a minimum of 40° in winter, and in summer as much natural heat as the summer affords. These winter temperatures will agree with Mr. Williams; but what about the summer's? Perhaps he is as far out there as he is in his altitude. "Ex-Cantab" says he thinks a minimum of 45° in winter, and a maximum of 85° in summer is cool treatment—these natural summer temperatures mean 85° at least; thus, I only differ from them in my winter temperature. I have written for Isaac F. Hutton's book, M. Jean van Volxem mentions in his letter, and will return to this subject of temperatures when it comes; but I am still of the opinion that it is a simple question of resting, and the advantage a long rest has upon an evergreen pseudobulb. I some time since referred to the three types of tropical growth embraced in Mr. Fortune's lecture, and I should put all evergreen Orchids as classing with the Mangosteen type. I at once repudiate the charge of killing an Orchid by my practice, and if Mr. Anderson says that he writes such things in "justice to your readers," I am sure that there will be found some of them who will tell him that if he wants to retain any influence over them, he must not seek to procure such a result by false inferences. This is strong language, so I will give the quotation of which I complain:—"In reply to the first question: 'Did he find any Odontoglossums grown as recommended by "G. H.?" I did, in one or two places, but the plants, instead of being cultivated, as I understand the meaning of the word, seemed in a bad plight. A continuance in the hot, dry atmosphere in which they were confined would certainly kill them." I am one of your readers, and I hope I profit by what I read in your journal. Will Mr. Anderson, in justice to me, say where I advised "a hot, dry temperature?" My own impression is, that the point above all others that has occupied my attention is, that when we have exhausted all the means at our disposal, we still cannot give moisture enough. I refer you to p. 417, where, at the end of my letter, I say: "Orchids come from the wettest parts of the earth alone, and supplying them with this moisture must always be our greatest difficulty. It is a point that has occupied much more of my attention than giving them 10° of heat more or less." I am as willing as "Ex-Cantab" to keep the discussion to the point, which is, the relative advantages of a little heat more or less during winter, and the effect of a more complete, because longer, state of rest upon the healthy growth of Odontoglossums. *G. H.*

The Weather in Westmoreland.—We have had a most remarkable season in the lake district. Although the crops are looking healthy, and there is a fair average crop of hay, everything else has suffered more or less. I find, on referring to my note-book, that on May 17 heavy rain fell up to 11 P.M., the wind being west. A sudden change then took place, the wind changing to the north; snow fell on the hills, and there was 5° of frost in the valleys. The latter wrought fearful damage upon the fruit crops, Apples being completely destroyed. Pears, which were set most abundantly, and nearly the size of small Beans, were left with a few scanty fruit, and the north-east winds still prevailing. The grub seems to have finished the few that were left, with the exception of some 36 trees, which I received from Thos. Laxton, Esq., of Stamford. These trees were removed, to make room for seedling Roses and new Peas, on October 24—their height averaging from 8 to 15 feet, and I mention this to show that large Pear trees can be removed to a distance, and succeed admirably. Severe as the weather was—and it cut off the fruit of some 40 other trees that had not been removed—there are at present 22 of the lifted trees, sent here from Stamford, that are carrying excellent crops, and are swelling their fruit in a satisfactory manner. Some of your readers may think that I have dwelt a little too long on this subject, but I look upon it as a most important lesson to us gardeners in the northern counties, as to whether it might not add greatly to the securing of a crop of fruit if trees were periodically lifted, so as to retard them in the early spring. Gooseberries are a heavy crop in most of the sheltered gardens in the lake district; for although the frost of May 17 destroyed about one-third, the remainder have swelled so large that there is a bountiful crop; and the same may be said of Currants of all kinds, although they are smaller than usual, on account of the cold nights still prevailing. Strawberries suffered severely, but as there was a large quantity of unexpanded blossoms, there is a fair average crop, the fruit being fine but inferior, on account of the earth being so ungenial. Just a few words about the trees. On May 17 most of the young shoots were cut, and the trees were much browned, and at the present time can be distinctly seen—Cedrus Deodara suffering severely, while a Taxodium sempervirens some 25 feet in height is quite safe; Picea Nordmanniana having the young growth completely killed, and, in fact, in almost every case the young growth suffered the same fate. Bedding plants have merely kept alive, some of the more tender becoming smaller than when planted out. *James Stewart, Bellsfield House, Windermere.*

The Condition of Peach and Nectarine Trees on the Open Wall.—At p. 836, the Rev. W. F. Radclyffe thus writes :—"I fear the statement made in your leading article is but too true of the above trees. Such as I have seen and heard of are in a miserable condition, some describing their trees as in a moribund state, and others as blistered, and covered with green aphis and spiders." He then proceeds to state that his trees are perfectly healthy, because, forsooth, he short-prunes, and looks after them himself; and adds, "I will not suffer severe winter or spring, red spider or aphis, to blister, curl, or afflict my trees;" all of which I should consider as wholly unworthy of notice, but for the following sentence, which is as devoid of truth as it is mischievous: "This miserable state of the Peach and Nectarine trees out-of-doors, in England, is a disgrace to science, and the result of neglect and gross ignorance." That is, the majority of the gardeners of England are grossly ignorant, and the grand remedy for it propounded by the Rev. W. F. Radclyffe in such brotherly terms is, "Come, review my trees." Under the circumstances my response, and that of hundreds more of sorely tried practicals, is, "No, thank you;" and my advice to a writer at whose feet I have often sat with pleasure is, "Speak not evil, one of another, brethren." We often hear of the want of courtesy among practical gardeners, but do not believe there is one amongst us who, if his trees in the open had escaped injury this season, could have complacently sat down and claimed the credit of it all, and poured contumely upon his suffering brethren, who had been harder hit by the sharp shafts of the Almighty's frost. However painful to me I must request permission to protest against such statements, as the character and daily bread of hundreds of gardeners are imperilled thereby. The fact is, that science and skill are powerless to save tender trees from the grip of zero, as the merest tyro in horticulture knows too well. Protect them with glass, as recommended in your leader, and the matter is easy. But I boldly assert, that the sorry state of Peaches and Nectarines in the open this year is no proof, either of a lack of science, no, nor of neglect nor ignorance; and on similar matters I claim to be as good an authority as your correspondent. I next expect to hear that the lateness of the Roses this season is attributable to the lack of science among gardeners, and that the wet haysel and late harvest result from the neglect and gross ignorance of farmers. Even this would be more reasonable than the broad assertion that the skill and perseverance of any man, can make tender trees endure such hardship as we have experienced this winter, spring, and summer, with impunity. *D. T. Fish, F.R.H.S., July* 3. [We are glad to print this disclaimer, with the substance of which we quite concur. Get a *good* gardener, treat him liberally, and be sure that all that experience can suggest, or intelligence supply, will be done; and then, if failure ensue, it must not be made a reproach to him. EDS.]

Vitality of Seeds of the Shepherd's Purse.—In the autumn of last year I made a new croquet lawn from a meadow adjoining my premises, and turfed it with the turf that was growing there. This consisted of the ordinary herbage of our grass lands, and was very free from weeds. To get the level it was necessary to raise the lower part with earth dug from the same field, a fine mould, several feet in depth. To my surprise, upon the setting in of warm weather, the bank which supports the lawn below, and which was turfed over with a very clean turf, was covered with a crop of Shepherd's Purse as thickly as though it had been purposely sown over it; and the same weed is bursting up through the interstices between the turves laid on the lawn, so far as the same earth was used. There is not a plant of it to be seen on the undisturbed part of the meadow, and I can only account for its appearance by supposing that in former times there was a garden there, and that the seeds lay dormant till brought up to the influence of the air. It has been a meadow to my knowledge for 40 years, and usually fed with sheep. *R. C. A. P., Halse, near Taunton.*

Laxton's "Alpha" Pea.—Will any of your readers (disinterested ones) who have grown this Pea please to say whether or no their experience of it differs from my own? Sown amidst a lot of other Peas, I find it to be about as early as Daniel O'Rourke, with a pod about equal in length and size. The haulm is thin, bearing about the same relation in respect thereof to Supreme, Premier, Imperial, Wonder, Prince, and others, that hay does to straw. It is also very long jointed, and produces but one pod to a stem. In productiveness I think it to be decidedly inferior to Daniel O'Rourke. My stock of it, the produce of a sealed quart, obtained from Messrs. Carter & Co., is growing where other Peas thrive luxuriantly, so I accept it as a fair trial, and am correspondingly disappointed. Alpha had been specially commended as the best of Laxton's last batch of Peas: if it is so, then I fear indifferent is the best. Comparisons may be odious, but we must occasionally put up with their objectionable character, as they are sometimes necessary; and upon that ground do I contend that, as compared with Dr. Maclean's splendid batch of dwarf Peas, Mr. Laxton's are far from being equal; even Supreme, which is truly a grand show Pea, is neither earlier nor so acceptable at table as the old Champion of England. *A. D.* [This evidence differs from that previously received from other sources. EDS.]

Ornamental Heracleums. — At this season the larger forms of Umbellifers will be coming into blossom, and now, therefore, that their value as decorative plants is more appreciated than formerly, it may be opportune to introduce figures of two species of Heracleum, for which we have to thank Messrs. Haage & Schmidt, of Erfurt. One of these is Heracleum eminens (fig. 182), the other H. absinthifolium (fig. 184), or as De Candolle calls it, Zozimia absinthifolia. H. eminens, which has leaves of gigantic dimensions, is well marked by the blunt rounded lobes of its trifoliolate leaves (fig. 183). These leaves are stouter in texture, and consequently more durable, than those of most of the other cultivated species, and they are covered with a fine velvety down, so that they take on a greyish hue. It is a grand plant, of stately dimensions, and very well adapted for planting in prominent, or even in isolated positions. The leaves keep, it is said, in a fresh and effective condition until the autumn. The stems support fine large umbels of flowers. Altogether, it is a highly ornamental plant. H. absinthifolium, a Caucasian and Iberian species, has much divided leaves, which are clothed with hairs, giving them a hoary appearance; the leaflets are somewhat distant, and the segments wedge-shaped subtrifid. The stems are sulcate, and grow some 2 or 3 feet high, and are almost without hairs; they bear umbels of about 20 rays, surrounded by a many-leaved involucre. As it forms a dense, close mass, a strong plant of this species would be a very picturesque object for the less refined portions of a lawn or pleasure ground. The foregoing plants are of smaller stature than H. giganteum, which latter is a grand plant for wilderness scenery or bold distant rockeries, having, however, the defects of sowing itself rather too freely and of losing its foliage before the end of summer. *M.*

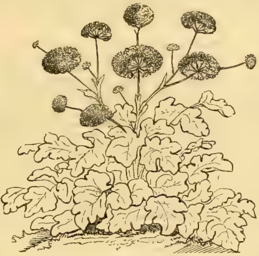
FIG. 182.—HERACLEUM EMINENS.

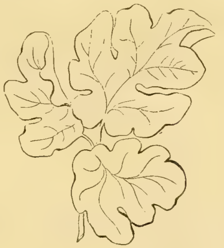
FIG. 183.—LEAF OF HERACLEUM EMINENS.

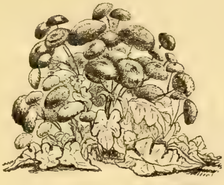
FIG. 184.—HERACLEUM ABSINTHIFOLIUM.

Watson's Lawn Sand.—I can endorse every word of your correspondent, Mr. J. Stewart, respecting the wonderful effect which the above has on a poor lawn. I used last spring 1 cwt., at the rate of 4 oz. to the square yard, and shall, if all's well, use 10 cwt. another spring, that being considered the best time for putting it on. I used 2 oz. to the square yard, and repeated the same dose a fortnight after. I cannot describe the wonderful improvement it has made on the lawn here, but shall be glad to point out the effect to any of my brother gardeners. *Isaac Dell, Stoke Rochford.*

The Cool Treatment of Orchids. — Would "G. H." kindly inform us, through your columns, if (1) he closes the Odontoglossum house at night? and (2) if he keeps the plants wet, in addition to the damp atmosphere? *X.*

Heating by Circulation of Hot Water.—How easy it is to suggest and make improvements on almost everything that comes under one's notice, when the first principles—the most difficult steps—have been overcome; and it is almost impossible to point out any object which has not been more or less improved since it first came in vogue. Perhaps no appliance has escaped the attention of the mind of improvers more than our hot-water apparatus, particularly for horticultural purposes. If any gardener endowed with a practical mind, who has been engaged where forcing has been extensively carried on, casts a retrospective glance at the firebricks which he has burned almost uselessly away, the cost of doing so will be found to be something frightful. As my desire is solely to simplify and extend horticulture, it is a pleasure to me to see the opposition elicited by the discussion of this subject, since this gives fresh life and vigour to the whole matter. I have long been convinced that burying our heated pipes beneath the floors of our buildings, or placing them close beneath the staging, or directly over the pipes, must be wrong, both in principle and practice. I well remember Mr. Taylor, late of Shrubland Park, and formerly gardener to Mr. Coster, reading a most instructive paper at the Streatham Gardeners' Mutual Instruction Society, nearly 20 years ago, on the unnatural conditions that potted plants are subject to in the winter season, from the heat rising from the pipes, the soil at the bottom of the pots becoming powdery from the excessive and unnatural heat from below the staging; and he attributed a great deal of his success with stove and greenhouse plants at the Regent's Park shows to his placing each pot in a pan of water for so many hours every spring, to remedy this evil. I have also read with great interest the long discussion that has been going on now for some years on the "cool" treatment of Orchids. This has been mainly brought about by the hot pipes being placed close beneath them instead of above them, so as to emulate sun-heat. To prove the value of this theory, I fixed a 3-inch pipe just inside the angle where the rafter and top plate meet, so that the pipe is about 2 feet 6 inches above the plants, and about 5 inches from the glass. This I found to effectually prevent damp and drip from the roof; in fact it dried up the injurious moisture in the winter time, instead of creating it; and I was so satisfied, that I have been heating all my pits in the same manner, as follows:—I run the main 3 or 4-inch pipe just inside the end of the pit, a three-quarter hole with a thread is made, and a brass tap is screwed in; from this is led a common inch barrel gas pipe running parallel with the front of the pit, and about 8 inches from the inside of the lower frame work, and at the further end of the pit, it turns upwards for 3 feet, and then returns a little more than half way up each rafter, and the highest point, or the air pipe, is directly opposite where it first enters. I have one of these inch pipes above 150 feet in length, and all this weight of water has to be lifted, as Mr. Fish will have it, through a ¾-inch tap; nevertheless the circulation is the most perfect I have ever met with. The suspending of this barrel pipe by the means of a quarter round iron rod, bent from each rafter, and just above the plants and a few inches from the glass, is certainly a vast improvement; it not only excludes the frost, but it effectually prevents damping, which is of vital importance in winters similar to the last. Should any of your correspondents who may doubt this statement only honour me with a visit at Woolwich, I shall expect them to satisfactorily explain how my hot water circulates contrary to their theory. Again, I have an inch pipe standing up 4 feet, with an elbow on the top, from the main supply from the boiler. This pipe is a flow, and supplies two 3-inch pipes 218 feet long, all inclining upwards, the water plunging suddenly into the boiler, to be reheated. The point at which the return leaves the house is considerably higher than the flow, and within a few inches of it. The supply of hot water is through an inch pipe, and it finds its way rapidly through the entire length, and the whole length is almost of the same temperature,* and this under the most adverse circumstances, for the small supply pipe is unquestionably much against the new system, yet the circulation is perfect. On the opposite side I have a house, which is heated on the contrary system; the water rises up about 3 feet in a 3-inch pipe, and then branches into two of equal dimensions, and just where it divides into the two pipes is the highest part in the house, so the water has to travel downwards in these 3-inch pipes round the house, a distance of 170 feet. Now if the cold water has such an effect in forcing the hot water along the lower pipes in the house, and down the bends into the boiler, how is it that I dare not put small plants (without injuring them from the intense heat) near this highest part of the piping; yet on the opposite side, when it is leaving the house, I cannot keep the plants from damping for the want of heat. If the new system is wrong, and this system right, how is it that I get a regular heat in one house and not in the other? Again, I find when my flow-valve is shut, I get no back action up the return pipe, which is very different to what happens in the house heated in the old style. If any of those who advocate the old system of circulation can explain why all these facts should occur with me, and will not do the same elsewhere, I should be exceedingly obliged. By about August 15 next I shall have one of my new boilers ready to drive the piping of six houses separately or altogether (and two of these houses working on the new system), in all about 1200 feet of piping; and if any of your doubting correspondents will but come and elucidate the above mystery, they shall have the whole apparatus at their disposal, and I shall be only too happy to render any assistance required. *H. Cannell, F.R.H.S., Woolwich.*

Diverting a Watercourse.—I have a stream of water running through my freehold land—which passes through another field or two not mine, and then supplies a mill—have I any right to place a bay across the stream, and put a ram in my field to drive the water from the said bay into a tank erected about 14 feet high in my field, and to have pipes laid on from the tank, to water plants, &c., growing in the same field. There will be a pipe to take away the waste water from the tank when it becomes full, to carry it again in the same stream—before it gets to the mill, and of course before it goes out of my land. Or, if I have no right to bay the brook, have I a right to use the water? *J. K.* [The reply to this question seems to us to depend on local customs and private rights. Perhaps some of our correspondents can furnish a more explicit reply. EDS.]

The Horticultural Dinner at Nottingham.—Your remarks on the want of life and reality were only true of the dinner itself, and not at all applicable to the speeches that followed. There was a little unfortunate grouping at table. While many sat among friends, others found themselves among strangers, and we cannot always be lively in the society of the unknown. A little arrangement by stewards would have grouped the diners better; but, so far as I could see, there was no attempt at this, and hence a little restraint and dulness here and there. The same thing happens at private dinners, where the hostess fails in pairing and grouping her guests congenially. But this dinner was hastily arranged, and up to the last moment the number and character of the diners remained uncertain. The fact is, we dined under difficulties; and it spoke volumes for the wisdom and tact of the chairman that most of those difficulties were conquered at the last moment, and that the Council of the Royal, scientific men, local notabilities, and practical horticulturists, all dined together happily and harmoniously. I trust that from this time the Council will take the dinner into their programme from the first, and constitute it an important part of the meeting. If the managers of the Society really hesitate about dining with the men who make their shows, once a year, then the Society deserves to perish. And it will. Notwithstanding the complete success achieved at Nottingham, there was imminent danger of a breach being made there between the managers and the workers that might never have been healed. Horticulture has a heart as well as a head, and those who ignore that fact must suffer from it. There is also much truth in the saying that the shortest way to an Englishman's heart is through the short cut of his stomach; or, to put it in more elegant words, one of the most binding cements in social life is a good dinner. But with the dinner anything like a lack of life and reality vanished. The chairman was never more eloquent, genial, or wise; and all the speakers, from the Mayor and Council downwards, spoke with energy and force, while the audience endorsed their words with a heartiness and enthusiasm and an unanimity that is seldom seen or heard at public dinners. In one word, everything after dinner was a decided success, and there was no lack of good things at the dinner itself. All that was needed to render it lively and real was a good appetite, a grateful heart, and the belief that every one of the unknown was a brother horticulturist in disguise, and therefore, a jolly good fellow if we could broach him. *A Practical.* [Our correspondent, who we know writes from experience, substantially confirms our brief remarks on this subject. The fact is, no large assembly like this could be comfortably entertained without active stewards, and stewards there were none, so that some dined and others got—what they could. So much for the dinner, which we believe should form part of all future programmes, and we trust will go on improving. But we are sorry to find so practical a writer persisting in holding what we quite believe is a false idea that the Council objects to meet the gardeners, and the equally unpractical notion that the Council should get up the dinner. The members of Council go as strangers to the selected locality, and all arrangements of this kind belong to the local authorities. To disseminate the contrary view has been the work of officious mischief-makers. The gardeners' dinner, if properly organised, and under the management of a respectable local committee, would certainly always command the sympathies and support of the Society, both Council and Fellows, as it did on this occasion. EDS.]

The Weather.—Mr. Mechi's old proverb concerning a "dripping June" has been so extensively quoted in newspaper articles, that I fancy the general public has by this time been pretty well brought to believe that "all things are in tune." Perhaps, barring a considerable lot of spoilt hay, things were fairly in tune up to the end of June; but how will it be if we get a wet July? Here, on the 3d, things don't look prosperous or encouraging, as we have already got this month a continued series of heavy soakings, with strong winds that are far from acceptable, and bring up unpleasant thoughts of the Potato disease, too much straw, laid crops, and a wet harvest. This is rather a gloomy view of things, I know, but hot dry summers have of late been so much the rule, that a wet cold one can scarcely be conceived. As a companion proverb to Mr. Mechi's I will give another, and an original one, perhaps less pleasing but none the less true, "A wet July makes all things awry." I do not want to prove a prophet of evil, neither shall I be like Jonah and quarrel should my fears not be realised. At present I think the prospect before us is far from bright, but ere this is in print we may have passed the worst. I fervently trust it may be so. *A. D.*

Foreign Correspondence.

ADELAIDE.—The following passages are extracted from the Report of Dr. Schomburgk, the Director of the Adelaide Botanic Garden, 1870:—The Guinea Grass (Panicum giganteum), introduced last year, and which withstood so bravely the dry weather and hot winds last season, has, I am glad to say, also withstood the extraordinary wet and cold winter months. In July, I lifted all the plants and divided them for distribution, the remainder I replanted. As a tropical plant this transplanting should have been done in the month of September, but in spite of it the plants have taken root again and are thriving most luxuriantly. I consider this a good test of its applicability to our climate. I mention again, that I can speak from personal observation of a five years' residence in South America, of the immense value of this grass there; and, if it only grows half so luxuriantly here as it does in South America, there would, through the summer months, be an end to all difficulties about green food for cattle. I must also remind all who intend to plant and secure a luxuriant growth of the Guinea Grass, that it must be planted on prepared ground, the plants 20 to 24 inches apart, and the land kept clean from weeds. I would also mention that it will not bear being fed down, nor trampled upon by cattle.

The grasses which I have already recommended in my reports, viz., Buffalo Grass, Lime Grass, Millet Grass, Meadow Fox-tail, Meadow Barley, have again stood well, and the cattle are fond of these grasses. Also the New Zealand grasses received from the Hon. A. Murray have not suffered from the last year's drought, and seem to be adapted for our dry climate. The value of the Prairie Grass and the Bromus mollis cannot be spoken of highly enough as pasture grasses and for hay.

From Dr. Hooker, Kew Gardens, I received a small packet of seed of Pentzia virgata, a much branched rigid little bush, 1 to 2 feet high, and a native of the Cape of Good Hope, of which Dr. Hooker remarks, that this plant is the most valuable sheep fodder for dry climates. I was so fortunate as to raise about twenty plants, which thrive remarkably well, and prove that our climate is well adapted for them. The leaves and branches contain an aromatic bitterness, which, as I understand, is very much liked by sheep. I hope to be able to increase this plant for distribution amongst the squatters.

The distribution of about 1700 grafts of the Sultana Grape last season, and the information I received that the greater part grew, leads me to believe that this Grape is now established in the colony. I would again direct the attention of the growers to the fact that the Sultana, like the Zante Currant, is one of the varieties of the Vine which, if short spur-pruned, will yield little or no fruit. The system of long rod-pruning must, therefore, be adopted, and at least eight or ten eyes should be left on every rod.

The encouraging news that the first sample of South Australian Flax, which has been sent home, won golden opinions in the English market, will, I hope, lead to the more extensive growth of this remunerative plant. We have to thank the energetic farmers in the south for laying the basis of this new industry; many years elapsed before an attempt was made, and, considering the unfavourable season the flaxgrowers had to contend with, the result is highly gratifying. I hope, for the well-doing of the colony, other districts will follow the example, as there is no doubt that Flax will grow in most of our districts.

From Lieut.-Colonel A. Crawford, Tasmania, I received last season a little parcel of white linseed, which this gentleman had received from East India. Colonel Crawford says in his letter:—"I am induced to forward it under the impression that it may prove a valuable variety. Certainly I never before saw any like it. A very small parcel reached me from India; the gentleman who sent me this seed informed me that the Flax it yielded was exceedingly good both in staple and colour, and that he had taken the first prize for it at the Agricultural Exhibition at Jubbulpore." Notwithstanding the advanced season when I received this valuable seed (the commencement of September), it turned out a splendid sample, and I gathered so much seed that I am able to distribute a little amongst flax-growers to test the quality of the plant.

For the introduction of gram into this colony we have to thank His Excellency the Governor. It has done uncommonly well at the garden, and the possibility of growing it is now beyond doubt. Notwithstanding that it was sown very late in the season, it has turned out a very good crop; the plants looked strong and healthy, and the yield is very fair. The successful cultivation of this plant would be a great good, and the attention of the farmers can be very fairly directed towards it. With the exception of Oats and Barley, very little attempt has been made by our farmers to grow other grain for cattle.

The China Grass cloth plant (Bœhmeria nivea) which has become of such mercantile value, has now satisfied me that our climate is not adapted for it, and that it cannot be grown as a payable commercial article. Mr. Hill, Director of the Botanic Garden, Brisbane, remarks in regard to this plant, "The Bœhmeria still continues to thrive exceedingly well, but though many have essayed to prepare it for manufacturing purposes, all have most signally failed. It has been experimented on by those who have spared no pains, and on every occasion with similar results."

The importance of the introduction of sericulture in South Australia is undeniable. I have advocated it for some years, and I am glad to say not unsuccessfully, as the sericulturists seem to increase.

Through the liberality of the Zoological Society in New South Wales, a stock of silkworm eggs from Japan has been received and divided among our sericulturists. I hope they will succeed in hatching and rearing the worms, and so improving our stock.

The desire which I have so long cherished to see during the summer months, instead of the dreary and death-like appearance of our lawns, changed into a more verdant one, has at length, after many trials with different kinds of grasses from all parts of the world, been realised. As I remarked in my last report, it is only the Couch Grass (Cynodon Dactylon), which will stand the scorching heat during the summer months. Encouraged by last year's experiments with this grass, I have planted during the last winter about three acres; and, favoured by the genial wet season, the growth has been remarkably vigorous, and has formed a beautiful green and close lawn—not in such perfection as we used to see at home, but rarely seen in Australia, and giving the garden throughout the summer a most cheering aspect. I mention again, it requires frequent mowing—and it must not be forgotten that its dulness of colour, during the winter months, will be overlooked in the verdant freshness of the surrounding vegetation and brilliant colours of the flower parterres.

There never before was such an active interchange of plants and seeds with kindred institutions in Australia, the surrounding colonies, and Europe, as during the last year. The garden has dispatched 27 Wardian cases, containing 800 stove, greenhouse, and other plants, and several thousands of packets of seeds, to the following Botanic Gardens:—Kew, Dublin, Berlin, St. Petersburg, Hamburg, Java, Natal, Mauritius, New Zealand, Queensland, and Sydney, and to nurserymen and amateur florists in Tasmania, Melbourne, and Sydney for exchange; and through these means our collection has again been largely enriched by numerous valuable plants, amongst which are many of economical and commercial value.

Several cases, with purchased plants from England and the Continent arrived, I am sorry to say, in a deplorable state—often more than two-thirds of the contents having perished. The value of a newly-imported plant cannot be appreciated highly enough, as the consignments from Europe arrive so seldom in good condition.

Societies.

ROYAL HORTICULTURAL: *July* 5.—James Bateman, Esq., F.R.S., in the chair. Before proceeding with the usual business of the meeting the Chairman, on behalf of the Council, formally received the following gentlemen in their official capacity of delegates to the horticultural section of the International Exhibition of 1871:—M. Karl Koch, delegate from the Imperial Government of Germany; MM. Regel and Volkenstein, delegates from the Imperial Government of Russia; M. v. Heyder, also from Russia; M. Morren, delegate from the Belgian

Government, together with MM. Linden, Gloner, and Professor Perard, from Belgium; M. Antoine, delegate from Austria; Dr. David Moore, who represented the Royal Dublin Society, and others.

Mr. Wilson, the Chairman of the Fruit Committee, then announced the awards made by that body, at the same time remarking that the new seedling Grape shown by Mr. Douglas was of very high promise, but not being quite ripe it was requested to be shown again; and also that a medal had been awarded by the Council on the recommendation of the committee, to the handsome Queen Pines shown by Mr. Perkins, on account of their extraordinarily quick production from unrooted suckers in 12 months. Reverting to some very promising new Peas shown by Mr. Laxton, of Stamford, Mr. Wilson said that the committee had come to the decision not to make any awards to vegetables which had not been previously tried at Chiswick. Having been requested by the Chairman to state his experience of Nottingham, Mr. Wilson said that he was billeted on the mayor, and he never before experienced so much genuine hospitality from anyone; in proof of which he need only mention that a sumptuous luncheon was provided by him every day, to which all horticulturists received a hearty welcome.

The Chairman, in the absence of the Rev. M. J. Berkeley, whose indisposition he much regretted, then read the awards of the Floral Committee, and of the international jury appointed to judge the productions of foreign horticulturists; and exhibited some fruit of a Passiflora, of what species he could not ascertain. M. Linden suggested that it was P. macrocarpa, but it bore much more resemblance to P. alata, though somewhat differing from the fruit of that species in the quantity of edible matter, which, in this instance, was only a little glutinous substance attached to the seeds. He then directed attention to an Orchid from the Society's collection, the flowers of which bore a curious resemblance to swans, and remarked that the collection and introduction of Orchids was not such a remunerative speculation as some people imagined, in consequence of the many plants which were quite dead when they arrived in this country, in proof of which assertion he showed a large bundle which had been received in that state by Mr. Bull.

Scientific Committee.—A. Murray, Esq., in the chair. The foreign delegates present at the Exhibition took their places at this meeting, having been duly introduced by the Chairman. Mr. G. F. Wilson exhibited leaves of various Lilies affected with spot, analogous to one of the forms of spot in Orchids. The cause of the disease was not obvious, and no further light was thrown on the subject by the committee.

Mr. Berkeley read the following communication from Dr. Schomburgk relating to a substance called in South Australia mineral gamboge, but which has no relation to gamboge:—"It is found on the margins of a sandy flat, overgrown only with Lepidosperma concavum, Br., near the River Coorang in South Australia, and is only known in one spot. It is found on bare sand in patches, and is not attached to the Lepidosperma. It encloses pieces of dead vegetable matter, but does not adhere to them as a dried balsam would. It has no root, nor does it penetrate into the sand. It is found on these sandbanks about 5—6 feet above the flat, at all aspects, N., E., S., W., and is thickest in depressions in sand. It appears to be covered with spores in cups on the upper surface, and varies in thickness from that of $\frac{1}{20}$ inch to $1\frac{1}{2}$ inch. It breaks up, and can be rubbed to a pulp under heat, but will not reunite like gutta-percha or gamboge. About half is soluble in spirits or ether, or forms a balsam that easily absorbs water when applied as steam, becoming creamy. There is no mycelium or similar structure. Even should it be a Fungus, does the solid part forming the substance under the spores take the place of mycelium? It has an ultimate composition very similar to a fined oil, and cellular tissue, and gives by destructive distillation products nearly the same as those of rape-seed oil, viz., paraffin and aniline, with other tarry products, such as that oil would yield. It does not appear to form again on spots it has been collected from, but on neighbouring new spots. It was supposed to be a mineral, and was said to be a dried-up petroleum oil, but has since been termed mineral gamboge, which it is not, and does not resemble. It does not appear ever to have been fluid. A Mr. Francis, who gave us the first news of this remarkable and interesting stuff, has named it Coorangisle, after the River Coorang, in which neighbourhood it is only found." Mr. Berkeley stated that the production in question was allied to Collema.

Mr. C. W. Strickland sent roots of Adiantum setulosum covered with little tubercles like those of the roots of Leguminosæ. Dr. Masters expressed an opinion that they were analogous with the root tubers of Nephrolepis tuberosa, but much smaller.

Mr. Berkeley again exhibited the specimen of Wheat received from Mr. Odams, and which was affected with a Fungus allied to Sphæria, and called Dinemasporium graminum. Mr. Berkeley also exhibited the graft on Camellia showing the decay of the tissues already referred to (see p. 584).

Mr. Laxton exhibited plants of variegated Pelargoniums (various types) inarched with plain-leaved varieties, also of different types, as negative evidence that variegation in the stock does not run into the scion. The four plants are:—1. L'Elègante, variegated Ivy-leaf, inarched with Triomphe de Thumesnil, double, of the inquinans race. 2. Lady Plymouth, a variegated Cape variety, inarched with Double Tom Thumb and Crimson Ivy-leaf, both on the same stock. 3. Duke of Edinburgh, variegated hybrid Ivy-leaf, inarched with Double Tom Thumb. 4. Variegated seedling (the shoot nearly an albino) of the Zonal type, inarched with Triomphe de Thumesnil, double. None of these, nor of several others which were worked in April, 1870, have as yet exhibited, in the scions, any sign of variegation, but the evidence being negative only, may not be of much value; there are, however, some interesting features, as showing that many of the species quite distinct in appearance will inarch on entirely different species. It is also curious to see in No. 1 a shoot nearly half an inch in thickness, supported and continually in flower, on a shoot of an Ivy-leaved variety, a comparative straw in size to it.

A twig of Beech from a plantation in Ireland was exhibited by Dr. Masters, with an apparent wound. Other trees in the same locality were unaffected. Mr. Berkeley stated that the affection was like that of the Vine shoots in Australia already referred to. Leaves of an Elm with a large bladdery gall, the work of an aphis, were exhibited by Mr. Earley, who also contributed some plants of Bromus mollis affected with a parasitic Fungus allied to smut, and on which Mr. Berkeley promised to report further on another occasion. From Mr. Earley came a spray of Antirrhinum, exhibiting transition forms between the ordinary blooms and that condition known as regular peloria. From Messrs. Ottolander, of Boskoop, came a large number of leaves of ornamental trees, some of great beauty and interest, and on which Professor Koch promised to report. Mr. Murray contributed an important paper on Blights, which elicited some important remarks from Dr. Charles Bastian. Mr. Murray's remarks are subjoined:—

"*Cui bono?* is a question which every naturalist is familiar with. It is a giant whom he has many times slain, but who will not die—a ghost which may be exorcised as much as you like, but which refuses to be laid. It is especially strong and pertinacious when it encounters any philosophical speculation or abstract inquiry, and it is therefore not to be wondered at that some learned discussion which took place the other day at one of the meetings of this committee on the much vexed subject called spontaneous generation should (as I hear has been the case) have roused it from its rare repose. I propose in the present communication to endeavour to show that, like all such abstract inquiries, that to which I allude has a practical application in its kernel, and that in particular it has a not unimportant bearing on the origin of blight and mildew, or at least of some blights and some mildews, and on the proper mode of dealing with them and similar phenomena.

With the endeavour to bridge over the chasm between organic and inorganic matter, between life and absence of life, I have nothing here to do. As to that, I content myself with saying that although it may seem more philosophical to hold that life is only one phase of the general force which comprehends gravitation, heat, electricity, magnetism, and chemical affinity, still, in point of fact, no one has succeeded in showing that it is so, and many arguments and facts may be put forward in opposition to that view. These may be hereafter answered and reconciled, but until they have been so I accept life as an independent force, not derived from, or interchangeable with, any other.

"But while I consider that all attempts to produce life or living things out of inorganic matter (as out of silicious solutions) have failed, or at least have not succeeded so as to command belief, the experiments which have been made on organic substances, by which new living things have been produced out of dead organic matter, have left a different impression on my mind. From them I have arrived at the conviction that the old maxim, *Omne vivum ex ovo*, is not true. Animals and plants of the lowest structure, but possessing all the faculties of living beings, the power of reproducing themselves included, are I believe originated out of the disintegration of dead organic matter in some other way than by laying of eggs, although as yet we do not know what that way is.

"The ordinary way in which such lower organisms are produced, or thought to be produced, by so-called spontaneous generation, is, as every one knows, by steeping dead organic matter, as hay, or leaves, in water for a few days, when vibrios and other animalcules appear in uncountable numbers in the infusion. The usual explanation, that the eggs and seeds of these animals or plants are of such invisible minuteness, and present in such incalculable numbers in the air we breathe, and every part of the round world, that whenever a suitable condition for their development presents itself, they then start in thousands into life, has, I think, been successfully refuted by the precautions which have been taken by Messrs. Pouchet and others to prevent anything like living spores being present in, or reaching the matters on which they experimented, and by their demonstrations that in point of fact no such swarms of spores have ever been found in the atmosphere; but even although it were not so, the ordinary explanation of spores floating in myriads in the atmosphere, seems to me to be in itself unsatisfactory and inadequate. This is particularly the case with regard to the phenomena of blight and mildew, whether we imagine the spores (as is more generally supposed) to float about in the atmosphere, or (as has been suggested by way of escape from the difficulties attending their atmospheric dispersion) that they are dispersed in the waters and in the earth, and are imbibed by the roots along with the liquids which they absorb, and that they are thus constantly present in the sap, ready to start into life when the proper occasion presents itself.

"If we take the view that the spores are dispersed and conveyed by the atmosphere, we have to meet the difficulty that they must be constantly present all the year round, for whenever the suitable occasion presents itself the blight appears. There may be only half-a-dozen days in the whole year during which the suitable condition presents itself, but in order to be able to seize them they must also have been present during the other 350 days, when the favourable conditions do not present themselves. The immense multitude of spores of even one blight thus floating about constantly may be imagined when we remember that after a blighting wind almost every exposed leaf of the kind it attacks is affected by the blight throughout the district. We must remember, too, that there are many blights, some affecting one plant some another, and not only this but there is one blight for the leaf, another for the stalk, another for the flower, another for the anthers, another for the husk, and another for the ovary. Separate cargoes of spores for all these, and also for these parts of all different plants, must be always floating in inconceivable numbers in the atmosphere, to be ready to be made use of when occasion serves, and, more wonderful still, not after a liberal crop of the blight has produced them, but without any antecedent growth, or seeding, or fruiting, perhaps for months before. The objections to the theory of the spores being dispersed by the waters and absorbed by the roots into the sap are still more potent, but as they are also more patent, I shall not occupy the time of the meeting by suggesting them. I shall only say that in addition to all the objections applicable to the other hypothesis, it has special difficulties of its own.

"While these prior objections, therefore, throw grave doubt upon the received origin of blight, the researches relating to spontaneous generation suggest another explanation, which, although not exhaustive, seems to me more in accordance with observed facts. The ordinary history of the appearance of blight and mildew is this. Let us take an example, for the sake of individualising the subject; let us take the Rose. In spring or early summer the plants are pushing out their young shoots; they are fresh, tender, and full of vigour, or, what is more to the purpose, full of sap. The last season has, perhaps, been a fine one, and no blight has been seen since the same time the previous year. Then comes a chilly easterly wind, perhaps only lasting a night or an hour or two, and within from 24 to 48 hours every young Rose leaf within the influence of that blast is shrivelled and covered with a white Erysipe. If we take the explanation suggested by the experiments relating to spontaneous generation, we should say that the blast had struck with paralysis the organic structure which performs the function of sphincter muscle to the stomata; that in the absence of its vital action the leaf began to decay; that being full of sap, a process equivalent to maceration of vegetable matter was set up, and out of the disintegration so induced the blight so peculiar to the leaves made its appearance. This corresponds, too, with a remarkable peculiarity which has been felt to be a great difficulty under the atmospheric dispersion theory, viz., that the different species of blight attack different parts of the plant. If the spores are free to fall on every part of the plant, there seems no reason why the different species should be restricted to different parts of it. Under the disintegration theory on the contrary (I really must be excused calling it the spontaneous generation theory, that implying a quality at once absurd and abhorrent to the views of its supporters)—under the organic reproduction theory, I say, it is consistent with the observations made in regard to it, that while there are some organisms produced alike out of all macerations of vegetable matter, the organisms produced vary according to the different treatment of the infusion operated upon, as by the degree of heat to which it is subjected, and still more different creatures are procured, and procured uniformly from different plants, and from different parts of the same plant; and this prevails to such an extent, that when a new substance (that is, an organic product which has not been previously examined, and which contains special or unusual ingredients) is subjected to maceration new animalcules, of form and proportions never previously observed, are said to be found.

"In suggesting that these and other forms of blight are the result of the maceration of the organic cells in the water of the sap, when the life of the part where they occur has been extinguished by the paralysis of cold, I by no means wish to be understood as offering that as the explanation of the origin of all blights, or all fungoid or animalcular productions. No doubt the ordinary modes of germal production account for many; and also I do not say that even those which have been produced by the mode of organic disintegration do not afterwards spread and increase in the ordinary method.

"So restricted, it seems to me that the explanation I have offered is more consistent with observed facts than the old germal theory, and so far a step of progress. But I have still to meet the interpellation of our old friend, *Cui bono?* What does it matter which of the explanations is the true one—it leaves the matter just where it was—neither explanation suggests any remedy, and neither suggests any difference in the treatment. Both acknowledge that blight follows certain atmospheric conditions, such as chilling blasts, and the treatment adopted by judicious cultivators is nearly that which would be followed, whichever were true. Not quite, I think. There is a difference between treatment adopted by the force of experience and instinctive unreasoning perception of what is best, and that followed upon principle from a right understanding of the real nature of the case. So long as the cultivator believes that blight is due to the descent of myriads of spores under certain conditions, many will be disposed to look for nostrums and specifics to protect their plants from them. So long as blight is looked upon as a diseased state of the plant, however produced, men will be apt to waste their time and their means in search of a remedy—they will say, "while there is life there is hope." But once convince him that blight is a symptom, not of disease, but of death (that is, death in the spot where the blight occurs, not necessarily death in the plant)—that it cannot appear until decay has begun—then they spare their pains, or use them in the right direction. They know there is no use galvanising a dead horse, and they turn their thoughts to prevention rather than cure; and although the precautions they use may not be different from what they would have taken otherwise, still the fact that they use them understandingly, that they know what they are about, must, I apprehend, be of value in guiding and keeping them in the right direction."

The Rose Show.—Unpropitious weather was the cause of the Crystal Palace Rose Show being of but a moderate description, and to the account of the same must be laid the charge of somewhat curtailing the dimensions of the show under notice, the limits of which bore no comparison to the National Rose Shows of former years. On the whole the blooms were decidedly better in colour and substance, and remarkably clean, considering the heavy rains experienced on the Monday and Tuesday previous. In the nurserymen's class for 72, the only exhibitors were Messrs. Paul & Son, and

Messrs. E. P. Francis & Co., Hertford. The Cheshunt firm were well 1st, with, among others, excellent blooms of Marie Rady, Dupuy Jamin, Alfred Colomb, Marie Baumann, Maréchal Niel, Dr. Andry, Duke of Edinburgh, Louis Van Houtte, Triomphe de Rennes, Felix Genero, Antoine Ducher, Madame Caillat, &c. For 48, distinct, three trusses of each, the competitors were Messrs. Paul & Son and Mr. Turner, the former again coming in 1st with a grand lot, including especially good examples of Charles Rouillard, Duc de Rohan, Alfred Colomb (wonderfully fine), Dr. Andry, Pitord, Beauty of Waltham (exquisite), Horace Vernet, Paul Verdier, Antoine Ducher, Camille Bernardin, Duchesse d'Orléans, Marie Baumann, Marquise de Castellane, and Triomphe de Rennes; Mr. Turner was 2d with admirable blooms of Climbing Devoniensis, Charles Rouillard, Baroness Rothschild, Madame C. Crapelet, Miss Ingram, Alfred Colomb, Victor Verdier, Queen Victoria, &c. Messrs. Paul & Sons were again 1st for 24 Hybrid Perpetuals, Mr. J. Fraser, Lea Bridge, being 2d. Mr. Turner and Messrs. E. P. Francis & Co. also competed. Surveying the whole of the collections, the most noticeable varieties were Xavier Olibo, Duchesse de Caylus, Baroness Rothschild (fine), Duke of Edinburgh, Marie Rady, Charles Lefebvre, Marie Baumann, Clémence Joigneaux, Alfred Colomb, Lælia, Baron Hausmann, &c. For 24 distinct, one truss of each, Mr. Turner was 1st, Mr. J. Walker, Thame, Oxon, 2d; and Messrs Veitch & Sons 3d; all showing remarkably fresh and good-sized flowers.

The amateurs' classes brought out a greater number of exhibitors than the preceding. The Rev. G. Arkwright, Pencombe Rectory, Bromyard, was 1st for 48 single blooms, showing, amongst others, Souvenir d'Elise, Esmeralda, Charles Lefebvre, Madame Hector Jacquin, Madame Knorr, Triomphe de Rennes, in very nice condition. Mr. Laxton, Stamford, came in 2d with a very fresh group; Mr. G. W. Chard, Clarendon Park, Salisbury, being 3d; and Mr. R. N. G. Baker, Heavitree, Devon, 4th. Mr. W. Ingle, gr. to Mrs. Round, Birch Hall, Colchester, was 1st for 36, with nice blooms of Baroness Rothschild, Beauty of Waltham, Madame Vidot, Moire, Nardy Frères; Mr. Chard was 2d, Mr. R. N. G. Baker 3d, and Mr. P. Stoddart, gr. to H. J. Gordon Rebow, Esq., Wivenhoe Park, Colchester, 4th. The varieties were very similar to the foregoing, but there was a great want of quality amongst them. For 24, the 1st prize was won by Mr. J. Skinner, gr. to Capt. Christy, Aperfield, Westerham, with a very even lot, fair in colour, but wanting in freshness. The same must also be said of the other prize groups, which were shown by Mr. W. Soder, Mr. J. Wakely, and Mr. R. B. Postans. 12 Roses, distinct, were shown capitally by Mr. J. C. Quennell, Brentwood, the Rev. C. C. Ellison, Bracebridge, Mr. J. Wakely, and Mr. W. Soder, who took the prizes in the order named, and also by several other exhibitors. Messrs. Paul & Son were 1st for the best collection of yellow Roses, with excellent boxes of Triomphe de Rennes, and Céline Forestier, and also for the best 12 varieties of 1869 or 1870—Mr. Turner being 2d in the latter class. The former had nice blooms of Paul Nèron, Mr. Gladstone, Comtesse d'Oxford, Marquise de Castellane, Louis Van Houtte, and Madlle. Eugénie Verdier, &c. Mr. Turner contributed Louisa Wood, Lord Napier, Jupiter, &c. The best 12 Tea-scented and Noisette Roses came from Mr. H. Thorneycroft, Weedon, Northampton; and Messrs. Paul & Son were 1st in the corresponding class for nurserymen. The best 12 Roses, distinct, came from Mr. Turner; and the best 12 of any Rose of 1869 or 1870 came from Messr. Paul & Son, who staged Comtesse d'Oxford, and they also took the 1st prize for the best 6 trusses of any Rose of 1869-70, with Louis Van Houtte, a grand Rose, velvety shaded crimson. 24 Roses in pots were staged by Mr. Turner and Messrs. Paul & Son, the former having the best of a contest in which admirable specimens for the season were the order of the day. Messrs. Veitch & Sons also staged a very fine group in pots, as well as several fine boxes of cut blooms, notably one of Baroness Rothschild.

In the class for a group of three plants suitable for dinner-table decorations, there was a strong competition, Mr. J. W. Chard, gr. to Sir F. Bathurst, Bart., Clarendon Park, Salisbury, coming in 1st with remarkably graceful and effective specimens of Hyophorbe Verschaffeltii and Areca aurea, the former occupying the centre. Mr. Bull was 2d with a group in which Dæmonorops plumosa occupied the centre, on either side being specimens of Deckenia nobilis and Geonoma Schottiana, all very graceful plants, but much too large for an ordinary table—Messrs. E. G. Henderson & Son were 3d, also contributing a group of Palms. In the next class, for three groups suitable for the decoration of the dinner-table, to consist of flowers or fruit, or both combined, for which there was also a very strong competition, the 1st prize was awarded to Messrs. Phillips & Pearce, the 2d to Mr. J. W. Chard, and the 3d to Mr. Hassard, Upper Norwood, an extra prize being also awarded to Mr. W. Soder.

The miscellaneous class was greatly enriched by collections of plants from M. J. Linden, Brussels, and M. Alexis Dallière, Ghent. Notably in the collection from the former were Epidendrum Frederici Guilelmi, Alloplectus vittatus, Dioscorea chrysophylla, D. Eldorado and D. prismatica, Maranta Mazellii and M. Wallisii discolor, Dieffenbachia imperialis and Dioscorea meleagris, which received First-class Certificates; and Aralia japonica aureo-reticulata, which had one of the 2d class. M. Linden was also awarded Silver Flora Medals for the groups of Dioscoreas, Marantas, and Orchids. M. Dallière sent a magnificent collection of Marantas, which included well-grown specimens of M. splendida, M. Wagneri, M. Veitchii, M. virginalis major, M. orbifolia, M. illustris, M. majestica, M. Van den Heckii, M. vittata, and M. argyrea, for which he also was awarded a Silver Flora Medal. He also exhibited a series of Palms, &c., which received a Special Certificate. Mr. Denning, gr. to Lord Londesborough, again brought up a choice group of Orchids, including a splendid specimen of Anguloa Clowesii, Dendrobium formosum, with 6 beautiful flowers; Epidendrum nemorosum, and cut spikes of a species of Stanhopea and Cattleya Leopoldiæ. Messrs. Rollisson and Mr. Bull each staged fine groups of Palms, Orchids, &c., and from Messrs. E. G. Henderson & Son came a very effective group of Tricolor Pelargoniums and Petunias. Mr. Turner sent a splendid lot of show Pelargoniums, cut Verbenas, &c. Mr. Hooper, Bath, had some fine Carnations and Cloves, and Mr. Parker, Tooting, had a fine specimen of Ixora amabilis.

Messrs. Carter & Co. offered a series of prizes for 6 dishes of Peas, to include Laxton's Supreme, Laxton's Quality, and Hundredfold, for which there were seven competitors, the 1st prize being awarded to Mr. Cox, gr. to Earl Beauchamp, Madresfield Court, who had very fine examples of the varieties named, two other of Mr. Laxton's new varieties, and Veitch's Perfection. Mr. C. Frisby, gr. to H. Chaplin, Esq., M.P., Blankney Hall, was 2d. Mr. J. W. Chard, Mr. Garland, Mr. Lumsden, Mr. Miles, and Mr. G. Brown also exhibited, with first-rate samples.

Floral Committee.—Dr. Denny in the chair. First-class Certificates were awarded to Mr. J. Croucher, gr. to J. F. Peacock, Esq., Sudbury House, Hammersmith, for Agave Verschaffeltii variegata, the variegation in which consists of a golden band down the centre of the leaves; to Mr. W. Bull for Alsophila Shepherdii, a very graceful miniature Tree Fern; to Mr. C. Green, gr. to W. W. Saunders, Esq., for Houlettia odoratissima antioquensis; to Messrs. J. Backhouse & Son for Linum salsoloides, pinkish white, and Lithospermum petræum, blue, both apparently very free bloomers; to Mr. Wiggins, gr. to J. W. Beck, Esq., for show Pelargonium Ada; to Messrs. E. G. Henderson & Son for Petunia Coquette, a semi-double variety with flowers of a white ground and crimson flaked margins; and to Mr. Turner for two very large heavily laced Pinks, named Dr. Masters and Shirley Hibberd. Messrs. E. G. Henderson & Son also received a Certificate of the Second-class for a free flowering show Pelargonium named Enterprise, a very useful variety for cutting; and Mr. Bull had also one of the same order of merit for Lobelia Erinus Omen, a pretty dwarf bedding kind. From Mr. Cannell came a collection of cut blooms of Verbenas; and Mr. J. Stevens sent an exceedingly fine group of Balsams, to which a Special Certificate was awarded.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair. Special Certificates were awarded on this occasion to Mr. Gilbert, gr. to the Marquis of Exeter, Burghley Park, Stamford, for a fine-sized, highly-flavoured Melon called Selected Cashmere; to Mr. Tillery, Welbeck, for excellent dishes of Galande Peaches and Violette Hâtive Nectarines; to Mr. Perkins, Warren House Gardens, Stanmore, for very handsome fruit, weighing over 5 lb. each, of Queen and Ripley Queen Pines, grown from unrooted suckers in 12 months; to Mr. J. Douglas, gr. to F. Whitbourne, Esq., Loxford Hall, Ilford, for a magnificent dish of Lucas Strawberry; and to Mr. Turner, for excellent dishes of Buckland Sweetwater and Black Hamburgh Grapes. Mr. Douglas also exhibited a bunch of his new seedling Grape, a cross between Buckland Sweetwater and White Frontignan, which possesses the rich flavour of the latter with the larger bunch and berry of the former. It was not quite ripe, so that the committee requested to see it again, when its very useful character will no doubt meet with due recognition. From Mr. W. Cruickshank, gr. to Lord Belper, Kingston Hall, Derby, came examples of Chasselas Musqué, and Wilmot's Muscat Muscadine. Mr. Parsons, Danebury, had a very fine specimen of the Giant Puffball, Lycoperdon giganteum; and from Mr. A. Colbourne, Woolhampton, came specimens of Mushrooms, measuring from 8 to 10 inches across. Mr. Wm. Paul sent a dish of fruit of a new Strawberry, named Waltham Seedling; and Mr. Trotman, Isleworth, again sent specimens of Strawberry Royalty, but on account of the exceptional character of the season, the committee were unable to decide upon their merits. Mr. Laxton, Stamford, exhibited specimens, with the haulm, of a new dwarf early Pea, named Unique, about 12 inches high, with a good crop of medium-sized, well-filled pods; also specimen pods of two other varieties, named Superlative and Achievement, which are said to grow 6 feet high. Mr. J. Walker, Thame, Oxon, sent capital specimens of Sugarloaf Brown Cos Lettuce, a good serviceable variety, which differs from the old Brown Cos in forming a close heart. Messrs. Wrench & Sons, London Bridge, exhibited Roiffea [?] or Reed Grass, a bast-like substance from Japan, to which, on account of its strength and softness for tying purposes, the committee voted a First-class Certificate.

THE WEST OF ENGLAND ROSE SHOW AT HEREFORD: *June* 30.—The fifth annual exhibition took place on Friday, the 30th ult., in the Shire Hall. There was a large gathering of exhibitors, and, considering the untowardness of the season, the show was an excellent one. Amateurs were in great force, especially the local ones. Mr. R. N. G. Baker, of Heavitree, Exeter, was there, as elsewhere this season, *facile princeps*. His blooms were magnificent. J. H. Arkwright, Esq., the Rev. George Arkwright, the Rev. G. B. M. Camm, the Rev. E. Bulmer, the Rev. P. M. Smythe, the Rev. R. O. Carter, Mr. S. Evans, and Mr. C. J. Perry, were the chief among the amateur exhibitors. Nurserymen were numerically few, Messrs. Paul & Son, the "Old" Nurseries, Cheshunt, and Mr. J. Keynes, Salisbury, however, making up for the absence of others (and especially for the absence, as a competitor, of Mr. John Cranston, the leading Herefordshire nurseryman, who only exhibited a small collection, "not for competition," the bulk of his Roses not being fully in bloom), by the great excellence of their numerous exhibits. Messrs. Paul & Son showed, as they always do, the best of Roses in the best manner. They won 1st prizes of £10 each for two collections of 72 varieties of single trusses, one open to the United Kingdom, the other limited to nurserymen non-resident in Herefordshire; 1st prize of £6 for 36 varieties of three trusses; 1st prize of £3 for 24 new Roses sent out in 1869-70-71; and equal 1st prize of £2 for 24 blooms of any one Rose, with a splendid box of Centifolia rosea. Mr. Keynes was just a shade below his usual mark, though his collections were, as is always the case, set up with excellent taste, and contained many magnificent blooms. He won 1st prizes for 24 varieties of three trusses (£3); for 12 new roses, sent out in 1869-70-71 (£2); equal 1st for 24 blooms of any one Rose, with a charming collection of La France (£2); 2d prizes for 72 varieties of single trusses in the same class (£6), and a similar exhibit in the limited class (£6); and a 3d prize for a collection of 24 new Roses, sent out in 1869-70-71 (£1). The varieties shown in the winning stands need not be enumerated, being the same as have been shown at the other leading shows this season. The necessity for a continued repetition of the names of the best varieties gets less and less yearly; for it is a rare thing to see a bad variety shown in even the smallest collection; and as for the best sorts, are they not duly chronicled and described in the catalogues of all the leading "growers for sale," and their names and qualities known by heart by even tyros among amateurs? The severity of the past winter and spring was so deadly in its effects on Teas, tender Noisettes, &c., that Maréchal Niel and the other delicate varieties of these favourite classes were generally absent from all the stands.

The table and floral decorations were praiseworthy, though neither so numerous nor, with one exception, so remarkable for excellence as they were last year and in 1869. On the other hand, it must in fairness be stated that they were all chaste in design, their chief characteristics being simplicity and elegance. There were some charming bouquets of the proper size for holding in the hand, none being of such Brobdingnagian dimensions as they too frequently are. The cottagers made a large and admirable display, which afforded quite as much pleasure as the more aristocratic parts of the exhibition.

STAMFORD FLORAL AND HORTICULTURAL: *June* 21.—Had the weather been favourable, the first exhibition of this revived society would have proved one of the most attractive that has been witnessed in Stamford for years, the show in every department being of a superior character, notwithstanding the backwardness of the summer season. As it was the day dawned gloomily, and shortly before the time for opening rain began to fall, and continued for about two hours. Those who braved the weather, however, had a real treat, as the display in each class was excellent, and the competition very keen. The largest tents were devoted to stove and greenhouse plants and Roses; and in these the professional gardeners who helped to fill them met general commendation. The Ferns, Cordylines, Dracænas, and other exotics, giant Fuchsias, Caladiums, and Coleus, of every shade and colour, and an endless variety of Pelargoniums, nearly filled one large marquee; while in that devoted to Roses were exhibited some of the choicest specimens which the best growers could produce. Messrs. Paul, of Cheshunt, were in great force, but far from alone in their eminence—several other exhibitors, and notably Mr. Laxton, having sent trusses of the best sorts, excellent in size, colour, and form. Among the exotics and Pelargoniums from the seats in the neighbourhood were specimens from Burghley, Casewick, Holywell, Uffington, and Lilford Park. The nurseries at Cheshunt, Huntingdon, Rugby, and Stratford-upon-Avon, were also represented in the greenhouse productions. The collection of cut flowers, &c., came in for a large share of attention and praise, and they were really very pretty; but the judges seemed especially struck with the taste displayed in the arrangement of the wild flowers, and they declared that in many respects these bouquets of Nature's humble beauty were unique, and regretted that they could not award extra prizes. In the fruit department, nothing approached the basket of fruit from Burghley Park, which consisted of Pines, Melons, Grapes, Peaches, Nectarines, Figs, Strawberries, Cherries, and Apples, the whole so skilfully arranged as to form a perfect picture. The Grapes were remarkable for their size. Some magnificent bunches were sent from the gardens of the Earl of Gainsborough and of Earl Brownlow. The vegetables also were exceedingly fine, some Cucumbers from Burghley being of immense length.

SCOTTISH PANSY SOCIETY: *June* 17.—The twenty-seventh annual competition of the Scottish Pansy Society was held on the above date in the vestibule of the Music Hall, Edinburgh. The present season has been one of the worst on record for the propitious growth of Pansies and Violets, and many of the regular exhibiting members of the Society had the most of their plants destroyed, at least for all show purposes. The entries in the different classes were consequently not so numerous as in previous years, but what blooms were shown were of excellent quality. The competition in the nurserymen's classes was limited, but in the amateurs it was good and interesting. Messrs. Downie, Laird & Laing exhibited, but not for prizes, a long and varied stand of show Pansies—fine, as a rule, in colour, good in shape, and of excellent substance. Messrs. Dickson & Co. had a nicely arranged stand of their new bedding Violas. Mr. Duncan Kerr, Glencorse, received two Certificates of Merit; Messrs. Downie, Laird & Laing, four—three for fancy and one for bedding Pansies—and Messrs. Dicksons & Co. a First-class Certificate for a white ground Pansy, three of merit for bedding Pansies, and three for bedding Violas. Certificates of Merit were awarded Mr. D. Kerr, for a white self Pansy, Mrs. Shand, and a cream self Pansy, Jessie Cunningham; to Messrs. Downie, Laird & Laing, for three fancy Pansies, namely, William Paul, Mrs. M'Lachlan, and David Syme, and bedding Pansy Whistle Binkie. Messrs. Dicksons & Co., Waterloo Place, had a First-class Certificate for white ground Pansy, Jane Grieve; Certificate of Merit for yellow ground Pansy, A. Brodie; for a dark self Pansy, Robert Black; for bedding Violets, Stricta Alba and Butterfly; for bedding Pansy, Mauve Queen; and for Violet, Blue Beard.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, JULY 1, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	71.2	41.2	30 0	67.7	48.9	18.8	56.5	0.02
Blackheath ..	72.2	40.0	32.2	68.6	46.3	22.3	56.6	0 05
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	68.6	40.8	27.8	65.1	47.1	18.0	54.3	0.06
Wolverhampton	70.0	39.4	30.6	66.1	47.2	18.9	54.9	0.29
Leicester ..	74.2	37.7	36.5	68.7	46.5	22.2	55.8	0.14
Norwich ..	72.5	38.8	33.7	67.6	45.3	22.3	54.6	0.37
Nottingham ..	71.6	36.8	34.8	68.1	46.0	22.1	55.2	0.16
Sheffield ..	71.8	38.0	33.8	66.5	46.7	19.8	54.7	0.19
Liverpool ..	69.3	45.2	24.1	61 9	50.8	15.1	56.6	0.24
Manchester ..	73.2	42.0	31.2	68.4	48.7	19.7	56.7	0.39
Salford	71 0	40.8	30.2	66.9	46.8	20.1	55.1	0 56
Bradford ..	69.0	43.5	25.5	64.6	49.6	15.0	55.3	0.43
Leeds	69.0	42.0	27.0	63.1	47.9	15.2	53.7	0.37
Hull	73.0	34.0	39.0	66.7	43.6	23.1	53.3	0.48
Newcastle ..	..	..	..	..	..	..	..	..
Edinburgh ..	65.7	39.0	26.7	..	..	..	52.8	0.40
Glasgow ..	65.8	43.6	22.2	..	..	..	54.2	0.92
Dundee.. ..	67.0	41.0	26.0	..	..	..	52.1	0.35
Aberdeen ..	65.9	39.2	26.7	..	..	..	51.7	0.13
Paisley	64.5	39.5	25.0	..	..	..	51.5	0.50
Greenock ..	64.0	47.0	17.0	..	..	..	55.1	0.96
Leith	67.0	41.7	25.3	..	..	..	54.5	0.39
Perth	70.0	42.0	28.0	..	..	..	55.9	0.69
Dublin	..	..	..	..	..	..	..	..

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, JULY 5, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
June and July.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
29. Thurs. .	29.71	65.5	59.6	54 9	69	4.7
30. Friday .	29.59	64.4	61.5	59.2	83	5.5
1. Satur. .	29.78	66.4	60.2	55.2	67	4.8
2. Sunday.	29.63	62.0	56.0	50 6	67	4.1
3. Monday	29.39	60 6	57.0	53.8	79	4.6
4. Tues. .	29.59	59.6	57 2	55.0	86	4.8
5. Wednes	29.79	62.9	56.8	52.3	67	4.2

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
June and July.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
29. Thurs. .	71.3	52.0	19.3	60.4	— 1.0	S.W.	250	0.00
30. Friday .	72.1	50.0	22.1	59.3	— 1.8	S.S.W.	250	0.02
1. Satur. ..	72.2	48.0	24.2	60.1	— 0.8	S.S.W.	257	0.00
2. Sunday.	64.0	48 8	15.2	54.5	— 6.6	E. : S.	190	0.18
3. Monday	69.3	54.8	14.5	60.2	— 1.1	S : SW	350	0.30
4. Tues. ..	68.0	53.2	14.8	58.7	— 2.8	S : SW	360	0.26
5. Wednes	70.9	50.3	20 6	58.7	— 3 0	WSW	360	0.14

June 29.—A very fine day.
— 30.—Rain fell occasionally in the morning. A generally fine day. Clouds variable.
July 1.—Cloudy till night, but fine. Cloudless after 9 P.M..
— 2.—Generally overcast. Rain fell from noon till 5 P.M.
— 3.—Generally overcast till night. Frequent heavy showers of rain fell during the day. Thunder was heard in the morning.
— 4.—A very variable day. Frequent heavy showers. Cloudless and very fine at night.
— 5.—Very variable throughout. Rain fell heavily at times, and hail also fell about noon. Thunder and occasional flashes of lightning also showed at mid-day. A fine night.

JAMES GLAISHER.

Miscellaneous.

LOCAL NATURAL HISTORY SOCIETIES.—The yearly increasing number of these societies is a matter for congratulation, as showing a growing appreciation of science throughout the country; but, if "the child is father to the man," we have yet more reason to be hopeful for the future, when we observe the now general movement in our public and larger private schools in favour of the study of natural history. We have not yet heard of the establishment of a natural history society at Eton; but, with this exception, we believe that all our more important schools possess such an association, more or less fully carried out according to circumstances. It must not be forgotten that it is to the Society of Friends that we are indebted for the first school society. So long ago as 1834 their school at York has had its natural history class; and the establishments of the same body at Sidmonton and Croydon are similarly supplied. Harrow has long possessed a Literary and Philosophic Society; but, so far as public schools are concerned, it was at Marlborough, under the superintendence of the Rev. T. A. Preston, that a "Natural History Society" was established in 1864. Rugby was not slow to follow suit, and these two schools may be considered as fairly representing, in their respective societies, what such bodies ought to be. From the two last-issued reports before us, we learn that the study of botany is among the most popular of those undertaken by the members. The interest in this is, in a great measure, kept up by the practice of recording, year by year, the earliest date at which flowering plants are observed to blossom—a practice which tends to foster a spirit of careful observation, even if leading to no other results. In the last Marlborough report the names of more than 50 boys are given as having assisted in this work, and Mr. Preston informs us that the eagerness of some of them is quite amusing. The last Rugby report contains a paper by Mr. F. E. Kitchener, the active president of the society, on the times of flowering of plants, generalising from the observations of two or three years, and deducing certain results, which are of considerable interest. To a casual observer such matters may appear trifling, but any one who is acquainted with Quetelet's voluminous observations upon the same subject, will admit that it is one of much interest and some importance. It must not be imagined, however, that such matters are the only ones attended to. Both societies have collections of plants, as of other objects, and the Marlborough herbarium is already assuming considerable importance. Mr. Preston has issued, with the last report, the first instalment of an admirable local flora, with descriptions, for the use of the members; and a plot of ground has been granted by the Marlborough authorities for a botanic garden. We have confined ourselves to the botanical work of these societies, as coming more within our province, but it is only fair to add that other branches of natural science are equally well attended to. Although, in each case, one of the masters is president, it must not be supposed that this in any way interferes with the fact that the society is mainly supported by the boys—that it is, in reality, their own. While cordially wishing success to these and all similar institutions, we cannot do better than adopt a suggestion which has already appeared in a contemporary—that persons possessing a surplus stock of books cannot do better than forward them for the use of the "rising generation."

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

MANY kinds of stove and greenhouse plants will now be going out of flower; such as *Clerodendron Balfourianum*, *Pimeleas*, &c., which do not shed their old blooms freely, should have them all removed at the earliest possible moment, so that the plants may not be impoverished thereby beyond what is necessary or desirable. Keep thrifty young plants of *Coccocypselum discolor* in a moderate greenhouse temperature, so as to encourage a sturdy growth, that they may the more readily be enabled to furnish an abundant crop of its remarkably brilliant ultramarine-coloured berries for early and mid-winter decoration. It should be borne in mind that though this plant is a native of Jamaica, it also inhabits the mountainous districts, hence it will thrive in a more temperate atmosphere than at first would appear likely. Indeed, there are many supposed exotics which might, were the altitude at which they are found better described, be far more successfully dealt with. *Epiphyllums* which have made their growths should be gradually inured to the full action of the sun and air, as by these means alone can they be induced to bloom as freely as they are capable. The gorgeous *Eucharis amazonica* should be repotted about this time, by way of preliminary preparation for the Christmas blooming. Choose moderate-sized pots for this shift, as it is not advisable to give too liberal shifts at once. A good rich fibrous loam, with a fifth part of peat, and a little silver sand and thoroughly decomposed cow or sheep dung in admixture, will suit them well. As may be readily surmised, from a survey of their large, deep evergreen, ovate, glossy leaves, they delight in abundance of moisture, but that only which is fresh and sweet. They will not, in a word, thrive in a stagnant unwholesome soil, which is too frequently the cause of non-success in their culture. As is well known the fleshy bulbs increase somewhat rapidly, each older one producing annually at least a pair and often more young ones. Their doing so often causes either frequent shifts, which in the end demands somewhat large pots, or an occasional division of the increase within each pot. Now, as a rule, these plants do not like being torn asunder in process of dividing them, and take some time to re-establish themselves, hence it is not advisable to do so too frequently—not oftener, in fact, than when an increase of stock is desirable, or the stools have exceeded in size the extent of pot-room that can be afforded them. Should sunny weather ensue, it will be necessary to shade seedling *Primulas* and *Cinerarias* which have been potted off. Keep them uniformly moist at the roots, and do not omit occasionally to look over them to detect at the earliest moment any symptoms of thrip or aphis pests, which not unfrequently attack them at this particular season. *Orchids* in bloom should now be removed into a cooler structure than an Orchid-house proper. It is often worth the outlay of time to improvise a temporary corner in a conservatory or greenhouse specially for them. One thing must, however, be borne in mind in regard to them, *i. e.*, no draughts must, under any circumstances, be permitted to reach them, or injury may be caused to the delicate young growths, which in all likelihood are now being made. Give the final shift to late blooming *Fuchsias*, and also alternate waterings of liquid manure to such as are in bloom. Give also less moisture and more air to those which are advancing to the flowering stage.

FORCING HOUSES.

Vineries, in which the Grapes are about to colour, and more especially those which have miscellaneous collections of plants growing beneath them, should have air afforded as freely as possible at this time, and it should not be necessary to add that a dry atmosphere should be uniformly maintained. To facilitate this, let all pot plants be watered in good time on the morning of each day, so that time may be allowed for the moisture to dry up before the cooler hours of night arrive, and with them the probable condensing of humidity upon fruit and on foliage. *Pines* should now enjoy an average mean temperature of from 78° to 80°, with a decrease of 10° or 12° by night. Let the heat run up to 88° or 90° during bright weather, and by sunheat alone. Should any increase in the size of the pots used for the forwardest batches of successionals be deemed necessary, it should be borne in mind that it will be advisable to use somewhat rougher compost. The "nobs" of fibrous loam may be larger, and the crocking be rather more abundant, than heretofore. Attention should, in connection with all such shifts, be given to the bottom-heat, by the usual method of removing, and turning over, and moistening, &c., of the tan. Be very cautious, however, not to afford too much fresh tan at this season; do not, besides, plunge the pots much below half their depth, and examine frequently the state of the heat, that the roots be not scorched. Excessive humidity should be constantly maintained in connection with a free supply of fresh air.

HARDY FLOWER GARDEN.

Where, owing to the somewhat late season and the cold, wet weather, *Ranunculuses* and *Anemones* have not yet been taken up, let the operation be done somewhat by anticipation, rather than to wait longer and until any foliage, now somewhat green, ripens off fully. Attend well to the tying up of *Dahlias*, *Hollyhocks*, &c., which are so liable, through any neglect in this wise, to be broken in twain during such variable weather, the loss being irremediable when once the injury is done. *Gladioluses* should in like manner be supported before the current growths become too large. A good mulching would do these latter good now. Sow seeds of *Hollyhocks* in the open borders. Make cuttings, also, of such biennial and perennial plants as *Pentstemons*, *Phloxes*, *Silenes*, *Pansies*, of either of which a further stock is required. Any desirable variety of *Antirrhinums* may now be increased by means of cuttings also. Choose hard, well developed cuttings from near the base of the old flowering shoots. Those who undertake the budding of *Roses* in their own gardens may now commence, as the stocks are sufficiently matured and the bark well run. It is perhaps as well to choose a dull day for the operation, though the buds generally take very well at any time if the above conditions are secured.

HARDY FRUIT GARDEN.

Moist as the weather is, and abundant as are snails and insects generally, the birds seem to choose in preference the produce of Strawberry beds and Cherry trees. Hence these matters will now be forced under every gardener's notice, and the necessary kind of netting materials must be held in use. The planting of *Strawberry beds* must be brought to a close with all dispatch, so that the old forced plants be got into the ground as quickly as possible, not only to lessen the labour of watering, but that they may make some progress, in the matter of establishing themselves for the next summer's fruiting. Proceed with the summer thinning of shoots upon pyramidal fruit trees, such as *Pears*, *Apples*, *Plums*, &c. Thin out all lesser ill-placed shoots, and let those remain which are well placed, and may be used to extend the size of the trees, to be shortened to the necessary length at a later date, when the wood has become more matured than it is at present. Full attention must still be given to aphis pests and their attacks on wall fruits. The black fly is especially plentiful upon *Morello Cherries* and Peach and Nectarine trees, and can only be destroyed by the direct application of tobacco-water, Gishurst Compound, or other similar materials. Proceed with the nailing-in of all young shoots upon each of these latter to the walls, or fasten them by the usual secondary aids of small cross-sticks, &c.

KITCHEN GARDEN.

More *Dwarf French Beans* should now be sown on a warm and fully exposed sunny aspect. Sow also certain kinds of *Peas* for a last main supply, though a row of any quick podding kind may be sown on a sunny southern aspect later. The sorts to be recommended for this sowing are Ne Plus Utra, Bishop's Long-pod, and any of the early and approved kinds of Sangster's No. 1—such as Carter's First Crop, Sutton's Ringleader, or Taber's Early Perfection, which, by the way, is a stronger grower, and somewhat more distinct than either. *Mazagan Broad Beans* should be sown in like manner, to secure a late crop. And with the sowing of a successional batch of *Endives*, sow also Fraser's *Batavian Endive*, or, for the matter of that, any approved kind of Batavian. If a sowing of Dutch or Early Horn *Carrots* were made now, they would come in very useful for drawing during the early winter months, and it may be, if the season is not of the best, in the early spring months instead. Proceed with the trench-planting of *Celery* during showery weather, forming the trenches for their reception upon the ground previously occupied with Peas or other early crops. *W. E.*

TOWN GARDENING.

THE *Chrysanthemum* will now be growing fast, therefore all lateral shoots should be removed as soon as they appear; and where it is intended to produce specimen blooms, a top-dressing of rotten dung and loam will be beneficial, as liquid manure cannot be used this wet season. The management of the Pompon differs from that of the large varieties, inasmuch as that they should be pinched back up to the end of the month to produce as many laterals as possible. The *Golden Pyrethrum*, a most useful plant for town gardens, should have all flower-buds picked off as fast as they appear; they will then keep neat all the summer. Go frequently over the bedding plants, taking off all old flower-stalks and yellow leaves, at the same time stirring the soil between them with the Dutch hoe. *Carnations* should be propagated this month by layers or pipings. I prefer layering where the plants are growing in the borders. *Intermediate Stocks* should be sown about the 20th of this month, and when they have four leaves be potted, three in a 48-sized pot, and kept in a cold frame till spring, giving all the air possible in fine weather. *Dahlias* should now be mulched with rotten dung, and tied to stakes as they progress in growth. Most of the species of the genus *Centaurea* are very showy, and do well in towns; and I should recommend, as many of them flower this month, that varieties be marked down, so that a collection can be got for another year, by planting offsets this autumn. *J. D.*

Notices to Correspondents.

CALCEOLARIA: *W. J. E.* The seedling is a showy one, and, from what you say of its habit, likely to be useful.

COTONEASTERS: *J. Morrison.* Cotoneasters are grafted on the common species, C. vulgaris, on the Quince, and on the Hawthorn.

EMPLOYMENT IN VINEYARDS: *Vitis* writes—"I shall be out of my apprenticeship to the gardening in a few months. Having a knowledge of the French language, and a desire to get into the wine-growing trade, would you inform me how to apply for a situation in a vineyard in the Bordeaux district." Unless our correspondent has some acquaintance, or private interest, in the district he mentions, we do not think he will obtain what he wishes.

GRAPES: *A. D.* The Grapes sent are fairly ripened, but not well coloured. They will, of course, be better when more thoroughly matured.

INSECTS: *Old Subscriber.* Send a specimen of the insect and a flower of the plant.

NAMES OF PLANTS: *John L.* Lotus major.—*J. Carter & Co.* Probably Sisyrinchium convolutum.—*T.* One of the varieties of Crinum capense.—*J. P. F.*, *Chownes.* Deutzia crenata flore-pleno. Yes.—*St. Aubyn.* We do not undertake to name florists flowers.

THE GREAT SHOW AT NOTTINGHAM.—In our report of the above show we gave Mr. P. Hope credit for showing the best single dish of Peaches, instead of Mr. Jack, gr. to the Duke of Cleveland, Battle Abbey, Sussex. We learn from Mr. R. T. Veitch, of Exeter, that he supplied the greater portion of the seed of the fine collection of vegetables exhibited by Mr. Garland, and that Messrs. Carter furnished the remainder.

WORM: *Monmouth.* Send a specimen.

CATALOGUES RECEIVED.—Osborn & Sons, Catalogue of Herbaceous, Alpine, and Bulbous Plants.—James Veitch & Sons, Catalogue of New and Beautiful Plants.—Joseph Meredith, Catalogue of Choice Stove and Greenhouse Plants, Roses, Bedding and Ornamental Plants, &c.

COMMUNICATIONS RECEIVED.—X. Y. Z.—J. M.—T. M., Philadelphia.—J. H. A.—F. L. P.—J. D. & S.—J. K.—C. S.—F. W. B.—Market Gardener.—J. W.

Markets.

COVENT GARDEN.—July 6.

The markets have fluctuated considerably during the past few days, more in consequence of the unfavourable weather than of the supply—a great quantity of damp goods coming in, and realising very low prices. Bush fruit and Cherries have been much injured by the heavy rains. Hothouse fruit is amply supplied, Pines especially.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve ..	..	to 3 0	Oranges, per 100 ..	6 0	to 10 0
Grapes, per lb. ..	2 6	6 0	Peaches, per doz. ..	12 0	24 0
Lemons, per 100 ..	6 0	10 0	Pine-apples, per lb.	3 0	6 0
Nectarines, per doz.	8 0	15 0	Strawberries, p. lb.	0 6	1 6

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Asparagus, p. bundle	4 0	6 0	Herbs, per bunch ..	0 2	to 0 4
Beet, per doz. ..	2 0	3 0	Horse Radish, p. bun.	3 0	5 0
Cabbages, p. doz. ..	1 3	1 9	Lettuces, per score ..	0 9	1 6
Carrots, p. bunch ..	0 8	1 0	— French Cos, each	0 9	..
			Mushrooms, p. pott.	2 0	3 0
— French, per bundle	1 0	1 6	Onions, per bunch ..	0 4	0 9
Cauliflowers, p. doz.	1 0	3 0	Parsley, p. bunch ..	0 4	0 6
— spring, each	0 6	1 0	Peas, per quart ..	10	1 0
Celery, red, p. bun.	1 6	2 0	Radishes, long, p. bun.	0 1½	..
— white, do ..	1 0	1 6	— round, do. ..	0 2	..
Cucumbers, each ..	0 9	1 0	Rhubarb, p. bundle	0 3	0 6
French Beans, p. 100	2 0	3 0	Shallots, per lb. ..	0 8	..
			Spinach, per bushel	2 6	3 0
Gooseberries, per quart	0 4	0 6	Turnips, p. bunch ..	0 4	0 9

Potatos, New Round, 6*s.* to 10*s.*: Kidneys, 8*s.* to 10*s.* per cwt.

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WANTED, for St. Kitts, West Indies, as GARDENER, a married Man; a small family not objected to. Must understand Ornamental Gardening, and the Management of Flowering Plants Character unexceptionable. Age about 30.—Address, stating all particulars, to Messrs. A. HENDERSON AND CO., Pine-apple Place, Edgware Road, London, W.

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SILVER SAND and PEAT, in any quantity.—This Sand is acknowledged by Florists to be the best yet obtained. Price Lists on application to Mr. JOHN ARNOLD, Builder, 29, Clarendon Square, St. Pancras, N.W. Small orders executed at the Wharf, Maiden Lane, North-Western Railway Depot.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 32, King William Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER. Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need therefore hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully.

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

TO MARKET GARDENERS and FLORISTS with a Small Capital.—A Gentleman, having purchased above FOURTEEN ACRES of LAND, near a Railway Station, not far from Horsham and Tunbridge Wells, and within an hour of Brighton, is wishing to have the same OCCUPIED, for a few years or permanently, either by a Market Gardener or a Florist. Arrangements would be made for compensation for permanent improvements, and for Trees planted. A small Stream of Water runs along the ground.

Mr. W. H. C., 7, Phillimore Gardens, Kensington, W.

TO BE LET, and seven years' unexpired LEASE to be SOLD, a snug CONCERN in the SEED, FRUIT and GREENGROCERY LINE, in the centre of Great Malvern, Worcestershire, where fine Fruit and Vegetables command high prices. Has been in the present Proprietor's hands for 16 years. Also can be LET with it, a large WALLED-IN GARDEN, well stocked with good bearing FRUIT TREES of all kinds. Satisfactory reasons for retiring will be given.—Address, in first instance,

W. W., Mr. Wheeler, 7, Borough Market, London, S.E.

TO BE SOLD, the BUSINESS of a SEEDSMAN and FLORIST, with Jobbing Business, in a first-rate position, main road, and doing a good trade. This is a splendid opportunity for any person in want of the above, and to be SOLD Cheap.

ALPHA, 227, Brixton Road, S.W.

TO BE DISPOSED OF, on advantageous terms, with immediate possession, the BUSINESS of a NURSERYMAN and FLORIST, in an excellent neighbourhood near London. Glass, Stock, Goodwill, &c., about £400.

ALPHA, Post Office, Deptford, S.E.

To Gardeners.

TO BE DISPOSED OF, in a Fashionable Town near London, a First-class FRUITERER, GREENGROCER, and POTATO BUSINESS, with a good Family Trade; handsome roomy Shop, good Cellars and Frontage; with or without a well stocked Garden; and in the best part of the town. The present proprietor having another shop in the town (in a different trade) cannot give proper attention to both. Price £200.

Apply by letter only, to G. C. H., *Gardeners' Chronicle* Office, W.C.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12¼ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

TO BE SOLD, by Tender, pursuant to an Order of the High Court of Chancery, made in a cause of Meldrum *v* Hayes, with the approbation of the Vice-Chancellor Bacon, at the Office of Mr. John Bolton, of Kendal, in the County of Westmoreland, Solicitor, on TUESDAY, the 25th day of July, 1871, at 3 o'Clock in the afternoon precisely (unless previously disposed of by Private Contract), the GOODWILL and STOCK in TRADE of the BUSINESS of NURSERYMAN and SEEDSMAN of the late JAMES MELDRUM deceased, now carried on by his Executors, at the Nurseries, at Castle Street, Mints Feet, Canal Head and Skewbarrow Garden, at Kendal aforesaid, and at the Shop and Premises situate in the Market Place, Kendal. The said Nurseries consist of about 14a. 0r. 0p., of Land laid out as Gardens and well stocked.

Particulars of the Stock, and particulars and conditions of Sale and Forms of Tender may be had gratis of the said Mr. JOHN BOLTON, of Kendal, aforesaid, and of Mr. JOHN WILSON, Solicitor, Kendal.

Dated this 23d day of June, 1871.

JOSHUA BIRD ALLEN, Chief Clerk.

NICOL & SON, 88, Queen Street, Cheapside, London,
Plaintiff's Solicitors.

SALES BY AUCTION.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, July 14, at half-past 12 o'Clock precisely, an importation of DENDROBIUM LITUIFLORUM, VANDA ROXBURGHII (scarce), SACCOLABIUMS, &c., from India; a consignment of ANGRÆCUM FUNALE, EPIDENDRUMS, BRASSAVOLA, ONCIDIUMS, &c., from Jamaica; 65 plants of ODONTOGLOSSUM BLUNTII, O. KRAMERI, and O. WELTONI, from New Grenada; and a small collection of Established ORCHIDS, in fine condition, including Trichopilias, &c.

On view the morning of Sale, and Catalogues had.

Pine-apple Place, Maida Vale, Edgware Road.

MR. J. C. STEVENS begs to announce that he has received instructions from the Mortgagee to offer for SALE by AUCTION, in one Lot, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, July 20, at 2 o'Clock precisely, the LEASE (38 years unexpired), STOCK, and GOODWILL of the old and well-known NURSERIES of Messrs. Arthur Henderson & Co., which have been established upwards of a century. More detailed particulars will appear in next Advertisement, and Plans will be ready 10 days prior.

Important Sale of Shorthorns

At the PRINCE CONSORT'S SHAW FARM, WINDSOR HOME PARK.

MR. STRAFFORD has the honour to announce that he has received instructions to SELL by AUCTION, without reserve, on WEDNESDAY, July 19 next, at the Prince Consort's Shaw Farm, Windsor Park, FIFTY-SIX HEAD of very superior PURE-BRED SHORTHORNS, the property of Her Majesty the Queen; amongst them will be found some fine specimens of the Fawsley blood, including several descendants of the celebrated cows, Alix, Cold Cream, and Furbelow. First-class Bulls from the renowned Warlaby Herd have been used for several years, viz., Prince Alfred (13,494), British Prince (14,197), Fitz Clarence (14,552), Lord Hopewell (18,239), and England's Glory (23,889); the young stock are chiefly by the latter bull. The sire now in service is Royal Benedict (27,348), from the same famed Herd.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London; or of Mr. TAIT, at the Prince Consort's Shaw Farm, Windsor.

Winterfold, near Kidderminster.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD is favoured with instructions to announce for SALE by AUCTION, without reserve, on THURSDAY, July 20 next, at Winterfold, a valuable COLLECTION of SHORTHORNS, consisting of FIFTY-FIVE HEAD of BULLS, COWS, and HEIFERS, the property of John Harward, Esq., Winterfold, and Isaac Downing, Esq., of Turner's Hill, and will include several very choice specimens of Kirklevington blood. First-class sires of the unrivalled Duchess family have been used, such as 3d Duke of Wharfdale (21,619), 2d Duke of Wetherby (21,618), 5th Duke of Wharfdale (26,033), 3d Duke of Claro (23,729), and the very superior and pure-bred American 8th Duke of Geneva; the two latter are now in service.

Catalogues, with Pedigrees and other particulars, may be had on application to Mr. MINETT, Winterfold, near Kidderminster; or of Mr. STRAFFORD, 13, Euston Square, London.

Bulbridge Ram Sale.

MESSRS. EWER AND WINSTANLEY beg to announce that the ANNUAL SALE and LETTING by AUCTION of Mr. Rawlence's RAM LAMBS and RAMS will take place at BULBRIDGE FARM, WILTON, on WEDNESDAY, August 2.

Mr. Rawlence has been awarded during the present year Five Prizes for his Sheep exhibited at the Bath and West of England Society's Show at Guildford, and his well-known reputation and continued success for the last 25 years renders further comment from the Auctioneers unnecessary.

Important Shorthorn Sales.

MR. JOHN THORNTON will SELL by AUCTION the following HERDS of PURE-BRED SHORTHORNS, several of which are of a very first-class and choice character:—

THURSDAY, August 3, the second day of the Yorkshire Show, at BOOTHAM, Stray, York, about FORTY HEAD, from the Rev. J. D. Jefferson's herd.

WEDNESDAY, August 23.—The celebrated and first-class HERD bred by the late Thos. Barnes, Esq., at WESTLAND, Kells, Co. Meath, Ireland. The small select HERD, the property of R. W. Reynell, Esq., will be SOLD at the same time and place.

FRIDAY, August 25.—The entire and first-class HERD bred by J. G. Grove, Esq., at CASTLE GROVE, Letterkenny, Ireland.

TUESDAY, September 12.—At BROCKTON HOUSE, Eccleshall, Staffordshire, Mr. T. Bell's entire HERD.

THURSDAY, September 14.—Messrs. Dudding's entire HERD, at PANTON HOUSE, Wragby, Lincolnshire, of about 100 head.

FRIDAY, September 22.—The first-class herd at CHAPEL BRAMPTON, Northampton, the property of J. N. Beasley, Esq.

TUESDAY, September 26.—About FORTY HEAD, belonging to Mr. Wm. Ashburner, at NETHERHOUSES, Ulverstone.

The late Sir John Rolt's HERD will also be SOLD during the autumn, at OZLEWORTH PARK, Wootton-under-Edge, Gloucestershire.

JOHN THORNTON, 15, Langham Place, Regent Street, W.—July 1.

Agricultural Land Improveme

DRAINAGE, SEWAGE IRRIGATION, FARM BUILDINGS, LABOURERS' COTTAGES, &c.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY.

(Incorporated by Act of Parliament in 1849.)

DIRECTORS.

T. Chapman, Esq., F.R.S.
George Thomas Clark, Esq.
John C. Cobbold, Esq.
Henry William Currie, Esq.
The Right Hon. Viscount Combermere.
Edward John Hutchins, Esq.
Sir William Tite, M.P., C.B.

Principal Engineer, Mr. J. BAILEY DENTON.

Agricultural Improvements of every kind are executed by the Company, or the outlay thereon repaid to Landowners who prefer carrying out the works by their own agents.

Tenant Farmers may also, by agreement with their Landlords, procure the execution of such Improvements.

The outlay, with all official expenses, may be charged upon the Estate, and paid off by a Rent-charge of about 6 per cent., in 31 years, or at the option of the Landowners in a shorter term.

No investigation of title necessary, and no legal expenses incurred.

UTILISATION of SEWAGE.

Special arrangements will be made with Boards of Health, Sewer Authorities, and others, for undertaking Works of Sewage Irrigation, together with all Works incidental thereto. The outlay in respect thereof may be repaid either by a sum in gross, or by a terminable yearly payment, discharging in a fixed period the principal amount with interest thereon.

Application to be made to ARTHUR MILMAN, Esq., the Secretary, at the Offices of the Company, 22, Whitehall Place, S.W.

THE LANDS IMPROVEMENT COMPANY.

(Incorporated by Special Acts of Parliament.)

Drainage, Reclamation, Farm Buildings, Labourers' Cottages, &c.

DIRECTORS.

John Clutton, Esq.
Frederick L. Dashwood, Esq.
Henry Farquhar, Esq.
Lord Garlies, M.P.
John Horatio Lloyd, Esq.
Granville R. Ryder, Esq.
Granville R. H. Somerset, Esq., Q.C.
Henry W. West, Esq., M.P.
Charles Watkin Williams Wynn, Esq., M.P. (Chairman).

The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

UTILISATION of SEWAGE.—The Company also advances money for the purpose of Works of Sewage Irrigation.

The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

No investigation of title is required.

For Forms and further information, apply to GRANVILLE R. RYDER, Esq., Managing Director, No. 1, Great George Street, Storey's Gate, Westminster, S.W.

BEDFORDSHIRE AGRICULTURAL SOCIETY (embracing the adjoining Counties).—LAST DAY of ENTRY for POULTRY and PIGEON SHOW DEFERRED from JULY 1 to 12.

A SPECIAL PRIZE, consisting of a HAND SEWING MACHINE, value £2 2s., will be given by Mr. C. Pickering, of Bedford, for the best COLLECTION of WILD FLOWERS, arranged in a small basket, open only to Ladies residing in Bedford or the County.

LIST of PRIZES and FORMS of ENTRY can be obtained from 3, St. Peter's Green, Bedford. THOS. LESTER, Secretary.

MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY.—Prize Lists for the Show at Liverpool in SEPTEMBER NEXT may be had on application to the Secretary. Upwards of THREE THOUSAND POUNDS are offered in PRIZES, including £100 for the best Hunter, £80 for the best Short-horned Bull, upwards of £220 for Dogs, £250 for Poultry, upwards of £225 for Pigs, and £300 for Sheep. ENTRIES CLOSE AUGUST 1.

Winsford, Cheshire. THOMAS RIGBY, Secretary.

BIRMINGHAM HORSE SHOW, 1871.—The SIXTH GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, &c., will be held in Bingley Hall, Birmingham, on TUESDAY, WEDNESDAY, THURSDAY, and FRIDAY, August 15, 16, 17, and 18.

ENTRIES CLOSE on SATURDAY, July 29.

For PRIZE LISTS and all other particulars, apply to the Secretary, 39, New Street, Birmingham. J. B. LYTHALL, Secretary.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED and TWENTY POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.

WOLVERHAMPTON MEETING, 1871.
SHOW of HORSES, CATTLE, SHEEP, PIGS, and IMPLEMENTS.
SATURDAY, July 8, to FRIDAY, July 14.

Admission—Saturday (Implement Yard only), 2s. 6d. Entire Showyard—Monday, 5s.; Tuesday and Wednesday, 2s. 6d.; Thursday and Friday, 1s.

Season Tickets, price 10s. 6d., available from July 8 to July 14, may be obtained of Messrs. SOLLOM AND BARNETT, Wolverhampton; or of

H. M. JENKINS, Secretary.
12, Hanover Square, London, W.

Royal Agricultural Society's Show at Wolverhampton.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for JULY 15 will contain a FULL and ILLUSTRATED REPORT of the SHOW; also PORTRAIT and MEMOIR of J. B. LAWES, Esq., Rothamsted.

Copies may be obtained on Friday, July 14, at STAND 345, Implement Yard; and at Messrs. W. H. SMITH AND SON'S Book-stalls. Price 5d.; post free, 5½d.

Published by W. RICHARDS, 41, Wellington Street, W.C.

The Agricultural Gazette.

SATURDAY, JULY 8, 1871.

MEETING FOR THE ENSUING WEEK.

ROYAL AGRICULTURAL SOCIETY'S MEETING AT WOLVERHAMPTON.

July 10 — The entire Showyard open from 8 in the morning, at which hour the Judges will commence inspecting the Live Stock, and making their awards. Admission, 5s. each person.
July 11, July 12 — Admission, 2s. 6d. each person. General Meeting of the Members in the Showyard, on Tuesday, at 2 P.M.
July 13, July 14 — Admission, 1s. each person.

The Showyard will be cleared of Visitors each Evening at 8 o'clock.
The Exhibition of Cattle in the Rings will take place at 10, and of the Horses at 12, noon, each day after Monday.

◆

THE STEAM CULTIVATION COMPETITION at Stafford and Wolverhampton during the past week threatened at one time to be altogether a failure. A constant or frequent heavy rainfall appeared likely to beat the judges out of the field. On the one hand, the six or seven fields of light land at Barnhurst, Wolverhampton, on which rapidity and extent of work had been illustrated during the earlier trials—on which, too, exceptional tools, such as ploughs for deep work, harrows, rollers, drills, &c., had been exhibited, were inadequate as representative of the tillage difficulties of an ordinary farm; and on the other, the four fields on Mr. DARLINGTON'S farm, near Stafford, where stiffer land, uneven surfaces, and awkward fences presented some of the commoner conditions with which steam must be prepared to cope, were in the first instance too wet for work. On subsequent days, however, they were fit enough, and the report of the Society's judges will, we doubt not, be a serviceable and trustworthy account of the latest contributions to the progress of steam cultivation.

A journal of the last eight or ten days, so far as these trials are concerned, is given in another page. It will suffice here to call attention to one or two of the points in which, as it appears to us, this progress is exhibited. The trials in the light land fields have proved, in respect both of the surface of the land after steam cultivation, and that of the subsoil on which the moved soil lies, that not only can a large area be cultivated, but excellent tillage work accomplished in a very short time. Formerly speed was accomplished at the expense of unevenness and imperfection. Now, a seven-furrow plough can be depended on to turn land over with regularity of both width and depth of furrow-slice, at the rate of 4 acres an hour! Tools, moreover, for turning land 15 inches deep can now be trusted to do their work regularly and thoroughly; harrows, rollers, drills, &c., can be worked easily and effectively by steam-power, and the mere stirring of the land or throwing it up in a tangled mass of broken furrow-slices can be done rapidly and well.

On the stiffer land near Stafford we think it has been made apparent—though the judges will hereafter speak with more authority—that that firm, having a fairly good tool at their command, who can pack the greatest quantity of power on four wheels for working it, must beat all weaker men. Messrs. FOWLER & CO., with their pair of nominally 20-horse power engines, and with their balance plough or cultivator, thus still stand in the front rank of steam cultivators wherever difficult circumstances exist.

Ample opportunity has been given during the experiment for judging the quality as well as the rapidity of the work accomplished, by occasional removals of the furrow-slice, or cultivated earth, so that the character of the unmoved subsoil surface was exposed. And here, too, considerable improvement has been exhibited on all former experience. Even where the speed had been excessive, the work stood this test remarkably well. The quality of the work accomplished, apart from the mere area of it, was thus and in other ways carefully observed. The weight of earth moved per hour and per acre, as most accurately expressing the work of cultivation accomplished, was, we believe, first tested at the show of the Yorkshire Agricultural Society in 1862, where Mr. J. C. MORTON was employed by the Society as their reporter. (See *Agricultural Gazette*, 1862, p. 795.) The work done was then ascertained by actual weighing of the earth moved per square yard of area, by the several competing ploughs and cultivators. It then appeared that where the speed was greatest, and the surface (left in heaps) appeared to have been most roughly knocked about, the quantity of material moved was really less than where the work had been slower and the apparent disturbance of surface had been less. At Stafford and at Wolverhampton we observed that the judges were applying the same test, but it appeared to us that they were not applying it in the right way. The object being to determine the weight of earth which had been moved, was quite within the scope of direct experiment, and ought to have been ascertained directly. It was only estimated, or determined indirectly. The weight of earth 1 foot deep per square yard was indeed determined in the several fields by actual weighing in the several fields, but the weight moved by the several competing tools was ascertained, not as it might have been, by putting 1 square yard of it upon the scales, but by applying the ascertained weight of 1 foot deep to the estimated depth of the work done. This, however, is incapable of accurate measurement, and the result arrived at is, therefore, after all, a mere estimate. This was plainly seen in the trials at York nine years ago, where the evil of irregularity during rapid work was illustrated by the proved superiority of the slower cultivation as regards the quantity of earth (ascertained by many weighings) which had been moved.

The report was as follows:—

> "The weight was taken in so many instances because it was supposed that some mistake had been committed, the quantity of earth moved per acre by FOWLER'S cultivator certainly appearing to be very much greater than that moved by HOWARD; whereas repeated weighings proved it to be actually somewhat less. The fact was, that it was thrown about so much more roughly in the former case, that it lay looser, and appeared to be deeper than it was. And one result of these weighings is to prove the fallacy of estimates of work of this kind by mere measurement, however honestly performed."

It is of course the *quantity* of earth moved and stirred and tilled—not the acreage cultivated—which really represents the work accomplished; and it is to be regretted that this has not in every instance been ascertained by actual weighing in the several instances, instead of being left to calculation from measurements, which however carefully taken canot command the same degree of confidence.

The work done on the farm near Stafford very fairly illustrated the superiority of steam-power over that of horses on clay soils. It is here that the advantage of tillage as a fertilising agent, apart from the application of manure, is best witnessed. "Such soils are dependent on proper cultivation for their fertility, even more than upon the direct application of fertilising matter, which indeed is already abundantly present in their substance, for only plants could get at it. To this end they need to be broken up and exposed throughout their depth to the free access of air and weather. But there are comparatively few days when this can be done by horse-power, for they are generally either baked by the sun, so that horses cannot pull the plough or cultivator through them, or they are so softened by the rain that the trampling and the sliding of the team and tool will do more to close the land than open it. We want a power which shall make the full use of the short intervals when such land is in proper condition for tillage operations, and which shall at the same time avoid the evil of poaching the land above and hardening it below, which in the horse cultivation of clays is too often seen. A four-horse team and plough weigh more than 40 cwt., and all this goes trampling and sliding from end to end of the field that is being ploughed, over every 10 or 12 inches of its width; and thus, of course, a floor is formed beneath the soil, hindering drainage, which is the greatest improvement of which clay lands are capable. We want a tool weighing not more than 4 or 5 cwt. for every foot of width worked by it, carried on wheels, so as not to close the surface over which it travels, and driven by a power which shall not press upon the land that is being worked. All this we have in the steam-driven ploughs and cultivators that were seen at work yesterday." These words, written nine years ago, convey fairly enough the impression which this week's trials, even in the midst of heavy rain, in the steam-ploughed fields near Stafford, must have produced on the spectators. The progress visible to those who were present both there and at the trial ground near York in 1862, appeared in the greater power of the engines, the greater consequent depth, thoroughness, and speed of the work accomplished—and the much greater quantity of earth moved under each square yard of surface.

Those who may visit Barnhurst, near Wolverhampton, next week, to see the steam-ploughs at work, will be struck with the appearance, in one or two of the fields, of a poached and trampled surface, worse than was ever seen before on any horse-cultivated farm; and the effects of which we doubt not will be be visible for months and crops to come. This was the site of the "steam-horse race" described in another page. The course had been staked out, so as to include fair specimens of all the various difficulties incident to steam-traction on a farm. The engines had to traverse ploughed and unploughed land, hollows, crooked lanes, and narrow gateways. But they were for the most part ultimately beaten by the weather. AVELING'S traction-engines did, indeed, overcome all the obstacles triumphantly, but the traction-engines with elastic tyres were beaten by the sloppy, slippery state of the land in the hollows.* The result, upon the whole, is, we think, to make it more than ever doubtful whether the traction-engine is adapted for aiding field work—however efficient it may be, and no doubt is, on good roads.

—— ON Monday, at Mark Lane, with a short supply of English Wheat and wet weather, factors asked full prices, but as little inclination to purchase was shown by millers, the sales made were at about last week's rates. On Wednesday prices favoured the purchaser—Wheat of all descriptions being purchased slowly, at drooping prices.——Trade in Beasts on Monday at the Metropolitan Cattle Market was brisk, and occasionally prices in advance on those of last week were obtained. Prices for sheep were rather lower, but those for choice lamb dearer. On Wednesday there was a short supply of beasts, and those on offer of choice quality made high prices. Sheep were rather better than on Monday—choice lambs fetching Monday's price.——Wool is advancing, and is expected to attain to a still higher figure.——In the Seed Market the belief gains ground that the growth of Clovers and Trefoil will be defective, There is little business doing excepting in Mustard and Rape seeds—which are in fair demand.

—— The following is the final account of the FRENCH PEASANT-FARMERS' SEED FUND, as forwarded to us for publication by the Hon. Secretaries:—The total amount subscribed to the fund up to May 24, was £41,979 18*s.* 1*d.*, including three grants amounting to £13,000 from the Lord Mayor's Mansion House Relief Fund. List 1, shows in what form the money was remitted; 2, through whose instrumentality collected; and 3, is a list of counties and countries, giving the amount received from each.

No. 1.

	£	s.	d.
Cash	£182	3	4
Notes	265	0	0
Stamps	35	5	5½
Post-office Orders	372	16	2
Drafts and Bills	41,124	13	1½
	£41,979	18	1

No. 2.

	£	s.	d.
Chambers of Agriculture	£3,693	3	10
Guardians of Unions	1,713	19	10
Church Collections	1,473	11	4½
County Committees, private donations and collections	20,832	15	1
Anonymously given	1,266	7	11½
	£28,979	18	1
Lord Mayor's Fund	13,000	0	0
	£41,979	18	1

No. 3.

	£	s.	d.		£	s.	d.
England:—				Surrey	£242	7	10
Bedford.. ..	£497	3	0	Sussex	816	19	3
Berks	482	15	9	Warwick ..	1044	4	8
Bucks	249	13	5	Westmoreland..	154	3	6
Cambridge ..	658	12	10	Wilts	404	14	9
Chester.. ..	143	5	3	Worcester ..	962	0	7
Cornwall ..	71	7	0	York	924	16	6
Cumberland ..	276	16	7				
Derby	405	14	0	*Wales:—*			
Durham ..	82	8	8	Anglesey ..	£7	0	0
Devon	333	18	5½	Brecon	159	18	2
Dorset	183	8	8	Cardigan ..	..		
Essex	777	7	0	Carmarthen ..	34	11	7
Gloucester ..	1064	16	7	Carnarvon ..	19	3	9
Hants	415	17	1	Denbigh ..	42	2	6
Hereford ..	226	6	7	Flint	40	10	0
Hertford ..	399	9	3	Glamorgan ..	213	16	1
Huntingdon ..	141	1	5	Merioneth ..	2	18	10
Kent	1526	18	11	Montgomery ..	62	19	2
Lancaster ..	387	6	0	Pembroke ..	45	14	3
Leicester ..	420	18	0	Radnor	32	10	10
Lincoln.. ..	338	2	4				
Midsex. 269 5 0 London 4015 5 10	4284	10	10	*Scotland* ..	£393	8	5
Monmouth ..	166	16	10				
Norfolk & Suffolk	1813	14	4½	*Ireland* ..	£69	9	6
Northampton ..	508	11	10				
Northumberland	827	1	1	Belgium ..	£7	0	0
Nottingham ..	107	1	8	France	5	0	0
Oxford	471	3	5	Hungary ..	1	0	0
Rutland ..	90	0	11	Italy	25	0	0
Shropshire ..	664	3	6	Jersey	13	1	6
Somerset ..	666	5	5	Switzerland ..	10	0	0
Stafford ..	380	9	7	New York ..	7	6	3

TOTALS.

	£	s.	d.
England	£26,673	2	10
Wales	621	5	3
Scotland	393	8	5
Ireland	69	9	6
Foreign Countries	68	7	9
Anonymous	1,266	7	11
Subscribed by persons giving no address ..	2,887	16	5
	£28,979	18	1
Lord Mayor's Fund	13,000	0	0
Total	£41,979	18	1

—— The very useful FOOD COMMITTEE of the SOCIETY of ARTS have presented their annual report as follows:—

"Your committee have continued their inquiries during the past session, and have to report a great improvement in meats submitted to them, which have been preserved in tins. Both as to the quality of the meat, its appearance, and retention of nutritive qualities, there has been satisfactory progress, and your committee regard this process as furnishing a very valuable aid to other kinds of food, especially where it is desirable to have as large a quantity as possible of animal matter in a small compass.

"The trade from Australia in tinned meats has very largely increased, in the exportation both of beef and mutton; and, so far as the many specimens of this and other modes have been investigated by your committee, this one alone has as yet fulfilled the necessary conditions of bringing meat from a distance with fully-retained meat flavour, without deterioration by addition of chemical agents. No process of the latter kind which as yet has been submitted to your committee can be said to be thoroughly successful. Either the texture of the meat has been broken down or hardened, and the flavour destroyed or altered, and in many cases such a distinct saline or mineral taste added as to preclude the adoption of such specimens as articles of general consumption.

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* We extract from a report in the *Times*, July 6:—"It was quickly apparent that the elastic tyres, unassisted by spuds or other means of penetrating the ground, are out of place upon a wet, soft soil, rendered slippery on the surface by a recent rainfall. In such circumstances, the metal tyre of the wheel rotates without driving the indiarubber, or the thick ring of rubber turns round within the external chain of protecting shoes, or all three revolve, cutting down into the ground without causing the engine to advance. After alternations of steady going and sticking fast, the engine came to a standstill in a deep hollow in a Vetch-stubble field, having sides sloping at inclinations of 1 in 18 and 1 in 12, from which position it was extricated by repeated and laborious efforts of the Messrs. RANSOME, Mr. HEAD, and their men in helping the wheels out of the mud by planks and posts. Any man less undaunted than Mr. AVELING would have yielded all further experimenting in such an unfavourable condition of the course, cut up as it was by preceding competitors, and now so soaked and washy that any heavy steam-engine would be expected to founder. Nevertheless, his 10-horse power single-cylinder engine, weighing with coal and water 11 tons 4¾ cwt. of which 8½ tons were upon the two 18-inch broad driving wheels), and dragging behind it two waggons constituting a load of 9 tons, made a start, proceeded steadily round the fields, turned admirably through all the gateways, in spite of having lost two cogs out of the driving bevel-gear, and arrived at the water-jump, or (as a wit named it) the Slough of Despond, where 'Pliable' had turned back. The round of a mile and three-quarters was accomplished in 61 min., with a consumption of 2 cwt. 9 lb. of coal. Mr. AVELING is to be congratulated upon the surprising capabilities and perfection of his traction-engines; but it must not be inferred from the trial narrated that the elastic tyre is a mistake, and that the fame of the road-steamer has now collapsed. Ridiculed at first, the indiarubber cushion for the rim of a wheel is being adopted in a modified form by Mr. AVELING himself, by Messrs. FOWLER, by Messrs. RANSOMES, SIMS & HEAD, and by other makers of traction-engines. Its place is upon hard roads or slushy roads, provided they have a hard bottom, or roads newly stoned, or even arable land in dry weather. These points will probably be brought out at the further trial of traction engines which is to be held on Thursday at Stafford. But a 'road-steamer' cannot become a 'farm-steamer,' unless provided with the same resources which enable ordinary traction-engines to traverse soft fields and clay lanes."

"Your committee still look with much hope to the process of preserving meat in cold temperatures, and are now engaged in a series of experiments, by which they hope to be able to determine the conditions most favourable for the practical appliance to animal and vegetable substances of this mode of preservation.

"As yet, no successful plan has been matured for bringing live animals by sea from long distances."

—— The disposal of the late Lord WALSINGHAM'S celebrated Southdown flock on Thursday of last week by Messrs. THORNTON and SLATER & SIMPSON, was attended by a large company, including many agriculturists from a distance. A gloom was cast over the latter part of the day's proceedings by the serious and sudden illness of Mr. JOHN CLAYDEN, who was struck down by a paralytic stroke in the course of the afternoon*. Eight hundred and seventy-one sheep fetched close on £5500, averaging about 6 gs. a-head. The old rams made £27 13*s*. each, the shearlings £22, and ram lambs, £4 10*s*. The 3-year-old ewes made £4 2*s*; the 2-year-old ewes £4 16*s*.; the shearling ewes realised £6 18*s*. apiece; the ewe lambs £2 11*s*.; and, on the whole, as we have stated, 871 sheep averaged £6 6*s*. apiece. The following is the tabulated summary:—

	£	*s*.	*d*.	£	*s*.	*d*.
19 old rams	27	13	2	525	10	6
65 shearlings	22	0	6	1431	13	6
120 ram lambs	4	10	8	543	16	0
192 old ewes	4	0	4	771	5	0
65 three-year ewes	4	2	4	267	10	0
90 two-year ewes	4	16	1	432	10	0
160 shearling ewes	6	18	9	1110	2	6
160 ewe lambs	2	11	0	407	7	6
871 averaged £6 6*s*.	Total			£5489	15	0

—— The following circular has been addressed to the tenantry on the Stoneleigh Estate:—

"Estate Office, Stoneleigh Abbey, Kenilworth,
"June 20, 1871.

"Dear Sir,—I am directed by Lord LEIGH to inform you that, having gone over nearly the whole of his estates with draining, buildings, and other permanent improvements, effected at a large outlay, his lordship is of opinion (and is confirmed in that opinion by the advice of persons of experience) that a more satisfactory system for the management of his estates—both for his tenants and himself—can be arranged, the main features of which are:—

"1. That all permanent improvements shall be effected by and at the sole cost of his lordship, a settled rate of interest on the outlay being charged.

"2. That all repairs shall be done by Lord LEIGH.

"These very important changes, you will see, necessitate a re-valuation of your farm, and this his lordship has no doubt will be effected in such a manner as to give you satisfaction, and increase that confidence which has always existed between you, his lordship, and the late Lord LEIGH.

"This change will relieve you from finding and locking up in improvements that capital which will enable you more profitably to cultivate your farm, and give you more freedom to advantage yourself, by removing your capital and energies to a more beneficial occupation, without the possibility of leaving any of your money on his land.

"The subject of leases has engaged his lordship's attention, and he is not indisposed to consider any application for one. There are tenants to whom he would not grant one, and also farms so situated that he would decline to lease them, but these tenants have his engagements to value and pay for their unexhausted improvements on quitting.—Your very obedient servant,

"GEORGE JONES."

—— The *North British Agriculturist* states as a fact within the personal knowledge of the Editor, that there are several farmers in the small county of Haddington, who annually expend upon AUXILIARY MANURES and FEEDING STUFFS about £2 for each acre they possess. Some farmers in that county have estimated that the outlay on manures and cattle food nearly corresponds with the amount of rent paid.

—— Our readers will find in another page an exhaustive and practical essay on Land Drainage, lately read before the East Kent Chamber of Agriculture by Mr. WEBB, of Sittingbourne, who thus describes his own long and extensive experience as a land agent and draining engineer.

OUR LIVE STOCK.

CATTLE.

A GOOD likeness either of a man or an animal must be truthful. That truthfulness is not studied by our Shorthorn and cattle artists is most painfully evident to all who examine their productions. We almost fear that while the artists pourtray falsely, the owners of the cattle love to have it so; and this we say advisedly, from the fact that photography is not popular with breeders of high-bred stock. The conventional picture of a Shorthorn represents more properly what the breeder aims at than what he has obtained. It represents a square and well filled-up carcase, terminated by a small and pretty head, and exceedingly diminutive legs; it is the *beau ideal* of what an animal ought to be, in the estimation of the artist, but is nevertheless impossible. It would not be difficult to point out grave anatomical faults in their drawings, and they are certainly utterly worthless as representatives of the animals after which they are named. Photography cannot fail to give a correct outline, and to maintain the proportions between the various parts of an animal. When properly used, it places before a breeder the best models of domestic animals, so as to enable him to study them with even greater attention than in the case of the living and moving animal. The accompanying woodcuts represent some of the most important outlines of an exceedingly well known Shorthorn bull, probably one of the best living, but whose name we suppress, for obvious reasons. The woodcuts are taken from two pictures of the same animal, the one a conventional lithograph, from a painting, and the other a photograph taken direct from the animal. The dark lines represent the true outlines of this bull, while the dotted lines are those of the lithograph. Both pictures are as nearly as possible of the same length. The outlines are obtained by first transferring the original lines to tracing paper, and subsequently to a wood block. The lines along the back of the animal in both drawings are made to coincide, and taking fig. 185, we see the result of a comparison between the conventional and the real breast or brisket. We call attention to the increased depth of carcase, prominence of breast, and diminished size of the forelegs. Fig. 186 shows how the artist gives a more than natural squareness to the tail-head, how he confers an impossible squareness at the buttocks, and an unmasculine fineness of bone at the hocks and shanks. Fig. 187 exhibits the wonderful contrast between the real belly-line in a well-formed Shorthorn bull, and what the artist thinks it ought to be. An animal formed on the model of the Shorthorn artist would probably be incapable of "work," or even of motion, and at best is only a gross exaggeration of the fattest animals exhibited at Smithfield, and has no resemblance to a healthy animal in breeding condition. We consider it necessary to draw attention to this point because pictures of animals ought to be useful not only by giving a good idea as to the original, but also in the future when faithful likenesses of well-known animals may indicate progress in symmetry, beauty, and utility of form.

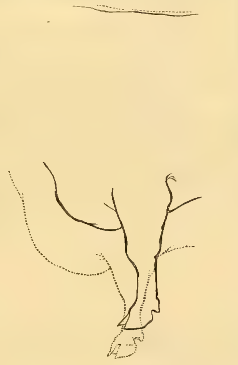

FIG. 185.—REAL AND IDEAL FOREQUARTER.

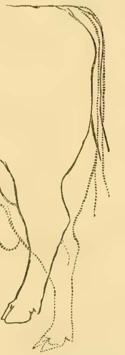

FIG. 186.—REAL AND IDEAL HINDQUARTER.

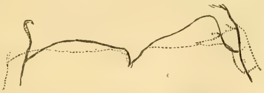

FIG. 187.—REAL AND IDEAL BELLY-LINE.

TEN DAYS AT WOLVERHAMPTON.

THE trials this year embrace "steam-cultivation and Hop machinery," divided into 22 classes—18 for steam culture, besides Lord Vernon's Silver Cup, value £100, and four for Hop culture.

The trial ground consists of 17 acres on the Palmer Cross Farm, occupied by Mr. Fleming, and 103 acres on Barnhurst Farm adjoining, occupied by Mr. W. Taylor (who, by the way, is irrigating a portion of his farm with sewage from the town sewers); the adjoining lands make a total of about 120 acres, situated about 3 miles from the show-ground. The soil is light and in good working order, to the depth it has hitherto been ploughed, but in some places large stones are embedded in the subsoil, against which the implements struck, causing numerous breakages, and leaving the work not so evenly done as it otherwise would have been; and even where there were not stones the subsoil turned up very hard, and bound together. This condition of the subsoil is much to be regretted, and in selecting land for steam culture it should be avoided, unless to test special implements, as it neither did justice to the common steam-tillage implements, nor showed to those who visited the work with the view of starting steam-culture themselves, how such farms as Barnhurst and Palmer Cross should be cultivated by steam. Stony and moorland-bottomed lands should first, "for example," be gone over with "a root or stone extractor" (class 14), and then no mishaps would take place with engines, ploughs, and cultivators afterwards. And, besides, when the bottom is unequal, the plots are also unequal, and the engines and implements do not get fair play. The Wolverhampton steam-culture trials have been looked forward to with no little expectation, and during the trials on the light land farms many farmers expressed very freely their disappointment. The heavy land consists of three large fields on New Buildings Farm, in the occupation of Mr. Darlington, situated about 3 miles from the railway station at Stafford, or about 18 miles from Wolverhampton. This distance is extremely inconvenient, and the narrow lane into the fields is awkward enough. The light land is staked out in the usual way, into small plots of about 3 acres each.

Monday, June 26.—The steam culture trials commenced this day, chiefly on the 17-acre field on Palmer Cross. Some 20 engines were in the field, with a strong force of implements and tackle, for the best combination of machinery for the cultivation of the soil by steam-power (class 1). Four firms entered as competitors, viz., Messrs. Fowler & Co., Messrs. J. & F. Howard, the Ravensthorpe Company (Fisken's system), and Messrs. Barrows & Steward. The Leeds firm were the first to get into position with their 20-horse power double winding drum set (*i. e.*, two engines on opposite headlands). This firm show other three systems of steam-culture, viz., their clip-drum system, double-drum set (*i. e.*, an 8-horse engine, carrying two drums, with a disc anchor on the opposite headland), and their detached windlass system. The Messrs. Howard exhibit three systems—two engines and one implement, two engines and two implements, and one engine with a detached windlass. Fisken's system is distinct from any of the above, so there is variety from which to choose the best. The six judges are divided into two sets:—John Hemsley, Skelton, Newark; Richard Kay, Forcett Valley, Darlington; and F. Sherborne, Bedfont, Middlesex; with W. Menelaus, C.E., Dowlais, Merthyr Tydvil, as consulting engineer, taking classes 1, 2, and 3, and also the Lord Vernon cup trial;—Major H. V. Grantham, West Keal Hall, Spilsby; John Hicken, Dunchurch, Rugby; J. W. Kimber, Tubney Warren, Abbington; with Easton, Amos & Anderson, taking class 6 and the other implement classes. Not much was done on Monday, and at the close of the day the competitors in class 1 drew for precedence next day: Messrs. Barrows & Steward stood 1st, Messrs. J. & F. Howard 2d, Messrs. Fowler & Co. 3d, and the Ravensthorpe Company 4th.

Tuesday, June 27.—The Banbury and Bedford firms not being ready, Messrs. Fowler & Co. again took the lead, with two 20-horse engines and a 13-tined cultivator, in a field on Barnhurst Farm. Owing to the wetness of the surface, the outermost tine on each side had to be removed to prevent clogging the wheels. The 3-acre plot was finished in about 40 minutes, to the depth of from 7 to 9 inches. The 12-horse double engine set was next started on another plot, with a 9-tined cultivator, smashing up the 3 acres in rather less than an hour, about the same depth as the preceding. A 12-horse clip-drum engine next started, with a 7-tined balance cultivator, doing its 3 acres in about an hour and a half, to the depth of 7 inches. An 8-horse double winding-drum engine and disc anchor opposite, with a 7-tined turning cultivator between, smashed up its 3 acres, 8 inches deep, in about an hour and three quarters.

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* As we are going to press, we receive the sad intelligence that Mr. CLAYDEN is no more,—and under the circumstances it is only in our power now briefly to record the fact.

The Ravensthorpe Company had in the field a 10-horse traction engine, and 10-horse portable engine, a 4-furrow balance plough, a 3-furrow balance plough, a 7-tined Howard cultivator, and a 7-tined balance cultivator; with a Howard cultivator going 5 inches deep: the 3 acres were finished in about 79 minutes.

Wednesday, June 28.—Messrs. Barrows & Steward took their turn in class 1, working a 5-tined Woolston smasher with a 12-horse portable engine, and detached windlass, with claw anchors which did not hold fast. The time occupied in doing the plot from 7 to 9 inches deep was about 2 hours 50 minutes, but out of this the stoppages, we presume, must be taken. Better things are expected of the Woolston anchors and implement in the heavy land field. This concluded the trials in class 1, Messrs. J. & F. Howard, after the breakage of their gear on Monday, having in the interim ceased to remain competitors.

The lots were then drawn for the precedence in class 2, and also in Lord Vernon's cup class. The two include seven trials, viz., 1, Howard's double drum set; 2, Edward Hayes, Stony Stratford, Bucks; 3, the Ravensthorpe Company; 4, Amies & Barford; 5, Fowler & Co.; 6, Howard's roundabout system; 7, Barrows & Steward: most of the afternoon was spent in the preliminaries.

In the lower grounds the other judges were continuing the trials of the implement classes, which commenced the previous day. Campain's anchor gave general satisfaction. The plough trials between the rival firms of Leeds and Bradford are to be resumed.

Thursday, June 29.—The trials in class 2 were continued. The three first on the list were unfortunate from breakages. In this class the weight of the engine must not exceed 10 tons, and in reference to how the weight was to be ascertained the Council lay down the rule to the judges that "the weight of the engine shall be deemed to be exclusive of coal, water, and rope, but to include the weight of the drum or windlass." The effect of this condition, which its framers ought to have seen, is so much in favour of Messrs. Fowler & Co.'s clip-drum engine as to leave a poor chance for the other sets. Messrs. Amies & Barford took their turn, with their 7-tined Woolston cultivator, going from 7 to 8 inches deep, using a pair of Campain's anchors, which is a great improvement upon the Woolston system. After working about 2 of the 3 acres in their plot, the judges were so satisfied with the quality of the work done as to allow the other acre to be ploughed, which was done with the Peterborough steam-plough. The depth of the furrow-slice was about 8 inches, and the time occupied in finishing the plot, including stoppages in coming in contact with stones, tree roots, and the paying out of the tackle, was about two and a half hours.

Messrs. Fowler & Co., the next in turn, started with their clip-drum engine and implements already described. They also use their 8-horse engine roundabout set, and made good work in the cup class, ploughing an acre in 55 minutes, cultivating another in 39 minutes, and digging the third in 36 minutes.

Messrs. J. & F. Howard and Barrows & Steward took their respective turns, the former with their cultivator, and the latter with a Woolston smasher.

Friday, June 30.—To-day the competition was in class 3, for the best combination of machinery for the cultivation of the soil by an ordinary agricultural engine, whether self-propelling or portable. The Howards used a four-furrow plough capable of being converted into a digger by removing the common breasts and putting on digging breasts, a five-tined cultivator, steam harrow and drill, and their roundabout tackle. Fowler & Co., a four-furrow plough or digger, a four-tined cultivator, harrow and drill, and roundabout tackle. Amies & Barford, their roundabout tackle, three-furrow plough or digger, seven-tined cultivator, steam harrows and roller, and Campain's anchors. Barrows & Steward, plough and cultivator, with their roundabout tackle. In this class the judges used a 12-horse Clayton & Shuttleworth engine for all the above competitors, which made the work slow.

Saturday, July 1.—The competition in class 3, and also in the implement classes, not finished, continue under both sets of judges, and in the afternoon the "traction-engine race" began, which threw the other trials in the background. A goodly number entered as competitors, but only a few came up to the starting, and fewer still reached the winning post. The racecourse was measured out on the ploughed fields, headlands and lanes at Barnhurst. Aveling & Porter's 6-horse engine went the round in 22 minutes; Ransome, Sims & Head's 8-horse Thomson in 24 minutes; Burrell's 8-horse Thomson in 28; and Aveling & Porter's 10-horse engine in 29 minutes. The race is to be resumed on Monday, July 3; and the "Derby Day," from Wolverhampton to Stafford and back, comes off on Thursday, July 6.

Monday, July 3.—The great attraction of the day was the steam-horse race at Barnhurst. As stated above, a course, 3168 yards in length, was staked out. It had many sharp turnings, dips, and soft places, owing to the rain that had fallen since Saturday. On that day the judges decided that the waggons should be loaded according to the discretion of the owners, and not a few Derby Day jokes were passed as to the capabilities of the racers, and how they would show their paces here and there on the racecourse. Accordingly the waggons were loaded with "pigs,"—"legitimate pigs of the Black Country." The morning promised badly, but eventually the weather cleared up a little. Much precious time was spent in going through the routine preliminary testing of the engines, with which most of our readers are familiar. At length the judges gave the orders to start, and the racers took precedence in the order of their merit on Saturday, a safe distance being kept between competitors. The test of merit being time, the number of minutes and even of seconds which the engines took to go over marked distances was carefully noted. On the order of the judges to start No. 7002 in the catalogue reached the ears of "Little Tom" (Aveling & Porter's 6-horse engine), away it started, amidst the acclamation of visitors, farmers, and scientific men, who had come long distances to see the race—one lady, we were told, drove from Ipswich by steam. But to the more interesting facts of the case. The engine, weighing with coals and water 5 tons 4 cwt. 2 qr., started at 2.25 P.M., drawing a load of 5½ tons, including the pigs and waggon. For soft ground the wheels were armed with clips and spikes, and on turning into the roads and lanes this armour was taken off. These shiftings occasioned some delay, but the winning-post was reached in 52 minutes. As soon as "Little Tom" was seen coming up the last field, "Sutherland" (Ransome, Sims & Head's engine) started—7 minutes past 3 P.M.; weight of the engine, 10 tons 6¼ cwt.; load, 5 tons. Now came the test of the rubber wheels, but not long, for before the engine had gone 100 yards the indiarubber tires proved their unfitness for soft wet ground. "Poor Sutherland!" was heard from different points of the compass, whilst the opposite was louder in favour of a little auxiliary assistance being all that was needed. Accordingly, planks, chains, jacks, and the thousand and one engineering appliances under such circumstances, were tried, but in vain. In spite, however, of the odds against the wheel as at present armed, the efforts the engine made getting out of one difficulty into another astonished everybody, and when the tyres got upon the hard road the engine snorted triumph in the face of its rivals. There is nothing to hinder rubber wheels being armed with clips, spikes, or other contrivances, so as to carry them through soft ground with as much ease as Aveling & Porter's or Burrell's. When the winning-post became hopeless to "Sutherland," Burrell's second engine started, 4 minutes past 4 P.M., with a load of 7 tons. The tyres of the wheels of this engine are armed with "shoes" or "paddles," which take a better hold of the ground than clips with spikes. The weight of Burrell's 8-horse engine is 6¼ tons, and with its extra load it reached the winning-post at 5.6 P.M., having thus run the course in 62 minutes. Aveling & Porter's long engine, weighing 8¼ tons, started at 6.35 P.M., with two waggons, the total weight of the load being 10 tons; this was found too much, but on reducing the load to 9 tons it completed its journey in 60 minutes. Both the engines of this firm called forth the loudest approbation. The shoes are taken off the wheels when they get upon a hard road.

Stafford.—The three fields at the New Buildings Farm, occupied by Mr. Darlington, were plotted out on Monday, and, according to the programme, the engines and windlasses were to be weighed on the public weighbridge at the Shropshire Union Railway and Canal Stone prior to proceeding on the same day to take up their positions on the above fields, so as to be ready to complete the competition for Lord Vernon's cup and the other prizes not settled. Very little progress, however, was made in this direction on Monday.

Tuesday, July 4.—The morning and evening were fine, but from 11 A.M. to well through the afternoon it rained heavily without intermission. Very few engines and implements were on the trial-ground when we left at 4 P.M., but the three fields were taken possession of, and the Messrs. Fowler & Co., who were again first in position on the more distant and hilly field—the judges having placed them on the steepest and most undulating ground of the heavy land—were finishing the turning cultivator trial, actuated by two 20-horse engines, one on the top of the hill, and the other on the farther headland below. Prior to this they had finished the ploughing with the same engines, making excellent work abut 9 inches deep. The cultivator was set to the same depth. The ground is, perhaps, too wet and soft on the surface for the cultivator; but it is in fine condition for ploughing, the furrow-slice turning up beautifully. The soil is a stiff red tenacious clay, working as freely as at Christmas. In this respect the contrast between the steam-plough trials at the Wolverhampton meeting, and those at the Leicester meeting, is very remarkable. In 1868 the dust at the gateways was over the shoes, and blinding with the least breeze of wind. In 1871 straw is being used in the showyard under the waggon wheels, whilst at the gateways in the field people will require to take care of their shoes, or they will leave them behind them. It is, however, to the state of the land in the fields that we wish to turn attention. How different is the resistance which the furrow-slice presents to the implement and the motive-power! At Leicester farmers complained that the land was too dry and burnt up to exemplify a fair state of steam-culture, the same complaint cannot be raised at Wolverhampton. Go to the Stafford trials, and you will see a condition of land closely resembling that of your own land when the greater area of your farm should be cultivated by steam—say from October to March, and as often April. It is true that the subsoil in many places, as at Barnhouse, is unsound, and that in such places it ought not to be brought to the surface, but that is only the greater reason why the unsound bottom should be subsoiled until it is thoroughly washed; and the current season is unusually favourable for subsoiling, breaking pan, and washing land through the instrumentality of steam-culture; and although that opinion may not yet be general, the heavy land at Stafford, as well as the light land at Barnhurst, requires subsoiling and washing, and those who are interested as purchasers should examine the different operations accordingly. Messrs. Fowler & Co., for example, are ploughing the land fully as deep as it can be done with profit, and when they come to try their deep ploughs, turning up other 6 inches of the raw subsoil, Mr. Darlington, like Mr. Taylor, last week, may justly conclude "that is not a profitable lesson in steam culture." On occasions like these annual trials, losses like the present cannot easily be avoided. The practical objection is, that the two tenants who are thus loser, ought to have ploughed their land before now with steam, subsoiling the bottom, and adding gradually to the depth of the staple. And in all cases where subsoiling is necessary, this should be practised with greater assiduity than it now is. Practically speaking, subsoiling, extracting stones, and the like, have not been tried this year as they ought to have been tried, so as to exemplify to farmers how the work ought to be done. Of course any omission that has taken place does not lie at the door of the Leed's firm, but the contrary, for they exhibit implements both for subsoiling and extracting stones. There is one practical lesson which Fowler & Co. teach, that merits special notice, and that is, how to plough and cultivate very hilly land, viz., by dividing the land at the top or ridge of the hill, plouging and cultivating first the one side and then the other. And they further teach how a 20-horse engine can be got to the top of a hill when the land is in a very soft and wet state, and also how to cultivate a steep hill-side when much undulated. The tracks of the engines going up and over the hill, and along the opposite headlands, must have struck everybody who visited the grounds to-day with the triumph of engineering skill aver all natural difficulties that lie in the way. And the manner the workmen got into position, and the way they afterwards held the balance-plough and the turning cultivator under all the circumstances of the case, including the pelting rain, proved how thoroughly they had acquired the art of steam-culture in all its details. Throughout the whole of the trials on the light land farms, the working staff of the Messrs. Fowler & Co. were universally admired for the ease and rapidity with which they get their engines and implements into position, and back again to the depôts when the work was finished; and also how few breakages and mishaps attended their labours.. Like skilful experienced workmen, success came natural to their hands wherever they turned themselves. They have, in short, got over an apprenticeship which the other competitors would do well to study with the greatest care.

We add to our report the following clever account of the "steam-horse race," from the *Birmingham Daily Gazette* of July 4:—

"We have been assured from influential quarters for some time past, that the introduction of the Thomson road steamer, with indiarubber tyres, would entirely revolutionise the road traffic of this country; that railways need no longer be made through thickly populated districts, for that the road locomotive would supply a better and cheaper substitute; that the flexible tyre, by the enlarged area of its grip on the road, would not only effectually prevent slipping, but would enable the engine to travel over the softest land with ease and impunity; and still more, that the new invention would sweep away all other systems of steam cultivation from the face of the earth, for that any farmer would find it answer his purpose to buy a neat little engine that, at a small expense of fuel, would thresh, grind, saw, cut chaff and roots, plough and cultivate his land, to say nothing about carting his corn in harvest, and afterwards carting it to market, better and cheaper than horses, and much more economically than the present cumbrous system of windlasses, ropes, anchors, and pulleys, which cost so much to buy, to repair, and to keep in order; in fact, that it would be cheaper and quite as effective for one of these traction-engines to be yoked to a set of ploughs or cultivators, and thus pull them directly over the land, just as horses would do.

"'It is the last straw that breaks the camel's back,' and this last assertion was too much even for our credulity. We had listened with patience to the assertions about road traffic, and so on, but with the experiments of the Romain cultivator and the Boydell endless railway fresh in our recollection, we could not bring ourselves to believe in steam cultivation being efficiently and economically conducted by an engine walking over rough land, and pulling tillage implements behind it, Lord Dunmore's experience notwithstanding.

"Messrs. Robey & Co., of Lincoln, had, however, entered for trial an 8-horse road steamer, and a 6-furrow plough adapted to be worked by it, by direct traction, and so we came to Wolverhampton unbelieving, yet anxious to see with our eyes how far the assertions, which to us had sounded so extravagant, had been borne out by the facts.

"To our great disappointment, Messrs. Robey & Co. have not appeared at the trial ground to exhibit the new system of cultivation, but the road steamer, as a traction-engine, is entered in the competition for class 17, by two well-known makers.

"There is no doubt that considerable harm has been done by exaggeration of the merits of a very useful invention, for results falling short of expectations unduly raised do, perhaps, more to discredit an invention, by producing a reaction of popular feeling against it, than any amount of prejudiced hostility could produce.

"The fine weather of last week having given place to a wet Sunday and showery Monday morning, some fears were entertained that the competition of traction-engines announced for 9 o'clock would have to be postponed. The day, however, brightened up, and after many delays had taken place, a traction-engine came up the road at last, followed, with some intervals between them, by five others. Then more delay took place in fetching coals and water, putting out fires and lighting them again, and so on, so that it was more than half-past 2 o'clock before the first could be started. The rule was that every competitor had to declare the weight he wished his engine to draw, and this being weighed out to him in pig iron, the engine was expected to pull it round the course the engines had run on Saturday. A plan of the course, with gradients, had been furnished to every competitor by the Society's engineers.

"The first engine to start was Aveling & Porter's 6-horse agricultural locomotive engine, the same which ran round the mile and three-quarter course on Saturday in 22 minutes. Its price is £300. It has ordinary driving wheels, 5 feet high and 10 inches wide, to which, on soft land, are fastened angle-irons and spikes, to prevent slipping; and on this occasion, the ground being wet and slippery, their aids were very necessary. It steers by worm and wheel motion from the driver's tank. The hind wheels are driven by the ingenious 'compensating motion,' or 'Jack in the box,' as the men call it, which enables the outside wheel only to revolve in turning round a sharp corner, and checks the pace of the other in rounding a curve. The diameter of the cylinder is 7¾, and the stroke is 10 inches. The gross weight, including driver, coals, and 105 gall. of water, was 5 tons 4 cwt. The weight declared to be drawn was 5½ tons gross, including the waggon which carried the pig-iron. At 2.35 the start was made, and after a few stoppages on the bad places of the road, the little engine came in again at 3.27, having done the distance in 52 minutes.

"But before the first engine returned the next was started; this was Head & Thomson's patent farm steamer, manufactured by Ransomes, Sims & Head.

"It has an upright boiler with globular copper pot in the fire-box, two vertical cylinders overhead, 6 inches in diameter, and the stroke of the pistons is 10 inches. It has three wheels, with indiarubber tyres, those of the two drawing wheels being 5 feet diameter, 15 inches by 4½ thick. Weight, including coals, water, &c., was 10 tons 6½ cwt., and the load drawn was 5 tons. The engine started at 3.6, and it was soon seen that the rubber tyre was no match for the spiked or spudded iron wheel on wet slippery land. Once or twice the waggon had to be disconnected and chains used to pull the load along. Attendants with planks were frequently in requisition to prevent the smooth wheels from slipping round. At last the crucial point was reached—the engine had to descend into a sort of pit, and having done so it seemed quite impossible that it could ever get out again with its load.

"The waggon was unfastened, but the engine had to be jacked up and planks used before it could get out of the hole and on to level ground.

"To add to the miseries of the situation, a violent thunderstorm came pitilessly down, and drove most of the spectators to seek any shelter they could.

"Mr. Head, however, stuck manfully to his engine, and after some time succeeded in hauling the wagon out of its difficulty. Before, however, he had done so, and, in fact, before the rain came down, Mr. Burrell's 8-horse engine, with ordinary wheels, dragging 7 tons of load, came into the field, ran down the pit side, and after vigorously trying the impossible feat of going up the hill with the waggon, unhooked it, and having gained the level, pulled up its load with chains, and went on its way, and after having to unlimber again at a soft place in the next hedge, it got its waggon through at last, and reached the goal, having run its course in 61 minutes.

"The road steamer followed after some time, but found it quite impracticable to take its load home, so left it in the field.

"What made the misfortunes worse was that they happened under the very eyes of Lord Dunmore himself, and other influential friends of the road steamer. Mrs. Thomson, the wife of the patentee, was also present, and also a lady who had just travelled from Ipswich 170 miles with her husband in a carriage drawn by a similar engine.

"The 10-horse engine of Messrs. Aveling & Porter next went round the course. It is similar to the smaller engine, but its driving-wheels are 6 feet by 18 inches; piston, 10 inches diameter and 12 inches stroke; weight, 11 tons 4 cwt.; load, 9 tons gross, in two carriages. It ran round with hardly a stoppage, except to disconnect at the pit, and got home again in 61 minutes.

"This finished the trial, as Messrs. Tuxford & Sons withdrew; as did also Mr. Burrell, as regarded his road-steamer."

LABOURERS' COTTAGES.

The following design for a pair of cottages is contributed by Mr. Bailey Denton, jun. It will probably be recognised by many of our observant readers as an old friend in a new dress. There is a proverb which says, that there is "nothing new under the sun;" and Mr. Denton reminds us that the original idea portrayed in this drawing was derived from the design usually called "the Leeds plan," for which Messrs. Ross & Richardson, of Darlington, most deservedly received a prize in 1861. It has, however, undergone considerable alteration; both the ground and chamber floor plans have been re-arranged, and the elevation and details of construction have been altered and modified, and, Mr. Denton hopes, improved. The agreeable appearance of the front elevation (fig. 188) has always attracted landowners, who have also appreciated the very convenient character of its internal accommodation. The living room, scullery, and pantry open into a roomy entrance or lobby, from which also springs the staircase (fig. 189). There is a capacious closet under the stairs.

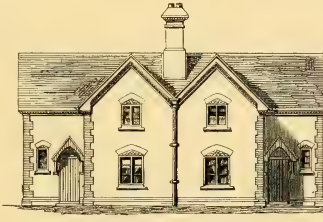

Fig. 188.—Elevation.

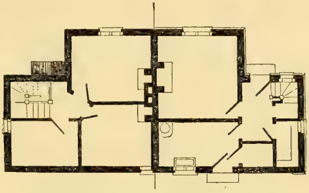

Fig. 189.—Ground and chamber plans.

The cubical space contained within the cottages is as follows:—Living-room, 1200 feet; scullery, 672 feet; pantry, 196 feet; fuel store, 126 feet; lobby, staircase, closet, and landing, 982 feet; parent's bed-room, 881 feet; second bed-room, 722 feet; third bed-room, 525 feet, which together make a total of 5304 feet cube.

The cottages have varied considerably in price; in fact, from £300 in Wiltshire, to £200 in Shropshire per pair; but we may state that the average cost, without outbuildings and fencing, has been £285 the pair.

They have been erected under the superintendence of Messrs. Bailey Denton, Son & North, in many parts of England—amongst others on the Combermere Estate in Cheshire, the Cheswardine Hall Estate in Shropshire, the Walton Hall Estate in Yorkshire, the Henlow Grange Estate in Bedfordshire, and the Belmont Estate in Herefordshire.

A VALUATION OF MANURES.

[The following report, by Dr. A. Cameron, Dublin, has been published. It was addressed to the Secretary of the Queen's County Agricultural Society, which has shown the good example of protecting the interests of its members and subscribers by submitting samples of the manure they purchase to an analytical chemist.]

I HAVE altered the money values which I formerly attached to certain of the ingredients of artificial manures. These changes will be best understood by reference to the following Table:—

Money Values of the Constituents of Manures.

	Present Values per Ton.				Values last Year per Ton.		
	£	s.	d.		£	s.	d.
Ammonia	80	0	0	Ammonia	70	0	0
Biphosphate of lime	30	0	0	Biphosphate of lime	36	0	0
Phosphate of lime ..	10	0	0	Phosphate of lime ..	9	0	0
Sulphate of lime ..	2	0	0	Sulphate of lime ..	1	10	0
Alkaline salts ..	1	10	0	Alkaline salts .	1	10	0
Organic matter ..	0	10	0	Organic matter ..	0	10	0
Potash salts ..	16	0	0	Potash salts ..	20	0	0

Ammonia.—This year manufacturers have not been able to procure ammonia at less than £66 per ton, whilst some of them have paid during the present £80 per ton of this substance. As, however, any farmer can buy sulphate of ammonia at £20 per ton (*vide* "prices current"), and as that salt contains 25 per cent. of ammonia, it is evident that the chemist would not be justified in placing a higher value than £80 per ton on ammonia.

Soluble Phosphates. — Superphosphate of lime is now produced of better quality than was formerly the case; instead of containing from 20 to 25 per cent. of soluble phosphates, it now includes from 25 to 35 per cent. of soluble phosphates. As the price of this manure has been somewhat reduced, and as its composition has undergone improvement, I have decided to value biphosphate of lime at £30 per ton, instead of, as formerly, £36 per ton. I would place a higher value on it were it not that the sulphate of lime with which it is associated is valued at 30*s.* per ton.

Soluble phosphate of lime is prepared by acting upon insoluble phosphate of lime by means of sulphuric or muriatic acid. Whether obtained from bones, or guano, or from coprolites, and similar stony substances, soluble or biphosphate of lime is equally valuable to the farmer.

It cannot, however, be produced so cheaply from guano or bones as from coprolites and other mineral phosphates; but that is a matter which concerns the producer, and not the consumer of soluble phosphates. The artificial manure manufacturer can purchase phosphate of lime at less than £5 per ton in coprolites, whereas he cannot obtain it for less than £8 10*s.* per ton in the form of bones. But why make soluble phosphates from bones? Bone soluble phosphate is precisely the same thing as coprolite soluble phosphate. No chemist could discover the slightest difference between them, for there is none. Therefore, even in "bone superphosphates," all the soluble phosphates should be derived from a mineral source or from bone-ash, whilst all the insoluble phosphates should be in the form of bone, or of soft guano. There may be practical difficulties in the way of producing a manure all the soluble phosphates in which would be derived from minerals, and the insoluble phosphates from animal substances; but the difficulties are not insuperable, and until they are overcome, a bone manure cannot be made as cheaply as a compound of equal value prepared from mineral superphosphate and sulphate of ammonia.

Insoluble Phosphates.—The farmer can purchase earthy phosphates (insoluble phosphates of lime and magnesia) at £10 per ton in bone-ash or bones (allowing for the amount of ammonia yielded by the latter). I, therefore, value the insoluble phosphates in manures at £10 per ton. I am aware that when farmers buy insoluble phosphates in the form of guano they pay more than £10 per ton for it, even when the dealer only makes a legitimate profit by the sale of the article. In some guanos, no doubt, the phosphates are probably in so fine a state of division that they would dissolve more readily in the soil than the phosphates in bone-ash (burnt bones); but still I am of opinion that the earthy phosphates should be sold retail at the rate of £10 per ton, and at that price farmers may procure them in bones and bone-ash.

Insoluble phosphate of lime is of but little, if any, value when it is a constituent of coprolites and dense minerals, such as phosphorite, &c. Manures which contain only from ½ per cent. to a mere trace of ammonia, and from 25 to 35 per cent. of soluble phosphates, are made from minerals or bone-ash. In the former case their insoluble phosphate is of no use;

in the latter it is valuable. Now, practically, it would be impossible to determine whether the insoluble phosphates in a manure are derived from bone-ash or minerals, and therefore I think it the better plan to value uniformly the insoluble phosphate in all kinds of manure at £10 per ton. It will, however, be found that the money value of the high-class so-called mineral superphosphates is but very little influenced by the value placed upon the amount of insoluble phosphates which they contain.

In valuing the manures analysed for the Queen's County Agricultural Society, I think it an excellent plan to value the more important ingredients separately. By this method it will be seen to what extent the amount of ammonia or soluble phosphate influences the total value of the article. By studying these figures the intending purchaser may easily determine the relative values of the different manures as sources of ammonia, &c.

I must now state that the money value which I have placed upon each manure now reported upon refers to its sale in Dublin; therefore your members cannot expect that its money value will not be increased by 8*s*. or 10*s*. per ton when it is sold in the towns in the Queen's County. You may, therefore, add, say 10*s*. per ton to the money value which I have affixed to each manure. Let it be clearly understood that when my value of a manure equals its selling price, the purchaser of it may rest satisfied that he is getting the maximum amount of value for his money.

The manures which I have this year examined for you are, on the whole, very good. The superphosphates are, with but very few exceptions, very rich in soluble phosphates. You have only sent me one specimen (No. 1) of nitrogenous guano, and that I find to be extremely rich in ammonia. I notice, however, that there is a large amount of volatile ammonia contained in this manure, and I would therefore recommend the purchasers of it to mix it immediately with a little oil of vitriol, or with mineral superphosphate of lime, either of which will "fix" the ammonia. One manure (No. 20) contains nearly 41 per cent. of soluble phosphate, and no insoluble phosphate. No. 28, on the contrary, contains 12.23 per cent. of soluble phosphates, and no less than 40.56 per cent. of insoluble phosphates. The addition of sulphuric acid in sufficient quatity would have rendered No. 28 a very valuable manure.

I regret to state that the specimens of Peruvian guano which I have analysed this season are, with few exceptions, very inferior to former years' importation. Indeed, this manure is now very often not worth the price demanded for it, and I would not recommend farmers to purchase it unless it is guaranteed to contain at least 11 per cent. of ammonia. I must also caution your members relative to the potash manure termed kainit, of which there are many spurious samples at present in the market.

Home Correspondence.

Mr. Morgan's Decimals.—As Mr. Morgan began this controversy in your columns, I am sure you will allow me a small space for a reply to his last. It is a fact that Mr. Morgan owes his position as secretary of the company which I created—the Metropolitan Sewage Company—as well as his connection with sewage in any and every way, to me, and to me alone. It is also a fact that in 1865, although Mr. Morgan was, as he confesses, "ignorant of everything connected with practical sewage farming," I had already made a special study of the subject for five years. These facts I never should have alluded to, because of their personality, had it not been for another fact, and that is, that of all the causes operating to retard the utilisation of sewage throughout the country, the chief cause is the obstructive inaction of the Metropolis Sewage Company; for it is a common argument in the mouth of a provincial town councillor opposing sewage irrigation, that it must have failed at Barking, otherwise the Company would have carried out the works. And, according to Mr. Morgan's figures, it has "failed at Barking"—utterly, hopelessly—for out of the 8*s*. a-head which the sewage is intrinsically worth, he declares, in effect, that he is obliged to waste 7*s*. 6*d*. in order to save 6*d*. It has, therefore, unfortunately, become a national necessity that the complete worthlessness of Mr. Morgan's statements, and the unscientific fallacy of his decimals, should be authoritatively exposed. I challenged him to submit our respective statements to the implement judges of the Royal Agricultural Society. He shirks my challenge, because his figures are purely imaginary, and he dare not face an investigation; but I pledge myself to bring the matter before the Council of the Royal Agricultural Society as a question of the greatest possible importance. Meanwhile, your readers will no doubt hesitate to accept Mr. Morgan's figures. *W. Hope, Parsloes, July* 1.

Mr. Denton's Cottages.—The fair spirit shown by Mr. Makins in his criticism of our designs may well claim acknowledgment, for it is by such means that truth will be elicited and satisfactory results obtained. In the first place, I must remark that in the design specially alluded to by Mr. Makins—as well as in all others which we may, through your kindness, present for illustration in the *Agricultural Gazette*—the regulations with regard to "space within the cottage" laid down by the judges of the cottage designs exhibited at the Royal Agricultural Society's show at Manchester in 1869 (see p. 564, vol. v., part ii., of the second series of the Society's Journal), have been as far as possible observed. They are as follows:—

Report of the Judges on Plans.

"The judges, on entering upon their duties, determined that no design afforded sufficient space unless the floor of the living-room contained an area of 150 square feet, that of the parents' bedroom 100 feet, and those of the children's rooms 70 feet each; while the height between the floor and the ceiling of the ground floor should not be less than 8 feet, and that of the bedrooms 7 feet 6 inches, thus affording a minimum breathing space in the living-room of 1200 cubic feet, in the parents' bedroom of 750 feet, in the children's bedrooms of 500 feet each. They considered that the 'arrangement and convenience' essential for the comfort of a labourer's family should include a scullery containing at least 550 cubic feet, a pantry with shelves, having a cubical area of at least 250 feet, and a cupboard for fuel within the dwelling, as well as a copper or galvanised iron boiler, either in the dwelling or in an adjoining outbuilding, together with proper privy or earth-closet; water supply, including pump; and a perfect drainage of the whole premises."

By a comparison with these rules I find that, whereas the accommodation provided in our design is generally in accordance with the figures just quoted, the cubical contents in the third bedroom in Mr. Makins' design are 28 feet less than those fixed by the judges as the least that should be adopted. Again, with respect to the pantries: although our dimensions are somewhat smaller than those taken as a standard by the judges, we are afraid it will frequently be found in actual experience that they are quite large enough for the limited supply of provisions they are intended to hold. The staircases, which Mr. Makins says are "narrow and awkwardly twisted," are of our ordinary width, and are purposely placed behind the door as being out of sight and out of the way, and not too easy of access from the village street. I must repeat, also, that it is not in our opinion advisable to place the pantry in direct communication with the scullery, especially when a boiler is placed in that apartment, and washing is likely to be done there and not in an outbuilding. One more remark, and I have done. Mr. Makins calls attention, with some degree of pride, to the exceeding plainness of his design. I agree with him that convenience and economy should have the first consideration, but I must also add that we have found in practice that designs of cottages may be made too ugly, and that landowners consequently are deterred from erecting them, especially on residential estates, where an agreeable elevation has a certain monetary value. I hope that each specimen we tender will be criticised, and in the same spirit as that adopted by Mr. Makins. Permit me to say, in conclusion, that I think you will do great service to the agricultural interest if you succeed in presenting the cottage question in such a way as to elicit discussion on the several features which govern the cost. By such means we may get rid of delusion and arrive at facts. *Arthur Bailey Denton* (*for partners and self*), 22, *Whitehall Place.*

Adulterated Oilcake.—The unexpected publication in your journal of my letters to Dr. Voelcker of May 23 and 29, respecting some cake sold by auction by Mr. Watling, of Great Yarmouth, has caused that gentleman great annoyance, and me much pain, for having unintentionally occasioned it; and I hope that, for both our sakes, you will publish this letter in your next edition. I did not purchase of Mr. Watling the cake referred to in my letter of April 23, but simply, at that gentleman's request, tried the effect of it upon my cattle, and afterwards sent some of it, by his desire, to Dr. Voelcker to be tested; and in my answer of the 29th to the Doctor's question of "Who was the seller of the above-mentioned cake, and the price it was sold at?" I answered that the price was £10 per ton. Unfortunately I added, "but, finding it produced disease in many cattle that were fed with it, Mr. Watling sold the rest by auction,"—which, Mr. Watling assures me, is altogether devoid of fact. Had I contemplated my letters being published, I should have sought further information before I replied. I now learn from Mr. Watling that no complaints were made of the cake up to the time of the auction; nor, indeed, until two of the purchasers at it communicated their complaints to the auctioneers, except only one by a gentleman who had purchased some prior to the auction, and, as he did not press his complaint, Mr. Watling took his to be one of the many cases which he believes frequently occur, when well-fed beasts are put on a change of cake, and this was also the opinion of an eminent chemist who tested some which was sent him to analyse. Mr. Watling further assures me that he sold only a portion of the cake in question by auction, with two other parcels, simply because his stock was in excess of his requirements, and the season near a close, as he has been accustomed to do; but he kept the remainder, and went on supplying his customers with it for nearly a fortnight after the auction, and until he learnt from the two auction purchasers the effects it had had on their cattle, and which (risking the loss of good customers) he would never have done had he known of what the cake was composed. It would seem, therefore, that the cake was bought and sold in ignorance of its deleterious composition, and I much regret that my letters should have raised a question regarding Mr. Watling's integrity in a matter which appears to have been conducted, on his part, without intention to do wrong to any one. *George Varnell, Beech House, Belton, Suffolk, June* 22.

Crops in East Lothian.—The bean land Wheat is this year very luxuriant; there are also some good fields after Turnips, particularly that portion sown in spring. However, in this neighbourhood, the larger part of the Wheat crop is after Potatos, and it is both light and thin on the ground, the straw being short, with rather under-sized heads; still, taking the crop as a whole, with good weather and a favourable harvest, it may ultimately prove an average. Barley has every appearance of being a large crop. The earliest sown fields are now in ear, and the straw is of great length. Oats have rarely looked worse, being apparently diseased at the root, and throughout the county a good field is the exception. Beans are excellent, and at present are loaded with blossom. The Potato crop, as a whole, is highly promising, though on different farms there is almost a total failure on late-planted fields. It is said, where planting was interrupted for a fortnight in April by the wet weather, the sets were lying cut, and thus became heated. Perphaps fully one-third part of the Turnip crop has been already singled, at present it may be considered promising. Hay cutting has commenced, the Rye-grass is tall, but from the deficiency of Clover plants, the weight per acre will not exceed an average. *July* 3.

Cabbages.—In a recent number of the *Agricultural Gazette*, p. 782, there is an article on the cultivation of this most valuable food for the stock of the farmer, a record of the seven years' experience of the writer. He writes—"Have any of our readers discovered a plan for keeping Cabbages?" I have had more than 20 years' experience of the value of this plant to the stock farmer, which has led to my considering it, if not the most valuable, at least of as great a value to him as any plant grown on a farm. I stated as much in my "Handy-book for Young Farmers" some 14 years ago, in which will be found, at p. 21 of the 2d edition, directions for the cultivation, which I had found successful. I have tried various modes of preserving Cabbages into the winter, the following I have found to be the most successful. My Drumhead Cabbages are fully grown and ripe at Michaelmas, and are then nearly as solid and hard as a Turnip. Lift them any time before frost occurs after some drying weather; cut off the stem an inch or two beyond the outer leaves with a bill-hook, and then place the Cabbage, stem upwards, on the surface between the rows (discarding any immature or inferior plants for present use), close in single line; and then cover the row with earth taken from each side side in a dry state, 3 or 4 inches in thickness, Into these trenches any rain will drain off down the outer leaves. The natural constitution of Cabbage does not admit of its preservation like other roots exposed to alternate rains and frost after the end of October; but mine, treated as above last year, formed most nutritious and useful food for milch cows, &c., into January last. Much of the early success in setting out Cabbage plants depends on the use of the small 3-pronged hand-fork, as I have explained elsewhere, both in taking up the plants and re-planting them. Thrust in the fork below the roots, and loosen the soil, when the plants come forth easily without breaking off the feeding mouths, and with some earth attached; then the planter, with a similar fork or a trowel, loosens the earth, and lays in the plant flat, without drawing upwards, as they are too apt to do. The plants so treated will hardly feel the removal, and will grow away freely. Never allow the plants to be pulled up, breaking off the material part of the root, and to be replaced with a setting-pin, the usual course, in a firm round hole. Every "setting-pin" ought to be burned. *Charles Lawrence, June* 26.

Utilisation of Sewage.—Your correspondent "F. P." is a funny fellow, and must, I presume, have been educated in the Circumlocution Office. He writes to you to ask Mr. Mechi to ask me the yearly quantity and value of the sewage of Romford, which I receive on my farm of "Breton's." I much fear he is not the simple and innocent inquirer after truth that he assumes to be; however, whether friend or foe, he is welcome to the information. "F. P." will find full details as to the town of Romford and Breton's Farm in the last Report of the British Association [London, John Murray], which contains the report of the committee appointed at the meeting at Exeter to investigate this subject; meanwhile I may assure him that the sewage of Romford does not average 100 tons per head per annum. The population is estimated (the Census return is not yet published) at from 7000 to 8000, and the average dry weather sewage at 247,000 gallons daily, equal in round numbers to 1100 tons. This is received in tanks, where it is stored, so as to admit of the whole 24 hours sewage being pumped in a day of 10 hours, and of the Sunday's sewage being pumped on the Monday. "F. P." therefore never saw any statement of mine that the pump "was worked continuously night and day." I pay £600 a year for the sewage. But the annual value of the manurial ingredients of the sewage, or rather of the liquid and solid excreta of "man," excluding kitchen waste and wash-house and bed-room soapsuds, has been ascertained by numerous and careful researches to be about 8*s*. per head of a mixed population of men, women, and children, just as the value of the mineral ingredients of the liquid and solid excreta of sheep is about 5*s*. per head per annum. In other words, this is the market price that shrewd money-making farmers give for the same substances in other forms, although until they are reduced by rain to the same state of solution as that in which they exist in sewage, they are of no use to vegetation. The value of the Romford sewage is, therefore—if the population is 6000, £2400; if the population is 7000, £2800; if the population is 8000, £3200. But although I sewage some 20 or 30 acres of my neighbour's land, and about 115—not 100—of my own, I still have not land enough to work up the whole of the manure contained in the sewage. I am not responsible for having chosen the farm, which I consider altogether too small for the sewage of even 6000 people. I purify, but I do not really utilise, the sewage of Romford. Finally, Mr. Editor, if "F. P." is serious, and will bring a certificate from you that he is really an anxious inquirer after truth, he shall have every other information and assistance that I can give him. *W. Hope, Parsloes, July* 1.

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, July* 5.—Present: Lord Vernon, President, in the chair; the Duke of Devonshire, K.G.; the Earl of Powis, Viscount Bridport, Lord Chesham, Lord Kesteven, Lord Tredegar, the Hon. H. G. Liddell, M.P.; Mr. Acland, M.P.; Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clive, Mr. Dent, M.P.; Mr. Holland, Colonel Kingscote, M.P.; Mr. Leeds, Mr. Masfen, Mr. Ridley, M.P.; Mr. Shuttleworth, Mr. Thompson, Mr. Torr, Mr. Wells, M.P.; and Professor Simonds.

The following new members were elected:—

Asterley, William Lloyd, The Pentief, Llanymynech, Oswestry.
Bagnall, George, Draycot, Cheadle, Staffordshire.
Baily, John, Python Hill, Mansfield, Nottingham.
Baldwin, Wm. J. A., Dalton-in-Furness, Lancaster.
Barber, Richard, Harlescott, Shrewsbury.
Bate, John Wm., Astol, Shifnal, Salop.
Billington, J. S., Netherset Hey, Madeley, Staffordshire.
Briggs, Thos., The Homestead, Richmond, Surrey.
Brown, Charles, Park Hall, Leigh, Cheadle, Staffordshire.
Brown, Richard, Ruyton Eleven Towns, Salop.
Bulkeley, T. F., Clewer Lodge, Windsor, Berks.
Cannon, H. R., Nagpore, India.
Carr, Wm., Dene Park, Tonbridge, Kent.
Cottle, George, West Felton, Shrewsbury, Salop.
Cope, T. Berwick, Tettenhall, Wolverhampton.
Corbett, W. A., Dumbleton, Evesham, Gloucester.
Davys, W. H. Campbell, Nenadd-fawr, Llandovery, Carmarthen.
Elwell, Paul, Evelith Manor, Shifnal, Salop.
Ford, John, Portland Lawn, Leamington.
Ford, W. H., Merridale, Wolverhampton.
Gibbon, Hy. J., Holmescales, Milnthorpe, Westmoreland.
Gosling, J. W., Little Bradley Place, Newmarket, Suffolk.
Griffin, Thos. J., Preston Vale Farm, Penkridge, Staffordshire.
Griffiths, R. C., Park Farm, Broughton, Chester.
Hollis, Edward, Steam Mills, West Felton, Salop.
Hope, Wm., Parsloes, Barking, Essex.
Ironmonger, T., Wolverhampton, Staffordshire.
Jones, G. Stow, Downham Market, Norfolk.
Kempster, Wm., New Cuckett, Ellesmere, Salop.
Kelsall, Thos., Bethsfield, Whitchurch, Salop.
Langford, Wm., Cherbury Hall, Salop.
Lloyd, David, The Hayes, Oswestry, Salop.
Lyne, R. S., Compton, Winchester, Hants.
Mackenzie, J. H., Northwood, West Hoathley, Sussex.
Menzies, G., Trentham, Stoke-on-Trent, Staffordshire.
Miller, J. N., Pathingham, Wolverhampton.
Mytton, D. H., Garth, Welshpool, Montgomery.
Neame, Edwin, Harefield, Selling, Faversham, Kent.
Nutt, John, Fillougby, Coventry.
Pearson, J. C., Newbridge, Wolverhampton.
Pooler, Hy., Calvington, Newport, Salop.
Price, Andrew, Bagley, Ellesmere, Salop.
Rigg, Joseph, Fellongley, Coventry.
Robinson, John T., Leckby Palace, Asenby, Yorkshire.
Saunders, G. J., Oswestry, Salop.
Smith, Henry, Harnage, Shrewsbury, Salop.
Smith, Henry Wm., Evesham.
Stanley, Hy., Yieldfields Hall, Bloxwich, Walsall, Staffordshire.
Stewart, M. J., Ardwell House, Stranraer, N.B.
Strongitharm, G., Rushall, Walsall, Staffordshire.
Taylor, Wm., Barnhurst, Tattenhall, Staffordshire.
Tennant, James, Newstead, Nottingham.
Thomas, Edward, The Cross, Oswestry, Salop.
Thomas, Richard, The Buildings, Barchurch, Salop.
Thomas, Thos., Treprenal, Oswestry, Salop.
Thompson, Wm., Walton, Stone, Staffordshire.
Turner, E., M.P., Panton Hall, Wragby, Lincoln.
Wall, Wm. H., Pembury, Tunbridge Wells, Kent.
Wallis, Robert, Stocksfield, Northumberland.
Walters, Stanley, Blythbury, Rugeley, Staffordshire.
Wardle, Joseph, Old Fens Hall, Whitchurch, Salop.
Walker, John, Oil Mills, Leamington.
Whitfield, Edward, Oswestry, Salop.
Williams, M. Dryton, Wroxeter, Shrewsbury, Salop.
Williams, W. G., Bodulwyddan, St. Asaph.
Willis, H. R. D'A., Budgefield House, Halewood, Liverpool.
Wise, J. P., Rostellan Castle, Cloyne, Ireland.
Woodward, F. Spooner, Blake House, Great Saling, Braintree, Essex.
Wright, Lyons, 24, Worcester Street, Wolverhampton.
Yates, F. G., Iron Bridge, Salop.
Yates, James, Atchley, Shifnal, Salop.

FINANCES.—Major-General Viscount Bridport (chairman) presented the report, from which it appeared that the secretary's receipts during the past month had been duly examined by the committee, and by Messrs. Quilter, Ball & Co., the Society's accountants, and found correct. The balance in the hands of the bankers on June 30 was £2528 17*s*. 11*d*., and £2000 remains on deposit. The quarterly statement of subscriptions and arrears to June 3, and the quarterly cash account, were laid on the table.—This report was adopted.

JOURNAL.—Mr. Thompson (chairman) reported that it was in contemplation to obtain an article for the February Journal, containing suggestions for the improvement of Irish agriculture, with a view to increasing the production of live stock.—This report was adopted.

CONSULTING BOTANIST.—Mr. Thompson (chairman) reported that in pursuance of the power delegated to this committee by the Council at its last meeting they had appointed Mr. W. Carruthers, F.R.S., and chief of the Botanical Department of the British Museum, to be Consulting Botanist to the Society. A list of the members' privileges, with a scale of fees, will be published in the next Journal.—This report was adopted.

HOUSE.—Major-General Viscount Bridport (chairman) reported that several ceilings require whitewashing, and that a new carpet and rug is required for one of the Society's rooms, and a clock for the library.—This report was adopted.

SELECTION.—Mr. Thompson (chairman) reported that the committee recommended the election of Mr. Brandreth Gibbs as a Vice-President in the room of the late Mr. Samuel Jonas. This report having been adopted, Mr. Brandreth Gibbs was, on the motion of Mr. Thompson, seconded by Lord Bridport, unanimously elected a Vice-President of the Society.

CHEMICAL.—Mr. Wells, chairman. The committee reported that Mr. Wells and Mr. Dent, on behalf of the Chemical Committee, together with the President and Mr. Thompson, had a consultation with the counsel engaged in the case of Bradburn *v*. Royal Agricultural Society, and the result of their interview is fully explained in the report of what took place in the Court of Exchequer before Baron Bramwell. The committee regret that they did not attach sufficient weight to the explanation placed before them by Mr. Bradburn as to his connection with the sale of the manure, and recommend that the report of the proceedings in court be published in the Journal. Professor Voelcker had reported that several cases of death have occurred amongst cattle fed on a patent cake, and a communication had been received from the Marquis of Exeter on the same subject,—a yearling bull and Shorthorn cow, together with three pigs, having died suddenly at Burghley, with all the symptoms of blood poisoning in their system after being fed on this cake. A heifer had also died at the Royal Veterinary College, after being fed on the same cake for 17 days. The condition of the cake appears sufficient to cause injury, but the committee having received another sample of it from the Marquis of Exeter, had requested Professor Voelcker to make a more detailed examination, and a full report of this sample, and also to procure a sample of fresh cake for the purpose of comparison. The committee wish to call the special attention of the Council to the opinion of Professor Voelcker on the subject of stale and mouldy cake, as given at pp. 142, 143, vol i., 1865, and further to the caution which should be exercised in the purchase of cakes composed of several different ingredients, any one of which ingredients being in bad condition may have the effect of setting up decomposition in the other constituents of the cake, and thus produce injury to the stock using it. In reference to the case of a patent blood manure, sent by Mr. F. Minett, the committee have received an explanatory statement from the makers, Messrs. Griffin, Morris & Griffin, which they recommend shall be inserted as an appendix in the next issue of the Journal. This report having been adopted, it was moved by the Earl of Powis, seconded by Mr. Leeds, and carried unanimously, "That the Council approve of the course pursued as to the action with Mr. Bradburn by the President and gentlemen who attended the consultation with Sir John Karslake."

VETERINARY.—Major-General Viscount Bridport (chairman) reported that the committee had had an interview with the General Purposes Committee of the Royal Veterinary College, at which it was ascertained that there was considerable difference of opinion between the Veterinary Committee and the Committee of the Royal Veterinary College. A copy of the Council minute of June 5, 1861, which contains the latest arrangement in reference to veterinary privileges made between the Council of this Society and the Governors of the College, has therefore been forwarded to the Governors, with a request that they would communicate officially their views on the subject. As the August Council meeting is generally thinly attended, the committee suggested that they should defer making their report until the November Council. Professor Brown having been requested to visit Coldham Hall for the purpose of investigating a serious outbreak of splenic apoplexy amongst cattle, the committee presented his report, and recommended that it be published in the Journal and his expenses paid. The committee also recommended that Professor Simonds be allowed the travelling expenses of two veterinary assistants at the Wolverhampton meeting, and also that the remaining half for experimental purposes, viz., £25, be granted. This report having been adopted, Professor Simonds made a statement in reference to the patent cake, which had been referred to by the Chemical Committee; and Mr. Torr stated that, as a preventive of splenic apoplexy, he had successfully used weekly doses of half an ounce of saltpetre; or, in the case of very large and heavy animals, as much as an ounce.

EDUCATION.—Mr. Holland (chairman) reported that the present system of examination had been commenced in 1868, when £60 were distributed in prizes. In the following year (1869) two life memberships were gained, and £75 were given away in prizes. In 1870 no prizes were distributed. This year two life memberships have been gained, and £60 have been awarded in prizes. Thus, in the four years, four competitors have been made life members, and the sum of £195 has been awarded in prizes.

In the first year (1868) 18 candidates entered, and 12 attended the examinations, but as no one passed in book-keeping, which was a *sine quâ non*, no prizes were awarded, although in other respects the results of the examinations were satisfactory.

In 1869 there were 21 entries, and 18 candidates attended; of these, two took a first-class, and eight were second-class men. In 1870 only two candidates entered; both attended, and both failed. This year there were nine entries, four attended; of the four two are first-class men, and have gained life memberships, and one has gained a second class.

The committee recommended that the usual fees be paid to the examiners for the present year, and stated their opinion that more time must elapse before the advantages arising from success at these examinations can be generally appreciated. They intended, therefore, at the August Council meeting to apply for a renewal of the grant on the same conditions, and on the same terms as those of last year.—This report was adopted.

The following noblemen and gentlemen were appointed a general Cardiff Committee:—Lord Vernon (chairman), Earl of Lichfield, Earl of Powis, Viscount Bridport, Lord Chesham, Lord Kesteven, Lord Tredegar, Sir Massey Lopes, Bart., M.P.; Sir A. K. Macdonald, Bart.; Sir Watkin W. Wynn, Bart., M.P.; C. E. Amos, C. Barnett, T. C. Booth, Edward Bowly, Charles S. Cantrell, D. R. Davies, Joseph Druce, W. J. Edmonds, B. T. Brandreth Gibbs, Richard Hornsby, C. Wren Hoskyns, M.P., Col. Kingscote, M.P., Robert Leeds, R. H. Masfen, Richard Milward, Charles Randell, R. C. Ransome, M. W. Ridley, M.P., William Sanday, Joseph Shuttleworth, William Torr, James Webb, William Wells, M.P., Charles Whitehead, Lieut.-Col. Wilson, Jacob Wilson, the Stewards.

Mr. Thompson having moved the following resolution:—"That in future the list of questions to be answered by towns competing for the country meetings shall include one calling for a statement of the maximum cost of the land required for the trial of implements, the acreage wanted being furnished by the Society," it was seconded by Mr. Torr, and carried unanimously.

Mr. Torr then called attention to the relaxation of the restrictions on the Foreign cattle trade recently made by the Privy Council, and to the injury which may have been thereby inflicted on English herds; he regretted especially that only 12 hours' quarantine was required to be passed by animals from foreign countries, and thought that it ought to be prolonged. He regarded the present scarcity of store stock as one of the results of the cattle plague, and he, therefore, viewed with alarm the result of allowing cattle to be imported from Hamburgh, as had recently been the case, according to his information, into Great Britain, through the port of Grimsby.

Prof. Simonds, as connected with the veterinary department of the Privy Council, wished to state that the reports which appeared in the newspapers from time to time were often either erroneous or greatly exaggerated, and he stated that the statement quoted by Mr. Torr in reference to importation of cattle from Hamburgh was utterly untrue. No cattle are allowed to be imported into the British Islands, unless slaughtered at the port of landing, except those from Holland, Spain, and Denmark: and these countries do not allow the importation of cattle by land or sea Formerly the importation of cattle into Holland, and their transit through that country, were sources of considerable revenue to its Government; but both these branches of the cattle trade had been suppressed by Royal proclamation for the sake of preserving the export trade. The cattle were all carefully examined before being shipped, and after arriving in England two separate inspections were made at intervals of not less than 12 hours, therefore the risk was reduced to a minimum. If, however, any case of disease were discovered, the whole cargo was immediately slaughtered, and the ship cleansed and disinfected; and the owners of each vessel engaged in conveying cattle from Holland, Denmark, and Spain, were required to give a bond to the amount of £1000 that it had not been employed for the conveyance of cattle from the scheduled countries. In answer to a question by Mr. Dent, he added that pleuro-pneumonia was not prevalent in Holland, except in a very limited district.

Mr. J. Dent-Dent, M.P., considered that Mr. Torr had raised a very important question, and that Professor Simonds' explanation of the regulations of the Privy Council was very satisfactory. If the Council of the Society were of opinion that the importation of store stock should be prohibited, then they ought to make that representation to the Privy Council; but if they were not prepared to recommend so serious a prohibition, he did not see that they could recommend that any additional precautions should be taken.

Mr. Thompson concurred in this view, and thought that the alarm of people on this question often arose from ignorance of the precautions that were adopted, and he also considered that any considerable extension of the period of quarantine would put a stop to the trade in foreign cattle.

Mr. Dyke Acland, M.P., also expressed his satisfaction at hearing the explanation given by Professor Simonds, and he felt that the agricultural public ought to have the statements that had been made placed before them in an official form; he therefore moved:—

> "That the Council having heard a statement from Professor Simonds, as to the present regulations of the Veterinary Department of the Privy Council, and as to the precautions adopted with regard to the importation of foreign stock, are of opinion that it would be desirable to obtain such a statement in an official form, and consequently that the Privy Council be requested to allow Professor Simonds to communicate to the Council of the Royal Agricultural Society for publication the exact regulations and restrictions under which the importation of foreign cattle is now carried on."

This resolution, having been seconded by Mr. Thompson was carried unanimously.

EAST KENT.

Land Drainage—At a meeting of the Chamber of Agriculture, held at Canterbury, Mr. **Webb**, of Sittingbourne, read the followng exhaustive paper on this subject:—

He said: I think the subject of drainage, proposed for to-day's discussion, is one that may very properly follow the last we heard in this room, namely, Mr. Aveling's excellent paper on steam cultivation, because I feel certain that on a clay soil you cannot thoroughly develope the full advantage of that new and useful system of cultivation without first obtaining perfect drainage, for the more stiff land is pulverised the more it will retain and absorb moisture. In a national point of view our subject is a very important one, for we have, according to the good authority of Mr. Bailey Denton, 20 million acres of undrained land throughout the kingdom, and we have many thousand acres in Kent. Now, as Mr. Baily Denton reckons that it will cost at least 100 million pounds sterling to perfect this class of land improvement, we must, I think, all regret that the surplus capital of this nation does not go more towards increasing the wealth and salubrity of our own island than in being drained off, as it is, in Russian, Turkish, and other foreign bonds. Although we read that the Romans well understood the art of drainage 2000 years ago, yet, until the commencement of the present century, the efforts of our own countrymen appear to have been most lax in getting rid of their superabundant water, nor was much good pipe drainage done until 1846, when Parliament granted 3½ millions of public money to be advanced to landowners on the security of their estates, both capital and interest to be paid off in 22 years. The avidity with which this loan was sought and expended soon gave rise to various companies, and we have now the Lands Improvement Company and several others, all of which are willing to advance money under the Private Moneys Drainage Act, the interest charged being generally at the rate of 5 per cent., and 1¾ per cent. per annum for the redemption of capital, thrown over a space of 25 years. I need hardly revert to the immense benefit which our country, but chiefly the agricultural portion, has obtained by the organisation of these public bodies. The impetus given to the improvement of estates has been immense, and a tenant for life of an estate has now the opportunity of expending money in permanent improvements without doing injury to the younger branches of his family. Although I have seen the operation of drainage in other counties, my own experience of the working part has been entirely confined to Kent, but I hope I may be allowed to say, without presumption, that I have had full opportunity of judging of the underground strata of this county, having had the superintendence of drainage works from one corner to the other. In early life I had the management of a clay farm, and I soon saw that without drainage there was an immense waste in the outlay both for labour and manure, and from the trials I made then, both by test holes and by draining parts at different depths, as well as by leaving intermediate spaces undrained, I came to the conclusion that deep drainage was the most effective; and I can say, after having done 6000 acres, at the cost of, perhaps, £40,000, that I never had to regret (even in a single field) going too deep, or the outlay that has been made. I will not say that the work has been done as well as I could have wished, but now that we get better workmen and better pipes we shall I hope also see an improvement in the work generally. I propose to consider the subject before us under four heads:—1st. Is drainage necessary at all? 2d. What is the best method of carrying out the works? 3d. What the probable cost? 4th. The advantages obtained.

1. *Is Drainage Necessary?*—I think that all land which requires surface furrows or open drains would pay to drain, for I cannot believe that stagnant water remaining in the soil can do any good, but the reverse; it must impoverish and deteriorate the better qualities of the earth, for after the land is drained the soil becomes a filterer, retaining the good properties which we are told both rain and snow bring down, while the roots both of plants and grass have freer action and go deeper in proportion as the water is taken away. In this we have one very good example. Upon undrained land, Wheat will frequently get root-fallen just previous to harvest, but we rarely notice heavy land, if it is drained, and at all in good heart, to be liable to root-fallen crops. I should say the simplest plan to find out whether the soil is surcharged with water is to dig a hole 4 feet deep, and to place four drain pipes upright, one on the other; if the water rises in the hole and remains in the pipes after three or four days, it is a clear proof there is a tenacious soil underneath which prevents the water from getting away. I believe there is a good deal of land, which, although it cannot be termed clay, yet, partaking of clay and loam, would pay to drain. I allude more particularly to those fields that we find feed badly with sheep, where in wet seasons, on Turnips, they will frequently be up to their hocks in mud; also there are many lands which, although no water is visible on the surface, require draining. For instance, I have seen several cases of marsh land where the surface has been so dry and sound that a four-horse waggon would hardly make an impression; and I remember one in particular which some members of the Farmers' Club came to see. The surface was quite dry and hard, and, but for the purple and sickly hue of the grass, one would hardly have dreamed of water. In cutting out the first 3 feet of these drains the ground was as dry as a road, but at 4 feet deep the water spun out so fast that the pipelayer could hardly see to lay the pipes. I must mention another circumstance which came across me this year in draining under the chalk hills near Charing. The field was known to be wet at times, but as it had to be cropped with Wheat, we were obliged to begin the work early. The soil was a chalk rubble, mixed with flint stones and a stiff clay, and the men had to pick-mattock the greater part; at 3 feet deep the soil was quite dry, but at 4 feet the water ran a stream. The field had previously been drained shallow, with but little good effect. In speaking of draining marsh land, I feel I am treading on tender ground, for I know many excellent graziers who would not have their marshes drained if done free of cost; but this I cannot understand, for while many disagree as to draining marsh land, there are few who do not approve of draining upland pasture. Now if it is right to take away the water in one instance, surely it must be in the other. No good gardener in these days attempts to water his plants at their roots, because they thrive so much better if the moisture is supplied on the surface, and I also think it must be most injurious for grasses to lie for months with moisture at their roots. The question I think is this: Is water remaining stagnant at the root of grasses injurious to them during the winter and spring months? and, remaining there, does it give moisture and assistance to the plant at the time of need, namely, the summer months? My opinion is, that by relieving land of water when it is overcharged, the soil is left in a better condition; it does not crack so much in hot weather, and the roots penetrate deeper; great improvement is also seen in the rills and low places; for whereas, undrained, they only produce coarse stringy grass, after draining they yield the best of herbage. Again, we have much land that rots sheep, and upon this there cannot be a doubt, for in some seasons the loss is immense. In 1860 I sent 40 sheep to one farm to be kept, and only one survived this disease—entirely occasioned by excessive wet.

2. *The Best Methods of Land Drainage.*—In passing on to consider the best mode of doing the work, it appears to me that in addressing the present assembly, consisting as it does of so many practical men, I shall be treating of matters which are everyday work to you, but unless I enter a little into detail I feel I shall not be doing my duty. The object of all drainage should be to make it as permanent as possible, and as the landlord has the most durable interest in the soil, he is, I think, the person that should have the work done, charging a percentage on the outlay. The system of the landlord finding tiles, and the tenant the labour, is most objectionable. I am not referring now as to whether the bargain is or is not a fair one, but, supposing that part to have been well considered, experience has taught us that under this arrangement a great deal of bad draining has been done, and money wasted, for a tenant has rarely a staff of men who understand the work, and each bottomer (as he is called) is allowed to lay his own pipes. Fortunately for us the great controversy as to deep and shallow draining is pretty well at an end; therefore we may, I think, consider that where 4 feet can be obtained, that depth should as a rule be adopted. I am of course in this (as in all other matters) speaking generally, because we now and then find a field in which, for want of fall or some other cause, it is preferable to go 3 feet. The only land I ever doubted as to the advisability of draining 4 feet deep is the Wealden clay, which we find abounding from Ashford to Bethersden, Tenterden, and indeed nearly through all the Dene into the Weald of Sussex; not that I am afraid as to the water getting down into a 4 feet drain, but whether the land is worth the additional expense, or, in other words, whether a 3 feet drain does not take off the water sufficiently for all farming operations. In one point there is, I think, a great difference between the yellow plastic clay of the Weald district and the blue or London clay which lies in the Beckenham, Sheppy, Hoo, and Whitstable districts; for, although both soils are equally strong and tenacious, yet it appears to me the blue clay opens the most in dry seasons, and this much assists deep drainage. I also think (but I may be wrong) that there are more fertilising powers in the subsoil of the blue than in the yellow clays, and where the roots run the most the water is certain to follow. I hope to see the day when a tramway will be laid from the range of chalk hills into the Weald; with the co-operation of the landed proprietors this might be effected at a moderate cost, and nothing would more benefit deep drainage than a good supply of chalk. On our most retentive clays it is, I think, a great mistake that because we put our drains deeper we should attempt to set them further apart; 6, 7, or in some instances 8 yards is quite wide enough. Knowing that Mr. George Neve, of Sissinghurst, has had several thousand acres drained under his management in the Weald of Kent, and knowing how practical he is in all matters connected with the cultivation of land, I have asked him for the benefit of his experience, which he has kindly given me. It is as follows:—"I may say in the first place that I am convinced that no rule should be laid down as to the depth of the drains, but that the nature of the soil should decide it. In no case that I am aware of has the 3 feet failed to drain the land perfectly in the stiff clays at 1 rod apart, and in the lighter soils at 1½ rod. The 4 feet drains have been put in from 1½ to 2 rods apart, and in a few instances even further apart. These have not in all cases acted so well. I find that even in the lighter soils the land is longer drying in the spring than with 3 feet draining." I shall also quote, with his kind permission, the opinion of another gentleman who has drained much in the same district, Mr. Rutherford, of Hothfield, who says:—"After trying several experiments with drains at different depths, my most shallow drains are now always 4 feet, even upon the stiffest soils, and I very much prefer this depth to anything less. I vary the width between the drains from 18 to 33 feet, according to the subsoil." Now, before quitting the point as to depth, I must further remark that hitherto we have not had the aid of so valuable an auxiliary as the steam-plough, for we shall now not only have the wet land ploughed as deep as may be required without the treading of two or four heavy horses up the furrows, but we shall have the benefit of subsoiling performed at a moderate rate, and this has hitherto been a very costly operation when done with horses; indeed, I look upon this as the greatest boon to the occupier of wet land, for before a good subsoiling alone cost from 22*s.* to 24*s.* per acre, and now I understand ploughing and subsoiling by steam can both be done for about 25*s.* per acre. In setting out the work, the first thing is to look well to the outfall, which should be placed so that there is no possibility of roots getting into the drain; there should also be no discharge or entry of any surface drain to cause a deposit to accumulate before the outfall, and it may be advisable, rather than choose a spot which will not give a depth of more than 30 inches, to carry the main across another field, which would give 4 feet. It also frequently occurs that a sufficiently good outfall cannot be obtained without getting the consent of an adjoining owner to cut through his field, and here, I may remark, that although the Land Drainage Act 1861 does provide powers for carrying a main drain or an open sewer through the estate of an adjoining owner, still it is to be regretted that, for all ordinary cases of drainage, the expenses incurred in carrying out the necessary forms are too great to enable persons to avail themselves of the provisions of the Act. If the outfall is placed in a ditch where there is a hedge, it is a good plan to have 3 or 4 feet of iron pipe of the same size as the main, as that effectually prevents roots getting in, and all drains (whether mains or minors) should be placed far beyond the range of Elm or Ash roots. I have known Elm roots to travel from 40 to 50 yards from the parent stock, and I much doubt whether a drain (even 4 feet deep) is ever safe from the reach of Lucerne roots, or a 30-inch drain from

those of Mangel or Carrots, for the moisture in a drain is always attractive to roots of any kind. We have found it better to dispense with any grating before the pipe at the outfall. In the spring following the completion of the works the outfall should be headed up with brickwork and Roman cement; all minor drains should be carried into a main, and not allowed to empty themselves into a ditch, for one outfall is much easier to watch and protect than so many. The main drain should be laid with a good fall and in an oblique direction to the minors, and when it is ascertained what area of land is to be carried to any one main drain, care must be taken that the size of the main pipe is all-sufficient. For instance, it will require a 3-inch pipe to carry 3 acres, a 4-inch pipe for 5 acres, a 6-inch for 12 acres, and a 9-inch for 30 acres, and so in proportion. The minor drains should be cut parallel to the rise of the hill, falling with a slight curve into the main, which is generally laid about 2 inches under the minor. I think all agree now that the drain acts much more evenly in this way than when the main is put across the slope, and anyone who has tried by test holes the two plans must have observed that the former is the best. The small pipes should be a good 2 inches in the clear, well burnt and evenly cut; but up to the present time few of our tilemakers have made the 2-inch pipes to the full size, and it is better to pay an extra 2*s.* per thousand than have them undersize. All the pipes should be laid by one foreman, or by a pipelayer assisting him, one then being made responsible for the efficiency of the work. The pipe should be turned on the hook until it fits well with the last one made, and after they are all in, the drain should have the even appearance of a length of rope. The pipe should then be covered with the stiffest soil, and no other cover is necessary except in sandy or gravelly soils, where it is frequently requisite to use straw to prevent the drain from silting, especially if the work is done in wet weather. Where the soil is all sand, it must be better to use collars with the pipes. I saw some very good work done in this way by Mr. Rutherford (whom I have quoted before). On the question of collars, he says:—"I very much prefer the pipe and collar to the old tiles and sole. First, they answer better in all soils; secondly, the water percolates as freely into the former as into the latter; thirdly, I have never had a pipe and collar drain stopped up by sand, but am always most careful not to have a sharp fall at the upper part and a less fall at the lower. The cost of the collars is 10*s.* per 1000." I hardly think it necessary to mention any other material than pipes. I have used stones, where they have been abundant, and where the distance to a tilery has been very great. Although they make an imperfect conduit, they have answered well, but I much prefer pipes; there is little saving of expense, except on the score of cartage. We have also used brushwood on a small scale in woods, where we have found the Oaks getting dead-topped and the Ash dying. The work has been done in this way: Instead of cutting the usual 2 feet grips, we have cut them 4 feet deep, and filled up about one foot of the bottom with furze or brushwood cut on the spot, and I believe the benefits will be very great and durable. The Oak timber is certainly wearing out fast on some soils, and if by the additional cost of 4*d.* or 6*d.* per rod the roots can be laid drier it is worth consideration. In draining marshes a sufficient fall can rarely be obtained by carrying a drain to the common ditches. We find it necessary generally to carry the outfall to the fleets, which formerly were the main estuaries of our creeks, for nothing less than 6 or 7 feet is of much use, as marshes are so flat and the water so sluggish, that unless the minors enter the main at about 5 feet 6 inches, the men have a difficulty to keep their depth. It is better not to run the minors in flat marshes beyond the length of 120 to 180 yards. On a hill district, such as Dover and Folkestone, we often find a strong clay soil overlapping a substratum of chalk or stone, and it is not unusual in such situations to find the fields dip to the centre, where there is no possibility of getting a main except at great expense, and in such places it will be found best to sink a small well, as the water then readily gets away through the fissures of the chalk or rock. I cannot pass on without alluding to one great assistant to our deep drainage, although we do trample him under our feet—I mean the worm. We have only to examine a good piece of porous brick earth, and we find the worms have sunk fine perpendicular holes at least 8 to 10 feet deep; and as the water is taken from clay, so it is found they increase and assist the fertility of the soil. At present we have hardly enough in our marshes, and I think we should do right to import some from the hill pastures, where they abound. To give you an instance that they do not naturally live in either wet or salt marshes, my grandfather enclosed about 100 acres from the sea at least 80 years ago, and the old "looker," who had lived there many years, told me he had never seen a worm on the island until we sent him some Mangels for the ewes.

3. *Respecting the Cost of Land Drainage.*—I think if I give an estimate of 1 acre drained at an interval of 18 feet apart and another at 33 feet, I shall be taking the width most usually adopted for the very stiff as well as for the milder soils. The prices for cutting are those which would be paid on an average of years; but after a very dry summer, they would not be sufficient. We have had to pay as high as 10*d.* or 11*d.* per rod when the work has commenced early after harvest, and 1*s.* 3*d.* to 1*s.* 6*d.* per rod where there has been much gravel. In Kent I find the cost of both labour and pipes to exceed the prices paid in other counties. This I consider we may attribute to the labour market being generally higher in this county.

Cost of Draining 1 acre, 21 feet apart, 4 feet deep.

	£	s.	d.
125 rods of cutting at 8*d.*	£4	3	9
2281 pipes at 22*s.* per 1000	2	10	3
Mains, labour and pipes	1	0	0
Heading drains	0	1	0
Laying in pipes	0	10	0
Cartage	0	6	0
Total	£8	11	0

Estimated cost, 33 feet apart.

	£	s.	d.
80 rods of cutting at 8*d.*	£2	13	4
1452 pipes at 22*s.*	1	12	0
Mains, labour and pipes	1	0	0
Heading drains	0	1	0
Laying in pipes	0	6	8
Cartage	0	4	0
Total	£5	17	0

4. *The advantages obtained* are so clear, that I need hardly take up your time much longer. That there is a considerable increase in the crop, and especially in wet seasons, is quite certain. To speak positively of the increased value from draining on pasture land is a much more difficult task; one can keep the produce of an acre of corn separate, but to say how much more weight of grass or extra quality in the grass is not quite so easy. I can, however, give you some data that it does pay to drain and improve marshes, and I shall give these results for what they are worth, because, besides draining, there have been other improvements made. In 1849 I had the management of 400 acres of marsh land; the land was all undrained, and more or less covered with rushes and ant-hills. The produce of wool for the first seven years 1849 to 1856 (before the land was drained) averaged yearly 25 pecks; from 1856 to 1863 (while the works were in operation) 31 pecks; from 1863 to 1870 (since they were completed), 37 pecks; being an increase of 12 pecks; and, as £19 has been the average price for the last seven years, the increased value has been £228 per annum. I think the produce of wool almost a better guide than that of mutton on such an occupation, because the returns from sheep vary so much both as to prices made and the mode of grazing. I am, however, bound to say that owing to the drought of 1868 and 1870, the returns for the last three years have been less than for any year since 1849; and although the land is improved the loss has been considerable, indeed no human power can withstand the effects of such seasons, and we must bend to the will of One who ordains all for the best. But from the closest observation I have made, I have not found that the drained marshes have suffered more from drought than the undrained. We have had for the last three years a less downfall of rain than for many years. I find the average has been (taken three miles from Sittingbourne, and 156 feet above the sea level) not quite 22 inches, whereas for the 20 years previous to 1868 the average was 27½ inches. We have, therefore, about 15½ inches due to give us the same average for 23 years. The consequence is, our marshes and grass lands have suffered much from the want of water, and they do not recover. Yet the cold stiff uplands never looked better. Why is this? Because they have had no excess of wet, and are enjoying natural drainage. As we cannot very well store our superfluity of winter water, we must look forward to devising some plan of irrigating our marshes by water supplied from artesian wells; and I hope the time is not far distant before some trials will be made. The expense of getting the water does not appear to me so great an obstacle as the cost of preparing the surface for irrigation, for our marshes lie very irregular. In speaking of storing water, a valuable member of this Chamber (who is not able to attend to-day) named to me yesterday the importance of some better steps being taken on the hill districts to provide reservoirs for the winter water, either in large ponds or tanks. The cost of sending miles for water has been very great to many of the farmers on the hills. One other advantage is that the temperature of a wet district must be improved by a good system of deep drainage. All writers agree that the evaporation of water adds greatly to the coldness, both above and beneath the surface, and especially of a retentive soil. And as regards the importance of climate, I can give you a very good illustration. In 1859 I sowed the same sort of Wheat on two farms, one in Sheppy, the other at Frinsted. Both crops were harvested as well as the year 1860 would allow. The produce of both was sold in the same week in November, 1860; one realised about 64*s.* per qr., the other 34*s.*, and yet the distance, as a crow flies, was barely 18 miles. I do not say that you can expect to have the same climate at Frinsted as in Sheppy, but I do believe that the temperature of a large district like the Weald will be much improved by drainage. I shall conclude by saying that I do not see why draining, if done effectively, should not last from 50 to 100 years. I produce two pipes which have been taken up from two marshes, and which have been in the ground nearly 20 years. Although the bore is only 1½ inch, you will observe there is hardly any deposit in the pipe. [The pipes produced were handed round to the members of the Chamber, and examined attentively.]

DISCUSSION.

The CHAIRMAN said he was sure they had all heard with great satisfaction the exhaustive and valuable paper of Mr. Webb, and it was almost a pity to detract from it by reading anything more, but he had a paper by Mr. Frederick Neame, who, he was sorry to say, was unable to be present, but who would be very pleased if they would allow his paper to be read, which would further elucidate the views expressed by Mr. Webb. He would therefore call upon the Secretary to read it.

The SECRETARY accordingly read Mr. Neame's paper, as follows:—

"Macknade, Faversham, June 23, 1871.

"Dear Sir,—I am sorry to be prevented attending the meeting of the Canterbury Chamber of Agriculture to be held to-morrow, to support our Honourable Chairman and to listen to the paper which Mr. Webb has so kindly undertaken to read on Land Drainage. It is a subject so important, one in which those who own land, those who occupy land, and those who consume the produce of the land, are much interested, because by good drainage, followed by good cultivation, the produce of the land is much increased. I also feel that our honourable chairman and the gentlemen who have undertaken to read a paper before the Chamber are entitled to look for the support of the members; without a good attendance of members the papers lose much of their interest to those who take the trouble to prepare them, and indeed for this reason (which I feel to be a very strong one), as my absence is unavoidable, I venture to offer a few remarks on the subject for discussion.

"A few simple observations will, I think, satisfy many persons that deep draining—by which I mean drains cut 4 feet deep—must be more effective than shallow drains—by which I mean drains cut 2 feet (except on very tenacious clays)—the shallow drains scarcely draining the land that is tilled, the deep drains draining the land that is tilled and the subsoil also. When the land remains saturated with wet the roots of plants are deterred from entering it, or if they enter they perish. The evil lies generally deeper than the vegetation. The limit is not beyond our reach, at any rate we should endeavour to approach it. As the subsoil becomes drained the roots of plants perforate it more freely, and where the roots can go the water can follow, and by degrees the subsoil becomes porous; but a very dry season is very desirable after land draining on very stiff land, for the purpose of opening the subsoil and rendering it porous. After wet seasons, treading heavy land by horses (especially in wet weather) often prevents the drains working so effectually as they otherwise would do. There is a doubt about deep draining on what we term very hard tenacious clays, which still exists among many eminent practical drainers. My own opinion is that deep draining should be the rule, and shallow draining the judicious exception. By deep draining there is no fear of the drains being stopped by deep cultivation, and less fear of their being stopped or interfered with by roots of Hops, or roots of Elm, Ash, or other trees. As the steam-plough renders all stiff land more pliable, there is not that fear of the pores of the earth being stopped as there is by horse cultivation. In fact, I almost incline to think that where the steam-plough is used deep drains will become a necessity, and as steam-ploughing is most useful on the heavy lands so deep draining must be adopted on them.

"The facility of obtaining money for land draining and dividing the repayment over a number of years is worthy of consideration.

"I was in hopes I might have been present to agree with the remarks Mr. Webb may make, or to have discussed any points wherein we may differ.

"I trust to the kindness of the meeting to receive this from one who wishes prosperity to the Chamber of Agriculture.

"I remain, dear sir, yours faithfully,
"FREDERICK NEAME.

"George Slater, Esq."

Mr. MURTON proposed a vote of thanks to Mr. Webb for his paper. Mr. Webb had given great attention to the subject, and he thought no one could but agree with the main points of his address. In proposing a vote of thanks, therefore, he would suggest that the paper should be printed and published, in order that members of the Chamber might have the opportunity of reading it at their leisure.

Mr. DOWKER seconded, and concurred in the suggestion that the paper should be printed and circulated among the members of the Chamber. With regard to Mr. Webb's remarks, he entirely agreed with him. He could have wished Mr. Webb had said more about draining the marsh land, because in this part of the county they were highly favoured as to arable land, for they had land requiring as little drainage as any other part of Kent with the exception of gravel soils. In the Weald it was of course very different. But they had a considerable quantity of marsh land; and he was perfectly satisfied, and had been so for some years, that no land whatever in East Kent, would pay better for cultivation and drainage than marsh land. Some persons were of opinion that marsh land could not be drained without its drying up in dry summers, but he must say that his experience of marshes which had been drained was the very reverse. Where land was very wet in winter time, it would be found to be all the more burnt up in summer time. Grass roots could not penetrate stiff soils; but if the land was more deeply cultivated, it would produce better grass. In many marshes he knew, before they were drained they grew nothing but coarse water-grass, which perished in the summer heat, but the same marshes when drained produced much finer and better grass. He considered they were all much indebted to Mr. Webb for his interesting and able paper.

The vote of thanks to Mr. Webb was then put and carried unanimously.

GOOLE AND MARSHLAND.

Economical Management of Farmyard Manure.—At a late meeting of this Chamber of Agriculture, Mr. J. Wells in the chair, a paper was read on this subject by Mr. CONDER, of Pontefract. He said :—

This subject has an additional interest at present, when the question "How to prevent the pollution of our rivers by sewage from our large cities and towns" has become one of the great problems of the day. Every English farmer must deplore the waste occasioned by the present system of water carriage of sewage. It therefore must be a matter of some interest to us to discuss how best to conserve and how most judiciously to use the ordinary manure made on the farm. There is no doubt the system most generally pursued may be improved upon—in the fold first, by more carefully mixing the different constituents together, so as to secure greater uniformity in quality; then, by the prevention of waste occasioned by filtration or evaporation, by employing the means which chemistry has made known to fix that valuable but highly volatile substance, ammonia. To secure this end, foldyards entirely covered over are preferable to open yards; but when, on account of the money outlay necessarily involved, these cannot be had, the next best thing is to prevent the rain-water off the roofs of surrounding buildings from washing the most valuable portions of the manure out of the yard. Buildings should be carefully spouted, and the water conducted away in channels or drains under the surface. Another essential point is the application of gypsum, or some other chemical compound, in the stables, cow-bins, piggeries, &c., which will not only prevent any unpleasant smell, but will also fix the ammonia that is otherwise constantly escaping. By using gypsum or sulphate of lime (calcined, of course), this may be effected [This is very questionable. ED.]; also, by laying hold of the liquid portion of the deposits it will materially increase the value of the manure. Gypsum should therefore be liberally applied, not only inside the stables, &c., but occasionally over the whole foldyard. Where this calcined gypsum is difficult to procure, the principle of Moule's earth closet may be adopted, and dry clay, finely pulverised, ashes, or charcoal of any kind may be used with a good result. Thus the health of animals kept indoors will be improved by purifying the air they breathe, and a much larger percentage of fertilising matter will be secured in the manure. Some writers on the subject recommend that foldyards should be carefully paved with bricks, and so formed that the liquid portions may be drained off into a large tank, to be afterwards pumped out and carted on the grass sward or other green crops. In some special cases perhaps this plan may be profitable, such, for instance, as where a large number of cows are kept for dairy purposes, or in any other establishment where large numbers of horses or other live stock are kept, and the most rigid economy in the use of straw has to be practised. But it may be questioned whether on farms where all the straw produced has to be consumed on the premises if liquid manure tanks are of any real value, and if the plan already described of absorbing the urinary deposits is not much preferable. The same principle should be carefully carried out when the manure is taken away from the farmstead. The system so common in some districts should be avoided.

There is still sometimes to be seen in this country a process something like the following: Manure is being carted out from the farmstead. You observe that it has the appearance of half-rotten straw; little oilcake, corn, or roots have been consumed on the steading, and the most valuable portion has been allowed to run off down the surface drains from the fold. Thus made it is carted out into some bye-lane, perhaps alongside an open ditch, then lightly thrown out with forks to encourage fermentation. Thus the ammonia evaporates from the top as the steaming vapour arises, and at the bottom the liquid portion is being drained away as the heavy rains penetrate completely through the heap, and literally wash out its most valuable constituents, its very life-blood. No wonder this treatment, when applied to the soil, fails to give the result the farmer looks for. This part of the subject has often been matter of discussion among practical agriculturists, and among a variety of modes considered, the following has been most generally approved: Instead of the manure being thrown out of the carts as lightly as possible, the cart is driven on the top of the heap, then upturned and emptied. If near the homestead, a man is usually employed with a kind of drag to pull the lumps about, keeping the surface of the heap level, building three sides quite perpendicular, and allowing a slope at one end for the cart to ascend and return. This prevents the heap from such rapid fermentation and consequent loss of strength, and preserves its most valuable properties for the cereal crops usually following the root crops to which such manure is applied. The heap should then be covered with some soil, ditch bottom or road-scrapings being generally available, if with a coat of gypsum, so much the better. The preferable plan is to cart the dung direct from the steading, and apply it to the land previous to the winter ploughing. This plan, however, can only be adopted to a limited extent, as it necessitates the keeping of one year's stock of dung ready for the next autumn, when the state of the weather and the press of farm work might prevent it being applied. When it is considered necessary that the dung should be reduced to a shorter and more pulverised condition, this end can be attained by simply turning over the heap formed as before described two or three weeks before it is intended for use. A quantity of gypsum should again be applied to the top after being turned. It is of comparatively little importance whether the dung thus prepared is applied to the soil spread evenly over the surface, or, as it is most commonly applied, in drills or ridges, the great end having been secured, namely, the conservation of its most valuable constituents, and a large increase in the percentage of those valuable gases that cause rapid and luxuriant vegetation. Some attention should be bestowed on the place where the dung-heap is formed. If not carted into a field, the bottom should be so formed that the liquid portion cannot be drained from the heap—this, on most soils, can easily be effected.

In further reference to the application of manure in the field, there are several principles upon which it is necessary to act. The soil must be in proper condition, not in a soft wet state, so as to be compressed by the feet of the horse or the wheels of the dung-cart. On the lightest and most friable of soils, some injury would be done; but on heavy clays and loams it would be an act of great folly to cart manure while the soil remained in a wet condition. The question, whether or not manure loses value by being allowed to remain on the surface after being spread, and whether it suffers by being applied when the earth is bound up with frost and covered with snow, or during intense heat and drought, by being exposed to the wind and sun—these topics have been discussed both by practical and scientific men, and have elicited opinions diametrically opposed to each other. One is of opinion that if manure is only spread on the surface, the deodorising power of the soil is so great, it will absorb all the ammonia, nitrogen, &c., that it contains, and that nothing more is necessary. In this case, the mechanical action of the manure in preventing compression, in opening and pulverising, to use a common phrase, in mellowing the soil in which it mixes, is overlooked. Another tells us confidently that frost has no effect at all detrimental to the value of manure spread on the surface—that it lays hold only on the moisture contained in it, and extracts nothing but water. Practice has shown that manure applied while in a state of fermentation and rapid decomposition, during either of the extremes of weather mentioned, does suffer in some degree—does lose some portion of its value; a great deal depends on the state in which it is applied, and of the agencies of evaporation at work when so exposed. The point to be aimed at in all applications of manure is to bring it into immediate contact with the soil as soon as possible. It is the custom in many districts to cart out manure and lay it in small heaps over the fields, and in this way it is sometimes left for weeks previous to being spread over the surface. There can be no objection to this mode of laying it on the land, but the practice of allowing it to remain is unwise, as in this case a very large proportion of surface is exposed, which, not coming into contact with the soil, as a matter of course is allowed to "waste its sweetness on the desert air." In deciding between the relative advantages of manure being applied on the surface or under the surface of the soil, it must not be forgotten that farmyard manure, while in a state of decomposition, is constantly giving off a certain amount of heat, whether in the soil or not; it follows, therefore, as a natural consequence that, unless it is in immediate contact with the earth, or some other deodoriser, it must lose value in some degree. But while strongly advocating the principle of immediate contact with the soil, it is not to be inferred that putting manure down to the subsoil is to be recommended; on the contrary, if put on the soil and slightly covered over, so as to protect from the extremes of weather, without doubt the most judicious method is adopted. In the best farmed districts of Scotland it is the practice to manure as much as possible previous to the winter ploughing, and in that climate, and in the months of November and December, when evaporation is at its lowest point, of course the danger of waste pointed out in this paper is greatly diminished. In adopting these views and endeavouring to act on these principles, without entering into detail, it may be affirmed that the farmer will secure not merely a better article as manure, but the very best possible for him to make, and applied so as to produce the best possible effect on his crops.

The CHAIRMAN said that he would give them some of his ideas suggested by the paper of Mr. Conder. The best way of making manure was to have boxes for the feeding of cattle. He had tested the principle during the thirty years he had been a farmer, and he had found it worse for the stock, but he got good manure. The next thing is to mix the manure. He had carried this out for some time, at Booth Ferry. It was considered the best to have covered farmsteads; but he would ask them what would be the condition of their cattle brought up in a covered farmstead? It might answer if their stock was intended for the butchers; otherwise it was important for the stock to come into contact with the atmosphere. At Sancton, Booth Ferry, and The Pastures, through sprinkling with gypsum, he had not had a single case of disease, although several of his neighbours suffered from it. He approved of a manure tank; but it should be cleaned out regularly. He used liquid manure on 18 acres of grass land with the best results. By saving the drainings it would save the very essence of the manure. He would conclude by hoping the time would come when they would have good farm buildings with half their foldyard covered in, and able to pay 5 per cent. to their landlords for the outlay.

Farmers' Clubs.

WESTER ROSS.

The most Profitable Mode of Consuming Turnips.—At the late meeting of this Farming Society, Provost MITCHELL opened the discussion for the evening by reading the following paper :—

At a meeting of the Club on February 11 last, our friend, Mr. Walter Arras, Fodderly, favoured us with an able paper on "The Cost of Growing an Acre of Turnips" [see p. 689], and showed by a minute and carefully prepared statement of details that the outlays connected with growing and storing of an acre of Swedish Turnips amounted to no less a sum than £12 18*s.* 7*d.* The whole subject was fully debated at the time, and the discussion gave rise to the question for the evening, viz., "What is the most profitable way of disposing of an acre of stored Swedish Turnips, so as to repay the above outlay?" There are so many ways of disposing of Turnips, each having its own advantages, that I am sure it will at once appear to you a difficult matter to decide which is the most profitable. In the neighbourhood of large towns Turnips may be sold profitably for the feeding of dairy stock and other purposes. But as such a system does not apply to this part of the country, it is unnecessary to enter upon it. In a district such as this Turnips must be consumed by stock on the farms, and I would cursorily glance at some of the ways in which this can be done, and is practised, to suit the various kinds of soil, modes of cropping, size of farms, accommodation of buildings, and other particulars with regard to locality. One method commonly adopted is that of letting the crop at so much an acre, or by the week, to be eaten on the ground by sheep stock, and this method has in some ways its advantages. The Turnips may be stored in the field at a cost of 8*s.* to 10*s.* instead of 32*s.* 2*d.* an acre, the expense set down by Mr. Arras for carting them to and storing at the farm steading. The land being thus manured by the sheep, a further saving of cartage of manure to a small extent will be effected. But the price obtained for an acre in this way, say from £6 to £8, even along with the saving in storage and cartage, will fall several pounds short of the expense of raising the crop. I am of opinion, therefore, that this is not the most profitable mode of consuming Turnips, but circumstances may sometimes occur which make it the only practicable one, more especially in the smaller sized farms. Again, Turnips may be partly eaten on the ground by sheep, and partly carted to the steading for cattle. This method on the larger sized farms, and in particular where a portion of the soil is of light quality and suited for Turnips being eaten off by sheep, is advisable, and may be made profitable. It enables the farmer to keep a stock of both sheep and cattle on the farm throughout the year. A considerable saving may be effected on the cartage and storage, and the lighter and outside portions of the farm will be manured by the sheep, and thus also save cartage of manure. Straw is thereby economised, and a large number of cattle may be kept at the steading by supplementing part of the crop not consumed by sheep with oilcake, grain, and other approved feeding stuffs; and I believe that these auxiliaries will come more and more into use, as their benefits become better known. By this method, I am of opinion that the outlay above stated will be more nearly realised than by the first mentioned plan. A third system is that of carting to and storing the Turnips at the farm steading, and this system brings us more directly to the question of the evening; and without attempting more minutely to compare the three methods with each other, I would propose that we should confine ourselves to the latter system, and consider what is the most profitable way of consuming an acre of Turnips at the farm steading; and thus, having something definite in view, we can proceed to discuss it systematically. The first object is to secure the proper kinds of stock, so that of whatever age, they make the greatest progress possible in growth, and fattening in a given time on good feeding. Well-bred stock in condition are now allowed to effect these desirable results sooner than any inferior class, and should be secured at as moderate a price as practicable, for the profit of their feeding will so far depend on the price at which they are bought. They should be selected of such an age as will suit the accommodation at the farmsteading. Stock in condition under two years of age, or over two years if not in good condition, will thrive as well in comfortable open courts as in any other circumstances, but all well-conditioned cattle of two years old and upwards should be placed in stalls in a well ventilated feeding byre, or in loose feeding-boxes.

For heifers, I consider that the stall is always the most suitable place, but whichever of these kinds of stock or ways of disposing of them is adopted, I believe that the average returns from the cattle may be calculated on as remunerative, provided that due care and attention are bestowed on the animals. This brings us to consider what is the best way of feeding. In courts young cattle usually are given a full supply of Turnips and straw—the former, if Swedish, are cut for them by a machine before being put in the troughs, or partially cut up after being placed there. There is, doubtless, a loss of Turnips by either of those ways, as a portion of them will find their way to the dung depôt, and besides there is a certain loss of nourishment by lying in the troughs when so cut. In stalls and loose boxes this loss may be so far prevented, and the individual animals in their feeding more particularly attended to as circumstances may require. The Provost concluded by quoting details of the experience of those gentlemen who had given the subject their minute attention.

Bailie D. G. Ross thought we could scarcely have a more important subject for discussion than that of the best mode of consuming Mr. Arras' acre of Turnips. They had already been informed that the acre of Turnips cost £12, and if they estimated the weight to be 24 tons, which might be taken as a fair average, it showed the crop to cost 6*d.* per cwt. Then how were they to turn this 24 tons to the best advantage? His answer was, convert them into beef or mutton. He was himself an advocate for eating the Turnips with cattle as far as possible. He would therefore confine his remarks to the manufacture of beef. He held that to feed a bullock on Turnips alone was the most expensive mode of feeding him of any, as to keep him going on anyways well it would take 2 cwt. of Turnips at a cost of 1*s.* per day. Supposing, then, that instead of 2 cwt. Turnips, which contained 90 per cent. of water, fully three-fourths more than he needed to supply his thirst, they gave him ½ cwt. Turnips, which cost 3*d.*; 6 lb. of cakes and meals of various kinds, costing 7*d.*; and 6 lb. of hay, costing 2*d.*, the cost in this case was not any more than feeding with the 2 cwt. Turnips; the beef was produced very much quicker, and by that mode he was enriching his dung even from the cattle urine alone, which was not nearly all water, as it would be from Turnips only, to say nothing of the riches otherwise he was putting into the dung. He must now see how he was to get clear of his Turnips without a loss, and get paid for his other stuffs also, and get at his rich dung for his trouble by the mode of feeding he preferred. He would put on a well-bred 2-year-old bullock, rising three years old, 1½ lb. beef per day. He was not prepared to say the weight he could put on with 1*s.* worth of Turnips alone, but he felt certain that after deducting the 90.70 water, the remaining 9.30 was not so much as his 9*d.* worth of feeding stuffs. He contented himself with knowing that his system was not costing any more than it would to keep this bullock with the 2 cwt. Turnips: of course to eat one's whole crop of Turnips in this way was impossible within the time of year that they should be consumed, for want of accommodation to do it, but he was strongly of opinion it was the right way to get up the constitution of the farm to produce straw and corn and grass, and repair the soil that was sick of red Clover.

Mr. FENTON's experience was that the most profitable way on strong land was to give cattle half Turnip, and the rest oilcake and meal. On light land farms, such as he possessed, he thought the best plan was to eat one half off with sheep and the other with cattle.

Mr. ROSS, Keppoch, had his Turnips stored in the autumn, and took care to give them fresh to the cattle, letting them take as much as they would eat with a little cake and bruised Oats. During the last two years his cattle paid uncommonly well; his 2-year-olds, even before they reached the age of two years, were quite fit for the flesher.

Mr. ARRAS found that the calculation in his former paper, as to the cost of growing an acre of Turnips, was less than the actual amount. He would take it at £14 instead of £12. Now, 240 hogs on Turnips would eat about an acre a week, and there were somewhere about 29 weeks for the wintering. At £14 this would come to £406. Suppose that the lambs in autumn were bought at £1 a-piece, that was £240; and that £2 a-head of profit was made, which had been more than realised this year, the said £2 a-piece of profit came to £480. Put this against the cost of Turnips, £406, and a balance of £74 remains. According to that calculation, Turnips would pay even at £14 an acre; and to that fell to be added all the manure that was left on the ground.

Mr. WALKER, Mountrich, presented another calculation. He tried to go in for sheep feeding. Take an acre of Swedish Turnips, 24 tons to the acre, and get £8 10*s.* an acre; the benefit of the sheep to the land was worth £2 an acre, which brought it up to £10 10*s.* Again, an ordinary-sized bullock, eating 2 cwt. a day, could be kept on an acre for 240 days; at 3*d.* per cwt., or 6*d.* per day, the cost would be £6 for the Turnips. The manure for the period he calculated at 30 loads, or £4 10*s.* an acre; total value of Turnips eaten by a bullock, £10 10*s.* But from this had to be deducted the value of straw eaten, the ordinary labour, the carrying of manure, &c., which he calculated as coming to £4 15*s.* per acre; that only left £5 14*s.* for cattle, as against £10 10*s.* for sheep. But it might be said that the quantity of Turnips was over-estimated and the value under-estimated. Say, then, that 1½ cwt. of Turnips was given daily, at a cost of 6*d.*; that comes to £9 an acre, and the £4 10*s.*, as above, brings it to £13 10*s.*; deduct expenses, as before, £4 15*s.*, and the balance was only £8 15*s.*, as against 10 gs. for sheep. But really there was no use giving so much Turnips to cattle. He thought 56 lb. a day was enough, with oilcake, bruised corn, and straw. They could thus feed twice or four times the number of cattle on the same quantity of Turnips; the cattle fed much quicker, there was better flesh, and much better manure. To carry out the plan, however, superior accommodation was required, even if they gave half the Turnips to cattle and half to sheep.

Sir KENNETH MACKENZIE said it was evident that the profit of consumption lay in the return given by the following crop, as well as in the increased value of the beasts fed. He had noticed two farms near Bunchrew Station, one having beautiful grass, and the other close by with miserable bare pasture. He was told that the farmer on one side was an Aberdeenshire man, who kept nothing but cattle, and the farmer on the other kept nothing but sheep; that the poor grass followed the sheep, and the rich grass followed the cattle. Now, it was quite possible that might be the case with grass, and yet the crop between the Turnip and the grass might be better after the sheep.

The CHAIRMAN, after some further remarks, summed up the discussion, urging first the great advantage of having good accommodation for cattle; and second, the advantage of knowing how to buy stock, and getting them of a good kind. Looking over his accounts the other day from the time he came to Ross-shire, he found that while he had increased very little comparatively in the money realised from grain, he had increased about three times in the money realised for grass and Turnips. If that was the way things were to go on, then the more Turnips they had the better, and he was very much inclined to go into that kind of thing, as long as people were inclined to eat a great deal of beef, and to eat it at the high price they were doing. Sheep would improve a light soil immensely; and, in regard to heavy soils, they had not only to consider the character of the land, but the time at which the sheep were put upon the Turnips. It made a difference according to whether it was early or late, and there was a great difference between the effect in wet and dry weather. Put sheep on Turnips in wet weather, and they would almost certainly lose their crop. A thing on which they all seemed to be agreed was, that Turnips should not be excessively used for cattle, and that artificial food was a great advantage both for the stock and the manure. He was sure they all felt exceedingly indebted to Mr. Mitchell for the pains he had taken with his paper.

Notices of Books.

Stables and Stable Fittings. St. Pancras Iron Works Company, Old St. Pancras Road, N.W.

Illustrated Catalogue. Musgrave Brothers, Belfast.

Catalogue of Patent Stable Fittings. Cottam & Co., 2, Winsley Street, Oxford Street.

List of Stable Fittings. J. Barton, 370, Oxford Street.

Let us begin with the last upon the list. Mr. James Barton, stable-fitting manufacturer, 370, Oxford Street, obtained a prize medal at the International Exhibition, 1862, and his new catalogue contains a very flattering list of patronage since then received, including various royal personages; more recently he has fitted up a stable for the Viceroy of Egypt to house 150 horses, embracing much novelty that merits special notice, because the invention of the Viceroy himself. Egypt has long been famed for the management of horses, and none of her previous rulers have been better versed in the stable requirements of the horse than he who has succeeded them.

The Khedive's stable is fitted up with 140 loose boxes and only 10 stalls. This preference of the loose box shows that he understands how to house this noble animal, for the day is not far distant when stalls will be the exception for even farm-horses. A hard-worked farm-horse, contractor's horse, cavalry horse, or coacher has more need of a loose box in which to recruit his overtasked muscles during night than even the hunter and racehorse.

In the Viceroy's stable enamelled iron plates extend further up the wall at the manger than is common, tinted sky-colour after the Egyptian style. The iron posts of the boxes and stalls are massy and ornamental, and surmounted each with a ball on which is figured in relief the star and crescent in front, gilded in harmony with the general design. Instead of wood-boarding rolled iron is used of sufficient thickness to defend the heel of the horse without sustaining any harm. This gives the sill below, and cross parallel ramp, sill, and capping above, a very neat and light appearance, with greater strength and durability than when wood-boarding is used. The gutters are covered, and the whole drainage is on a much larger scale than is common in England, the gutter and drainage pipes having a greater capacity for flushing out to keep them clean.

Such is a general outline of the improvements effected by the Viceroy of Egypt in the stables at Cairo. The spring-bottomed racks, the enamelled mangers, and rotary water-troughs, although made to special order, are similar to those which Mr. Barton exhibited in the Agricultural Hall at the Christmas Show, 1870. Mr. Barton gives a great many designs for stall and box divisions, plain and ornamental, with all the other fittings required in the stable in his catalogue, and to it we must refer for further particulars.

Cottam & Company exhibited in the Agricultural Hall, during the recent horse show, their usual selection of stable fittings and at their manufactory, 2, Winsley Street, Oxford Street, W., they have fitted up a first-class stable, with stalls and boxes for horses, which merits inspection. The details are variously arranged, so as to exemplify how best to economise space, and at the same time provide for the comfort and health of the horse. Light, ventilation, and cleanliness are special objects in a stable, and these are carefully provided in the construction of the rack and manger guard fittings and trevice fittings of both stalls and boxes. As Colonel Fitzwygram justly observes in his work on "Horses and Stables:"—

> "Ample light is essential to the health of the eyes. Light is, indeed, food and exercise to them. Without ample light the eyes cannot be strong. If they are altogether deprived of light, the optic nerve becomes paralysed, and blindness is the result. Again, ample light is essential to the cleanliness of the stable. A dark stable may be dirty without the owner finding it out; and, in good truth, most dark stables are dirty, and a dirty stable must be unhealthy. Both eyes and lungs are especially liable to injury from the gases produced by impurity."

Cottam's ventilating manger guard fittings provide that impurity from hay, seeds, or green forage is readily seen and removed before contamination with the horse's breath takes place. Their "registered ventilating sill" makes similar provision for stalls and loose boxes. This provision is more especially needed for the latter (loose boxes), for however perfect the ventilation of a stable may otherwise be, yet the air in the bottom of a loose box is liable to stagnate and become foul, unless it is allowed to escape below the sills at the sides and front.

This firm have also obtained a patent for a project embracing the replacing of broken boards without the tedious operation of removing the ramp, as hitherto experienced. This is effected by a "dove-tailed wedge" in the sill, equal to the breadth of a board, so that when a board is broken by a kicking horse, it can be removed, and as the groove of the ramp is parallel to the groove of the sill, any board or boards between the broken one and the wedge can be driven home, so as to leave the opening at the wedge. The wedge can then be removed, and a new board put in; by replacing the wedge portion of the sill, the trevice or division is thus quickly repaired. Their catalogue contains a variety of engravings of trevicing, plain and ornamental, from which to select. They prefer enamelled iron tiles for lining the wall in front of stalls and feeding boxes to wood or porcelain tile, and show patterns of different colours, as white, green, and granite.

The floor of their stable is paved with "adamantine clinker," impervious to water, and never slippery.

Adjoining the horse stable are shown "Cottam's patent portable united cow fittings" for four cows, which consist of an enamelled manger and sliding tye for each cow, with an enamelled water-trough between two cows, so elevated as to prevent the cows dropping their food into the water.

St. Pancras Iron Works Company have published a large illustrated catalogue (May, 1871), which ought to be in the hands of every landowner or horse-owner who is about to build a new stable or refit an old one. At the recent horse show in the Agricultural Hall, Islington, this firm exhibited loose boxes, in which the horses of H.R.H. the Prince of Wales were shown. At their manufactory, Old St. Pancras Road, London, N.W., they have fitted up a stable upwards of 100 feet in length with stalls and boxes, each differing from the others, thus showing a variety of patterns from which to choose. Some of the stalls are faced with glazed tiles of various colours and shapes, against the horse's breath; one is faced with slate, another with marble slab, and another with enamelled iron, and so on. The racks, mangers, and watering troughs are equally diversified, to meet the requirements of purchasers. For farm-horses low racks are useful for green forage when given alone, but when cut up into chaff along with hay or straw it should be given in the manger. Deep, narrow mangers are objectionable. There is great art in baiting a horse, and all who have any successful experience in feeding only place before him a small quantity at a time evenly spread over the bottom of the manger so as to make him feed slowly on fresh food not "blown upon," masticate and insalivate well with relish, and thus insure perfect digestion. In a narrow box the horse's breath contaminates his food—he is liable to eat too fast when he comes in hungry, bolt his food imperfectly masticated, and thus to get little benefit from it. The St. Pancras manger is shallow, with a broad flat bottom rounded at the angles, so that the horse can feed with ease without any annoyance to irritate from his mouth coming in contact with the sides; and the lips are so narrowed and curved inwards as to prevent the food being tossed out with the nose. Some think water should always be in the water-trough for the horse to drink when he pleases; others affirm that it is better to water at stated intervals. A clever plan is here shown to meet both views. This is done by a cock below out of the reach of the horse, for turning on and off water at pleasure, so that the horseman can fill the trough, and when his horse has done drinking he can then turn off the remainder, or he can allow the horse to drink at his leisure, cleaning out the trough once a day. The waste water from the trough flows into the gutter, washing it out clean, and keeping the stall or feeding-box free from smell. There is a considerable diversity in the trevice posts, sills, and ramps of stalls and boxes, to meet choice and style of architecture. A great many specimens of stable-paving are shown, including their own non-absorbent grooved brick, small granite cubes, clinkers, red and blue Welsh and Staffordshire bricks (plain and grooved), and so on. Specimens of open and capped gutters for stalls and boxes, with trapped pots, &c., are also shown. All pots should, if practicable, be outside the stable, so as the whole of their contents can be mixed with the manure in the yard or pit. A great variety of harness-room fittings is also shown, and means for the general ventilation of the stable in summer, and warming of it during winter.

Musgrave Brothers, *Belfast*, have obtained several silver medals from the Royal Agricultural Society of England, one at the Leeds meeting, 1861, and a second at London, 1862, along with the International medal, and a third at Bury St. Edmund's, 1867—the latter for "continuous practical improvements," and the loose boxes and stalls which they exhibited last year and this year at the horse show in the Agricultural Hall, Islington, prove a continuance of public favour. They publish a comprehensive illustrated catalogue, to which we must refer for details. We can notice only a few of the useful novelties they have introduced into the stable and cow-house in this as in the sister country. A folding window, on the principle common in churches, is placed at the head of every stall and loose box for lighting and ventilation. In the summer time these supply an abundance of fresh air to the stable, and in winter they can be closed, and the stable ventilated and kept warm by one of their "slow combustion stoves." Their sliding-pole barrier across the gangway at night is another improvement which ought to be in every stable fitted up with stalls. We once had the hind leg of a fine mare broken by a kick from a horse that broke loose during the night—a dead loss of £40 besides the disappointment—and with such a barrier the horses would have been kept safely apart. During day, or rather when the horseman is in the stable, the pole is pushed home through the heel-post into a strong iron tube, which has a groove on the under side for the boarding, and on the upper side for any kind of ramp fittings used. By dividing the boarding with a second or third "barrier sheath," two or three sliding poles may be drawn out, so that, if desirable, the horse may be left loose in his stall over night.

Their low racks are so contrived that they answer both for hay and cut provender. When to be used for hay, the bottom of the rack is open so that seed can fall through. When filled a gridiron lid is turned over upon the hay, and as the hay is pulled through the bars, the lid slides down on vertical bars—thus pressing upon the hay, and preventing waste. When to be used for chaff, a sheet-iron covering is turned down from the back of the rack, thereby converting it into a manager or trough. The "water-pot" turns on a pivot at each side, and is so balanced that it remains steady when full of water, and is easily turned upside down when to be washed out. The foul water falls into a pipe below, and is used for washing out the gutters and drains. The front of the rack, manger, and water-trough is so rounded that the horse cannot grasp it in his mouth, or in any way injure his head and neck. Mangers are made after several patterns, to prevent the horse tossing out his food with his nose: one has the narrowed inward lip now in common use, another has a grated lid with a circular opening in the middle sufficiently large to allow the horse to feed. The open grating is for admitting air and allowing the breath to escape. A third pattern is a tumbling manger, on the principle of the water-pot, already described, the better to wash and keep it clean when the horse is fed on cooked food.

Their "harmless loose box mangers and racks" also merit special notice. An open iron hanging guard comes forward over the manger and water-pot, and is bolted flush with the edge. Boarding below descends perpendicularly to the floor. A high hay-rack is permanently fixed also flush with the boarding, so that when thus left a spirited horse cannot injure himself in the absence of his groom. In a large stud a box or two on this plan should always be ready, to prevent harm to restless horses.

Farm Memoranda.

NORTH RIDING OF YORKSHIRE.—If there is any truth in Mr. Mechi's oft repeated adage, that "showers in June put all in tune," we ought—with our rainfall for the month of 3 inches—to have all in perfect concord. Not so, however. Our meadows are good, and give promise of abundant crops. Pastures are very much improved, and may now be described as good. Our Turnip braird is excellent, has not been so good for many years, and, thanks to the cold, sunless weather, has altogether escaped the ravages of the fly. Potatos also promise well, and so far all is in tune, but when we turn to our grain crops we strike discordant notes. Wheat generally thin, backward, and unhealthy, conveying to the mind of the experienced a distant prospect of meagre rickyards and sparse bushels. Oats, especially on the light lands, are very unpromising. Many have grubbed off, and where the main crop has had vigour enough to recover, the look of it is by no means pleasing, the plants being patchy, and of different heights, and the result at harvest we dare safely predict will be under an average. Barley, on the whole, looks tolerably well, backward, but promising fairly.

Stock of all descriptions were never before known to maintain for so long a time such high rates. Anything at all like prime beef has during the last two months readily made from 9*s*. 6*d*. to 10*s*. 6*d*. per stone of 14 lb., and mutton, out of the wool, from 8*d*. to 9*d*. per lb. Store cattle have been selling proportionately high, and there is considerable risk of many who have bought since April of having to summer graze for nothing.

Wool sells freely and well, at prices from 2*d*. to 3*d*. above last year's prices.

The stock of Wheat in the hands of the growers was scarcely ever known to be so low. *W. J. M.*, *June* 30.

THE SPITAL IRRIGATION FARM, ABERDEEN.—Last season 11 acres of land, between King Street Road, at Spital, and the Links, belonging to Mrs. Knight Erskine, of Pittodrie, which has been laid out for the purpose during the previous winter, were brought under sewage cultivation with very satisfactory results as regards the crops raised. And this year, under the care of Mr. G. F. Cruickshank, factor on the property, a much larger extent of land has been prepared, and is now either cropped, or in process of being so, on the sewage system. The newly laid-out ground is immediately northward of the 11 acres cropped last season, and extends from Ladymill, King Street, down to the margin of the Links. The extent is 36 acres, making in all a sewage farm of about 47 acres.

The additional land to which we have referred has been laid out in accordance with a plan prepared by Mr. George C. Roger, C.E. In the case of the smaller section laid out last year by the late Mr. Anderson, C.E., the work was done by "day labour." This year Mr. Roger issued specifications and readily found a good contractor to work them out; and the result thus far has been a very decided pecuniary saving with no less satisfactory workmanship. The newly laid out land is intersected lengthwise by a public road leading from King Street up the Old Town Links; and five service roads have been made, dividing it into six fields of manageable size; each of which is, of course, subdivided by branch carrier drains, and waste water runnels, for the purpose of flooding the several plots—the main carrier which supplies the whole passing along by the side of the public road.

In laying out the land, the first thing to be done, after having it all thoroughly furrow-drained and trenched, was to proceed with levelling and formation of carriers. In addition to having the levels very carefully taken and marked on the plan, the sewage was brought gradually forward as the work progressed, and as each plot was formed and the sluices adjusted and fixed, it was turned on. This served the double purpose of testing the levels, and administering a forcing manure to the newly-stirred soil. From the care taken at the outset in taking levels, no difficulty whatever occurred in irrigating the different plots, though in numerous cases the flow of sewage from the main carrier turns either to the right or left, as may be wished, at the same point. The main carriers are laid with tiles fastened with cement in the bottom, which is rendered necessary by the rapidity with which the sewage water flows through them; in the case of the branch carriers, where the descent is very little and the flow sluggish, an open trench simply is required. The main waste water channels have been so arranged now that the waste water from the whole 47 acres is brought to a point in the Powis Burn at the extreme north-east corner.

In the laying out of the land, Mr. Roger has kept clearly in view—what we think is a very important element—the conditions of soil and climate, and the character of the crops grown in Aberdeenshire generally; his practical knowledge of local agriculture enabling him to adjust operations accordingly. Some 6 acres have been sown down in Italian Rye-grass, the plots occupied in this way having been earliest prepared, so as to lose no advantage in giving the young plants a start. Next, about 10 acres were planted in Potatos, which are just now coming into vigorous leaf. About 2 acres of Swedish Turnips have been sown, and the remaining part of the land will be laid down in common Turnips and other green crop.

The whole of the 11 acres irrigated last year have now been put in grass, of which there is a vigorous crop. A first cutting has already been taken off a small part; and we may say there is quite a ready sale for the grass when fit for cutting.

In regard to the cost of laying-out the land now being brought under irrigation, in relation to probable returns, it would be as yet premature to speak. As we have frequently said in reference to the general question of sewage utilisation, experience in each individual locality where sewage cultivation is attempted must be a main element in directing to satisfactory results, whether as regards cost in laying-out and management, or the proper crops to be cultivated. In the present case, as we have indicated, a material saving has this year been effected in the matter of laying-out. And in that respect, as well as others, the results on the Spital Farm will, we expect, by-and-by form an important contribution to the solution of the general question of sewage farming in so far as Aberdeen is concerned. *Aberdeen Free Press.*

Obituary.

WE regret to announce the decease of LORD BERNERS, at his seat, Keythorpe Hall, Leicestershire, which happened towards the close of last week, after a long illness, at the age of 74. His lordship, who was born at Kirby Cane, Norfolk, on the 23d of February, 1797, was the elder son of the late Rev. Henry Wilson, who in 1838 succeeded to the ancient Barony of Berners (to which his elder brother a few years previously had established his claim); his mother was Elizabeth, daughter of Mr. Thomas Sumpter, of Histon Hall, Cambridgeshire. He was educated at Eton and Emmanuel College, Cambridge, and succeeded in 1851 to the Peerage as sixth lord in actual possession of the title. He was a magistrate and deputy-lieutenant for Leicestershire, and an active member of the Royal Agricultural Society of England, over whose meetings he presided a few years ago. His lordship was twice married; firstly, in 1823, to his cousin, Mary Letitia, elder daughter and co-heiress of Colonel George Crump, of Alexton Hall, Leicestershire; and, secondly, in 1847, to the Hon. Henry Charlotte Cholmondeley, only daughter of the late Lord Delamere. But as he had no issue by either union, the title (which is descendible in the female line) devolves upon his niece, Emma Harriet Lady Tyrwhitt, as only surviving child of his deceased brother, the Rev. Robert Wilson, Rector of Ashwellthorpe, Norfolk, by his second wife, Harriet, daughter of the above Colonel George Crump, of Alexton Hall. Her ladyship, according to "Lodge's Peerage," was born in 1835, and married in 1853 the present Sir Henry Thomas Tyrwhitt, by whom she has a family, who are heirs to both the Berners and the Tyrwhitt titles.

Miscellaneous.

THE CENSUS AND THE SEWAGE QUESTION.—Is the iconoclasm of Hunger an absolute impossibility in any country when the growth of population continues to press upon the means of subsistence, and when a reckless agriculture drains away the constituents of a people's daily food into the sea, and sterilizes while it cultivates the fields on which it lives? Natural laws are implacable. Nothing is more remarkable in these Census Returns than the evidence of what may be called the congestive tendency of an industrial civilization in the aggregations of great cities. The danger to the peace of States and societies arising from these vast aggregations is obvious enough; but Nature suggests a remedy and a compensation in the observance of that great sanitary law of a perpetually self-creating and self-supporting food supply. There is nothing transcendental in the policy of organising the circulation between town and country of the essential elements of human subsistence, and the fertilising constituents of the soil. Yet this, after all, is the problem of problems for an increasing population, unequally distributed over a limited territory, the soil of which is becoming more and more a monopoly, dependent, in a great measure, for its sustenance on foreign countries, incessantly engaged in the competition of manufacturing industry, and in the struggle for a bare existence. We trust we shall not shock any philanthropist who has been in the habit of indulging a more exalted strain of moral reflections, if we confess that these Census papers have turned our thoughts to the question how, in a country where the towns absorb the population, and wealth monopolises the fields, town and country may be made to support each other a little better, without robbing the rich or pampering the poor. It is not a political, nor a social, but a sanitary revolution that is wanted. The utilisation of town sewage is not an inviting subject for the philanthropists of the platform; but we contend it is quite as practical a question for the present age as the exhaustion of our coal-fields in a thousand years. *Daily News*, *June* 23.

The Week's Work.

JULY 8:—*Cole Seed* or *Rape* is usually sown on land that has been pared and burned; but in exceptional seasons, when the weather is moist and growing, a crop of Turnips may be grown. Whether grown on the flat or on raised drills, the practice of manuring and seeding the land for both crops is similar. Cole is better adapted for fenny and peaty soils than Turnips. Drill in from two to four quarts of seed per acre, using the water drill in dry weather. Where Turnips have failed from the fly, or other cause, many prefer a crop of Cole to the risk of a second sowing of Turnips. Cole may also be used for filling up blanks either by transplanting or sowing seed. When ready for cutting, it may be given to sheep in the pastures; or if the Turnips are to be eaten off by sheep, the filling up of the blanks may be timed so that both may be folded together. The crop that was sown about the middle of last month, if it has brairded well, will require a rough hoeing, and blanks, if any, may be filled by transplanting in moist weather, or after a heavy shower, or the water-cart may be yoked in dry weather. A couple of water-carts, and half-a-dozen watering pans, in active hands, soon go over a 20-acre field.

Carrots, *Parsnips*, *Chicory*, and all advanced root crops, horse and hand hoe, if the work has not already been finished. Keep the earth well up to the former three crops. It should always be borne in mind that root crops will only luxuriate in a finely pulverised and properly aërated soil, consequently frequent and deep hoeings are greatly in their favour. When a continuance of wet weather is experienced, so as to prevent the hoes being worked, and when weeds spring up abundantly, yoke the paring-plough, first ploughing the land from the one side of the plants, going as close as not to earth them up, and turning the earth close to the plants in the opposite row, so as to root up half the weeds between and cover the other half. In a day or two, as the weather and weeds direct, pare the opposite half, thereby reversing the former and rooting up the remaining half of the weeds. In this way Wild Mustard and Charlock may be prevented from exhausting and seeding the land, and any that cannot be reached with the plough should be pulled by hand, to prevent their running to seed. A too common mistake is to let the Wild Mustard get too far a length before it is thus ploughed down. When the weather breaks up, the horse-hoe may be yoked. In dry weather, the paring-plough should, if possible, be avoided, and Wild Mustard and the like kept down by frequent and deep horse and hand hoeing.

Irrigation is a golden practice in dry weather, and July weather is seldom so wet throughout that water cannot be profitably applied to the meadows and pastures. At all events, where there is a command of river-water, the irrigation works should be ready for its application; and where river-water cannot be had, the surplus water of a rainy season should be stored for application the moment dry weather sets in. Town sewage should be applied to the hay stubbles and pastures, however rainy the weather may be. For a similar reason, where stored water or river water can be applied, it may be doctored with guano or grass manure, to fertilise poor land. And if rain is falling sufficiently plentiful to wash in the artificial fertilisers, they may be applied by a broadcast distributor. Whether, therefore, the golden treasure falls from the clouds, or comes from the town sewer, the river, or the pumps, it ought to be applied the one way or the other. As for the "A. B. C." system, it is almost as hopeless in a wet summer as in a dry, even in places to which liquid sewage cannot be profitably conveyed; for in our fickle climate no dependence can be placed upon July clouds washing dry sewage into the pastures, and as there is plenty of land to consume all the sewage of our large towns in a liquid form at this season, and as it can be more profitably used in a liquid than in a dry form, even in wet weather, the practical conclusion is obvious. In winter, when the growth of grass is almost *nil*, and when water is not required by the land, the sewage of towns may be more profitably utilised in a dry state, and stored for application when vegetation commences. There is reason and hope in the future of this, for in the winter time, when the sewage is worth nothing to the farmer, and less than nothing at times, it is of most value for the dry system manufacture; and on the other hand, if farmers have not to pay for the sewage during winter, that would enable them to give more for it in the summer time, when the liquid portion is for the most part of more value than the solid. The general conclusion, therefore, is obviously in favour of sewage irrigation at this season, let the weather be wet or dry. In wet weather irrigated meadow and sewage grass requires to be more frequently cut, to prevent lodging and rotting at the bottom. In this way a greater weight of grass can be mown, provided the temperature is sufficiently high. In dry seasons like the last, the foliage of all sewage crops suffer from the extreme heat.

Sheep Washes include a long list of preparations poisonous to the insects which infest the skins of sheep shortly after shearing. When newly shorn the change is so great that the extremes of heat and cold produce an unhealthy state of the skin; ticks and lice follow, and to prevent or kill these insects, sheep are dipped in the various solutions termed washes. But what is poisonous to insects is too frequently poisonous to the sheep also. The better plan is to wash the sheep when newly shorn, oftener than once if necessary, afford them shelter from the sun during mid-day and from cold during night and in bad weather, and feed them properly until their wool grows and forms a natural covering to defend them both from heat and cold, for were such done there would be no need of poisonous sheep washes.

Washing newly shorn sheep is done for the twofold purpose of cleanliness and to obviate catching cold, just as some shepherds wash their own heads when newly shorn. The practice has much to commend it, North and South, as it promotes the healthy action of the skin, upon which the wellbeing of the sheep so much depends, for a bright sun at noonday is as liable to injure the skin as cold at night. Hence newly shorn sheep should have shade to go under, and not be penned or turned out at mid-day exposed to the blistering action of the sun.

The Watering of Cattle with pure soft water requires more attention at this season than is paid to it, generally speaking. Pump water is often too hard; ponds and rivers are full of animal and vegetable life. The former, pump-water, should be exposed in a shallow trough for some time before cattle are allowed to drink it, and pond-water and river-water should be carefully filtered. Nothing deteriorates the quality of milk sooner than the dirty water of ponds and rivers, which milch cows drink in large quantities at this season. *W. B.*

Notices to Correspondents.

Artificial Manures. *A Subscriber* desires to know by what method bones can best be converted into manure; the usual wholesale price of bones near towns; whether, if a pit were dug in chalk, much loss would ensue? Of the fertilising material, also, how pure ammonia is best fixed and mixed for broadcast sowing? Bones must be broken or crushed, and mixed with about half their weight of sulphuric acid on a dry floor, and thereafter put in a heap to rot with sand. Ammonia can be fixed by adding acid to any liquid containing it, until the litmus-paper test shows that the liquid is no longer alkaline.]

Diseased Cow: *A Correspondent, near Coventry*, writes:—"My neighbour has a cow that has been unwell for a week or ten days. She was calved about three months, very low in condition, but has done very well till about a fortnight back, when her pasture was changed from a poor to a good one. In a day or two after she gradually sunk her milk and appeared very dull, refusing to feed or drink, and at times appears to be griped and blown, almost the same as though she had been in Clover. Her bowels are very much constipated. They have given her linseed-oil and castor-oil, which passes through her, bringing very little away, and then she is the same as before. She looks as full as though she had fed as usual. She appears to me to be fardel-bound, as I have had all the same symptoms when they have been so on dry food." [The disease is probably, as you suggest, "fardel-bound," or impactment of the third stomach. Give 2 oz. of hyposulphite of soda once a day in a pint and a half of water, to arrest fermentative action. To remove the obstruction in the alimentary canal, give compound tincture of aloes 4 oz., Epsom salts 6 oz., aromatic spirit of ammonia 1 oz., water 1 pint. Four or five doses may be safely given, at intervals of eight hours, if the desired action does not follow the first dose.]

Names of Plants: *J. Rogers.* Festuca ovina.

Markets.

ENGLISH WOOL.

During the last week prices of English Wool have continued to gain strength, and are now about 3*d.* to 4*d.* per lb. above the rates current at this time last year. The tendency is still upwards, and we should not be surprised to see a further advance of 2*d.* to 3*d.* per lb. between this and Christmas.

HAY.—Per Load of 36 Trusses.

Smithfield, Thursday, July 6.

PrimeMeadowHay,	145*s.* to	155*s.*	Clover, old ..	..150*s.*	160*s.*
Inferior do. ..	..125	135	Inferior do. ..	..135	145
New Hay ..	.. 80	125	Prime new do.	..125	135
Inferior do. ..	.. —	—	Inferior do. ..	.. —	—
Straw	.. 40	50			

Cumberland Market, Thursday, July 6.

Sup. Meadow Hay	147*s.* to	175*s.*	Inferior Clover	..130*s.* to	147*s.*
Inferior do. ..	..120	132	Prime 2d cut do. ..	—	—
New do.	.. 84	140	New do. ..	.. —	—
Inferior do. ..	.. —	—	Straw	.. 45	50
Superior Clover	..160	176			

Joshua Baker.

METROPOLITAN MEAT MARKET, July 6.

Best Fresh Butter .. .. .. 15*s.* per dozen lb.
Second do. do. .. .. .. 13*s.* „

Small Pork, 4*s.* 4*d.* to 4*s.* 10*d.*; Large Pork, 3*s.* 4*d.* to 3*s.* 8*d.* per 8 lb.

METROPOLITAN CATTLE MARKET.

Monday, July 3.

The number of Beasts is very much smaller than last week, the falling off being principally in foreign. Trade is not brisk, yet in a few instances higher prices are obtained. The supply of English Sheep is about the same as last week, but of foreign it is larger; prices are rather lower, and it is difficult to make a clearance. There is more inquiry for Lamb, and choicest qualities are rather dearer. Trade is unaltered for Calves. Our foreign supply consists of 820 Beasts, 11,780 Sheep, 474 Calves, and 45 Pigs; from Scotland there are 10 Beasts; from Norfolk and Suffolk, 800; and 1130 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8 to 6 0	Best Long-wools	.. to ..
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	5 8—6 0
2d quality Beasts	4 0—5 0	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do. Shorn ..	5 0—5 4
Do. Shorn ..	6 2—6 6	Lambs	6 8—7 8
		Calves	3 8—6 0
		Pigs	3 4—5 0

Beasts, 2760; Sheep and Lambs, 25,000; Calves, 492; Pigs, 175.

Thursday, July 6.

We have again a short supply of Beasts, and a good demand. Choice qualities are very scarce, and the few on offer make high prices. The number of English Sheep is about the same as last week, but there are more foreign; on the average trade is rather better than on Monday. Choice Lambs are in demand, at fully Monday's quotations. The supply of Calves is large, the average quality is, however, only middling. Our foreign supply consists of 280 Beasts, 5600 Sheep, and 739 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8 to 6 2	Best Long-wools	.. — ..
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	5 8—6 0
2d quality Beasts	4 0—5 0	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do Shorn ..	5 0—5 4
Do. Shorn ..	6 2—6 6	Lambs	6 8—7 8
		Calves	3 8—5 8
		Pigs	3 4—5 0

Beasts, 750; Sheep and Lambs, 15,220; Calves, 823; Pigs, 85.

MARK LANE.

Monday, July 3.

There was a short small supply of English Wheat to this morning's market, and, with wet weather, factors commenced by asking full prices; millers, however, showed but little inclination to purchase, and the sales made in either English or foreign were in retail, at about last week's rates. Barley was a slow sale. Beans 1*s.* per qr. cheaper. Peas unchanged in value. The supply of Oats was large, and the sales made were at very irregular prices, generally below those of last week. Flour was quiet.

Price per imperial Quarter.	*s. s.*		*s. s.*
Wheat, Essex, Kent, Suffolk..White	47—60	Red......	55—60
— fine selected runs ....do.	59—65	Red......	59—62
— Talavera	62—66		
— Norfolk	—	Red......	—
— Foreign	48—65		
Barley, grind.& dist.,30*s* to 34*s*..Chev.	43—46	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
Oats, Essex and Suffolk	26—28		
— Scotch and Lincolnshire..Potato	28—30	Feed	—
— Irish ....Potato	27—29	Feed	25—28
— Foreign ......Poland and Brew	25—27	Feed	20—23
Rye	34—36	Foreign ..	33—36
Rye-meal, Foreign			
Beans, Mazagan.... 37*s.* to 47*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*...Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian.	42—44
Peas, White, Essex, and Kent..Boilers	38—40	Suffolk ..	40—42
— Maple, 40*s.* to 44*s.* ....Grey	36—40	Foreign ..	36—40
Maize	—	Foreign ..	33—36
Flour, best marks, delivered..per sack	42—50		
— 2d ditto ....ditto	36—42	Country ..	36—42
— Foreign ....per barrel	25—29	Per sack..	38—60

Wednesday, July 5.

There was a thin attendance of millers to-day, and the trade throughout ruled dull, at prices favouring purchasers. The supplies of English grain were short, but of foreign they were liberal. Wheat of all descriptions was purchased slowly, at drooping prices. Barley was inactive, and for both grinding and malting parcels late rates were with difficulty sustained. Malt was quiet, at about late rates. Oats experienced a limited inquiry, at prices generally easier. Beans were dull, at Monday's decline. Peas were taken off cautiously on former terms. The Flour trade was inactive, and prices were very weak.

Arrivals of Grain, &c., into London by Water Carriage.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	320	—	—	—
Irish ..	—	—	—	—
Foreign ..	13,840	4790	43,160	3410 6530 brls.
	13,160	4790	43,160	

Liverpool, July 4.—There was a larger attendance than usual, and a further decline from Friday's rates. A moderately fair business was done in white and red Wheat, at the reduction on the week, though rather irregular, being estimated at 2*d.* to 3*d.* for the former, and 3*d.* to 4*d.* per cental for the latter descriptions. Flour nominally lower, and hardly anything done. Beans maintain late rates. Peas 1*s.* per qr. cheaper. Oats and Oatmeal slow, and rather in buyers' favour. Indian Corn 1*s.* 6*d.* to 1*s.* 9*d.* per qr. lower on the week, and sales to a moderate extent.

Averages.

	Wheat.	Barley.	Oats.
May 20	59*s* 11*d*	36*s* 3*d*	27*s* 2*d*
June 3	60 0	36 11	27 7
— 10	59 9	38 6	25 11
— 17	59 7	35 11	26 10
— 24	59 11	36 10	27 8
July 1	59 1	36 10	27 5
Average ..	59 8	36 10	27 1

SEED MARKET.

The weather has considerably improved since our last, and is now much more favourable to the maturity of seeds. Holders are, nevertheless, very firm in their demands, and the conviction gains ground that the growth of Clovers and Trefoil will be defective. There is at present scarcely any business passing in our markets, except a little in Mustard, Rape, and bird seeds, all of which are in fair demand, at unaltered rates. Offers of new Trifolium seed for delivery a few weeks hence come to hand.

John Shaw & Sons, Seed Merchants,
16, Water Lane, London, E.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100*s* ; Petersburg, 60*s*. and 80*s*. ; superior close Mat, 45*s*., 50*s*., and 55*s*. ; packing Mats, 20*s*., 30*s*., and 35*s*. per 100 ; and every other description of Mats at equally low prices, at

J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from 2*d*. to 5*d*. per yard, advancing ¼*d*.
54-inch Hessian and Scrim, 3*d*., 3½*d*., 4*d* , 4½*d*. and 5½*d*.
72 ,, ,, ,, 4½*d*., 5½*d*., 6*d*., 6½*d*., and upwards.

J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

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SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

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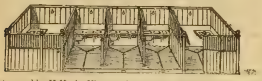

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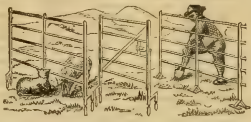
Cottam's Iron Hurdles, Fencing, and Gates.



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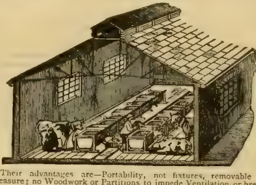
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s*.

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PROTECTION AGAINST FROST.
WOOL NETTING, 2 yards wide and 1*s* 6*d*. per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1*s*. 9*d*. per yard.
Three yards wide	2*s*. 8*d* per yard.
Four yards wide	3*s*. 6*d*. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d*. to 8½*d*. p yard. HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d*. and 8¾*d*. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C. ; and of all Seedsmen in London or the Country.
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Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows :—

PROPAGATING GLASSES.

	Each.—*s*.	*d*.		Each.—*s*.	*d*.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 ,, ,, ..	0	4½	13 ,, ,, ..	2	0
4 ,, ,, ..	0	5½	14 ,, ,, ..	2	6
5 ,, ,, ..	0	6½	15 ,, ,, ..	3	0
6 ,, ,, ..	0	8	16 ,, ,, ..	3	6
7 ,, ,, ..	0	10	17 ,, ,, ..	4	0
8 ,, ,, ..	1	0	18 ,, ,, ..	5	0
9 ,, ,, ..	1	2	19 ,, ,, ..	6	0
10 ,, ,, ..	1	4	20 ,, ,, ..	7	0
11 ,, ,, ..	1	6			

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter ..	0*s*.	6*d*.	9 inches in diameter ..	1*s*	8*d*.
5 ,, ,, ..	0	8	10 ,, ,, ..	2	0
6 ,, ,, ..	0	10	11 ,, ,, ..	2	6
7 ,, ,, ..	1	1	12 ,, ,, ..	3	0
8 ,, ,, ..	1	4			

Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2*s*.	0*d*.	16 inches long	1*s*	4*d*.
22 ,, ...	1	10	14 ,, ...	1	2
20 ,, ...	1	8	12 ,, ...		
18 ,, ...	1	6			

WASP TRAPS, 3*s*. 6*d*. per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—*s*.	*d*.		Each.—*s*.	*d*.
12 inches	6	6	20 inches	10	6
14 ,, ...	7	6	22 ,, ...	11	6
16 ,, ...	8	6	24 ,, ...	12	6
18 ,, ...	9	6			

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LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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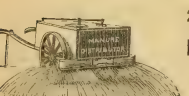

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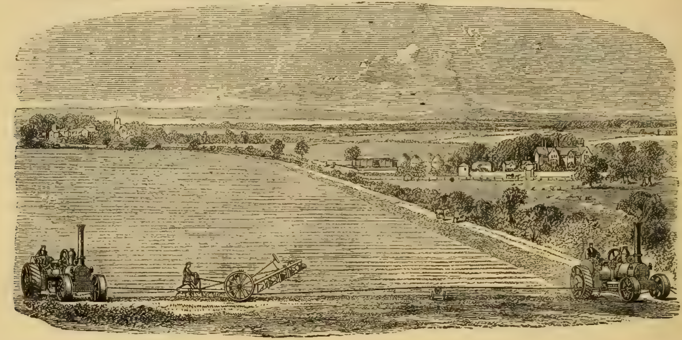

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THOMSON'S SUPERB HERBACEOUS CALCEOLARIA.—Seed of the above, as grown by the Subscriber for many years at Dalkeith Park, is now being sent out in sealed packets at 2*s*. 6*d*. and 1*s*. 6*d*. The Trade supplied on liberal terms. Post Office orders payable on Galashiels.
WM. THOMSON, Tweed Vineyard, Galashiels.

To the Trade.

CALCEOLARIA, saved with the greatest care, from one of the choicest and most pleasing strains in the country. Price on application.
JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton Nurseries," Chester.

Calceolaria, Cineraria, Primula.

F. AND A. SMITH are now sending out NEW SEED of the above, from their well-known superior strains, in packets, at 1*s*. and 2*s*. 6*d*. each.
The Nurseries, West Dulwich, near London.

Gold, Silver, and Bronze Variegated Geraniums.

F. AND A. SMITH'S large COLLECTION of the above are now in fine condition, including many specimens of the most approved varieties, forming a display unrivalled for colour and extent.
The Nurseries, West Dulwich, near London.

CUTTINGS of GERANIUMS, &c.—100 Geraniums, in 30 choice varieties, including Tricolor, Gold and Bronze, Variegated Zonal, Nosegay, and Ivy-leaf, for 10*s*.; 50, 5*s*. 6*d*.; 25, 3*s*. 24 Fancy Pelargoniums, 3*s*. 6*d*.; 12, 2*s*. 24 CHRYSANTHEMUMS, 2*s*. 6*d*.; 12, 1*s*. 6*d*. 24 POMPONS, 2*s*. 6*d*.; 12, 1*s*. 6*d*. 24 FUCHSIAS, 2*s*. 6*d*.; 12, 1*s*. 6*d*. All post free. CATALOGUES, one stamp.
J. COOMBS, The Ferns, Enfield.

NEW DOUBLE GERANIUMS, &c.—12 fine varieties Double Geraniums, 4*s*.; 12 vars. new Double Geraniums of 1870, 12*s*.; 12 fine new Zonal Geraniums of 1870, 6*s*.; 12 superb vars. Gold and Golden Bicolor Geraniums, 6*s*. 12 vars. new FUCHSIAS (1870), 3*s*.; 12 best select Fuchsias, 2*s*. 12 select COLEUS, 2*s*. 12 select PHLOXES, 3*s*. 12 new CHRYSANTHEMUMS (1870), 2*s*. 12 new VERBENAS of 1870, 2*s*. 12 vars. new CHILEAN MIMULUS, 3*s*. New AGARATUMS:—White Tom Thumb, 6*d*.; White Imperial Dwarf, 6*d*.; Tom Thumb's Bride, the best white, 1*s*. 6*d*.; Sultan, the darkest blue, 1*s*. 6*d*; the above four new Ageratums, 3*s*.; 12 vars. Ageratums, including the above, 5*s*.
B. W. KNIGHT, Florist, Battle, Sussex.

Miscellaneous Plants,
SUITABLE for BEDDING and DECORATIVE PURPOSES, &c.

ROBERT PARKER begs to announce that he can supply, in large or small quantities, all the best varieties of BEDDING PANSIES, HARDY and GREENHOUSE SUCCULENTS, DOUBLE PYRETHRUMS, SWEET VIOLETS, &c.

Priced and Descriptive LISTS are published, and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

Climbing Ferns.

LYGODIUM SCANDENS, the most beautiful of all Climbers. Can be supplied by the dozen at 6*s*. to 9*s*.; 40*s*. to 60*s*. per 100, all nice plants. Package gratis for cash.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

To the Trade.

STOVE PLANTS, in 50 or more choice and new varieties, at 9*s*. to 12*s*. per dozen; 50*s*. to 75*s*. per 100. Package gratis for cash. Names on application for CATALOGUE.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

ASPLENIUM GERMANICUM.—Very nice plants of this scarce Fern, in 60-pots, for 6*s*. per dozen.
JOHN H. LEY, Lansdowne Road, Croydon, S.E.

SEEDLING PALMS.—Nice healthy 1-yr. Seedlings of OREODOXA OLERACEA, at 30*s*. per 100. This is an excellent opportunity to obtain a stock of a good Palm at a low price.'
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S W.

AQUILEGIA GLANDULOSA, the true variety.
Seed, 6*d*. and 1*s*. per packet.
Seeds of choicest FLORIST FLOWERS. A LIST on application to STEPHEN BROWN, Seedsman and Florist, Weston-super-Mare.

Pandanus utlilis, for Table Decoration.

A. VAN GEERT begs to offer strong Plants of PANDANUS UTILIS, at 30*s*. per dozen; smaller ditto, 12*s*. to 18*s*. per dozen. May be supplied by the 100.
Fine Plants of MUSA ENSETE, 31*s*. 6*d*. each.
Ghent, Belgium.

Hyacinths, Tulips, &c.

J. ROEST, FLORIST, Voorschoten, near Haarlem, Holland, begs to call the attention of the Trade to his CATALOGUE of DUTCH BULBS, which can be had post free of his Agents, Messrs. BETHAM AND SON, 9, Lower Thames Street, London, E.C.

To the Trade only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have published their NEW WHOLESALE CATALOGUE of BULBS for the season, and will be glad to forward it to Nurserymen, Seedsmen, and Florists only, free, upon application.

BUDDENBORG BROTHERS, FLORISTS, of Hillegom, near Haarlem, Holland, beg to inform Nurserymen and the Trade generally, that they have just published their CATALOGUE of HYACINTH, TULIP, and other BULBS, for the coming Season, and that it can be obtained, post free, on application to Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

WANTED, New and Rare SUCCULENT PLANTS.
J. T. PEACOCK, Sudbury House, Hammersmith, S.W.

Wanted, Seeds of Choice Strains.

MR. WILLIAM BULL will require NEW SEEDS, when ripe, of the following :—

Auricula, self
Auricula, show
Antirrhinum
Carnation
Cineraria
Pelargonium, fancy
Pelargonium, show
Pansy, fancy and show
Pinks
Polyanthus
Pentstemon
Violas

And Seeds of other choice Florist Flowers.

State quantities and prices per ounce. Satisfactory proof must be given that the strains of the above seeds are all of the first quality.

Apply to WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen to the Queen, Reading, Berks.

For Sowing after Haycart.

SUTTONS' RENOVATING MIXTURE of fine GRASSES and CLOVERS for improving Pastures deficient of bottom herbage, may be sown after the hay is carried with advantage; 6 to 12 lb. required per acre. Price 9*d*. per lb., or cheaper by the cwt.
SUTTON AND SONS, Seedsmen to the Queen and H.R.H. the Prince of Wales.
Royal Berkshire Seed Establishment, Reading.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready in April. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford.

SIXTY THOUSAND DWARF TEA-SCENTED ROSES, in pots, also specimen TEA ROSES, in 6-inch pots, for Greenhouse Culture or Exhibition. CATALOGUES now ready.
WM. WOOD AND SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

DWARF ROSES, in pots, by the dozen, 100, 1000, or 10,000. The largest stock of Roses in the Kingdom. CATALOGUES on application.
WM. WOOD AND SON, Woodlands Nursery, Maresfield, Uckfield, Sussex.

MITCHELL'S renowned ROSES are NOW in BLOOM, the largest stock and the best plants in England. This magnificent Collection are all propagated in the open ground, possessing a hardy constitution suitable for all climates.
Pilt Down Nurseries, Uckfield, Sussex.

Roses—One Hundred Thousand Blooming Plants.

JOHN CRANSTON'S superb COLLECTION of ROSES, including all the newest and best varieties, is NOW in BLOOM. Carefully compiled Priced and Descriptive CATALOGUES forwarded post free on application.
King's Acre Nurseries, near Hereford.

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.
Floral Nurseries, Hailsham, Sussex.

Orchids.

JAMES BROOKE AND CO. beg to offer the following choice collection for 25 guineas :—Dendrobium Devonianum, chrysotis, Falconeri, heterocarpum, transparens, Cambridgeanum; Cattleya Warneri, Mossiæ, Trianæ, citrina, amethystina, Leopoldi; Odontoglossum Alexandræ (Bluntii), Pescatorei, citrosmum, grande, Insleayi, Schleipperianum, bictonense; Oncidium Lanceanum, O. papilio, O. Krameri; Lælia purpurata, Vanda cœrulea, Pleione Wallichii, Cypripedium hirsutissimum, Cymbidium Mastersii, Phaius albus, Trichopilia suavis, Barkeria spectabilis, B. Skinneri, Calanthe vestita, C. Veitchii, Cœlogyne cristata, Aerides Warneri.

CATALOGUES, with full Descriptions, Remarks on Culture, prices, &c., on application.

18, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will furnish on application his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

RICHARD WALKER has the following to offer, for cash—EAST HAM, ENFIELD MARKET, DWARF YORK, true ROBINSON'S CHAMPION DRUMHEAD PLANTS, all at 2*s*. per 1000; and will warrant them all to be a good stock, and strong plants. Market Gardens, Biggleswade, Beds.

CABBAGE PLANTS.—Enfield Market, Battersea, and Drumhead Cabbage; ditto SAVOYS, at 3*s*. per 1000. Packing included.
W. VIRGO AND SON, Wonersh Nursery, near Guildford.

Plants for Sale.

ONE HUNDRED THOUSAND CABBAGE, COLEWORT, and COTTAGE KALE, 2*s*. 6*d*. per thousand.
800 YARDS of BOX EDGING, &c.
T. MOSSMAN, Gardener, 213, Skinner Road, Peckham, Surrey, S.E

New Turnip Seed, 1871.
DEVONSHIRE GREY STONE TURNIP (the TRUE VARIETY).

ROBERT T. VEITCH has just completed harvesting a fine pure stock of this most excellent TURNIP, the best variety for either early or late sowing. It has been selected with great care, and is very strongly recommended.

Price per bushel or cwt. on application. Quantities of half bushel or quarter cwt. and upwards forwarded carriage free.
54, High Street, Exeter.

FIVE HUNDRED THOUSAND PLANTS now READY (all true and fine).
BROCCOLI, Carters' Champion, Elletson's Mammoth } 5*s*. per 1000.
" Deal Early, Penzance Early }
" Purple Sprouting, Early, 4*s*. per 1000.
SCOTCH KALE, COTTAGERS' KALE, ROSETTE COLLARD, DRUMHEAD SAVOY, 3*s*.; a reduction for a large quantity.

H. J. HARDY begs respectfully to offer the above for cash, and wishes to call attention to the fact that the two first-named Broccolis stood the frost of last winter and all his other sorts failed.—All package and carriage free to London; to the amount of 20*s*., package and carriage free to any part of England.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Essex.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s. 6d. per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

New and Choice Flower Seeds, Post Free.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

	Per packet.—s.	d
Williams' superb strain of PRIMULA, Red, White, or Mixed 1s. 6d., 2s. 6d., 3s. 6d., and	5	0

Plants from this seed have always been awarded First Prizes wherever exhibited.

	s.	d.
Neill's extra choice CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., and	5	0
Weatherill's extra choice CINERARIA, 1s. 6d., 2s. 6d., 3s. 6d., and	5	0
Wiggins' prize strain of CYCLAMEN 1s. 6d., 2s. 6d., and	3	6
ECHEVERIA METALLICA	2	6
HOLLYHOCK, from Chater's finest varieties .. 1s. and	2	6
HUMEA ELEGANS PURPUREA, new	1	0
LAPAGERIA ROSEA, new seed	1	0
MYOSOTIS SYLVATICA, true	0	6
PANSY, finest show varieties .. .. 1s. and	2	6
POLYANTHUS, Wiggins' prize strain .. .. 1s. and	1	6
PYRETHRUM GOLDEN FEATHER	1	0
East Lothian STOCKS, per collection of three colours	2	6
SOLANUM HYBRIDUM COMPACTUM, new, awarded a First-class Certificate by the Royal Horticultural Society, March 16, 1870 .. .. 3s. 6d. and	5	0
Williams' Improved Hybrid SOLANUM .. .. 1s. 6d. and	2	6
SWEET WILLIAM, Hunt's Auricula-eyed	0	6
VIOLA CORNUTA var. PERFECTION 1s. 6d., 2s. 6d., and	3	6
VIOLA ODORATA LAUCHEANA, new, superior to the old Russian Violet	2	6
WALLFLOWER, Saunders' fine dark variety	1	0

Choice Seeds for Present Sowing, Free by Post.

JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton" Nurseries, Chester.

	Per packet —s.	d.
ANTIRRHINUM, choice mixed .. .. .. 6d. and	1	0
AURICULA, from choice varieties .. .. .. 1s. and	2	6
CALCEOLARIA, herbaceous, saved from a magnificent collection of choice flowers .. .. 1s 6d., 2s. 6d. and	5	0
CARNATION, from prize flowers .. .. .. 1s and	2	6
CENTAUREA, candidissima and Clementei.. .. 1s. and	2	6
CINERARIA, from newest named flowers .. 1s. 6d., 2s. 6d and	5	0
CYCLAMEN, Wiggins' prize strain .. .. .. 1s. 6d and	2	6
GLOXINIA, erect and other varieties .. .. .. 1s and	2	6
HOLLYHOCK, from choice named sorts .. 1s., 2s 6d and	5	0
HUMEA ELEGANS .. .. 6d. and	1	0
" " PURPUREA	1	0
MIGNONETTE, Parsons'.		
MYOSOTIS DISSITIFLORA	1	0
PANSY, from prize flowers.. .. .. 1s. and	2	6
PETUNIA, from choice varieties .. .. .. 6d and	1	0
PINKS, from choice named sorts .. .. .. 1s. and	2	6
POLYANTHUS, from a choice strain .. .. .. 1s. and	2	6
PYRETHRUM AUREUM, Golden Feather .. 6d and	1	0
PRIMULA SINENSIS FIMBRIATA ALBA, 1s. 6d., 2s. 6d. &	5	0
" " " RUBRA .. .. 1s. 6d., 2s. 6d. and	5	0
" " " Mixed .. .. 1s. 6d, 2s. 6d. and	5	0
" " " FILICIFOLIA ALBA, 1s. 6d., 2s. 6d., and	5	0
" " " " RUBRA, 1s. 6d., 2s 6d and	5	0
" " " " Mixed .. 1s. 6d., 2s 6d and	5	0
SOLANUM, of sorts.. .. .. 2s. 6d. and	3	6
STOCK, Brompton, finest German .. .. 1s., 2s 6d. and	3	6
" East Lothian, collection of three colours	2	6
WALLFLOWER, finest Double German .. 1s., 2s. 6d and	3	6

The following, for early Spring blooming, can be supplied by weight, or in packets, 3d. and 6d. each :—

Alyssum saxatile
Calandrinia, of sorts
Candytuft, of sorts
Collinsia, of sorts
Erysimum, of sorts
Iberis sempervirens
Limnanthus, of sorts
Lupinus, of sorts
Myosotis, of sorts
Nemophila, of sorts
Saponaria, of sorts
Shortia californica
Silene, of sorts
Sweet William, fine mixed
Viola, of sorts
Wallflower, fine mixed

CATALOGUES of SEEDS and PLANTS post free on application.

Our New Fuchsias.—Ten Varieties for £1.

MESSRS. HOCK AND CO. beg to call attention to their FUCHSIA NOVELTIES, which were offered for the first time in this country on April 1. The Fuchsias have been raised by the well-known cultivator, Mr. Weinrich, who has succeeded in the last two years in raising, in this highly appreciated species, something really new and splendid, consisting in size, colour, and profuse blooming, giving a beauty to that kind never known before. Descriptions of them will be given in English, on application to Messrs. HOCK & CO, The Rhine Nursery, Castel, opposite Mainz, Germany.

HOCK & Co.'s newest and best GERMAN CALCEOLARIA, CINERARIA and PRIMULA SEED.

	Per packet.—s.	d.
CALCEOLARIA HYBRIDA GRANDIFLORA PUMILA COMPACTA, new	3	0
CALCEOLARIA HYBRIDA GRANDIFLORA PUMILA COMPACTA TIGRINA, varieties, new	3	0
CINERARIA HYBRIDA, choicest mixed	1	6
" " NANA	1	6
" " " KERMESINA	1	0
" " " extra dwarf, globe form	2	6
" " " new, ex. dwarf, carmine	2	6

PRIMULA NOVELTIES.

	s.	d.
PRIMULA CHINENSIS FIMBRIATA ALBA GLOBOSA, snow white, large flowered variety	3	0
PRIMULA CHINENSIS FIMBRIATA RUBRA, large flowered variety	3	0
" " PUNCTATA ELEGANTISSIMA ..	2	6
" " COCCINEA NOVA	2	6
" " FIMBRIATA FILICIFOLIA RUBRA	2	6
" " " " ALBA..	2	6

Best PRIMULA SEED, older varieties, 1s. per packet :—

Primula chinensis rubra
" " flore-alba
" " cupreata
" " filicifolia alba
Primula chinensis filicifolia rubra
" " fimbriata rubra
" " " Kermesina
" " splendens
Primula chinensis flore-alba.

HOCK AND CO., The Rhine Nursery, Castel, opposite Mainz, Germany.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Cabbage Seed, for present Sowing.

For the GARDEN, for SOWING at ONCE, to come in next Spring and Summer.

SUTTONS' IMPERIAL, the finest in cultivation, and earliest for Spring use, 8d. per ounce.

LONDON MARKET.
ENFIELD MARKET.
EARLY DWARF YORK.
NONPARIEL.

For the FARM.

	Per lb.—s.	d
SUTTONS' IMPROVED DRUMHEAD, the largest in cultivation: should be sown in July and August ..	2	6
ROBINSON'S CHAMPION DRUMHEAD	2	6
COMMON DRUMHEAD, or FLAT DUTCH	2	0

Also GRASS SEEDS, TURNIP SEEDS, MUSTARD, RAPE, &c., for Autumn Sowing, particulars of which may be had on application.

SUTTON AND SONS, Seedsmen to the Queen, Reading.

Established 1793.

JOHN K. KING, SEED GROWER, Coggeshall, Essex, will be happy to supply his unrivalled Hardy Prize Stocks of MANGEL WURZEL, SWEDES, and other TURNIP SEEDS (carefully selected from large roots), at moderate prices.

Large purchasers supplied at special moderate prices.

FARM SEED LISTS post free.

Carriage free on orders of 20s. and upwards.

CARTER'S PRIZE MEDAL GRASS SEEDS, For SOWING in JULY and AUGUST.

As supplied to H.M. THE QUEEN, H.R.H. THE PRINCE of WALES, the IMPERIAL COMMISSIONERS for the PRESENT EXHIBITION, the PARIS EXHIBITION, &c.

For PERMANENT PASTURES,

Carefully arranged to suit the various conditions of soils.

For LIGHT SOILS
For MEDIUM SOILS } 27s. to 31s. 6d. per acre.
For HEAVY SOILS

Second quality, 20s. to 26s. per acre.

CARTER'S RENOVATING MIXTURE, for Renewing and Improving old Grass Lands (to be sown after the Hay Crop is removed), per cwt., 80s.; per lb., 9d.; per acre, 4s. to 8s. 6d.

"CARTER'S AUTUMN MIXTURE" of fast-growing Grasses and Clovers.

This Mixture comprises several quick-growing varieties, and will produce a Crop of Green Food, for Feeding-off, before Christmas, if sown "at once." To be followed by a heavy swarth of valuable Hay next May.

The crop may then be ploughed up, or, if left on the ground, a useful Autumn Grazing Crop will be ensured.

Sow 2 bushels per acre. Price on application.

All Seeds Carriage Free; 5 per cent. discount allowed for cash.

JAMES CARTER AND CO.,
The Royal Seedsmen, 237 and 238, High Holborn, London, W.C.

Caution.

F. J. DRECHSLER'S ADDRESS is now, and has been for several months past, No. 63, ARLINGTON STREET, LONDON, N.W., and not North Street, &c.

See this year's PORTABLE WINNOWING-MACHINES, FUMIGATORS, SEMINATORS, &c.

No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½d. per yard run.
No. 2.—54 inches wide	at 7d. per yard run.
No. 3.—54 inches wide	at 5½d. per yard run.
No. 4.—54 inches wide	at 4d. per yard run.
No. 5.—54 inches wide	at 5½d. per yard run.

In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

THE HYDRONETTE (ROBIN'S PATENT).

For Gardens, Greenhouses, Conservatories, Hotbeds, Washing Windows, Carriages, &c.

Unrivalled ease of action, simplicity, convenience, and force.

The HYDRONETTE is a more useful, easy-working, reliable, and convenient water-throwing machine than any other in use. In five sizes, viz: — No. 1, with 4 feet of Suction Hose, Strainer, Jet and Rose, 12s. 6d.; No 2, 15s. 6d; No. 3, £1 1s; No. 4, £1 5s; No. 5, £1 10s. Extra Hose and Union Joints to order.

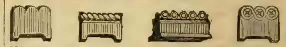
PATENT WATER BRINGER.

HAYNES AND SONS' PATENT WATER BRINGER, price 21s.—This simple Machine will draw water from a pond or well 10 feet below the level of garden, and 100 feet over the surface, with the Hydronette or any other Garden Engine.

HAYNES AND SONS, 227, 229, and 231, Edgware Road, W.

CAUTION.—None are genuine unless labelled "HAYNES & SONS, Proprietors, London."

Rosher's Garden Edging Tiles.



THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

"The finest silvery-foliaged Plant for general usefulness that has ever been introduced."
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SENECIO ARGENTEUS.

FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY.

"Will enjoy an immense popularity, and be much sought after by Flower Gardeners of all grades."—*G. G., in "Gardeners' Magazine."*

Price 5s. each; 50s. per dozen.

JAMES BACKHOUSE AND SON, YORK.

THOMAS THORNTON,

HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS; a large stock of Green and Variegated HOLLIES, VINES, &c.: all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS

will soon be ready, and can be had on application.

THE STEAM-ENGINE TRIALS
OF THE
ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz. :—
First Prize for Horizontal Fixed Engine of 10 H.P. ; First Prize for Steam Engine, with Boiler combined.

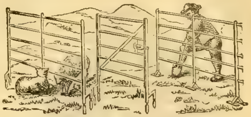
At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N.B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.
THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.
GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.
☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN;
78, LOMBARD STREET, LONDON, E.C.; and TARLETON STREET, LIVERPOOL.

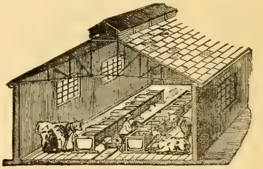
Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

Illustrated Price Lists on application to COTTAM AND CO., Iron Works, 2, Winsley Street, Oxford Street, London, W.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

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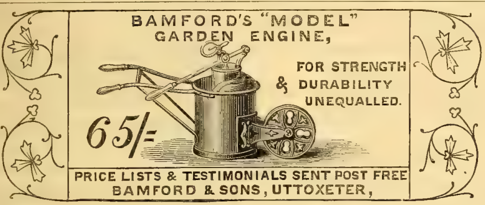

ROYAL AGRICULTURAL SHOW AT WOLVERHAMPTON, JULY 10 TO 14, 1871.

RANSOMES, SIMS & HEAD, IPSWICH,

WILL EXHIBIT AT THE ABOVE MEETING THEIR

NEW PATENT FARM STEAMER, WITH and WITHOUT THOMSON'S INDIA-RUBBER TYRES,
NEW ROAD STEAMER, THOMSON'S PATENT,
PORTABLE ENGINES, of various sizes,
EXPANSION PORTABLE ENGINE,
SINGLE-BLAST THRESHING MACHINES,
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PRIZE PLOUGHS, of various sizes,
SINGLE PLOUGHS, with FRICTION WHEEL,
NEW PATENT DOUBLE-FURROW PLOUGHS,
NEW DOUBLE-FURROW TURNWREST PLOUGH,
PATENT SUBSOILER for DOUBLE PLOUGHS,
PATENT RAKES and HAYMAKERS,
FOOD PREPARING MACHINERY.

MACHINERY IN MOTION, STAND No. 288. ORDINARY SHEDDING, STAND No. 75.

JOHN WARNER & SONS, HYDRAULIC ENGINEERS,

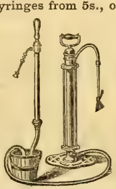
Bell and Brass Founders to Her Majesty, Manufacturers of Hydraulic Machinery of every description, Wind Engines, Water Wheels, Water Rams, Deep Well Pumps and Frames for Horse or Hand Power, Garden Engines, Swing Barrows, &c., &c. Branch Pipes for Rubber Hose, with Jet and Spreader, or with Haswell's Patent Director, from 3s. 6d. Syringes from 5s., or, fitted with Haswell's Director, 12s. 6d. Lists sent on application.

8, CRESCENT, CRIPPLEGATE,
LONDON, E.C.

FOUNTAIN JETS,
In great variety, from 3*s*. 6*d*.

No. 547A.
GARDEN ENGINE.

12 Gallons ..	.. £3	0 0
16 ,, ..	.. 3	16 0
24 ,, ..	.. 5	1 0
30 ,, ..	.. 5	13 0



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AQUAJECT.
Useful for every variety of purpose—in watering or washing Flowers or Trees in Gardens, Conservatories, &c.; also for washing Carriages or Windows, laying Dust, &c.

Price complete	£1 8 0
Small size for the hand, as an ordinary Syringe ..	0 15 0

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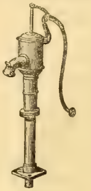

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CAST-IRON PUMPS.

2½ inches	.. £1	9 0
3 ,, ..	.. 1	18 0
3½ ,, ..	.. 2	7 0
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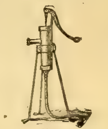

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PORTABLE PUMP,
With improved Valves for Liquid Manure, £2 16*s*. 6*d*. Two-inch Flexible Rubber Suction Pipe, in 10, 12, and 15 feet lengths, per foot 2*s*. 5*d*.

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Galls.		Galls.	
20	£2 2 0	38	£3 18 0
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Suttons' Superb Hybridised Florist Flower Seeds.

SUTTONS' SUPERB CALCEOLARIA.

MESSRS. SUTTON AND SONS have received NEW SEED of their superb varieties of FLORISTS' FLOWERS, HYBRIDISED, and saved from the Finest Strains in Cultivation.

SUTTONS' Superb CALCEOLARIA, per packet, 2s 6d., post free.
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From Mr. GEO. BOND, *Gr to the* Earl of Powis, *Walcot Gardens.*
May 23, 1871.—"The flowers of the Calceolaria and Cineraria seed I had of you are splendid."

From Mr CHAS WARCROFT, *Gr to* A. R. Hudson, Esq., *Pershore.*
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SUTTON AND SONS, Seedsmen to the Queen, and H.R.H. the Prince of Wales, Reading.

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For PRESENT SOWING.

LEE'S CHOICE CALCEOLARIA, from James's, Dalkeith, and other choice strains, carefully selected and hybridised. Unsurpassed for colour, habit and form. In packets, 2s 6d. and 5s each.

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LEE'S CHOICE PRIMULA FIMBRIATA, in separate colours or mixed. In packets, 2s 6d. and 5s. each.

Do do., 6 distinct varieties for 10s 6d.

JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

	Per packet —s.	d.
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d.; smaller packets ..	1	6
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Saved with the greatest care, and from one of the largest collections in the kingdom.		
CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2	6
PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.		
PRIMULA, choicest Mixed Fringed, 2s. 6d.; smaller packets..	1	6
,, dark Carmine	2	6
,, new Scarlet	2	6
,, Rose Fringed	2	6
,, choicest White Fringed	2	6
,, choicest Fern-leaved Carmine	2	6
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Forwarded immediately on receipt of Post-office Orders.
Seeds carriage free Five per cent. discount for cash.

JAMES CARTER AND CO., The Royal Seedsmen, 238, High Holborn, London, W C.

WM. PAUL'S ROSES are NOW in BLOOM; inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance from the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

New H.P. Rose, Louis Van Houtte.

H. BENNETT has to DISPOSE OF 1000 young, strong, thriving plants, in 5-inch pots (having from 12 to 14 working buds each) of this exquisite Rose, the best yet sent out by Monsieur Lacharm. Characteristics: habit vigorous, and branching; growth and blooming continues throughout the season; colour, dense rich velvety-crimson, the tips of the petals most brilliantly illuminated with a lighter shade; form, most perfect. A fine pot Rose, blooming to a certainty when forced. Price, per single plant, dozen, or 100, on application. Also very strong plants, in 5-inch pots, of the following new Roses of 1870:—

H.P. ROSE, Mademoiselle Eugénie Verdier.
H.P. ROSE, Marquise de Castellane.
TEA ROSE, Madame Levet.

HYBRID PERPETUALS of 1871.

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Henri Pages. | Monsieur Cordier.
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TEAS of 1871.

Frères Souper et Notting. | Madame Emilie Dupuy.
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General ROSE CATALOGUE free on application.
Manor Farm Nursery, Stapleford, near Wilton, Wilts

Ferns, Ferns, Ferns.

TO THE TRADE and OTHERS.

LOMARIA GIBBA, 9d. each, 6s. per dozen.
GYMNOGRAMMA LAUCHEANA (best Gold Ferns), 9d. each, 6s. per dozen.
GYMNOGRAMMA WETENHALLIANA, beautifully crested Silver Fern, 1s. each
DICKSONIA ANTARCTICA (beautiful Tree Fern), 2s. each, 18s. per dozen.

All the above healthy-growing young Plants.

THAMNOPTERIS AUSTRALASICA (Bird's Nest Fern), fine strong plants, in 48-size pots, 2s 6d. each.
PTERIS LONGIFOLIA, strong plants, in 48-size pots, 1s. each.
ASPLENIUM BULBIFERUM, do., do, 1s 6d each.
SELAGINELLAS, strong plants, in 60 size pots, 6s per dozen
NEW FUCHSIAS of last year, own selection, 3s. 6d. per dozen, good plants.
DOUBLE GERANIUMS, Four First-class sorts, extra strong plants, 2s. 6d per dozen.

Also other Plants as Advertised June 10 and 24.
All package free, and for cash only
Post orders payable at Huntingdon.
KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

ROYAL BOTANIC SOCIETY'S THIRD SUMMER EXHIBITION,

JULY 12 AND 13.

AWARDS OF PRIZES.

MEDIUM GOLD MEDAL.

Mr. J. Ward, Gr to F. G. Wilkins, Esq., Leyton, for 20 Stove and Greenhouse Plants.

GOLD MEDAL

Messrs. Jackson & Son, Kingston, for 20 Stove and Greenhouse Plants.

LARGE SILVER GILT MEDAL.

Miss Hassard, Church Road, Upper Norwood, for Dinner-table Decorations.
Mr. John Ward, for 8 Exotic Orchids.
Mr. W. Lynn, Gr. to Lord Boston, Hedsor, Maidenhead, for a collection of Fruit.

SILVER GILT MEDAL.

Mr. W. L. Buster, St Mary Cray, Kent, for Dinner-table Decorations.
Mr. Thos Baines, Gr to H. Micholls, Esq., Southgate, for 6 Stove and Greenhouse Plants
Mr. B S Williams, Holloway, for 8 Exotic Orchids.
Mr Johnson, Gr to the Marquis of Aylesbury, Savernake, for a collection of Fruit.

SMALL SILVER GILT MEDAL.

Miss E. Harris, Clarendon Park, Salisbury, for Epergne with Cut Flowers and Fruit.
Mr. W. Kemp, Gr. to the Duke of Northumberland, Albury Gardens, Guildford, for 20 Stove and Greenhouse Plants.
Messrs. Jackson & Son, Kingston, for 6 Stove and Greenhouse Plants
Mr. Thos. Baines, Gr. to H. Micholls, Esq, Southgate, for 6 Fine Foliage Plants.
Mr. A. Wright, gr. to C. H. Roberts, Esq., Avenue Road, Regent's Park, for 8 Exotic Orchids.
Mrs. Greenhalgh, for large Fern Case.

LARGE SILVER MEDAL.

Mr. F. Perkins, Regent Street, Leamington, for Dinner-table Decoration.
Mr. John Ward, for 6 Stove and Greenhouse Plants.
Mr. E. Morse, Epsom, for 6 Stove and Greenhouse Plants.
Mr. J. Burley, Nurseryman, Bayswater, for 6 Fine Foliage Plants.
Messrs. Rollisson & Son, for 6 Exotic Orchids.
Mr. J. Carr, Gr. to P. L. Hinds, Esq., Byfleet, Weybridge, for 8 Caladiums.
Mr. T. Baines, Gr. Southgate, for 6 Exotic Ferns.
Mr. B. S. Williams, Nurseryman, for 6 Exotic Ferns.
Mr. T. Russell, Rose Cottage, Hampstead, for Pair of Window Boxes.
Mr. F. Perkins, Leamington, for Rustic Basket filled with Plants.
Messrs. Ivery & Son, Dorking, for 12 British Ferns.
Mr. B. S. Williams, for Pair of Tree Ferns.
Mr. B. S. Williams, for 4 Palms.
Mr J. Burley, Nurseryman, for 4 Palms.
Mr. J. Weston, Gr. to D. Martineau, Esq., Clapham Park, for 6 Fuchsias.
Mr. J. Catlin, Gr. to Mr. Lermitte, Sen., Finchley, for 6 Scarlet Pelargoniums
Mr G. Goddard, Gr. to H. Little, Esq., Twickenham, for 6 Tricolor Pelargoniums.
Messrs. Paul & Son, Cheshunt, for 48 varieties of Cut Roses.
Mr. W. Ingle, Gr. to Mrs. Round, Birchall, Colchester, for 24 varieties of Cut Roses.
Mr. B. R. Cant, Nurseryman, Colchester, for 24 trusses of Yellow Roses.
Mr. C. Berry, Gr. to J. Da Silva, Esq., Wandsworth Common, for 12 lb. of Black Grapes.
Mr. P. Feist, Gr. to R. Ashton, Esq., Staines, for 12 lb. of White Grapes
Mr. B. S. Williams, for a collection of Plants.

SILVER MEDAL.

Miss E. Harris, Clarendon Park, Salisbury, for Dinner-table Decorations.
Miss E. Harris, for Epergne with Growing Plants.
Miss Hassard, for Epergne, with Cut Flowers and Fruit.
Miss Annie M. Williams, Holloway, for Table Bouquet.
Mr. J. W. Chard, Clarendon Park, Salisbury, for Dinner-table Decoration.
Messrs. Dick Radclyffe & Co., Holborn, London, for Epergne with Plants, Flowers, and Fruit.
Mr. John Wills, Sussex Place, Brompton, for Bridal Bouquet.
Mr. F. Perkins, Leamington, for 20 Stove and Greenhouse Plants in 12-inch pots.
Mr. Joseph Wheeler, gr. to J. Philpotts, Esq., Stamford Hill, for 6 Stove and Greenhouse Plants.
Mr. Ransley Tanton, Epsom, for 6 Stove and Greenhouse Plants.
Mr. A. Wright, gr. to C. H. Roberts, Esq., for Fine Foliage Plants.
Mr. J. Wheeler, for 8 Exotic Orchids.
Mr. W. Bull, Chelsea, for 8 Exotic Orchids.
Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart., for 8 Caladiums.
Mr. J. Carr, for 6 Exotic Ferns.
Mr. J Burley, Nurseryman, for 6 Exotic Ferns.
Mrs. Jeal, Park Street, Dorset Square, for large Fern Case.
Miss Graham, Brookside, Haltwhistle, for small Fern Case.
Messrs. Dick Radclyffe & Co., Holborn, for Hanging Basket with Growing Plants.
Mr. C. Wood, High Street, Marylebone, for pair of Window Boxes filled with Growing Plants.
Mr. W. Cole, Gr. to F. S. Budgett, Esq., Ealing, for Rustic Basket filled with Plants.
Mr. J. Carr, Byfleet, for 12 British Ferns.
Mr. G. Wheeler, for a pair of Tree Ferns.
Messrs. Wright, Nurserymen, Lee, Kent, for 6 Fuchsias.
Mr. J. Weston, Gr. to D. Martineau. Esq., for 6 Scarlet Pelargoniums.
Mr. G Thomas, Turner Road, Lee, Kent, for 6 Tricolor Pelargoniums.
Messrs. Carter & Co., Holborn, for 12 Tricolor Pelargoniums.
Mr. B. Cant, Colchester, for 48 varieties of Cut Roses.
Mr. W. Farren, Cambridge, for 24 varieties of Cut Roses.
Messrs. Paul & Son, for 24 trusses of Yellow Roses.
Mr. E Clark, Gr. to J. C. Brown, Esq., Horsham, for a collection of Outdoor Fruit.
Mr. Westler, Gr. to J. A. Rose, Esq, Wandsworth Common, for 2 Vines in pots.
Mr. A. Johnson, Savernake, for 12 lb. of Black Grapes.
Mr. G. Osborne, for 12 lb of White Grapes.

SMALL SILVER MEDAL.

Mr. Joseph Wheeler, Stamford Hill, for 20 Stove and Greenhouse Plants, in 12-inch pots.
Mr. A. Wright, for 6 Stove and Greenhouse Plants.
Mr. Jas. Douglas, Gr. to F. Whitbourne, Esq, Loxford Hall, Ilford, for 4 dishes of Strawberries.
Messrs. Ivery & Son, for a collection of Hardy Ferns.
Messrs. E. G. Henderson & Son, for collection of New and Rare Plants.
Messrs. J. Veitch & Son for collection of New and Rare Plants.

LARGE BRONZE MEDAL.

Messrs. Pellat & Co., 25, Baker Street, for Epergne, with Plants, Flowers, and Fruit.
Mrs. Ransley Tanton, Epsom, for Bridal Bouquet.
Mr. F. Perkins, for Ball-room Bouquet.
Mr. G. Pearce, Gr. to W. S. Burton, Esq., Regent's Park, for 8 Caladiums.
Mr. A. Wright, for 6 Exotic Ferns.
Mrs. Jenkins, York Gate, Regent's Park, for large Fern Case.
Mr. Geo. Pearce, Gr., Regent's Park, for Hanging Basket, with Growing Plants.
Miss Annie Williams, Holloway, for pair of Window Boxes, filled with Growing Plants.
Mr. Ransley Tanton, for Rustic Basket, filled with Plants.
Mr. G. Wheeler, for 6 Fuchsias.
Mr. W H. Filce, Gr. to J. Hatter, Esq., Clapham Park, for 6 Scarlet Pelargoniums.
Mr. T. Welsh, Hillingdon, Middlesex, for 6 Tricolor Pelargoniums.
Messrs. F. & A. Smith, for 6 Tricolor Pelargoniums.
Messrs E G. Henderson & Son, for 6 Tricolor Pelargoniums.
Mr J. Fraser, Nurseryman, for 48 varieties Cut Roses.
Mr. J. Skinner, Gr. to Capt. Christie, Westerham, for 24 varieties Cut Roses.
Mr. W. Lynn, Gr. to Lord Boston, Hedsor, Maidenhead, for collection of outdoor Fruit.
Mr. W Birse, Gr. to J. F. Lermitte, Esq., Finchley, for 2 dishes of Peaches.
Mr. J. Davey, Bridge Nursery, Friern, Barnet, for 2 dishes of Nectarines.
Mr. J. Smith, Gr. to the Earl of Gainsborough, Exton Park, Oakham, for 4 dishes of Strawberries.
Mr W. Cole, for 2 Vines in pots.
Mr. C. Osman, Gr., Stanmore Hall, for dish of Figs.
Mr. J. Jaques, Gr. to J. C. Cunliffe, Esq., Croydon, for 1 Queen Pine-apple.
Mr. H Bertram, Gr. to R. T. Crawshay, Esq., Cyfarthfa Castle, for 1 Pine-apple.
Mr G. Osborne, Kaye's Nursery, Finchley, for 12 lb. of Black Grapes.
Mr W. Davies, New Lodge, Friern, Barnet, for 12 lb. of White Grapes.
Mr. J. Douglas, for 1 dish of Black Hamburgh Grapes.
Mr. J. Standish, Ascot, for 1 dish of Black Grapes.
Mr. R. Ritchie, Gr. to R. H. Prance, Esq., Hampstead, for 1 dish of Muscat Grapes
Mr. W Cole, for 1 dish of White Grapes.
Messrs Rollisson & Son, Tooting, for a collection of New and Rare Plants.
Messrs. E. J. Perkins, Leamington, for cut Geranium Blooms.
Mr. G. Pearce, Gr, for a collection of Foliage and Flowering Plants.
Mr. W. Hooper, Bath, for a collection of Picotees, Pinks, and Pansies.
Miss E. Harris, for Table Bouquet.
Miss P. Buster, St. Mary Cray, Kent, for Hand Bouquet.
Miss Hassard, for Hand Bouquet.
Mrs. Ransley Tanton, for Ball-room Bouquet.
Mr. John Cranston, King's Acre, Hereford, for Ball-room Bouquet.
Mr. G. Pearce, for 6 Exotic Ferns.
Miss Levett, 66, Talbot Road, Bayswater, for small Fern Case.
Mr. F. Perkins, for 6 Scarlet Pelargoniums.
Mr. J. W. Chard, for 24 varieties of Cut Roses.
Mr. A. Reid, Gr. to Louis Huth, Esq., Possingworth, Sussex, for 2 dishes of Peaches.
Mr. W. Birse, for 2 dishes of Nectarines.
Mr. W. Cole, for 2 dishes of Cherries.
Mr. F. Pestridge, Nurseryman, Uxbridge, for 4 dishes of Strawberries.
Mr. H. Harvey, Gr., Wooley Park, Wantage, for a dish of Figs.
Mr. J. Akehurst, Gr. to S. Copestake, Esq., Highgate, for 1 Queen Pine-apple.
Mr. G. Ward, Gr. to T. N. Miller, Esq., Bishop Stortford, for 1 Pine-apple.
Mr. M. Walker, for 1 dish of Black Hamburgh Grapes.
Mr. F. Hicks, Gr. to C. Scholefield, Esq., for 1 dish of Black Grapes.
Mr. B. Barham, Gr. to Lord Ormathwaite, for 1 dish of Muscat Grapes.
Mr. G. Wheeler, for a collection of Achimenes.
Mr. G. Wheeler, for a collection of Foliage and Flowering Plants.
Messrs. Downie, Laird & Laing, for a collection of Phloxes.
Mr. W. Bull, Chelsea, for a collection of New and Rare Plants.
Mr. W. Paul, for collection of Cut Roses.

CERTIFICATES.

Mr. G. W. Chard, for Bridal Bouquet.
Messrs. Carter & Co., Holborn, for Hanging Basket with Growing Plants.
Mr G. Pizzey, Gr. to Sir E. Fulmer, for collection of Outdoor Fruit.
Mr. W. Bones, Gr., Havering Park, for 2 dishes of Peaches.
Mr. W. Kemp, for 2 dishes of Nectarines.
Mr. M. Walker, Gr., Gunnersbury House, Acton, for 2 dishes of Cherries.
Mr. D. Pizzey, for 4 dishes of Strawberries.
Messrs Lane & Son, for 2 Vines, in pots.
Mr. A. Reid, for Fruit not named in Schedule.
Mr. J. Deville, Gr. to Lady Edwards, Wooton Hall, Derbyshire, for 1 Queen Pine-apple.
Mr. M. Rochford, Page Green, Middlesex, for 1 Pine-apple.
Mr. Chas. Ross, Gr., Welford Park, Newbury, for 1 Green-fleshed Melon.
Mr. W. Lane, Gr. to J. Miles, Esq., Friern, Barnet, for 1 Scarlet-fleshed Melon.
Mr. Barham, Gr. to Lord Ormathwaite, Warfield Park, for 1 dish of Black Grapes.
Mr. W. Kemp, for 1 dish of Muscat Grapes.
Mr. D. Pizzey, for 1 dish of White Grapes.
Mr. W. Chitty, Stamford Hill, for a collection of Campanulas.
Mr. J. Akehurst, for 3 Pine-apples in pots.
Mr. H. Harvey, for 4 Pine-apples.
Mr. A. Wright, for a collection of Heaths.

BOTANICAL CERTIFICATES OF MERIT.

Mr. Robert Parker, Tooting, for Ixora amabilis.
Mr. W. Bull, Chelsea, for Amorphophallus spectabilis.
Mr. W. Bull, Chelsea, for Alocasia Marshallii.
Mr. W. Bull, Chelsea, for Philodendron hybridum.
Mr. W. Bull, Chelsea, for Dioscorea spectabilis.
Mr. W. Bull, Chelsea, for Pteris serrulata cristata.
Mr. W. Bull, Chelsea, for Goniophlebium glaucophyllum.
Messrs. E. G. Henderson & Son, for Hydrangea japonica speciosa.
Messrs. E. G. Henderson & Son, for Verschaffeltia melanochætes.
Mr. B. S. Williams, Holloway, for Rhopala Granadensis.
Mr. B. S. Williams, for Miltonia Warscewiczii.
Mr. H. Wendland, Inspector of Royal Gardens, Hanover, for Æchmea Maria Regina.
Messrs. Jas. Ivery & Son, Dorking, for Polystichum angulare pulchrum.
Messrs. Jas. Ivery & Sons, for Polystichum angulare fœmina trifidum.
Messrs. Jas. Ivery & Son, for Polypodium vulgare Whytei.
Mr. W. Bull, Chelsea, for Bignonia Roezliana.
Mr. Standish, Ascot, for Bouvardia leiantha grandiflora.
Messrs. Rollisson & Son, for Davallia clavata.

FLORICULTURAL CERTIFICATES OF MERIT.

Messrs. E. & J. Perkins, Leamington, for Coleus Lady Leigh.
Mr. Chas. Kimberly, Coventry, for Tricolor Geranium Gem of Tricolors.

ROYAL HORTICULTURAL SOCIETY.—HORTICULTURAL DEPARTMENT of the LONDON INTERNATIONAL EXHIBITION, 1871.

The following Awards to Foreign Exhibitors have been made in this Department :—

APRIL 19, 1871.

Silver Flora Medal, M. L. Van Houtte, Ghent, for a Group of New Indian Azaleas.
First-class Certificate, M. L. Van Houtte, for Azalea Comtesse de Beaufort.
,, M. L. Van Houtte, for Azalea President Ghellinck de Walle.
,, M. L. Van Houtte, for Azalea George Loddiges.
,, M. L. Van Houtte, for Azalea Alice.
,, M. L. Van Houtte, for Azalea Marquis of Lorne.

MAY 3, 1871.

Silver Floral Medal, M. A. Dallière, Ghent, for a Group of Palms, Hollies, Azaleas, &c.
Second-class Certificate, M. A. Dallière, for Azalea La Reine.

JUNE 7, 1871.

Silver Floral Medal, M. A. Dallière, for a Group of 12 Palms.
,, M. A. Dallière, for a Pair of Pyramidal Bays.
First-class Certificate, M. J. Linden, Brussels, for Xanthosoma Lindeni.
,, M. J. Linden, for Dracæna lutescens striata.
,, M. J. Linden, for Acer palmatum crispum.
,, M. J. Linden, for Acer palmatum roseo-dissectum.
,, M. L. Jacob-Makoy & Co., Liege, for Lycopodium dichotomum.
,, M. L. Jacob-Makoy & Co., for Lycopodium mandioccanum.
,, M. L. Jacob-Makoy & Co., for Lycopodium taxifolium.
,, M. L. Jacob-Makoy & Co., for Tillandsia Morreniana.
Second-Class Certificate, M. J. Linden, for Epidendrum paniculatum.
Special Certificate, M. J. Linden, for a Group of Japanese Acers.

JUNE 21, 1871.

First-class Certificate, M. J. Linden, for Verschaffeltia melanochætes.
,, M. J. Linden, for Thrinax elegantissima.
,, M. J. Linden, for Calamus sp. Menado.

JULY 5, 1871.

Silver Flora Medal, M. J. Linden, for a Group of Orchids.
,, M. J. Linden, for a Group of New Dioscoreas.
,, M. J. Linden, for a Group of New Marantas.
,, M. A. Dallière, for a Group of Marantas, for culture.
Special Certificate, M. A. Dallière, for Group of Greenhouse Palms, &c.
Special Certificate, M. J. Hermans, Herenthals, for Cut Roses.
First-class Certificate, M. J. Linden, for Epidendrum Frederici Gulielmi.
,, M. J. Linden, for Maranta Mazellii.
,, M. J. Linden, for Maranta Wallisii discolor.
,, M. J. Linden, for Dieffenbachia imperialis.
,, M. J. Linden, for Dioscorea meleagris.
,, M. J. Linden, for Dioscorea Eldorado.
,, M. J. Linden, for Dioscorea prismatica.
,, M. J. Linden, for Dioscorea chrysophylla.
,, M. J. Linden, for Alloplectus vittatus.
Second-class Certificate, Mr. J. Linden, for Aralia japonica aureo-reticulata.

The Gardeners' Chronicle

SATURDAY, JULY 15, 1871.

MEETINGS FOR THE ENSUING WEEK.

WEDNESDAY, July 19	Royal Horticultural (Fruit and Floral Committees), at S. Kensington ..	11 A.M.
	Ditto (Scientific Committee) ..	1 P.M.
	Ditto (General Meeting)	3 P.M.

IT is with surprise and regret that we have lately seen an attempt to dwell on the difference between PRACTICE and SCIENCE, as if the two were necessarily antagonistic instead of being complementary the one to the other. In a subject like gardening, which is at once an art and a science, neither the one nor the other can be neglected without injury to both. He who ignores the science leaves his craft as he found it – he buries his talent ; he who neglects the practice injures his own interests, and has clearly no title to be called a gardener. We can only suppose that those who decry science really have no clear idea what they mean. We fancy it is the word which is in fault here. "Science" has a Latin twang about it which raises a sort of prejudice against the thing it symbolises. Substitute the Saxon term, "knowledge," and we have a word which comes home to every man's understanding, and which at once commands his sympathies.

A gardener with knowledge is what every one wants—a gardener with science is fought shy of ; but this simply means that the public, in seeking a gardener, neither wish for a philosopher nor desire a quack. They want a man who can, as Mr. FISH well expressed it, put his science into his flowers or fruit. The Pine, as we were lately reminded, that was presented to CHARLES II., and of which ceremonial the picture still remains, was but a poor affair in comparison with what the "science" of a DAVID THOMSON, or any other of our noted Pine growers, has led us to look for on our exhibition tables now-a-days.

The thousand and one illustrations of improvement in the art of gardening that might be adduced, were it not a matter of complete supererogation to do so, are, we submit, all and each as much due to science—that is, knowledge—as to practice. Without knowledge there can be no progress—with it advancement is only limited by the finite powers of individuals ; and their successors, profiting by what their predecessors have done, push forward the great work and earn the gratitude of their fellows by their power of supplying human needs and human comforts.

The duty of the Royal Horticultural Society is plain, though we do not think that sufficient allowance is always made for the difficulties of its position. It must uphold the interests of all departments of gardening, scientific or practical ; it must not favour either at the expense of the other ; and it must get money. If it ignore science, it loses its title to influence and respect ; it undoes all that SABINE, KNIGHT, LINDLEY strove so earnestly to accomplish, and descends to the level of a mere bazaar ; if it neglect practice and slight practitioners the main object of its existence is annulled ; while if it does not get money, naturally its own downfall must ensue.

Happily we believe none of these contingencies are likely to ensue. It is obvious enough that on the Council of the Society are some members not so useful as they might be, and who cannot be termed gardeners in any sense of the word ; but as they probably aid the Society, at least indirectly, in its money-making departments, we can only wish that their aid was more freely rendered. As for other members of the Council, and these the working men—WILSON SAUNDERS, BATEMAN, WILSON, MARSHALL, CLARKE, and others—we do not see how the Society could, on the whole, be more fortunate in its councillors.

Every one of those we have named is a working horticulturist of no second rank, and they are supported by men of business and tact who have succeeded so far in steering the Society amid many difficulties, and who seem now likely to enable the Society once more to bask in the sunshine of prosperity. That the Council of a Society, with so many conflicting interests to serve, should blunder occasionally, is only to say that it is human. It could commit no graver blunder than to slight either its practical or its scientific upholders.

In conclusion, we commend the perusal of the following communication to our unscientific friends. It will probably lead them to think that if a little knowledge is a dangerous thing, no knowledge is often worse.

"Understanding that prizes are offered for hybrid plants, I should like to be acquainted with particulars, as for several years past I have quietly interested myself in the matter, and accomplished some singular crosses. I enclose a flower, the result of one Heartsease crossed with Calceolaria ; it slightly shows the cross, is a first blossom ; the plant is delicate, with smaller leaves than is usual with Heartsease.

"The shoots, or off-shoots, which accompany it are a more curious cross,—Heartsease crossed with common Brake Fern. Three or four plants thus crossed show most of Heartsease, but ever and anon throw up similar shoots, which vary in strength and size, and sori on back of leaves, but after growing rapidly they die off. One of the shoots sent threw out two or three blooms, and appeared likely to give seed, but, as you will perceive, did not. The parent plants are large, stems strong and coarse looking, with few leaves and very marked joints. A month since they threw up shoots, showing the cross very freely ; at present it is not the case, as the plants are resting, but will soon take heart and prepare for a second growth, and then, no doubt, will more decidedly show the Fern nature, as they did last year.

"I am repeating various crosses—one of interest, Geranium with Hemlock, or rather Hemlock with Pelargonium. The cross produces quite a small delicate plant, which seeds freely, and in the blossom shows the cross very plainly. I grew plants from this cross for two years ; it proved only an annual. I tried repeatedly to reverse the cross, but never succeeded.

"Some years since I tried 'Borage,' or 'Bee-bread,' with Pelargonium, and the cross must have taken, for the blossoms hybridised invariably gave white seed, and they grew, but I could not see any trace of a cross in the plants. If I can, I shall repeat this cross."

—— OF all the HORTICULTURAL ESTABLISHMENTS of PARIS, none were more remarkable than that known as LA MUETTE. At the time of our last visit, hardly more than a twelvemonth since, one vast conservatory was filled from end to end with nothing but Azaleas, grown in the French style, and constituting, when looked on from above, a marvellously beautiful parterre of floral mosaic. The Palms and decorative plants grown in this establishment were so numerous, and the general arrangements on so large a scale, that it is no wonder that the earlier accounts received in this country were treated with incredulity as highly coloured with the exaggeration pertaining to travellers' tales. This, however, was not the case. It was soon ascertained that there was no exaggeration in the account written of La Muette. We have been naturally anxious to know what was the fate of this, in many respects, unrivalled establishment. M. ANDRÉ returns for answer that out of the 40 houses and their contents scarcely anything remains, but he attributes much of the disaster to the incompetency of the director appointed after the departure of MM. BARILLET and ERMENS. At the Luxembourg, M. RIVIÈRE has been more fortunate, and was enabled to save the greater portion of his plants. Of the destruction in other public establishments, we have previously spoken on more than one occasion.

—— The last number of the "Revue Horticole," *i.e.*, the first number since the termination of the new Reign of Terror, contains a long list of persons connected with horticulture and botany who have fallen victims in some way or another to the direful calamities which have overtaken France during the last year. To some of these we have already alluded, but we have not previously announced the decease under most painful circumstance, of M. LIERVAL, well known as a distinguished florist ; M. FOURREAU, the pupil and *collaborateur* of M. JORDAN, of Lyons, well known for his extreme views as to the nature of species, and who died in battle, as also did ETIENNE DE VILMORIN, youngest son of LOUIS DE VILMORIN ; and ALPHONSE MÜLLER, nurseryman, of Strasburg. Animated by noble patriotism, it is to be hoped their successors will show their love of their country by rendering the occurrence of such disasters impossible in the future.

—— The Earls of SHREWSBURY and of DARTMOUTH have set a good example by inviting their tenantry to visit the AGRICULTURAL SHOW at WOLVERHAMPTON, and providing luncheon for them on the occasion. This is a practice that might well be imitated by the proprietors of large garden establishments on the occasion of the provincial or other large shows of the Royal Horticultural Society.

—— CHLORIDE of LIME is an excellent disinfectant, but it is a depilatory, and, as they have found to their cost in Brussels, some time since, a defoliator. It appears, from the "Illustration Horticole," that a quantity of the substance mentioned was stored in some warehouses close to the Botanic Garden ; the result was that a large number of the plants lost their leaves in consequence of the emanations from the chloride of lime.

—— A correspondent, writing from Christchurch, has forwarded us a specimen of SISYRINCHIUM BERMUDIANUM, L., found, as he states, in the moist part of a wood in the south of Hampshire, in a sheltered position, about half-a-mile from the coast. There is no reason to doubt the correctness of this statement, which is extremely interesting, as being the first record of this plant in Great Britain, though it was discovered some years since in County Galway, Ireland ("Phytologist" ii., 795). BENTHAM admits the plant as a native of Ireland, while WATSON, MOORE, and MORE, in the "Cybele Britannica," and "Cybele Hibernica," respectively, consider it as an alien. If the plant has not been purposely introduced, it forms an interesting addition to the other plants of supposed American lineage, Neottia gemmipara, Naias flexilis, Eriocaulon septangulare, &c. We should be much obliged if our correspondent would favour us with another specimen.

—— The current number of that excellent periodical, the "American Agriculturist," contains a woodcut and a descriptive account of the BUFFALO GRASS, Buchlöe dactyloides. This grass is widely distributed throughout the central districts of North America, from Canada to Texas, and forms a large proportion of the food of the Buffalo. The grass in question is diœcious, the male plants having so different an aspect from the female that the two sexes of the same plant have been described as separate species. Dr. ENGELMANN, of St. Louis, however, happened to meet with an obliging monstrosity, which bore flowers of both kinds, and which settled the specific nature of the plant. A grass like this, having such extensive powers of propagating itself by stolons, and one which can endure so great climatal vicissitudes, should be looked after by our Australian friends.

—— Mr. ALBERT MÜLLER has recently published, in the Transactions of the Entomological Society, an interesting paper on the DISPERSION of CERTAIN INSECTS by means of the wind. The insects in question are such as, under ordinary circumstances, are not migratory, but are carried per force. Mr. MÜLLER cites a large number of cases which led him to the conclusion, in which we concur, that the amount of dissemination by atmospheric means is much underrated. As the dissemination of some plants, seeds, &c., occurs in precisely the same manner, we advise all readers concerned in the question relating to the dispersal of species, to peruse Mr. MÜLLER's interesting paper.

—— Those who advocate the claims of the CARPET SYSTEM of BEDDING-OUT, may be interested to know that Mr. CANNELL has one of the largest beds we have seen at the Fuchsia Nursery, Woolwich. It is 34 feet long, and 11 feet wide, and contains over 2900 plants, estimated in value at nearly £60. As yet, owing to the ungenial nature of the weather, the plants have not made much progress in growth ; but there is every reason to anticipate that, should we be favoured shortly with anything like summer weather, the bed will present many features of interest, inasmuch as nearly all the subjects available for this kind of work are represented in sufficient numbers to show the special merits of each, and grouped in such a happy manner as to make the bed a carpet picture of the most complete description. There is also another promising feature in this bed which we do not remember to have seen before, *i. e.*, the introduction of dwarf flowering plants of bright colour, to brighten up the sombre tints of the plants used for carpeting the ground.

—— The MAXIMUM TEMPERATURES in England during the week ending July 8 ranged from 77° at Leicester to 68° at Sheffield, with a mean for all stations of 71°.8 ; and in Scotland from 73° at Leith to 66°.9 at Aberdeen, with a mean for the several stations of 69°.5. The MINIMUM TEMPERATURES in England, as recorded at the several stations, were 47°.2 (at Salford), 47°.7 (Leicester), and 47°.9 (Nottingham); with a mean for the country of 48°.9, or about four-tenths of a degree lower than the mean for the several stations in

Scotland—where 47° (at Paisley) and 47°.5 (at Aberdeen) were the lowest temperatures. MEAN TEMPERATURES.—These values, although as a rule below their averages, were higher than during the preceding week; 60°.5 at Blackheath in England is 1½° above the next highest, viz., 59° at Perth in Scotland: close to which follow Portsmouth, 58°.9; Norwich, 58°.6; Leicester, 58°.4; and Manchester and Bradford, 58°3, in England, and Leith with 58.5° in Scotland; the means for the two countries were 57°.8 for England and 57°.1 for Scotland. RAINFALL.—Some heavy falls have been recorded in England, especially at the midland stations: for instance, 2.13 inches at Nottingham, 1.76 inch at Sheffield, and 1.58 inch at Leicester; of the remainder, 1.59 inch at Hull, 1.32 inch at Liverpool, and 1.16 inch at Birmingham, were the principal. In Scotland the falls ranged in amount from 0.90 inch at Edinburgh to 0.52 inch at Leith, while at Paisley no rain fell. The mean fall for England was 1.16 inch, and for Scotland was 0.63 inch. (See Mr. GLAISHER'S Tables in our present issue.)

—— The plants composing the British Flora are now so well known, and England especially has been so thoroughly searched by careful observers, that any addition to their number, other than of critical species or evident introductions, is of great interest. More especially is this the case with the latest addition to our list—that of SILER TRILOBUM, Scop. (Laserpitium aquilegiæfolium, Gærtn.) which has been found by Mr. J. COSMO MELVILL at Cherry Hinton, near Cambridge, close to the well-known locality for Seseli Libanotis and Bunium Bulbocastanum. The locality is given, in the "Flora of Cambridgeshire," as producing Smyrnium Olusatrum, a plant which was recorded from the same place by RAY, RELHAN, and MARTYN; and, almost incredible as it may appear, the plant seems to have escaped the notice of the many botanists who have made Cambridge the scene of their studies. Mr. MELVILL first gathered it in 1867, and we have seen in his herbarium the specimen then collected; he labelled it Smyrnium, on the faith of the Cambridgeshire Flora, recording the plant for that locality, although he had doubts even at the time as to its correctness. Having recently collected true Smyrnium, he again visited Cherry Hinton, and the result of his examination is the identification of the plant with Siler trilobum. Although in a young state (no fruit being at present matured) there can be no doubt as to the accuracy of the identification, the leaves alone, which are singularly like those of Columbine, being sufficient to show the distinctness of the plant from Smyrnium, and agreeing perfectly with authentic Continental specimens, as well as with JACQUIN'S admirable figure in "Flora Austriaca." Whether the plant is a genuine native we can scarcely pronounce at present, the Continental distribution, while not in opposition to such a conclusion, being scarcely what one would expect for a British plant: it is, however, a species which would only be introduced by a botanist, and must have retained its present position for many years. Under these circumstances we direct our readers' attention to the matter, and would advise them to examine their specimens of Smyrnium in case the same singular error may have occurred elsewhere.

—— Any one familiar with old gardening books will recall the important INFLUENCE which the MOON was supposed to exercise upon the GROWTH of PLANTS. Directions for planting trees, or gathering herbs, were almost always regulated in some manner by the state of the moon. We learn from the "Scientific American," that some of our Transatlantic cousins are still under the influence of the same belief. A correspondent of that journal writes:—"I am quite certain if Hickory timber, for instance, be cut between the full and new moon, the worms will devour it, but if cut, say, three days after full moon the worms will not touch it." Another correspondent, who had heard this point discussed for many years, tried the experiment, and, it is almost unnecessary to add, found the sticks cut at the different times mentioned in precisely the same condition, and quite free from worms. It is somewhat comforting to dwellers in the "old country" to find that even "Brother JONATHAN" has his superstitions, as his ancestors had before him.

—— Some consideration has of late years been given towards the growth of fibrous and oil-yielding plants in our colonies and foreign possessions, and amongst the latter the Sunflower, HELIANTHUS ANNUUS, has been favourably spoken of. The plant is largely grown in Russia for the sake of the oil; and it is said that, under a good system of cultivation, a bushel of seed will yield a gallon of excellent oil, which can be used for burning in lamps, for soap-making, or painting; and, if properly refined, it makes an excellent table oil. It is said to be much used for adulterating Olive oil, and is exported from St. Petersburg in large quantities, fetching about 10*s*. 6*d*. per cwt. The refuse, or marc, after the expression of the oil, is an excellent food for cattle. Horses, cows, and poultry are said to fatten rapidly after being fed with these seeds. In many places in Russia they are boiled and eaten by the people, and, when properly shelled and pulverised, they make good flour, which, being sweet, is very suitable for making cakes. The dried leaves are given to cattle instead of straw, and the stalks are said to produce a large quantity of alkali. One of the most recent applications, however, that has been advocated for the stems of the Sunflower is the manufacture of paper. Considering the ease with which these plants can be grown, and the quantity of seeds each one produces, it is time, if they are so really valuable, that they were made more generally useful.

—— The genus GAZANIA is well known both for its showy flowers, and for being peculiar in its geographical distribution to Southern Africa. None of the species, so far as we know, have, until now, been found to possess any useful properties; but one comes to us from the Bolwe River in Matabililand, Southern Africa, from the leaves of which the natives make excellent tinder. The long leaves are apparently beaten out, and the outer cuticle removed, leaving a soft, leathery substance, which is partly twisted like a rope in lengths of about 6 inches.

New Garden Plants.

SELAGINELLA RUBELLA, *Moore, n. sp.*

Stem prostrate, rooting, acquiring a brownish-red tint, branched alternately, the branches about twice dichotomously-forked; leaves dimorphous: lateral ones obliquely ovate-oblong obtuse, the anterior portion larger and dilated at the base, the margin entire, the costa prominent beneath: intermediate ones obovate, cuspidate, parallel, decurrent, auricled and slightly ciliate at the exterior base; spike ½ inch to 1 inch long, tetragonous, with ovate acuminate squarrose bracts.—*Hab.* Not known.

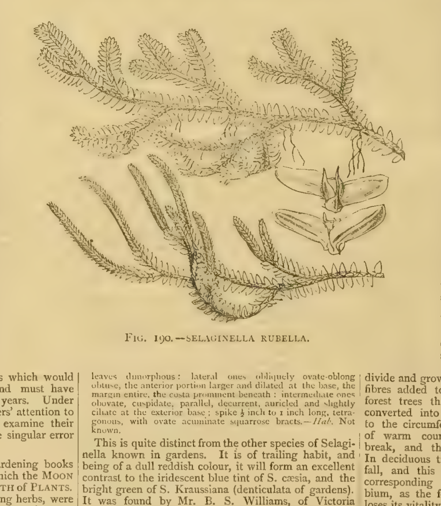

FIG. 190.—SELAGINELLA RUBELLA.

This is quite distinct from the other species of Selaginella known in gardens. It is of trailing habit, and being of a dull reddish colour, it will form an excellent contrast to the iridescent blue tint of S. cæsia, and the bright green of S. Kraussiana (denticulata of gardens). It was found by Mr. B. S. Williams, of Victoria Nursery, Holloway, on an imported Orchid, but beyond this the particulars of its history, as well as the habitat of the Orchid, have been lost sight of. Though it is thus obscure as to its origin, it will form a welcome addition to the plants of this order already in the hands of cultivators. *T. M.*

PHALÆNOPSIS MANNII, *n. sp.*

Foliis cuneato-oblongo-ligulatis acutis; racemo plurifloro deflexo; sepalis oblongo-ligulatis acutis; petalis lineari-falcatis; labello trifido; laciniis lateralibus ligulatis erectis retuso emarginatis, medio lobulato callosis, isthmo a basi rotundato attenuato; lamina antica semilunata serrulata, carina papulosa in medio, papulis quibusdam per discum, plica transversa ante lacinias laterales, anteposita ligula bicuspidata, ac carina ancipiti retusa in ungue laciniæ mediæ; columna apice tridentata.

Leaves nearly a span long, green, with a delicate violet border and many violet spots on the base. Flowers up to 13, according to a peduncle in my herbarium. Sepals and petals yellow, with many cinnamon-brown dots and blotches. Lip white and purplish. Column yellow. This pretty plant was discovered in May, 1868, by Gustav Mann, Esq., who kindly sent both dried specimens and a nice faithful picture. I feel surprised that this plant emits many thin roots, quite contrary to the common Phalænopsoid usance. It was a great satisfaction to name it in honour of the fortunate discoverer, who rendered the most eminent services to science, exposing himself in a very unusual and most dangerous manner. *H. G. Rchb. fil.*

ODONTOGLOSSUM HINNUS, *Rchb. fil.*

A new variety has come to hand, wanting the inner calli, and having entire wings of the column, with few toothlets, and without any tendrils. The lip reminds one of old Odontoglossum cristatum, Lindl. The sepals and petals, I may add, are undulated like those of Renanthera Lowii, what gives it a very peculiar appearance. It is a very beautiful and decidedly very rare thing. Sent by J. Day, Esq. *H. G. Rchb. fil.*

THE NATURAL HISTORY OF A FLOWERING PLANT.

[The following is a report of Professor Thisselton Dyer's third lecture on "The Natural History of a Flowering Plant," in the Theatre of the Royal College of Science, Dublin.]

"THE stem" unites together the two great feeding systems of the plant—the leaves and the roots. The roots also serve the purpose of firmly fixing the stem to the ground, and therefore compensate partly the instability arising from the enormous surface exposed by the foliage to the wind. Great strength of material is necessarily required in a tree's framework; but it must also have elasticity, otherwise it would be shattered by every sudden blast, instead of bending before it. Timber is by no means to be regarded as having merely accidentally useful properties: these are of precisely the same advantage to the tree that they are when used for construction. There is a mechanical limit to the growth of trees—the stem increasing in a lower ratio than the strains put upon it, the weight of the upper portions would also eventually crush the lower. It should be noticed that the bulk of foliage in Palms is comparatively small—the roothold, from the want of a tap-root, being, at the same time, feeble. The unit of structure in a stem is a fibrous bundle. There are two patterns upon which stems are constructed, though, in their youngest state, both are at first similar. The substance of the young stem is cellular, and the first fibrous bundles are arranged in a circle towards the middle. The mass of cells in the interior of this circle is more or less evident in all our deciduous trees, and is called the pith. It is sometimes very large, as in the Chinese plant, where it is used in the manufacture of rice-paper. The fibrous bundles consist of an inner and an outer portion; each consists of fibres which are really cells, extremely elongated, and with their bounding membrane very much encrusted internally. Usually, except in Firs and similar trees, there are found associated with the fibres of the inner portion of each bundle tubes whose cut ends are often visible in wood to the naked eye. Such tubes are called vessels, and they are formed from rows of cells whose partitions have been absorbed. Between the two portions of each bundle is a layer of delicate tender cells, in an actively vital state, the fibres themselves being practically lifeless and inert. These cells divide and grow, and are gradually converted into new fibres added to each portion of the bundle. In our forest trees this process continues till a bundle is converted into a wedge, stretching from the centre to the circumference of the stem. In many trees of warm countries the process goes on without break, and the wood formed is quite continuous. In deciduous trees, however, it stops when the leaves fall, and this produces a line of demarcation, one corresponding to every year. In Palms the cambium, as the formative layer of cells is called, soon loses its vitality, and new circles altogether of bundles are formed; the cut ends of these can be seen dotted about in a section of palm-wood. In our own trees the inner part of the wedge already described forms the wood, the outer portion the bark; the wedges are separated by often very manifest lines called pith-rays. The young one-year-old shoots bear the leaves; in these the wedges or bundles round the pith are still slender, and form, in fact, a cylinder such as may be well seen in an old cabbage stalk. It will be noticed that this is perforated with holes, through which fibrous contributions pass out from the inside of the cylinder to form the framework of the leaves; a contribution to which is also received from the bark on the outside. The outside of the stem, in its very young state, is covered with an external cellular layer—a portion, in fact, of the original cellular structure of the stem, separated from the pith by the development of the cylinder of contiguous fibrous bundles. The cellular material which fills up the framework of the leaves may be looked upon as an out-growth of this external cellular layer of the stem. In Palms, the fibrous bundles take, eventually, an outward course, and pass off bodily into the leaves; these have often a sheathing base, which, in some species, breaks up, leaving the fibrous framework projecting in stiff and rigid bristles. Under the name of Piassaba fibre (produced by a Brazilian Palm), these are used for making the common brooms with which the streets of Dublin are swept. The sap absorbed by the roots is largely distributed through the plant by the compression and relaxation of the vessels when the branches are swayed by the wind. It is found that if a plant is constrained from swaying in a particular direction, the corresponding diameter of the trunk is shorter. Liquid is always got rid of by transpiration from the leaves, while it continues to enter the roots by absorption. When the vessels are compressed, therefore, in the bent branches the upward direction is that in which there is least resistance to motion—of the downward motion of the sap after elaboration in the leaves the cause is less obvious. Its course is mainly in the cambium within the bark; that it really takes place is proved by the swelling which is produced on a stem above a ligature. Decortication is commonly fatal to the parts of the stem above. If, however, the cambium is not destroyed, it may heal over with bark if properly protected. In this way Cinchona bark is removed without killing the young trees. When it is necessary to prune trees, this should always be done by removing the branches without leaving a stump. This gives a chance for the wounds to heal over, and so avoids further decay. Trees lose heat in the conversion of the water of their sap into vapour, but their stems at any rate absorb in the sun more than they lose, and towards the end of the day become warmer than the air.

A NEW SYNOPSIS OF ALL THE KNOWN LILIES.—V.

Subgenus 2. LILIUM PROPER.—Bulbs squamose; stigma a thick head to the style, with three blunt lobes—(*Continued*).

Group 2: ARCHELIRION (Open-flowered Lilies).—Perianth broadly bell-shaped, horizontal, or slightly drooping, its divisions ovate or lanceolate, broadest below the middle, not unguiculate, spreading from below the middle when fully expanded. Stamens diverging on all sides.

Key to the Species.

Leaves linear sessile, with bulblets in the axils of the upper ones. Stems cottony.	9. L. TIGRINUM.
Leaves lanceolate, with a short distinct petiole, not bulbiferous in the axils. Stems glabrous.	
Leaves ovate-lanceolate. Perianth segments usually banded down the centre with red.	10. L. SPECIOSUM.
Leaves linear-lanceolate. Perianth segments usually banded down the centre with yellow.	11. L. AURATUM.

The three species of this section are so well known to every one that I describe them only for the sake of making my synopsis complete. To me they seem to form a distinct group, and not to range well with either the Martagons or Eulirions, but to differ appreciably from both in the shape of the entire flower and of its divisions, and to form a clearly marked group intermediate between all the other three.

9. *L. tigrinum*, Gawler in Bot. Mag. t. 1237; Red. Lil. t. 395 and 475; Ait. Hort. Kew, edit. 2, vol. ii., p. 241; Kunth, Enum. iv. 259; Spae, Mon. p. 39; Miquel, Ann. Mus. Lug. Bat. vol. iii., p. 156; *L. speciosum*, Andrews, Bot. Rep. t. 586, non Thunberg.—Stems 2—4 feet high, erect, firm, robust, purplish-black, clothed especially in the upper part with grey cottony pubescence. Leaves 20—30 at the flowering time, linear, scattered irregularly, erecto-patent or spreading, dark glossy green, stout in texture, paler on the lower side with 5—7 distinct nerves, the lower ones 4—6 inches long, 6—9 lines broad, slightly rounded to a sessile base, narrowed gradually from the middle to a long point, the upper ones much shorter, linear or often lanceolate, with round nearly black bulblets in the axils of many of them. Flowers usually 3—4, but when luxuriant up to 8—20 in a deltoid raceme 8—9 inches broad, the lateral peduncles rigidly erecto-patent, usually furnished with a bract at or below the middle, the lower ones 3—4 inches long. Perianth 2½—4 inches deep, bright deep orange-red with a very large number of small distinct purplish-black spots on the face, the divisions lanceolate, the outer ones 4—6 lines, the inner 6—9 lines, broad below the middle, the lower part with a few raised papillæ, the haft furnished with a groove bordered with two pubescent ribs. Filaments 6—12 lines shorter than the segments; anthers 6—9 lines long; pollen orange-red; ovary 7—9 lines long; style 1½—2 inches; stigma deep purple.

A native of Japan and China, introduced to our gardens along with L. japonicum in 1804 by Captain Kirkpatrick, but well known previously, although not named, by the figure published by Sir Joseph Banks in 1791. One of the most distinct, best known, and least variable of all the species. The principal points in which the different specimens are not uniform, are in the colour of the flowers and the extent to which they droop, which is usually but not invariably considerable.

10. *L. speciosum*, Thunb. in Linn. Trans. ii. 332; Bot. Reg. t. 2000; Zucc. in Sieb. Fl. Jap. fasc. iii. p. 31, t. 12 and t. 13, fig. 1; Kunth, Enum. iv. 259; Spae, Mon. p. 36; Bot. Mag. t. 3785; Flore des Serres, t. 276; Paxton Mag. v. t. 1, viii. t. 127; *L. superbum*, Thunb. Fl. Jap. p. 134, non Linn.; *L. lancifolium*, Paxt. Mag. v. 267, non Thunb.—Stem 1—3 feet high, rigid, erect, glabrous, terete, greenish. Leaves about 20 at the flowering time, the lower ones ovate, or ovate-lanceolate, 6—9 inches long, 1½—2 inches broad below the middle, bright green above, paler, with 7—9 distinct ribs beneath, rounded at the base to a short erect petiole, narrowed gradually from the middle to an acute or acuminate point, the upper ones lanceolate, 6—9 lines broad, 3—5 nerved. Flowers usually 3—6, in a broad deltoid raceme, occasionally more numerous in cultivation, in a compound corymb; the peduncles bracteated, rigid, erecto-patent, the lowest 4—5 inches long; perianth 3—5 inches deep, the divisions spreading from near the base when fully expanded, the outer 12—18 lines, the inner 15—21 lines broad below the middle, the face in the lower half charged with copious, much raised papillæ, which reach a length of 2—3 lines, the lower third with a distinct green glabrous hollow down the keel, the colour a pure white ground in the typical form, more or less suffused, and copiously spotted with claret-red, but sometimes both the face and papillæ pure white, the bud externally greenish, the expanded flower measuring 6—8 inches across. Filaments 2½—4 inches long; anthers 9—12 lines long; pollen deep red or yellowish; ovary an inch deep; style 1½—2½ inches.

A native of Japan, long known through Kæmpfer's drawing published by Sir Joseph Banks, but not introduced to Europe till 1832. As every one knows, it varies greatly in the size and colouring of the flower, but it is a most distinct plant, with no close affinity except to L. auratum. Unfortunately it was first sent out into cultivation under a wrong name, Lilium lancifolium, which belongs to an entirely different species of the Isolirion group, which I shall have to notice presently; and a name when once put into garden circulation, even when entirely erroneous, is very difficult to get changed. Let me beg of all my horticultural readers who have not done so already to call this commonest and best known of the Japanese Lilies, in their catalogues and on their labels, by its correct name of "speciosum," and probably some of these days we shall be having the proper "lancifolium" rediscovered and introduced; but let it be clearly understood that at present "lancifolium" is not known in cultivation at all. The principal named varieties are two—1, *punctatum*, with white segments, not suffused, but only spotted with red, figured in "Paxton's Magazine," vol. v. t. 267, under the name of lancifolium, and there compared with speciosum as if a distinct species; and 2, *Tametano* of Zuccarini (albiflorum of Hooker, L. Broussartii, Morren, in Mem. Acad. Royal Brux., Feb. 1834, with a figure), with pure white flowers. This last is sometimes called Lilium eximium in gardens, but must not be confounded with the eximium already noticed under L. longiflorum.

11. *L. auratum*, Lindl. Gard. Chron. 1862, p. 644*b*; Hook. Bot. Mag. t. 5338; Flore des Serres, t. 1528—1531; Ill. Hort. ix., t. 338; Rev. Hort., 1867 t. 371; *L. Dexteri*, Hovey Mag. Hort., Aug. 1862.—Stem 2—4 feet high, rigid, erect, purplish-green, terete, quite glabrous. Leaves about 30 at the flowering time, spreading or deflexed, linear-lanceolate, the lower ones 6—9 inches long, 9—15 lines broad below the middle, precisely similar to those of speciosum in colour and texture, with five or rarely seven distinct translucent ribs beneath, slightly narrowed at the base to a short distinct petiole, narrowed gradually from the middle to an acuminate point. Flowers usually 3—6 in a deltoid raceme, occasionally up to 20 under cultivation, the peduncles rigidly erecto-patent, bracteolate, 3—4 inches long, and bracteated at the base by a large leaf. Unexpanded bud green. Perianth spreading just as in speciosum, the divisions 5—7 inches long, the outer 15—18 lines, the inner 18—21 lines broad near the middle, the face ivory-white in the ordinary form, with a distinct central band of bright yellow and numerous deep purple spots, the lower part copiously papillose, the haft with a glabrous greenish keel. Expanded perianth, 10—12 inches across. Filaments 3—3½ inches long; anthers 1 inch; pollen scarlet; ovary 12—14 lines long; style 3—3½ inches.

A native of Japan, and scarcely to be regarded as more than a subspecies of speciosum. Oldham writes on the label of a specimen he gathered near Yokohama in August, 1861, now in the Kew herbarium—"Udi of the Japanese: splendid showy plant, growing chiefly in light rich soil amongs the shrubs and between the rocks." Introduced into this country by Messrs. Veitch, who flowered it for the first time in 1862, not 1848, as was quoted, through a misprint, in the description appended to the plate in the "Botanical Magazine." There is now a pure white variety advertised, and several with the segments variously suffused or vittate with red. I have not seen the *Lilium Wittei*, described by Suringar in Koch's "Wocheuschrift," 1867, p. 294, but, judging from the description, it must be a mere variety of this. *J. G. Baker.*

[Those of our readers interested in the culture and identification of Lilies will learn with pleasure that the publication of M. Duchartre's notes on these beautiful plants has been lately resumed, in the "Journal de la Société Centrale d'Horticulture de France." The Franco-German war of course put a stop to this publication, but now that the sword is once more sheathed, the Lilies will bloom again, and we shall shortly continue our translation of M. Duchartre's articles. EDS.]

NEW PEARS.

AT p. 651 you give an extract, headed "Remarks on New Pears," taken from Mr. Rivers' Fruit Catalogue, where he says, "We advance but slowly in new Pears, and not more than 5 per cent. of the new varieties raised from seed on the Continent are adapted for universal cultivation." As these quoted remarks (made by Mr. Rivers about four or five years ago) may have a tendency to mislead parties with regard to Continental productions, and to make them suppose that we, as a nation, think ourselves before our neighbours in these things, I have sent you lists, which I am afraid will be too long for your columns, of Pears of English and Scotch growth, as far as I know them. The sorts enumerated have taken us many long years to produce, and are, as first-class fruits, few in number, especially when compared with the prolific productions of France and Belgium, a list of which I also send you, of kinds only produced within the last 20 years. Whilst the English and Scotch first-rate sorts produced, during 150 years or more, amount only to about 30, we have 120 new first-rate kinds produced on the Continent in 20 years. Were I to go backward 50 years more the balance against us would be great indeed. Take the productions of Van Mons alone, what can we show against them? The list I send you of new kinds, all of which, with a few exceptions, have been proved here as of excellent quality, and the greater portion of them are, in my estimation, adapted for general cultivation, where the locality does not stand at too great an elevation above the sea. The years affixed are those I received the sorts in, and these dates are generally one or two years later than the years when the respective kinds first fruited. I think a perusal of the lists will make us cautious of giving credence to a statement which would limit the new good Pears of the Continent, suitable for general cultivation, to 5 per cent. of those sent out from the Continent. My experience is the very contrary, and I do not wish to cry up the extreme honesty of our brethren across the water, although I think that they will, as far as I am a judge, bear honourable mention beside us. My long rows of specimen Pear trees do not speak very favourably of English nurserymen, when put in contrast with our Continental neighbours. I have purchased all the sorts of Pear that I could procure in America, Great Britain, or from Continental nations, and I have kept the names of all the parties from whom I purchased, and planted their trees each according to its kind in juxtaposition with sorts under the same name, so as to enable me to judge which were the most correctly named, the Americans, the Continentals, or Britons. Although I am ashamed, I am constrained to say that I have found the nomenclature of fruit in England very much behind either America (from which I have 150 sorts of Pear) or the Continental nations, from which I have imported nearly 1200 kinds, very few of which belie their names. In my specimen rows there stand against my English brethren a very sombre array of false kinds and false names, and these are exceedingly vexing, as, unintentionally, one sends them all over the country, before the error of name and kind is found out, which to do takes years of patient attention. Alas! it is the labour of a long life to do it. Uncorrectness of nomenclature is now almost as bad as it was before Thompson tried his hand at the Augean stable, and it would, indeed, take a Hercules now to gather together our golden Apples and Pears and to send them forth into the world each under its proper character and name; then how am I, a poor mortal, to grapple with the hydra of such nomenclature? My collection of Apples contains about 1000 sorts, gathered from under the four winds of Heaven. When I look at it, it makes me stand aghast, and I exclaim to myself, Alas! what can I do! I feel myself helpless amidst the confusion. I had in my fruit room last winter over 600 kinds, according to the names received with them, and I intended sending 500 sorts to the Fruit Committee of the Royal Horticultural Society; but when I came to arrange and test them I found only 250 sorts that I could send with anything like correct names. Many of the others were fine fruit, but I was doubtful of them, and kept them back, until I could examine them further. In concluding, I must in justice give the prize to the American and Continental collections.

A LIST OF ALL THE PEARS RAISED IN ENGLAND, THAT I KNOW.

Aston Town, 1st quality.
Beadnell's Seedling, 1st to 2d quality.
Bergamotte, Gansel's, 1st rate.
,, ,, late, worthless.
,, Oakley Park, 2d rate.
,, Seaside, 2d rate.
,, St. Leonard's, 2d rate.
,, Welbeck, 2d rate.
,, Wormsley, 2d rate.
,, Hampden's, 2d rate.
Beurré d'Aremberg, early, 2d rate.
,, Winter, Rivers', 3d rate.
Bon Chrétien, Williams', 2d rate.
Black Worcester, 3d rate.
Brockworth Park, said to be 1st rate.
Brougham, 1st rate.
Broom Park, 1st rate.
British Queen, 1st to 2d rate.
Bishop's Thumb, 1st to 2d rate.
Bringewood, 1st rate.
Bury Hill, 2d rate.
Crassane, Althorpe, 2d rate.
,, Stroud House, brown, 1st rate.
,, Stroud House, green, 2d rate.
Doctor (The), or Benedictine, 2d rate.
Duchesse d'Angoulême, Pitmaston, 1st rate.
Dunmore, 1st to 2d rate.
Downton, 2d rate.
Elton, 1st rate.
Eastnor Castle, 2d rate.
Eyewood, 1st rate.
Golden Russet, 2d rate.
Hampton Court, 2d rate.
Incomparable, Hacon's, 1st rate.
Josephine, Autumn, said to be 1st rate.
King Pear, or Caillot Rosat, 1st rate.
King Edward, 3d rate.
Monarch, 1st rate.
Maud Hogg, said to be 1st rate.
Moccas, 1st rate.
Nelis, Graham's Autumn, 1st rate.
Prince Consort, 1st rate.
,, of Wales, 2d rate.
Princess of Wales, 1st rate.
,, Royal, Groom's, 1st to 2d rate.
Shobden Court, 1st rate.
Stevenstone, 1st rate.
Suffolk Thorn, 1st rate.
Swan's Egg, 2d rate.
St. Germain, Uvedale's, 3d rate.
Tillington, 1st rate.
Victoria, Huyshe's, 1st rate.
52 sorts, 29 of which are 1st rate.
18 ,, ,, 2d rate.
5 ,, ,, 3d rate.

The above are all the sorts of English Pears that I know, or that I have been able to procure, and the list shows that we are far behind our Continental neighbours in Pear raising. I have not taken into account the Perry sorts, nor some third-rate kinds that have only a local standing. I dare say some of your correspondents could eke out this list very much.

A LIST OF ALL THE SCOTCH PEARS I KNOW, OR THAT I HAVE BEEN ABLE TO PROCURE. QUALITY IN ENGLAND.

Achan, 2d rate.
Benvie, 2d rate.
Briar Bush, 3d rate.
Busked Lady, 2d rate.
Carnock, 2d rate.
Crawford, 2d rate.
Craig's Favourite, 2d rate.
Croft Castle, 2d rate.
Duncan, 3d rate.
Elcho, 2d rate.
Elshan Hoft, 3d rate.
Farrow Cow, 3d rate.
Garnon's, 2d rate.
Green Yair, 2d rate.
Green Pinckey, 2d rate.
Grey Goodwife, 3d rate.
,, Honey, 1st rate.
Golden Knap, 3d rate.
James' Pear, 3d rate.
John Monteith, 3d rate.
Lady Lamont, 2d rate.
Lammas, 2d rate.
Muirfowl Egg, 1st rate.
Pow Meg, 3d rate.
Powis Castle, 2d rate.
Saffron, 2d rate.
Sauch, a beautiful Pear, 3d rate.
Unicorn, 3d rate.

Of the above there are two or three that may be called first-rate, but as a rule few of the Scotch Pears are found to be of first-rate quality so far south as Somerset.

A LIST OF NEW CONTINENTAL PEARS INTRODUCED SINCE 1850. ALL OF FIRST-RATE QUALITY.

Amélie Leclerc	1863
Amiral Cécile	1860
Bergamotte Millepieds	1852
Berriays	1861
Besi de la Pierre	1862
Beurré de l'Assomption	1866
Beurré Antoinette	1850
,, Bachelier	1850
,, Chatenay	1855
,, Delannoy	1856
,, Durand	1858
,, Février	1860
,, Flou	1854
,, Fidèline	1863
,, de Ghelin	1862
,, Jolais	1861
,, de Jonghe	1860
,, Loisel	1855
,, Luiget	1860
,, Menand	1865
,, Six	1850
,, de Stuttgardt	1863
,, Van Driessche	1860
Bon Roi René	1864
Bonne Thérèse	1860
Braconot	1850
Brueil Père	1850
Brun (le)	1864
Calebasse, Delvigne	1850
,, Oberdieck	1865
Castalline	1850
Chaigneau	1863
Choisnard	1860
Colmar d'Alost	1856
Comtesse de Chambord	1860
Congrès Pomologique	1860
David d'Angers	1865
Désiré Cornelis	1850
Dr. Koch	1866
Dr. Menière	1866
Dr. Nelis	1850
Dr. Trousseau	1850
Doyenné du Cercle	1860
,, du Comice	1860
,, Flou Ainé	1864
Duchesse Ann	1861
,, de Bordeaux	1850
,, de Brabant	1856
,, Hélène d'Orléans	1850
Duhamel du Monceau	1865
Dupuy, Charles	1850
Edouard Morren	1856
Felix de Leim	1852
Ferdinand de Lesseps	1865
Fondante du Comice	1856
,, de Moulins Lille	1863
,, de la Roche	1860
Général Davevier	1860
,, Lourmel	1856
,, Tottleben	1860
Grégoire Bordillon	1867
Grosse Louise	1862
Hélène Grégoire	1855
Henri Bivort	1856
Jacques Chamoret	1866
Jules Bivort	1850
Leclerc, Thouin	1869
Léon Rey	1863
Léopold I.	1850
Levard	1864
Long du Bosquet	1866
Loriol de Barny	1864
Louis Vilmorin	1869
Lucie Andresson	1864
Madame André Leroy	1864
,, Appert	1864
,, Baptiste Desportes	1866
,, Elisa	1850
,, Favre	1863
,, Loriol de Barny	1868
,, Treyve	1858
,, Vagille	1868
Maréchal Vaillant	1866
Marguèrite d'Anjou	1866
Marie Benoist	1865
,, Guisse	1862
,, Louise d'Uccle	1855
,, Parent	1855
Mariette de Millepieds	1860
Marshall Wilder	1869
Maurice Desportes	1866
Merlet	1865
Miller	1866
Napoléon Savinien	1860
Napoléon III.	1870
Olivier de Serres	1864
Passe Crassane	1860
Payen	1864
Pêche	1850
Pertusati	1869
Petite Marguèrite	1866
,, Victorine	1866
Pierre Pepin	1870
Plantagenet	1864
Poëte Beranger	1870
Poiteau (of the French)	1853
Président Metivier	1869
,, d'Osmouville	1854
,, Royer	1864
Premices d'Ecully	1856
Prince Napoléon	1868
Priou	1866
Professor Barral	1868
Puebla	1865
Rivers	1866
Robert Hogg	1869
Ronde du Bosquets	1865
Souvenir de Gaëte	1869
25th Anniversary of Leopold I.	1858
Williams' d'Hiver	1869

		Sorts.
From 1850 to 1855 inclusive,		28
1856 to 1860	,,	28
1861 to 1865	,,	37
1866 to 1870	,,	27
		120

Being at the rate of six sorts per annum.

Besides the above I have imported about 50 other new kinds, said to be all of first-rate quality, since 1869; so that during the last decade, above 100 new kinds have been added to our collections. All I have quoted, up to 1869, I have fruited here, and so proved their claim to the first rank. *J. Scott, Merriott.*

KARL THEODOR HARTWEG.

WE have already (p. 313) chronicled the loss of another of that energetic band of botanical collectors who travelled under the auspices of the Horticultural Society of London, and to whom we are indebted for many of the choicest plants in cultivation. We glean most of the following particulars of his career from a more detailed sketch which appeared in the "Wochenschrift."

The subject of our memoir, a native of Karlsruhe, was born June 18, 1812, and descended from a long line of distinguished gardeners. Besides the advantages of his father's experience, he enjoyed the benefits of a far better education than usually falls to the lot of a gardener. Unfortunately, his father died before he, Karl, had completed his nineteenth year, and consequently he determined to visit France and England, where the state of horticulture was in advance of that of Germany.

He went first to Paris, and succeeded in obtaining a situation in the Jardin des Plantes, and whilst there he laboured most assiduously to make the most of the opportunities offered by that establishment to improve himself. After gaining a tolerable knowledge of French, he came over to England haphazard, but falling ill before he obtained employment, he became very needy. At length, when his health became better, he entered the Horticultural Society's garden as a common labourer, where his superior intelligence and education soon became evident to the authorities, and he was advanced to the higher and more lucrative post of garden clerk. About that time the lamented Douglas met with his death, and it was resolved by the Society to seek another person to explore the highlands of Mexico, chiefly with a view to the possible discovery of new plants which would bear the climate of this country.

Hartweg having been selected for this expedition, left England October 8, 1836, for Vera Cruz, and from thence went to Santa Fé. He did not, however, remain long in the unhealthy lowlands, but ascended the first terrace, Taquapan, on the east side of the lofty Orizaba. And here he met with the first batch of the many splendid epiphytal Orchids with which he enriched our gardens. Agave saponaria was another interesting discovery of his in this region. After a brief stay he pushed on by way of Xalapa to Mexico, there to present his credentials and obtain permission to proceed to Guanxuato. But the vegetation of the mountain plains and declivities not answering his expectations, he longed for the tropical vegetation of the lower zones. Still poorer was the vegetation of Leon, where he stayed two months —during the dry season, it is true—without finding anything of note, except the charming Lælia majalis. But in Aguas Calientes there was more luxuriance, though not sufficient to detain him, and he decided to explore the lower terraces and valleys, and for this purpose he went to Bolanos. Bromeliaceæ, Cacteæ, and Acacias in great variety formed the most striking features there. His next point was the town of Zacatecas, which is situated upon one of the highest and most barren terraces of northern Mexico. Evergreen Oaks and various species of Pinus were plentiful, but he was too late to get seeds. Having little else to do, he now arranged his collections, and forwarded them to England, thus completing the first year of his travels.

In February, 1838, Hartweg started for San Luis Potosi and Rancos de los Gallitos, where also he found immense tracts of evergreen Oaks, richly adorned with Epiphytes. Returning to Zacatecas, he proceeded to the State of Mechoancanha, where, amongst other things, he found Pinus oocarpa, P. leiophylla, and P. pseudostrobus. Here, too, grew the majestic sacred Fir, Abies religiosa, rising to a height of 150 feet. The next move was to Reall del Monte, the home of the "Old Man" Cactus, Cereus senilis, and thence to Queretaro, where greater variety rewarded our traveller. The dwarf Pine, Pinus Llaveana, which only grows about 15 feet high; P. apulcensis and P. patula, in company of Cupressus thurifera, a tree of 150 feet; Juglans nigra, Garryas, &c.

At the close of 1839 Hartweg was instructed to go to Guatemala, and on his way he visited Oaxaca, the seat of Cochineal culture. He remained a few days, and discovered Pinus Russelliana, P. Devoniana, P. Teocota, and Tilia mexicana, &c.

He stopped awhile at Quezeltenango to collect Orchids, ascending the mountains to the highest terrace, where Oaks, Pinus Hartwegii, P. oocarpoides, P. filifolia, and Alnus mexicana abound. An important excursion from this point to the lower plains, bordering the Pacific, resulted in a rich booty of Orchids, many of which flowered in London in the course of the following year.

His next trip was to the highlands of Eucador, where he visited Riobamba, Acobamba, &c., but was less successful. Towards the end of May, 1841, he set out upon his journey to the Cordilleras, but of the 70 species of Orchids collected few were alive when they arrived in England. Before leaving he ascended the Pichincha, to investigate the alpine flora. He returned to England in 1843, and in a report of his travels it is stated that the cost of the journey was covered by the sale of seeds and cones of Coniferæ alone.

The exertions of the Horticultural Society at this period to introduce new and beautiful plants, will be understood when we remember that the sum of £3837 was expended for this purpose between 1840 and 1846. Hartweg was sent out again in 1845, and this time to California. Our space will not admit of a detailed account of his second journey, but it is very well known that an immense number of our hardy annuals and herbaceous plants from that region were introduced by him and Douglas.

We must not omit to mention the valuable collections of dried plants he brought home, and which Mr. Bentham described and published, under the title of "Plantæ Hartwegianæ."

Altogether, Hartweg was absent about nine and a-half years. He did not remain long in England, but soon returned to his native country.

The late Grand Duke Leopold having taken great interest in him, appointed him Inspector of the Ducal Gardens at Schwetzingen, which post he held till his death. Of a modest, retiring disposition, he seldom took part in public meetings, believing that little came of them; but he was induced to take part with others interested in the improvements of fruit culture.

Some six or eight years ago, his hitherto strong constitution began to fail, and he suffered from ever-increasing attacks of palpitation of the heart; this, coupled with an affection of the brain, gradually brought him to his grave, and he died on February 3 last.

LUMINOUS PLANTS.

> "'Tis said in summer's evening hour,
> Flashes the golden-coloured flower,
> A fair electric flame."—COLERIDGE.

THERE are some of the phenomena of life which are so startling in their character that they cannot fail to attract attention, even amongst the unlearned. Of such is the emission of light by insects and plants; especially in countries where fire and light are held to be more or less divine, and the object of adoration, we may anticipate that such phenomena are regarded with peculiar interest. It is so in India, where the idea that some plants, under favourable conditions, evolve light, has firm possession of the minds of the inhabitants. That something of the kind has been observed, only the most sceptical would doubt, but it is equally probable that exaggeration has lent something to the reports. The prevalence of this idea in India long since was noticed by Major Madden in one of the Indian horticultural journals, when he stated that "vague ideas of the existence of luminous plants in India and the neighbouring countries, still float about, as in the days of the old Hindoos and Greeks." The major gave instances, of which some probably had their foundation in fact. It is not that we place implicit reliance on all that we read on this subject, that we are induced to allude to some recorded instances, but rather with the view of collecting together some of the gossip on the subject.

If we refer to No. 153 of the "Journal of the Asiatic Society of Bengal," we find it there recorded that in Affghanistan, "to the north of Nahoo, is a mountain called Sufed Koh, in which the natives believe gold and silver to exist, and in which they say, in the spring, is a bush which at night, from a distance, appears on fire, but on approaching it the delusion vanishes." It is very probable, in this instance, that the belief is based on vague report.

Baron Hugel's name is well known in connection with Kashmere, and, as a naturalist, his evidence, if positive, would be accepted with respect. But, again, only report is cited, for the Baron says that he was told that the Auk River, when swollen with rain, brings down from Thibet pieces of timber which "shine in the dark as long as they continue moist." The phosphorescence of decaying wood is nothing new, and it is probable that this is attributable to the same cause. Schoolboys did believe in the phosphorescence of "touchwood" many years ago, and probably do so now. In those days we have recollections of carrying such treasures in our pocket for practical illustration in the dormitory at night.

Of a somewhat different character was the substance exhibited in April, 1845, at a meeting of the Royal Asiatic Society. It was the rootstock of a plant from the Ooraghum jungles, at the foot of the Madura Hills, near Tuchoor, and was supposed to belong to some species of Orchis or Marica. It was said of it that it possessed the peculiar property of regaining its phosphorescent appearance when a dried fragment of it was subjected to moisture, "gleaming in the dark with all the vividness of the glow-worm, or the electric Scolopendra, after having been moistened with a wet cloth applied to its surface for an hour or two; and it did not seem to lose the property by use, becoming lustreless when dry, and lighting up again whenever moistened." The *Gardeners' Chronicle* stated at the time, that "a small slice of the dried root being wrapped in a wet cloth, and allowed to remain about an hour, shines in the dark like a piece of phosphorus, or perhaps somewhat paler, more like dead fish, or rotten wood."

Accompanying this account in an Indian journal is the statement that this plant has long been familiar to the Brahmins under the name of Jyotismati, and "is occasionally referred to a species of Cardiospermum, perhaps on account of the white crescent on the black seed of that plant." The discovery of the Coromandel plant was made, it is said, by a "tuhseeldar, compelled by rain to take shelter at night under a mass of rock, where he was astonished to see a blaze of phosphoric light over all the grass in the vicinity."

Sanscrit authorities refer the Jyotismati to the Himalayas, and Major Madden found, upon inquiry at Almora, that there was a luminous plant well known there by that name and the Jwalla-mat, implying the possession of light or fire. This plant proved to be the Anthistiria Anatherum, of which perhaps one root in a hundred is said to be luminous at night during the rainy season. Other grasses, species of Andropogon, are reported to possess the same property, and both Hindoos and Moslems are persuaded of the existence of a plant called Sunee, extolled for its power of revealing the wonders of fairyland; and eagerly sought by fakeers and serpents.

In 1845 the natives of Simla were filled with a rumour that the mountains near Syree were illuminated nightly by some magical herb.

It has been supposed that some of these reports may be traced to a species of Dictamnus, as there is one which is very closely allied to the European form (the Dictamnus himalayensis of Royle), which abounds near Gungotree and Jumnotree. If the Indian species really possesses the power of exhibiting itself in the manner of its European relative, it is not at all surprising that the natives should spread its fame as that of a bush ever burning but never consumed.

Apropos of the European Dittany (Dictamnus Fraxinella), the late Professor Henslow explained the inflammable atmosphere generated about it, on a calm still evening, as the evaporation of a volatile oil, and adds that "if a candle be brought near it, this plant is enveloped by a transient flame, without sustaining injury."

Fire is said to be latent in the "Summee," which is supposed to be Prosopis spicigera, the Jhund of Northern India. It may be that only such latent fire is alluded to as may be obtained by friction.

The English translation of the Ulfaz Udwiyeh gives Siraj-ul-kootrub as "the fairy's lamp—a plant which shines at night like the glow-worm."

Another plant which has obtained the reputation of being luminous is the Tuberose (Polianthes tuberosa). It has been observed, so it is said, of a sultry evening after thunder, to dart small sparks in great abundance from such of its flowers as were fading. The rare occasion when fading flowers, a thunderstorm, and an observer, meet together for such an exhibition, must be some apology for the doubt which may be entertained as to the speedy verification of the facts.

It should be remembered that Josephus, in his "Wars of the Jews" (book vii., chap. vi.), writing of Macherus, says:—"There is a certain place called Baaras, which produces a root of the same name with itself; its colour is like to that of a flame, and towards evening it sends out a certain ray like lightning; it is not easily taken by such as would do it, but recedes from their hands." The only virtue this root possesses is its supposed power in the expulsion of demons.

As to the incident recorded in connection with the Fraxinella, Dr. Hahn has offered explanations in the "Journal of Botany" for 1863. "When the daughter of Linnæus one evening approached the flowers of Dictamnus albus with a light, a little flame was kindled without in any way injuring them. The experiment was afterwards frequently repeated, but it never succeeded; and whilst some scientific men regarded the whole as a faulty observation or simply a delusion, others endeavoured to explain it by various hypotheses, One of them especially, which tried to account for the phenomenon by assuming that the plant developed hydrogen, found much favour. At present, when this hypothesis has become untenable, the inflammability of the plant is mentioned more as a curiosity, and accounted for by the presence of etheric oil in the flowers. Being in the habit of visiting a garden in which strong healthy plants of Dictamnus albus were cultivated, I often repeated the experiment, but always without success, and I already began to doubt the correctness of the observation made by the daughter of Linnæus, when during the dry and hot summer of 1857 I repeated the experiment once more, fancying that the warm weather might possibly have exercised a more than ordinary effect upon the plant. I held a lighted match close to an open flower, but again without result; in bringing, however, the match close to some other blossoms, it approached a nearly faded one, and suddenly was seen a reddish, crackling, strongly shooting flame, which left a powerful aromatic smell, and did not injure the peduncle. Since then I have repeated the experiment during several seasons, and even during wet, cold summers, it has always succeeded; thus clearly proving that it is not influenced by the state of the weather. In doing so I observed the following results, which fully explain the phenomenon. On the pedicels and peduncles are a number of minute reddish-brown glands, secreting etheric oil. These glands are but little developed when the flowers begin to open, and they are fully grown shortly after the blossoms begin to fade, shrivelling up when the fruit begins to form. For this reason the experiment can succeed only at that limited period when the flowers are fading. Best adapted for the purpose are those panicles which have done flowering at the base, and still have a few blossoms at the top. The same panicle cannot be lighted twice. The rachis is uninjured by the experiment, being too green to take fire, and because the flame runs along almost as quick as lightning, becoming extinguished at the top, and diffusing a powerful incense-like smell.

In 1843, the luminosity of plants was recorded in the Proceedings of the British Association. Mr. R. Dowden is said to have made mention of a luminous appearance on the double variety of the common Marigold. This circumstance was noticed on August 4, 1842, at 8 o'clock P.M., after a week of very dry weather. Four persons observed the phenomenon. By shading off the declining daylight, a gold-coloured lambent light appeared to play from petal to petal of the flowers, so as to make a more or less interrupted corona round its disk. It seemed as if this emanation grew less vivid as the light declined; it was not examined in darkness. When this subject was discussed, Dr. Allman expressed his opinion that the phenomenon was not at all due to phosphorescence, but was referable to the state of the visual organ, that is, an optical illusion. This led Mr. Babington to mention that he had seen, in the south of England, a peculiar bright appearance produced by the presence of the Schistostega pennata, a little moss, which inhabited caverns and dark places; but this, too, was objected to by a member present, who stated that Professor Lloyd had examined the Schistostega, and had found that the peculiar luminous appearance of that moss arose from the presence of small crystals in its structure, which reflected the smallest portion of the rays of light.

These remarks having been published in the *Gardeners' Chronicle*,[*] Dr. Edwin Lankester, in a succeeding number communicated some observations on the subject of luminosity, in plants more especially,[†] in which he referred to many of the facts of luminosity which had been recorded.

"The light from the moss," he says, "mentioned by Mr. Babington has also been observed in Germany on another species (Schistostega osmundacea). It has been observed by Funk, Brandenberg, Nees von Esenbeck, Hornschuh, and Struve. Bridel-Brideri and Agardh attributed this light to a small Alga, which the former called Catoptridium smaragdinum, and the latter Protococcus smaragdinus, which they supposed occupied the moss. Unger, however, has examined the moss accurately, and finds that at certain seasons the peculiar utricles of this moss assume a globular form, and being partially transparent, the light is refracted and reflected in such a way as to present a luminosity on the surface of the vesicles. Meyen says he has confirmed Unger's observations."

With regard to the light given out from flowers, the doctor cites Christina Linnè, Linnæus, the younger Linnæus, Haggren, Crome, Zawadski, Hagen, Johnson, and the Duke of Buckingham as amongst the observers whose experiences have been recorded. The plants enumerated by him are the Nasturtium (Tropæolum majus), the Sunflower (Helianthus annuus), the Marigold (Calendula officinalis), African and French Marigolds (Tagetes erecta and Tagetes patula), Martagon Lily (Lilium chalcedonicum and Lilium bulbiferum), the Tuberose (Polyanthes tuberosa), Poppy (Papaver orientale) Chrysanthemum (Chrysanthemum inodorum), Evening Primrose (Œnothera macrocarpa), and Gorteria rigens.

In addition to the observations on the light of flowers, there are some on the phosphorescence and luminosity of sap. Mornay describes a tree in South America, called Cipo de Cunaman, with a milky juice, which gave out in the dark a bright light. Martius, also, in a plant which he named Euphorbia phosphorea, says that, when wounded, the sap gave out a light. To these instances is added a reference to Senebier, who observed in his experiments on Arums, on one occasion, when confining an Arum in oxygen gas, that it gave out light as well as heat.

On the same page of the *Gardeners' Chronicle* on which Dr. Lankester's observations are printed, another correspondent expresses surprise that any doubt should be thrown on the luminosity of plants. "For," he says, "I have observed it frequently, and have looked for it on each succeeding summer, on the Double Marigold, and more especially the Hairy Red Poppy (Papaver pilosum), in my garden at Moseley, in Worcestershire. In the evening, after a hot, dry day, the flashes of light afforded much amusement to myself and to others."

Fifteen years later, and the subject was again revived in the pages of the *Gardeners' Chronicle*, by the record of certain experiences tending to corroborate those of others which had previously been made, and to which we have already directed the attention of our readers.

This observer, quoting from his diary, states:—"We witnessed (June 10, 1858) this evening, a little before nine o'clock, a very curious phenomenon. There are three scarlet Verbenas, each about nine inches high, and about a foot apart, planted in the border in front of the greenhouse. As I was standing a few yards from them, and looking at them, my attention was arrested by faint flashes of light passing backwards and forwards from one plant to the other. I immediately called the gardener and several members of my family, who all witnessed the extraordinary sight, which lasted for about a quarter of an hour, gradually becoming fainter, till at last it ceased altogether. There was a smoky appearance after each flash, which we all particularly remarked. The ground under the plants was very dry; the air was sultry, and seemed charged with electricity. The flashes had the exact appearance of summer lightning in miniature. This was the first time I had seen anything of the kind, and having never heard of such appearances, I could hardly believe my eyes. Afterwards, however, when the day had been hot, and the ground was dry, the same phenomenon was constantly observed at about sunset, and equally on the scarlet Geraniums and Verbenas. In 1859 it was again seen. On Sunday evening, July 10 of that year, my children came running in to say that the 'lightning' was again playing on the flowers. We all saw it, and again on July 11. I thought that the flashes of light were brighter than I had ever seen them before. The weather was very sultry."[‡]

These instances of luminosity in flowering plants, and those about to be alluded to amongst Fungi, are referable to two very distinct causes. Those of Fungi being entirely exhibitions of phosphorescence, causes which are inadequate to explain the phenomena in the other cases. Two or three paragraphs have already appeared in recent numbers of this journal, illustrative of this phase of the subject, and the following are given as more detailed accounts of the instances alluded to by Mr. W. G. Smith.

The Rev. M. J. Berkeley[*] alludes to the luminosity of Fungi, in his excellent "Introduction," when he says, "This luminosity has been observed in various parts of the world; and where the species has been fully developed, it has been generally a species of Agaricus which has yielded the phenomena. Agaricus olearius of the South of Europe is one of the best known, but other species have been observed, as Agaricus Gardneri in Brazil, Agaricus lampas, and some others in Australia; in Amboyna, by Rumphius, &c. Mr. Babington has observed imperfect mycelia extremely luminous near Cambridge; and Dr. Hooker speaks of the phenomenon as common in Sikkim, though he was never able to detect the species to which it was due. Tulasne,[†] who has specially examined the luminosity of the Agaric of the Olive, has observed dead leaves in the south of France to be endowed with the same property, without, however, being able to detect the cause. Fabre, in a paper in the "Annales des Sciences Naturelles," ascribes it to a temporary increase of oxydation.

Beautiful, however, as the effect may be in these instances, it is far excelled by the phosphorescent appearance presented by Rhizomorphæ in mines, the splendour of which is described by Humboldt in the most glowing colours. Such Rhizomorphæ are, I believe, always mere subterranean forms of common Fungi, as is the case with Rhizomorpha subcorticalis. De Candolle long since explained their real nature; but it is very curious, if this be the case, that our common Polypori and Xylaria, which give rise notoriously to such productions, are not themselves luminous when perfectly developed.

Mr. Gardner gives the following account of the Brazilian species first discovered by himself: "One dark night, about the beginning of the present month (December, 1839), while passing along the streets of the Villa de Natividade, Goyaz, Brazil, I observed some boys amusing themselves with some luminous object, which I at first supposed to be a kind of large fire-fly; but on making inquiry I found it to be a beautiful phosphorescent species of Agaricus, and was told that it grew abundantly in the neighbourhood on the decaying fronds of a dwarf Palm."

The whole plant gives out at night a bright phosphorescent light, somewhat similar to that emitted by the larger fire-flies, having a pale greenish hue. From this circumstance, and from growing on a Palm, it is called by the inhabitants "Flor do Coco."[‡]

It has been stated that the mycelium of truffles is luminous; but this seems to rest upon the authority of one observer, and, as far as we can learn, has never been verified.

Mr. James Drummond, in a letter published in "Hooker's Journal" for April, 1842, and dated Swan River, 1841, gives some account of luminous Fungi of that region:—"As respects Fungi I would chiefly like to give you some account of two species of Agaricus, belonging to that division which has the stem at one side of the pileus. They grow parasitically on the stumps of trees, and possess nothing remarkable in their appearance by day; but by night they emit a most curious light, such as I never saw described in any book. The first species in which I observed this property was about two inches across, and was growing in clusters on the stump of a Banksia tree, near the jetty at Perth, Western Australia. The stump was at the time surrounded with water, when I happened to be passing on a dark night, and was much surprised to see what appeared to be a light in such a spot. On examination, I found it to proceed from this Fungus. It is six or seven years since this circumstance occurred. The late Dr. Collie, then our colonial surgeon, possessed a good collection of botanical books, which he and I consulted, but without finding anything which bore on the subject. When this Fungus was laid on a newspaper, it emitted by night a phosphorescent light, enabling us to read the words round it; and it continued to do so for several nights, with gradually decreasing intensity as the plant dried up. A few weeks ago, and not till then, I discovered another instance of the same kind. I was collecting plants on an ironstone hill in the Toodjay district, when I was struck with the beauty of a large Fungus, of the same character as the former, but measuring 16 inches across, and about a foot from the root to the extremity of the pileus. The specimen which I carried home weighed about 5 lb., was very smooth, yellowish-brown above, and dirty white upon the gills; it gradually became thinner towards the outer edge of the pileus, where it was waved and sinuated. It was the beauty of the species which induced me to gather it, for as to making a full collection of the Swan River Fungi, such a task would require an entire season, and the skill of a person who could make drawings or models of them. The specimen in question was hung up inside the chimney of our sitting-room to dry, and on passing through the apartment in the dark, I observed the Fungus giving out a most remarkable light, similar to what I have described above. No light is so white as this, at least, none that I have ever seen. The luminous property continued, though gradually diminishing, for four or five nights, when it ceased, on the plant becoming dry. We called some of the natives, and showed them this Fungus

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[*] *Gardeners' Chronicle*, 1843, p. 691.

[†] *Ibid*, 1843, p. 710.

[‡] *Gardeners' Chronicle*, July 16, 1859, p 604.

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[*] "Introduction to Cryptogamic Botany," p. 265.

[†] "Annales des Sciences Naturelles," 1848, ix. p. 338.

[‡] "Hooker's Journal," 1840, vol. ii., p. 426.

when emitting light ; the room was dark, for the fire was very low, and the candles extinguished, and the poor creatures cried out 'Chinga !' their name for a spirit, and seemed much afraid of it ; and I certainly must own it is a very extraordinary 'Will-o'-the-Wisp.'"

This, then, is a summary of the facts which we have been able hastily to collect together concerning the luminosity of plants. There may be other recorded cases which have passed from our memory, or with which we have never become acquainted, and to these it is not at all improbable that some of our correspondents will be able to add others. The subject has now been fairly opened, it is a very interesting one, and it must be confessed still not wholly without mystery, especially in so far as regards the light emitted from the flowers, &c., of the higher orders of plants. *Hardwicke's Science-Gossip.*

SOBRALIA MACRANTHA ALBIDA.

THIS is a very elegant variety of the well-known but too little grown Sobralia macrantha. It was exhibited at South Kensington a few weeks since by Mr. B. S. Williams, of the Victoria and Paradise Nurseries, Upper Holloway, but it is not known from what locality the plant had been received. The reed-like stems attain to some 3 or 4 feet in height, and produce from the apex numerous large flowers, which are upwards of 6 inches across ; and although the individual flowers are short-lived, yet the numbers which are produced in succession amply compensate for it, and render this novelty a very showy and attractive ornament to an Orchid-house or ordinary stove.

The sepals and petals are of a soft creamy white, large and spreading, whilst the lip is very large and nicely expanded, the colour being a rich soft purple, rendering the contrast between it and the creamy-white sepals and petals really charming.

In potting Sobralias, it should be borne in mind that they are terrestrial plants, and do not require elevating above the rim of the pots, in the manner practised for the epiphytal kinds ; they should be potted in good peat and leaf-mould, to which may be added a little loam and sand, and the pots should be well drained. During the summer season they enjoy a liberal supply of water, and should be placed at the cool end of the Cattleya-house. In winter less water will suffice, but at no season should they be allowed to become thoroughly dry, or it will cause the leaves to turn yellow and fall off, to the great detriment and disfigurement of the plant.

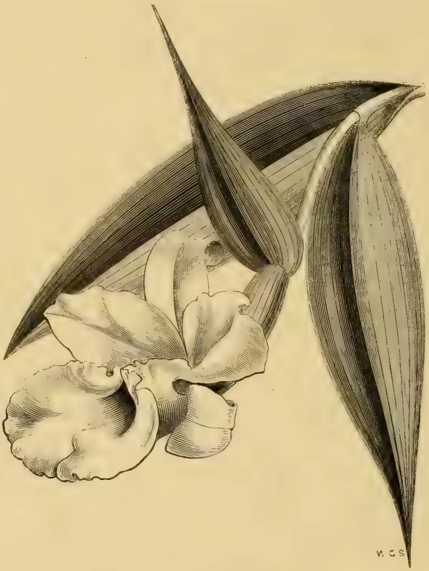

FIG. 191.—SOBRALIA MACRANTHA ALBIDA.

NOTES ON CONIFERS.

As one who, I doubt not, is not singular among your readers in taking an unceasing interest in coniferous plants, especially those suited to our climate, I saw with much pleasure Mr. Robson's paper on the subject, and ask your leave to make a few remarks and statements. Cupressus funebris : I add my testimony to his report as to this tree. As far as I know or can learn, it has never shown in this country the weeping habit for which it has credit on the faith of Mr. Fortune's original description. I have always suspected that there must have been some confusion in his notes, and that the weeping tree of China is really the Cryptomeria, which, when well grown, much better corresponds with both description and plate in his book. It is here about 12 feet high. Pinus insignis here is hardy as regards its vitality, but the foliage gets in severe winters so browned as in a great degree to destroy its beauty. Pinus austriaca is a noble tree, of rapid growth, and suitable for planting on a large scale. Is it anything but a very vigorous variety of Pinus sylvestris? Pinus cephalonica appears not to suffer from spring frosts when it has got to a good height, and is then a very handsome tree. When young and low its early shoots suffer every year. Pinus Sabiniana is quite hardy, grows with considerable rapidity, and is very striking in appearance. Pinus halepensis is here quite hardy. It is but of moderate height, and has a very neat and pleasing appearance. Picea Pinsapo deserves all the praise given to it, as being perfectly hardy, and truly symmetrical. Picea Nordmanniana is entitled to the same praise, and grows with much rapidity. Cupressus Goveniana is here fully 20 feet high, and covers a space down to the ground of the same diameter. It is a very striking object, being always covered with cones in all sizes and stages, which are at first a yellowish-green, and appear never to fall off. It is not injured by any severity of weather. Cupressus Uhdeana : This plant, after having attained nearly the same size as the above, was this winter killed to the ground. Cupressus Lambertiana (or macrocarpa), when fully developed, makes a noble tree. Libocedrus chilensis is quite hardy, and has now attained a height and form that give promise of much future ornament. Sequoia sempervirens deserves all that can be said in its favour. It covers the whole of the ground on which it stands. It grows with great rapidity ; soon repairs any casual injury, and is a much handsomer tree than Wellingtonia, which is very stiff and formal, Cunninghamia sinensis is so far hardy that it stands our winter, though the foliage is much browned. The new growth, however, is of bright grass-green, and the upright stem about 8 feet high. *G., Bath.*

Home Correspondence.

Orchid Cultivation.—I have neither time nor inclination to go into a controversy which, at least, so far as "G. H." is concerned, is to have little effect in changing what looks very like the foregone conclusions of that gentleman. All the evidence that has been published in your columns for the last 18 months, were it summarised, is directly against that treatment which "G. H." insists upon. As a matter of courtesy, I reply to his queries, in the hope that I may neither be misinterpreted nor misunderstood. "G. H." asks, first, "Will Mr. Anderson tell me where he learned that 6500 feet is the elevation from which these plants come?" I learned it from "G. H." himself (see p. 615), who, again, took his information from M. J. Van Volxem, who found Odontoglossum Alexandræ and O. triumphans, the one at so low an elevation as 5500 feet, and the other about from 6000 to 7500. I may state further that in a private letter from Mr. Blunt which I had access to, it was stated that he found the bulk of those sent home—O. Alexandræ, Lindleyanum, hystrix, &c.—a little lower than the high range of Bogota. I need scarcely defend myself from the strictures of "G. H." as to my not being up in "my altitudes," for I had written long since that Bogota was fully 8000 feet above sea-level. My observations as to the summer temperature necessary for the plants found in these regions at the heights spoken of were from my "home" experiences, and it would be a point of importance to know whether those on the low natural line are in as good a condition as those on the high natural line. The difference, however, in mean temperature, does not appear to be so great between a 6000 and a 7000 feet elevation, as some suppose. I am glad to hear that "G. H." has not killed an Orchid at the high temperature he recommends ; it appears from a very lengthened practice that a continuance of such, even with copious moisture, "will certainly kill them." The next question that your correspondent asks me, and which he is specially concerned about, is, "Will Mr. Anderson in justice to me say where I advised "a hot, dry temperature?" I had not been sufficiently explicit in replying to the question of "Ex-Cantab" on that matter, and the inference may be drawn that "G. H." had something to do with the recommendation of dryness along with heat. But any one reading his numerous letters will bear him out as one that has all along prescribed extreme humidity in the growing season, and by no means a dry climate, even in the quiet season, where young growths were moving onward ; so that if his disciples, or rather the disciples of the school to which he allied himself, took his temperatures without his wet atmospheric climate, they would be applying his teachings falsely. "G. H." may console himself, therefore, that his was not one of the places where the plants "were in a bad plight." Indeed, at the time of my "tour throughout many Orchid-growing establishments" (see p. 712), "G. H.'s" collection of cool Orchids, and, in truth, his collection of Orchids in general, was only in its infancy. Your readers may ask me how I know "G. H.'s" establishment, and what object I have, even supposing I knew it, of exposing his hand? In the first place, "G. H." (see p. 76) intimates to your readers that he is sending you a photograph of a plant of Odontoglossum Bluntii, with a flower-spike bearing 28 flowers, and that "it is our intention to send it up to the next Floral Committee of the Royal Horticultural Society." Turning over to p. 78, I find that Messrs. Brooke & Co., Fairfield Nurseries, Manchester, exhibited a splendid cut spike of Odontoglossum Bluntii, or Alexandræ (see p. 76), which also received a special award. "G. H.," speaking for that firm at that same period, asks a question as to cool temperature, and then answers it in the following words :—"I do not consider that mine is cool treatment ; say a mean of 70°, the highest 80°, the lowest 60°." He still persists in these figures in the *Gardeners' Chronicle*, which I and others of your correspondents challenge as not the figures for the treatment of the majority of Odontoglossums. However, he cannot be in earnest, he is surely writing for controversey sake. Let your readers or yourself turn to James Brooke & Co.'s catalogue of select Orchids for 1871, which you have already noticed in rather a prominent way, and you will find, at p. 6, under "Remarks on Cultivation," the following paragraph :—"Cold temperature, or from 50° to 60°, with plenty of moisture, when growing ; 40° to 50°, and dry, when at rest." In case, however, your indefatigable correspondent should wriggle out of that by stating that the cold temperature was for something else than what we have been so long discussing, please refer to p. 20, and the reader will find, under the head of "Odontoglossum," that the plant succeeded well in a house from 40° to 50°. Pray what meaneth all the discrepancy? Your correspondent must disclaim all knowledge of the catalogue, else he will have to eat "humble pie" indeed. Captain Auchterlonie's Tables of Temperature, reprinted in Mr. McPherson's note (see p. 775), is as near as possible what I have all along aimed at for the five winter months, from October onwards. Our summer temperatures are necessarily much higher, sometimes higher than they ought to be, under the influence of the sun in June and July particularly, and that is why I have recommended a north house for such Odontoglossums as I have named above, and for Masdevallias and for Oncidium cucullatum nubigenum—all plants requiring the coolest summer temperature at command. O. grande, O. citrosmum, O. Insleayi, O. Reichenheimii, and some others, require a much warmer climate, and so do, in my opinion, a good many more of those published in "Ex-Cantab's" list. *James Anderson.*

—— The last communication of "G. H." (p. 874) induces me to think that every detail of accurate information regarding the native climate of the Odontoglossa may be found valuable. Some notes, made by Professor Lindley, "Upon a collection of Orchids formed in Columbia and Cuba by Mr. J. Linden," have been thrown into a pamphlet, published by

Bradbury, Evans & Co. for 2*s.* 6*d.*, which deserves to be better known by cultivators than it is. Nearly 150 species of Orchids are there enumerated, and arranged in tables, according to their native elevation; and the mean temperature of each level is added, from data furnished by Humboldt. I will here give only the Odontoglossa mentioned:—

Elevation, 10,000 to 11,000 feet: Mean temp., 49°; min., 32°.—Odont. densiflorum.
9000 to 10,000 feet: Mean, 52°.—Odont. dipterum; Odont. divaricatum.
8000 to 9000 feet: Max., 69°; mean, 56°; min., 36°.—Odont. Hallii, Odont. epidendroides; Odont. luteo-purpureum.
7000 to 8000 feet: Mean, 59°.—Odont. megalophium.
6000 to 7000 feet: Mean, 62°.—Odont. odoratum; Odont. angustatum.
2000 to 3000 feet: Max., 80°; mean, 75°; min., 55°.—Odont. hastilabium.

In the notes which follow the technical Latin diagnosis (what Linnæus called the *nomen specificum*) of each species, we learn one or two other points of interest, such as that most of the species named grow in forests, and that some of these forests are expressly designated "thick," "damp," "damp and gloomy," epithets which appeal to other points of treatment besides temperature, viz., humidity and light. On the charming genus Masdevallia, which is just now beginning to occupy our stages, there is a good deal of very useful information contained in the pamphlet from which I quote. May I venture to think, Mr. Editor, that if you would just refer to it, you would perhaps judge the preface, which is of no great length, worthy of being extracted *in extenso*, to your own columns; although, to be sure, the date in the title-page is MDCCCXLVI. *P. H. Gosse, F.R.S., Torquay.* [We will comply with our correspondent's suggestion in a future number. EDS.]

—— "G. H.," in a recent number, writes thus: "'Ex-Cantab' says, I recommend a mean winter temperature of 70°, and Mr. Anderson repeats it, but I have not given a mean of 70° in winter that I am aware of." Now will he be surprised to find that at p. 76 he has written this—"I do not consider that mine is cool treatment—say a mean of 70°—the highest 80°, the lowest 60°"? As I brought this sentence to his notice at p. 380—and there was no correction in his reply thereto—he exceeds the boundary of fair discussion in accusing us of misrepresenting him upon that point. Again, a little further on he says, p. 874, "these natural summer temperatures mean 85° at least." This, too, is a mistake. I meant 85° at the most—a maximum of 85°, let the day be as bright and hot as it may (see p. 380). The minimum temperature in the house must depend in a great measure upon the temperature of our summer nights; it will be 70° very often without fire-heat, but is seldom lower than 60°, which is quite sufficient. But the most remarkable sentence at p. 874 runs thus: "But we should not forget that arguments require examples to the point to convince." Has your correspondent seen the *Gardeners' Chronicle* lately? Allow me to bring to his notice a few examples given at p. 712, 741, and 837. *Ex-Cantab.*

Box Edging.—Can any of your readers oblige me with any suggestion as to the probable reason of the failure of Box edging, which I cannot make to grow? I renewed mine quite lately, but, after the lapse of a few weeks, it looks as shabby as before, nearly half the Box being dead. My garden is on a poor gravel, but I can hardly think that the subsoil has anything to do with the failure. *F. C.*

The Royal Horticultural Society and the Horticultural Dinner.—Perhaps no better time than the present could be chosen for coming to a final decision upon this vexed question. Nearly another year will elapse before another provincial show, and, therefore, the matter may be talked over quietly, and definitely settled to the satisfaction of all parties. Most of the ills of life arise from misunderstandings; these unexplained grow into dislikes, hard words, hatreds, and all uncharitableness. Their removal is like oil on the gearing of machinery—making all to run smooth, without strain or waste of power. That misunderstandings still exist your Editorial note to my last proves. Long and, I may add, intimately as you have known me you seem not to have caught the drift of my remarks. You say that I am so unpractical as to wish the Council to get up the dinner. What I did say was, that they ought to take it into their programme; and to this I adhere. There ought to be no divided authority at these meetings; all that is done should be under the official sanction of the Council. I advocate this course less in the interest of gardeners than of the Royal Horticultural Society. Let the dinner and the Congress slip from its grasp, and it loses its hold on its practical supporters, in the exact ratio of the success of these two features of its provincial shows. By separation there is also a great danger of a clashing of authority. Is it not a fact that something of this sort did actually occur at Nottingham? Was not the dinner first accepted by the Council, then relegated to the local committee, then officially announced, then reannounced by the Council of the Royal, the first bills withdrawn, and subsequently reannounced unofficially? And yet after this warning of the evils of divided authority we are asked to leave such matters to local management, and reproved for entertaining the false idea that the Council object to meet the gardeners; if not, what was all the fuss about, and why have the Council not dined with the exhibitors before? [Because there has not before been a properly organised dinner. EDS.] The Royal, as far as I am aware, is the only horticultural society that has ventured into the provinces without dining with its constituents; all the agricultural societies do so. The dinner is just as prominently announced on the official bills as the show of implements and bullocks, and for my own part I cannot yet see any just cause or impediment why the Royal Horticultural Society should not do likewise. [It is beyond the limits of etiquette for a public body to go as visitors to any place and then to get up or even to instigate a public dinner, which, if it means anything, must be supposed to be held in its own honour. EDS.] No one asks the Society for a free dinner, nor to make themselves in any way responsible beyond announcing it and appointing a dinner committee, or requesting the local authorities to do so: official sanction is all that is asked for. I know nothing of mischief-makers, but this I know, that many of the best gardeners in Britain do believe, and grieve over the fact, that the Council seems unwilling to meet them at the festive board or in the intellectual arena; and when plied with assurances to the contrary, the pertinently retort has baffled them, Why, then, did the Society ignore the dinner at Nottingham till the last moment? why has it not dined with gardeners before? and why was there no congress at Nottingham? I should be grateful to have these questions solved without blame to the Society. I love the old ship for many reasons, and personally have the highest respect for the Council; in fact, it is chiefly my love for the Society, and my desire for its prosperity, that prompts me to the thankless duty of criticising its conduct. It has done good work in improving the material of horticulture, but the time has come for it to win the love of horticulturists. It has it in its power to do so, by little social courtesies that cost it nothing. But if it refuses, horticulturists are becoming strong enough to take care of themselves. Gardeners are proverbially grateful for small favours, and it surely is a small matter that their dinner should become part of the official programme of these provincial shows, and that a Congress be held for their pleasure and instruction. This is, however, probably the last time the Society will be asked to undertake such matters; I am assured, on good authority, that both a dinner and Congress will certainly take place at those great gatherings, whether the Society patronises either or not; and, further, that probably one of the first matters discussed at such independent Congress, will be the relation of the Royal Horticultural Society to practical gardeners; and the second, "Heads and Hands; or, Our Press." *A Practical, July* 8. [It will be well worth the time and space occupied if the discussion of this subject should lead to the removal of the misunderstanding alluded to. As to the dinner, we have already pointed out how it ought to be managed. As to the Congress, it was all along understood that there was to be one, or something equivalent to it, at Nottingham, but why it was not carried out, we have never learned. Had we been aware that nothing would have been done, we should ourselves, certainly, as before, have taken some active steps to promote one. EDS.]

Diverting a Watercourse.—As you justly say, "J. K.'s" inquiry is much dependent upon local customs. A precisely similar case existed not far from my abode a few years since, the water passing through other property ere it reached the mill below. In this instance, however, the water was only dammed back to form a waterfall. This was contested unexpectedly by the owner of a mill above, from the fact that it flooded his "mill-tail" unduly, to his injury, in regard to the working of the mill. The miller below "J. K." has not only a right to be recouped for the loss of the water maintained and kept from him during process of filling the newly made vacant bay, but also for the fact that the bay will for all future time stay the impetus of the stream, which will act very detrimentally to him in all cases of a scarcity of water—independently of the fact that the increased area increases likewise by the absorption of the soil, the loss of the water: to say nothing of the fact as to whether your correspondent has a lien on what water he requires from the stream for his use. *William Earley.*

—— "Sic utere tuo, ut non lædas alienum" is a good, sound old legal maxim, and one that seems to me quite applicable to your correspondent, who makes inquiries about "diverting a watercourse." It seems to me impossible for such a thing to be done without injury to his neighbour, or those below him on the stream, even though "there should be a pipe to take away the waste water from the tank when it becomes full, to carry it again in the same stream." I should think the miller below could be free to bring an action against the diverter, and of all questions arising in courts of law, none are so strongly contested as those arising out of the rights to waterrcourses, and, I may add, none so uncertain in thei results. *E. C.*

The Gardeners' Dinner at Nottingham.—In your comments upon the letter of "A Practical," there is a statement which is not correct. You say that "The gardeners' dinner, if properly organised, and under the management of a respectable local committee, would certainly always command the sympathies and support of the Society, both Council and Fellows, as it did on this occasion." The facts are, that at an early meeting of our local committee, the secretary, Mr. Lowe, was requested to ask the Council of the Royal Horticultural Society to assure us that a gardeners' dinner would have that support and sympathy; and the answer which he brought was this, "the Council do not seem to take an interest in the dinner, and they leave it to Mr. Hole." *The Mr. Hole referred to.* [No discrepancy here: they would not, because, as they think, they could not, take up the subject, as promoters. EDS.]

A Caution.—Would you let me look at your Lawn Mower, Sir?—Makers of these useful machines would do well to look after a set of cunning fellows who go about the country under pretence of being skilled in repairing, setting, and making old machines cut like new ones. Unless they produce more substantial evidence than that of their ready tongue about re-friction, &c., gardeners should be aware of them. Of course there are some who will produce their card, and give satisfactory references. *Caution.*

Flower Show Appeals.—The Chelmsford and Essex Horticultural Society offers a prize at its annual exhibition for "6 plants for beauty of foliage (distinct species)," and last year one of the exhibitors showed in the class two Crotons, viz., C. variegatum and C. angustifolium; but as these were both varieties of the same species, he was very properly disqualified. This year, however, one exhibitor showed two Alocasias in the class, viz., A. Lowii and A. macrorhiza variegata, and, contrary to precedent, and to the expectations of the majority of the exhibitors there present, he was awarded the 1st prize. This is all the more to be wondered at, seeing that it was awarded by the same judges as last year. If it be nothing more, this is surely a little piece of inconsistency; for why should one collection containing two Crotons be disqualified, and another with two Alocasias be honoured with the 1st prize? Surely a little explanation is required, and as both the judges and the exhibitor of the two Alocasias in question are readers of the *Gardeners' Chronicle*, I trust they will use that medium of conveying such explanation. I write this with no ill feeling, but in order that a definite and proper understanding may be arrived at to guide us in future years. *Thomas Simpson, Broomfield, Chelmsford.* [The Alocasias mentioned are a distinct species, and therefore comply with the terms. EDS.]

The Last Trail of the Winter of 1870-71.—So at least we may surely venture to hope was the terrific hailstorm that swept across a great portion of East Anglia, from the coast to 30 or more miles inland, on July 5. A few very loud peals of thunder soon after noon, from a huge black cloud which was rent asunder, and the rain and hail poured down pell-mell in bucketfuls, tearing, rending, shattering, battering everything in its hurried course, converting, roads and walks into rivers of floating ice, and leaving on the level ground in many places a deposit an inch deep of blunt, conical hailstones, the form of a boy's spinning-top, and of the most ponderous size. Though the day wss extremely hot, and much rain fell with the hail, it was quite two hours before it disappeared from the shady side of walls or trees, and almost any number of cart-loads might have been collected on our lawn. I have never seen anything like it in summer. For the time, it chilled the air as ice-pudding does the mouth, and the noise and confusion while it lasted were indescribable. From what I can learn, we got the tail of it here, as it did not proceed above a mile beyond us in any direction, except towards the east; but it seems as if the strength and fulness of the cloud had been in its tail, for rI do not gather that more hail fell anywhere than over here; and, singularly enough, considerably more fell in the kitchen-garden than in the flower garden, though the two are within a quarter of a mile of each other. But the kitchen garden is probably 40 feet lower; and I have observed this difference in quantity of fall, both of rain and snow, before. It was a pitiable sight to see the Coleus, Iresine, Perilla, Pelargoniums, subtropicals, &c., shivering amid the large pieces of ice, which glistened like plump drops of crystallised sugar, such as delight baby eyes, and satisfy and fill their mouths with sweets. So late as the mornings of Jane 25 and 26 frosts had bitten into many of our Coleus and other tender plants, and it seems doubtful if they will get over this pelting with ice balls. I send you samples of fruits and vegetables to show you how hardly they have been hit. I confess I was somewhat proud of our crops of Apples and Pears. We had a better crop than most this year. I very much fear that the hail will ruin them. The indentations are so deep, that it seems as if the bruised portions must decay. It strikes me that the form of the hail had something to do with the depth of these bruises. Most of the hailstones, I suppose, would fall with their narrow points downwards; but the mere weight of the hail may have been sufficient to cause the injury. The fruit on walls is also greatly bruised, that on cordons, perhaps, most of all. I mark the samples sent—cordons, wall, open. The Pear perhaps, reveals the severity of the storm more than aught else. You will see that they are bruised almost right through. I also send some

Onion plants, which have suffered much. Before the hail they were a model crop—without speck or bruise, now the whole is battered and wounded. Lettuce plants are torn to shreds. Some Broccoli plants, just pricked out, strong and healthy, are, I fear, utterly ruined. In fact, it seems as if this last trail of winter in July was to prove more disastrous than all that had gone before it. Would that we, in East Anglia, could have taken a leaf out of your correspondent's book, and said to this storm-cloud, We do not suffer hail in July to wreck and ruin our crops. But though all ministering priests, serving before the great altar of Nature, we have no such power to close the windows of heaven, even when they discharge such huge morsels of ice—to our utter discomfiture and heart-breaking—at mid-summer. We can but say, "Even so, Father, for so it seemeth good in thy sight;" and reverently, hopefully, and mercifully set to work to restore what the storm has well nigh ruined. *D. T. Fish*, *July* 6. [The samples sent were very much injured, some of them beyond recovery. EDS.]

Vitality of Seeds of Foxglove.—Upon two or three roods of ground I had trenched deeply in the new works here last winter, a dense mass of seedling Foxgloves has sprung up, where no symptom of such existed before. *William Earley*, *Valentines*.

Laxton's Alpha Pea.—Your correspondent "A. D.," commenting on the character of the above Pea, gives it a widely different description to what I should have expected from my own experience, excepting in one point, viz., its earliness, which I consider to be on an equality with Daniel O'Rourke, but with pods double the size, and much longer, and Peas more resembling the Broad Bean in size than a Daniel O'Rourke Pea, and far surpassing it in flavour. The haulm is strong-growing, as is the case in all Laxton's Peas, and abundantly prolific, hanging more like Hops in the county of Kent. *E. Morgan*, *Harrow-on-the Hill.*

The Trade Yard at Nottingham.—"The true Epic of our time is, not Arms and the Man, but Tools and the Man—an infinitely wider kind of Epic." (T. Carlyle.)—The great success which has attended the Royal Horticultural show at Nottingham induces me to ask, through your valuable journal, whether the Council would adopt on the next occasion some better method in the arrangement of goods in that portion of the ground set apart for trade. It is scarcely in keeping with the high purposes for which the Royal Horticultural show is held that the visitor on entering finds himself in the midst of a fancy bazaar, and that the principal approaches to the grand marquee are lined with booths similar to those we see on fair day in market towns. None but the most persevering of sightseers would be likely to see anything beyond this in the trade ground. The manufacturers of implements, tools, and apparatus used in horticulture ought to be recognised by the Council as having a claim to a constant and prominent place at the show. There is no need to exclude other trades, but it is by no means necessary that dealers and manufacturers of goods having no special interest to the horticultural world should monopolise the best places. Next in point of attraction to the show of plants and fruit, come the implements and apparatus used in the garden. They have contributed some share, however humble, to the great triumphs of the horticulturist. It would but be in agreement with the proper fitness of things, if the principal avenue to the marquee were set apart for the use of manufacturers and their representatives. Then let the sellers of agricultural implements and miscellaneous goods take the second and third places. Of course if it is absolutely necessary to the prosperity of the Royal Horticultural Society that the vendors of toys and the retailers of beer should have the most prominent positions in the trade ground, by all means let them have it. No one, however, who saw the thousands that poured into the Park on each day of the show would suppose that they stood in need of any such support. A manufacturer does not attend the show merely to make sales. That branch of trade is now permanently established, and there is always ample stock in the hands of agents to meet the wants of the public. It is the only time during the year, and for that district in several years, that he has the opportunity of meeting both professional gardeners and amateurs, who have always some inquiries to make, or wish to test the merits of some novelty in garden requisites. By the present arrangements that opportunity is not given them. Therefore let the Council institute a new organisation of the trade yard, which will give the visitors convenience of access to the manufacturers of implements and apparatus, concentrate their attention on the special purposes for which the show is held, and add to its completeness. *George Baines*.

Orchard-house Culture made Easy.—One of the lions of Nottingham in the shape of fruit tree culture is a long ladder and plank shed or general store of stock-in-trade of the well-known horticultural builder, Mr. Foster. This shed is 200 feet long, more or less, supported on pillars, the roof sufficiently high to admit of carts, &c., being safely sheltered from the weather. The roof is simply a common span, but instead of being slated or tiled it is glazed with strong glass, which enables Mr. Foster to make the best of this shed for two purposes, viz., general store and orchard-house. The shed is open on one side and weather-boarded on the other up to the eaves, and appears to answer all the purposes of an orchard-house so far as securing plenty of fruit. After a scramble over planks, casks, and other sundries, I found that the trees in this house are all planted out, and are fruiting in a state worthy of a different situation. I did not go the whole length of the shed, but the sorts of trees which I observed were Apricots, Nectarines, Plums, and Peaches; and had they been put up for exhibition for quantity of fruit, they would have taken prizes in the order named. So far as I could see, the trees were all trained standards, or what are termed riders; they are planted inside the house and close to the boards, and their straight stems reach to the eaves, the branches being afterwards trained in the fan shape to a wide trellis underneath the roof, where they are luxuriating in the greatest health and vigour. A good deal of Mr. Foster's success lay in the large amount of ventilation, and in the shoots being close to the glass. Upon the outside of the house, and on the weather-boards, are the finer sorts of Pear trees, trained horizontal fashion, and they seemed to enjoy their situation. The above shows what can be done with a little ingenuity and forethought in turning such lumber sheds to a useful account. Had Mr. Foster known that his model orchard-house was going to be taken by storm, and inspected by a bevy of dukes', earls', and lords' gardeners, he would no doubt have taken a leaf out of his neighbour Mr. Pearson's book, and had the trees duly pinched and stopped. *J. Miller*. [A most successful experiment, as we ourselves can testify. EDS.]

Caterpillars and the Fruit Crops.—It is a general complaint amongst fruit cultivators this season that there has been not only a great destruction of fruit trees, but also of the fruit crops, by blight and caterpillars. Some of the returns are quite alarming; therefore, any suggestions tending towards the mitigation of the ravages of these pests cannot be otherwise than acceptable to gardeners. I think the nature of the species of caterpillar that has worked so much mischief among our fruit trees is not generally known. As regards its habits, I may say that it perpetuates its species by forming a ring of a hard substance round the small wood of the tree, in the months of July and August, where it remains until the ensuing spring. There is a most simple and effectual method by which this pest can be destroyed, viz., by cutting away the rings during the autumn and winter months. It is only by close observation that these rings can be discovered, because of the resemblance they bear to the bark of the tree on which they are placed. A sharp look-out should be kept in the spring of the year about March or April for any caterpillars, the product of any rings that may have escaped the eye of the pruner, and were not destroyed in the dormant form. As a matter of course the appearance of the caterpillars will depend very much upon the forwardness or otherwise of the season; that presence can be detected by the appearance of a web, or nest, on the tree, encasing the progeny in a cluster, when they can readily be destroyed. A remarkable circumstance of the partial manner in which blight will attack fruit trees of the same kind, recently came under my own observation. It was a case of two market gardens, the one separated from the other by means of a quick hedge. Both were planted with an upper and an under crop. In the one case the whole under crop, consisting of Red and Black Currants, was destroyed; the upper crop being only slightly touched. In the other case, the under crop of Currants was untouched, but the upper crop, consisting principally of Apple trees, is almost leafless, through the attacks of caterpillars. The following circumstance will probably account for the partial and slight destruction worked in the Apple trees forming the upper crop in the first instance. The proprietor of the garden, in pruning the trees last winter, adopted a system of close pruning from the base to the top of all the main branches of the trees, and so unconsciously removed the rings in which reposed the embryo caterpillar. *J. T.*

The Setting of Grapes.—In your paper of July 1, appears a communication from Mr. Josiah Elcombe, of Exeter Nursery, Southampton, quoting the following words of another gardener, with respect to a house of grapes under his care:—"These I gave a good syringing to, at a certain stage of blooming, as is usual with me to do, and thus save the trouble of thinning." I would feel obliged to Mr. Elcombe (or to any other experienced person) if he would tell me at what stage of blooming this should be done to effect the purpose intended, as if it does do that, it would confer a great boon on those who have ground vineries, in which the "trouble of thinning" is fivefold what it is in ordinary ones. *A. Boyle*, *South Wales.*

Horticultural Boilers.—At last a ray of broad common-sense light has dawned upon this vexed question, and as we are just entering into a sort of boilerphobia, Mr. Stevens is to be thanked for having struck the key-note in a correct and proper spirit. Waste in the stokehole is no good to any one, and it may be fairly asserted that in proportion as the chimney above the boiler is heated, so is waste going on. I never yet felt the chimney above a vertical boiler that it was not more heated than was consistent with economical heating. When the Polmaise advocates, nearly 30 years ago, tried to enlist the late Mr. John Wilmott, of Isleworth, into their ranks, he said: "No, I cannot afford to boil the kettle at the top of the chimney," and whoever tries to extract a maximum effect from a minimum cause, must necessarily do so by a great waste of power. When you see on a dark night white light escaping from the chimney-top, rest assured fuel is being wasted, and yet with the vertical boilers it is not an unusual thing, in very severe weather, not only to see light, but frequently flame also escaping from the chimney top. The vertical boiler may be said emphatically to be wrong in principle, and whatever is defective in principle must be bad in practice. In a place near Cottonopolis, where the one-boiler principle is being carried out on a large scale, but where three boilers are needed to do the work of one, all goes tolerably well until the greenhouses want assistance to repel the frost, and then down falls the bed in the stoves, so much that during the past winter I had reason to know, from an eye-witness, that with the three full-sized boilers fired to their utmost, and the valves full on, several degrees of frost were registered in one, if not more, of the cold houses, while, at the same time, there must have been a great waste of fuel up the chimney. Mr. Stevens was, therefore, quite right in selecting the Cornish horizontal boiler, as that form which allows the products of combustion to escape with the least velocity from the surface of the boiler must be the most effective. For a boiler to be thoroughly effective and economical, it must not only be equal to its work in the coldest weather, but, as Mr. Stevens remarks, in proportion to its size, equal to several hundred, or may be thousand, feet more of piping, and there will be no need for forcing the heat up the chimney, as is constantly the case with small and inferior boilers. It may be laid down as a truism, that every pound saved in the fixing of an inferior boiler will involve the waste of pounds in fuel every year afterwards; for though dealers may tell us of the economy of their special crotchet, that "a shovelful of cinders" will be sufficient for this, or a bushel of coal for that, the fact is, the boilers can absorb no more heat than the fuel generates: and hence that form which, by a series of flues and slow combustion, allows the heat to be absorbed before it reaches the chimney stack, must be the best. Then, again, the setting of a boiler is a material point. With the old saddle, for one properly set you may find a dozen that are not doing their work in a proper manner; and so it is with almost all boilers, and therefore to bring one out which requires no skill in setting will be a great point gained. I am not one of those who think that the heat which may enter the brickwork is so much lost; on the contrary, as the fire lowers the heat will enter the boiler; yet at the same time I am convinced a jacketed and isolated boiler is the correct thing, and that such a one, surrounded by a stratum of confined air, must be the least wasteful of any. Chimney dampers are, in my opinion, an abomination; and if a boiler is properly set, and furnished with accurately fitting feeding and ashpit doors, there is not the slightest need for a damper. We do not want fresh air down the chimney, nor at all except to regulate the combustion of the fuel, and every molecule admitted beyond that need must be the parent of waste. Of this there can be no question. The best furnace fittings are unquestionably those made according to Sylvester's patent, as they fit with perfect accuracy, and, acting upon the slide principle, may be adjusted with the greatest nicety, and cannot with fair usage get out of order. Here, too, expense may be complained of, but the first cost which leads to an annual saving is not a waste of means. The material of a boiler cannot matter much; I have had good and bad of both materials, but, fractures apart, cast-iron is the most durable. Any one passing St. Paul's, in London, may prove this to demonstration, for while the wrought-iron spikes of the pallisading are all in a state of decay, the cast-iron principals are as sound as the day they were put up. I believe, however, for horticultural purposes more boilers rust out than wear out, and that in cold houses the few months the boilers are out of use in the summer causes more injury than months and months of firing. With wrought-iron boilers I have found this especially the case. Next to the good boiler, the good stoker is the essential point. The clean, thinking, intelligent fireman will, as Mr. Stevens observes, burn the fuel to clinkers, and get sufficient heat with little fuel, while the slovenly stoker will waste a large quantity of fuel and generate comparatively little heat. To teach the young gardener the how and why of this stoking operation is one of the most important duties of the employer. I heard a year or more ago, from my friend Mr. Speed, of the power and economy of Mr. Stevens' boiler, and recently Mr. Tillery (Welbeck) sent me the figures which Mr. S. has reproduced. These are most important, and may be studied with profit. The horizontal action is however the true principle of economy in boiler construction, and in no other way can they be made to work without waste. For four years I have been working one of Messenger's triangular tubular boilers, and at the first nothing could be more satisfactory. Eighteen months ago it went wrong, and though the sweep and bricklayer were called in, nothing like effective action could be restored. At last, in a fit of desperation, for we were sitting up with it until midnight regularly, I put on an old suit, and took a turn at it myself. Clearing the fire away, I found the only escape for the flame was by the side of the tubes, instead of at their ends, and examining it more closely I found the throat of the fire-place as completely stopped as if filled in with cement, so firmly as to require a crowbar to break it out. Removing this the action of the fire was perfect, so much so that we can now leave the fire on the coldest nights 12 or 14 hours with perfect safety, though both Grapes, stove plants and Orchids, are dependent upon it. I mention this to show the imperative necessity of young gardeners being made acquainted with the setting and action of a boiler, and how much trouble a little care and forethought may save. My test for a boiler is not the heating of the pipes. I take stock of its action some feet up the chimney, and in an inverse ratio to the heating of the brickwork so do I pronounce it good, bad, or indifferent. The new boilers recently introduced are all horizontal. Mr. Cannell's is before the public, and Mr. Westland's, which I have seen, is not materially different. It, however, is in action, with results not less gratifying in an economical point of view than those claimed by Mr. Stevens. If not in for a "mania" we are certainly verging upon a revolution in the manufacture of horticultural boilers, and that which, while doing its work properly, sends the least heat up the chimney, will certainly be the best and most economical. "The boiler of the future," remarks Mr. Tillery, "must not require attention more than twice in 24 hours," and where even high or low temperatures are required in a series of houses, that may be accomplished; but when a mean of 70° is required in some houses, and not more than 40° in others, then attention to the valves must involve almost as much trouble as attention to the fire. Let the principles which Mr. Stevens and myself have set forth be carried out, and then much of the past mystery about boilers will be dissolved into thin air. *W. P. Ayres.*

—— Two cracked boilers and a severe winter are about as unpleasant things to deal with as a gardener possibly can have; and this was my case last winter. Talk about Fungus, the Fungus nightmare is nothing compared to nightmare brought on by the cracking of boilers. Cracked, yes; and the fires put out—like disaffected soldiers, at a time when their services were most required. Such treachery was certainly too bad, for I always upheld the tubular boilers, notwithstanding the fact of their consuming an enormous quantity of coal, making an enormous quantity of ashes, added to their being as awkward boilers to build stokeholes for, or to keep clean, either outside or in, or to stoke, as possibly could have been invented. Depend upon it, if at any time a gardener has been guilty of the crime of laughing at his neighbour's calamities, and he is in possession of one of these boilers, it will assuredly bide its time, and mete out to him such measure of retributive justice as the fulness of the case deserves. If I have been guilty of the above crime, I certainly have suffered enough at the hands of the vindictive tubulars last winter, and should not wish my worst enemy to have to go through any similar ordeal. The tubular boilers have served their day and generation, and no material progress was made in the improvement of any boiler, until lately, through the columns of the *Gardeners' Chronicle*, we have hailed with joy the advent of some improved forms of horticultural boilers. All of them have been launched forth with more or less power of argument, and some of them it would appear were launched before ever they were built—a wrinkle, by-the-by, that builders of such big ships as the Great Eastern might well copy. Whilst in a dilemma whose boiler to choose, a happy incident introduced me to the acquaintance of Mr. Stevens' modified Cornish boiler. I went to Trentham, accompanied by Mr. Marriott, of Coventry, a gentleman having considerable experience of boilers, a horticultural builder and lover of gardening generally, and an ardent admirer of the late Sir Joseph Paxton. Arrived at Trentham, we were shown by Mr. Stevens several of his boilers —some at work, and more in process of being put down. We were of course told all about their power, how their introduction reduced their enormous coal bill to a trifle, how they were so easy to fix, so easy to stoke, so easy to keep clean both outside and in, and altogether so simple; in short, all the qualities were good ones, for bad ones they have none. The boiler carries common sense on the face of it, and recommends itself irrespective of anything requiring to be said in its favour. Let a boiler be ever so much written up, or, on the other hand, written down, if it really is a good one, it will recommend itself; and this boiler of Mr. Stevens, even supposing a single line had never been written about it, would have made its own way. Moreover, I believe that the inventor or improver of a boiler is never in more danger of making wreck of his cause than when he feels it is necessary to follow it with such support as that "it is the most powerful and most efficient boiler ever offered to the public." In the modest simplicity of the manner in which Mr. Stevens introduces his boiler there is much to admire. Given to us without a trammel of any sort, the horticultural world has much cause to thank Mr. Stevens, and also the North Staffordshire Engineering Company, for sending out so very substantial and well-made an article, one of which we have here doing the work of two tubulars. My employer encouraged me to go to greater expense in fixing it than I could have done on my own responsibility. To be out of sight and out of everyone's way, we found it necessary to fix the new boiler at a point 80 yards distant from a good deal of its work. Instead of sending the smoke through 80 yards of an underground flue, as we formerly had to do, we now send the hot water, and have also got rid of the nuisance of drawing coals and ashes to and from the awful hungry maws of the displaced tubulars. Altogether, we have done nothing lately of which we are more proud than the re-arranging of our heating, and it will afford me very great pleasure indeed to show Mr. Stevens' boiler and our system of heating to any one who may choose to come. "A Practical Hand" at p. 646 asks what proportion of heat passes into the lower flue. As regards this, he need have no misgivings, for when the fire is at work the flame can easily be seen (through a crevice) passing from the upper to the lower flue, thence up the chimney with a tremendous draught, especially if the damper is three parts or fully drawn. From the top of our chimney to the ground line is 28 feet, and from this point to flue under the boiler is 14 feet more, or 42 feet in all. The chimney is the same which had previously been used for the displaced tubulars. I saw a very short chimney working very satisfactorily one of the same boilers in the vineyard of Mr. Sage, at Atherstone, but I think it was the intention of Mr. Sage to further economise the heat by constructing an underground flue, having a house built over it. To my boiler there is at present attached 4000 feet of 4-inch piping, and judging from the heat we raise in those pipes, it appears quite likely enough to do as many more. Allow me, in conclusion, to remark that I should not like to have the water of the return-pipe enter the boiler at, or even near the same temperature as that escaping by the flow; if this was the case, and with so powerful a boiler as I find Mr. Stevens' to be, I should calculate soon to have an explosion. *Wm. Miller, Combe Abbey Gardens.*

Ventilating Plant Structures.—In your paper of June 24, under the above heading, Mr. C. B. Saunders gives an account of ventilating plant-houses, but as my man does not understand the account, would Mr. Saunders kindly give some further details, so that a country carpenter will understand it? *A. W.*

Societies.

ROYAL BOTANIC: *July* 12 *and* 13.—The last, and, possibly, the most successful exhibition of the season here, was held on Wednesday and Thursday last, under the most unfavourable circumstances as regards the weather, which, as on all former occasions of the kind this season, has been about as ungenial as it well could be, tending in no little measure to make these exhibitions, which have been much better than the average of the last few years—thanks to the indefatigable exertions of the courteous Superintendent, Mr. Don—anything like so successful in a financial point of view as they deserved to be. On this occasion the display was a bright and cheerful one, as, in addition to the fine collections of flowering plants, judiciously interspersed with fine-foliaged plants, such as Palms, Ferns, and the showy-leaved Caladiums, Crotons, &c., there was a very large assortment of all that pertains to the decoration of the dinner-table and the window, in which competitions the ladies took a very prominent part; and foremost amongst these was Miss E. Harris, a niece, we believe, of a well known and much respected exhibitor at the metropolitan shows—Mr. J. W. Chard, gr. to Sir F. Bathurst, Bart., Clarendon Park, Salisbury. This lady took two small silver-gilt medals for two epergnes, one as a centre table decoration, with growing plants, and the other with cut flowers and fruits, besides being 2d in the classes for an effective arrangement illustrative of dinner-table decoration, and for table bouquet (not tied). In the former class, Miss Hassard, St. Ronan's Road, Norwood, was 1st and 2d for an epergne. Miss Annie Williams, Holloway, had the best table bouquet (not tied), and Miss P. Buster and Miss Hassard took equal 2d honours in the class for hand bouquets. In the open class for a bridal bouquet, the best was contributed by Mr. J. Wills, nurseryman, Sussex Place, Brompton; Mr. Ransley Tanton, Epsom, coming in 2d; and Mr. J. W. Chard 3d. Mr. F. Perkins, Coventry, had the best ball-room bouquet, Mr. Cranston and Mrs. Ransley Tanton being placed equal 2d. In the class for dinner-table decoration with plants, flowers, &c., Mr. W. S. Buster, St. Mary Cray, Kent, was 1st; Messrs. Perkins, 2d; and Mr. J. W. Chard 3d; and Messrs. Dick Radclyffe & Co. had the best epergne, or centre table decoration with growing plants.

Stove and greenhouse flowering plants were well represented, considering the lateness of the season, the principal exhibitors being Mr. Baines, Mr. J. Ward, Mr. J. Wheeler, Mr. Carr, and Mr. A. Wright, amongst amateurs; and Messrs. Jackson & Son, Mr. Morse, Mr. R. Tanton, and Messrs. Perkins, amongst nurserymen. In Mr. Baines' group of 6 were fine and beautifully-flowered specimens of Dipladenia amabilis, Allamanda Aubletii, remarkably good; Erica obbata, and E. Parmentieriana, &c., both wonderfully fine examples. In the 2d prize group, contributed by Mr. J. Ward, were a beautifully grown and exquisitely flowered plant of Pleroma elegans, the deep blue flowers of which gave a cheerful relief to all around; a capital specimen of Allamanda grandiflora, and the same of Erica Parmentieriana rosea, &c. In the corresponding class for nurserymen, excellent groups of the usual plants were staged by Messrs. Jackson and Mr. E. Morse. The class for 20 in 12-inch pots brought out a better lot than usual; and with a fresh exhibitor in this section came also some fresh subjects, fresh in the sense that metropolitan growers but very seldom show them—we allude to the group shown by Mr. F. Perkins, of Leamington, who had very neat specimens of Begonia Sedeni, Pancratium speciosum, Cassia corymbosa, Clerodendron fallax, Diplacus californicus grandiflorus, Eranthemum Andersonii (elegans), Crassula Francis Dubois, and Sobralia macrantha, &c. Excellent collections were also contributed by Mr. J. Wheeler, Mr. J. Ward (including two very beautiful examples of Kalosanthes), Messrs. Jackson & Son, and Mr. W. Kemp, gr. to the Duke of Northumberland, Albury Park, Guildford, &c.

In fine-foliaged plants Mr. Baines also took the lead, with a capital group of Palms, Crotons, Sarracenias, &c.; Mr. J. Burley coming in a good 2d with handsome Palms, Cycads, &c. Beautiful collections of Palms, for which a class was as usual made, were contributed by Mr. B. S. Williams and Mr. Burley, and the former had also a pair of handsome Tree Ferns. Well grown Caladiums were contributed by Mr. J. Carr, Mr. G. Wheeler, and Mr. G. Pearce, gr. to W. S. Burton, Esq.; and from Mr. R. Ritchie, Mr. G. Wheeler, Mr. Baines, Mr. A. Wright, Mr. B. S. Williams, and Mr. Burley, came capital groups of Exotic Ferns, the British section being exceedingly well represented by Messrs. Ivery & Son, Dorking. Of Orchids the show was but poor, the principal exhibitors being Mr. B. S. Williams, Mr. Bull, Messrs. Rollisson & Son, Mr. J. Ward, Mr. Wright, &c. There was a nice display of Scarlet or Zonal and Tricolor Pelargoniums, the best groups coming from Mr. J. Catlin, gr. to Mrs. Lermitte, Finchley; Mr. Stevens, Ealing; and Mr. J. Goddard, Twickenham.

Of cut Roses there were some grand examples, taking the state of the weather into consideration; Mr. W. Paul, who does not now enter into competition, sent six boxes of rare excellence, the blooms being fine, both in size, colour, and form. Messrs. Paul & Son contributed collections which fully maintained their reputation, and the same may also be said of Mr. Cranston and Mr. Cant. The amateur contingent were well represented by Mr. J. Skinner, Mr. Chard, Mr. Ingle, &c.

In the miscellaneous class were a very fine group of new plants, intermixed with choice Ferns, Palms, and flowering subjects, from Mr. B. S. Williams; smaller collections from Mr. Bull and Messrs. Veitch & Son, including from the latter some admirable cut Roses; a large and very effective group of hardy British Ferns from Messrs. Ivery & Son; a large collection of decorative plants from Messrs. E. G. Henderson & Son, and the same from Mr. G. Pearce; six exceedingly good specimens of Lilium auratum, from Mr. W. Paul; a dozen very well grown and much admired Phloxes in pots, and a group of new Bronze Zonal Pelargoniums, from Messrs. Downie, Laird & Laing; from Mr. Mann, Brentwood, a group of new Zonals; and from Mr. Cannell, Woolwich, stands of cut blooms of the same class, including several bunches of that gem of the scarlet-flowered section, Jean Sisley; a large and very attractive collection of new Pelargoniums from Mr. W. Paul; six very fine Heaths from Mr. A. Wright, &c.

Botanical Certificates of Merit were awarded to Mr. R. Parker, Tooting, for Ixora amabilis; to Mr. W. Bull, for Amorphophallus spectabilis, x Alocasia Marshallii, Philodendron hybridum, Dioscorea spectabilis, Pteris serrulata cristata, and Goniophlebium glaucophyllum; to Messrs. E. G. Henderson & Son for Hydrangea japonica speciosa; to Mr. B. S. Williams for an elegant Rhopala; to Mr. H. Wendland, inpector of the Royal Gardens, Herrenhausen, Hanover, for Æchmea Maria Regina; to Messrs. James Ivery & Son for Polystichum angulare pulchrum Bellairsiæ, P. angulare proliferum Marshallii, and P. vulgare cornubiense (Whytei); to Mr. W. Bull for Bignonia Roezliana; to Messrs. Standish & Co., for Bouvardia leiantha grandiflora; and to Messrs. Rollisson & Son, for Davallia clavata. Floral Certificates of Merit were voted to Messrs. E. & J. Perkins, for Coleus Lady Leigh; and to Mr. Charles Kimberley, Coventry, for Tricolor Pelargonium Gem of Tricolors.

The show of fruit was the largest of the season, though in none of the classes were there any especially remarkable productions. Two collections of fruit, 8 dishes, were shown, the best coming from Mr. Lynn, gr. to Lord Boston, Hedsor; Mr. A. Johnson, Savernake Forest, coming in 2d. Mr. Lynn had in his collection a very fine Queen Pine, excellent dishes of Black Hamburgh and General de la Marmora Grapes, a good Victory of Bath Melon, capital Grosse Mignonne Peaches and Elruge Nectarines, Sir Joseph Paxton Strawberries and Bigarreau Napoléon Cherries. Mr. Johnson had two nice Queens, capital Black Hamburgh and Tottenham Muscat Grapes, Peaches, Nectarines, Melons, Strawberries, &c. In the class for a basket of Black Grapes, not less than 12 lb., there were seven competitors; Mr. C. Berry, gr. to J. Da Silva, Esq., Burntwood House, Wandsworth Common, coming in 1st, with a very well-finished sample, though many of the berries were not equal in size. Mr. A. Johnson was 2d, and Mr. G. Osborn, Kaye's Nursery, Finchley, 3d. Mr. E. Sage, Atherstone, sent the best coloured lot, and Mr. Bones, gr. to D. McIntosh, Esq., Havering Park, had the largest berries: these would undoubtedly have stood first had they been better in colour. The other exhibitors were Mr. G. Wallis, gr. to J. Dixon, Esq., Aston Park, Congleton, and Mr. Walker, gr. to H. J. Atkinson, Esq., Acton. In the corresponding class for White Grapes, the best were a well-grown and nicely-coloured basket of Muscat of Alexandria, shown by Mr. P. Feist, gr. to R. Ashton, Esq., Bishopsgate House, Staines, Mr. G. Osborne coming in 2d, his bunches and berries being fine in size, but not quite ripe; the same remarks also apply to the 3d prize lot, which came from Mr. Davies, Friern, Barnet. The best single dish of Black Grapes was contributed by Mr. J. Douglas, gr. to F. Whitbourne, Esq., Loxford Hall, Ilford, a nicely-finished lot of Black Hamburgh; Mr. M. Walker coming in 2d, and Mr. W. Lane, gr. to J. Miles, Esq., Barnet, all showing very creditable examples. Messrs. Standish & Co. exhibited a fair-sized dish of Madresfield Court Grapes, and took the 1st prize in the class for any other black variety; Mr. F. Hicks, gr. to C. Scholefield, Esq., being 2d with Black Prince; and Mr. Barham, gr. to Lord Ormathwaite, 3d, with Muscat Hamburgh. In the corresponding class for a dish of Muscats, there were nine competitors, the 1st prize being taken by Mr. R. Ritchie, gr. to R. H. Prance, Esq., Frognal, Hampstead, with perfectly finished examples of Bowood Muscat; Mr. Barham coming in 2d with capital bunches of Muscat of Alexandria, a trifle green in colour; and Mr. Kemp, gr. to the Duke of Northumberland, Albury Park, Guildford, 3d, with smaller bunches of the same variety. Mr. W. Davies, Barnet, sent three bunches of Muscat of Alexandria weighing 13 lb., very fine, but unripe. Mr. J. Douglas, Mr. W. Lane, Mr. E. Sage, and Mr. A. Wright, all staged the last-named variety. The best single dish of any other white variety was a very nice one of Buckland Sweetwater, shown by Mr. W. Cole, gr. to F. S. Budgett, Esq., Ealing Park; Messrs. Standish & Co. being 2d with Ascot Citronelle, a new Grape of excellent merit, combining the flavour of the Citron and the luscious Muscat; it does not crack, and will carry well for two months after ripening; and Mr. D. Pizzey 3d, with White Muscadine. Of Queen Pines, 8 were shown—the best, a specimen weighing 6 lb., coming from Mr. Jaques, gr. to J. C. P. Cunliffe, Esq., Hooley House, Croydon; Mr. J. Akehurst, gr. to S. Copestake, Esq., being 2d, and Mr. J. Deaville, gr. to Lady Edwards, Wooton Hall, Ashbourne, 3d. The best Pine of any other variety was a Providence, weighing 9 lb. 4 oz., from Mr. H. Balham, gr. to R. T. Crawshay, Esq., Cyfarthfa Castle; Mr. G. Ward being 2d with a smooth-leaved Cayenne, weighing 7 lb.; and Mr. M. Rochford, Page Green, 3d, with a nice fruit of the same variety. There were six other competitors. For the best two dishes of Peaches there were 13 competitors, good-sized, well-coloured fruit being the rule. Mr. W. Birse, gr. to J. F. Lermitte, Esq., Finchley, was 1st with handsome examples of Violette Hâtive and Royal George; Mr. A. Reed, gr. to L. Hath, Esq., Passingworth, being 2d with Barrington and Grosse Mignonne; and Mr. W. Bones 3d, with Violette Hâtive and Royal George. In the class for Nectarines the display was not so numerous. Mr. W. Birse had very well-coloured dishes of Balgowan and Violette Hâtive; and from Mr. A. Johnson, Duc de Telliers and Elruge; capital specimens of Newington from Mr. J. Davey, and Hunt's Tawny from Mr. Kemp. The best scarlet-fleshed Melon, in a collection of 7, was a small Scarlet Gem shown by Mr. W. Lane; Messrs. Wright, Lee, Kent, had also a nice fruit of the same variety. Mr. T. Crane, gr. to the Rev. L. Deedes, Bramfield Rectory, Herts, had Improved Scarlet Gem. In the green-fleshed class there were 13 examples shown, including a nicely ripened fruit of Triomphe de Nice, from Mr. T. Crane; a nice flavoured example of Conqueror of Europe, from Mr. W. Lane. Golden Gem was shown by Mr. W. Cox, Madresfield Court, and Bailey's Green-flesh came from Mr. C. Ross. In the class for 2 Vines in pots, any kind, there were three exhibitors, Mr. Cole, Ealing Park; Mr. Wesker, gr. to A. Rose, Esq., Fernside, Wimbledon Common; and Messrs. Lane & Son. The former sent very well-done specimens grown on the system described by Mr. William Thomson for table decoration, and from both of the latter came plants grown in the usual way. Mr. Wesker was placed 1st, Mr. Cole 2d, and Messrs. Lane & Son 3d. Collections of 6 dishes of outdoor fruits of the usual description were shown well by Mr. Lynn, Mr. W. Bones, Mr. Kemp, Mr. Pizzey, and Mr. E. Clarke. Capital dishes of Bigarreau Napoléon and Black Tartarian Cherries were shown by Mr. W. Cole; and Mr. M. Walker, and Mr. J. Smith, gr. to the Earl of Gainsborough, had nice dishes of Elton and Downton. Of Strawberries, Mr. J. Douglas had very fine dishes of Lucas, Frogmore Late Pine, British Queen, and Admiral Dundas. Mr. J. Smith had President, Sir C. Napier, and Lucas, &c. Mr. Johnson, Mr. Kemp, Mr. Pizzey, Mr. C. Kimberly had also very good examples. In the miscellaneous class, Mr. Harvey, gr. to P. Wroughton, Esq., Wooley Park, Wantage, had 4 Queen Pines, grown on the Hamiltonian system. Figs were shown by Mr. A. Reid, Mr. H. Harvey, Mr. C. Osman, and Mr. C. Ross; and Apples were shown by Mr. T. Crane, Mr. E. Clarke, Mr. Denville, Mr. C. Osman, &c. Mr. W. Cox had 4 Golden Gem Melons, and Mr. Harvey sent 2 fruits and flowers of Stephanotis floribunda.

EDINBURGH BOTANICAL: *April* 13. — Alexander Buchan, Esq., M.A., President, in the chair. The following communications were read:—

I. *Notes on the recent Progress of Botany in Denmark*; by Dr. Robert Brown.

Dr. Brown gave a review of some of the more important researches made by Danish botanists during the last few years, and published chiefly in the Danish language, in the Transactions of the Natural History Society, the Botanical Society, the Academy of Sciences, or as separate works. After noticing the proposed removal of the Botanic Garden from the centre of the city of Copenhagen, where it has long been, he called attention to the foundation of the Botanisk Forening, or Botanical Society, which now numbers between one and two hundred honorary, resident, non-resident, and foreign members, and publishes a yearly "Tidsskrift," or fasciculus of transactions, containing many papers of merit. The last part is occupied by Branth and Rostrup's "Lichenes Daniae." It is under the presidency of Professor Lange, and is yearly increasing in importance and numbers. The publication of the 47th livraison of the "Flora Danica," under the editorship of Professor Lange, marks an era in Danish botany, and keeps up the high reputation this work has attained. The present part contains, like its predecessors, 60 plates, representing 75 plants (14 of these being varieties already partially described in the "Flora Danica," and two hybrids), of which 24 have not been figured previously in any iconographic work. These 75 plants comprise 35 Phanerogamia (25 dicotyledons, 9 monocotyledons, and 1 gymnosperm), and 40 Cryptogamia (1 Fungus, 7 Characeæ, 12 mosses, 10 Hepaticæ, and 10 Lichens). The plates are executed by Mr. Thornman, and very faithfully and beautifully pourtray the objects they are intended to illustrate. Perhaps next to the "Flora Danica," the most important botanical work produced in Denmark of late is "L'Amérique Central," of Professor A. S. Œrsted, the result of a journey in Costa Rica and Nicaragua, in 1846-48. As yet only the first part is issued, partly at the expense of the Danish Academy of Sciences. It contains 18 folio pages descriptive of the physical features of the country, a map, two physiognomical views, and 18 magnificent plates, on copper, representing new species of plants. Œrsted has also published an elaborate memoir on the classification of the Oaks, founded on the form of the pistil, venation of leaves, &c., which differs materially from that of De Candolle and other preceding writers, and is a valuable contribution to the history of the Cupuliferæ. In the Proceedings of the Academy of Sciences, the same author has also contributed a paper on the "Silphion" of the ancients, which, from a study of the classical writers, Greek coins, and vases, he considers is a species of plant allied to Narthex Asafœtida, and which he proposes to call Narthex Silphium. Professor Œrsted's numerous papers on the Development of Fungi, his recently published Introduction to the Study of Cellular Plants, and his Memoir on the Morphology of the Coniferæ, were also noticed. Of late years Dr. Eugène Warming has visited Brazil, and made a collection of plants, chiefly in the vicinity of Lagoa Santa. These are now in course of description by himself and other botanists, chiefly Augustus Progel, J. A. Schmidt, Johannes Müller (Argoviensis), Otto Böckeler, C. F. Meissner, A. W. Eichler, J. G. Baker, Ernst Hampe, George de Martens, and Otto Nordstedt. The memoirs of these botanists are published chiefly in the Natural History Society's Transactions, are written in Latin, and contain descriptions of, and critical and geographical notes on, many new or little known species. Warming has published, in the same place, remarks on the Development of Heat in Philodendron Lundii (*n. sp.*) from Brazil. The development of heat during the flowering period embraces two calorific undulations. The first day the greatest temperature is towards 6 to 7.30 P.M. It then abates and falls to the normal heat during the night. The next day the calorific movement attains its culminating point, 8.10 A.M.—and ceases towards noon. These observations are made on a plant which flowered from November 16 to 17, 1864. The culminating point of the calorific undulation does not coincide when the temperature of the air is at its maximum—viz., 2.30 P.M. However, there has been observed a certain dependence between them, that when the temperature of the spadix was more or less high, so also was the temperature of the air. The first period of heat presented the greatest intensity. Not only did the temperature last a much longer time, but was more elevated than in the second period. The greatest heat which Dr. Warming has observed was 39½° Centigrade, the temperature of the air being then 25¾°, showing a difference of 13¾°. The difference in the part occupied by the stamens was even higher—viz., 18½°. The anthers did not open and discharge their pollen until the evening of the second day, after which the calorific movement ceased. At the time of the development of the heat, the inflorescence gave forth an aromatic odour which was much stronger when the temperature was more elevated. The spadix is continually surrounded by swarms of insects, which certainly assist the fructification. Amongst the other researches noticed were Œrsted's paper on Biden's Platycephala; Warming on the Spiral Arrangement of the leaves of the Cucurbitaceæ, and on Scopolia atropoides and other Solanaceæ; Lange's addition to his "Handbook of the Danish Flora;" Didrichsen's "History of Danish Botany;" and Warming's "Inaugural Thesis on the Inflorescence and Development of Euphorbia."

II. *On the Phyllotaxis of Lepidodendron*; by Professor Alexander Dickson.

Dr. Dickson exhibited, and made some remarks on, specimens of Lepidodendron from the coal measures, which, in the arrangement of their scales, or leaf scars, illustrated the same spirals as found in plants at the present day.

III. *Note on Lilium canadense, L., var. puberulum, Torr*; by Dr. Robert Brown.

In the enumeration of Dr. Bigelow's Californian collection, in the fourth volume of the "Pacific Railroad Surveys," Professor Torrey notes a variety of Lilium canadense, distinguished by the stem and peduncles being minutely pubescent, the leaves broadly lanceolate, with the margin and nerves puberulous, the flowers few (2—7), largely pedunculated, the sepals markedly reflexed and purple spotted within. In the course of examining his own and the late Mr. Jeffrey's collection, Dr. Brown had found specimens which corresponded to Torrey's description, but the characters are by no means constant, nor are all found on one plant. In specimens of Lilium canadense gathered in Canada, the leaves were found quite as broad as any from North-West America; and in numerous specimens of Lilium canadense from Oregon, California, and British Columbia, the leaves were almost linear lanceolate. The pubescence is not a constant character, for while it was found on young plants, it was absent from old, nor was constant on either. Most probably it is caducous. The result of this is, that, in all likelihood, there is only one form of Lilium canadense found over the whole American continent, from the Atlantic to the Pacific, and that any varieties (such as those mentioned by Torrey (*l.c.*) and Wood in "Proc. Acad. Nat. Sciences of Philadelphia," 1868, p. 166) are merely local, and the result of habitat, age, or other circumstances, which do not give the character derived therefrom any kind of specific value. Specimens, and a coloured drawing of the plant from life in North-West America, were exhibited.

IV. *Report on the Open Air Vegetation at the Royal Botanic Garden*; by Mr. M'Nab.

After the meeting of the Botanical Society (March 9) and until April 13, the weather was excessively dry, accompanied with north-easterly winds. On 15 mornings the thermometer was at and below the freezing point, the lowest markings being on March 15, 17, and 29, and on April 7, 8, and 11, falling respectively to 22, 28, 26, 28, 25, and 24 deg. It is remarkable that those plants fixed on for the purpose of recording the dates of their flowering, this year came within a range of rather less than two months—viz., between February 13 and April 9. The plants enumerated generally extend over a part of four months. The short period this year was caused by the unusually long winter, which prevented the Snowdrop and Winter Aconite (two of the earliest spring flowers) opening their blossoms before February 13. Some of the latest recorded during April are fully 18 days earlier than last year. During 1870, the same plants ranged between February 2 and April 30; and during 1869 between January 9 and April 3, showing a considerable range in the periods of flowering of the same plants during different years:—

	1871.		1870.		1869.	
Orobus vernus..	March	18	April	3	Jan.	25
Scilla bifolia	,,	18	March	25	Feb.	3
Hyoscyamus Scopolia ..	,,	18	April	9	Jan.	19
Omphalodes verna	,,	20	,,	9	,,	10
Scilla bifolia rubra	,,	20	March	28	March	8
Puschkinia scilloides.. ..	,,	20	April	1	Feb.	29
Scilla bifolia major	,,	20	March	25	,,	21
Draba aizoides	,,	21	April	4	March	11
Symphytum caucasicum ..	,,	21	,,	10	Jan.	10
Ribes sanguineum	,,	21	,,	6	March	1
Gagea lutea	,,	21	,,	2	,,	5
Adonis vernalis	,,	22	,,	8	,,	18
Hyoscyamus orientalis ..	,,	22	,,	11	,,	10
Aubrietia grandiflora.. ..	,,	22	,,	2	Feb.	10
Muscari botryoides	,,	22	March	30	,,	28
Hyoscyamus physaloides ..	,,	23	,,	31	,,	28
Muscari botryoides alba ..	,,	24	April	8	March	5
Mandragora vernalis.. ..	,,	24	,,	3	,,	2
Erythronium dens canis ..	,,	24	,,	2	,,	6
Carex montana	,,	25	,,	14	April	1
Narcissus moschatus.. ..	,,	26	,,	13	March	16
,, Pseudo-Narcissus..	,,	27	..		..	
Anemone nemorosa	,,	28	,,	12	April	3
Fritillaria imperialis	,,	29	,,	15	March	24
Pulsatilla vernalis	,,	30	,,	11	,,	10
Narcissus bicolor	,,	31	,,	16	,,	29
Saxifraga virginica	April	1	,,	19	April	2
Menziesia empetriformis ..	,,	2	,,	20	,,	1
Primula ciliata purpurata ..	,,	3	,,	20	,,	3
Triteleia uniflora	,,	5	,,	5	March	28
Epimedium rubrum	,,	6	,,	21	April	2
Ornithogalum montanum ..	,,	8	,,	28	,,	2
,, excapum ..	,,	9	,,	30	March	30

BIRMINGHAM ROSE SHOW AND EXHIBITION OF GARDEN TOOLS, &C.—We have to record a thoroughly successful exhibition, which was held in the Town Hall, Birmingham, on Thursday and Friday, July 6 and 7, being the tenth held in that noble building. As a Rose show it may be pronounced nearly, if not quite, the best of the season, and the collections of horticultural tools and appliances were both large and interesting. Mr. John Keynes, Salisbury, was 1st with a fine stand of 72 varieties, single trusses; with 48 varieties, 3 trusses; with 24 varieties, 3 trusses; with collection of 24 new Roses sent out by English nurserymen in the spring of 1869, 1870, or 1871; with 12 trusses yellow or sulphur Roses, all of one variety, and with 12 trusses of dark crimson or rose-coloured Roses all of one variety. Mr. John Cranston, Hereford, was 2d, with 72 varieties, single trusses, and with 24 varieties, 3 trusses; and 1st with 12 trusses white or blush Roses, all of one variety, for which he showed a magnificent box of Baroness Rothschild. Of amateur exhibitors, the following won the principal prizes:—Mr. R. Draycott, gr., Hallaton Hall, Leicester; Mr. Joseph Davis, gr. to Mrs. King, Wilton, Salisbury; Mr. C. J. Perry, Castle Bromwich; Thomas Lloyd, Esq., The Priory, Warwick (gr., Mr. J. Moore); the Rev. P. M. Smythe, Solihull; Mr. S. Evans, gr. to C. N. Newdegate, Esq., M.P., Arbury, Nuneaton; J. H. Arkwright, Esq., Hampton Court, Leominster; Mr. J. E. Cavell, Walton Manor, near Oxford; and Captain W. G. Webb, Elford House, near Tamworth. There were many local prize-winners not enumerated above. The general excellence of the amateurs' stands was most marked. In some of the divisions there were as many as 25 entries. The following varieties were shown uniformly well by nurserymen and amateurs:—Hybrid Perpetuals: Abbe Giraudier, Alfred Colomb, Charles Lefebvre, Clemence Raoux, Charles Turner, Duke of Wellington, Duke of Edinburgh, Dupuy Jamin, Elie Morel, Emilie Hausburg, Exposition de Brie, Ferdinand de Lesseps, Fisher Holmes, Général Jacqueminot, Hippolyte Flandrin, Horace Vernet, La France, La Motte Sanguine, Louis Van Houtte, Madame Charles Wood, Madame Liabaud, Madame Victor Verdier, Mdlle. Eugène Verdier, Marie Baumann, Miss Ingram, Marquise de Castellane, Marquise de Mortemart, Paul Néron, Princess Mary of Cambridge, Reine Blanche, Sénateur Vaisse, Thyra Hammerich, and Victor Verdier. Tea-scented varieties: Devoniensis, Gloire de Dijon, Madame Sertot, Souvenir d'un Ami, and Madame Willermoz. Noisettes: Maréchal Niel and Triomphe de Rennes.

A very decided and beautiful feature in the show was the display of dinner-table decorations and bouquets, which were exceedingly numerous and of great merit. The principal exhibitors and prize-winners in these departments were Mr. F. Perkins, Leamington; Miss Cole, Birchfields; Mr. H. Pope, King's Norton; Mr. C. H. Harrison, Edgbaston.

Collections of Roses not for competition came from Mr. C. Turner, Slough, who showed a magnificent collection; Messrs. Francis & Arthur Dickson, Chester; and Mr. R. H. Vertegans, Malvern and Edgbaston.

Garden tools and appliances were shown in great variety by Messrs. Mapplebeck & Lowe, Birmingham, whose collection, which was a very large one, included almost every kind known in the trade, and attracted much attention, especially on the part of the nurserymen and professional gardeners, for whom of course they had a special interest. They exhibited handsome iron vases, garden seats in great variety with and without movable awnings, garden engines, lawn-mowers, chairs and tables for the garden or greenhouse, a Fern stand of new design, flower-stands, and an exhaustive collection of garden tools, garden cutlery, &c. They likewise exhibited a recently patented invention of Messrs. J. & A. Pumphrey —"The Paxton watering-can and garden engine," which, as its name indicates, may be used as an ordinary watering-pot, or as a garden engine or syringe. It is a cheap and effective apparatus, well made, and likely to have a large sale, especially among amateurs. It is by no means cumbersome, and is made of various sizes, the smallest being especially adapted for ladies. The small garden engine with which it is fitted is light but strong, fitted with an air vessel, and extremely useful for greenhouse and other purposes. where the diffusion of dew-like spray is desirable. Mr. G. H. Harris, Birmingham, exhibited a "garden or let-down garden lounge," with an awning raised or lowered with much ease, which was much admired; water-barrows, hose-reels, garden-rollers, lawn-mowers, garden seats, &c. Messrs. Griffiths & Browett had an extensive exhibit of hydropults, watering-pots, a sulphurator, &c.

The annual dinner of the Society was held on Thursday afternoon, at the Acorn Hotel, Mr. Councillor Lowe in the chair, there being also present a number of exhibitors, subscribers, and members of the committee.

Wolverhampton Horticultural: *July* 11.—This show was held for three days in connection with the meeting of the Royal Agricultural Society. The success on the first day seems to have been marred by bad weather. The flowers, fruits, and vegetables were displayed in five large tents, and the centre of the field was occupied with rockery, artistically arranged by Mr. R. Lowe, of the firm of Lowe & Co. The rocks were interspersed with Ferns, whilst a fountain, manufactured by Mr. J. Matthews, of Weston-super-Mare, played in the middle of the rock. For some distance around the fountain, the field was dotted with greenhouse plants, together with flowers and shrubs, which gave a pleasing appearance to the grounds. In a tent on the right-hand side of the entrance a collection of stove and greenhouse plants was arranged, and as this class was open to all comers, some very fine specimens of ornamental, fine foliage, and variegated plants were exhibited, and greatly admired. The next tent contained plants shown by gardeners of gentlemen in the counties of Salop, Worcester, Warwick, Hereford, and Cheshire, and in this class there was a fine display of greenhouse plants in bloom, which attracted considerable attention. There was a good show of fruit, and the 1st prize for a collection of six varieties was awarded to Mr. Bannerman, gr. to Lord Bagot. In the open competition for cut Roses, Messrs. Paul & Son, of Cheshunt, succeeded in carrying away two of the first prizes, while one first prize was awarded to Mr. R. B. Cant, of Colchester. In the gentlemen's gardeners' class for cut flowers, the gardeners of Messrs. C. J. Perry, of Castle Bromwich, and Mr. J. Forsyth were amongst the most successful in carrying off first-class prizes; whilst second-class prizes were awarded to the gardeners of Lord Hatherton, Mr. R. S. Walker, and Mr. J. Lee. In the gentlemen's gardeners' classes for stove and greenhouse plants, Messrs. R. S. Walker and G. H. Perry were awarded the largest number of prizes. Mr. John Matthews, of Weston-super-Mare, exhibited a large number of well-executed statuary fountains, vases, Italian Fern and other baskets, as well as many other descriptions of pottery goods for the nursery and garden, manufactured in terra cotta; and some of the articles—which contained specimens of Ferns and other choice plants—belonging to Messrs. Lowe & Co., looked exceedingly pretty. We may also mention that Messrs. Lowe & Co. exhibited, but not for competition, a fine assortment of greenhouse and other plants in a separate tent. Lady Dartmouth's prize for wild flowers brought forth numerous competitors, and some of the designs were exceedingly pretty and well executed. The prize was awarded to Mrs. H. Underhill, who exhibited an ornamental display of wild flowers.

Manchester Horticultural (Rose and Fruit Show): *July* 7-8.—The attempt made by the Manchester Botanical and Horticultural Society to establish a July Rose and fruit show at Old Trafford may be pronounced successful. As a spectacle, a Rose show cannot compare, either in magnificence or variety, with gorgeous displays of greenhouse plants and Orchids; but whatever differences of opinion may exist as to the special excellences of other gardening products, every lover of the art is more or less a rosarian. And if trays of cut Roses, however well stocked, can never be supposed to equal in effect the luxuriance and grandeur of tropical plants, yet in minute beauties—in perfection of form, and in delicacy of colour and fragrance—they afford sufficient matter of study and contemplation to justify a special exhibition. In the first three classes of nurserymen's prizes, Messrs. Paul & Son were easily the winners, for although the famous Sussex grower, Mr. Mitchell, of Piltdown, challenged their claim to premier honours, the general excellence of Messrs. Paul's collection was certainly unrivalled. The Cheshunt firm sent several extra magnificent stands of cut Roses, the most noteworthy being the Baroness Rothschild, a finely-developed flower, of a delicate pink colour; the Comtesse d'Oxford, a very distinct red; and the Duke of Edinburgh, a very dark-red flower. In the amateurs' class the competition was keen and representative, the premier honours being pretty fairly divided between the Rev. G. Arkwright and the Rev. S. Reynolds Hole. In the competitions which were open to all classes, the most successful exhibition was of Tea-scented and Noisette Roses, in which Messrs. Paul & Son were again the winners. Mr. R. S. Yates also exhibited in this class a magnificent collection, yielding delicious fragrance. A valuable prize was offered for the best collection of new Roses, but the result was a walk-over for Messrs. Paul & Son, whose fine display was unchallenged. The special prizes offered for dinner-table decorations, and for bridal and ball-room bouquets, brought out a competition which, on the whole, was satisfactory. The fruit show was in all points excellent. The exhibition owed its most attractive garnishing to a number of old contributors, who, though not competitors on this occasion, sent choice specimens of plants and flowers by the way of betokening interest in this new effort of the Society, which will probably be the forerunner of many excellent shows.

Notices of Books.

How to See Norway. By J. R. Campbell. Longmans. 8vo. Pp. 84; tab. 5.

A little book of unpretending character, but of a degree of merit amply sufficient to justify its reprint from the pages of the "Alpine Journal."

The author gives a quantity of useful information in a short compass. Amongst other things he alludes to the comparative infrequency of crime in Norway, and the general absence of the "rough" element, and attributes much of this immunity from the worst features of more southern countries to the excellent education afforded to every child. "Every child learns to read and write. Valleys where neither church nor road are found have each a schoolmaster during several months in the year. Where the valley is too long for all the children to attend one school, it is portioned out into two or more districts, and the teacher devotes a certain number of weeks to each in succession. * * Most peasant children are taught a little history and everyday science (in addition to reading, writing, ciphering, and religious knowledge). The schools have the most admirable books on general knowledge I ever saw—far better than those used in English parish schools." This statement is confirmed by the admirable books and materials for instruction exhibited in the Swedish schoolhouse at the International Exhibition, and to which we have already referred.

Transactions of the Woolhope Club, 1870. *Hereford Times* Office. 8vo, pp. 321.

This volume worthily maintains the reputation of the Club—a club which not only attends to the amenities of quasi-scientific picnics, but earns a right to enjoy itself in that or any other way by the sterling value of the information which its energetic members get together. Edible Fungi, notable trees, Mistleto-Oaks, as usual, come in for a large share of attention; but we have, in addition, capital geological papers, gossiping archæological memoirs, besides notes on entomological and meteorological subjects. The Rev. R. Blight contributes a good paper on the growth of the Mistleto, in which he asserts that the parasite has the power of penetrating the hard wood, and not merely of becoming imbedded therein by the formation of new wood over it. The photographs of remarkable trees of the district are continued, and several other illustrations are added. As there may possibly be some difficulty in securing more finished lithographs, we would suggest that the legend relating to them be confided to the printer, as the lettering of the plates greatly disfigures them.

An interesting feature of the present volume consists in the reproduction from Fries' "Monographia Hymenomycetum Sueciæ" of the autobiographical memoir of the veteran Swedish mycologist, accompanied by a photographic portrait.

We may conclude our notice of this interesting volume, by extracting from its pages certain details as to the growth of the Wellingtonia:—

> "The Sequoia Wellingtonia in Holm Lacey Park is the finest tree (of its kind) in the county. * * * It was planted in November, 1855, when it was 8 inches high, In 1866 it was 18 feet high; at 1 foot from the ground the circumference of the bole was 3 feet 1 inch, and at 5 feet, 1 foot 8 inches. At the present time, 1871, the tree is 16 years old and 27 feet high. It girths at 1 foot from the ground 5 feet 3 inches, and at 5 feet from the ground it is 3 feet 6 inches in circumference. Its rate of growth, therefore, is about 1 foot 9 inches a year."

Introductory Text-Book of Meteorology. By Alex. Buchan, M.A., &c. Blackwood & Sons. 8vo. Pp. 218; 8 plates.

We have already had occasion to speak in the most favourable terms of the "Handy Book of Meteorology," by the same author, and we can as conscientiously recommend the present condensed treatise to the notice of our readers. Possible purchasers, however, should have been informed as to the relative status of the two books. Those who have the "Handy Book" will hardly require the "Introductory Text Book," while for very many, perhaps the majority of readers, the latter volume will answer the purpose as well as the larger volume.

—— Two numbers of the *Illustrated Gardeners' Guide* are before us, and demand some notice at our hands. The publication in question is published in the German, French, and English languages, in three parallel columns, and is devoted to horticulture in all its ramifications. It is edited by the directors of the Pomological Institute at Ringelheim (Hanover), with the assistance of M. Emile Rodigas, of Ghent. The publication is an ambitious one, well got up, illustrated with excellent cuts, and also with chromo-lithographs, while the general character of the articles is good and practical. The "Guide" is of a large 4to size, and may be had from Messrs. Silberrad, Harp Lane, Great Tower Street, E.C.

—— The first part of a new edition of *Yarrell's British Birds* (Van Voorst), revised by Professor Alfred Newton, is before us. The original work has been so highly esteemed by naturalists, that it has passed through three editions, the latest of which was issued in 1856. Since that time very great additions have been made to our knowledge—not that the absolute number of species observed has been very greatly extended, but the knowledge of their habits has been greatly enlarged. It is needless to say that the typography and engraving are equal to those of former editions, while the reputation of the present editor offers a guarantee for the value of this new edition.

—— *Knife and Fork* is the suggestive title of a new journal, "devoted to the science of gastronomy," and edited by Fin Bec. The specimen before us contains a variety of savoury articles, not the least curious of which is an article devoted to the Knife and Fork Fund, and soliciting subscriptions in order to place the Journal on a thoroughly sound and lasting basis, and to institute various reforms in the culinary art. To attain the latter object, it is proposed to establish courses of lectures on domestic economy, cookery schools, competitive examinations for domestic servants, prizes for the cheapest and most nutritious dishes, economical cooking apparatus, and for methods of producing food abundantly and cheaply. All this we may look on as a prospective arrangement, contingent on circumstances—a *ménu* for what may possibly be a Barmecide's feast. To deal merely with the spread before us, we can conscientiously recommend the *pièces de resistance* and *relèves* as well served and substantial, the *entrées* and *entremets* as light, varied, and toothsome.

—— Not content with the boon offered to botanists by the publication of his "Refugium Botanicum," Mr. Wilson Saunders has laid naturalists under a further obligation by issuing a series of *Mycological Illustrations* (Van Voorst), consisting of figures and descriptions of new and rare Hymenomycetous Fungi. Mr. Saunders has associated with him as co-operators Mr. Worthington Smith and Mr. A. W. Bennett. In the part before us some 30 species are illustrated on 24 plates. Not only are characteristic portraits given, but also sections, together with figures and measurements of the spores. We venture to suggest the desirability, in all cases where it is possible to do so, of adding yet further microscopical details relating to the basidia, cystidia, &c.

—— Having noticed from month to month the periodical issues of the *People's Magazine*, we need only now refer to the fact that the half-yearly volume is complete, and would, from the variety and quality of its articles, form a suitable present for young persons as also to those of larger growth.

—— *How to Live on a Sixpence a Day* (Longmans), is the title of a sixpenny pamphlet, written by T. L. Nichols, M.D., and containing much sense and some crotchets. The writer disregards too much the individual peculiarities of digestion. He overlooks the fact that "what is one man's meat is another man's poison," and hence his assertions are often too sweeping. Tea and tobacco may not be of much service as food, in the sense intended by Dr. Nichols, but it is idle, in the face of such enormous experience as we have, to deny their value. Dr. Nichol's idea is that the best diet for man is one composed of bread (including all grains, Potatoes, Yams), and fruit, while the dearest, and most doubtful, and most expensive form of food is flesh. Dr. Nichols prefers cheese to meat, and, weight for weight, no doubt it is more nutritive; but what about the relative digestibility of the two? Some of the dietaries are well chosen on the score of economy, and labourers with large families and small incomes might do worse than adopt some of Dr. Nichols' hints. Here is one, well suited for healthy children, at any rate:—"The best Scotch oatmeal costs twopence a pound. You could hardly eat more than half a pound a day, which, with sugar, milk, and fruit might come to threepence, and, with the addition of cheese, fourpence a day."

—— Referring once more to the *Nederlandsche Boomgaard*, noticed by us at p. 276, we may state that there is an edition of this publication published in the French and German languages under the title "Le Jardin Fruitier Neerlandais." The work is drawn up by the Committee of the Pomological Society of Boskoop, and not by Dr. Van Hall, as we had erroneously stated. The preface alone is the work of that gentleman. The preface to the French edition is from the pen of Dr. Karl Koch, of Berlin.

—— The *Belgique Horticole*, the regularity of whose publication has been interfered with by the Franco-German war, has appeared in an improved type, and with sundry other ameliorations. It is, however, somewhat odd to read in the number for January and February, 1871, the account of the opening of our own International Exhibition of May 1.

—— A German edition of *How Crops Grow*, already noticed in our columns, has been published under the superintendence of Baron Liebig, and may be had of

Messrs. Williams & Norgate. The German title is "Wie die Feldfrüchte Wachsen."

—— Mr. Robinson, whose literary activity is worthy of comment, has just published a *Catalogue of Hardy Perennials, Bulbs, Alpine Plants, Annuals, Biennials, &c.*, including a complete list of British flowering plants and Ferns. (Murray, 1*s.*) It is a mere enumeration without any descriptive detail, or even attempt to adjust synonyms; hence the same plant sometimes gets entered under more than one name. The catalogue will be serviceable for making lists, marking *desiderata* for exchange, &c.

—— Any one with a taste for debating can hardly do better than purchase the *British Controversialist* (Houlston). For ourselves, there are so many controversies in which we are naturally obliged to take some practical part, that but little leisure remains for the mere discussion of such subjects as are handled in the magazine before us.

Garden Memoranda.

Orton Hall, near Peterborough, the Seat of the Dowager Marchioness of Huntly.—The house is about 2½ miles from Peterborough, and the place is distinguished for a choice collection of fine Conifers and a splendid avenue of Wellingtonia gigantea. These were raised from seed about 15 years ago; grown and planted, I believe, by Mr. Reid, now gardener at Haigh Hall, Wigan. Their healthy condition and rapid growth bear witness to his careful management and skilful planting. There seem to be Wellingtonias everywhere about the grounds; so plentiful are they, that the public road is lined with them for some distance from the entrance gate, and a farmhouse by the road-side has its avenue of Wellingtonia gigantea. Here and there, too, we drop upon fine specimens, ranging from 30 to 40 feet in height and broad in proportion, in secluded nooks and warm sheltered corners, or nursed round with other trees. But the grand muster of these arboreal giants is on each side of the carriage drive. The latter describes something like the circular line of a quadrant, leaving one road, and sweeping round to join another that leaves the first road at nearly right angles. The mansion is placed on the side of the carriage road, which extends for nearly a mile. The drive is lined throughout its whole length with Wellingtonias, planted in lines 36 feet apart and 27 feet from each other. Some of the trees stand on the grass, others among sheltering shrubs or underwood, others on the bare earth, while many have the earth line covered with mixed borders of bedding plants. The trees are very much alike in all portions of the avenue, though the flowers seem scarcely in harmony with the grandeur of these monarchs of the forest. Possibly as they advance, the whole space on each side of the road will be laid down in grass, and the entire ground line made uniform in character. The trees all seem remarkably healthy. None seem to have suffered in the least by the severity of the winter, neither do any manifest a tendency to lose portions, large or small, of their branches, thought by many to be a natural failing of the Wellingtonia. It ought to be observed, however, that these trees are mostly much sheltered. The demesne is well wooded, and the avenue at most points is backed up at one or both sides by the shelter of the house, shrubberies, or established woods. This I believe to be one great cause of the healthy condition of the Wellingtonias. Trees are naturally sheltered; each shelters its neighbour. And in large forests, or even on the more exposed hill-side, one part of the tree shelters the other, and the whole afford protection to each. This is too often forgotten in our dotted styles of planting. A tree is set down on an open lawn or field, with its 30, 60, 100, or more feet of space, all bleak and bare; and then we greatly wonder why it does not run up quickly and continue green and healthy. I know several avenues and many single specimens of Wellingtonia in exposed, open places, but none equal in vigour and robust health to these; and I believe one chief cause of their pre-eminence is the large amount of shelter they enjoy. All the Fir tribe are most impatient of being overhung, but side shelter is quite a different thing, and an important help to rapid growth.

At first sight it seems as if these two lines of trees were far too close together; but possibly they are well placed for ultimate effect. To form a covered road, the boughs will have to be pruned up from 20 to 30 feet high, and then to drive or walk beneath the interlacing boughs of the giant Wellingtonias would be a new sensation of rare novelty and great pleasure. The close proximity of the colossal trunks would add to the magnificence of the scene, and many centuries must come and go ere the boles meet, as meet they will, if they ever arrive at anything like Californian dimensions in Britain. Some very fine specimens of choice Conifers are found in other portions of the ground. These are all equally well or better sheltered than the the Wellingtonias.

The following are some of the finest specimens seen in a small pinetum or arboretum, belted round at all points nearly, with masses of deciduous, evergreen or other trees and shrubs:—Many fine specimens of Thuja Lobbii, gigantea, and chinensis; Cupressus Lawsoniana, and macrocarpa; Picea bracteata, very fine; P. Nordmanniana, good; P. Pinsapo, very fine; P. cephalonica, good; P. lasiocarpa, fine healthy plant; Abies Douglasii, good, but leader lost; A. Smithiana, good, more strong and dense in habit than generally seen; Cedrus africana, very fine, and glaucous; Pinus excelsa, Sabiniana, and macrocarpa, were especially large and good. I also observed some very large Tulip trees, huge masses of Euonymus, of sorts; Libocedrus, Cedrus Libani, and Thujopsis borealis, while the Taxodium or Sequoia sempervirens was everywhere. The Araucarias were almost the only Conifers that did not seem quite at home. Even the trees and shrubs overflowed, as it were, into the fernery, or rather a good part of the latter is found under Yews and Cedrus Deodara, &c.; and the background and highest points are mostly filled in with Conifers and such shrubs or plants as Honeysuckles, Hypericums, Yuccas, Sedums, Fumarias, Spiræas, common Roses, Silenes, Foxgloves, Nepetas, and last, but by no means least, a coarse sort of Euphorbia. A considerable extent of uneven ground is provided here in a small space by the formation of an undulated base, the piling up of rocks, and a multiplicity of walks at different levels—now descending a short flight of steps, and again crossing a rustic bridge; now a mound, and again a pool of water; here a jutting corner of sandy soil studded with rare alpine plants, such as the Gentiana verna; and anon a receding shady vale in miniature, where Ferns live in a fresh green paradise. Altogether, for a small fernery, it is very prettily and nicely furnished. The present dowager marchioness is constantly adding something collected by herself from the Alps and other alpine regions.

The kitchen garden is large, and well furnished with crops. A herbaceous border of flowering plants is carried round it in the old style. There is one great advantage in having choice gems within the walls—they are safe from the ravenous mouths of hares and rabbits.

On one part of the wall we noticed a huge plant of that grand old Noisette Rose Lamarque. On the conservatory roof was a fine plant of Maréchal Niel, which had been literally covered with its burden of golden treasure. In the same house were some very fine plants on the roof of Rhynchospermum jasminoides, so seldom seen in such a position. Fine as a pot plant, this sweet climber is much better on a conservatory rafter.

Finally, two houses of Grapes, one chiefly of Hamburghs, and the other wholly of Muscats, proved by the regularity of the crop and size of bunch and berry that the present gardener, Mr. Collie, is a fruit as well as a tree grower. Altogether this quiet and comparatively small place is well worth a visit from the lover of trees, as well as the maker of ferneries. In regard to the latter, a middle course has been chosen, between the stiffness of formal art and the bold freedom of Nature. *F.*

Miscellaneous.

THE HARDER PART.

Ho, ye who at the anvil toil,
  And strike the sturdy blow;
Who feel the blood within you boil
  Before its furnace glow—
Ne'er envy him whose life is passed
  As one long holiday,
For know it is the harder part
  To idle life away.

Ho, ye who on the rugged farm
  Contend with hardy soil,
To wrest from out earth's bosom warm
  The fruits of honest toil.
Ne'er envy him whose life is passed
  In indolence and play,
For know it is the harder task
  To idle life away.

Ho, ye who rack the weary brain
  In study hard and long,
That ye perhaps at last may gain
  The honour of a song—
Though wearily the time is passed
  As work ye day by day,
Yet his is still the harder task
  Who idles life away.

And so, whatever be your work,
  Perform it with a will,
And never from its duties shirk,
  Nor soul with envy fill;
For that which makes the happy heart
  Is work, not foolish play,
And freedom from that harder part
  Of idling life away.

S. A. M., in "Kentish Gazette."

The Secret of Growth.—A discussion took place some years ago in the *Builder* on the influence of coloured glass in conservatories, and experiments were afterwards made which seem to have since assumed an exaggerated shape in America, where it is gravely announced that "the germ of all growth and life lies in blue glass." The "discoverer" learnedly sets forth to the public, in a pamphlet, that "he covered a grapery with glass of a blue or violet hue. In five months 2-inch Vines had grown 45 feet; in a year they bore Grapes in startling abundance. He covered a piggery with it: the three sows, under the violet glass, increased 12 lb. in an incredibly short time, and a barrow pig increased even more rapidly than this," owing to the "abnormal development of greed and viciousness enabling him to seize on more than his share of animal food." After these successes, he next put up an Alderney bull-calf just born, and apparently dying, under glass of this mysterious colour. In a few hours it got up and ate with great vivacity: it began to grow next day," and was "full-grown in four months." The author recommends that architects be directed to roof our houses with the life-producing violet hue; and if this practice be observed he promises that "we can produce in the temperate regions the early maturity of the tropics, and develope in the young a generation, physically and intellectually, which will become a marvel to mankind." A commentator remarks that when the members of the human race look blue, they are not supposed to be just then in a very flourishing condition. *Builder.*

Monstera deliciosa.—Some readers may remember this under the old name of Philodendron Pertusum. We have grown the plant for its fruit for a great many years, and, as was remarked at the Fruit Committee on the 6th ult., when a ripe fruit was exhibited, no plant could be more easy to cultivate. We have been in the habit of planting a lot out every summer in sheltered situations, with many other choice plants, and few prove to be more interesting than this, more particularly if a lot of hot leaves and short grass be trenched in before planting. This gives the plant more vigour, and tends to assist in developing its magnificent and singular-looking leaves. These, like those of many Endogens, spring as it were from the bottom of the previous leaf-stalk, and push out the top of the next leaf, with the leaf itself bent down against the side of the stalk, or something like a flag rolled up. This, under favourable circumstances, lifts itself gradually, and developes into a leaf 3 feet 6 inches by 2 feet 6 inches. Curious as is its manner of unfolding, it is rendered even still more curious by the small threads that connect the outer segments of the leaf, giving it an entire and perfect shape. These are soon broken by wind or movement. We have generally grown the Monstera planted out in small bricked-up corners of cool houses, where we could, by an alteration of the plants, make the most use of the sun-heat in summer. It will succeed perfectly, I have no doubt, in a common greenhouse where Vines are grown, and where in the summer months I have no doubt that a little extra heat would ripen the fruit sooner. With us, it takes 12 months from the time of blooming. Of course, there is mostly a succession of fruit on each plant. The report alluded to states that this fruit is very delicious. In my opinion, it is one of the most delicious fruits grown; and, if allowed to grow freely, instead of being hampered in a pot, the fruit loses the little asperities or raphides that cause a peculiar tickling sensation in the throat in some cases. I considered at one time that there were two varieties, but I am now convinced that the difference is simply due to the conditions of growth. Some of our first fruits this year were from 14 inches to 18 inches long, with a good depth of the eatable part. One ripe to-day is scenting the air some distance round the house, more so than a house of Pine-apples would do. The habit of the plant is creeping, or, if it were consistent, we might say stalking, as the rootlets come from the stem, at a foot or 18 inches from the ground, and form fine strong spongelets as thick as one's finger. These on reaching the soil either penetrate it or go along to the wall, where they spread out into numerous tufts of roots. Any sort of soil appears to suit its growth. We have always used good loam and a bottom of brick rubbish. *J. F., in "Florist and Pomologist."*

A New Description of the Sugar-cane has been successfully introduced into the French colonies. The fact is interesting to our sugar planters, because the time has come when the yield of the cane must be increased, and it is well known that certain species are more susceptible of improvement than others. This law runs throughout the vegetable kingdom, and people who cultivate vegetables for manufacturing purposes always, therefore, not only look for what grows best, but for what will yield most readily to cultivation. The Beetroot growers, by acting according to good judgment on this point, have devoted so much attention to the selection of the richest varieties of their plant, that they have raised its saccharine strength from barely 4 per cent. to 8 and even 12 and 15 per cent., and this within less than 50 years. On the other hand, it is undeniable that the cane-growers have remained content with the gifts of Nature, and have done very little towards raising the quality and productiveness of their plant. The humble root which rivals the cane has been doubled and trebled in richness, whilst the cane has remained comparatively stationary. It is asserted by many able to judge the question, that Beetroot has now reached its maximum of sugar-producing quality, and we ought to be encouraged in our efforts to improve the cane by the knowledge that our plant has not yet passed its maximum. The plant is called the Salangore Cane. The results were mainly obtained from the trial of the new cane at a plantation called Grand Pare, situated near Basse Terre. The results are specially noteworthy. Planted at the full distance apart (2 metres by 2 metres), which is an essential condition, and manured at the right times, the Salangore Cane grows with such vigour, and in such thick tufts, that in five or six months it forms so thick a green covering that weeds cease to grow about it. The weedings are thus notably reduced. The cane goes through the period of flowering without injury. The tufts yield from 25 to 40 canes. In consequence of the enormous quantity of canes produced by each tuft, the weight to the hectare is much above that of an ordinary hectare of canes. In one case 16 tufts of canes, which were far from being the finest in the field, were cut in a square space of 38 metres 45, and they weighed 367 kilogrammes nett, from which, in proportion, we should find, in round numbers, 100, 600 kilogrammes to the hectare. To ascertain the weight produced from a hectare of ordinary canes, the minutes of an assembly of the Sugar Society of Point-a-Pitre, of December, 1869, were consulted, and an authoritative declaration was made as follows:—In Guadaloupe, an average of 40,000 kilogrammes of cane to the hectare is obtained, whilst at Grande Terre 30,000 only are obtained. The average at Beauport has been only 27,000 kilogrammes to the hectare. The bragasse of the Salangore canes gives so much fuel that only a small addition of straw is required, and this quantity leaves as much upon the ground for the use of the plantation as the other kinds of canes. The juice of the Salangore cane is abundant. The sugar is easily made, without any other ingredients than those used in the manufacture of sugar from other kinds of cane. The sugar is of the best quality, and of a hard and brilliant grain. The yield per hectare is considerably superior to that of other cane. *Colonial Standard.*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, JULY 8, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg	In.
Portsmouth	73.3	50.0	23.3	70.1	51.5	18.6	58.9	0.69
Blackheath	76.5	48.8	27.7	70.3	53.0	17.3	60.5	0.87
Bristol	..	..	..	..	..	..	..	..
Birmingham	70.0	48.8	21.2	65.1	51.8	13.3	56.6	1.16
Wolverhampton	69.8	48.5	21.3	65.4	51.0	14.4	56.3	1.11
Leicester	77.0	47.7	29.3	69.4	51.2	18.2	58.4	1.58
Norwich	75.5	48.5	27.0	70.1	51.0	19.1	58.6	0.50
Nottingham	72.3	47.9	24.4	68.4	51.0	17.4	57.8	2.13
Sheffield	68.0	49.0	19.0	65.3	51.1	14.2	56.3	1.76
Liverpool	72.3	50.7	21.6	66.8	52.5	14.3	57.9	1.32
Manchester	71.0	48.0	23.0	68.4	52.0	16.4	58.3	1.05
Salford	68.7	47.2	21.5	66.5	50.4	16.1	56.5	0.98
Bradford	70.3	51.2	19.1	66.4	54.1	12.3	58.3	0.64
Leeds	69.0	49.0	20.0	65.9	52.3	13.6	57.3	0.88
Hull	71.0	49.0	22.0	66.3	51.3	15.0	56.9	1.59
Newcastle	..	..	..	..	..	..	..	..
Edinburgh	72.7	50.0	22.7	..	..	..	57.0	0.90
Glasgow	68.0	48.0	20.0	..	..	..	56.3	0.84
Dundee	68.0	50.0	18.0	..	..	..	56.8	0.80
Aberdeen	66.9	47.5	19.4	..	..	..	55.7	0.53
Paisley	67.0	47.0	20.0	..	..	..	56.1	0.00
Greenock	..	..	..	..	..	..	..	..
Leith	73.0	51.9	21.1	..	..	..	58.5	0.52
Perth	71.0	51.0	20.0	..	..	..	59.0	0.84
Dublin	73.9	45.0	28.9	..	..	..	56.7	1.61

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, JULY 12, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
July.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity.	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
6. Thurs.	30.06	64.4	59.0	54.7	70	4.7
7. Friday	29.95	68.9	61.5	55.6	62	4.9
8. Satur.	29.74	66.4	58.8	52.7	62	4.4
9. Sunday	29.84	68.9	60.7	54.1	59	4.6
10. Monday	29.82	65.3	57.9	52.0	61	4.2
11. Tues.	29.44	53.6	53.2	52.8	97	4.5
12. Wednes	29.76	63.0	57.9	53.3	72	4.6

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
July.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
6. Thurs.	71.2	50.6	20.6	60.3	— 1.5	S.W.	345	0.00
7. Friday	76.5	56.8	19.7	65.9	+ 4.0	S.S.W.	255	0.00
8. Satur.	72.0	56.2	15.8	62.7	+ 1.0	S.W.	400	0.00
9. Sunday	73.4	54.2	19.2	61.9	+ 0.2	S.W.	320	0.00
10. Monday	75.0	49.0	26.0	60.1	— 1.7	variable	120	0.11
11. Tues.	58.1	52.6	5.5	53.4	— 7.4	N.	340	1.29
12. Wednes	70.1	49.8	20.3	58.1	— 3.9	WSW	375	0.01

July 6.—Cloudy till the afternoon, and again after 8 P.M. Variable between 3 and 8 P.M. A little rain fell occasionally.
— 7.—A very fine day. Light clouds prevalent.
— 8.—Very fine throughout. Breezy.
— 9.—Clouds varied rapidly in amount throughout the day. Fine.
— 10.—Cloudy throughout. Rain commenced falling at 8 P.M., and continued steadily till midnight.
— 11.—Generally overcast. Rain fell more or less heavily from midnight till 5 P.M.
— 12.—Cloudy, but variable in amount from time to time. Showers of rain fell in the afternoon and evening.

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THOSE *Camellias* which have already finished their growth, and upon which the young wood is moderately firm, should be placed at once in a position where air to the fullest extent can be afforded them. Do not expose them too freely to the more powerful rays of the sun at this early season, especially as the wood and young leaves are but moderately ripened or hardened. These remarks also apply to *Indian Azaleas* in a like stage of growth. Continue the shifting on of *Cinerarias* and *Herbaceous Calceolarias*, as regularly as they fill the fresh pots and soil with roots, and require such attention. Encourage now by every possible means the growth of all plants specially grown for winter decoration, because the utmost amount of growth that can be made between now and the long cold nights of autumn will not be any too much, if, indeed, enough. Pinch back all strong young shoots as frequently as this becomes necessary, so as to secure size and beauty of form in each plant, as well as to increase their blooming capacity. Amongst the many subjects to be thus treated, which are familiar to all, I may mention the old and greatly neglected *Rondeletia speciosa*, and what is equally as badly treated, but if possible more beautiful, *Mitraria coccinia*, *Justicia speciosa*, *Torenias*, *Pentas*, *Luculias*, *Gesneras*, *Begonias*, *Aphelandras*, *Achimenes picta*, *Eranthemums*, &c. Give to any a moderate shift as often as required, and when the fresh pots are moderately filled with roots, afford alternate waterings, with properly prepared and wholesome liquid manure. Use the syringe freely amongst them night and morning, and so endeavour to afford suitable conditions for the full development of their growth. Even at this season, however, I suggest that every means be employed to maintain, even around these fast-growing subjects, a cool night temperature—cool, be it observed, in a comparative point of view. The external air will often afford sufficient warmth for all their requirements at such times, then permit its invigorative properties to pervade the structure freely. In short, always give air freely at the apex of each stove when the thermometer out-of-doors registers 60°, and there is no sign of a change. Should, however, the thermometer, as it will do occasionally, maintain anything like a temperature of from 67° to 70° in the late evening, give air back and front, without any hesitation. One whole night of this free buoyant air, will do all the inmates of such structures more good than a week's growth in a closed unwholesome atmosphere. In show-houses and conservatories there will now be a great variety of plants in bloom, many of which, especially of the soft-wooded sections, will have become pot-bound, and, if they have been in bloom long, somewhat exhausted in their energies. It is advisable, therefore, to have manure-water handy, so that a little can be given to such as require it, at each watering. I refer to *Fuchsias*, *Brugmansias* growing freely and beginning to bloom, *Tacsonias* with limited root-room, *Balsams*, *Cockscombs*, &c., to which manure-water may be applied with far less risk than to many kinds of hard-wooded subjects. Do not fail to afford to such "miffy" subjects as *Boronia serrulata* a little artificial warmth, whilst engaged in making growth. A nice gentle humid warmth, such as pervades an early vinery, suits it well just at the heighth of its growing season. The free-flowering *Acacia Drummondii*, and such like subjects, will also be much benefited by having a little of such assistance.

FORCING HOUSES.

In many instances *Muscat Grapes* will now be in their last stage of ripening, and with the acquiring of their richly vinous flavour, should also be "putting on colour,"—that golden tint so much sought after. Gently raise the heat, therefore, until in the course of a week or two, from 90° to 95° may be permitted with perfect immunity from injury by sun, &c. In the event of dull, cold weather, give a little artificial heat; at the same time be it remembered that air must also be afforded with no niggard hand. Ofttimes, between the stoning and the final swelling process, the Vines will make a growth from the points of sublaterals. Do not permit them to exceed two or three joints in length, excepting it be a few shoots at the back or front, or any position where they will not unduly interfere with the more matured foliage that does the work. *Early Vineries*, from which the whole crop has been taken, should still have all the air that can be afforded them. I do not advise a resort to too free exposure until the foliage has become properly developed. Keep *Pines* growing as much as possible, having a due regard to the proper maturation of the growth made. I was much surprised at the last meeting of the Fruit Committee, by the production on the part of Mr. Perkins, a very expert Pine grower, of two beautifully grown "Queens," which had been grown from a rootless sucker in a few days only over 12 months. Even such grand results as these, I find, are attained under the most rational system of culture. As I have frequently urged, a mean minimum temperature only should be determined upon, the maximum being at all times suggested by the external elements. By slow but constant gradation get the trees in Peach and Nectarine houses inured to the full outer air, afterwards removing the lights altogether. Subsequently give all necessary attention to such cleaning, mending, and painting as may be required in connection with the several structures. Occasionally syringe all trees in this state during dry hot weather, should such favourable weather visit us.

HARDY FLOWER GARDEN.

Sweet Peas, properly selected, should never be dispensed with. They are so bright and so fragrant, affording besides one of the sweetest subjects for associating with the colourless *Mignonette* as cut flowers for the use of the boudoir, &c. Moreover, by sowing seeds successionally, their period of blooming may be made to last many months; little outlay in labour being requisite. They also make excellent "shift-screens," to afford variety to the annual arrangements of all "by-ways" in garden enclosures, which sometimes possess unseemly back-grounds. Where *Dahlias* have not been mulched, as previously suggested, this should now be done, as by these means many more surface roots are encouraged, which otherwise would not exist to support the plants. Make up all deficiencies in beds of every kind of summer bedding plants. Hoe well the surface of each, subsequently raking them neatly, and make some progress in the pegging down of *Heliotrope*, *Verbenas*, and other similar semi-trailing plants. Tie out the Picotees and Carnations of the better sort, placing card-boards to the blooms where the kinds are worthy the attention, and high-class culture is aimed at.

HARDY FRUIT GARDEN.

Tie up the points of the growing shoots upon *Espalier trees* by the usual means of stakes. Spur back the shoots formed during the current spring to two or three eyes from the base. Continue the removal of all *Strawberry runners* as they form, when not wanted for the increase of stock. Give some kind of artificial support to *Filberts* in all instances where such a crop exists as to demand it, as is the case in some neighbourhoods this season.

KITCHEN GARDEN.

Trench up where practicable every piece of ground now becoming vacant, if not done within the last two years. Use the hoe freely, and where practicable a fork, to loosen the soil well between growing crops, which is one of the most powerful of all incentives to growth. Sow more *Lettuce*, *Spinach*, *Endive* and *Carrots* of the short Horn type, where not done last week. "Drain" the crop of autumn Onions, and by full exposure to the sun, and by occasionally turning them over, encourage them to ripen off quickly. Make now a sowing for the main crop of autumn *Coleworts*. Keep all recently planted *Celery* well watered, should hot weather ensue. Do not let any crops assuming a seedy appearance remain one hour more than is needful; they impoverish the ground beyond what many unacquainted with the matter would surmise. *W. E.*

Notices to Correspondents.

ANTHURIUM SCHERZERIANUM: *E. B. C.* Sow the seeds at once in a pan of nice, light, peaty soil, in a warm, moist stove or pit.

COLEUS: *Subscriber.* Ajax is a bronzy-crimson, with golden margin. Bausei is nearly of the same colour, with green margin, or sometimes, when at its best, almost wholly of the deeper colour.

CUPRESSUS MACROCARPA: *C. C. H. G.* The ground on which this plant grows in California is said to be rather wet, but not heavy. The destruction caused in these islands by the frosts of a few years since, prevent us from recommending if as a desirable tree to cultivate for timber.

DISEASED PEACHES: *R. G.* The little protuberances on the Peaches noticed by you are caused through gumming and unhealthy action of the roots of the tree.

FLORAL DEVICE: *Northwich.* We do not understand your question, and therefore cannot advise you.

GRAPES DECAYING: *J. D. & S.* We have never seen berries go off in the manner yours seem to have done. Is it general or only partial? We should like to know a few more particulars.

GRAPES INJURED: *T. H. B.* Your Grapes are injured through a settlement of damp upon them, and the neglect to give air early enough in the morning. Lady Downes is very liable to this.

INSECTS ABOUT STRAWBERRIES: *A Constant Reader.* These, no doubt, are encouraged by the mulching materials used; but this season Strawberries are a prey to innumerable vermin, through the excessive wet.

NAMES OF PLANTS: *W. C. Trevelyan.* Pteris aquilina, in the young or seedling state.—*J. C.* 1, Scandix pecten veneris; 2, Tragopogon pratensis var. minor; 3, Ranunculus arvensis.—*E. C. C. D.* Asperula Cynanchica.—*H. M.* Specularia hybrida, if, as we understand, it is found wild.—*K. & S.* Apparently a particularly good form of Athyrium Filix-fœmina laciniatum.—*F.* Desfontainea spinosa.—*J. S.* Francoa sonchifolia.—*C. W. H.* Sisyrinchium bermudianum: a great rarity. The first record of the occurrence of this plant in Great Britain. Was discovered some years ago in County Galway, where it is now thoroughly established; but has never previously been met with beyond that county.—*H. Tisley.* The two Lilies of which flowers are sent are both the same, botanically, Japanese forms of bulbiferum coming in about half-way between the type and Thunbergianum, as Lindley figures it. The finer flower has broader perianth-segments, not so distinct a claw, and more distinct papillæ than in the other. The colour of both is pretty much that of European Croceum. There are numerous garden names for the forms of this series, but different people apply them quite differently, and they are nowhere drawn or described in any botanical work. *J. G. B.*

NORTH BORDER: *G. S.* A north border, where scarcely any sun is seen for nine months of the year, would suit hardy Ferns better than any other class of plants we can recommend; and those are so numerous that if adopted G. S. had better select them at some of the nurseries where Ferns are made a specialty. If patches of peat soil were introduced, such plants as the hardy Cypripediums, the Trilliums, the Goodyeras, some of the choice Primulas, &c., ought to succeed.

PEACH TREES NOT FRUITING: *J. K.* Your failure may be attributable to various causes. Perhaps owing to the excessive vigour of the trees, which makes them cast their fruit, as we have experienced often; perhaps dryness at the root about the time of setting. As the trees attain age, if you treat them properly, you will get plenty of fruit most likely.

PELARGONIUM STALKS: *F. L.* The white spots on the Pelargonium stalks are very curious. We have never seen them before. The tissue beneath the spots looks unhealthy, having a brownish tinge. We will inquire further in the matter. *M. J. B.*

RHODODENDRON: *X. Y. Z.* The tuberiform bodies on the Rhododendron ferrugineum are caused by an undescribed species of Ascomyces, one species of which causes blister in Peach leaves. We have seen nothing like it before. *M. J. B.*

SMUT: *Earl of Essex.* It is the common smut, Ustilago segetum. The spores are blown off by the wind and do not vegetate till the new crop is sown, so that there is no remedy, as in the case of Bunt. *M. J. B.*

VINE ROOTS: *J. B.* After a very careful examination of your Vine roots, we can find no trace of the new insect pest, nor do we see any place where the eggs could have nestled. The larger roots have been dead for some time, and merely exhibit the usual condition of dead Vine roots. *M. J. B.*

CATALOGUES RECEIVED.—Louis Van Houtte, Catalogue of Bulbs, New Perennials, Stove and Greenhouse Plants, and Hardy Shrubs.

COMMUNICATIONS RECEIVED:—J. M. J. W. C. R. G.—H. B.—D. T. F.—F. J. D.—B. F.

Markets.

COVENT GARDEN.—July 6.

We have still to report a very uncertain supply, in consequence of the unsettled weather, which has much injured the Cherries and bush fruit. Hothouse fruit is amply supplied, and we notice an unusually large supply of English Pines among the dealers. Those from the West Indies are also now in their prime, the quantity varying at sale from 20,000 to 25,000 weekly. In the Potato market we have no alteration to report.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve ..		to 3 0	Oranges, per 100 ..	6 0	to 10 0
Grapes, per lb. ..	2 6	— 6 0	Peaches, per doz. ..	12 0	—24 0
Lemons, per 100 ..	6 0	—10 0	Pine-apples, per lb.	2 6	— 5 0
Nectarines, per doz.	8 0	—15 0	Strawberries, p. lb.	0 6	— 1 6

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d*
Asparagus, p. bundle	4 0	— 6 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz. ..	2 0	— 3 0	Lettuces, per score ..	0 9	— 1 6
Cabbages, p. doz. ..	1 3	— 1 9	— French Cos, each	0 9	— ..
Carrots, p. bunch ..	0 8	1 0	Mushrooms, p. pott	2 0	— 3 0
— French, per bundle	1 0	— 1 6	Onions, per bunch ..	0 4	0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	0 4	— 0 6
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	1 0	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, round, per bunch ..	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Rhubarb, p. bundle	0 3	— 0 6
French Beans, p. 100	2 0	— 3 0	Shallots, per lb. ..	0 8	— ..
Gooseberries, per quart	0 4	— 0 6	Spinach, per bushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch ..	0 4	— 0 9

Potatos, New Round, *6s.* to *10s.*; Kidneys, *8s.* to *10s.* per cwt.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15s. 0d.	19s. 6d.
Third quality	16s. 0d.	22s. 6d.
Seconds	18s. 6d.	26s. 0d.
English	20s. 0d.	27s. 0d.

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.

Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths *s. d.*	3rds. *s d*	2nds *s d.*
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	1[illegible] 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

16 to 17 oz. to the foot.

SMALL SHEET SQUARES (in 100 feet Boxes).

6 by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12s 6d
8 by 6	8½ by 6½	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13s 6d

Boxes 2s each, returnable at full price

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

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Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.

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RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

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RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, *100s*; Petersburg, *60s* and *80s.*; superior close Mat, *45s.*, *50s.*, and *55s.*; packing Mats, *20s.*, *30s.*, and *35s.* per 100; and every other description of Mats at equally low prices, at

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HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from *2d* to *5d* per yard, advancing ¼*d.*
54-inch Hessian and Scrim, *3d.*, *3½d.*, *4d.*, *4½d.* and *5½d.*
72 " " " *4½d.*, *5½d.*, *6d.*, *6½d.*, and upwards.

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NEW TWINE NETTING, 2 yards wide, *4d.* per yard; ¾ mesh, 2 yards wide, *8d.* per yard. HEXAGON NETTING, 76 mesh to square inch, *4½d.* per square yard. Repaired TANNED NETTING, *1½d.* per yard, 2 yards wide. RABBIT NETS, FISHING NETS, BIRD NETS. See List, post free.

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NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING for Protecting the above from Frost, Blight, Birds, &c., 2 yards wide, *3d.* per yard, or 100 yards, *20s.*; 4 yards wide, *6d.* per yard, or 50 yards, *20s.* NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, *6d.* per yard; 4 yards wide, *1s.* per yard; ¾-inch mesh, 4 yards wide, *1s. 6d.* per yard. Also TIFFANY. Can be had in any quantity of

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EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at *1d.* per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.

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EDGINGTON'S MARQUEES for Hire, are the most elegant and capacious.

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A quantity of good Second-hand Government TENTS from Abyssinia, for Sale, cheap. A Liberal Discount to the Trade.

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E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST FROST.
WOOL NETTING, 2 yards wide and *1s. 6d.* per yard.
"FRIGI DOMO" CANVAS.

Two yards wide	*1s. 9d.* per yard.
Three yards wide	*2s. 8d.* per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, *5½d.* to *8½d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, *6¾d.* and *8¾d.* per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.

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PARTNER WANTED.—An Active Business Man, having a first-class Connection, and a thorough knowledge of the Seed Trade in all its branches, is desirous of meeting with a Partner, active or otherwise, who would be willing to embark in trade with him. For the past 10 years Advertiser has been connected with an extensive Seed Establishment, doing a large wholesale and retail business, and is well known in the London Trade. The most satisfactory references can be given. None but Principals treated with.—For particulars and capital required, A. Z., Messrs. Hurst & Son, Seed Merchants, Leadenhall Stree, London, E.C.

Gardener.

WANTED, a HEAD GARDENER.—One who can Lay-out Gardens to a Plan; must be a Competent Man, and understand the Sea-side climate.—Address, stating terms and qualifications, with references, on or before the 21st inst., to R. RUSHTON, Secretary, Raikes Hall Park Gardens and Aquarium Company, Limited, Blackpool, Lancashire.

WANTED, a GARDENER (HEAD, WORKING), where two or three are kept.—Must be thoroughly up in the profession—Forcing, Flower and Kitchen Gardening; and must have a good personal character from last employer for sobriety, capability, and honesty. No person employed at a Nursery need apply. Terms, 25s. per week; no perquisites of any kind.—Apply by letter, stating full particulars, to A. H., 12, Salisbury Square, Fleet Street, E.C.

WANTED, a first-class MARKET GARDENER, to take charge of Show Grounds, at Crossness, near London.—Applications by letter to M. C. RAWSON, General Manager, Native Guano Company, 1, St. Swithin's Lane, London, E.C.

WANTED, a young MAN, used to Nursery Work, to take, when required, charge of Greenhouses. A knowledge of Grafting and Budding Fruit Trees and Roses indispensable. Wages about 16s.—G. J. WOOLLETT, Nurseries, Caterham, Surrey.

WANTED, a Man used to general NURSERY-WORK.—One who is not particular what he does. Wages according to worth.—The Orchard, Mortlake, Surrey, S.W.

KNIFEMAN, &c.—J. CARTER, Nurseryman, Keighley, Yorkshire, is in WANT of a MAN who is experienced in Budding, Grafting, Layering, &c., and who has a general knowledge of Shrubs and Fruit trees, so as to assist Foreman in executing orders. Wages 17s., and house.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

Gardeners.

B. S. WILLIAMS has much pleasure in stating that he has upon his GARDENERS' REGISTER many Men of the strictest integrity, thoroughly qualified to undertake the duties of HEAD GARDENER, GARDENER and BAILIFF, or UNDER GARDENER. Ladies or Gentlemen requiring such may rely upon B. S. W. recommending only those whose conduct and abilities are worthy of their trust.

Victoria and Paradise Nurseries, Upper Holloway, London, N.W.

GARDENER (HEAD).—Age 35, married; good practical Cultivator of Flowers, Fruit and Vegetables; Land and Stock if required. Good character from late employer.—A. Z., Ivy Cottage, Cole Hill Lane, Fulham, S.W.

GARDENER (HEAD).—Age 35, married; now leaving one of the principal places in Ireland, owing to death of his employer. Testimonials of the highest class.—A. B., Mr. R. B. Matthews, Seed Merchant, Belfast.

GARDENER (HEAD).—Age 34, married, without family; thoroughly experienced and practical Man. Eight years with a Nobleman. Will not treat for a single-handed place.—Reference to Rev. C. B. REID, Hanworth House, Hounslow.

GARDENER (HEAD).—Age 40, married; thoroughly practical in all branches of the profession. No single-handed place accepted. Good references.—A. B., Mr. Wood, Tooting, London, S.

GARDENER (HEAD).—The Advertiser, who is now disengaged, begs to offer his services to any Lady or Gentleman requiring a thorough practical Man. Can be highly recommended. Five years' character.—A. B., Post Office, Hatfield, Herts.

GARDENER (HEAD).—Age 32, married; has had 14 years' experience in first-class Gardens. Thoroughly understands Early Forcing, Pines, Vines, &c., Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Character will bear the strictest investigation.—M. W., 19, Hill Street, Leamington.

GARDENER (HEAD), age 36, married, two children (youngest five).—Mr. STEVENS, St. John's Nurseries, Putney, can with confidence recommend to any Lady or Gentlemen a thorough practical Man, well versed in Early and Late Forcing, Kitchen and Flower Gardening; also Cattle and Land. Four and a-half years' good character.—A. B., as above.

GARDENER (HEAD), age 30.—CHARLES BUTTERS, for six years Head Gardener to the Duchess Dowager of Cleveland, at Downham Hall (whom he has left because of the Sale of the Estate), is at liberty to engage with any Nobleman or Gentleman in want of a thorough practical Gardener. Excellent references from late employer.—CHARLES BUTTERS, White Hart Street, Thetford.

GARDENER (HEAD), Protestant, married, English.—A practical Man of business, who has had the Management of some first-class Garden Establishments in Ireland; is a first-rate Grape, Peach, Strawberry, and Vegetable Grower. Advertiser has supplied both English and Irish Markets with Fruit and Vegetables. He is an established Plantsman, and has great taste in the Decoration of Terrace Gardens and Pleasure Grounds.—BETA, J. W. Mackey, Esq., 40, Westmoreland Street, Dublin.

GARDENER (HEAD, WORKING).—Middle-aged, married; thoroughly understands the profession in every department. Strictly sober and industrious. Excellent character from last employer (16 years).—Further information may be obtained from Mr. J. SCOTT, The Seed Stores, Yeovil.

GARDENER (HEAD, WORKING).—Married, one child; 15 years' good practical experience in the Cultivation of Vines, Peaches, Melons, Cucumbers, Mushrooms, Greenhouse and Conservatory Plants, also Flower and Kitchen Gardening. Good references.—H. A., Head Gardener, Parkhurst House, Haslemere, Surrey.

GARDENER (HEAD, OR SINGLE-HANDED).—Age 30, married, one child; understands Forcing Vines, Stove, and Greenhouse Plants, Flower and Kitchen Gardening, Stock, and Meadow Land. Wife can attend Dairy. Good references given.—B., 1, Barton Cottage, Eden Road, Lower Norwood.

GARDENER (HEAD, or Single-handed).—Single; understands Fruit, Flowers, Grapes, and Kitchen Gardening. Good reference.—B. A., 7, Linton Crove, Lower Norwood, Surrey, S.E.

GARDENER (FIRST-CLASS).—HENRY BAILEY can with confidence recommend a first-class Man to any Nobleman or Gentleman requiring the services of such. Unexceptionable references given, and good wages expected.—Royal Nursery, Feltham.

GARDENER (experienced), to any Lady or Gentleman.—Age 46, married, no children. Good character.—G. M. B., Post Office, Slough, Bucks.

GARDENER.—Age 29, Scotch; 14 years' sound experience; good practical knowledge of Kitchen, Flower, and Fruit Gardening; also the Early Forcing of Fruits, Flowers and Vegetables, &c. Thoroughly proficient.—A. B., Post Office, Chester.

GARDENER.—Single; thoroughly understands Early and Late Forcing of Vines, Melons, Cucumbers, and Stove and Greenhouse Plants. Can be highly recommended.—J. S., 19, Hill Street, Leamington Spa.

GARDENER (SECOND, or SINGLE-HANDED) in a Gentleman's Family).—Two years' character from last employer.—H. A., 2, Osborn Villas, Lee Green, Kent.

GARDENER, or GARDENER and BAILIFF.—Married, one child; has had excellent experience and has high recommendations.—All particulars on application to A. R. M., "Newton" Nurseries, Chester.

FOREMAN, in a Gentleman's Establishment, where one or two are kept in the Houses.—Age 23; thoroughly understands the Culture of Pines, Vines, Peaches, Early and Late Forcing, and general routine of Gardening.—A. B., Mr. Baxendine, Nurseryman, Guildford, Surrey.

FOREMAN (GENERAL).—Age 22, steady; understands Forcing, Stove, Greenhouse, and Kitchen Garden. Two years' good character from last place.—W. W., Pine-apple Nursery, Maida Vale, London, W.

PROPAGATOR, or PROPAGATOR and FOREMAN.—Has had many years' experience in Hard and Soft-wooded Propagating, Grafting and Plant Growing.—Address, for character, stating salary, to the FOREMAN of Mr. John Shaw's Nursery, Bowden, Cheshire.

PROPAGATOR and GROWER of Stove and Greenhouse Plants, either in a Nursery or Gentleman's Establishment.—Age 24; good hand at Bouquets. Good experience in London and Provincial Nurseries.—L. P., Birmingham Nursery, Harbourne Road, Edgbaston, Birmingham.

BAILIFF and GARDENER (HEAD).—Age 42; thorougly practical in Kitchen and Flower Gardening, Stove Plants, Greenhouses, &c.; well understands Stock, &c.—R. B., 1, Percy Terrace, Mortlake, Surrey, S.W.

To Noblemen's and Gentlemen's Gardeners.

IMPROVER.—Has had three and a-half years' experience. Can be highly recommended.—E. A., 1, Brook Lane, Chester.

Seed Trade.

SHOPMAN.—Fifteen years' experience with Agricultural, Vegetable, and Flower Seeds, with a good knowledge of the Nursery and Florist Business. Good reference.—A. O. F., 3, St. Andrew's, Uxbridge.

ODAMS'S NITRO-PHOSPHATE or BLOOD MANURE.
ODAMS'S DISSOLVED BONES.
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ODAMS'S NITRO BI-PHOSPHATE (or prepared) GUANO.

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George Saville, Ingthorpe, near Stamford.
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This Company was originally formed by, and is under the direction of Agriculturists, circumstances that have earned for it another title, viz.,

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Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held.

Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

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REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

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REPORT and ANALYSIS by DR. A. VOELCKER. Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.
"London, January 15. 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need therefore hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully.

(Signed) "AUGUSTUS VOELCKER.

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THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
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MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

"PHYTOSMEGMA," or PLANT CLEANSER, destroys Scale, Mealy Bug, Red Spider, &c., without injury to Plants; 6*d*. and 1*s*. per bottle.

The NEW SHOWERER, for applying the above, 6*d*., 1*s*. and 3*s*. 6*d*. each.

Wholesale of T. A. POOLEY, Sussex Wharf, Wapping, E.; and Retail of all Nurserymen, Seedsmen, and Florists.

Blight.

GARDENERS TROUBLED WITH THE ABOVE, WOULD DO WELL TO TRY

"WILKIE'S BLIGHT COMPOSITION" for their DESTRUCTION. It offers a safe and speedy remedy, and at a moderate price. Taken in quantities, A. W. would be happy to make a considerable reduction. Sold in 1 and 2-gallon jars at 3*s*. 6*d*. and 6*s*. each. It bears being considerably diluted. Post Office orders from unknown Correspondents.

WILKIE'S CONDENSED COMPOSITION, in bottles at 2*s*., 3*s*. 6*d*., and 6*s*. each.

The above articles may be had through all the principal Nurserymen and Seedsmen, and wholesale of

A. WILKIE, Oak Lodge Gardens, Addison Road, Kensington, W.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy all the Insects, and not injure the Plants, and burns without the assistance of blowing. Price 3*s*. 6*d*. per lb., carriage free. A reduction in price for large quantities.

To be had of Messrs. R. ROBERTS AND SONS, 112, St. John Street, Clerkenwell, London, E.C.; and of all Seedsmen and Nurserymen.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

For Reaping Machines,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

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MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

SEVERAL good HOUDAN CHICKENS, two or three months old, to be DISPOSED OF. The Cockerels from 7*s*. 6*d*. to 12*s*. each; the Pullets from 5*s*. to 10*s*. each; or the lot of 20 Chickens would be Sold for £5.

Also a Pair of handsome young NUN PIGEONS, at 12*s*. 6*d*.
H. C., Mr. Beck, Bookseller, Leamington.

Prize Berkshire Pigs.

MR. GRIGGS, the Winner at the Essex Agricultural Show at Romford (June 15 and 16, 1871) of Four First Prizes, Four Second Prizes, and Four Commendations, has some of the PRIZE PIGS, and some first-rate BOARS and SOWS, for SALE.
Oaklands, Romford.

To Market Gardeners and Others.

TO BE LET, on a Twenty Years' LEASE, from Michaelmas next, THIRTEEN and a HALF ACRES of good LAND, close to the London and South-Western Railway Station, Ashford, Middlesex.
Mr. WATKINS, Printer, Staines, Middlesex.

TO MARKET GARDENERS and FLORISTS with a Small Capital.—A Gentleman, having purchased above FOURTEEN ACRES of LAND, near a Railway Station, not far from Horsham and Tunbridge Wells, and within an hour of Brighton, is wishing to have the same OCCUPIED, for a few years or permanently, either by a Market Gardener or a Florist. Arrangements would be made for compensation for permanent improvements, and for Trees planted. A small Stream of Water runs along the ground.
Mr. W. H. C., 7, Phillimore Gardens, Kensington, W.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

TO BE SOLD, by Tender, pursuant to an Order of the High Court of Chancery, made in a cause of Meldrum *v*. Hayes, with the approbation of the Vice-Chancellor Bacon, at the Office of Mr. John Bolton, of Kendal, in the County of Westmoreland, Solicitor, on TUESDAY, the 25th day of July, 1871, at 3 o'Clock in the afternoon precisely (unless previously disposed of by Private Contract), the GOODWILL and STOCK in TRADE of the BUSINESS of NURSERYMAN and SEEDSMAN of the late JAMES MELDRUM deceased, now carried on by his Executors, at the Nurseries, at Castle Street, Mints Feet, Canal Head and Skewbarrow Garden, at Kendal aforesaid, and at the Shop and Premises situate in the Market Place, Kendal. The said Nurseries consist of about 14a. 0r. 0p., of Land laid out as Gardens and well stocked.

Particulars of the Stock, and particulars and conditions of Sale and Forms of Tender may be had gratis of the said Mr. JOHN BOLTON, of Kendal, aforesaid, and of Mr. JOHN WILSON, Solicitor, Kendal.

Dated this 23d day of June, 1871.

JOSHUA BIRD ALLEN, Chief Clerk.

NICOL & SON, 88, Queen Street, Cheapside, London,
Plaintiff's Solicitors.

SALES BY AUCTION.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, July 20, at half-past 12 o'Clock precisely, choice established ORCHIDS, in fine condition, including—

Cattleya Warneri
" lobata
Cymbidium Mastersii
Lælia Turneri
" Schilleriana
Oncidium macranthum
Masdevallia Lindeni
" coccinea
" Veitchii
Anguloa Ruckeri
" Turneri
Miltonia Warscewiczii
Vanda suavis
Aerides Warneri
Cypripedium niveum
Dendrobium Wardianum
" Falconeri
Saccolabium guttatum

And many other rare varieties. Also a number of SEEDS of PALMS and other plants from Petropolis; Ornamental Wire Garden Stands, Window Boxes, &c.

On view the mornings of Sale, and Catalogues had.

Pine-apple Place, Maida Vale, Edgware Road.

To CAPITALISTS, BUILDERS, NURSERYMEN, & OTHERS.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions to offer for SALE by AUCTION, by order of the Mortgagee, in Two Lots, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, July 20, at 2 o'Clock precisely, the LEASES and STOCK, with possession, of the old and well-known NURSERIES of Messrs. Arthur Henderson & Co., of Pine-apple Place, Edgware Road. The following are some of the particulars of the Houses and Pits on the Pine-apple Place Home Nursery:—Lease 38 years to run, at £45 per annum; Dwelling-house, partly heated with hot water, comprising Dining-room, Sitting-room, Five Bedrooms, Kitchen, and Scullery; large and roomy Ornamental Show House, Shop in front, and small Shop behind; Chief Clerk's Office, Private Office, two Seed Lofts, Fern-house, Bouquet and Cut Flower-house, North-house for Hard-wooded Plants, Span-roof Ornamental Geranium-house, Pelargonium-house, Ornamental Stove-house, Hard-wooded Propagating-house and Shed, Vinery used for Camellias and Orange Trees, Four Ranges of Brick Pits, Two deep Brick Pits filled with Azaleas, several Sheds, Ornamental Evergreens and Flowering Summer Plants, a large mass of Aucubas, Standard Ornamental Trees, Euonymus, Azaleas, Hollies, and Ten large Beds of good Rhododendrons.

Also LEASE of GROUND, HAMILTON TERRACE, adjoining Pine-apple Place, 50 years to run, at £89 per annum, Span-roof Rose-house, Hardy-house, Two Glass Plant-houses (with divisions in centre), Stove-house (against wall), Greenhouse (against wall), large specimen Azalea-house, specimen Heath-house, long House for Azaleas, large Three-Span-roof House for Vines and Stove Plants, specimen Camellia-house, small Orange-house, 14 Brick Pits, Glass Lobby, Framing and Lights, a large number of Sheds, Stabling, Offices, Carpenter's Shop, Three Fowl-houses, Plants in Pots, &c.

. Also LEASE of GARDEN ROAD NURSERY, rent £25 per annum, Two large Greenhouses, with a quantity of Framing for growing miscellaneous Soft-wooded Plants. The ground is well stocked with Ornamental Evergreens, and Trees and Shrubs, Three Cottages (let on lease at 50 guineas per annum), Pond and Tank, &c.

Particulars and Plans can be obtained of F. KEARSEY, Esq., 35, Old Jewry, E.C.; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

N.B.—Part of the Purchase Money may remain on Mortgage.

Bulbridge Ram Sale.

MESSRS. EWER AND WINSTANLEY beg to announce that the ANNUAL SALE and LETTING by AUCTION of Mr. Rawlence's RAM LAMBS and RAMS will take place at BULBRIDGE FARM, WILTON, on WEDNESDAY, August 2.

Mr. Rawlence has been awarded during the present year Five Prizes for his Sheep exhibited at the Bath and West of England Society's Show at Guildford, and his well-known reputation and continued success for the last 25 years renders further comment from the Auctioneers unnecessary.

BEDFORDSHIRE AGRICULTURAL SOCIETY (embracing the adjoining Counties).—The SEVENTIETH SHOW of STOCK will be held at Bedford, on THURSDAY, July 20.

A HORTICULTURAL and FLORAL EXHIBITION, together with a POULTRY SHOW, will be held on the same day, in adjoining Grounds. The Band of the Coldstream Guards will attend.

The Dinner will be held in a commodious Tent on the ground, at 4 o'Clock. The Committee hope to be favoured with the attendance of Ladies.

Cheap Tickets will be issued by the Midland, London and North-Western, and Great Northern Railway Companies. For further particulars see Railway Bills. THOS. LESTER, Sec.
3, St. Peter's Green, Bedford.

MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY.—Prize Lists for the Show at Liverpool in SEPTEMBER NEXT may be had on application to the Secretary. Upwards of THREE THOUSAND POUNDS are offered in PRIZES, including £100 for the best Hunter, £80 for the best Short-horned Bull, upwards of £220 for Dogs, £250 for Poultry, upwards of £225 for Pigs, and £300 for Sheep. ENTRIES CLOSE AUGUST 1
Winsford, Cheshire. THOMAS RIGBY, Secretary.

BIRMINGHAM HORSE SHOW, 1871.—The SIXTH GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, &c., will be held in Bingley Hall, Birmingham, on TUESDAY, WEDNESDAY, THURSDAY, and FRIDAY, August 15, 16, 17, and 18

ENTRIES CLOSE on SATURDAY, July 29.

For PRIZE LISTS and all other particulars, apply to the Secretary, 39, New Street, Birmingham. J. B. LYTHALL, Secretary.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED and TWENTY POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

The Agricultural Gazette.

SATURDAY, JULY 15, 1871.

WOLVERHAMPTON, which divides with curious exactness the iron and manufacturing industry in its neighbourhood from the agricultural—the "black country" stretching directly southwards from it, and a green and fertile country coming up to its very suburbs on the north—has during the past week been the common centre of attraction for both the commercial and agricultural classes. Farmers from every county have been drawn together by the annual exhibition of the Royal Agricultural Society in its showyard, and crowds of spectators from its grimy southern neighbourhood have enjoyed the sight of whatever is foremost in the live stock and the implements of the farm. The agriculturist is yearly realising more and more his indebtedness to the ironworkers of the country—almost everything he uses now is iron, wooden ploughs and harrows are no more, carts and waggons and the frames of threshing machines seem to be nearly all that is left for the carpenter to do for him—and on the other hand, iron workers are beginning to realise the immense importance of a prosperous agriculture, not only as furnishing them with their home supplies of food, but as taking from them no small portion of the products of their industry. This Wolverhampton show has been thus a wholesome mutual introduction of two sets of workers, who are now more nearly related than they may have thought; and each is the stronger and the better for being brought to feel its dependence on and interest in the other.

The showyard in which they have met has been more than usually good. Classes of Shorthorns, several of them unrivalled in the past history of English exhibitions, 161 entries in all, contributed by 42 breeders in 31 English and many Scottish and Irish counties — excellent classes of Herefords, and a good show of Devons, 87 and 47 entries respectively, shown, the one by 28 breeders, and the other by 12 breeders, in 11 and 6 English counties, and a few Scotch and Irish counties respectively—and a capital show of Channel Island stock, besides other less definite classes, make up a very good exhibition of our cattle. Noble classes of Leicester and Southdown sheep—fair classes of Cotswolds and Lincolns and Oxford and West County Downs—a very remarkable exhibition of the Shropshire breed—besides small classes of Ryeland, Dorset, Cheviot, and mountain sheep, make up a very perfect representation of the sheep stock of the country. The pig classes include most perfect illustrations of the white breeds, a fair display of the black breeds, and a good show of Berkshires. The horses, which have proved the greatest attraction in the yard—the ring in which they are paraded having been continually surrounded by a dense throng—are a stronger and better collection of their several classes than has been witnessed at any previous show of the Society.

If this be a fair account of the live stock yard, what shall be said of the implement department? It is more useful and substantial, less disfigured by petty and bazaar-like stands, than we have seen—characterised by an appearance of business-like utility, with, however, but little novelty to attract the attention of those whom we hear described as "the miscellaneous judges," who award the silver medals at the disposal of the Society. It is impossible to walk round the 40 or 50 sheds here gathered full of implements and tools of every kind, adapted for every scale of farming—from steam-ploughs that will cultivate a "land" in a single bout, to spades and forks and drills for hand use—without being impressed by the immense magnitude of the growth which the agricultural machine manufacture of this country has experienced during the career of the Society. This, then, has been the spectacle offered at Wolverhampton, and enjoyed, so far as weather would permit, by the crowds who have thronged the showyard.

If we may now venture upon a criticism intended more for professional than for general readers, we would direct attention to the sources whence the show proceeds. The Shorthorns exhibited by 42 breeders in 31 English counties are a remarkable illustration of the ubiquity of the dominant breed of the country; nevertheless, considering that ubiquity and the hundreds of our pure-bred herds, they display less energy and public spirit on the part of breeders, than do the Herefords with their 28 breeders, or even the Devons with their 12 herds represented. In these last it is plain that a larger proportion of those who are interested in the fortunes of the several breeds have exerted themselves. In the sheep classes the difference thus exhibited amounts indeed to contrast. The whole of the Leicesters are shown by only five breeders—the whole of the Cotswolds by six, the whole of the Southdowns by nine. And the numbers of sheep in these three classes are 67, 56, and 80 respectively. Look now at the Shropshires. There are 39 flocks here represented, and no fewer than 538 sheep shown, the whole of the other sheep classes together numbering only 401. Surely there is a lesson here of energy and public spirit—resolution to carry public opinion—determination to show what the live stock of a single English county can accomplish—that may be taken to heart by those who undertake to illustrate the merits of our other breeds, whether of sheep or cattle. Let us in particular call the attention of the Gloucestershire cultivators of the Cotswold breed of sheep. They have the very grandest of the Flock in their hands, but it is never adequately represented, and most of the exhibitors this year are from other counties, much the larger proportion of the prizes going to Norfolk!

In the implement yard the great feature is the success of Messrs. Fowler & Co. in the steam cultivation competition. They carry off both the 1st and 2d prizes (£100 and £50) for "the best combination of machinery for the cultivation of the soil by steam-power;" the 1st prize (£50) for "the best combination of machinery for the cultivation of the soil by steam-power, the weight of the steam-engine not to exceed 10 tons;" the 1st prize (£50) for the best combination of machinery for the cultivation of the soil by an ordinary agricultural engine, whether self-propelling or portable; and Lord Vernon's cup (£100) for "the best combination of machinery for the cultivation of the soil by steam-power, the cost of which shall not exceed £700." They also win the special prizes for plough, subsoiler, digger, cultivator, scarifier, and root-extractor. On the other hand, the Fisken system of steam cultivation receives a second prize in its class; and Messrs. Howard, who may be named as the great rival steam-cultivating house, receive the second prize in the class for cultivation by ordinary agricultural engines, and the prizes for the best harrow, and the best drill, and the best combined subsoiler and ridger.

We confess that we are glad to find the judges in the first of the above decisions doing what in them lies to check that growth towards the gigantesque, which in steam cultivation has threatened to become monstrous. It is Fowler's 12-horse power double engine set that is placed first—the 20-horse power engines are placed second. It may be quite true that he who can pack the greatest number of horse-power on four wheels will beat his weaker neighbour at the pinch, yet it is well not to ignore the ordinary and average circumstances of English farms and English farming; and the judges have done right to let the manufacturer know that these are what, in the opinion of the Society, should guide him in catering for his customers.

The novelties of the showyard are not numerous. There is a thatch-making machine, and a simple pulley slide in the thatcher's ladder for supplying him with material; a simple and very workman-like potato-riddle, for use in the field at digging time; a potato-planter, which ribs the land, sows rather than "sets" the tubers, and covers them up; a clever feeding-house arrangement, by which Turnips are sliced or cake broken and fed into the manger as the machine carrying both is pushed along the feeding gangway. We must refer our readers to the report in other pages for these and other particulars. This general reference to the yard must not, however, conclude without mention of the very admirable stands of plants and seeds contributed by Messrs. Sutton, Messrs. Carter, Messrs. Gibbs, Messrs. Wheeler, and others, to which further reference is made elsewhere.

We have again to report the triumph of THE FOUR-COURSE CROP ROTATION—this year pure and simple. The prize farm in the Royal Agricultural Society's Wolverhampton district has been cultivated by its present tenant for more than 20 years upon this principle; and no variation from it, for the safety of the Clover crop, has been permitted. There has been no such device as an eighth in Peas or Beans in order to create a double interval of time between successive Clovers—hardly anything in the way of a catch crop, such as the management of last year's prize farm sanctioned, in order to vary the rapidly recurring monotony of cultivation under the four-field course of cropping. Wheat, Turnips, Barley, and Clover, have been the almost invariable succession; and the land at Sherlowe, the farm which has been this year decorated, looks as if it liked it. The Wheat, indeed, is only fair; but the winter had destroyed so much that a great deal had to be re-sown, and it is very creditable to the management that it looks so well. The Mangel Wurzels, Swedes, and common Turnips are all first-rate. The Barley is magnificent. The second growth of Clover, with Rye-grass among it, is giving a good bite to lambs and yearlings—though the crop of hay from it has not been very good, and a good deal of the second year's growth had been kept on, owing to a difficult seed-time and consequent loss of plant last year. "You will see nothing very remarkable in the cropping," we were told, "but the live stock is undeniably first-rate." The country generally thereabouts is well cropped, and that may account for the judgment given us of this year's produce—for, as regards the half occupied by the Barley and the green crops, the land was covered as one rarely sees it on the best of soils at this season of the year; and the quality of the land at Sherlowe is not by any means of the best, although the soil is such as presents no difficulty to the cultivator.

We were not fortunate enough to find Mr. Forrester at home (Sherlowe, High Ercall, near Wellington), during the short visit paid to his farm immediately after the announcement of its success in the prize farm competition; but a very intelligent bailiff, who had been on the land as long as his master, accompanied us through the fields.

The decision of the judges this year, unlike that of last year, has no doubt been materially influenced by the quality and management of the live stock of the farm. A better herd of Herefords, a better flock of Shropshires, one rarely sees. So far as derived from them—the annual meat produce of the land (rather more than 400 acres, of which less than 300 are arable) may be put at 25 to 30 2½ to 3-year-old Herefords, sold at from £30 upwards each, derived from about as many cows, which, with their produce up to this age, make up the Sherlowe herd; and some 200 fat shearlings, fed up to 15 months, and then fetching 50*s*. and upwards as mutton—the produce of 150 to 160 capital Shropshire ewes, which with their lambs make up the Sherlowe flock—as compact, tidy, and symmetrical a lot of sheep as if they were pure-bred Southdowns. We do not see that these are equal to the consumption of 70 acres of such a green crop as is this year awaiting them—but of any further purchase of stock for winter keeping we have no information. Besides these there is a varying quantity of pork and bacon fed, not bred, upon the farm.

The grain produce may be put at 4 to 4½ qr., or sometimes more, of Wheat, over some 70 or 75 acres, and from 44 to 50 bushels—this year certainly much more—of Barley over a similar extent. This, it must be remembered, is the produce of only second-rate, and for the most part light and easily worked, red land. It is a produce due not merely to natural fertility and good tillage, but to the large purchases of oilcake and manures which are annually made.

Four pairs of horses, with an odd one, accomplish all the work at Sherlowe Farm—easily accomplish it, for everything is already done, and the horses are all at grass. The Mangels and earlier Swedes already nearly cover the land; the later Swedes are being singled; Kohl Rabi is a capital plant, all singled; the common Turnips are ready for the hoe. Seventy-two acres are all thus covered with a most promising plant. All the farm is as clean as possible; we saw no Couch nor any other weed that we remember, unless the Plantain among a somewhat imperfect Clover plant be considered one. Some 20 tons of Proctor & Ryland's, and Griffin & Morris's Turnip manures, and 2 tons of nitrate of soda are applied every year; and a large quantity of farmyard dung from cake-fed beasts is made in stalls and yards.

The landlord has done his part as effectually as the tenant. The farmhouse is a mansion, and the buildings are as well equipped and complete a homestead as any one would wish to see. The roads are good, the land is drained, the fences are well kept, the lines of Thorn as clean, and tilled each year as carefully, as any other crop upon the farm. Credit is due, we understand, to Mr. Forrester for much of the present arrangement of the land. It was formerly subdivided with great irregularity—and the larger fields and straighter fences are his handiwork. A large field of rough and marshy pasture-land has been lately drained, and is being gradually got into better cultivation, partly by paring and burning, partly by ordinary arable tillage, prior to laying it down again. A large extent of a most promising crop of Oats standing on this temporarily broken up land is one of the features of this year's cropping.

Sherlowe may be taken, on the whole, as a sample of clean and business-like, comparatively small farm management, where no great difficulties exist, but where by liberal treatment the soil has been made to yield much beyond the produce of its natural fertility. We are glad to see, from the extra prizes which they have been able to award, that the judges have had their eye upon the profitable character of the management as the main test of its merit. Mrs. Sankey, who receives one of these extra prizes, farms not far from Sherlowe. We can congratulate her upon magnificent crops of Wheat and Beans, a flock of useful large-framed Shropshire sheep, and well-kept fences, all of which we saw upon our way. And we can congratulate Mr. Forrester upon a success achieved apparently by long continuance in well doing according to the ordinary rules of management proper for light soil cultivation, upon a moderately sized farm of mixed arable and pasture-land.

A hamlet, with the parish church, lies at some little distance, on the northern or north-western side of the farm; large and open fields, with occasional woodland, slope southwards from it; and Sherlowe itself, so liberally and handsomely equipped, looks out upon a smiling English landscape, the morning shadow of the Wrekin stretching over it, and the distant Welsh Hills bounding it upon the west. It is the very ideal of a gentleman farmer's home.

—— Trade has been dull during the past week in Mark Lane, in spite of small supplies, with a fall of 1*s*. in English Wheat——In the Metropolitan Cattle Market on Monday trade was active at fully late rates. On Thursday the tendency continued upward.

—— The show just terminated at Wolverhampton has, we hope, turned out a financial success in spite of untoward weather during the greater part of the time. On Monday, a fine day, 2654 persons paid 5*s*. each for admittance; on Tuesday, a damp and doubtful morning, after a heavy rainfall during the night, 7064 persons paid 2*s*. 6*d*. each. The yard was in a very wet and miserable plight, but the authorities did what was possible to make dry footpaths here and there where it was wetted, by means of planks and straw. On Wednesday, 11,514 paid half-a-crown—weather still cold and dull and showery, land still soft and marshy. On Thursday, up to 2 P.M., 42,994 had paid a shilling each to see the show—weather fine, and footing firmer! These are better than the Oxford figures. The visitors on that occasion throughout the week were about 78,000 in number. Here we have a total of 64,000 already at 2 P.M. on Thursday, and a fair probability, therefore, that the total of the week may reach 100,000.

NOTEWORTHY AGRICULTURISTS.

MR. JOHN BENNETT LAWES.

A MEMOIR of Mr. Lawes is a history of successful agricultural investigation during the past quarter of a century—such as no other time or country offers. We can, however, give but a scanty outline of his life and labours here.

Mr. J. B. Lawes was born in 1814, and on the death of his father, in 1822, succeeded to the estate of Rothamsted, in Hertfordshire. He was educated at Eton, and at Brasenose College, Oxford, where he remained from 1832 to 1835; and he afterwards spent some time in London for the purpose of the further study of chemistry. He took possession of his property at Rothamsted in October, 1834, and at once instituted experiments in agricultural chemistry. He studied with great interest the researches of De Saussure on vegetation, and sought to apply his scientific knowledge to the solution of questions affecting practical agriculture. Among other subjects, his friend and neighbour, the then Lord Dacre, particularly directed his attention to the fact that bones, which proved so valuable as manure on some lands, were quite or almost useless on others. Several hundred experiments were made, some upon various crops in the field, and others with plants grown in pots, in which the constituents found in the ashes of plants, as well as others, were supplied in various states of combination.

Of all the experiments so made, those in which the neutral phosphate of lime in bones, bone-ash, and apatite, was rendered soluble by means of sulphuric acid, and the mixture applied for root crops, gave the most striking results. The results obtained on a small scale in 1837-8-9, were such as to lead to more extensive trials in the field in 1840 and 1841, and to the taking out of a patent early in 1842.

In 1843 Mr. Lawes established large works in the neighbourhood of London for the manufacture of the manure now generally known under the name of superphosphate of lime; and it is understood that, after a period of nearly 30 years, the amount manufactured at Mr. Lawes' works alone is now more than 40,000 tons annually. Mr. Lawes had for some years engaged the assistance of a young chemist, Mr. Dobson, who, on leaving Rothamsted in 1843, was succeeded by Dr. Gilbert, in conjunction with whom a systematic series of agricultural investigations in the field, the feeding shed, and the laboratory, was undertaken.

JOHN BENNETT LAWES, F.R.S., F.C.S., ETC.

An old barn was fitted up as a laboratory, but this in time proved insufficient for the requirements of the investigations that were carried on. About the year 1854 a considerable sum of money was subscribed as a testimonial to Mr. Lawes for the services he had rendered to British Agriculture; and it was proposed to him by the committee to expend the amount in plate, when he at once expressed a wish that, instead of this, it might be devoted to providing a new laboratory, which would enable him the better to prosecute and extend inquiries, the publication of the results of which would be the best return he could make for the honour that had been conferred upon him. The results of the Rothamsted investigations, from 1843 up to the present time, 1871, will be found in the Journal of the Royal Agricultural Society of England, the Reports of the British Association for the Advancement of Science, the Journal of the Chemical Society of London, the Proceedings and Transactions of the Royal Society of London, the Journal of the Society of Arts, the Journal of the Horticultural Society of London, the *Edinburgh Veterinary Review*, the Reports of the Royal Dublin Society, the *Philosophical Magazine*, the *Agricultural Gazette*, the *Chemical News*, some official reports, and elsewhere. Mr. Lawes was elected a Fellow of the Royal Society in 1854, and in 1867 the Royal Medal was awarded to him, conjointly with Dr. Gilbert, by the Council of the Society. Mr. Lawes has also received a gold medal from the Imperial Agricultural Society of Russia, and a medal from the Society of Arts.

We append to this short notice two passages, one the address of the President of the Royal Society on the presentation of a Royal Medal to Mr. Lawes and Dr. Gilbert; the other a portion of the speech which Mr. Lawes delivered on receiving his present laboratory at the hands of the subscribers to that gift.

1. *Sir Edward Sabine*, Pres. R.S., 1867.—"Messrs. Lawes and Gilbert have been engaged for the last twenty-four years in a systematic series of researches upon agricultural chemistry, with a view of determining, by exact experiments, the principles, chemical and physiological, which are involved in the general and fundamental processes of successful agriculture.

"These investigations have embraced:—

"1. Researches into the exhaustion of soils, including experiments on Wheat, on Barley, on Turnips, on Clover, and leguminous crops.

"2. Researches on the principles of rotation and fallow.

"3. On the mixed herbage of grassland.

"4. On the process of vegetation generally, including researches upon the action of manures.

"5. On the origin of nitrogen in plants (Phil. Trans. 1861).

"6. Researches on the feeding and fattening of animals (Phil. Trans. 1859).

"It is difficult to give in a short compass the practical conclusions arrived at from a series of investigations upon a number of subjects each so complicated in its nature, so important in its object, and continued systematically over so protracted a period. At the time your medallists commenced their experiments it was generally supposed that certain saline bodies, or so-called mineral constituents, were essential to the growth and development of the plant, and that such substances must be furnished to it by the soil. The necessity of a certain quantity of nitrogen was also recognised; but it was imagined, since wild plants could thrive without any artificial supply of nitrogen, that a sufficient amount of this element existed in the atmosphere (in the form chiefly of salts of ammonia) to render it unnecessary to take any steps for increasing this supply; and it was supposed that the fertility of a soil might be maintained for an indefinite period if the different mineral constituents carried off by the crop were annually returned in due quantity as mineral manure to the soil.

"This mineral-ash theory, as it was termed, was proposed by Liebig; but it has been proved by Messrs. Lawes and Gilbert to be erroneous, as it embraces a part only of the truth.

"The field experiments upon which this conclusion rests were commenced in 1843. Fourteen acres, divided into about twenty plots, were devoted to experiments upon Wheat, and seven acres, divided into about 24 plots, to experiments upon Turnips. Subsequently similar experiments were made upon Beans, Clover, Barley, and the mixed herbage of permanent meadow land. The general plan of the field experiments consisted in selecting fields in a condition of agricultural exhaustion, that is, in a state in which a fresh supply of manure was needed to fit the soil for the growth of another crop. Upon this exhausted soil each of the most important crops in the rotation were grown, year after year, upon the same spot, both without manure and with many different descriptions of manure, each of which was, as a rule, applied year after year to the same plot. By this means it was possible to determine the point of relative exhaustion or excessive supply of any of the constituents of the manure.

"Wheat, for example, was grown year after year upon the same land for 24 years; Turnips (with an interval of three years) for 25 years; and in the experiments on rotation (which comprised the 'four-course' of Turnips, Barley, leguminous crop [or fallow], and Wheat) the last of the fifth 'four-course' rotation was completed, comprising 20 years in all.

"Parallel with the field experiments, records relating to the fall of rain, atmospheric pressure, temperature of the air, and of the dew-point, were kept or collated, so as to enable the observers to ascertain the effects of the varying season upon the quantity and quality of the field produce.

"It soon became evident that much remained to be done in perfecting the methods of chemical analysis before comparative analyses could afford much assistance in determining the relative productiveness of different soils; and to this object our medallists addressed themselves both with skill and success.

"The practical value of these experiments may be seen from the fact that, taking the results of twenty years, the annual average produce in bushels of Wheat per acre without manure was 16¼, with farmyard manure exactly double, and with artificial manures 35¾ bush., the latter being considerably more than the average produce of Great Britain when Wheat is grown in the ordinary course.

"The produce of Wheat grown successively on the same plot without manure scarcely altered from year to year, whilst that of the Turnips became reduced to nothing; the effect of a manure of superphosphate being most marked upon the Turnips, whilst the employment of salts of ammonia mixed with alkaline salts and phosphates was most suitable for Wheat, although these are not the manures indicated by a simple analysis of the ashes of the two crops. The authors remark, 'Indeed the whole tendency of agricultural investigation seems to show the fallacy of alone relying upon the knowledge of the composition of a crop, as directing to the constituents probably more especially required to be provided for it by manures; and rather that the elucidation of agricultural principles must be looked for from a due consideration of vegetable physiology as well as chemistry, of the special functional peculiarities and resources of different plants, as well as their actual percentage composition.'

"The investigation into the feeding of animals was even more laborious; but it was a necessary complement to the experiments upon the growth of crops. It was directed to the solution of the following among other important problems:—

"1. The amount of food consumed, and its several constituents, in relation to the production of a given live weight, for different animals.

"2. The comparative development of the different organs in the fattening of animals, and their composition.

"3. The relation of the manure produced, both in quantity and quality, to the food consumed.

"4. The expenditure or loss, by respiration and exhalation of the animal, considered as a meat-producing and manure-making machine.

"It is impossible to go into detail into this portion of the inquiry, the principal results of which are given in a paper published in the Philosophical Transactions for the year 1859.

"It may be sufficient to sum up these remarks by stating that the various inquiries, to which a brief reference has been made, have been conducted with a skill, perseverance, and success which have placed their authors, by general consent, at the head of those who have pursued this important branch of experimental inquiry."

2. Extract from speech delivered July, 1855 (Earl of Chichester in the chair). Mr. LAWES said:—

"Gentlemen, I will now explain to you to what purpose we intend to devote your building, and to show you to what extent science is most likely to be beneficial to agriculture. The great chemists of old had an opinion that science could do but little in aid of agriculture. Sir H. Davy, one of the most eminent of that class, wrote a book on agricultural chemistry, but I am not aware that any improvement resulted from it. If you consult works on agriculture previous to 1840, you will find no mention of the terms commonly used now. The French and Germans were the first to apply the science, and they made progress in the chemistry of agriculture. Little attention was paid to the subject till Baron Liebeg's works were published in 1840, and this aroused the agriculturists of this country. Allow me to say that some writers on chemistry have exaggerated its importance, which has been the means of retarding rather than advancing the matter. On looking at the great advantage which chemistry has conferred on manufactures, some have gone so far as to say that the same result would arise to agriculture; but we must not be dazzled by such predictions. There is an essential difference between manufactures and agriculture, which it is necessary for us to bear in mind. The success of our manufactures arises from a combination of skill and capital with an abundance of such things as iron and coal. I am not prepared to deny that our agriculturists possess equal skill and equal capital; but where is the abundance of their raw material? Where are guano beds in Great Britain? We have large deposits of phosphate of lime; but we are deficient in that very important article—ammonia. If science would give us an abundance of necessary manures at very low prices, it would create as great a revolution in agriculture as it has done in manufactures. But even then there would still remain a great distinction in favour of manufactures. Give the manufacturer a great and continued demand for his goods, and there is no limit to his productive powers. He can erect fresh buildings: he can construct new steam-engines: he can obtain the assistance of more factory girls. But even if we had an abundance of excellent manures at a cheap rate, our productive powers would still be limited by climate. The sun is our steam-engine, the showers are our factory children. These are not at our command—they will not do our bidding; and therefore, with all the advantages that science can give us, we must not expect the productive powers of agriculture to increase in the same ratio, and with the same certainty as the productive powers of manufactures. Agriculture, as practised in Great Britain in the present day, is a very different process, requiring more skill and capital, than agriculture as practised in other nations. In those countries where land is cheap and abundant, and where a man has merely to cast his seed into the earth, without any previous preparation, and pay no more attention to it till the harvest time, when he may go and reap 40 bush. of Wheat or 100 bush. of Indian Corn per acre, it would be a mockery to offer the assistance of science to agriculture. But in a country like this, where land is scarce and fetches high rents, where the land requires a great deal of preparation, and where labour is dear, the application of science is absolutely necessary. The process of corn crops drawing the land, and the properties of various manures, are involved in the science of agricultural chemistry; and the knowledge on these subjects which is to be obtained from that science should enable us to conduct our operations with certainty and success. I have often received visits from practical agriculturists, some of whom have come from a great distance, and very glad I have been to see them. One question, however, they invariably put, but which I would they should not put. It generally comes out where the finest crop is found; the question is, 'Does it pay?' Of course, I cannot very well say 'yes,' but if I give a negative, then my friend, whoever he may be, is apt to think, 'Ah, it's all very well for you who have got a little money to spare for such pursuits; but it is nothing to me.' But I must explain to you, gentlemen, that the object of these investigations is not exactly to put money into my pocket, but to give you the knowledge by which you may be able to put money into yours. Science is not to do away with a rotation of crops; but to enable you to judge of the properties of all your several crops in rotation; and whether it would be better under certain circumstances to grow a second, third, or even fourth crop on the same land, or to follow your usual course. Science will not enable you to grow two grain crops in one year, but it may give you such information respecting the principle of manures as will enable you to turn over your capital in a much smaller space of time than you do at present. A great deal of your capital is placed in the land, where it lies dormant for a long time; but science may correct that evil by enabling you to put the right manure in the right place. It is sometimes said the farmyard manure possesses an advantage over artificial manures, in its great lasting qualities; but this is a fallacy. The lasting qualities of farmyard manure are not an advantage; for it is getting back your money by instalments, instead of getting it all at once. What is your farmyard manure, but so many tons of oilcake and Turnips? If a man owed you £1000 would you prefer having it all at once, or in ten instalments of £100 a year? The artificial manure pays ready money; but the farmyard manure pays by instalments. The application of science to feeding is only another phrase of the same principle. We give you that knowledge which will enable you to pursue that course which would be most profitable to you. Gentlemen, it is not the object of science to interfere between landlord and tenant; but science will impart to the landlord a good knowledge of the qualities of his own land, and it will enable the tenant to turn to the best account the floating capital which he has embarked in the soil. Gentlemen, when investigations such as these have occupied our attention many years, we are led to regard them in some way as our children, and are unwilling to desert them or leave them destitute at the time of our death. This infant of mine for which you have built this magnificent abode, combines with the helplessness of the babe the appetite of a giant! The consumption is only limited by the supply. When, some 12 years ago, I delivered it into the arms of its present nurse, Dr. Gilbert, it was struggling for an existence. Under his tender management it has arrived at its present thriving condition. The interest in its welfare is not confined to this immediate neighbourhood, but extends even to foreign countries, for it was only the other day, in a work published in Germany, that my child was pronounced to be dead, and it was stated that Dr. Gilbert had been called in to attend its funeral. Gentlemen, you have had opportunities of seeing that this rumour is without foundation, and that the infant is in a thriving condition. I hope the only corpse we shall have to bury is that old building on the hill; the vitality of it has been transferred to this new building; and I hope feelings of gratitude to you for your kindness this day, will cause such an electric current to run through its veins as to stimulate it to more active growth, and a more flourishing existence. Money, although a very important element in the conduct of these investigations, is not the only one. There must be a taste for scientific pursuits, which alone can give them vitality. If our tastes and habits were hereditary, and descended to our children in the same way that our property does, I should have no anxiety on this subject with regard to the future. But I cannot conceal from myself the fact that the pursuits of the father are very rarely the pursuits of the son; and glad should I be if my son should prove an exception to this rule. So great is the amount of accumulated matter which I have not hitherto published, that I consider it would take at least five years to place it all before the public. I have, therefore, although the subject is surrounded by many difficulties, provided that in the event of my death these investigations shall be still carried on, and the reports of what we have already done placed before the public, for a term of at least 5 or 7 years. A variety of circumstances prevented me doing more than this; but I cannot conceive that the agriculturists of this country, who have shown so great a sympathy with the experiments I have carried on, will ever allow the building to fall into disuse. Gentlemen, I should be most ungrateful were I to omit this opportunity of stating how greatly I am indebted to those gentlemen whose lives are devoted to the conduct and management of my experiments. To Dr. Gilbert more especially I consider a debt of gratitude is due from myself and from every agriculturist in Great Britain. It is not every gentlemen of his attainments who would subject himself to the caprice of an individual, or risk his reputation by following the pursuits of a science which has hardly a recognised existence. For 12 years our acquaintance has existed, and I hope 12 years more will find it continuing. Gentlemen, to you who have left your several important occupations to assemble here to-day, as well as to those who have subscribed to the testimonial, but were unable to be present, I return my most sincere thanks. The scientific investigations which I have carried on will henceforth assume an importance in my eyes not hitherto belonging to them. Whether they are eventually to become the guiding star to agriculturists or to sink into insignificance before others more grand and comprehensive, my gratitude to you will be the same; and a remembrance of your kindness to me to-day will be engraven in my heart until my eyes shall become dim, and my memory shall cease to serve." *Herts Guardian*, *July* 28, 1855.

[We hope in a few weeks to place in our columns a portrait of Dr. GILBERT.]

OUR LIVE STOCK.

CATTLE.

THE Wateringbury sale on the 5th inst. was undoubtedly a great success. There was not a large company, but those who were present meant buying, and the prices were very high, especially when the age of the stock is taken into account. After the first two lots (see below) had been disposed of at fair prices, *Specimen 2d* by 15TH GRAND DUKE, and of the "Charmer" tribe, a thick, deep heifer, appeared, and was knocked down at 120 gs. to Mr. W. Angerstein. *Baroness* (lot 6) by 15TH GRAND DUKE, and of the *Cathleen* by CALIPH tribe, was bought by Mr. W. Lancaster at 150 gs. *Charming Duchess*, by the same bull, and of the "Charmer" family, was purchased by Mr. J. W. Larking for 70 gs.; but we have not space to mention prices below the 100 gs. in this remarkable sale, and must rest content by referring our readers to the complete list given below. *Duchess of Brailes* by DUKE OF BRAILES (23,724), and of the *Aline* by SNOWBALL sort, made 105 gs., and went into Mr. Angerstein's hands; and Mr. J. W. Larking gave the same sum for *Specimen 2d* by 15TH GRAND DUKE. A "Sweetheart" heifer, *Twin Duchess 5th*, by 15TH GRAND DUKE, brought 185 gs. from Mr. Angerstein; and finally *Oxford Fawsley 3d* by GRAND DUKE OF KENT (26,289), a very fat and not by any means faultless heifer, not more than six months old, brought the astounding sum of 310 gs. from Mr. W. Lancaster. *Lady Bates* by 15TH GRAND DUKE, was purchased by Colonel Kingscote at 160 gs.; *Baroness Fawsley*, by the same bull, was bought by Mr. Sartoris for 125 gs.; *Charming Lady*, by the same bull, for 215 gs., by Mr. H. Brassey; and *Charming Duchess 2d*, by the same bull, for 190 gs., by Mr. H. J. Sheldon. Such were some of the highest prices given at this remarkable sale, the total proceeds of which amounted to £3264 9*s*. The average over the 44 animals sold was £74 3*s*. 10*d*.; the average over 32 females being £90 10*s*., and over 12 bulls £30 14*s*. 3*d*.

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Lady Louisa's Duchess 2d	1868	67	Mr. John Thornton.
Thorndale Garland	1869	4	Mr. D. Armstrong Peckham).
Specimen	1869	120	Mr. W. Angerstein.
May Duchess 2d	1869	34	Mr. J. B. B. Elliot.
Rose of Kent	1869	49	Mr. D. Mackinder.
Baroness Fawsley	1869	150	Mr. W. Lancaster.
Charming Duchess	Jan., 1870	70	Mr. J. W. Larking.
Fawsley 11th	Jan., 1870	44	Mr. Gipps.
Chaplet	Jan., 1870	35	Mr. C. Collard.
Duchess of Brailes	Mar., 1870	105	Mr. W. Angerstein.
Specimen 2d	April, 1870	105	Mr. J. W. Larking.
Rose of Spring	April, 1870	44	Mr. J. B. B. Elliot.
Lady Louisa's Duchess 3d.	May, 1870	35	Mr. C. A. Barnes.
Duchess of Brailes 2d	May, 1870	61	Mr. W. Angerstein.
Twin Duchess 5th	Aug., 1870	185	Mr. W. Angerstein.
Lady Gwynne	Oct., 1870	90	Mr. C. Howard.
Oxford Fawsley	Oct., 1870	310	Mr. W. Lancaster.
Lady Bates	Nov., 1870	160	Colonel Kingscote.
Baroness Fawsley 2d	Nov., 1870	125	Mr. F. Sartoris.
Lady Flora 3d	Dec., 1870	40	Mr. Gipps.
Lady Superior 3d	Dec., 1870	31	Mr. Kingsnorth.
Sweet Jenny Jones	Jan., 1871	46	Mr. Gipps.
Charming Lady	Jan., 1871	215	Mr. H. Brassey.
Countess 3d	Feb., 1871	70	Sir G. R. Philips.
Chaff	Feb., 1871	32	Mr. White.
May Duchess 4th	Feb., 1871	27	Mr. B. Hale.
Charming Duchess 2d	Feb., 1871	190	Mr. H. J. Sheldon.
February Butterfly	Feb., 1871	26	Mr. F. Cobb.
Columbia's Duchess 2d	Mar., 1871	58	Mr. C. Howard.
Duchess of Brailes 3d	May, 1871	60	Sir G. R. Philips.
Rose of May	May, 1871	25	Mr. Kingsnorth.
Bulls.			
MASTER KNIGHTLEY	1869	50	Mr. D. Armstrong.
HIS GRACE	1869	30	Mr. Philip.
3D DUKE OF KENT	Oct., 1870	52	Mr. Gipps.
THE RED KNIGHT	Dec., 1870	25	Sir G. R. Philips.
GENEVA DUKE	Dec., 1870	51	Mr. F. Cobb.
SHAKESPEARE	Mar., 1871	25	Mr. J. Russell.
JANIZARY	Mar., 1871	23	Mr. Kingsnorth.
PARTISAN	April, 1871	16	Mr. Kingsnorth.
MILCOTE	April, 1871	21	Mr. Pitcher.
BELLEVILLE	April, 1871	18	Mr. Ford.
YOUNG BUTTERFLY	April, 1871	16	Mr. Benstead,
GENERAL	May, 1871	25	Mr. F. Wythes.

—— The Smeeth sale of 38 Shorthorns, comprising Mr. F. Marton's entire herd, was conducted by Mr. Strafford, the day after the Wateringbury sale. The result was a general average of £25 15*s*. 7*d*. Twenty-nine cows made £28 0*s*. 6*d*., and nine bulls averaged £18 10*s*. each. No high prices were given, none of the animals fetching as much as 50 gs.

—— We have received a catalogue of some well bred Shorthorns, which will be sold by Mr. Strafford, at Winterfold, on the 20th inst. These cattle are the joint property of Mr. Harward and Mr. Downing, of Turner's Hill, and comprise many specimens of well-known and much esteemed families. Lot 2 is the first and oldest of eight representatives of the well-known "Bates Blanches," tracing back to *Blanche* by BELVEDERE. There are also five Kirklevingtons, three members of the "Surmise" tribe, six Keturahs, of Didmarton notoriety, a *Lady Waterloo*, by 3D DUKE OF CLARO, and from *Waterloo Cherry*, by CHERRY DUKE 4TH. *Joan of Arc* and *Clara Novello*, both by CUPID (14,359), head a somewhat numerous group, and there are other well-bred animals. The bulls recently used have been of the most excellent sort, namely, 3D DUKE OF CLARO (23,729), 5TH DUKE OF WHARFDALE, and 8TH DUKE OF GENEVA.

—— On the 19th inst. Mr. Strafford will sell, without reserve, 56 animals from the Queen's herd at Windsor, 15 being bulls. The cows are said to be extraordinary breeders and good milkers.

SHEEP.

LAST week our notice of the dispersion of the Merton flock was scarcely complete. We append a list of some of the most important prices given. The yearling ewes were put up in pens of five, and were purchased as follows:—One pen of 5, Duke of Richmond, 10 gs. each; 1 do., Sir G. Musgrave, £5 10*s*.; 1 do., J. White (for Australia), £5; 1 do., Mr. Banks, for the Pacific Steam Navigation Company, and Peru, £14 each; 1 do., Mr. E. Wilson, £8 each; 1 do., H. Gorringe, £8; 1 do., the Prince of Wales, £10; 1 do., Hon. E. Kenyon, £9; 1 do., E. Wilson,

£9 10*s.*; 1 do., H. Stone, £10; 1 do., Lord Sondes, £7 10*s.*; 1 do., £10 10*s.*, H. Gorringe; 1 do., £8, the Prince of Wales. In the ram sale Lord Sondes bought a 3-shear, commended at Oxford, for 25 gs. 1 3-shear was sold for 65 gs. to Mr. J. J. Coleman, M.P.; 1 do., at 25 gs., Hon. E. Kenyon; 1 2-year-old, 40 gs., Mr. Wachter; 1 do., 50 gs. (1st prize yearling at Oxford), Prince of Wales; 1 do., 84 gs. (2d prize yearling at Oxford), Lord Portsmouth; 1 do., 60 gs., Sir W. Throckmorton. In the shearling class, 1 sheep was sold at 180 gs. to Mr. H. Chappel; 1 do., at 35 gs., J. White; 1 do., 41 gs., Mr. Turner; 1 do., 30 gs., Mr. E. Wilson; 1 do., 100 gs., Prince of Wales; 1 do., 45 gs., Mr. G. W. Homer; 1 do., 35 gs., Duke of Portland; 1 do., 34 gs., Duke of Portland. Such were some of the highest prices in a ram sale which averaged £27 13*s.* 2*d.* upon 19 old rams and £22 upon 65 shearlings. Two-year-old ewes fetched from 70*s.* to 175*s.* per head, the highest figure being given by Lord Portsmouth, who also secured another pen of ten at 145*s.* each. Three-year-old ewes made from 60*s.* to 125*s.* each, the last named price being given by Mr. J. J. Coleman, M.P., and 100*s.* by Lord Sondes. Mr. W. Taylor gave 120*s.* each for a pen of five full-mouthed ewes; Mr. G. Smith gave 160*s.* each for a second pen, and a third was secured at 140*s.* by the Prince of Wales. Even broken-mouthed ewes went at from 55*s.* to 75*s.* each. The highest prices for ram lambs were as follows:—17 gs., Mr. Delome; 20 gs., Mr. Foljambe; 20 gs., Mr. Majoribanks; £20, Mr. N. Grenville; £20, Mr. Seaward. Most of the lambs made from 4 to 6 and 8 gs. each, while others were sold as low as 45*s.* Ewe lambs commenced with the sale of lot 1, a pen of 5, at 77*s.* 6*d.* each, to Mr. Haar; three pens were sold at 80*s.* each, and others brought from 45*s.* to 60*s.* each.

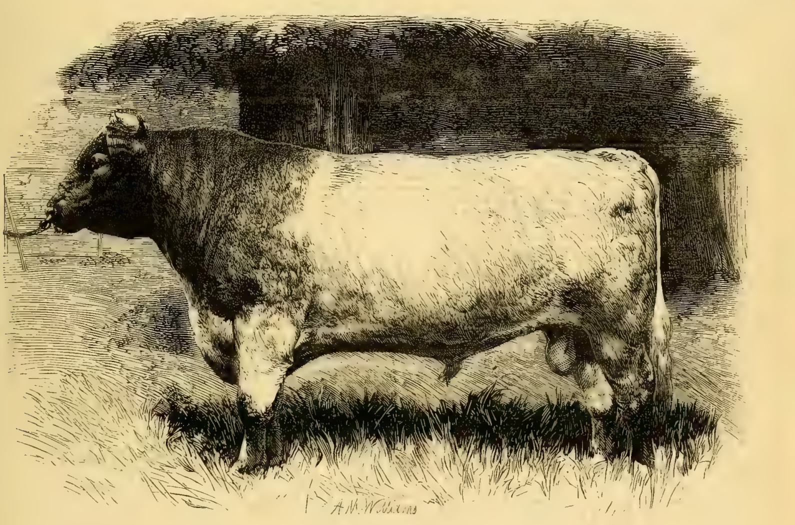


FIG. 193.—TELEMACHUS (27,603).

PIGS.

MR. SWANWICK, of the College Farm, Cirencester, has, among other good sales, just disposed of his 2-year-old prize boar at Wolverhampton to Mr. Craig, of Edmundton, Ontario, Canada, for 65 gs.; also the 1st prize boar in the young class for £30, to Mr. Cochrane, of Canada; and the 2d prize in the same class for 30 gs., to Mr. Snell, of Edmundton, Canada.

TELEMACHUS.

TELEMACHUS (27,603), the Shorthorn bull whose portrait is given above (fig. 193), is the property of the Marquis of Exeter, and was calved on April 13, 1868. He is by NESTOR (24,648) of the Gwynne tribe, and from *Louisa 9th* by the pure Bates bull PRINCE ALBERT (18,579). His grand-dam was by BARON FARNLEY (14,129), 2nd his great-grand-dam by 3D DUKE OF YORK (10,166). TELEMACHUS is of a pleasing and gay roan colour. His head is not strongly masculine in character, and has even been accused of being cow-like, but we are informed that he has recently lost hair from his head, which it is hoped he will regain. He is of excellent symmetry, is very well made over the shoulders, is good in the girth and middle, but loses a little at the loin, which might have been better covered. He has just crowned a long series of honours, which we append, by taking the 2d place at Wolverhampton in a remarkably good class, in which the celebrated EDGAR, bred by Mr. Saunders, of Nunwick, took the lead. Mr. Walton; of Burghley Park, thus writes to us:—

"I bought his dam at Peterboro', at a sale held in the market there by Mr. Carr during the cattle plague restrictions; and she was bred by Mr. Emmerson, Over Dinsdale, Darlington. We put her to our Gwynne bull NESTOR, a first-rate sire, as all his stock prove. NESTOR is by MENTOR, who on his dam's side is of the old Burghley blood (known here nearly 60 years); MENTOR was by the celebrated bull 4TH DUKE OF THORNDALE (17,750), who was bought by the late Marquis of Exeter, when three years old, for 410 gs.; and after five years' service here was sold at the sale in March, 1867, after the late Marquis' death, for 440 gs. (when eight years old),—a thing unparalleled in the history of Shorthorns.

TELEMACHUS WON

		£	s.	d.
1869.—1st prize, Northampton	.. .. ..	£15	0	0
,, 2d ,, Peterborough	.. .. ..	2	10	0
,, 3d ,, Lincoln	.. ..	3	0	0
,, 1st ,, Rutland	.. ..	10	0	0
1870.—1st ,, Warwickshire	.. .. ..	10	0	0
,, 1st ,, Northamptonshire	.. ..	15	0	0
,, 1st ,, Peterborough	.. .. ..	10	0	0
,, 1st ,, Lincolnshire	.. .. ..	15	0	0
,, Extra prize at ditto for best bull in Classes 2, 3, and 4	.. ..	15	0	0
1871.—1st prize, Warwickshire	.. .. ..	10	0	0
,, Extra prize best bull in the show	.. ..	10	0	0
,, Essex show, 1st prize in All England Class..	.. ..	20	0	0
,, And President's Cup, for best in show, male or female, value	.. .. ..	105	0	0
		£240	10	0

THE WOLVERHAMPTON MEETING
OF THE
ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

WE refer to a leading article for general remarks on a meeting which has been held with great success, despite considerable difficulties of weather; and we proceed here at once to describe the several sections which have made up the very remarkable show just closed.

HORSES.

The exhibition of horses at the Royal show at Wolverhampton forms not the least interesting feature of the meeting, and probably receives closer attention from the majority of visitors than all other classes united. Around the ring on Monday last, gazing with all their eyes, hung a crowd of all classes, young and handsome women, their elders and protectors, besides hosts of men—from the bishop of the diocese downwards—all of whom watched with the liveliest interest the various animals as they came before the judges. Whilst the latter were patiently discharging their laborious task, the public earnestly scrutinised, and formed silent opinions upon the animals. When the verdict went forth, and the distinctive badges were affixed to the victorious competitors, occasional murmurs might be heard in the crowd, as individuals assented or differed with the fiat of the judges. With but few exceptions, their selections met with approval, and these gentlemen are fairly entitled to praise for the care and excellent judgment which marked their decisions. In cases where exhibitors met with disappointment, exclamations against the choice of the judges might be heard, and accusations, too, of their *penchant* for breed or quality when an animal lacking these points was passed over.

There is no question that men's judgments are influenced by their tastes, needs, and requirements, and if gentlemen who ride 12 stones have the selection it is ten to one that their choice will be a light weight beast. It might be well for the authorities to consider, in their appointments hereafter, whether judges should not be themselves a combination of light and heavy weights.

The 35 classes of horses represent some 246 animals, which is about 43 in excess of the number exhibited last year at Oxford. Some classes are not so well supported at Wolverhampton, to wit, "thoroughbred sires," others again surpass those shown at Oxford, and we may justly pronounce the exhibition of 1871 a greater success, as far as horses are concerned, than the show on the banks of the Isis.

The class list opens with agricultural stallions, foaled before January 1, 1869 (not qualified to compete as Clydesdales or Suffolks).

Mr. N. Welcher takes 1st prize with "Honest Tom," an animal of great strength and bone, with wonderful arms, back, and loin. You wonder how a horse with his characteristics has found his way to Westtoft, Norfolk, a locality celebrated for beasts of a far different stamp. The 2d prize falls to Mr. J. Manning for a chestnut, "Young Champion,"—not badly named, for it will take a good one to beat him. There is a weighty grey named "A 1," and a thick cobby iron-grey, No. 1, named "Lion," which bear inspection, besides one or two others that go to make up a very decent class. Class 2—stallions, under the same rule, but only two years old,—and some very nice ones there are amongst them. No. 16, "Captain," owner Mr. Geo. Street, of Mauldon, Beds, is a cobby, fine-coloured beast; and the 2d prize horse also deserves praise, but we thought some of the animals small.

Clydesdale stallions next claim attention. Class 3 gives us five animals foaled before 1869. The next class, for 2-year-olds of this breed, has no entries. Her Majesty the Queen sends a grand horse, “Sandy,” with wonderful back and loins and great arms, but he fails to attract the attention of the judges, who bestow 1st honours on Mr. Henry Tomlinson’s “Young Lofty,” and right well we agree with them, but not so in the award of 2d favours to Colonel Lloyd Lindsay’s “Prince Albert,” a sour-headed beast we had no fancy for.

In Class 5, six Suffolk stallions, foaled before 1869, enter the arena, and exceedingly fine fellows they are. But there is the same old fault—too much top-weight for the legs which carry it. The 1st prize, “Cupbearer,” owned by Mr. R. Garrett, of Saxmundham, is a huge beast, with indifferent hocks, anything but good forelegs, and not so deserving merit as “Hercules,” exhibited by Mr. Badham, who receives 2d honours for an animal of better proportions and plenty of bone. The 3d prize goes to Baytham Hall, Suffolk, for “Bismarck,” a lofty colt, with good body and clean legs. The Stonetrough Colliery Company show a grand beast, light in colour, with a finely-turned neck, and good lines generally, in character not unlike a sculptured outline of ancient days.

The next class, No. 6, for Suffolk stallions, foaled since 1869, presents three capital animals, and the judges had no little difficulty in selecting the most worthy. The choice at last fell on Lieut.-Colonel Maitland’s “Heir Apparent,” a beast with an extraordinary back and loin, but otherwise somewhat cumbersome, and to our mind not so good or deserving as No. 30, a horse with great bone and liberty and good feet; and though named “Patriot,” rumour declared him not pure, nor did he appear quite the type of a Suffolk Punch,—a character thoroughly well supported by the 2d prize horse “Emperor,” the property of Mr. Badham, of Sudbury. The thorough-bred stallions in Class 7 are both fewer and inferior to those shown at Oxford in 1870. We miss the contributions of Lords Craven and Norreys, and several others, and wonder why a spot so central as Wolverhampton has failed to attract a larger number of thoroughbred sires. The 1st prize goes to Mr. J. Casson, of Carlisle, for “Sincerity,” an old stager of some 13 summers, with many good points; and Mr. John Watson, of Kidderminster, takes 2d, with a spanking bay with black legs, “Blinkhoolie.” We were glad to see our old friend “Laughing Stock,” and congratulate my Lord Coventry on possessing a nice little animal like “Umpire;” we have, however, no regard for “Protection,” which Mr. Stewart sent from Saint Bridge. Class 8, for stallions not exceeding 15 hands, formed a most creditable collection, and caused no little trouble to the judges, many of the animals being so evenly matched it was no easy task to define which was most worthy. Shropshire receives the 1st prize, Mr. J. Lockhart, of Bromfield, most properly getting it for his clever breedy little beast “Dick Turpin,” a capital mover and pretty well grown. The 2d prize goes into Norfolk, to Mr. B. Mitchell’s “Fireaway,” also a fine mover, perhaps somewhat coarse in his hocks, but this colt has yet to furnish, and will come out well, or we are mistaken; which cannot be said of the 3d prize horse “Cleartheway,” with his straight shoulders and bad forelegs. Mr. Beart’s “Ambition,” which received only commendation, we should have preferred for 3d honours, as possessing really better points. No. 44, “Young Quicksilver,” a cobby horse, moved well, but we did not like his shoulders; “Enterprise” is a particularly square beast, but is too long in his fetlocks; and his stable companion “Alonzo” lacks quality. The leaning of the judges being evidently towards breed and quality, animals devoid of these qualifications stood not the slightest chance, and bitter disappointment was both expressed and felt at some of the awards; our tendency being in favour of breed, we did not object to the decisions in this class on the whole.

Pony stallions not exceeding 14 hands, in Class 9, produced three competitors. Had there been ten times that number, Mr. Roundell’s beautiful brown “Sir George,” four years old, must have held the position assigned to him at Wolverhampton; anything more perfect than the shape and going of this little horse you could not see, and loud were the praises he received. His quick clever going raised him to the same position amongst the horses as Messrs. Aveling & Porter’s little busy engine obtained in the lists for traction-engines. Of course the 1st prize is in Mr. Roundell’s possession, the 2d being held by Mr. C. Groucock, of Wymondham, Norfolk, for a breedy chestnut, named “King Arthur,” with a capital middle piece, and good head and neck.

Fifteen agricultural mares, with foals at foot or in foal, competed in Class 10, and a lot of powerful, useful animals they were. Few had foals at their sides, which is to be regretted, as the intention of the Society is clearly for the encouragement of brood mares, and for this reason we object to the honours going to aged mares without colts, unless the prize be withheld until the foal is dropped, a rule which applies to other stock. The 1st prize goes to Mr. Henry Overman for a stylish, active, black 10-year-old, named “Diamond” (in foal), and no doubt she is an attractive, good beast, but we very much prefer the 2d prize mare, “Smart,” the property of Mr. Crowe, of Downham Market, Norfolk, with her grand walk and well-turned quarters, although she is nine years old (and in foal to Honest Tom). No. 62 “Beauty,” the property of Mr. Lamb, of Grantham, is a fine animal, with good points, somewhat of the Clydesdale type, but she is a gummy goer. Norfolk gets 3d honours with a mare, also named “Beauty,” owner Mr. Welcher, of Tofts, near Brandon, who deserves it for such a compact, well-grown beast. 66, “Diamond,” owner Mr. Salt, of Kirby Frith, Leicester, is a quick, active animal, with a good colt at foot, and she struck us as a not unlikely mare to breed a coacher. Many mares in this class were clumsy and loose, their only redeeming point being a useful foal by their side.

Class 11, Clydesdale mares, under same conditions as last, produces four competitors; although a nice lot, they do not approach animals which we still recollect with so much satisfaction at the Manchester show in 1869. Mr. Thomas Statter’s “Princess” worthily receives 1st honours, a compact mare with good limbs; and G. H. Head gets the 2d place with a coarse, bold-looking mare, whilst Col. Loyd Lindsay is nowhere with his “Polly,” notwithstanding her excellent feet.

Suffolk mares, under same rules as these Clydesdales, find five entries in Class 12, and we heard them pronounced excellent, and indorse the statement. The county which gives them the title in this instance, takes all the awards. The Executor of Mr. Capon, of Wickham Market, is 1st with “Matchit,” all over a good mare, and a grand mover. Col. Maitland gets 2d with a mare of great quality and length, with good bone and feet; Woodbridge receives a prize in Mr. H. Wolton’s “Diamond,” a lumpy, rolling beast, with great back and loin, and bad hind legs. Salop sends one specimen from Oswestry, a compact mare, with first-rate legs.

We observed with much pleasure that all the specimens of the Suffolk Punch, at Wolverhampton, had much better feet than heretofore has been the case; a still further improvement may be effected in both legs and body, and in such case the animal must become more popular in counties which now do not care for it. An interesting class follows next in succession, and we wish that we could speak of the animals entered in it with satisfaction. No. 13, for mares suitable for breeding hunters, in foal, or with foal at foot, has 10 competitors; the mares were not only weedy, but the few colts alongside them were the most miserable lot one ever saw. The 1st prize mare, “Lady Emily,” the property of Mr. Miller, of Lancashire, however, would not have attained the honour but for her creditable colt; the 2d prize animal, “Lady Byron,” from Leeds, though 18 years old, possessed a deal of character, and, despite her small bone, was rightly placed; the 3d prize animal, “Jassy,” from Salop, had no pretensions to a prize, with her low straight shoulders and small girth; whilst 95, a long roomy mare of the old school, with a fine colt at foot, left the ring, to our regret, without distinction of any kind.

The next class, 14, for mares above 14 hands, scarcely commends itself to notice. Mr. Henry Overman’s “Jenny Lind” takes 1st prize: she is powerful but rather under-bred, and the 2d prize, “Judy,” the property of Mr. Thomas Jones, does not attract one, with her straight action and upright shoulders; whilst 98, “Miss Dodson,” the property of T. Latham, of Wittenham, Berks, is a breedy animal, of good shape and make, for which she receives commendation.

Six mares compete in class 15, and they possess rather more merit than the animals in the two classes immediately preceding them. “Kitty,” the property of Mr. Coates, of Wenchcombe, with her wall eye, gets 1st, and “Bright Eyes,” from Southwell, receives the 2d, notwithstanding a plain head and bad loin. Mr. G. Stokes gets commended for his “Polly,” an active, light-carcased mare, that looks like a hunter.

Hunter geldings find seven competitors in Class 16. They are not an unuseful lot, and we agree in the selection which placed Mr. W. Armstrong’s sweet-topped horse, “Banker,” 1st. There is a deal of character in 110, a fine-coloured brown, standing over a lot of ground, an animal that can move; and “Roman,” the 3d prize horse, though small, has many merits; not so his neighbour, “Young Dagobert;” and No. 109, “The Emperor,” will be more correctly placed in the army than by the cover side.

Class 17, hunter fillies, exhibits six animals. “Luna,” the property of Mr. J. Moffat, of Cumberland, receives 1st honours, and well she deserves them, with her fine hock action. Mr. E. Philimore, of Prestbury Park Farm, Cheltenham, gets the 2d prize with a pretty beast, with good shoulders, but with a tail put on too low, and bad forelegs. The 3d prize is bestowed on Mr. Booth’s “Duckling,” a lady all over, with plenty of substance and good legs. The remainder, we thought, had few merits.

Hunter gelding or filly, four years old, Class 18.—13 out of 16 entries compete. Great interest is evinced by those around the ring in these animals, and the judges find it no easy matter to draft the favoured ones from those which cannot win. Captain Barlow, of world-wide celebrity, is here with some of the right sort, and we were glad to see him mounted on one of the competitors, although we do not understand why the Captain preferred “Beckford” to “Tregothnan;” the latter animal most deservedly secured 1st honours, and “Beckford,” not so properly, obtained the 2d; Gloucestershire gets the 3d place, and Staffordshire takes a commendation in “Blankney,” a well-bred, clever gelding, with good middle. Several in this class looked to advantage as they were extended. “Magic,” No. 135, and “Scale,” 128, galloped well.

As the next class entered the ring, the interest of the public seemed to have attained the utmost height. On one entire side the railings were thronged three deep; in the front rank sat many ladies. Class 19—hunters, mare or gelding, up to not less than 15 stones. Eleven competitors, but few with great claims. We speedily made our selection, as, indeed, we did in most of the classes, and we did not find that our view differed materially from the authorities. Mr. J. Booth, of Killerby, Catterick, Yorkshire, sustains his character by carrying off the 1st prize with “Banner Bearer,” a strong hunter all over; whilst Nottinghamshire receives 2d honours with “Borderer,” a good-looking chestnut, with great back and loin; and Mr. G. van Wart, of Birmingham, obtains the 3d distinction with “Loxley,” a gentlemanly mover. We did not care for “Cymbeline’s” shoulders, nor for the substance of the Coleshill gelding, and far less for the puddling going of “Ace of Clubs.”

Class 20. Hunter, mare or gelding, up to not less than 12 stones.—Of the eight competing we cared but for four, and the judges were of the same opinion. My Lord Coventry got a 1st for a hot-headed black, named “Bird-on-the-Wing,” breeder unknown, whilst the 2d prize went to “Loiterer,” a real specimen of the old school, not an everyday beast, and from the right source, too—Mr. S. J. Welfitt, a name well known. A nice, active mare, named “Witch” (No. 160), that gallops in good form, got 3d prize.

Class 21 contained but one entry—a pair of pretty-looking roans.

Roadsters, mare or gelding, Class 23, produced some 18 very meritorious animals, which taxed the efforts of the judges to no small extent. After a preliminary trial of the whole, eight were soon shelved, and then the business became anything but easy. The preference which these gentlemen possessed for quality and breed again evinced itself as they dwelt over Mr. Moffat’s breedy “Airy,” “Covet,” and “Land Agent,” not omitting Mr. Cook’s “Lizzie,” a pretty goer, as quick as a cat; and more especially evident in their selection of Mr. Fell’s black gelding, which looked more like winning a plate than hacking on the road. Encouragement of this character will never forward the idea of good roadsters, for which England was once so justly celebrated. The before-named animals of Mr. Moffat’s received honours—“Covet” obtaining 1st prize, and “Land Agent” 3d, whilst the 2d prize went to Mr. Fell’s gelding. 176, a black mare from Droitwich, was very attractive from her power and make, but she performed badly, although rumour said that such was not her habit. “Quicksilver,” a strawberry roan, was striking, from his well turned neck and throat and short strong back, but both these animals lacked quality, hence their fate. For roadsters, mare or gelding, above 15 hands, seven competed in Class 24, and they were very commendable animals too. The 1st prize went to “The General,” the property of Mr. North, Cambridgeshire; Mr. Badham, of Sudbury, took 2d; and Lancashire had 3d, in a nice grey gelding of Mr. Horrocks Miller’s.

Class 24, which next occupied the attention of the judges, would, but for the rain which had commenced steadily falling, have attracted the attention of many. It presented a very good selection of cobs, mares, or geldings, but there was a deficiency of bone and substance even amongst these. A remarkably stout active animal, with hogg mane, a fine goer, was passed over for 1st place because his head was somewhat large, but then he carried it well, and what matters? 198, a cream, with white mane and tail, had no right to the 1st prize, so all maintained; and Mr. G. Smith may congratulate himself on his luck, whilst Mr. Wiley must bear the defeat of his “Bob” as he can. A breedy gelding, “Camperdown,” from Southwell, Notts, received commendation, and nothing else deserved it.

Class 26, for ponies, produced nine specimens, which may be pronounced excellent. The 1st prize (212), “Jumney,” a grey, seven years old, a perfect model. He held himself as though he knew it, and all his movements were equally correct. The 2d prize, “Billy,” is a smart little pony, with a good back and loin. Minnie, a dark chestnut from Cardiff, failed to attract the judges, although she possessed lots of quality; and great was her owner’s disappointment.

Returning to the classes for agricultural horses, we find in 27 eight 2-year-old fillies competing. With but two exceptions, these animals are small, and it was Lombard Street to a China Orange that Mr. J. Linton took 1st honours with his “Princess.” Mr. Davis’ roan, “Darling,” is a nice-topped animal.

Clydesdale fillies in Class 28 brought four competitors; of these Her Majesty the Queen exhibited two. The 1st prize most deservedly fell to Mr. Parker, his animal having all the merits, whilst the remaining honours went to the Throne for beasts without any sufficient merit.

The last class that we need refer to is 30, for agricultural pair of geldings or mares. Six enter, and that number compete. Without any exception, they are the best lot perhaps that ever came together as far as weight, substance, and matching qualities go; but that the animals are such as an agriculturist would use is utterly improbable. With but two exceptions, they are perfect specimens of the dray-horse, and as such they should be disqualified to compete in this class. The judges were evidently of this opinion, as they conferred the ribbons on those pairs which exhibited the qualities we look for in horses for farm work. A grey mare, "Sensation," six years old, shown by Mr. Brierley, of Rhodes House, Middleton, Manchester, is as fine a specimen of a huge, active van-horse as could be seen; she moved like a pony, and when standing attracted the attention of every one.

The show of horses we have written upon must be pronounced exceedingly useful; and if it does not come up to the Manchester collection of 1869, it is, nevertheless, a great success, and must have given both pleasure and satisfaction to the visitors of the Wolverhampton meeting. It is unfortunate that the site on which it was held lay so low: the soil being boggy; the weather wet, nothing could be worse for an exhibition of live stock and steam machinery than the racecourse of Wolverhampton.

The following is the list of judges and their awards:—

JUDGES.—The Hon. G. E. Lascelles, Sion Hill, Thirsk; N. G. Barthropp, Hacheston, Wickham Market; J. E. Bennett, Bosworth Grange, Rugby; A. L. Maynard, Skimmingrove, Saltburn-by-the-Sea; J. H. Wood, Humberstone, Grimsby; D. Wright, Beal, Northumberland.

Agricultural Stallion, foaled before January 1, 1869 (*not qualified to compete as Clydesdale or Suffolk*)—1st, £25; 2d, £15; 3d, £5.—1st, William Welcher, of Mouse Hall, West Tofts, Brandon, Norfolk, HONEST TOM; 2d, John Manning, of Orlingbury, Wellingborough, YOUNG CHAMPION. Highly Commended: the Rev. John Hitchcock, of Chitterne All Saints, Heytesbury, LION.

Agricultural Stallion, foaled in the year 1869 (*not qualified to compete as Clydesdale or Suffolk*.—1st, £20; 2d, £10; 3d, £5.—1st, Thomas Corfield, of Cardington, Church Stretton, THE SHROPSHIRE FRIEND; 2d, Lawrence Ashcroft, of Mawdesley, Ormskirk, JOHN BULL; 3d, George Street, Maldon, Hamphill, Bedfordshire, CAPTAIN BROWN. Highly Commended: James Perkin, of Manstey Farm, Penkridge, YOUNG PRINCE.

Clydesdale Stallion, foaled before January 1, 1869—1st, £25; 2d, £15; 3d, £5.—1st, Henry Tomlinson, Blithford, Rugeley, YOUNG LOFTY; 2d, Lieut.-Colonel R. Loyd Lindsay, M.P., of Lockinge Park, Wantage, PRINCE ALBERT. Highly Commended: Matthew Read, of Beamish Barn, Chester-le-Street, WELLINGTON.

Suffolk Stallion, foaled before January 1, 1869—1st, £25; 2d, £15; 3d, £5.—1st, Richard Garret, of Carleton Hall, Saxmundham, CUPBEARER; 2d, George David Badham, of The Lawn, Bulmer, Sudbury, HERCULES; 3d, William Wilson, of Beylham Hall, Ipswich, BISMARCK.

Suffolk Stallion, foaled in the year 1869—1st, £20; 2d, £10; 3d, £5.—1st, Lieut.-Colonel Fuller Maitland Wilson, of Stowlangtoft Hall, Bury St. Edmund's, HEIR APPARENT; 2d, George David Badham, of the Lawn, Bulmer, EMPEROR. Highly Commended: James Algernon Pigot, of Peckingham Hall, Witham.

Thoroughbred Stallion, suitable for getting Hunters—1st, £50; 2d, £25; 3d, £10.—1st, Joseph Casson, Burgh-by-Sands, Carlisle, SINCERITY; 2d, John Watson, Waresley, Hartlebury, Kidderminster, BLINKHOOLIE; 3d, W. Taylor Sharp, of Baumber Park, Horncastle, SUFFOLK. Commended: the Earl of Coventry, of Croome Court, Severn Stoke, Worcestershire, UMPIRE

Stallion, above 14 *hands but not exceeding* 15 *hands* 2 *inches, suitable for getting Hackneys*—1st, £20; 2d, £10; 3d, £5.—1st, James Lockhart, of Culmington, Bromfield, Salop, DICK TURPIN; 2d, Benjamin Mitchell, sen., of Crome Hall, Downham Market, FIREAWAY 2D; 3d, Henry Bultitaft, of Bedwellhay Grange, Ely, Cambridge, CLEAR-THE-WAY.

Pony Stallion, not exceeding 14 *hands*—1st, £15; 2d, £10; 3d, £5.—1st, Henry Roundell, of Otley, Yorkshire, SIR GEORGE; 2d, Charles Groucock, of Stanfield Hall, Wymondham, KING ARTHUR; 3d, William Dew, of Wellfield House, Bangor, LLEWELYN.

Agricultural Mare, in foal, or with foal at foot, not suitable to compete as Clydesdale or Suffolk—1st, £20; 2d, £10; 3d, £5.—1st, Henry Overman, of Weasenham, Brandon, Norfolk, *Diamond*; 2d, Edmund Crowe, of Denver, Downham Market, *Smart*; 3d, Charles Lister, of Coleby Lodge, Lincoln, *Royal Duchess*. Commended: William Thomas Lamb, of Welbourne, Grantham.

Clydesdale Mare, in foal, or with foal at foot—1st, £20; 2d, £10; 3d, £5.—1st, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, *Princess*; 2d, George Head Head, of Rickerby, Carlisle, *Deborah*.

Suffolk Mare, in foal, or with foal at foot—1st, £20; 2d, £10; 3d, £5.—1st the Executors of the late Thomas Capon, of Dennington, Wickham Market, Suffolk, *Matchit*; 2d, Lieut.-Colonel Fuller Maitland Wilson, of Stowlangtoft Hall, Bury St. Edmund's, Suffolk, *Bury Empress*; 3d, Horace Wolton, of Newbourn Hall, Woodbridge, *Diamond*.

Mare in foal, or with foal at foot, suitable for breeding Hunters—1st, £25; 2d, £15; 3d, £5.—1st, Thomas Horrocks Miller, of Singleton, Poulton-le-Fylde, *Lady Emily*; 2d, Joseph Clarke, of Beeston, Leeds, *Lady Byron*; 3d, Leonard Lywood, of High Downs, Bridgnorth, *Jassy*.

Mare, above 14 *hands, but not exceeding* 15 *hands* 1 *inch, in foal, or with foal at foot, suitable for breeding Hackneys*—1st, £20; 2d, £10.—1st, Henry Overman, of Weasenham, *Jenny Lind*; 2d, Thomas Jones, of Cross Lane Head, Bridgnorth, *Judy*. Commended: Thomas Latham, of Littleham, Abingdon.

Pony Mare, not exceeding 14 *hands*—1st, £10; 2d, £5.—1st, William Coates, of Scarborough Farm, Winchcombe, *Kitey*; 2d, Richard Milward, of Thurgarton Priory, *Brighteyes*. Highly Commended: George Stokes, of Camp Farm, Kingsbury.

Hunter Gelding, three years old—1st, £20, offered by A. Bass, Esq., M.P., William Armstrong, of Kendal, Westmoreland, *Banker*; 2d, £15, by the South Staffordshire Hunt, Sir Wilfred Lawson, Bart., M.P., of Brayton, Carlisle; 3d, £10, by the Wolverhampton Local Committee, Frederick Barlow, of Hasketon, Woodbridge, Suffolk; 4th, Charles Cook, of Taddington, Wincomb, Gloucestershire.

Hunter Filly, three years old.—1st, £20, offered by the Wolverhampton Local Committee, James Moffatt, of Kirtlington Park, Carlisle, *Luna*; 2d, £15, by the Wolverhampton Local Committee, Edward Phillimore, of Prestbury Park Farm; 3d, £10, by the Wolverhampton Local Committee, John B. Booth, of Killerby Hall, Catterick. Highly Commended: Charles Boyd, of Littywood, Staffordshire.

Hunter, Gelding or Filly, four years old.—1st, £30, offered by H. Meynell-Ingram, Esq., M.P., Frederick Barlow, of Hasketon, TREGOTHNAN; 2d, £20, offered by H. Meynell-Ingram, Esq., M.P., Frederick Barlow, of Hasketon, Woodbridge, BECKFORD; 3d, £10, offered by H. Meynell-Ingram, Esq., M.P., Charles Cook, of Taddington, Winchcomb; 4th, £5, offered by H. Meynell-Ingram, Esq., M.P., George John Mitchell, of Newton Mount, Burton-on-Trent, BLANKNEY.

Hunter, Mare or Gelding, up to not less than 15 *stones*.—1st, £30, offered by Major Thorneycroft, Captain Boughey, and Members of the Albrighton Hunt, John B. Booth, of Killerby Hall, Catterick; 2d, £20, offered by Major Thorneycroft, Captain Boughey, and Members of the Albrighton Hunt, T. Harvey, D. Bayly, of Edwinstow House, Ollerton; 3d, £10, offered by Major Thorneycroft, Captain Boughey, and Members of the Albrighton Hunt, George Van Wart, of The Shrubbery, Birmingham; 4th, £5, offered by Major Thorneycroft, Captain Boughey, and Members of the Albrighton Hunt, Richard Basnett Oswell, of Shelvock, West Felton, Salop.

Hunter, Mare or Gelding, up to not less than 12 *stones*.—1st, £25, offered by T. M. Weguelin, Esq., M.P., the Earl of Coventry, Croome Court, Severn Stoke, Worcestershire; 2d, £15, offered by H. Ward, Esq., Samuel James Welfitt, of Tathwell Hall, Louth; 3d, £10, offered by S. Loveridge, Esq., William Armstrong, of Kendal, Westmoreland; 4th, £5, offered by C. F. Clarke, Esq., George Smith, of Ailston, Stratford-on-Avon.

Carriage Horses or Mares, in pairs, under six years old.—1st, £25, offered by the Earl of Dartmouth, John Thomas Robinson, of Leckby Palace, Thirsk.

Roadster, Mare or Gelding, about 14 *hands* 1 *inch, and not exceeding* 15 *hands* 1 *inch*.—1st, £20, offered by C. W. Lyon, Esq., James Moffat, of Kirtlington Park, Carlisle, Cumberland; 2d, £10, offered by the Wolverhampton Local Committee, William Fell, of The Close, Lichfield; 3d, £5, offered by H. Rogers, jun., Esq., James Moffat, of Kirtlington Park, Carlisle. Commended: Richard Milward, of Thurgarton Priory.

Roadster, Mare or Gelding, above 15 *hands* 1 *inch*—1st, £20; 2d, £10; 3d, £5, offered by M. T. Bass, Esq., M.P.—1st, John Warth, Sutton, Ely, Cambridgeshire; 2d, George David Badham, The Lawn, Bulmer; 3d, Thomas Horrocks Miller, Singleton, Poulton-le-Fyld. Commended: Thomas Statter, jun., Stand Hall, Whitefield, Manchester.

Cob, Mare or Gelding, above 13 *hands, and not exceeding hands* 1 *inch*—1st, £15, offered by W. Sparrow, Esq.; 2d, £10, by Frank James, Esq.; 3d, £5, by the Wolverhampton Local Committee.—1st, George Smith, Ailston, Stratford-on-Avon, Warwickshire; 2d, William Edward Wiley, Tamworth Road, Erdington, Birmingham; 3d, John G. Boraston, Kidderminster.

Pony, not exceeding 13 *hands*—1st, £10, offered by T. J. Perry, Esq.; 2d, £5, by R. J. Moore, Esq.—1st, Frederick Bower, 10, Albion Street, Birmingham; 2d, William Tyler, Friday Bridge, Birmingham. Highly Commended: Thomas Statter, jun., Stand Hall.

Agricultural Filly, two years old, not qualified to compete as Clydesdale or Suffolk.—1st, £15, John Linton, of Westwick Hall, Cambridge; 2d, £10, James Hawksworth, of Barton Fields, Barton Blount; 3d, £5, Stephen Davis, of Woolashill, Pershore.

Clydesdale Filly, two years old.—1st, £15, Thomas Townley Parker, of Charnock, Chorley; 2d, £10, Her Majesty the Queen, Windsor Castle. Highly Commended: Her Majesty the Queen. Commended: Thomas Statter, jun., of Stand Hall.

Suffolk Filly, two years old.—1st, £15, William Thompson, jun., of Thorpe, Colchester.

Agricultural Pair of Geldings, or Mares, of any age.—1st, £20, offered by Sir Smith Child, Bart, M.P., Charles William Brierley, of Rhodes House, Middleton; 2d, £10, offered by W. P. Herrick, Esq., Thomas Statter, jun., of Stand Hall; 3d, £5, offered by the Staffordshire Agricultural Society, Charles William Brierley, of Rhodes House. Highly Commended: the Earl of Dartmouth.

Agricultural Pair of Geldings or Mares, four years old.—1st, £20, offered by W. T. C. Giffard, Esq., Thomas Statter, jun., Stand Hall.

Agricultural Pair of Geldidgs or Mares, three years old.—1st, £20, offered by C. B. Wright, Esq., Thomas Statter, jun., of Stand Hall; 2d, £10, offered by the Staffordshire Agricultural Society, Charles William Brierley, of Rhodes House, Middleton.

Agricultural Gelding, three years old.—1st, £10, offered by the Earl of Bradford, Edward Tongue, of Manor House, Aldridge, Walsall, Staffordshire.

Agricultural Gelding, two years old.—1st, £10, offered by the Staffordshire Agricultural Society, James Perry, of Salter's Hall, Claverley, Bridgnorth; 2d, £5, offered by the Staffordshire Agricultural Society, Thomas W. D. Harris, of Wootton, Northamptonshire.

Agricultural Gelding, yearlings.—1st, £10, offered by the Staffordshire Agricultural Society, Thomas Statter, jun.

CATTLE.

Shorthorns.—The number of entries in this class was 161 against 159 exhibited at Oxford last year. The quality of the animals was considered by the many breeders and judges surrounding the ring to be exceedingly good, and this remark especially applied to the bulls above two and not exceeding three years, the yearling bulls, and the heifer classes.

Bulls above three years old formed a grand class, in which Mr. H. Thompson's EDGAR, formerly the property of Mr. Saunders, of Nunwick Hall, Penrith, from whom he was purchased by his present owner last autumn, took the 1st place. EDGAR is one of the best bulls of his day, and, from whatever point he is viewed, he is alike good. He is well known as a prize taker, and was 2d last year at Oxford, when BOLIVAR took the 1st place. Any one who wishes to study a perfect form, will do well to spend a short time in examining this bull. His fine masculine head is succeeded by a finely formed neck, upon which the hair forms a definite mane. Age has told upon him, especially just over the shoulder tops, where he is a little bare, but in every other point he is level as a die. A stick laid across from shoulder point to hook bone touches the animal during its whole length—a crucial test of merit. His girth is 9 feet 2 inches; he is thoroughly well packed on the loins, and well let down at both flank and fore-flank. He is very nearly pure Bates in his breeding, being by PRINCE PATRICK (18,633), and from *Young Emma*, of Mr. Crofton's "Emma" tribe, by MAC-TURK (14,872), g.d. *Countess Emma* by HEIR-AT-LAW, gr.g.d. *Baroness Emma*, by BARON OF RAVENSWORTH (7811).—TELEMACHUS, the 2d prize bull, is of undoubted merit, but a little slack on the loin, which is compensated for by magnificent shoulders. We refer to this bull, which is figured in the present number elsewhere. The 3d prize was awarded to the Rev. Walter Sneyd, for his IRONMASTER, a very level, well-fleshed bull, especially forwards, but rather small and complained of by some as not quite let down near enough to the ground. Neither must we omit to mention CHARLIE by 1ST FIDDLE, and therefore half-brother to BOLIVAR, a very good bull, and a prize winner at Manchester. This bull had many friends, and was considered to be a better bull than the 4th prize, MAN'S ESTATE, owned by Mr. John Wright. This 4th prize bull is a good animal, of taking appearance, and a son of EDGAR'S. We also spent some time over Mr. Willis' WINDSOR-FITZ-WINDSOR, a gaily-coloured bull, with famous loins, great length of carcase, very thick through the heart, straight below, muscular in the forearm, and short from flank to inside of hock. He is a little weak over the crops, which may account for his not having been placed by the judges.

In the class of bulls above two and not exceeding three years old, Mr. William Linton, of Sheriff Hutton, York, took the 1st prize with LORD IRWIN, a son of BRITISH HOPE (21,324), and *Hand Maid* by MAY DAY (20,323). This is a white bull, of large size for his age, with a famous girth and remarkably good shoulders, but paunchy withal, not very level on the top, and low in the loins. It is of good quality, and well deserves his place. The second prize bull is the property of Mr. John Outhwaite, of Bainesse, Catterick, Yorkshire, a well known and veteran agriculturist. This animal, ROYAL WINDSOR, is white in colour, and was bred by Mr. Willis, of Caperby. He is by WINDSOR-FITZ-WINDSOR (25,458), and out of *Royal Lily* by FITZ CLARENCE (14,552). He is a very good animal, with famous hind-quarters, albeit a little low in the chine and a trifle hard to the touch. Sir David Baird, of New Blythe, Preston Kirk, Haddington, comes 3d with BARON LAWRIE 3D, bred by Mr. G. R. Barclay, Keavil, and by the grand old bull HEIR OF ENGLISHMAN (24,122). Lady Pigot's BYTHIS could only obtain a 4th place, although decorated last year at Oxford, as a yearling, with the highest honours. It may be remembered that last year, at Oxford, there was some little dissatisfaction when BYTHIS was crowned, while LORD IRWIN was placed 2d, and Lord Braybrooke's HAYDON DUKE only 3d. The last 12 months have reversed the decision, and now LORD IRWIN takes the *pas*. The Messrs. Dudding, of Panton House, showed a good bull, STANDARD BEARER, of good Booth origin, which was highly commended, and would have been worthy of a better place but for his being somewhat patchy.

The yearling bulls formed a remarkably good class, comprising 20 entries. A finer lot of young bulls were never brought together, and pitching upon the best was apparently no easy task to the judges. After much consideration, the choice was restricted to eight first-rate animals, including Mr. Richard Stratton's very good straight bull, MASTER GLANVILLE; Lord Sudeley's very good Seraphina bull CHERUB, by BARON BOOTH, which eventually came out 2d; Mr. G. Garne's EARL OF WARWICKSHIRE, bred by Mr. Sheldon, of Brailes, and uniting the best Booth and Duchess strains; Mr. Lamb's pretty little bull IGNORAMUS; Mr. J. Meadows' PRINCE CHARLES, and Colonel Towneley's BARON HUBBACK 2D. Further sorting resulted in the red rosette being given to the last-named bull. He is by BARON OXFORD (23,375), and out of *Duchess 7th*, by GRAND DUKE OF LANCASTER (19,883), and may be described as a level, red bull, a little deficient in loin, and rather spoilt in appearance by his drooping horns. Lord Sudeley's red bull, CHERUB, is a good animal, especially in front, is level, but not very well haired. He was 1st at Guildford in the recent show, and was much admired at Wolverhampton as he passed round the ring. The 3d prize bull, IGNORAMUS, is small, but young, and on the whole of good quality; and the same remark applies to Mr. Meadows' PRINCE CHARLIE, which, after having been "sent back" by the judges, was afterwards recalled, and placed 4th. We should have liked a higher place for Mr. Garne's EARL OF WARWICKSHIRE 3D, a decidedly useful, well-grown bull, which, however, must rest content with high commendation only. Although undecorated by the judges, we must mention as a very pretty but small, and at the same time very young bull, Mr. James Beattie's BARON TORR, of Alesby origin, and the winner of a 1st place at the Highland and Agricultural Society's show at Dumfries last summer.

Bull calves were also a good class, 12 in all, of which Messrs. William & Henry Dudding's BRITISH FLAG, by the Panton bull ROBIN, was very properly placed the 1st. He is a good toucher, has a level top, a good middle, and stands well on his legs; he is also a good-sized bull for his age. Mr. William Linton's LEEMAN, of Booth extraction, was placed 2d, a not large bull, but of excellent quality and well haired. Messrs. Thomas Garne & Son, of Broadmoor, Gloucestershire, also showed a bull of good quality, which was placed 3d, and there were other excellent animals.

Shorthorn cows were fairly represented, and the judges for long hesitated before deciding as to which was best. The struggle was principally between Mr. Beattie's *Warrior's Plume* and Mr. Dugdale's *Kent Cherry 2d*. The former was bred by Mr. Torr, and is by BREASTPLATE (19,337), and from *Warrior's Pride* by DR. MCHALE (15,887). She has an immense but badly placed udder, and is exceedingly plain behind, being low in the rumps, and moving along in anything but good style. In spite of these defects she has many excellent points, especially about the loins and ribs. On comparing *Warrior's Plume* with Mr. Dugdale's *Kent Cherry 2d*, we find in her a large and handsome rival, having no glaring defect, splendid hind-quarters, and very good over the shoulder, a point in which *Warrior's Plume* is somewhat deficient. The 3d place was awarded to Mr. James How's *Windsor Butterfly*, a thick, level, good, but rather low cow. Mr. William Bradburne, of Wednesfield, Wolverhampton, showed a very good cow, *Miss Chesterfield* by FITZ TURK (19,763), and out of a cow by DUKE OF MANCHESTER (15,934).

The class for heifers in milk or in calf was a remarkably good one. Lady Pigot's *Dame Swift* by PRINCE OF BUCKINGHAM, dam by VALASCO, g.d. by BRITISH PRINCE (14,197), a handsome white heifer, but with a light neck, was placed 1st. Mr. How's *Vesper Queen*, of really good Booth origin, came 2d, and thus gained a step upon the 3d place she took last year at Oxford, when in competition with Mr. M'Intosh's *Lady Knightley 2d*, and Mr. Dudding's *Countess of Yarborough*. The 3d place was awarded to Mr. F. J. S. Foljambe's *Concert* by LORD LYONS (26,677), and descended from *Seraph* by LORD OF BRAWITH (10,465). Messrs. W. Hosken & Son received a high commendation for an exceedingly handsome heifer, *Countess of Oxford* by 2D EARL OF OXFORD, a large heifer for her age, and the 2d prize taker at Guildford. Mr. W. H. Hewett also showed two very good heifers.

In the class for yearling heifers, Mr. John Outhwaite, of Bainesse, Yorkshire, took the 1st place with a good, thick, wide heifer. This decision gave universal satisfaction. Mr. Foljambe, of Osberton Hall, came 2d with his *Fleur de Lis* by LORD LYONS, a well topped heifer, which, if she had a fault, stood too far off the ground. Colonel Towneley took the 3d place with *Baron Oxford's Duchess*, a level, neat heifer, with scarcely the substance of the two first.

Heifer calves were represented by a large and good class, in which a very good calf, now the property of Mr. Arthur Garfit, a young gentleman who has recently commenced farming and Shorthorn breeding at Scothern, Lincolnshire, was placed first. This heifer, named *Brilliant Rose 2d*, was purchased at Mr. Cheney's sale, and is by GENERAL NAPIER. She is a lengthy, pretty animal, good in most points, but scarcely nice at the shoulders. The second place was awarded to Lady Pigot's *Victoria Regina*, a well-haired calf, generally well put together, but deficient in the beef-bed, *i.e.*, between rump and hooks. The third place was given to the Messrs. Dudding's *Lady Grace*, a nice heifer, with beautiful touch, good shoulders, and better between "hooks" and rump than the 2d prize heifer.

Herefords.—The show of Herefords was considered a very satisfactory feature of the meeting there being 87 entries, which, at least, shows an undiminished interest when contrasted with the 86 entries of last year. In the class for old bulls, Mr. Warren Evans' MONAUGHTY 3D, "red, white face," which, by the way, seems now to be almost unnecessary in describing a Hereford, was placed 1st. He was in somewhat low condition last year, when, in the 2-year-old class, he made a good 2d to Her Majesty's PRINCE ALBERT EDWARD. This year he has been more successful, and has been placed 1st at Guildford and again at Wolverhampton. He is a large, good bull, with wonderfully developed buttocks, grand loins, and great depth. Mr. Philip Turner's BACHELOR, the 2d prize bull, is eight months the senior of his rival, and yet is not nearly so large, and lacks the character which forms one of the points of MONAUGHTY 3D. The 3d prize bull, exhibited by Mr. Nathaniel Benjafield, is an extremely level animal, with scarcely the necessary quality as indicated by touch, but is wonderfully improved since he gained his first honours at Southampton two years ago. Passing on to the next class, that that of bulls above two and not exceeding three years, we find Mr. John Williams the winner of the 1st prize, with ROYAL HEAD, a small bull of very excellent quality. The Earl of Southesk follows, with OSTORIUS (3295), the 1st prize calf at Manchester, from whence he went into Scotland, and has now returned to England. Mr. Philip Turner's PROVOST, son of the prize bull BACHELOR above mentioned, is a nice level animal, who makes a good 3d. Among the yearling bulls, Mr. Richard Hill's PEARL DIVER, a bull of extraordinary quality, makes a good 1st, and Mr. Child's STAR OF THE WEST, also a bull of good quality and pleasing appearance, comes 2d. Both of these bulls are sold for Sidney. The 1st prize bull calf, belonging to Mr. H. N. Edwards, is a very good one; and the 2d prize, bred and exhibited by Mr. Taylor, of Showle Court, is nice, but showed to disadvantage owing to want of the necessary condition.

The queen of Hereford cows this year is *Ivington Rose*, the property of Mr. W. P. Peren, a grand heavy-fleshed cow, standing on low legs, but full of substance. Glancing at her pedigree, we find she is by the celebrated sire SIR THOMAS (2228), dam by MASTER BUTTERFLY (1313). The 2d prize cow *Livia* belongs to Mr. P. Turner, of The Leen. Last year she was, as a 2-year old, 2d to *Silver Star*, since gone to Australia; but despite this relief, she still remains only 2d. The year previously, at Manchester, she was also 2d; but although she seems destined to rise no higher, she is a good cow, and requires a particularly good one to beat her. The 3d prize in this class was awarded to Mr. R. Tanner's *Queen*, which occupied a similar position last year in the same class at Oxford. She is a large cow, and has a good calf at her foot. Passing on to the heifers in calf or in milk, Mr. P. Turner again leads with a heifer by BACHELOR—*Rarity*, a very nice young animal, only three weeks over two years old, and therefore competing most creditably with animals months older than herself. Mr. J. Harding's *Dahlia* received the 2d prize, and Mr. Fenn's heifer, *Duchess of Bedford 6th*, the 3d place. This was rather a change from Guildford, when *Dahlia* made a 2d to *Duchess of Bedford*; but this is accounted for by the last-named heifer being out of form from having calved on the show-ground. In the yearling heifer class, Mr. Harding's *Lizzie Jeffreys*, a heifer not previously known as a prize-taker, took the 1st place, and Mr. P. Turner secured the 2d prize with *Plum*, another prize animal by the prize-taker BACHELOR. The 2d prize calf at Oxford, Mr. Thomas Thomas' *Sunflower*, now makes a 3d as a yearling. Lastly, in the calf class, Mr. Thomas Fenn's *Lady of the Teme* is a perfect gem; and Mr. Morris' *Madeline* by the Royal prize-taker STOWE (3478), makes a good 2d.

Devons are pronounced to be a very excellent show, said by many to be one of the best ever held, but numerically inferior to Oxford by a dozen entries. The prize-takers will be seen by reference to the list; but in giving a very passing notice of this beautiful breed, we may mention that the old-established breeders still continue to remove the Society's prizes. Mr. J. Howard Buller's red, unnamed, and unpedigreed bull, takes the 1st place over Lord Falmouth's well-known NARCISSUS; and Mr. Davy, of Flitton, is placed 3d with DUKE OF FLITTON 4TH. The 2-year-old bull class is represented by three animals, each of which is decorated with a prize. Yearling bulls are a good class, and so are the calves, in both of which Viscount Falmouth, Mr. Walter Farthing, and Mr. Davy take off the prizes. In the cow class Mr. William Taylor, of Glynley, takes both 1st and 2d prizes. In the heifers in milk or in calf, Mr. Smith, of Hoopern, stands 1st, and Mr. William Taylor 2d. We have not space to speak at length of the merits of these animals, and their names and owners appear in the prize lists below.

There was a fair show of *Jersey* cattle. In the bull class, Mr. Walter Gilbey, of Hargrave Park, Essex, took the 1st prize with BANBOY, and Mr. George Simpson, of Wray Park, Reigate, came 2d, with his old bull PRINCE. In the class for cows above three years old Mr. Walter Gilbey took the 1st place with an imported cow, and Mr. George Digby Wingfield-Digby came 2d with a nice 4-year-old cow, *Julia*. Mr. Wingfield-Digby also took the 1st prize in the heifer class with *Miss Edith*, daughter to *Julia*; and Mr. J. G. Hubbard, of Addington Manor, Winslow, Bucks, showed the 2d prize heifer. *Guernsey* cattle appeared in considerable force, there being eight entries of bulls, and 17 of cows and heifers. The Rev. Joshua R. Watson carried off the 1st prize for bulls and cows, and Mr. Charles Le Page, of Guernsey, took the 2d prize for bulls, and the 1st for heifers in milk, Mr. Blondel Le Page coming in 2d.

Norfolk and *Suffolk* cattle were not numerously represented. Mr. Benjamin Brown, of Thursford, Thetford, Norfolk, succeeded in obtaining all three 1st prizes, namely, for bulls, cows, and heifers in milk. For further particulars regarding the honours in this class, we refer our readers to the prize list.

There were some fine specimens of *Longhorns* exhibited in the class for other established breeds. The Duke of Buckingham and Chandos' bull YOUNG CONQUEROR was well worthy of his 1st prize, and Mr. John Godfrey's SAMSON 2D, the 2d prize bull, is also a magnificent animal. This breed took four out of the six prizes offered for "other established breeds," the other two being taken by Angus cattle, both the property of Mr. Statter, jun., of Stand Hall, near Manchester. In the two classes for the best pair of heifers and cows in milk, also, Mr. Statter was unrivalled, and carried off all four prizes with three pairs of Ayrshires, and a pair of cross-breds.

The following is the prize list of the cattle classes:—

JUDGES.—Shorthorns: G. Bland, Coleby Hall, Lincoln; W. Parker, Carleton Hill, Penrith; J. Robinson, Clifton Pastures, Newport Pagnell. Herefords and other Established Breeds: H. Haywood, Blakemere House, Hereford; W. Taylor, Thinghill Court, Hereford. Devons and Norfolk and Suffolk Polled: S. P. Newbury, 4, Boringdon Villas, Plympton; and Thomas Pope, Hornmigsham, Warminster. Jersey, Guernsey, and Dairy Cattle: C. P. Le Corme, Trinity Manor, Jersey; Henry Tait, Shaw Farm, Windsor.

SHORTHORNS.

Bull, above three years old—1st, £30; 2d, £20; 3d, £15; 4th, £10.—1st, Mr. Henry Thompson, of Maiden Hill, Penrith, Cumberland, EDGAR; 2nd, the Marquis of Exeter, of Burghley Park, Stamford, TELEMACHUS (27,603); 3d, the Rev. Walter Sneyd, of Keele Hall, Newcastle-under-Lyne, Staffordshire, IRONMASTER, red; 4th, Mr. John Wright, of Green Hill Head, Penrith, Cumberland, MAN'S ESTATE (26,806). Highly Commended: Mr. Richard Forster, Soffe, of Hams, Eastleigh, Southampton, LORD MORPETH.

Bull above two and not exceeding three years old—1st, £25; 2d, £15; 3d, £10; 4th, £5.—1st, Mr. William Linton, of Sheriff Hutton, York, LORD IRWIN, white; 2d, Mr. John Outhwaite, of Bainesse, Catterick, Yorkshire, ROYAL WINDSOR, white; 3d, Sir David Baird, Bart., of New Blythe, Preston Kirk, Haddingtonshire, BARON LAWRIE 3D, red; 4th, Emily Lady Pigot, of Branches Park, BYTHIS, red and white. Highly Commended: Messrs. W. & H. Dudding, of Panton House, Wragby, Lincolnshire, STANDARD BEARER, red.

Yearling Bull—1st, £25; 2d, £15; 3d, £10; 4th, £5.—1st, Colonel Charles Towneley, of Towneley, Burnley, Lancashire, BARON HUBBACK 2D, red. 2d, Lord Sudeley, of Toddington, Winchcombe, Gloucestershire, CHERUB, red; 3d, Mr. John Lamb, of Burrell Green Penrith, Cumberland, IGNORAMUS, roan; 4th, Mr. Joseph Meadows, of Thornville, Wexford, Ireland, PRINCE CHARLIE, roan. Highly Commended: Mr. George Garne, of Churchhill Heath, Chipping Norton, Oxfordshire, EARL OF WARWICKSHIRE 3D. Commended: Mr. Richard Stratton, of Burderop, Swindon, MASTER GLANVILLE, rich roan; Mr. John Reeve, of Leadenham House, Grantham, Lincolnshire, GRANDEE 2D, roan. Mr. George Mann, of Scansby Hall, Doncaster, RORY OF THE HILLS, roan

Bull calf, above six and not exceeding twelve months old—1st £15; 2d, £10; 3d, £5.—1st, Messrs. William & Henry Dudding, of Panton House, Wragby, Lincolnshire, BRITISH FLAG, red and white; 2d, Mr. William Linton, of Sheriff Hutton, York, LEEMAN, red and white; 3d, Messrs. Thomas Garne & Son, of Broadmoor, Northleach, RED PRINCE, red.

Cow above three years old—1st, £20; 2d, £10; 3d, £5.—1st, Mr. James Beattie, of Newbie House, Annan, *Warrior's Plume*, roan; 2d, Mr. Adam Dugdale, of Rose Hill, Burnley, Lancashire, *Kent Cherry 2d*, roan; 3d, Mr. James How, of Broughton, Huntingdon, *Windsor Butterfly*, red and white. Highly Commended: William Linton, of Sheriff Hutton, York, *Carnation*, roan. Commended: Mr. W. J. Whitsted, of Abbey Farm, Wroxall, Warwick, *Magnolia*, red roan; Mr. William Bradburn, of Wednesfield, Wolverhampton, *Red Rose*, red and white.

Heifer, in milk or in calf, not exceeding three years old—1st, £15; 2d, £10; 3d, £5.—1st, Emily Lady Pigot, of Branches Park, Newmarket, *Dame Swift*, white; 2d, Mr. James How, of Broughton, Huntingdon, *Vesper Queen*, red; 3d, Mr. F. J. Saville Foljambe, M.P., of Osberton Hall, Worksop, Notts, *Concert*, roan. Highly Commended: the Rev. Robert Bruce Kennard, of Marnhull Rectory, Blandford, *Oxford Duchess*, roan; Mr. W. H. Hewett, of Norton Court, Taunton, *Nelly*, white; Messrs. William Hosken & Son, of Loggan's Mill, Hayle, Cornwall, *Countess of Oxford*, roan. Commended: Mr. William Ladds, of Ellington, Kimbolton, Hunts; Mr. James Beattie, of Newbie House, Annan, *Sonsie*.

Yearling Heifer—1st, £15; 2d, £10; 3d, £5.—1st, Mr. John Outhwaite, of Bainesse, Catterick, Yorkshire, *Lady Brough*, roan; 2d, Mr. F. J. Savile Foljambe, M.P., of Osberton Hall, Worksop, Notts, *Fleur de Lis*, roan; 3d, Colonel Charles Towneley, of Towneley, *Baron Oxford's Duchess*, red. Highly Commended: Colonel Charles Towneley, of Towneley, *Butterfly's Memento*.

Heifer calf, above six and under twelve months—1st, £10. 2d, £5.—1st, Mr. Arthur Garfit, of Scothern, Lincoln, *Brilliant Rose 2d*, white; 2d, Emily Lady Pigot, of Branches Park, Newmarket, *Victoria Victrix*, roan. Highly Commended: Richard Stratton, of Burderop, *Mabel*, rich roan; Messrs. W. & H. Dudding, Wragby, *Lady Grace*, white; Colonel Charles Towneley, Burnley, Lancashire, *Butterfly's Memento 3d*, red and white.

HEREFORDS.

Bull above three years old—1st, £25; 2d, £15; 3d, £5.—1st Mr. Warren Evans, of Llandowlais, Usk, MONAUGHTY 3D; 2d, Mr. Philip Turner, of The Leen, Pembridge, Herefordshire, BACHELOR (2941); 3d, Mr. Nathaniel Benjafield, of Short's Green Farm, Motcombe, Shaftesbury, Dorset, THEODORE. Commended: Mr. H. N. Edwards, of Mr. Broadward, Leominster, SIR JOHN.

Bull above two and not exceeding three years old—1st, £25; 2d, £15; 3d, £5.—1st, Mr. John Williams, of St. Mary's, Kingsland, Herefordshire, ROYAL HEAD; 2d, the Earl of Southesk, of Kinnaird Castle, Brechin, Forfarshire, OSTORIUS (3295); 3d, Mr. Philip Turner, of The Leen, Pembridge, Leominster, PROVOST. Commended: Mr. John Harding, of Bicton, Shrewsbury, NOBLEBOY.

Yearling Bull—1st, £25; 2d, £15; 3d, £5.—1st, Mr. Richard Hill, of Orleton Court, Ludlow, PEARL DIVER; 2d, Mr. George Child, of Westonbury, Pembridge, STAR OF THE WEST; 3d, Mr. John Crane, of Benthall Ford, Shrewsbury, PRINCE GEORGE. Highly Commended: Her Majesty the Queen, PRINCE GEORGE FREDERICK.

Bull Calf, above six and not exceeding twelve months old.—1st, £10; 2d, £5.—1st, Mr. H. N. Edwards, of Broadward, Leominster, Herefordshire, ALEXANDER. 2d, Mr. William Taylor, of Showle Court, Ledbury, THE WOLVERHAMPTON BOY. Highly Commended: Mr. Richard Hill, of Orleton Court, Ludlow, THE COLONEL; Mr. John Morris, of Town House, Madley, VENDOME. Commended: Mr. W. B. Peren, of Compton House, South Petherton, PERFECTION.

Cow above three years old.—1st, £20; 2d, £10; 3d, £5.—1st, Mr. William B. Peren, of Compton House, South Petherton, *Ivington Rose*; 2d, Mr. Philip Turner, of The Leen, Pembridge, Leominster, *Livia*; 3d, Mr. Richard Tanner, of Frodesley, Dorrington, *Queen*. Highly Commended: Mr. George Pitt, of Chadnor Court, Dilwyn, Leominster, *Highlass 4th*; Mr. John Williams, of Saint Mary's, Kingsland, Herefordshire, *Pansey*; Sir J. R. Bailey, Bart., M.P., of Glanusk Park, Crickhowell, *Riding Hood*.

Heifer in milk or in calf, not exceeding three years old—1st, £15; 2d, £10; 3d, £5.—1st, Mr. P. Turner, of The Leen, Pembridge, *Rarity*; 2d, Mr. John Harding, of Bicton, Shrewsbury, *Dahlia*; 3d, Mr. Thomas Fenn, of Stonebrook House, Ludlow, *Duchess of Bedford 6th*. Highly Commended: Her Majesty the Queen, *Princess Amelia*; Mr. John Baldwin, of Luddington, Stratford-on-Avon, *Venus 7th*; Mr. Richard Tanner, of Frodesley, Dorrington, *Lady Milton*; Mr. John Morris, of Town House, Madley, *Chignon*.

Yearling Heifer—1st, £15; 2d, £10; 3d, £5.—1st, Mr. John Harding, of Bicton, Shrewsbury, *Lizzie Jefferys*; 2d, Mr. P. Turner, of The Leen, Pembridge, *Plum*; 3d, Mr. T. Thomas, of St. Hilary, Cowbridge, Glamorganshire, *Sunflower*. Highly Commended: Mr. Peter Davis, of Bickmarsh Hall, Alcester, Warwickshire; Mr. J. Hungerford Arkwright, of Hampton Court, Leominster; Mr. R Tanner, of Frodesley, Dorrington; Mr. Henry Rawlins Evans, jun., of Swanstone Court, Dilwyn.

Heifer Calf, above six and under twelve months—1st, £10; 2d, £5.—1st, Mr. Thomas Fenn, of Stonebrook House, Ludlow, *Lady of the Teme*; 2d, Mr. John Morris, of Town House, Madley. Highly Commended: Mr. T. Thomas, of St. Hilary, Cowbridge; Mr. Henry N. Edwards, of Broadward, Leominster; Mr. Thomas Fenn, of Stonebrook House, Ludlow (2); Mr. William Tudge, of Adforton, Leintwardine; Mr. J. H. Arkwright, of Hampton Court, Leominster. Commended: Mr. Tudge, of Coston Hall, Aston-on-Clun.

DEVONS.

Bull above three years old—1st, £25; 2d, £15; 3d, £5.—1st, Mr. J. H. Buller, of Downes, Crediton, Devon; 2d, Viscount Falmouth, of Tregothnan, Probus, Cornwall, NARCISSUS; 3d, Mr. James Davy, of Flitton Barton, North Molton, DUKE OF FLITTON 4TH. Highly Commended: Her Majesty the Queen; Mr. John Pitfield, of Symondsbury, Bridport. Commended: Mr. John Peake, of Mullaghmore, Monaghan; Mr. Walter Farthing, Stowey Court, Bridgwater.

Bull above two and not exceeding three years old—1st, £25; 2d, £15; 3d, £5.—1st, Mr. James Davy, of Flitton Barton, DUKE OF FLITTON 5TH; 2d, Viscount Falmouth, of Tregothnan, Probus, Cornwall, JONQUIL; 3d, Mr. William Smith, of Hoopern, Exeter, Devon, PENNSYLVANIA.

Yearling Bull—1st, £25; 2d, £15; 3d, £5.—1st, Viscount Falmouth, of Tregothnan, Probus, CINNAMON; 2d, Mr. Walter Farthing, of Stowey Court, Bridgwater, MASTER HARRY; 3d, Mr. James Davy, of Flitton Barton, North Molton, DUKE OF FLITTON 6TH. Highly Commended: Viscount Falmouth.

Bull Calf, above six and not exceeding twelve months old—1st, £10; 2d, £5.—1st, Mr. Walter Farthing, of Stowey Court, MARQUIS OF LORNE; 2d, Mr. James Davy, of Flitton Barton, North Molton, CONQUEROR. Reserved Number: Her Majesty the Queen.

Cow, above three years old—1st, £20; 2d, £10; 3d, £5.—1st, Mr. William Taylor, of Glynley, Westham, *Profit's Duchess*; 2d, Mr. William Taylor, of Glynley, Westham, *Frederica*; 2d, not awarded. Highly Commended: Mr. James Davy, of Flitton Barton, *Lovely Queen*.

Heifer, in milk or in calf, not exceeding three years old—1st, £15; 2d, £10; 3d, £5.—1st, Mr. William Smith, of Hoopern, Exeter, *Duchess*; 2d, Mr. William Taylor, of Glynley, Westham, Eastbourne, Sussex. Highly Commended: Mr. Trevor Lee Senior, of Broughton House, Aylesbury, Bucks, *Young Daisy*.

Yearling Heifer—1st, £15; 2d, £10; 3d, £5—1st, Mr. James Davy, of Flitton Barton, North Molton, Devon, *Gaylass*; 2d, Mr. James Howard Buller, of Downes, Crediton, Devon; 3d, Mr. Walter Farthing, of Stowey Court, Bridgewater. Highly Commended: Mr. George Turner, of Brampford Speke, Exeter.

Heifer Calf, above six and under twelve months old—1st, £10; 2d, £5.—1st, Mr. James Davy, of Flitton Barton, North Molton, Devon, *Actress the 5th*; 2d, Mr. Walter Farthing, of Stowey Court, Bridgewater. Highly Commended: Her Majesty the Queen; Mr. Walter Farthing, of Stowey Court.

MISCELLANEOUS BREEDS.

JERSEY.

Bull above one year old—1st, £10; 2d, £5.—1st, Mr. Walter Gilbey, of Hargrave Park, Stanstead, Essex, BANBOY; 2d, Mr. George Simpson, of Wray Park, Reigate, Surrey. Reserved Number: Mr. Frederick Simpson, of Sion House, Belbroughton, near Stourbridge.

Cow, above three years old—1st, £10; 2d, £5.—1st, Mr. Walter Gilbey, of Hargrave Park, Stanstead; 2d, Mr. George Digby Wingfield-Digby, of Sherborne Castle, Dorsetshire. Highly Commended: Mr. Walter Gilbey, of Hargrave Park, Stanstead. Commended: Mr. P. Gaudin, of Spring Farm, St. Martin's, Jersey; Mr. John Gellibrand Hubbard, of Addington Manor, Winslow, Bucks.

Heifer, in milk or in calf, not exceeding three years old—1st, £10; 2d, £5.—1st, Mr. G. Digby Wingfield-Digby, of Sherborne Castle, Dorsetshire; 2d, Mr. J. G. Hubbard, of Addington Manor, Winslow, Bucks. Highly Commended: Mr. George Simpson, of Wray Park, Reigate. Commended: Mr. Philip Gaudin, of Spring Farm, St. Martin's; Mr. J. G. Hubbard, of Addington Manor, Winslow; Lord Chesham, of Latimer.

GUERNSEY.

Bull, above one year old—1st, £10; 2d, £5.—1st, the Rev. J. R. Watson, of Le Bocage, Guernsey; 2d, Mr. Charles Le Page, of Les Naftiaux, Guernsey. Reserved Number: Mr. E. A. Sanders, of Stoke House, Exeter, Devon.

Cow above three years old—1st, £10; 2d, £5.—1st, the Rev. Joshua Rundle Watson, of Le Bocage; 2d, Mr. T. Blondel Le Page, of Maison de Bas, St. Andrew's, Guernsey. Highly Commended: Mr. Thomas Statter, jun., of Stand Hall, Whitefield.

Heifers, in milk or in calf, not exceeding three years old—1st, £10; 2d, £5.—1st Mr. Charles Le Page, of Les Naftiaux, Guernsey; 2d, Mr. Thomas Blondel Le Page, of Maison de Bas, St. Andrew's. Highly Commended: Mr. Thomas Blondel Le Page.

NORFOLK AND SUFFOLK POLLED.

Bull above one year old—1st, £10; 2d, £5.—1st, Mr. Benjamin Brown, of Thursford, Thetford; 2d, Mr. J. J. Coleman, M.P., of Carrow House, Norwich. Highly Commended: Mr. Thos. Brown, of Marham Hall Farm, Downham.

Cow above three years old—1st, £10; 2d, £5.—1st, Mr. Benjamin Brown, of Thursford, Thetford; 2d, not awarded. Commended: Mr. J. J. Coleman, M.P., of Carrow House, Norwich.

Heifer, in milk or in calf, not exceeding three years old.—1st, £10; 2d, £5.—1st, Mr. Benjamin Brown, of Thursford, Thetford; 2d, not awarded. Highly commended: Mr. John Hammond, of Bale, Thetford. Commended: Lord Sondes, of Elmham Hall, red (Norfolk).

OTHER ESTABLISHED BREEDS

(Not including the Shorthorn, Hereford, Devon, Jersey, Guernsey, or Norfolk and Suffolk polled breeds).

Bull above one year old—1st, £10; 2d, £5.—1st, the Duke of Buckingham and Chandos, of Stowe, Buckingham (Longhorn); 2d, Mr. John Godfrey, of Wigston Parva, Hinckley, Leicestershire (Longhorn). Highly Commended: Mr. Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, black (Angus).

Cow above three years old—1st, £10; 2d, £5.—1st, Mr. John Godfrey, of Wigston Parva, Hinckley, Leicestershire (Longhorn); 2d, Mr. Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, black (Angus). Highly Commended: the Earl of Powis, of Powis Castle, Welshpool (Ayrshire); Mr. Adam Dugdale, of Rose Hill, Burnley, Lancashire, (West Highland); Mr. William Thomas Cox, Spondon Hall, Derby (Longhorn); Mr. Richard Hemming Chapman, of Upton, Nuneaton (Longhorn). Commended: the Earl of Harrington, of Elvaston Castle, Derby (Ayrshire).

Heifer, in milk or in calf, not exceeding three years old—1st, £10; 2d, £5.—1st, Mr. Thomas Statter, jun., of Stand Hall, Whitefield (Angus); 2d, the Duke of Buckingham and Chandos, of Stowe, Bucks (Longhorn).

DAIRY CATTLE.

Pair of Heifers in milk, under three years and eight months old.—Prizes offered: 1st prize, £20 (offered by the Staffordshire Agricultural Society; 2d, £10 (offered by Mr. J. W. Phillips); 3d, £5 (by Mr. A. C. Twentyman).—1st, Mr. Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, *Rose* and *Beauty* (Ayrshires), just over three years old, breeders unknown; 2d, Mr. Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, *Buttercup* and *Dairymaid* (Ayrshires), about three years old, breeders unknown; 3d, Mr. John Jervis Sharp, of Broughton, Kettering, Northamptonshire, *Julia 4th*, roan (Shorthorn), three years and five months old, bred by exhibitor.

Pair of Cows, over three years and eight months old, in milk—1st, £20 (offered by the Staffordshire Agricultural Society); 2d, £10; 3d, £5.—1st, Mr. Thomas Statter, jun., of Stand Hall, Whitefield, Manchester (Ayrshire), ages and breeders unknown; 2d, Mr. Thomas Statter, jun., of Stand Hall, Whitefield, Manchester (crossbred); 3d, Mr. Henry Crossley, of Watkinson Hall Farm, Halifax (Yorkshire cross). Commended: Mr. Thomas Nash, of Featherstone (Shorthorn); Mr. Josiah T. Poyser, of Stapenhill, Burton-on-Trent (Shorthorn): Mr. Charles William Brierley, of Rhodes House, Middleton, Manchester (crossbred).

SHEEP.

Leicesters.—There was a good show of these rams, and a meagre one of ewes. The older class of rams was indeed considered to be the best that had been shown for years. The names of exhibitors in this class still continue the same, with the exception of the substitution of the Rev. George Inge for that of the late Col. Inge, who was an exhibitor for so many years. Mr. F. H. Hutchinson, of Manor House, Catterick, Mr. R. W. Creswell, of Ravenstone, Ashby de la Zouch, Mr. Turner, of Alexton Hall, Mr. George Sanday, of Holme Pierrepont, and Mr. John Borton, of Barton House, Malton, Yorkshire, all appeared in their usual places. The honours were not, however, completely divided, for Mr. Creswell, although exhibiting some very admirable sheep, was left out in the cold. Taking a more minute look at the Leicester classes, we may mention the 2d prize shearling, the property of the Rev. George Inge, as a very good animal, while the 3d prize, also from Thorpe Constantine, although a good carcased and well-topped sheep, was a little wanting in fleece. The highest honours were taken by Mr. George Turner, of Alexton Hall, with a sheep very good along the top, but a rather loose handler; this sheep stands well on his legs, is of large size, and is covered with a good fleece. Mr. George Sandays' No. 664 in the catalogue was a good sheep, and received a high commendation. Mr. John Borton also showed a sheep which for neatness of form was surpassed by none, but he was deficient in wool underneath. The rams of any other age were a remarkably good class. The first animal we noticed was the property of Mr. Hutchinson, No. 278 in the catalogue, a remarkable sheep, with good shoulders and grand breast, capital rumps and back, and of good Leicester character, the winner of 15 first prizes, 2d at Oxford, 2d at Manchester, and yet on the present occasion never even looked at. The next sheep, 279, also Mr. Hutchinson's, might be described as a splendid animal, well covered with firm flesh, very thick, covered with good wool, and possessing a good head. Mr. Creswell's old rams were also large and excellent. No. 681 in the catalogue was a good sheep; No. 682 was altogether good, large, wide, and well woolled. Next to him was another beauty, succeeded by a wonderful sheep (684) for width at shoulders and at rumps, of very excellent form, and well woolled. The 1st prize, bred by and the property of Mr. Turner, is a good sheep "all round," and a firm handler. He was 1st at Guildford. Mr Sanday's 2d prize is a large, good sheep, well covered with firm flesh; and Mr. Borton's 3d prize is also a good sheep, but looser in the flesh. The ewe class was not well filled, and only contained three pens, all of which took prizes. The 1st place was awarded to a pen exhibited by Mr. Hutchinson, the 2d was awarded to Mr. Borton, and the 3d to the Rev. Mr. Inge. Mr. Borton has let two sheep at high prices to Mr. Hutchinson, and also sold him a pen of gimmers at £10 each.

Cotswolds.—The competition in the Cotswold classes was as usual carried on principally by breeders from Oxfordshire and Norfolk. The Cotteswold men appear satisfied, and do not apparently care to exhibit their wonderful sheep excepting at their own annual ram sales. The two pens of theaves exhibited by Mr. Russell Swanwick, of the College Farm, Cirencester, formed a pleasing exception to this rule, and Mr. Swanwick also appeared as an exhibitor in the class for rams. The 1st prize for rams was taken by a lengthy large sheep, which however had lost most of his top-knot, if he ever had more, the property of Mr. Thomas Brown, of Marham Hall Farm, Downham Market, Norfolk. Both 2d and 3d prizes and the reserve number went very deservedly into the same hands. The 1st prize for rams of any other age was taken by a sheep belonging to the executors of the late Mr. T. Gillett, Kilkenny, Faringdon, Oxon, and both 2d and 3d prizes were awarded to Mr. Brown, of Marham Hall, Norfolk. In the class for shearling ewes there were only five entries, and both 1st and 2d prizes were awarded to Mr. Swanwick, of the College Farm, Cirencester, for two capital pens of up-standing, large and lengthy sheep—both, we understand, sold on the ground, at good prices, to American purchasers.

Lincolns formed a very excellent show. In the shearling ram class, Mr. William F. Marshall, of Branston, won the 1st prize, and Mr. Thomas Cartwright, of Dunston Pillar, the 2d; while Messrs. Dudding, of Panton, came 3d. Probably the firm touch and characteristic wool of the 1st prize sheep outweighed form in the estimation of the judges. Be this as it may, the Messrs. Dudding's sheep is larger, heavier, and better carried out both before and behind, than those of his successful rivals, but we confess him to be somewhat loose to the touch, and to have possibly too fine a character of wool for Lincoln. Still, in the succeeding class, wool of the same character as that of this shearling has not prevented the judges from awarding a first place to a very firm and good sheep, the property of the Messrs. Dudding. The 2d prize is awarded to a ram, bred and owned by Mr. Algernon Hack, of Buckminster, Grantham. Mr. Gunnell's five ewes, shown in Class 82, are good in every way, and uniform both in character and fleece. In this class Mr. Cartwright is 2d, Mr. John Pears, of Mere, Lincoln, 3d.

Oxfords formed a good show, well represented in all the classes, with the exception of the shearling ewes, which only contained three pens of good sheep. In the shearling class, Mr. Treadwell, of Winchenden, carried off the prize with a very true sheep, the first at Guildford, and Mr. Longland is 1st prize winner in the class for older rams. The 2d prize is taken by Mr. Wallace, of Old Stafford, who also holds the reserve number. In the class for older rams, Mr. Longlands leads the way with what was the reserve number in the same class at Oxford last year. He is in every way a typical sheep, having a uniformly rich brown face, free from grey or white, a good top-knot, plenty of wool between the ears, a firmly fleshed and well-covered back, plenty of substance and weight, and in fact, a good sheep all round. The 2d prize is taken by a ram belonging to Mr. Milton Druce, of Burghfield, a truly grown and firm sheep, like the last, but a year younger, and not quite so good at the neck. This sheep was 3d at Oxford last year. We may mention as an instance of the changes wrought by time, and a change of judges, that Mr. Wallis' 1st prize at Oxford was only commended at Wolverhampton, and that his 1st prize shearling at Oxford was only 3d at the recent Royal meeting. There were some good Oxfordshire ewes shown, but rather few of them. Mr. M. Druce's 1st prize pen of five were remarkably good, and Mr. Howard's 2d prize were well headed, and in other respects excellent.

Southdowns.—There was a fair show of rams and a good show of ewes in these classes, although the former were most numerously represented. The 1st prize for shearling rams was secured by Sir William Throckmorton, of Buckland, Faringdon, Berkshire, with a sheep which, although less in size than the 2d prize sheep, which was also one of Sir William's exhibits, was of more perfect form and better quality. Mr. Rigden's 3d prize sheep was also very excellent in his points. The Duke of Richmond's reserve number and highly commended sheep, although good in many respects, had a light neck, and was not quite true grown at the rumps. The same remark applies to Mr. Heasman's commended sheep, No. 840. In class 89, for rams of any other age, H.R.H. the Prince of Wales obtained a high commendation and the reserve number. Sir William Throckmorton is again placed 1st, with a good, straight, well headed and well woolled animal.

Shropshire sheep formed, as might have been expected, a great feature at Wolverhampton. Instead of the 111 entries made in these classes at Oxford, there were 186 entries, and this increase was no doubt partially due to the special cup offered by Mr. R. H. Masfen and other breeders of Shropshires for the greatest number of prizes which should be taken by any exhibitor of these sheep in all classes. We may mention at this point that the cup was won by Mrs. Beach, of The Hattons, a lady who has so long been associated with the improvement of this now well-known breed. The shearling rams were the largest class ever shown, containing 85 entries, the major part of which possess a uniform character and colour, and the few exceptions come from the flocks of younger breeders. The prize animals are of a bold type and of well developed masculine character, dark in feature with bold heads on long, heavy, well developed bodies covered with heavy fleeces, free from black or grey, mounted on short legs. This is satisfactory, since such is the type of Shropshire which ought to be cultivated; and it is by giving prizes to such sheep that breeders will be stimulated to endeavour to produce similar ones. The 1st prize shearling, bred by and the property of Mr. Charles Byrd, of Littywood, is such an animal as has been already described, with a lively countenance and perfect carcase, rectangular, and wonderfully symmetrical. He is of the same family as the 2d prize shearling at Oxford last year, which was let to Lord Chesham for 116 gs. Mr. Mansell, the breeder of the sire of the 1st prize sheep, takes the second place with a shearling of precisely similar type and character, with more weight about him, but scarcely such symmetry. Mr. Stubbs' 3d prize sheep is similar in colour, seems to have led the judges in their decision, but is less stylish, has not so well covered a back, and shorter wool. In the class for rams of any other age, Mr. Mansell takes the head with a remarkably noble sheep, with extraordinary masculine head and fore-end. He has a long, heavy well-developed body, capable of making the heaviest sheep of his class, and is covered with a splendid pile of wool, free from grey or black. His features are somewhat bolder even than Mr. Mansell's type, and there is in this sheep a little grey on the nose, which is not a characteristic of the flock from which he springs, but we are informed that this is traceable through a ewe to a remote progenitor, "Old Marquis." The Shropshire ewes were not so good as the rams—very numerous, but not a very excellent show.

There was a large entry of Shropshire shearling ewes. The 1st prize was well won by a pen of five, exhibited by Mrs. Beach, of The Hattons. These sheep were of the best Shropshire type, having dark brown faces and legs. It is possible to imagine heads better wooled, but the general style of the animals, and the thickness and weight of carcase, fairly entitled them to their position. Lord Chesham, who took both 2d and 3d prizes in this class, showed sheep of the same uniform good type, and Mr. H. Smith, of Sutton Maddock, received a high commendation for some good sheep, with scarcely frame enough to stand against the prize pens.

The best ten Shropshire ewes made another class, where Mr. William Baker, of Moor Barns, took the lead with an excellent pen which, if we must criticise, had a trifle too much grey on their faces. Mrs. Beach's pen, placed 2d, was free from this fault, but had not the weight of carcase of the 1st prize sheep. Mr. Thomas Nock's 3d prize ewes were also a grand lot of sheep, with scarcely the faces to please judges in a class of so much excellence. The class for ten ewe lambs was well filled, and the 1st prize was awarded to Mr. John Hanbury Bradburne, of Pipe Place, Lichfield, for some grandly carcased lambs, with scarcely wool enough between their ears, and the 2d place was taken by Mrs. Beach for a stylish, good pen. Lord Chesham's 3d prize pen might have been a little better matched, but were good lambs. We were particularly struck with the wonderful character and quality of Mrs. Beach's ten ram lambs, which took off the 1st prize in their class. They were all "as like as peas," and the wool between the ears and on the forehead was developed in a remarkable degree. The 2d prize pen, in the same class, also contained some very excellent lambs, which, although scarcely so grand in their frames as in the first pen, reflect credit on their breeder, Mr. Thomas Nock, of Sutton Maddock. Mr. Henry Smith's lambs were 3d, and scarcely possessed size and condition to rival the first two pens.

Such is a slight sketch of a remarkable show of Shropshires. The breed is distinctly rising in quality and *uniformity*, and the judges certainly appear to have had a model before them to which they adhered, throughout all the classes, with praiseworthy tenacity.

The following were the judges and their awards :—

JUDGES.—Leicester : R. Fisher, Leconfield, Beverley ; T. Potter, Yellowford, Thorverton ; T. H. Simpkin, Hoby, Leicester. Cotswolds and Oxfordshire Downs : R. Garne, Aldsworth, Northleach : R. J. Newton, Campsfield, Woodstock. Lincolns, and Rylands and other Long-woolled Breeds : C. Clarke, Scopwick, Sleaford ; J. Greetham, Stainfield, Wragby. South Downs, Hampshire, Dorset, and other Short Wools : H. Fookes, Whitechurch, Blandford ; J. S. Turner, Seaford, Sussex. Shropshires : B. Bond, Swansmoor, Great Haywood, Stafford ; W. Kemp Bourne, Fisherwick, Lichfield ; R. H. Masfen, Pendeford, Wolverhampton. Cheviots and Mountain Sheep : J. Irving, Shap Abbey, Westmoreland . R. Shortreed, Attonburn, Kelso, N.B. Inspectors of Shearing : W. B. Canning, Elston Hill, Devizes ; W. Jobson, Buteland, Hexham ; J. B. Workman, Ridon, near Pershore.

Leicesters.

Shearling Ram.—1st, £20, George Turner, jun., of Alexton Hall, Uppingham ; 2d, £10, the Rev. George Inge, of Thorpe Constantine, Tamworth, Staffordshire ; 3d, £5, the Rev. George Inge. Highly Commended : George Henry Sanday, of Holme Pierrepoint.

Ram of any other age.—1st, £20, G. Turner, jun., Alexton Hall ; 2d, £10, George Henry Sanday, of Holme Pierrepoint ; 3d, £5, John Borton, of Barton House. Highly Commended : the Rev. George Inge. Class generally Commended.

Pen of 5 Shearling Ewes of the same flock—1st, £15, Teasdale Hilton Hutchinson, of Manor House, Catterick ; 2d, £10, John Borton, of Barton House ; 3d, £5, the Rev. George Inge, of Thorpe Constantine.

Cotswolds.

Shearling Ram—1st, £20, Thomas Brown, of Marham Hall Farm, Downham Market, Norfolk ; 2d, £10, Thomas Brown . 3d, £5, Thomas Brown.

Ram of any other age—1st, £20 (reserved), the Executors of the late Thomas Gillott, of Kilkenny ; 2d, £10, Thomas Brown, of Marham Hall Farm ; 3d, £5, Thomas Brown.

Pen of 5 Shearling Ewes of the same flock—1st, £15, Russell Swanwick, of the Royal Agricultural College Farm, Cirencester, Gloucestershire ; 2d, £10, Russell Swanwick.

Lincolns.

Shearling Ram.—1st, £20, William F. Marshall, Branston, Lincoln ; 2d, £10, Thomas Cartwright, Dunston Pillar, Dunston ; 3d, £5, William & Henry Dudding, Panton House, Wragby. Highly Commended : Robert Johnson, Kirkireton, Wirksworth.

Ram of any other age.—1st, £20, William & Henry Dudding ; 2d, £10, Algernon Hack, of Buckminster, Grantham ; 3d, £5, John Pears, of Mere, Lincoln. Highly Commended : William & Henry Dudding.

Pen of five Shearling Ewes of the same flock.—1st, £15, Thomas Gunnell, of Willow House ; 2d, £10, Thomas Cartwright, of Dunston Pillar ; 3d, £5, John Pears, of Mere. Highly Commended : Richard Newcombe Morley, of Leadenham, Grantham.

Oxfordshire Downs.

Shearling Ram.—1st, £20, John Treadwell, of Upper Winchendon ; 2d, £10, George Wallis, of Old Shifford, Bampton, Faringdon ; 3d, £5, George Wallis, of Old Shifford, Bampton.

Ram of any other age.—1st, £20, James Longdon, of Grendon, Northampton ; 2d, £10, A. F. Milton Druce, of Burghfield, Reading ; 3d, £5, George Wallis, of Old Shifford.

Pen of 5 Shearling Ewes of the same flock.—1st, £15, A. F. Milton Druce, of Burghfield, Reading ; 2d, £10, Charles Howard, of Biddenham, Bedford.

Ryland and other Long-wools,

Not qualified to compete as Leicesters, Cotswolds, or Lincolns.

Shearling Ram.—1st, £15, John Lynn, of Church Farm, Stroxton ; 2d, £5, John Lynn.

Pen of 5 Shearling Ewes of the same flock.—1st, £10, Thomas William Daniel Harris, of Wootton, Northamptonshire.

Southdowns.

Shearling Ram—1st, £20, Sir William Throckmorton, Bart., of Buckland, Faringdon ; 2d, £10, Sir William Throckmorton ; 3d, £5, William Rigden, of Hove.

Ram of any other age—1st, £20, Sir William Throckmorton, Bart. ; 2d, £10, William Rigden, of Hove ; 3d, £5, William Rigden, of Hove. Highly Commended : H.R.H. the Prince of Wales, K.G.

Pen of 5 Shearling Ewes of the same flock—1st, £15, the Duke of Richmond, K.G. ; 2d, £10, Lord Sondes, of Elmham Hall, Thetford, Norfolk ; 3d, £5, Colonel R. N. F. Kingscote, M.P., Kingscote Park, Wootton-under-Edge. Highly Commended : Sir William Throckmorton, Bart.

Shropshires.

Shearling Rams.—1st, £20, Charles Byrd, Littywood ; 2d, £10, Thomas Mansell, Adcote Hall ; 3d, £5, John Stubbs, Burston, Stone, Staffordshire. Highly Commended : Sarah Beach, The Hattons, Brewood, Staffordshire.

Ram of any other age.—1st, £20, Thomas Mansell, Adcott Hall ; 2d, £10, John Evans, Uffington, Shrewsbury ; 3d, £5, John Coxon, Freeford Farm, Lichfield. Highly Commended : William Baker, Moor Barns, Atherstone ; Sarah Beach, of The Hattons, Brewood ; Thomas Nock, Sutton Maddock, Shiffnall ; Charles Reynolds Keeling, Yew Tree Farm ; Richard Edwards, Udlington, Shrewsbury ; Lord Chesham, Latimer, Chesham, Bucks.

Pen of 5 Shearling Ewes of the same flock.—1st, £15, Sarah Beach, of the Hattons, Brewood, Staffordshire ; 2d, £10, Lord Chesham, of Latimer, Chesham, Bucks ; 3d, £5, Lord Chesham. Highly Commended : William Baker, of Moor Barns, Atherstone ; William Yates, of Grindle House, Shiffnal ; W. O. Forster, of Apley Hall, Shiffnal.

Ten Shropshire Ewes, having had lambs in 1871.—1st, £20, William Baker, of Moor Barns, Atherstone ; 2d, £10, Sarah Beach, of The Hattons, Brewood ; 3d, £5, Thomas Nock, of Sutton Maddock, Shiffnal.

Ten Shropshire Ewe Lambs.—1st, £15, John Hanbury Bradburne, of Pipe Place, Lichfield ; 2d, £10, Sarah Beach, of The Hattons, Brewood ; 3d, £5, Lord Chesham. Highly Commended : William Baker, of Moor Barns, Atherstone.

Five Shropshire Ram Lambs.—1st, £15, Sarah Beach, The Hattons, Brewood ; 2d, £10, Thomas Nock, Sutton Maddock, Shiffnal ; 3d, £5, Henry Smith, New House, Sutton Maddock, Shiffnal.

Hampshire and Other Short-wools,

Not qualified to compete as Southdowns or Shropshires.

Shearling Rams.—1st, James Rawlence, of Bulbridge, Wilton ; 2d, Alfred Morrison, of Fonthill House, Tisbury, Wilts ; 3d, Alfred Morrison. Highly Commended : Robert and John Russell, of Horton Kirby. Commended : Robert and John Russell, James Rawlence, of Bulbridge, Wilton.

Ram of any other age.—1st, £20, James Rawlence, of Bulbridge.

Pen of 5 Shearling Ewes of the same flock.—1st, £15, James Rawlence ; 2d, £10, James Rawlence.

Dorsets.

Shearling Ram.—1st, £15, Henry Mayo, of Cockers Frome, Dorchester ; 2d, £5, Henry Mayo.

Cheviots.

Ram of any age.—1st, £15, John Robson, of Bymess, Rochester ; 2d, £5, John Robson. Highly Commended : John Robson.

Pen of 5 Ewes of any age.—1st, £10, John Robson ; 2d, £5, Alexander Roxburg, of Caerllo. Highly Commended : Alexander Roxburg, of Caerllo.

Mountain Sheep,

Not qualified to compete as Cheviots.

Ram of any age.—Three entries, disqualified by the Inspectors of Shearing.

Pen of 5 Ewes of any age.—1st, £10, Jonathan Peel, Knowlmere Manor, Clitheroe. The other two entries disqualified by the Inspectors of Shearing.

PIGS.

The Pig classes are remarkable for the excellence of the white breeds exhibited. The black classes were not by any means so good, and the Berkshires as a whole are barely up to the mark of ordinary merit. In a very good class of white boars over twelve months old, Mr. Eden, of Salford, takes the 1st prize with a large well-made pig, showing perhaps a little more quality than the 2d prize boar of Messrs. Duckering. The younger class of boars are also a fair class, varying, however, more in size. Mr. Everett, of Thetford, takes the 1st prize with a long and rather slim specimen, Mr. Wheeler, of Shipston-on-Stour, being 2d. The sows of this breed are a wonderfully fine class. Messrs. Eden and Duckering are again 1st and 2d respectively—the former showing a sow with eight large and handsome pigs, the latter showing one with six, much younger and less prosperous looking. In the class of three breeding sows of the same litter the same order obtains—Eden 1st, Duckering 2d ; the latter showing two pens. These three pens were remarkably even. Messrs. Howard in the same class showed a pen considerably smaller, being three months younger. The boars of the small white breed are shown in two very good classes. Mr. Eden, again 1st in the older class—a very even and capital lot—but unsuccessful in the younger class, where Mr. Walker, of Burton, and Mr. J. E. Fox, of Bradford, are respectively 1st and 2d. There are capital classes also of breeding sows and sow pigs—Mr. Duckering, 1st in the former class, Mr. Eden 1st in the latter, which certainly was a remarkably fine class.

The older class of boars of a small black breed were a middling lot. Mr. Mortimer Ware, from Helstone all the way, was 1st, with a very good boar ; and Mr. H. Crossley, of Halifax, 2d. In the younger boars Mr. Ware was again 1st, and Mr. Sexton 2d.

The sow classes of this breed were better than the boars. Mr. Sexton is 1st, and Mr. Hope, of Parsloes, Barking, 2d, with a very handsome specimen of the breed, showing both quality and constitution, and Mr. Sexton is 1st and 2d in the class of young sow pigs.

The Berkshire classes are tolerably good, Mr. Swanwick, of the Royal Agricultural College, who has for some years been exhibiting, at length succeeding in taking all the chief honours, *i. e.*, 1st in the older class of boars, 1st and 2d in the younger class of boars, and 1st and highly commended in the sow class, a very large and good collection.

There are very good classes "not eligible to compete in any of the preceding classes," and here we have the same names again succeeding—Mr. Peter Eden, who has had unrivalled success as pig breeder, at this meeting taking the 1st prize for both boars and sows.

The following were the judges and their awards :—

JUDGES.—J. Angus, Whitefield, Morpeth ; H. Aylmer, West Dereham Abbey, Stoke Ferry ; J. Smith, Henley-in-Arden.

Large White Breed.

Boar above 12 months old.—1st, £10, Peter Eden, of Cross Lane, Salford ; 2d, £5, Richard E. Duckering, Northorpe, Kirton Lindsey. Highly Commended : Henry Goodall, Arcted, Sandbach.

Boar above 6 months and not exceeding 12 months old.—1st, £10, Francis H. Everett, Bridgham, Thetford ; 2d, £5, John Wheeler, Long Compton, Shipston-on-Stour. Highly Commended : Francis H. Everett, Bridgham.

Breeding Sow.—1st, £10, Peter Eden ; 2d, £5, Richard E. Duckering. Highly Commended : Edward Davis, 2, Old Mill Street, Wolverhampton ; James and Frederick Howard, Britannia Farm ; Peter Eden.

Pen of 3 Breeding Sow Pigs of the same litter, above and under 8 months old.—1st, £10, Peter Eden ; 2d, £5, Richard E. Duckering. Highly Commended : Richard E. Duckering.

Small White Breed.

Boar above 12 months old.—1st, £10, Peter Eden ; 2d, £5, John Sagar, of Lister Hills, Bradford. Highly Commended : Thomas Comber, of Redcliffe, Newton-de-Willows ; Lord Chesham.

Boar above 6 months and not exceeding 12 months old.—1st, £10, Matthew Walker, of Stockley Park, Anslow, Burton-on-Trent ; 2d, £5, John Edward Fox, of Mansion House, Great Horton, Bradford. Highly Commended : Richard E. Duckering.

Breeding Sow.—1st, £10, R. E. Duckering ; 2d, £5, Charles Roberts, of Wakefield, Yorkshire. Highly Commended : Clement R. N. Beswick-Royds, of Pyke House, Littleborough.

Pen of 3 Breeding Sow pigs of the same litter, above 4 and under 8 months old,—1se, £10, Peter Eden ; 2d, £5, Richard E. Duckering. Highly Commended : John Clark Andrew, of Crewkerne, Somerset.

Small Black Breed.

Boar above 12 months.—1st, £10, William Mortimer Ware, Newham House, Helstone ; 2d, £5, Henry Crossley, Broomfield, Halifax. Highly Commended : Henry Crossley.

Boar above 6 months and not exceeding 12 months old.—1st, £10, W. Mortimer Ware ; 2d, £5, George Mumford Sexton. Highly Commended : George Mumford Sexton, of Wherstead Hall, Ipswich.

Breeding Sow—1st, £10, George Mumford Sexton ; 2d, £5, William Hope, of Parsloes, Barking, Essex. Highly Commended : George Turner, jun., of Alexton Hall.

Pen of 3 Breeding Sow Pigs of the same litter, above 4 and under 8 months old.—1st, £10, George Mumford Sexton, of Wherstead Hall, Ipswich ; 2d, £5, Samuel Geater Stearn, of Brandeston. Highly Commended : Thomas Comber, of Redcliffe, Newton-le-Willows.

Berkshire Breed.

Boar above 12 months old.—1st, £10, Russell Swanwick, of Royal Agricultural College Farm, Cirencester, Gloucestershire ; 2d, £5, Arthur Stewart, of St. Bridge, Gloucester. Highly Commended : John Gilbert, of Half-way Farm, Perry Barr ; Heber Humfrey, of Kingstone Farm, Shrivenham.

Boar above 6 months and not exceeding 12 months old.—1st, £10, Russell Swanwick, of Royal Agricultural College Farm, Cirencester ; 2d, £5, Russell Swanwick, of Royal Agricultural College Farm.

Breeding Sow.—1st, £10, Russell Swanwick, of Royal Agricultural College Farm. Highly Commended : John Spencer, of Villiers Hill, Kenilworth, Warwickshire ; Russell Swanwick, of Royal Agricultural College Farm : Arthur Stewart, of St. Bridge.

Pen of 3 Breeding Sow Pigs of the same litter, above 4 and under 8 months old.—1st, £10, the Rev. Henry G. Baily, of Swindon, Wilts ; 2d, £5, John Gilbert, of Half-way Farm, Perry Barr. Highly Commended : Henry Stanley, of Upton, Shiffnal ; Russell Swanwick, of Royal Agricultural College Farm.

Breed not eligible to compete in any of the preceding Classes.

Boar.—1st, £10, John Edward Fox, of Mansion House, Great Horton ; 2d, £5, Peter Eden.

Breeding Sow.—1st, £10, Peter Eden ; 2d, £5, William Parker, Bradford. Commended : Richard E. Duckering.

Pen of 3 breeding Sow Pigs of the same litter, above 4 and under 8 months old.—1st, £10, Clement R. N. Beswick-Royds, of Pyke House, Littleborough, Lancashire ; 2d, £5, Thomas Bantock, of Merridale House, Wolverhampton.

We append, for the sake of completeness, the names of the judges in the undernoted divisions :—

Wool.—Jason Gurney, Hounslow, Middlesex.

Butter and Cheese.—W. Clark, 148, Temple Street, Bristol ; J. Robinson, Town Hall Buildings, Newcastle-on-Tyne ; J. Watson, Carr's Lane, Birmingham.

THE IMPLEMENT YARD.

THE implement catalogue is a more bulky volume than last year by some 500 entries, the total being 7650, numerous entries containing several articles. There are 363 stands, of which 232, containing 6535 entries, are in the main area, divided as usual by a central avenue. In the machinery in motion department there are 79 stands—42 on the east side, and 37 on the west, containing 481 entries. In the seeds, roots, and manure, &c., department, there are 40 stands and 534 entries, and in the open space, comprising greenhouses and other articles, 11 stands and 100 entries. On the left of the main entrance there are two long sheds for wool and dairy produce, not included in the implement catalogue.

Of the special entries for the Wolverhampton meeting, there are 105 "for trial," under steam culture, traction engines being included in class 17 ; under Hop cultivation there are 20 entries "for trial," besides several doubles not thus entered, and two or three hop-presses for brewers, catalogued along with hop-presses for hop-growers. Some 19 entries claim novelty sufficient to merit the 10 silver medals, and are accordingly entered for trial. Total for trial, 144.

In our report we shall first notice steam-culture implements ; 2d, hop-culture implements ; 3d, the miscellaneous articles entered for the 10 silver medals ; 4th, a few articles of special merit, and then, as we can, run over the other articles as we have hitherto done at the meetings of the Royal Agricultural Society.

Steam Cultivation, &c.—Premising that we must postpone till next Saturday a further account of the steam cultivation trials, we now report that there is a larger exhibition of implements and machinery under this head than has been seen at any previous meeting of the Royal Agricultural Society. There may be a few forced entries, where the articles shown have but a slender connection with steam-culture or engines employed in agriculture, but exceptions of this kind are unworthy of notice. We are unable to take the articles in the order they stand in the catalogue, and must be satisfied with mentioning only a few of the leading stands.

Messrs. J. & F. Howard, Bedford, have a splendid show under 17 entries. (1). They show for the first time a pair of their tubular safety-boiler traction-engines adapted for the double engine and single implement system, or for the double engine and double implement system, which latter permits of each engine continuously working one implement, thus performing double work as compared with the single implement systems. The engines are each fitted with two winding drums, so that they can be worked conjunctly or separately on the right across or roundabout plan; (2), a pair of their common patent traction engines with boiler across the framing, fitted each with a single winding drum for the double engine and single implement system; (3), a set of steam tillage implements with detached windlass and tackle, including snatch-blocks, rope and anchors, adapted for being worked by a common portable engine; (4), a new improved patent detached windlass with tackle, &c., as entry 3; (5), a pair of steam traction waggons made entirely of wrought iron, except the axles, which are of steel; (6), a 3-furrow semi-balance plough with three sets of bodies mounted on strong flanged steel beams, one set for ploughing, the second for digging, and the third scarifying or smashing; (7), a 4-furrow semi-balance plough in other respects similar to the last; (8), a 6-furrow semi-balance plough, similar in other respects to the two preceding, for either ploughing, digging, or scarifying, according to the kind of breast fixed on the frame; (9), a 2-furrow deep tillage implement, also similar in principle of construction to the preceding, but adapted for ploughing, digging, or smashing to the depth of from 12 to 18 inches deep; (10), a 4-furrow or double stetch ridging steam-plough, with framing as entry 7, and which can be used as a 4-furrow plough, digger, or scarifier—and by changing the breasts, the implement makes two drills or stetches at a time. This is an invaluable implement on all farms where root crops are grown; (11), a one-way double-pointed rocking tine cultivator for 1, 2, 3, 4, or 5 tines, as the nature of the ground requires. Each tine rocks in the frame, so that the point in action is depressed, and the one behind so raised as not only to avoid sole friction, but to aid in the work of cultivating the land; (12), a cultivator similar in construction to the last, with steel beams, fitted for seven rocking double-pointed tines; (13), a steam cultivator for light and medium soils, covering 9 feet in breadth by 9 inches in depth, with simple, efficient steerage, and an improved method of carrying the slack rope; (14), an improved steam corn-drill; (15), a steam clod-crusher, similar to a horse clod-crusher, but fitted with steerage, so as to adapt it to steam-power by means of rope haulage; (16), a set of patent zig-zag steam-harrows; (17), a heavy drag steam-harrow. Very great progress is manifested in the exhibits of this firm, that of the tillage implements being based on the principles of construction of their horse implement, with which they have been for a length of time more than successful. Their safety-boiler traction-engine is one of the greatest advances in the implement-yard, and is based upon their safety fixed boilers, which are gradually obtaining adoption. No doubt the greater power of generating steam, as compared with the common boiler, will require a corresponding degree of caution during the excitement of trials to avoid breakage, but this is only a question of experience and calculation in the construction of gearing to secure safety in this respect, as in obviating harm otherwise by the peculiar construction of the boiler. A great many steam implements shown by the Bedford firm are not entered for trial.

Messrs. Ransomes, Sims & Head exhibit an 8-horse (nominal) power traction-engine with elastic tyres, invented by R. W. Thomson, of Edinburgh, and John Head, of Ipswich. It carries its own fly-wheel, so that its power may be transmitted to all sorts of farm machinery and implements when not applied to hauling waggons, &c., by direct traction. This firm also exhibit an 8-horse (nominal) power locomotive-engine, invented by R. W. Thomson and John Head, similar in construction to the preceding, but fitted with cast-iron road wheels of such a form that angle-iron spuds can be attached to the rims. Both these engines are adapted for driving a detached windlass for hauling implements, with an anchor on the opposite headland, or on the roundabout system, with a series of anchors and snatchblocks, and also for working Fisken's light rope system. This firm also exhibit one of the East Indian Government engines with a single carriage, already alluded to under the traction-engine race.

Amies, Barford & Co., of Peterborough, have 13 entries for trial, viz., (1), a steam-culture set, consisting of a 10-horse power traction-engine, a detached windlass, 7-tine improved Woolston cultivator, a 3-furrow balance-plough and digger, a pair of Campain's patent anchors, an illustration of which was given in the *Agricultural Gazette* at the Oxford meeting last year; (2), a windlass driven by friction brakes, which enables the engine to run continuously without stopping to make the return journey; (3), cultivating windlass, invented by Brown & May, of Devizes, driven either by a "tumbling shaft or strap," and furnished with improved clutch gearing. The drums have coiling apparatus, and are mounted on a four-wheel frame; (4), an improved a 7-tined Woolston smasher; (5), an improved 5-tined Woolston smasher for heavy work; (6), a combined cultivator and scarifier, similar to 4, but provided with a set of steel shears for skimming, paring, or scarifying; (7), press wheel-roller, or clod-crusher, for working on the roundabout system, with improved steerage for turning at the headlands; (8), press wheel-roller for not turning at the headlands; (9), patent drag-harrows, invented by J. Ostler, of Walrond Park; (10), a combined cultivator and seed and manure drill, on the principle of a modern Suffolk drill, with Chambers' patent manure-distributor; (11), Campain's right-hand anchor; (12), a 10-horse traction-engine, manufactured by Tuxford & Sons, Boston; (13), a portable wire-rope tarring machine. Campain's left-hand anchor is exhibited, but not entered for trial in the catalogue. Campain's anchors were deservedly the most popular articles in the trial grounds. Their high merit, both for anchorage and the economising of manual labour, is fast recommending them to general use.

John Allen Williams, of Baydon, Wiltshire, one of the earliest improvers and users of steam-culture implements, exhibits for trial a steam-roller, consisting of three cylinders, each 3 feet in diameter, on a common axis in an iron frame, with steerage-wheel in front; also a combined roller, cultivator, and set of three harrows. The roller is the same as described above. The cultivator is in front of the rollers, the set of harrows is behind. By means of a lever, the cultivator is raised at the land's-end, so as to permit of the combined implement being readily turned.

Charles Burrell, Thetford, Norfolk, exhibits an 8-horse (nominal) power traction-engine mounted on springs, with a driving-chain on each side. It has a single steam-cylinder, with change of speed for double power when such is required; also an 8-horse (nominal) power road-steamer under Thomson's patent, with double cylinder and fast and slow gear, adapted for road traffic, steam culture, and other agricultural purposes. He also shows a 12-horse (nominal) power double-cylinder engine under Thomson's patent, with fast and slow gear, and an arrangement for raising and lowering the boiler, so as to keep it level in hilly roads and ground.

The Ravensthorpe Engineering Company, Mirfield, Yorkshire, exhibit for trial (1) a complete set of steam-ploughing tackle, invented by the Messrs. Fisken, consisting of two patent windlasses, six corner anchors, one tension-anchor, two claw-anchors, 30 light rope-porters, 1200 yards of Manilla rope, 800 yards of steel wire-rope, a 4-furrow balance-plough; (2), a complete Fisken set, consisting of a 10-horse traction engine, two patent windlasses, six corner anchors, a driving-rope tension-anchor, two claw-anchors, 25 rope-porters, a 7-tined Howard cultivator, 1200 yards of Manilla rope, 700 yards steel wire rope; (3), a 16-horse Clayton & Shuttleworth portable engine; (4), a 7-tined Fisken balance-cultivator; (5), a 4-furrow Fisken balance-plough; and (6), an improved Fisken harrow.

Messrs. Fowler & Co., Leeds, have no fewer than 40 entries for trial, of which four are complete sets—two on the double-engine system, and two single-engine sets—viz. (1), a 20-horse power double set of steam-ploughing and cultivating machinery. The set includes two 20-horse power double-cylinder traction engines fitted with winding drums, tank, steerage, and all the more recent improved appliances necessary for steam-culture and tractive purposes; also 800 yards of best steel wire rope. The spokes of the fly-wheel are of wrought iron, the shafts and gear of steel. The extended use of steel in the manufacture of their engines show how thoroughly this firm study the requirements of field practice, thereby profiting by their extensive experience. (2). A 12-horse power double set of steam-ploughing and cultivating machinery, the latter including balance-diggers and cultivators, also turning cultivators. With the exception of the horse-power and the single-cylinder engine, the set is similar to the preceding. (3). A 12-horse power single set of steam-ploughing and cultivating machinery and apparatus. This is their clip-drum set, about which so much has been said during the trials in class 2. It includes a 12-horse power single-cylinder engine, fitted with clip-drum, a 6-disc anchor opposite, 800 yards of steel wire rope, and 20 rope-porters, with balance-plough, convertible into a digger or cultivator by change of breast, or a turning-cultivator, and all the necessary appliances for steam-culture and road-traction. The boiler, axles, and gear are made of steel. Total weight under 10 tons. The introduction of steel boiler plate increases strength and reduces weight, a most important improvement in traction-engines for farm and road work. (4), An 8-horse power double-drum set, comprising an 8-horse power single-cylinder engine, fitted with two winding-drums, a 6-disc anchor, 1200 yards of common steel rope, 16 rope-porters, a balance-plough, digger or cultivator, &c.; (5), Fowler's winding-windlass and tackle; (6), 8-furrow balance-plough; (7), 6-furrow balance-plough; (8, 9, 10), three 6-furrow balance-ploughs; (11), 5-furrow balance-plough; (12), 4-furrow balance-plough; (13), 4-furrow balance-digger; (14), 4-furrow balance-plough; (15), 4-furrow balance-plough fitted with slack gear; (16 and 17), two 13-tined turning cultivators, extra strong, for 20-horse engines; (18, 19), two 11-tined turning-cultivators; (20, 21), two 9-tined turning-cultivators; (22, 23), two 5-tined light land turning-cultivators; (24, 25), two turning-harrows with steerage frame, so constructed as to take different weights of harrows. The frame can also be fitted with ridging breasts. The harrows can be lifted, to clear them of weeds, &c. (26), 7-tined balance-cultivator; (27), 7-tined balance-cultivator, with slack gear; (28), a patent Coultas seed-drill, fitted with the exhibitor's steerage harrows before and behind, which are raised at the headlands, to permit turning. The frame is entirely of iron, and the drill finishes the work at once. (29). General purpose seed and manure drill by Coultas and the exhibitors, fitted with steerage, turning apparatus, &c.; (30), subsoil-plough, for turning over the furrow-slice and loosening the subsoil below to the depth of from 18 to 24 inches; (31), trenching plough, for turning down the staple to the bottom and bringing up the subsoil to the surface; (32), patent mole-draining plough; (33), plough for cutting or cleaning open ditches, 20 inches wide by 18 inches deep; (34), a root or stone extractor; (35), 3-tined knifer; (36), 2-tined knifer; (37), two water carts, with hose for feeding boilers; (38), 12-feet roller, with patent steerage apparatus; (39, 40), two sleeping vans for the labourers of hirers-out, fitted with vice for small repairs and boxes for carrying duplicates.

Robey & Co., Lincoln, exhibit an 8-horse power traction-engine, under Thomson's patent, for road work or steam-culture by direct or rope traction. Also a 6-furrow plough, adapted to their Thomson engine, for steam-culture by direct traction.

Tuxford & Sons, Boston, enter for trial a 10-horse traction-engine or farm locomotive for drawing, cultivating, and farmyard purposes. The engine is of extra strength, so that it can with safety work considerably above its nominal power. They also enter an improved cultivating windlass, with adjustable expanding friction-couplings and automatic friction-brakes, so that the drums can be thrown into and out of gear without shock or jar, and the brakes prevent slack in the rope and the injury so often experienced therefrom by windlasses without such improvements.

Aveling & Porter, Rochester, Kent, enter for trial (1), a 12-horse (nominal) power traction engine, fitted with a single winding-drum for the double-engine system of haulage; (2), a 10-horse (nominal) power traction-engine for road work, steam-cultivation by a detached windlass, threshing and other farm purposes. (3), a 6-horse (nominal) power traction-engine, for road and other farm purposes as the last; (4), a 6-horse (nominal) power agricultural locomotive engine, with improved wheels; (5), a low-sided steam-trolley, capable of carrying 5 tons; (6), a waggon, also capable of carrying 5 tons of agricultural or other produce.

Hop Cultivation.—Messrs. Coleman & Morton, Chelmsford, enter a hop-cultivator, fitted with wheels in front, having crank-axles for regulating the depth of working by the action of a lever; also another hop-cultivator, or nidget, similar to the last, but lighter. They also enter for trial a hop syringing-engine, for washing the Hop plant when infested with aphis blight. It consists of a circular water barrel of iron, mounted on wheels, fitted with a force-pump and two jets, with 16 feet of delivery hose to each. The pump has an air vessel attached to the suction pipe, a strainer inside, so that two continuous jets of washing liquid can be delivered for washing two rows or hills at a time. Its general form may be gathered from fig. 194, which shows the same general apparatus adapted as a road-watering machine. This machine has gained the first prize of £10.

William Weeks & Son, of the Perseverance Iron Works, Maidstone, Kent, have a very excellent exhibit of Hop cultivating implements, machinery, and apparatus, well worthy the attention of Hop-growers. Twelve articles are entered for trial, viz. (1), a Hop-washing machine, capable of holding 28 gallons. The pump is fitted with double hose, each having 25 feet of 3-ply hose, with tap and jet; the interior is furnished with a filtering or straining bag, similar to a coffee-pot, so that in washing off the aphis blight the leaves of the bine are not injured with thick matter, such being strained out by the strainer; (2), a hop-sulphuring machine, for destroying mould in Hops. It consists of a small fan mounted on wheels, from which motion is given to the fan; the exit blast is divided into two currents, so that when wheeled forward between two rows of poles, or bines otherwise trained, both sides are dusted over with the sulphur blown from the machine. The sulphur is fed in regularly as required from a hopper. This machine has gained the 1st prize of £10. (3). An improved hop-presser with case and weighing apparatus, which has gained the 1st prize of £10; (4), a hop-presser, with or without case, to which the 1st prize was awarded at the Canterbury meeting of the Royal Agricultural Society in 1860; (5), a hop-bine cutting machine on travelling wheels, for cutting hop-bines into short lengths for manure or other purpose. In principle of construction it is that of a portable chaff-cutter, the bine being drawn in between fluted rollers, &c. (6). A hop-alley clod-crusher, invented and manufactured by the exhibitors; (7), a heavy iron hop-skim or cultivator, invented and manufactured by the exhibitors; (8), a light iron hop-skim or cultivator; (9), an iron hop-nidget fitted with steel shares for heavy work; (10), an iron hop-nidget fitted with steel shares for light land; (11), a portable dipping-tank for dipping hop-poles in creosote; (12), a fire-basket for drying Hops in kilns.

Richard Read, of 35, Regent Circus, Piccadilly, London, enters for trial a hop-washing machine with double hose and jet for washing two hills or rows of

Hop plants at a time. It has a copper wire-gauze strainer, through which the washing liquid is drawn to the pump, and a safety-valve may be had to order similar to another hop-washing machine exhibited but not entered for trial. Mr. Read also exhibits for trial a small pail-washing machine for small Hop gardens, which, it is stated, can be worked by one person.

Mellard's Trent Foundry, Rugeley, Staffordshire (Alfred Giles, manager), enter three of Godfry's American revolving mouldboard-ploughs for trial. An illustrated notice of this implement was given in the *Agricultural Gazette* at the Guildford meeting of the Bath and West of England Society last month, and to it we refer. The judges awarded a silver medal to one of these ploughs, viz., entry 3012 in the catalogue. In a field not far from the trial grounds at Stafford a farmer was working one of the American single ploughs, and making excellent deep ploughing. The work was better done down-hill than up-hill. The implement was hauled by three horses, all going in the furrow—old style.

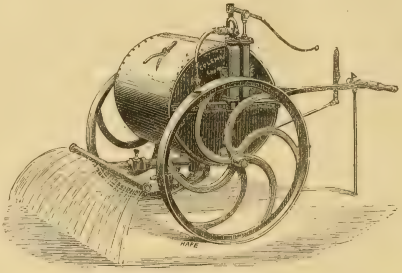


Fig. 194.—Coleman's watering-machine.

GENERAL REPORT OF IMPLEMENTS.

There is a fine show of horse-ploughs on the stands of Messrs. J. & F. Howard, Ransome, Sims & Head, and Hornsby & Sons. Double-furrow ploughs have increased tenfold since the Oxford meeting. Very great improvements have been introduced by the Ipswich firm during the current year. We figure in particular the simplest and lightest of the existing double-furrow ploughs, lying on its side for turning at the land's-end (fig. 195), and a one-way double-furrow plough—fig. 198 in the position in which it is at work, fig. 199 in the position half-way towards reversal, at the land's-end, in which it can be shifted from place to place. Cultivators are equally numerous; broadshares and scarifiers are plentiful; harrows and drags, including chain-harrows, are well represented by the Howards, Hunt & Pickering, Larkworthy, Underhill, Ball, Cambridge, Corbett & Chipchase, Page & Co., Denton, &c.; horse-hoes by Garrett & Sons, Clay, Hill & Smith, Page & Co., Priest & Woolnough, and others. Rollers are exhibited on 25 stands, corn and seed drills on upwards of 60, turnip-drills on 15 stands.

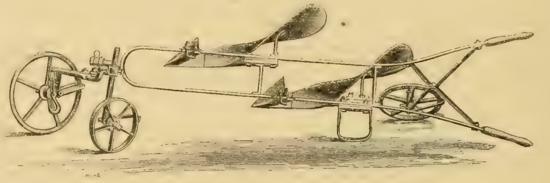


Fig. 195.—Ransome's lighter double-furrow plough.

There is an extensive exhibit of mowing and reaping machines, horse-rakes, &c. Burgess & Key have greatly improved their conical reel-raker, which they recently introduced. Instead of wood tubular iron arms have been introduced. The leverage is so arranged that the driver, riding on one of his horses, has, by means of a vertical lever rising up to his hand, as complete control over the whole machine as if seated on the machine in the ordinary way. Wood has a fine show of American machines; he has introduced a self reel-raker, in which the arms are each hinged some 6 inches from the end next the standard, and by means of a three-lobed cam the arms rise vertically as they come round to the seat of the driver, and fall into the cam as they come round. The main carriage wheel rotates on three small friction wheels, working in the interior of its rim; this permits the connecting rod to work through the wheel, and the crank to have a direct thrust in a line with the bearing of the wheel. Hornsby & Son exhibit their best machines; so do the Howards, Samuelson & Co., Picksley, Sims & Co., Bamlett, the Reading Iron Works, Kearsley, &c. Hayes & Son exhibit excellent waggons; so do Ball & Son, Milford & Sons, the Bristol Waggon Works Company, Crosskill & Sons, and the Beverley Iron and Waggon Co. Single-horse carts are shown on 13 stands; two-horse carts on 8 stands, cattle carts on 3, drays on 3, general purpose carts on 3, harvest carts on 6, market carts on 3, pony carts on 2, sanitary carts on 5 stands, watering carts on 4 stands, dog carts on 14, horse-rakes on 27 stands.

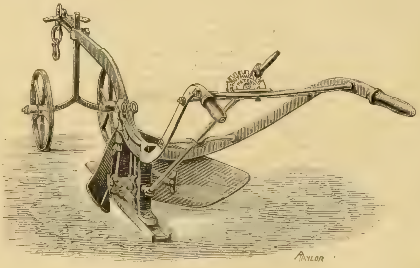


Fig. 196.—Southwell's ridging plough.

Horse pitchforks and straw and hay elevators are exhibited on upwards of a dozen stands; one of the latter we shall hereafter notice, viz., Tasker & Son's folding balance-elevator. Steam-engines, threshing and dressing machines are above an average show. Clayton, Shuttleworth & Co., Marshal & Sons, Tuxford & Sons, Ruston, Procter & Co., Robey & Co., the Lincolnshire firms, appear as if arrayed in competition, and no doubt so they are. In short, threshing machines are shown on no fewer than 32 stands. Horse-gears, powers, and intermediate motions are shown on 32 stands. The other articles of the barn are innumerable. Riches & Watts, of Duke's Palace Iron Works, Norwich, Norfolk, exhibit in motion Child's Patent "Aspirator," for dressing all kinds of grain and rice by the combination of riddles, elevators, and exhaust. The machine attracted much attention during the show, and merits a more detailed notice than our present limits will permit us to give it.

Of flour-mills and grinding-mills for man and beast, the number for hand, horse, and steam power exceeds that of previous years, when they were included in the special trials. The same may be said of chaff-cutters, root-cutters, pulpers, and cake-breakers. Chaff-cutters, for example, are shown on no fewer than 50 stands; turnip-cutters, slicers, pulpers, &c., on 26; cake-breakers on 27 stands.

Stable and cattle-house fittings are unusually well represented by Musgrave Brothers, Belfast; the St. Pancras Company, London; Cottam & Co., London; R. Willacy, and others.

Pumps and pumping apparatus for irrigation and liquid manuring, sewage distribution pipes, water and liquid manure carts, are unusually numerous. Liquid manure pumps, and pumps generally, are shown on some 40 stands; liquid manure carts and distributors, on 15 stands: such facts speak more than volumes for the progress of liquid manuring.

The three firms who competed at Leicester—Whitehead, Pinfold, and Page & Co.—exhibit brick and tile machines; Stoner & Co., and Wade & Cherry also exhibit. Draining tools are exhibited by several firms, so that this branch is fairly represented.

Saw-tables, band-saws, circular-saws, turning-lathes, mortising machines, &c., are very much as last year. Great progress has been made in this department of machinery in motion, which is annually becoming more and more attractive.

Fencing of various kinds for large animals and small, from bullocks down to rabbits; gates and gate-posts, are abundant if not more numerous than usual. Stone-breakers, steam-hammers, wheel-moulding apparatus, anvils, annealing oven for iron and steel, bolt and nail forging machine, coprolite-mills, bone-mills, fans and blowers for smiths and blast furnaces; fire-engines, heating apparatus, gas stoves and boilers, form another class of articles well represented.

Dairy utensils are about an average; kitchen and cooking apparatus, and the various articles on the house inventory, are above an average. Wm. Hill & Co., 15, Pavement, York, exhibit on stand 261 a very ingenious mode of cooking by steam. "Its economy," says the exhibitor, "is proved by the fact, that if 20 lb. of meat be roasted the loss is 6lb.; if boiled the loss is 4 lb.; but if steamed in this apparatus the loss is only 1 lb." Mr. A. Mills Dix, Shelton Brewery, Potteries, Staffordshire, exhibits a novel refrigerator for cooling worts, of considerable promise to brewers, large and small, and which is available for brewing family ale where a moderate quantity is consumed.

The garden is superabundantly well represented on something like a hundred stands. Some large stands are exclusively devoted to supplying garden requirements.

To the following articles we give a special notice, taking them in the order they stand in the catalogue. Further instances will be given next week:—

Reynolds' Patent Thatching Apparatus (entry 171) is exhibited by Woods, Cocksedge & Warner, Suffolk Iron Works, Stowmarket, sole licencees and manufacturers. This thatch-manufacturing apparatus is extremely simple. By means of a winch on an axis, with a forked termination, each with an eye, through which a wire passes from a coil similar in principle to what is used in rope-making, a handful of straw or other thatch, as reed or Flax, is twisted in at every revolution of the winch-handle. A web may be thus made the whole length of the stack, or of any convenient length. At one end of the web two or three turns are made to fix the wires, which are then cut off. It is found from experience that webs or mats from 2 to 3 feet in length are the most convenient, as they can be made at some slack time prior to harvest, folded up, tied in bundles, and stacked until required for thatching. The thatch they form differs little in outward appearance from thatch put on in the usual way in the southern and midland counties of England, where the thatch is wetted, "yarmed," as it is termed in Hants, carried up by the attendant, and put on, "yarm" after "yarm," by the thatcher, the wetness of the straw and the manner it is yarmed helping to bind it together. By the new machine the thatch is put on dry, and at a fraction of the expense of the old plan, whilst it stands the weather and defends stacks better.

According to the new plan, the thatcher places each mat on the roof, and pegs it down with a patent "broach" or thatch-peg, composed of a sharpened stick of the ordinary kind now in use, but having a hole in its head, through which a twisted thong of wire is attached, having a loop in the opposite end—the length of the thong being equal to the breadth of the mat. Thatch-pegs and thongs being in readiness for use, when one mat is laid, the thatcher takes the thong of the previous peg, stretches it firm over the mat, puts a peg through the loop which holds the mat fast. Another mat is laid and pegged down in the same way, and thus the work proceeds. Mr. Reynolds has also patented ladders for the use of the thatcher, and for hoisting the mats and pegs. With straw of an average length, he says, 20 mats, 2 feet in width, will cover a square. These can be made in as many minutes—half a pound of wire for the same will cost 4*d*. Twenty mats will require 20 thatch-pegs, and a man and boy will lay from four to seven squares per day—so that the total expense does not exceed 7*d*. per square. The thatch is adapted both for round and long stacks, and good straw may last more than one year.

The Oxford Patent Ridging Plough, exhibited by Southwell & Co., of Rugeley, has a very ingenious device for expanding or contracting the mouldboards, by the ploughman standing between the stilts, either at the headland or whilst the plough is going. This is done by simply turning a crank-lever, with a ratchet-catch, to the right or left; the one way to contract the breasts, and the other to expand them. From this crank-lever a shaft extends to the body of the plough; upon the lower end of this shaft are fixed two cam levers, the one on the up-side, the other on the down-side; from these two hinged link-levers extend, one to each breast, so that when the crank-lever is turned to the right the breasts are expanded, and when it is turned to the left they are contracted. This implement was highly commended at the Oxford meeting, and is favourably noticed by the judges in their report in this journal, p. 528. (See fig. 196.)

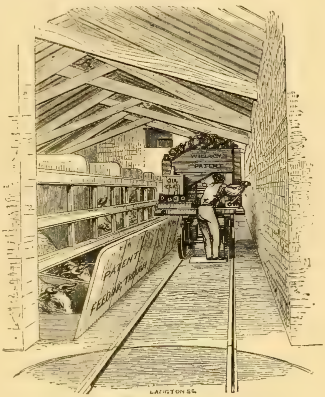


FIG. 197.—WILLACY'S CATTLE FEEDING ARRANGEMENT.

Willacy's Patent Cattle Feeding Machinery (fig. 197).—At the Manchester and Oxford meetings it was our duty to report favourably on the successful endeavours of Mr. Robert Willacy, of Pentwortham Priory, Preston, Lancaster, to expedite and economise labour in the feeding of cattle, more especially when large numbers are housed together. It is a well-known fact, that when the cattleman feeds the first ox all the others in the building become restless, and not unfrequently play mischief. This Mr. Willacy obviates by placing a combined chaff-cutting, root-pulping, and cake-breaking machine on a railway in front of the feeding troughs, which will supply a mixture of cut chaff, pulped Turnips, or other roots, and broken oilcake to 100 head of cattle in ten minutes, or as fast as the machine can be wheeled along the rails. At Oxford the machine only sliced the Turnips and broke the cake, and the judges, in their report gave a very favourable notice of the machine. Since then the machine has been improved by substituting a root-pulper for a turnip-slicer, and by the additional mechanism for supplying cut chaff along with the pulped food. This is a most important improvement. Pulped roots and chaff have of late been strongly advocated, and it affords us great pleasure to report the advance thus made by Mr. Willacy, which proves that he continues to lead on his brother farmers in the march of progress.

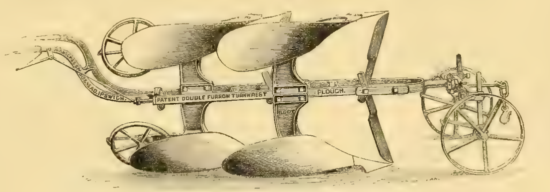


FIG. 198.—RANSOME'S ONE-WAY DOUBLE-FURROW PLOUGH (AS AT WORK).

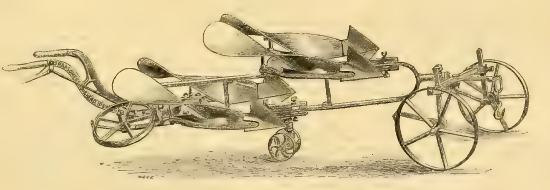


FIG. 199.—RANSOMES' ONE-WAY DOUBLE-FURROW PLOUGH
Half-turned for change of Furrow).

Self-ridging Potato and Manure Drill.—Lewis Wright, of Hannah Alford, Lincolnshire, exhibits a new machine for planting and manuring Potatos at one operation, in drills or rows on the flat. There are two hoppers, the upper or large one for the Potato sets, the lesser one below for the artificial manure. Two traveller bands with cups bring the Potatos out of the hopper, one in each cup, and empty them into two spouts placed at the desired distance between. Two coulters or small ridging-ploughs open two furrows into which the Potatos drop, and as the distance between the cups corresponds to that between the sets, they drop regularly in their places at the proper distance asunder. In the bottom of the Potato hopper a stilted frame moves to and fro by a cam movement, which prevents the sets falling through, thereby supplying the cups with a regular feed. If more than one set is brought up by a cup, the odd ones fall down a spout into a box behind, and are put back into the hopper. The manure is delivered tnto two spouts for each Potato-drill in the usual way, and falls on each side of the open furrow. Two closing breasts behind follow, covering in the earth and manure mixed together over the Potatos; motion is taken from the wheels, and the horse yoked in shafts in the usual way. The machine has not yet been tried sufficiently to warrant our opinion on its practical merits, but its mechanism is not without promise.

The following is the prize-list in the implement department:—

SECTION I.—STEAM CULTIVATION.

CLASS 1. For the best combination of machinery for the cultivation of the soil by steam power, 1st, £100, Messrs. Fowler & Co., 12 horse power, double engine set, price £1280; 2d, £50, Messrs. Fowler & Co., 20-horse power, double engine set, price £1880.

CLASS 2. For the best combination of machinery for the cultivation of the soil by steam-power, the weight of the steam engine not to exceed 10 tons, 1st, £50, Messrs. Fowler & Co., 12-horse power clip-drum engine and disc anchor, price £740; 2d, £50, the Ravensthorpe Engineering Company, 10-horse traction engine and set, price £690.

CLASS 3. For the best combination of machinery for the cultivation of the soil by an ordinary agricultural engine, whether self-propelling or portable, 1st prize, £50, Messrs Fowler & Co., stationary winding set, with 4-furrow combined plough, digger, and cultivator, price £280, with combined drill and two sets of harrows, and combined drill and harrow, £416 19*s*. 2d, £25, Messrs. Howard & Co, stationary windlass set, with five-tine reversible cultivator, price £250, with 4-furrow combined plough and diggers, one set of harrows, and combined drill and harrows, £416 10*s*.

A Silver Cup, value £100, offered by the Right Hon. Lord Vernon, president, given for the best combination of machinery for the cultivation of the soil by steam-power, the cost of which shall not exceed £700, the engine to be locomotive, and adapted for threshing and other farm purposes, Messrs. Fowler & Co., 8-horse power double-drum engine and disc anchor, price £698.

CLASS 4. For the best Windlass, detached, £20, Tuxford & Son.

CLASS 5. For the best Snatchblock, or substitute thereof, £10, Amies, Barford & Co.

CLASS 6. For the best Plough, suitable for steam cultivation, £25, Fowler & Co.

CLASS 7. For the best Subsoiler, suitable for steam cultivation, £20, Fowler & Co.

CLASS 8. For the best Digger, suitable for steam cultivation, £25, Fowler & Co.

CLASS 9. For the best Cultivator, suitable for steam cultivation, £25, Fowler & Co.

CLASS 10. For the best Skim-Plough or Scarifier, suitable for steam cultivation, £20, Fowler & Co.

CLASS 11. For the best Roller, suitable for steam cultivation, £10, Amies, Barford & Co.

CLASS 12. For the best Harrow, suitable for steam cultivation, £10, J. & F. Howard.

CLASS 13. For the best Drill, suitable for steam cultivation, £20, J. & F. Howard; £10, J. Coultas.

CLASS 14. For the best Root or Stone Extractor, suitable for steam cultivation, £10, Fowler & Co.

CLASS 15. For the best combination of any of the above implements not qualified to compete in classes 1, 2, or 3, £20. (Not sufficient merit).

CLASS 16. For the best implement, or part of tackle, suitable for steam cultivation, of any other description, not qualified to compete in the preceding classes, 1st, £10, J. & F. Howard, subsoiler and ridger; 2d, £10, Fowler & Co., harrow-frame fitted with ridging bodies.

CLASS 17. For the best Agricultural Locomotive Engine, applicable to the ordinary requirements of farming, £50. Aveling & Porter. Highly Commended: Aveling & Porter. Commended: C. Burrell.

CLASS 18. For the best Waggon for agricultural purposes, to be drawn by an agricultural locomotive engine, £20, Aveling & Porter. Commended: Hayes & Son.

SECTION II.—HOP MACHINERY.

CLASS 1. For the best Machine for the Cultivation of Hop gardens, to supersede manual labour, £20. Prize withheld.

CLASS 2. For the best machine for washing the Hop plant to remove the aphis blight, £10, Messrs. Coleman & Morton, Chelmsford, Hop syringing engine, with branch pipe and delivery hose.

CLASS 3. For the best Hop presser, £10, Messrs. Weeks & Son, Maidstone, Hop presser.

CLASS 4. For any other improved implement or implements used in the cultivation or management of Hops, £10, William Weeks & Son, Hop sulphurator.

MISCELLANEOUS AWARDS - SILVER MEDALS.

(To Agricultural Articles and Essential Improvements therein.)

Silver medal for the adaptation of the principle of the rotating disc, mould plough, entered among the Hop cultivating implements, Messrs. Mellard's, Trent Foundry (Limited), Rugeley.

J. Fowler & Co., ditching plough.

Ransome, Sims & Head, 8-horse power agricultural locomotive engine, with indiarubber tyres.

Aveling & Porter, 6-horse power agricultural locomotive engine, with internal indiarubber tyres.

SEEDS, ROOTS, MODELS, AND MANURES.

Artificial Manures are well represented by samples on the stands of Griffin, Morris & Griffin, Wolverhampton; Webb & Co., Worcester; W. & H. M. Goulding, of Dublin and Cork; Gibbons, Mills & Gibbons, of Wolverhampton (Henry Gibbons was manufacturing superphosphate in 1833, and therefore may be considered the father of this new branch of industry, so important to modern agriculture); Bradburn & Co., Wolverhampton; E. Packard & Co., Ipswich; the Agricultural and Horticultural Co-operative Association, London. On all these stands samples of the raw materials are shown, and also samples of the manufactured articles for the different kinds of crops.

Seed and root stands we shall take in the order of the catalogue, giving each stand a separate notice.

James Dickson & Sons, Chester, have a large collection of dried specimens of grasses, principally of those grown in this country for stock; samples of grass and Clover seeds in bags for permanent meadows, pasture and alternate husbandry; also in bags, seed of their prize Purple-top Swede Giant Long Red Mangel, Defiance Yellow Mangel, &c.; likewise the different cereals and pulse crops in bags, numerous specimens of evergreens, forest trees, &c., in pots, from their nurseries; the whole being set off with a very pleasing variety of horticultural decorations for the table, as Palms, &c.

John Kemp King, of Coggeshall, Essex, has an unusually fine show of roots and seeds. He was the first to show roots at the summer meetings of the Royal, and the movement thus started was a good one, as it tests their keeping quality. Those shown on his stand are as clear in the skin and as fresh as they were at the Christmas show in the Agricultural Hall; and he has done well to leave the fresh growth untouched, as it shows the health and freshness of the root. This applies to the different varieties of Mangels, Kohl Rabi, and Swede, whose quality is unsurpassed. The secret lies in the care with which the roots are selected for seeding, the harvesting of the seed-crop, the cleaning and preservation of the seed. We have on many previous occasions drawn attention to this, but we never saw his roots so fresh and full of life at this season. He has also a fine display of growing roots and grasses in pots, looking very promising for next year; likewise of the different seeds.

Edward Webb & Sons, of Wordsley, Stourbridge, Staffordshire, show a small but fine collection of seeds, roots, grasses, linseed and cotton cakes, manures, &c.

Richard Lowe & Co., Wolverhampton, exhibit very fine samples of farm and garden seeds; also a fine show of shrubs and forest trees. The stand is skilfully arranged, and tastefully decorated with bouquets of flowers.

J. C. Wheeler & Son, Gloucester, exhibit, as they usually do at the summer meeting of the Royal, a first-rate collection of agricultural seeds, also particularly the British grasses, both dried and growing in pots, scientifically arranged with the view of laying down land for permanent meadow or pasture, and also for alternate husbandry, according to climate and the geological nature of the soil. This firm also show samples of the different varieties of their celebrated Potatos.

Thomas Gibbs & Co., seedsmen to the Royal Agricultural Society of England, corner of Half Moon Street, Piccadilly, London, have a most splendid and extensive selection of seeds, roots, and dried specimens, their stand being laid out with the greatest possible taste and skill. Their roots include Mr. Brandreth Gibb's celebrated Yellow Globe Mangel Wurzel, with various other kinds; agricultural seeds of every kind of the best quality; a general collection of nearly 300 specimens of grasses, Clover, and other cultivated crops, growing in pots, illustrative of the soundness and vitality of the seed thus sown; collection of dried specimens of selected natural grasses, English and foreign Wheats, Barleys, Oats, &c., ornamentally and instructively arranged for profitable inspection. This stand always forms an inviting studio for young farmers, and this year the arrangement exceeds any previous exhibition.

James Carter & Co., London, have a magnificent stand. Of late years they have been annually improving in the artistic and decorative arrangement of their fine exhibits, and this year we have to report Wolverhampton in advance of Oxford and Manchester. The wonderful specimens of Mangel Wurzel which they exhibited at the Christmas meeting of the Smithfield Club in the Agricultural Hall are here as fresh as they were then, and the graceful manner they are panelled out with specimens of grasses, &c., growing luxuriantly in pots, shows off the whole to the best advantage. The samples of the different kinds of seed-corn, &c., are of the best quality. They also show Mangels, Kohl Rabi of the present year's growth, which, taking into account the lateness of the season, are very promising.

Harrison & Sons, of the Royal Midland Seed Warehouse, Leicester, have a choice selection of roots and seeds. Their new Normanton Globe and Giant Long red Mangel Wurzels maintain the high position they have long held at the summer meetings of the Royal Agricultural Society of England—the best guarantee of the standard quality of the seed.

Sutton & Sons, of the Royal Berks Seed Establishment, Reading, Berks, have a magnificent exhibit. Some 200 dried specimens of the natural grasses, gathered on their own experimental farm, adorn the back of their stand. The superb specimens of their different varieties of Mangel Wurzel, Kohl Rabi, and Swede, are as fresh as they were at the Christmas cattle show in the Agricultural Hall, Islington, thus proving their superior keeping qualities. The Mangels are skilfully laid out, the specimens of growing grasses, &c., being very artfully intermixed, giving to the whole stand a very attractive appearance. The Italian Rye-grass, and other grasses, the growth of the current season, are something wonderful, and but for the fact that they speak for themselves, such luxuriance of growth would hardly be credited. They also show specimens of Kohl Rabi of the current year, of the best quality, and of good size, considering the lateness of the season. The canvas bags, upwards of 200 in number, containing their own home-grown seeds, carefully harvested, and all of the very best quality, are a splendid show of themselves. A large selection of seed is also shown in glass-cases or behind glass, which has a fine effect. They also show their splendid Potatos, old and new, an immense head of Cabbage of this year's crop, and the largest selection of new Peas which we ever saw shown at the summer meeting of the Royal Agricultural Society, quality and variety super-excellent.

Wool, Butter, and Cheese.—There is a better exhibition in this department than there has been for many years. The wool is confined to Shropshire fleeces, and although some entries are rather coarse, there are some good fleeces shown.—If the cool season is not the best for the production of butter, it is favourable for its exhibition. At the last show the weather was so hot that the butter appeared in a semi-fluid state: but the rolls, prints, &c., are as shapely and rich in colour as they were when they left the dairies of the exhibitors. Lord Chesham, of Latimers, Chesham, Bucks, who was 1st for wool, is here again 1st for butter, and the quality is first-rate. The show of Irish butter from Blarney, Cork, is fair.—Cheeses are divided into four classes: (1), coloured, over 6 inches thick; (2), coloured, under 6 inches thick; (3), uncoloured, over 6 inches thick; (4), uncoloured, under 6 inches thick; and, with a few exceptions, the samples in each class must be reported favourable. It is interesting to examine the diversity on the stands, and to ascertain where this and the other is made. Upon the whole, it is to be hoped we are making progress everywhere in the making of cheese.

THE ANNUAL MEETING.

THE Annual Meeting was held in the Show-yard, on Tuesday afternoon, under the presidency of Lord Vernon. There was a good attendance.

The SECRETARY read over the list of farm prizes, and also stated that the cup given by Mr. Masfen and other breeders of Shropshire sheep to the exhibitor taking the greatest number of prizes in all the Shropshire classes, had been awarded to Mrs. Beach, The Hattons, Brewood, Staffordshire.

The following is the list of prizes for the best managed farms:—

FARM JUDGES.—G. Jackson, Tattenhall Hall, Chester; W. Sanday, Radcliffe-on-Trent, Nottingham; J. Wheatley, Neswick, Driffield.

For the best managed Arable Farm.—1st, £100, given by various landowners in Staffordshire and Shropshire, Mr. G. T. Forrester, Sherlowe, High Ercall, Wellington, Salop; 2d, £50, given by the Society, Mr. T. Winterton, Alrewas Hayes, Lichfield. Highly Commended, and a special prize of £25, given by the subscribers for his successful management of good land, Mr. W. Brewster, Balderton Hall, Middle, Wem, Salop. Highly Commended, and a special prize of £25, in recognition of her profitable management, Mrs. E. Sankey, Bratton Farm, Wellington. Highly Commended, Mr. C. R. Keeling, Yew Tree Farm, Penkridge; and Mr. G. A. May, Elford Park, Tamworth.

For the best managed Dairy Farm.—1st, £100, given by the same landowners, John Clay, Kinsale, Oswestry, Salop; 2d, £20, Matthew Walker, Stockley Park, Anslow, Burton-on-Trent.

Thanks were voted to the Mayor and Corporation of Wolverhampton, and, amidst a good many dissentient voices (owing to the lack of accommodation to Birmingham) to the railway companies for their arrangements.

Sir JOHN MORRIS then moved, and Mr. AVELING seconded, a vote of thanks to the President, for whom three cheers were given.

Lord VERNON in reply, spoke of the Royal Agricultural Society as the greatest educational engine in the country. One of its principal advantages was its exclusion, as much as possible, of everything sensational, and its devotion to practical business. The great advantage of the Society visiting a town like Wolverhampton was the bringing of the enlightened workman into contact with those who produced his food, while the latter, on the other hand, had the benefit of seeing the centres of industry where the forces of Nature were employed in making the machinery for the cultivation of the soil. The great feature of the show was the exhibition of steam cultivators and traction engines. It would be impossible for any local society to undertake the exhibition and trial of those particular implements, which required not only a vast area of ground, but the highest possible engineering skill in testing. If the presentation of a cup, which he had been allowed to offer during his presidency, produced what so many members of the Council were desirous of seeing, viz., the bringing of the means of cultivating by steam within the reach of the smallest farmer, he was sure that they would consider that they had performed one of the greatest works they could. He congratulated Mr. Fowler on winning the cup. To the skill and organisation which he exhibited on the field, as well as to the discipline of his men, much of his success was due. He expressed his high sense of the assistance given to the society by the local committee, who had had unusual difficulties to contend with.

The proceedings concluded with cheers for Sir Watkin Wynn, the president elect.

Farm Memoranda.

WESTER ROSS: *July* 6.—After the thorough pulverisation of the soil by the unusually intense and long-continued frost, the crops brairded and came away regularly and very promisingly, with the exception of some of the Wheat on light and exposed fields, which was very much thinned out by the bare frost, but which, although doing its best by tillering, has failed in occupying fully the ground. The Wheat, which is now generally coming into ear, is well strawed, but the fields that are sufficiently planted are the exception, not the rule, so that our crop of Wheat will be rather under than up to the average. Should we have a good blooming and ripening season the yield might be more abundant than we anticipate. For Oats the season has once again been too dry, and, like the three previous years, they generally are very short in straw. Last year they yielded very badly, as the crop was not only light but many of the ears were black and useless, and this year they appear pretty largely affected in the same way. The abundant showers we are now having will do something in lengthening the straw, but a heavy crop they cannot now be. Barley is the heaviest cereal crop we have, but it is not so largely sown as Wheat or Oats. It is thickly planted, and many fields are abundantly strawed. The earlier fields of Barley are also getting into ear. The harvest will be later than it has been for the last few years. Unless the weather be forcing little will be cut in August. Part of our Turnips brairded irregularly from scarcity of rain, and part of the Swedes had to be re-sown, having been destroyed by fly. On the whole, however, our Turnips are coming away promisingly. The Swedes have been singled, and the common Turnips are now coming to the hoe. There is now abundance of rain everywhere in the North, and in some places a little too much. On a few adjoining farms an alarming waterspout seemed to fall. Every Turnip-drill had a current, carrying along with it the soil, in some places to a great depth; and, at the bottom of a brae-set field, the water gathered together and ran through a gate in such volume as to carry along with it, for a short distance, a Turnip sowing machine which stood in its way. Afterwards it ran down the steep part of another field of Turnips, leaving bare the very rock, and burying some 2 acres of Turnips and Potatos with the drifted soil. Potatos, perhaps, never looked better than they do now. Some of the earlier fields, after being drilled up, are covering the ground. The cutting of hay has commenced, and the crop, if any, is not much short of an average. The price of hay is now low, and bids fair to be so for some time. Our pastures are better supplied with grass than stock. The high price and keen demand for cattle has drawn away to the South more than the usual number, so that, with fine weather, the prices cannot be low for some time to come.

LANCASHIRE.—The long-continued spell of unsettled weather which has prevailed here has materially damaged the hay crop, which, if favoured by fine and dry weather, would have been unusually heavy. Scarcely any hay has been stacked, and a great quantity is lying damaged in the fields. Yesterday and to-day (July 4 and 5) very heavy rain has fallen, and there are no signs of improvement. Mr. Gibbs' drying-machine would be useful if it were able to turn out a reasonable quantity per diem, but people here fancy the process, besides being costly, is so slow as to be practically useless. It would be well if the agricultural journals would afford some information as to this apparatus, and state its capabilities and cost. *W. H. B.*, *July* 5.

Obituary.

THE death of Mr. JOHN CLAYDEN, of Littlebury, will be learned with sincere and general regret. We abridge the following short memoir of his useful life from the columns of the *Mark Lane Express*:—

As had been feared, Mr. Clayden never rallied from the fit of paralysis with which he was attacked on the station at Watton after attending the Merton sale, but gradually sank and died in the village on the morning of Tuesday last. He thus survived but a few weeks the death of his brother-in-law, Mr. Samuel Jonas—a prominent man like himself, not only about home, but as an eminent English agriculturist.

Mr. John Clayden was born, where he continued to farm, at Littlebury, in July, 1805. He was the eldest of seven children, the family of Mr. William Clayden, a well-to-do yeoman and practical farmer, far in advance of his own times. As such, he was a frequent attendant at the famous Holkham sheep shearings, and personally well known to Mr. Coke, afterwards Lord Leicester, who once called at Littlebury, on his way to London. The son, John, began life at a good school in his native village. Mr. Clayden, senior, died in 1828, and at the age of 23 his eldest son came into the control of a business which included the farming of 800 acres at home, and of another large occupation, about ten miles off, which his father had been superintending for an aged relative. In the first instance, the brothers, John and William Clayden, took their own farm conjointly; but in 1832 the younger brother removed to Linton, in Cambridgeshire, leaving to John the undisputed possession of Littlebury. The active, business-like habits of Mr. Clayden soon gave him a standing and repute among his neighbours, conspicuous amongst whom was the late Mr. Jonas Webb; and the two became fast friends. Beyond frequent visits to each other's house, they were almost invariably to be seen together at the agricultural shows just then springing up, and amongst which, previous to the formation of the Royal Agricultural Society, the Saffron Walden gathering held a good place. The tastes of the two friends, moreover, "hit" very much as to the best kinds of stock, so that they were often associated together as judges. And there were few better "all-round" judges than John Clayden. Whether it were over cart-horses, cattle, sheep, or pigs, he was never out of his element; and, as a consequence, no one was so continually called in as referee—that is, from the particular class over which he might be acting. As an exhibitor, his chief successes were with his Southdown sheep, his Suffolk horses, and his Shorthorn cattle. On the death of Mr. Jonas Webb, Mr. Clayden was appointed Chairman of the Agricultural Hall Company, but his public duties were by no means confined to this office. He was a member of the Council of the Royal Agricultural Society of England; a member of the Council of the Smithfield Club; a member of the Committee of the Farmers' Club; one of the Directors of the Agricultural Hotel Company; the Chairman of the Nitro-phosphate Manure Company, and one of the Honorary Secretaries of the Royal Agricultural Benevolent Institution. Then, he had been Mayor of Saffron Walden as often as Whittington was of London; but he found time to farm in the very best style 1000 acres of land which he held under Lord Braybrooke, about 100 acres belonging to other proprietors, and 800 acres more of his own. Mr. Clayden was a man of very active, business-like habits, while he united with these a special charm in his cheerful, genial manner, that, backed again by his high character, had served to culminate the success he has so deservedly achieved in the annals of modern agriculture; and in the beginning of the year 1870 a testimonial was presented to him at a dinner at Saffron Walden. Mr. Clayden, who had been twice married, leaves a family of two sons and five daughters.

To this may be added, that Mr. Clayden was Chairman of the Cattle Defence Association, and took a warm interest in its proceedings. Only just before his death, in a letter to the Secretary, he had expressed a very decided opinion as to the necessity of beginning their work afresh, in consequence of the recent Orders in Council.

The Week's Work.

JULY 17.—*Summer Meetings* during the month are numerous, and that of the Royal Agricultural Society of England at Wolverhampton will serve the twofold purpose of holiday amusement and practical education. Of the former nothing requires to be said, but it is otherwise with the latter, for the agricultural public not only learn in the exhibition of implements and live stock the progress made since Oxford last year, but along the various lines of railway leading to Wolverhampton they obtain from what they see on either side an amount of practical education relative to the crops, pastures and grazing stock, the value of which it were difficult to estimate. Such education, including the "railway return" and the showyards, is the best farmers' sons and daughters can receive, and to this the families of landlords and agricultural labourers may honestly be added; for besides what they see and hear at the time, the mind, on their return home, is turned out of the antiquated path of the past into a new channel, thus giving greater force to the current of thought—just as the straightening of a river gives greater velocity and force to the stream.

Labourers' Holidays involve one of the most important movements of the day, not only in social science, but in agricultural practice. No industrial class stands more in need of the practical education taught by a visit to county shows and the meetings of the Royal Agricultural Societies of England, Scotland, and Ireland than agricultural labourers, for when confined at home for life they are apt naturally to treat the introduction of new labour-abridging machinery, or even improved machinery and implements of any kind, by their employers, as an innovation of their rights, and to carry into effect their use with an unwilling hand and unfriendly spirit; whereas, when they see the competition at these meetings, they appreciate their practical value often better than their employers, consequently they return home elated with a spirit of enterprise, anxious for an opportunity to exemplify what they themselves can do, and by such means not unfrequently induce their employers to go a-head when otherwise they would lag behind. The practice of sending farm-servants to learn the catchpenny extravagance too common in our large towns, is not to be approved of, and were extravagance the worst that is learnt the evil would be less than it is, but a farmer cannot invest his capital better than by giving his labourers a holiday at Wolverhampton and other local shows and ploughing matches of the district.

Cabbages horse and hand hoe as soon as the plants are firmly rooted. Hoe deep, and draw the loosened earth up to the plants. This is all the more needful if the surface has been crusted by heavy storms of pelting rain, or by the liberal use of the watering-pan at the time of planting. Some object to the use of the watering-pan, but in dry weather we have used it as successfully in the field as in the garden; and, if the water is near, the work of watering is not such a heavy one as some imagine. Water in the progress of things will be more liberally applied to all cultivated crops than it has hitherto been, and what is chiefly wanted just now is more courage to go a-head.

Lupine, Lucerne, and *Sainfoin,* when grown as forage crops, go over after every cutting and remove all weeds. Grass or weeds of any kind are said to be more obnoxious to these crops naturally than any other; but, be this as it may, their successful growth depends upon their being kept clean.

Turnip Seed is harvested during this month in the South, and the earlier part of August in the North, and at the time we write there is nothing to indicate an exception. The crop should always be cut with a sharp smooth-edged reaping-hook. Some leave it abroad in small parcels until ready for the threshing floor, others tie up the crop in small sheaves as fast as cut, and stack immediately. There is no little art in stacking this crop. If the stack is of any considerable size there should be a tripod of three poles in the centre, to prevent it settling down, so as to obviate mouldiness and insects. In building the stack, the bottom sheaves are placed erect upon their butts, as in stacking Flax; the courses above are laid slanting, with their butts outwards, and as loose and open as possible, and the stack should be thatched down to the bottom immediately. If properly stacked, the seed keeps better in the stack than in the granary, and the crop is threshed when the seed is to be used. When the seed is threshed out at the time of harvesting it is very liable to become mouldy and to be eaten by insects, and therefore it should be frequently examined. Some fumigate with weak fumes of sulphur or pyrolignic acid; others mix a small quantity of soot, to prevent animal and vegetable growth. Some farmers hang up in bags what seed they require in the kitchen chimney, and when sufficiently smoked to prevent insects and the spores of Fungi doing any harm, the seed-bags are hung up in a dry place until seed time. In both these plans of preserving the seed very great care is necessary not to injure its vitality, otherwise the seed will braird weakly, and so on.

Corn Harvest last year (1870) was general by this time in the southern counties of England. This year it is later. *W. B.*

Markets.

ENGLISH WOOL.

The demand during the last week has been unabated, at gradually hardening prices, and our views in this respect appear to have been fully carried out. American buyers have been operating lately, and we believe everything points to still higher prices.

HOPS.

BOROUGH MARKET, July 13.

Messrs. Pattenden & Smith report that the prospects of the coming crop are still more unfavourable than a week ago. The cold ungenial weather causes the bine to look very weak and unhealthy, and there is still a large quantity of lice throughout the plantations in general. The market is consequently very firm, and prices have an upward tendency. Holders of choice samples stand out for a considerable advance.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, July 13.

Prime Meadow Hay	140*s.* to	160*s.*	Clover, old	160*s.*	167*s.*
Inferior do.	110	126	Inferior do.	130	140
New Hay	60	120	Prime new do.	100	130
Inferior do.	—	—	Inferior do.	—	—
Straw	40	50			

CUMBERLAND MARKET, Thursday, July 13.

Sup. Meadow Hay	155*s.* to	168*s.*	Inferior Clover	140*s.* to	156*s.*
Inferior do.	126	147	Prime 2d cut do.	—	—
New do.	110	130	New do.	—	—
Inferior do.	—	—	Straw	47	52
Superior Clover	168	176			

JOSHUA BAKER.

METROPOLITAN MEAT MARKET, July 13.

Best Fresh Butter .. .. .. 16*s.* per dozen lb.
Second do. do. .. .. .. 14*s.* „
Small Pork, 4*s.* 4*d.* to 4*s.* 8*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 2*d.* per 8 lb.

METROPOLITAN CATTLE MARKET.

MONDAY, July 10.

We have a very short supply of Beasts, especially of choice English; trade is active, at fully late rates; in some instances our top quotations have been rather exceeded. There are very few more Sheep than last week; trade is not quite so brisk throughout, and prices are scarcely altered. Choice Lambs are in demand, although not quite so dear as on Thursday. Calves are on the average lower. Our foreign supply consists of 750 Beasts, 10,300 Sheep, 450 Calves, and 65 Pigs; from Scotland there are 80 Beasts; from Norfolk and Suffolk, 500; and 1140 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c.	5 10 to 6 2	Best Long-wools	.. to ..
Best Shorthorns	5 8—5 10	Do. Shorn	5 8—6 0
2d quality Beasts	4 0—5 0	Ewes & 2d quality	.. — ..
Best Downs and Half-breds	.. — ..	Do. Shorn	5 0—5 4
		Lambs	6 4—7 4
		Calves	3 8—5 8
Do. Shorn	6 2—6 6	Pigs	3 4—4 8

Beasts, 2470; Sheep and Lambs, 26,790; Calves, 482; Pigs, 210.

THURSDAY, July 13.

Trade to-day is brisk, with an upward tendency in prices for everything, and Monday's quotations are fully maintained. Our foreign supply consists of 230 Beasts, 5200 Sheep, and 737 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c.	5 10 to 6 2	Best Long-wools	.. — ..
Best Shorthorns	5 8—5 10	Do. Shorn	5 8—6 0
2d quality Beasts	4 0—5 0	Ewes & 2d quality	.. — ..
Best Downs and Half-breds	.. — ..	Do Shorn	5 0—5 4
		Lambs	6 4—7 4
		Calves	3 8—5 8
Do. Shorn	6 2—6 6	Pigs	3 4—4 8

Beasts, 1090; Sheep and Lambs, 13,500; Calves, 737; Pigs, 35.

MARK LANE.

MONDAY, July 10.

There was again a very short supply of English Wheat to this morning's market, but the trade was dull, and it could only be disposed of at a decline of fully 1*s.* per qr. The attendance was good, but the few sales made in foreign were in retail, at a similar reduction. Barley, Beans, and Peas were unchanged in value. The Oat trade was dull, at about last week's prices. Flour was slow, and rather cheaper.

PRICE PER IMPERIAL QUARTER.	*s. s.*		*s. s.*
WHEAT, Essex, Kent, Suffolk .. White	47—60	Red	55—60
— fine selected runs .... do.	59—65	Red	59—62
— Talavera	62—66		
— Norfolk	—	Red	—
— Foreign	50—68		
BARLEY, grind. & dist., 30*s* to 34*s* .. Chev.	43—46	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
OATS, Essex and Suffolk	26—28		
— Scotch and Lincolnshire .. Potato	28—30	Feed	—
— Irish .... Potato	27—29	Feed	25—28
— Foreign ...... Poland and Brew	25—27	Feed	20—23
RYE	34—36	Foreign ..	33—36
RYE-MEAL, Foreign			
BEANS, Mazagan .... 37*s.* to 47*s.* .. Tick	49—50	Harrow ..	49—50
— Pigeon .... 51*s.* to 59*s.* .. Winds	—	Longpod .	—
— Foreign .... Small	45—47	Egyptian .	42—44
PEAS, White, Essex, and Kent .. Boilers	38—40	Suffolk ..	40—42
— Maple, 40*s.* to 44*s.* .... Grey	36—40	Foreign ..	36—40
MAIZE	—	Foreign ..	33—36
FLOUR, best marks, delivered .. per sack	42—50		
— 2d ditto .... ditto	36—42	Country ..	36—42
— Foreign .... per barrel	25—29	Per sack ..	38—60

WEDNESDAY, July 12.

A dull feeling pervaded the Corn Exchange to-day, and prices exhibited much weakness. The supplies of English Wheat were short, but from abroad they were larger. Transactions in all descriptions were restricted, at prices tending downwards. Barley sold slowly, on former terms. Malt was dull, at about late rates. There were good supplies of Oats, which changed hands to a limited extent, at drooping prices. Beans and Peas were in slow demand, at recent values. Flour was depressed, and prices in some instances were further reduced.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch ..	340	—	—	—
Irish ..	—	—	—	—
Foreign ..	51,450	2950	41,080	5630 7330 brls.
	51,790	2950	41,080	

LIVERPOOL, July 11.—Although there was not much activity, still a more general business was done in Wheat, at about previous prices. Flour without alteration. Best Egyptian Beans 1*s.* per qr. higher, but lower qualities unchanged and plentiful. Peas 1*s.* per qr. dearer. Oats and Oatmeal rather neglected. Indian Corn in good request, and 1*s.* 3*d.* to 1*s.* 6*d.* per qr. in sellers' favour.

AVERAGES.

	Wheat.	Barley.	Oats.
June 3	60*s* 0*d*	36*s* 11*d*	27*s* 7*d*
— 10	59 9	38 6	25 11
— 17	59 7	35 11	26 10
— 24	59 11	36 10	27 8
July 1	59 1	36 10	27 5
— 8	59 0	34 10	27 1
Average ..	59 6	36 7	27 1

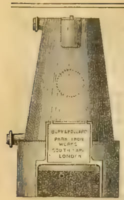
SEED MARKET.

Inactivity continues to characterise the seed trade. For the moment there is no speculation whatever in any single article. Rape and Mustard move off in retail, at unaltered currencies. The large quantity of Trifolium seed which will be saved causes cheap offers to come to hand from the country. Hemp and Canary meet with a quiet demand.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

COALS.—June 12.

Holywell Main, 17*s.*; Eden Main, 16*s.*; Walls End Thrislington, 16*s.* 6*d.*; Walls End Hetton, 18*s.* 3*d.*; Walls End Hawthorn, 15*s.* 3*d.*; Walls End Original Hartlepool, 18*s.* 3*d.*; Walls End Kelloe, 16*s.* 3*d.*; Walls End East Hartlepool, 17*s.* 9*d.*; Walls End Tees, 18*s.*—Ships at market, 25; sold, 16; unsold, 5; at sea, 13.



Latest Improvements IN HEATING by HOT WATER.

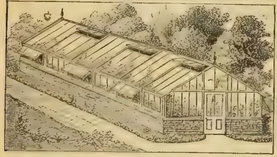
THE IMPROVED CONICAL BOILERS, for HEATING PINERIES, CONSERVATORIES, GREENHOUSES, MANSIONS, HALLS, WAREHOUSES, &c ,

Solely Manufactured by
POLLARD, JEPHSON, AND CO.
(late Bury & Pollard, Successors to John R. Peill, late Stephenson & Peill).

These BOILERS are adapted for setting in Brickwork, or as shown in sketch they require NO BRICKWORK.

Price Lists free by post.

Bear Garden, New Park Street, Southwark, London, S.E.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C , W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included :—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft by 24 ft
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

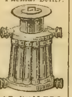
3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
,, ,, glazed, 16 oz good sheet glass	6s. ,,
6 ft. ,, ,, 2 in thick, unglazed	5s. ,,
,, ,, glazed, 16 oz good sheet glass ..	11s. ,,
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. ,,
Portable box containing two ditto, 6 ft by 8 ft.	55s. ,,

Estimates given for Conservatories or Greenhouses to any Design

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.



GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices ; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s. 6d. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60s each.

Portable Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

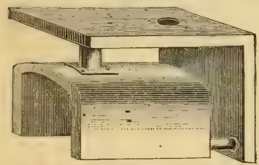
INDIA-RUBBER RINGS for Pipe Joints ; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S E. (Surrey side Blackfriars Bridge). Price List on application.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz , the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel ; the cost of setting is also considerably reduced, and likewise the space occupied ; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 ,,	18 ,,	24 ,,	450	6 0 0
20 ,,	18 ,,	30 ,,	600	7 0 0
24 ,,	24 ,,	24 ,,	700	8 0 0
24 ,,	24 ,,	30 ,,	850	10 0 0
24 ,,	24 ,,	36 ,,	1,000	12 0 0
24 ,,	24 ,,	48 ,,	1,400	15 0 0
28 ,,	28 ,,	60 ,,	1,800	20 0 0
30 ,,	30 ,,	72 ,,	2,600	30 0 0
36 ,,	36 ,,	96 ,,	4,500	50 0 0
48 ,,	48 ,,	108 ,,	7,000	75 0 0
48 ,,	48 ,,	144 ,,	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order ; or they allow a liberal Discount for Cash at their Wharf in London.
6, Bankside, Southwark, London, S.E.

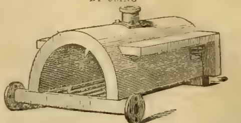
HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.

Manufactured in London ; Ulverstone (Lancashire) ; Gloucester ; Coventry ; Paisley, and Aberdeen, only.

Illustrated Price Lists free. A Pamphlet, with Views of these and other styles of Glasshouses, post free, 3d Estimates given for Conservatories, &c., to any design in Wood ; also for Heating Apparatus.

HEREMAN AND MORTON, Horticultural Builders, 14, Tichborne Street, Regent Quadrant, London, W.

Simplicity, Efficiency, and Economy is Secured BY USING



THE PATENT TERMINAL SADDLE BOILER. It is easily set, and very powerful Illustrated Circulars post free.
J. IRELAND, Edward Street, Broughton Lane, Manchester.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application ; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

VASES AND FOUNTAINS
FOR THE
GARDEN AND CONSERVATORY.

ILLUSTRATED CATALOGUE, containing Prices and full information concerning FOUNTAINS and VASES, and with 30 large pages of beautifully Lithographed Designs, Post Free for 12 stamps, which will be allowed if an order is given.

ANDREW HANDYSIDE AND CO.,
Britannia Works, Derby ;
LONDON OFFICE :—32, WALBROOK.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the fire ; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVER'S STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

J. C. & J. S. ELLIS,
HORTICULTURAL ENGINEERS,
NORFOLK FOUNDRY, SHEFFIELD,

MANUFACTURERS and ERECTORS of HOT-WATER APPARATUS

OF EVERY DESCRIPTION, FOR
HEATING GREENHOUSES, CONSERVATORIES, HOTHOUSES, CHURCHES, PUBLIC BUILDINGS, PRIVATE RESIDENCES, WAREHOUSES, &c.

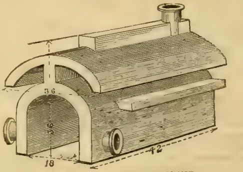
The great advantages of these Boilers are :—

The fire acting directly under the flow pipe, the water begins to circulate immediately.

The Flues all being formed by a continuous water-way, the fire and all the hot gases are brought in direct contact with the heat-absorbing surface of the Boiler, thereby giving a greatly increased amount of power, and by which an immense saving of fuel is effected.

These Boilers offer great facilities for banking-up the fire, and will burn easily from 12 to 14 hours without attention.

The arrangement of Soot-doors in the brickwork is such that all the flues can be cleaned in a few minutes.



PATENT DOUBLE-ARCH BOILER.

TESTIMONIALS.

"The Gardens, Chatsworth, January 19, 1871.

"DEAR SIR,—After using your Patent Double-Arch Boiler for the past 12 months, enables me to speak with a practical knowledge of its merits ; and I have no hesitation in saying, out of many Boilers, of all sorts of construction, we have in use, it is the most efficient, and I believe it to be the best Boiler extant ; neither do I think there is another that exposes so much surface to the direct action of the fire. Its efficiency, economy in fuel, and the minimum of attention, renders this Boiler a valuable improvement in Horticulture, and it reflects great credit on your good sense in designing it. I shall be glad to show the one I have in use to any person calling at Chatsworth.

I remain, dear Sir, yours truly,
"THOMAS SPEED.

"Mr. Ellis."

"Westbourne Gardens, Sheffield, October 27, 1870.

"DEAR SIR,—Your Patent Double-Arch Boiler, that you have put down for us lately, to heat the whole of our houses, answers admirably. Its heating surface exceeds all others which I am acquainted with. The small amount of fuel required, the way it is set, and the arrangement of soot-doors, renders it the most complete and economical Boiler I have had to do with.—Believe me, Sir, yours truly,
"W. H. BIRD.

"Mr. Ellis, Norfolk Foundry, Sheffield."

Great Reduction in Prices for 1871,

OF

GREEN'S PATENT SILENS MESSORS

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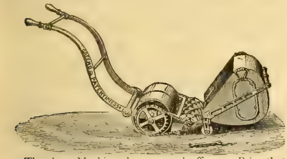

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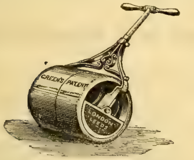

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ROYAL BOTANIC SOCIETY, Regent's Park.—THIRD SUMMER EXHIBITION.—In the AWARDS of PRIZES advertised in the *Gardeners' Chronicle* of July 15, the heading BRONZE MEDAL was omitted; it should have been inserted between the names of W. Hooper, Bath, and Miss E. Harris.

Messrs. Ivery & Son wish the names of the Ferns for which they obtained CERTIFICATES of MERIT printed thus:—Polystichum angulare proliferum Marshallii, Polystichum angulare pulchrum Bellairsiæ, Polypodium vulgare cornubiense Whytei.

CRYSTAL PALACE GRAND SUPPLEMENTARY ROSE SHOW and EXHIBITION of TABLE DECORATIONS, on SATURDAY, August 5. Schedules and List of Prizes to be had on application. By order,
I. WILKINSON, Manager and General Superintendent.

Worcestershire Agricultural Society.

A GRAND HORTICULTURAL EXHIBITION in connection with the above will be held in the SHOW GROUND at MALVERN, AUGUST 22, 23, and 24, when PRIZES to the amount of ONE HUNDRED and TWENTY POUNDS will be awarded.

For List of Prizes and Rules, &c., apply to Mr. J. S. HAYWOOD, 26, Broad Street, Worcester, Hon. Secretary to Horticultural Show, or to ALBERT BUCK, Secretary, Worcester.

METROPOLITAN FLORAL SOCIETY.—The SECOND AUTUMN SHOW will be held at the Crystal Palace, on AUGUST 30 and 31, and not 24th and 25th as formerly announced

Schedules to be had on applying to the Rev. H. HONYWOOD DOMBRAIN, Westwell Vicarage, Ashford, Kent.

Hunt's Superb Sweet William.

JAMES HOLDER can supply SEED of the above, in 24 choice varieties, at 2s. 6d. and 5s. per packet; also PLANTS, 24 sorts, distinct, for 5s., 50 plants for 8s., or 100 for 15s., basket included. Crown Nursery, Reading.

To the Trade.

CALCEOLARIA, saved with the greatest care, from one of the choicest and most pleasing strains in the country. Price on application.

JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton Nurseries," Chester.

Calceolaria, Cineraria, Primula.

F. AND A. SMITH are now sending out NEW SEED of the above, from their well-known superior strains, in packets, at 1s. and 2s. 6d. each.
The Nurseries, West Dulwich, near London.

Gold, Silver, and Bronze Variegated Geraniums.

F. AND A. SMITH'S large COLLECTION of the above are now in fine condition, including many specimens of the most approved varieties, forming a display unrivalled for colour and extent.
The Nurseries, West Dulwich, near London.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s. 6d. per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

To Florists and Amateurs.

TO BE SOLD, a fine COLLECTION of CACTI, consisting of most of the choice varieties, many of them fine specimens of 20 years' growth. Over 200 pots will be sold for one quarter their value, on account of the bad health of the owner, and removing into the country. Also a nearly new GREENHOUSE, 21 feet by 12 feet. Together or separate.
Mr. QUELCH, 360, Albany Road, Camberwell, Surrey, S.E.

Roses.

H. LANE AND SON'S magnificent COLLECTION, upwards of 100,000, is NOW in FULL BLOOM.

Patrons and Friends are respectfully invited to pay an early visit.

The Nurseries, Great Berkhamstead, Herts, 28 miles distant from London (Euston Station).

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready in April. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford.

Roses—One Hundred Thousand Blooming Plants.

JOHN CRANSTON'S superb COLLECTION of ROSES, including all the newest and best varieties, is NOW in BLOOM. Carefully compiled Priced and Descriptive CATALOGUES forwarded post free on application.
King's Acre Nurseries, near Hereford.

SIXTY THOUSAND DWARF TEA-SCENTED ROSES, in pots, also specimen TEA ROSES, in 6-inch pots, for Greenhouse Culture or Exhibition. CATALOGUES now ready.
WM. WOOD AND SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

DWARF ROSES, in pots, by the dozen, 100, 1000, or 10,000. The largest stock of Roses in the Kingdom. CATALOGUES on application.
WM. WOOD AND SON, Woodlands Nursery, Maresfield, Uckfield, Sussex.

MITCHELL'S renowned ROSES are NOW in BLOOM, the largest stock and the best plants in England. This magnificent Collection are all propagated in the open ground, possessing a hardy constitution suitable for all climates.
Pilt Down Nurseries, Uckfield, Sussex.

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.
Floral Nurseries, Hailsham, Sussex.

JOHN HARRISON begs to inform his Friends and the Public generally that his ROSES are NOW in MAGNIFICENT BLOOM, and will continue throughout the season. His Catterick Nursery, on the Richmond Branch of the North-Eastern Railway, is close to the platform at this station; and a conveyance waits for the 2 o'Clock train on Tuesdays and Saturdays to convey parties to his Scorton Nurseries, where upwards of 100,000 of the finest Roses may be seen at one view, which cannot be surpassed, if equalled, in England.
North of England Rose Nursery, Darlington.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

PINES.—Wanted to Purchase, from 60 to 100 strong Succession Pine Plants, for fruiting next January. They must be warranted free from scale, &c. State price and particulars to
Mr. GODFREY, Ankerwycke, Staines.

GOOD strong STRAWBERRY RUNNERS, now ready; also, MUSHROOM SPAWN and CUCUMBER SEED.
D. C., Cuthill's Strawberry Grounds, Love Walk, Camberwell, S.E.

Climbing Ferns.

LYGODIUM SCANDENS, the most beautiful of all Climbers. Can be supplied by the dozen at 6s. to 9s.; 40s. to 60s. per 100, all nice plants. Package gratis for cash.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

To the Trade.

STOVE PLANTS, in 50 or more choice and new varieties, at 9s. to 12s. per dozen; 50s. to 75s. per 100. Package gratis for cash. Names on application for CATALOGUE.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

ASPLENIUM GERMANICUM.—Very nice plants of this scarce Fern, in 60-pots, for 6s. per dozen.
JOHN H. LEY, Lansdowne Road, Croydon, S.E.

AQUILEGIA GLANDULOSA, the true variety. Seed, 6d. and 1s. per packet.
Seeds of choicest FLORIST FLOWERS. A LIST on application.
STEPHEN BROWN, Seedsman and Florist, Weston-super-Mare.

THREE very fine CROTONS, ALOCASIAS and HOTHOUSE PLANTS for SALE.—A Gentleman wishes to part with them, being too large for his Conservatory.
A. B., Post Office, Llandyssil, South Wales.

SEEDLING PALMS.—Nice healthy 1-yr. Seedlings of OREODOXA OLERACEA, at 30s. per 100. This is an excellent opportunity to obtain a stock of a good Palm at a low price!
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Pandanus utilis, for Table Decoration.

A. VAN GEERT begs to offer strong Plants of PANDANUS UTILIS, at 30s. per dozen; smaller ditto, 12s. to 18s. per dozen. May be supplied by the 100.
Fine Plants of MUSA ENSETE, 31s. 6d. each.
Ghent, Belgium.

To the Trade only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have published their NEW WHOLESALE CATALOGUE of BULBS for the season, and will be glad to forward it to Nurserymen, Seedsmen, and Florists only, free, upon application.

Lily of the Valley.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have to offer an unusually large and fine stock of very strong 3-yr. old CONVALLARIA CLUMPS. Price on application. Plants will be sent out in October next.

BUDDENBORG BROTHERS, FLORISTS, of Hillegom, near Haarlem, Holland, beg to inform Nurserymen and the Trade generally, that they have just published their CATALOGUE of HYACINTH, TULIP, and other BULBS, for the coming Season, and that it can be obtained, post free, on application to Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

WANTED, New and Rare SUCCULENT PLANTS.
J. T. PEACOCK, Sudbury House, Hammersmith, S.W.

EVERY GARDEN REQUISITE KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

New Catalogue.

JOHN H. LEY, Exotic Nursery, Croydon, S.E., will be happy to forward, post free on application, his NEW CATALOGUE (price very low) of PALMS, FERNS, STOVE PLANTS, &c.

Seeds for 1871.

WM. CUTBUSH AND SON'S Descriptive Priced CATALOGUE contains every requisite for the Garden. Post free on application.
Highgate Nurseries, London, N.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.
Forwarders to all parts of the World.

Summer Flowering and other Ornamental Plants.

PETER LAWSON AND SON will be glad to forward their NEW CATALOGUE, just published, free upon application. It contains all the leading Hothouse and Greenhouse Plants, Bedding-out Plants, and many novelties well worthy of a place in every Flower Garden.—Edinburgh and London, May, 1871.

B. S. WILLIAMS' SPRING CATALOGUE of NEW and RARE PLANTS is now ready, in which will be found a selection from all the best Plants of recent introduction; and in addition, descriptions of some very fine Plants, which B. S. W. now offers for the first time. Post free to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, N.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen to the Queen, Reading, Berks.

For Sowing after Haycart.

SUTTONS' RENOVATING MIXTURE of fine GRASSES and CLOVERS for improving Pastures deficient of bottom herbage, may be sown after the hay is carried with advantage; 6 to 12 lb. required per acre. Price 9d. per lb., or cheaper by the cwt.
SUTTON AND SONS, Seedsmen to the Queen and H.R.H. the Prince of Wales.
Royal Berkshire Seed Establishment, Reading.

LOAM.—Loam, unequalled for Fruit and Plant Culture. See Report of New Vineries, Gunnersbury. For rice, &c., apply to
Mr. R. TANTON, F.R.H.S., The Nurseries, Epsom.

FINE Transplanted CELERY PLANTS, 1s. 3d. per 100, 10s. per 1000; Strong EARLY CABBAGE PLANTS, 2s. 6d. per 1000.
EDWARD TAYLOR, Nurseryman, Malton, Yorkshire.

CABBAGE PLANTS.—Enfield Market, Battersea, and Drumhead Cabbage; ditto SAVOYS, at 3s. per 1000. Packing included.
W. VIRGO AND SON, Wonersh Nursery, near Guildford.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

Ixora amabilis.

ROBERT PARKER has great pleasure in offering this beautiful and distinct variety; habit vigorous and compact, with fine foliage; flowers deep orange-salmon, trusses very large, borne in the greatest profusion—young plants in 4-inch pots yielding two and three large trusses of flowers: very desirable for decorative and exhibition purposes. First-class Certificates have been awarded by Royal Horticultural and Royal Botanic Societies. Strong, healthy plants, 21s., 42s., and 63s. each.
Exotic Nursery, Tooting, Surrey, S.W.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

Orchids.

JAMES BROOKE AND CO. beg to offer the following choice collection for 25 guineas:—Dendrobium Devonianum, chrysotis, Falconeri, heterocarpum, transparens, Cambridgeanum; Cattleya Warneri, Mossiæ, Trianæ, citrina, amethystina, Leopoldi; Odontoglossum Alexandræ (Bluntii), Pescatorei, citrosmum, grande, Insleayi, Schleipperianum, Bictonense; Oncidium Lanceanum, O. papilio, O. Krameri; Lælia purpurata, Vanda cœrulea, Pleione Wallichii, Cypripedium hirsutissimum, Cymbidium Mastersii, Phaius albus, Trichopilia suavis, Barkeria spectabilis, B. Skinneri, Calanthe vestita, C. Veitchii, Cœlogyne cristata, Aerides Warneri.

CATALOGUES, with full Descriptions, Remarks on Culture, prices, &c., on application.

18, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

Seed Warehouse: 44, English St., & Blackfriars St.

NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE.

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs. LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.
LITTLE AND BALLANTYNE.
WM. BAXTER SMITH, } Sole
July 1, 1871. JAMES WATT, } Partners.

WILLIAM MOORE, Deceased.—All PERSONS INDEBTED TO, or having any CLAIMS against the Estate of WILLIAM MOORE, late of East Dereham, Norfolk, Nurseryman, deceased, are requested to PAY THEIR DEBTS, and send particulars of their CLAIMS to me, the undersigned, JAMES ELVIN, Executor, before October 11 next; after which day the said Executor will not be answerable or liable for any claims or demands he shall not then have had notice of. (Signed) JAMES ELVIN.
East Dereham, July 18, 1871.

Special Offer at Low Prices.

ORCHIDS.—Broughtonia sanguinea, 5s. ; Cattleya Dowiana, 10s. 6d ; Dendrobium taurinum, 15s. ; Sophronites grandiflora, 10s. 6d ; Epidendrum dichromum, 5s ; Vanda gigantea, 5s. ; Oncidium barbatum, 5s ; Dendrobium japonicum, 5s ; Dendrobium macrophyllum, 7s 6d ; Vanda Batemanni, 31s 6d. ; Epidendrum sceptrum, 7s 6d ; Cattleya Aclandiæ, 10s 6d ; Oncidium Kramerianum, 15s. ; Eulophia lurida, 5s ; Eulophia scripta, 10s 6d ; Odontoglossum platyodon, 15s ; Oncidium Roezlianum, 21s ; Oncidium panchrysum, 31s. 6d ; Oncidium triquetrum, 7s 6d ; Cœlogyne Bensoniæ, 21s ; Saccolabium Blumei majus, 15s ; Aerides Lindleyanum, 21s ; Calanthe vestita luteo-oculata, 5s ; Calanthe vestita rubro oculata, 5s ; Aerides crispum, 10s 6d ; Brassia verrucosa major, 10s. 6d ; Burlingtonia venusta, 10s 6d ; Cattleya Mossiæ, 5s ; Cattleya Leopoldi, 10s 6d ; Cypripedium barbatum, 3s 6d ; Dendrobium Dayanum, 10s 6d ; Dendrobium speciosum, 5s ; Dendrobium Devonianum, 15s ; Epidendrum erubescens, 10s. 6d. ; Angræcum funale, 7s 6d ; Lælia autumnalis, 10s 6d. ; Lælia purpurata, 10s 6d ; Lycaste Skinneri, 5s ; Lycaste lanipes, 10s. 6d. ; Lycaste Deppei, 7s 6d ; Miltonia Morelliana, 15s. ; Odontoglossum Bictonense, 7s 6d ; Odontoglossum citrosmum, 10s 6d ; Odontoglossum cordatum, 10s. 6d ; Odontoglossum nebulosum, 15s. ; Saccolabium curvifolium, 21s ; Trichopilia suavis, 7s. 6d. ; Cypripedium barbatum biflorum, 21s ; Brassavola caudata, 7s. 6d. ; Vanda Roxburghii, 21s. ; Vanda Roxburghii cœrulea, 21s ; Cypripedium niveum, 21s. ; Phalænopsis grandiflora, 63s. ; Aerides Warneri, 21s. ; Cypripedium Stonei, 15s. ; Oncidium ampliatum, 7s. 6d ; Dendrobium Bensoniæ, 42s ; Dendrobium primulinum, 15s ; Phalænopsis Schilleriana, 84s. ; Phalænopsis amabilis, 84s ; Odontoglossum grande, 5s. ; Goodyera Dawsoniana, 3s. 6d. ; and numerous other Orchids at equally low prices. Selections of 12 Orchids made for £3. Apply at

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S W

New Zonal Pelargoniums.

JOHN MANN begs to announce that he will distribute the following NEW PELARGONIUMS on August 1 :—

PRINCESS TECK.—Beautiful large circular flower, salmon, with good bold white eye, the size of Lord Derby ; fine zonate foliage, compact 5s each.

CHALLENGER —Fine large flowers, mottled salmon, large truss, dark zonate foliage ; very attractive 7s. 6d each.

PRINCE TECK —Very large fine formed flowers, of dark scarlet, good habit ; improvement on Lord Derby. 5s. each.

DUCHESS of ABERCORN. Soft rosy-salmon shaded, with large, circular, good shaped flower, dark zonate foliage ; First-class Certificate Royal Horticultural Society 7s 6d. each.

ILLUMINATOR Rich bright intense scarlet, good shape, very large white eye, green foliage, zonate ; First class Certificate Royal Horticultural Society 7s 6d each.

CHARMER Rosy pink, with large white eye, very fine flowers ; improvement on Christabel, good zonate foliage 5s each

MARQUIS of LORNE Fine formed, crimson-scarlet, large and fine, white eye, zonate ; good 5s each

VICTORIA —Pale salmon, very large truss, good shaped flowers, white eye 7s 6d each.

BEAUTY of BRENTWOOD —Deep shade of rose, fine flower, new colour, good habit 5s each

PRIMA DONNA —Very large trusses of good sized scarlet flowers, deeply shaded with rose pink, good habit, fine glow of colour. 5s. each.

The set of the above, 50s.
A Descriptive LIST to be had post free on application.
The Nursery, Brentwood, Essex.—July 19.

CARTER'S
PRIZE MEDAL GRASS SEEDS,
for SOWING in JULY and AUGUST

As supplied to H.M. THE QUEEN, H R H. THE PRINCE of WALES, the IMPERIAL COMMISSIONERS for the PRESENT EXHIBITION, the PARIS EXHIBITION, &c.

For PERMANENT PASTURES,

Carefully arranged to suit the various conditions of soils.

For LIGHT SOILS, }
For MEDIUM SOILS } 27s. to 31s. 6d. per acre.
For HEAVY SOILS }

Second quality, 20s. to 26s. per acre.

CARTER'S RENOVATING MIXTURE, for Renewing and Improving old Grass Lands (to be sown after the Hay Crop is removed), per cwt., 80s. ; per lb., 9d. ; per acre, 4s. to 8s. 6d.

"CARTER'S AUTUMN MIXTURE" of fast-growing Grasses and Clovers.

This Mixture comprises several quick-growing varieties, and will produce a Crop of Green Food, for Feeding-off, before Christmas, if sown "at once." To be followed by a heavy swarth of valuable Hay next May.

The crop may then be ploughed up, or, if left on the ground, a useful Autumn Grazing Crop will be ensured.

Sow 2 bushels per acre. Price on application.

All Seeds Carriage Free ; 5 per cent. discount allowed for cash.

JAMES CARTER AND Co.,
SEEDSMEN to the QUEEN and the PRINCE OF WALES,
237 and 238, High Holborn, London, W.C.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy all the Insects, and not injure the Plants, and burns without the assistance of blowing. Price 3s. 6d. per lb., carriage free. A reduction in price for large quantities.

To be had of Messrs. R. ROBERTS AND SONS, 112, St. John Street, Clerkenwell, London, E.C. ; and of all Seedsmen and Nurserymen.

FIVE HUNDRED THOUSAND PLANTS now READY (all true and fine).

BROCCOLI, Carters' Champion, Elletson's Mammoth } 5s. per 1000.
" Deal Early, Penzance Early }
" Purple Sprouting, Early, 4s per 1000
SCOTCH KALE, COTTAGERS' KALE, ROSETTE COLLARD, DRUMHEAD SAVOY, 3s ; a reduction for a large quantity

H J HARDY begs respectfully to offer the above for cash, and wishes to call attention to the fact that the two first-named Broccolis stood the frost of last winter and all his other sorts failed.—All package and carriage free to London ; to the amount of 20s , package and carriage free to any part of England.

H. J HARDY, Stour Valley Seed Grounds, Bures, Essex.

Cabbage Seed, for present Sowing.

For the GARDEN, for SOWING at ONCE, to come in next Spring and Summer

SUTTONS' IMPERIAL, the finest in cultivation, and earliest for Spring use, 8d. per ounce.

LONDON MARKET, 4d. per oz.
ENFIELD MARKET "
EARLY DWARF YORK, "
NONPARIEL, "

For the FARM.

	Per lb.—s.	d.
SUTTONS' IMPROVED DRUMHEAD, the largest in cultivation : should be sown in July and August ..	2	6
ROBINSON'S CHAMPION DRUMHEAD	2	6
COMMON DRUMHEAD, or FLAT DUTCH	2	0

Also GRASS SEEDS, TURNIP SEEDS, MUSTARD, RAPE, &c., for Autumn Sowing, particulars of which may be had on application.

SUTTON AND SONS, Seedsmen to the Queen, Reading.

Established 1793.

JOHN K. KING, SEED GROWER, Coggeshall, Essex, will be happy to supply his unrivalled Hardy Prize Stocks of MANGEL WURZEL, SWEDES, and other TURNIP SEEDS (carefully selected from large roots), at moderate prices.

Large purchasers supplied at special moderate prices.

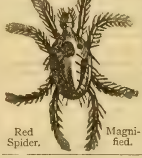
FARM SEED LISTS post free.

Carriage free on orders of 20s. and upwards.

"PHYTOSMEGMA," or PLANT CLEANSER, destroys Scale, Mealy Bug, Red Spider, &c., without injury to Plants ; 6d. and 1s. per bottle.

The NEW SHOWERER, for applying the above, 6d., 1s. and 3s. 6d each.

Wholesale of T. A. POOLEY, Sussex Wharf, Wapping, E. ; and Retail of all Nurserymen, Seedsmen, and Florists.



Red Spider. Magnified.

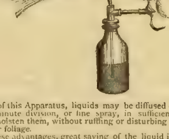
GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

THE "HORTICULTURAL VAPORISER," for the Application of Frettingham's Liquid Compound, or other Preparations, for the Destruction of Insects on Plants.



TRADE MARK.

By means of this Apparatus, liquids may be diffused over Plants in a state of minute division, or fine spray, in sufficient quantity to thoroughly moisten them, without ruffling or disturbing the most delicate flower or foliage.

Besides these advantages, great saving of the liquid is effected. A tablespoonful applied by the Vaporiser is equal to a pint applied by means of a sponge, or the ordinary methods in use.

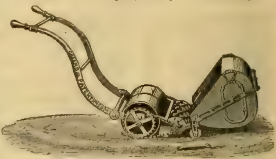
As a Disinfectant Distributor, for Sick Rooms, it is invaluable. The minuteness of the spray preventing a single particle of the liquid calling to the ground ; thus, the whole of the Disinfecting Liquid used comes into active operation at once, without fear of damaging the carpets or furniture Price 3s. 6d each.

May be obtained direct from PARK AND ATHERTON, Nottingham ; or of their Agents throughout the country.

The Apparatus will be forwarded to any address in England on receipt of 4s. in stamps.

Great Reduction in Prices for 1871,
OF
GREEN'S
PATENT SILENS MESSORS
OR
NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices :—

To cut		Price £	s.	d.	
8 inches	..	£2	10	0	Can be worked by one person.
10 "	.. ..	3	0	0	
12 "	.. ..	4	0	0	
14 "	.. ..	5	0	0	
16 "	.. ..	6	0	0	This can be worked by one person on an even Lawn
18 "	.. ..	7	0	0	By Man and Boy.
20 "	.. ..	7	10	0	"
22 "	.. ..	8	0	0	"
24 "	.. ..	8	10	0	"

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED
PATENT ROLLER,
FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	7	10	0	20 in.	22 in.	3	10	0
24 in.	26 in.	4	10	0	16 in.	17 in.	2	15	0

PRICES of ROLLERS, fitted with Shafts,
Suitable for Pony or Horse-power.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	10	0	0	30 in.	60 in.	15	10	0
30 in.	36 in.	10	15	0	30 in.	72 in.	17	10	0
30 in.	42 in.	11	15	0	30 in.	84 in.	19	10	0
30 in.	48 in.	13	10	0					

These ROLLERS possess many advantages over all others ; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price ; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

		£	s.	d.
24 inches by 26 inches	.. .. ..	£4	0	0
20 " 22 "	.. .. ..	3	2	6
16 " 17 "	.. .. ..	2	10	0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds ; and 54 and 55, Blackfriars Road, London, S.E.

THOMAS THORNTON,
HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES ; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS ; a large stock of Green and Variegated HOLLIES, VINES, &c. : all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS
will soon be ready, and can be had on application.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c, and invigorates the Grass, keeping it green during hot dry weather Cleanly and inodorous. 30*s.* per cwt. ; 36-lb. tins, 10*s.* Directions and testimonials on application.

Principal Agent :—W. D BARBOUR, 3, Park Row, Leeds.

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E. ; Queen's Road West, Chelsea, S.W. ; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES ; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

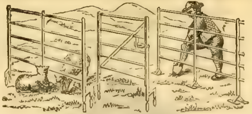
SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

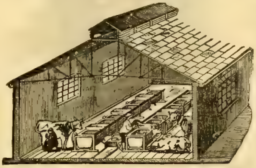
Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

Illustrated Price Lists on application to COTTAM AND CO, Iron Works, 2, Winsley Street, Oxford Street, London, W.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS

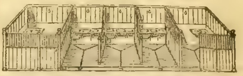


Their advantages are—Portability, not fixtures, removable at pleasure ; no Woodwork or Partitions to impede Ventilation or breed Vermin ; Hay Rick dispensed with as unnecessary ; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

By Appointment to H.R.H. The Prince of Wales.

BARTON'S PATENT STABLE and HARNESS ROOM FITTINGS, BRACKETS, &c.



Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps.

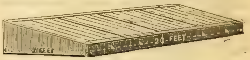
For ALTERATION of STABLES a competent person can be sent to any part, to inspect and give Estimates.

JAMES BARTON, Iron Works, 370, Oxford Street, W.

W. S. BOULTON AND CO., Norwich, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c, at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES —Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

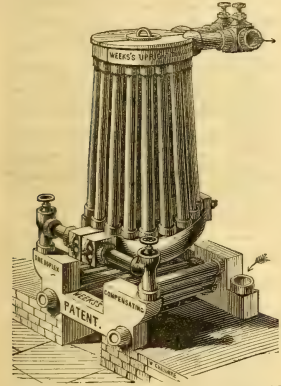
If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above :—

10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
17½ feet long by 6 feet wide..	£5 0	31½ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.

PLANT PRESERVERS.

Illustrated Catalogues free on application.
Rose Lane Works, Norwich.



THE GARDENER'S FRIEND.

WEEKS'S PATENT

DUPLEX UPRIGHT TUBULAR BOILER,

TWO BOILERS IN ONE,

Guaranteed by Insurance for FIFTEEN YEARS, is the only real SAFETY Boiler; is INDESTRUCTIBLE, cannot BREAK DOWN, and may be easily cleaned out, without withdrawing the Water from the Apparatus.

J. WEEKS & CO.,
HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
KING'S ROAD, CHELSEA, LONDON, S.W.

JOHN WARNER & SONS, HYDRAULIC ENGINEERS,

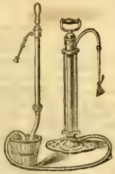
Bell and Brass Founders to Her Majesty, Manufacturers of Hydraulic Machinery of every description, Wind Engines, Water Wheels, Water Rams, Deep Well Pumps and Frames for Horse or Hand Power, Garden Engines, Swing Barrows, &c., &c. Branch Pipes for Rubber Hose, with Jet and Spreader, or with Haswell's Patent Director, from 3s. 6d. Syringes from 5s., or, fitted with Haswell's Director, 12s. 6d. Lists sent on application.

8, CRESCENT, CRIPPLEGATE,
LONDON, E.C.

FOUNTAIN JETS,
In great variety, from 3*s.* 6*d.*

No. 547A.
GARDEN ENGINE.

12 Gallons ..	..	£3	0	0
16 ,,	.. ..	3	16	0
24 ,,	.. ..	5	1	0
30 ,,	.. ..	5	13	0



WARNERS'
AQUAJECT.
Useful for every variety of purpose—in watering or washing Flowers or Trees in Gardens, Conservatories, &c. ; also for washing Carriages or Windows, laying Dust, &c.

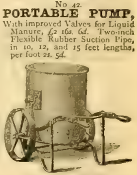
Price complete	£1	8	0
Small size for the hand, as an ordinary Syringe ..	0	15	0

THE CRYSTAL PALACE
GARDEN or FIRE ENGINE.

No. 35.
CAST-IRON PUMPS.

2½ inches	..	£1	9	0
3 ,, ..	..	1	18	0
3½ ,, ..	..	2	7	0
4 ,, ..	..	2	15	6

No 42.
PORTABLE PUMP,
With improved Valves for Liquid Manure, £2 16*s.* 6*d.* Two-inch Flexible Rubber Suction Pipe, in 10, 12, and 15 feet lengths, per foot 2*s.* 5*d.*



No. 579½.—SWING
WATER BARROW.

Galls.				Galls.			
20	£2	2	0	38	£3	18	0
30	2	14	0	50	5	14	0

WM. PAUL'S ROSES are NOW in BLOOM inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

Per packet —	s.	d.
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d. ; smaller packets ..	1	6
" finest Spotted, 2s. 6d. ; smaller packets ..	1	6

Saved with the greatest care, and from one of the largest collections in the kingdom.

	s.	d.
CINERARIA, choicest Mixed ; saved from a splendid collection of named varieties, and cannot be surpassed	2	6

PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.

	s.	d.
PRIMULA, choicest Mixed Fringed, 2s. 6d. ; smaller packets..	1	6
" dark Carmine	2	6
" new Scarlet	2	6
" Rose Fringed	2	6
" choicest White Fringed	2	6
" choicest Fern-leaved Carmine	2	6
" choicest Fern-leaved White	2	6

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free. Five per cent. discount for cash.

JAMES CARTER AND CO., The Royal Seedsmen, 238, High Holborn, London, W C.

Choice Seeds

For PRESENT SOWING.

LEE'S CHOICE CALCEOLARIA, from James', Dalkeith, and other choice strains, carefully selected and hybridised. Unsurpassed for colour, habit and form. In packets, 2s. 6d. and 5s each.

LEE'S CHOICE CINERARIA, from our own collection of named flowers. In packets, 2s. 6d. and 5s. each.

LEE'S CHOICE PRIMULA FIMBRIATA, in separate colours or mixed. In packets, 2s. 6d. and 5s. each.

Do. do., 6 distinct varieties for 10s. 6d.

JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Suttons' Superb Hybridised Florist Flower Seeds.

SUTTONS' SUPERB CALCEOLARIA.

MESSRS. SUTTON AND SONS have received NEW SEED of their superb varieties of FLORISTS' FLOWERS, HYBRIDISED, and saved from the Finest Strains in Cultivation.

SUTTONS' Superb CALCEOLARIA, per packet, 2s 6d , post free.
SUTTONS' Superb CINERARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb PRIMULA, per packet, 2s. 6d , post free.
Ordinary Varieties, per packet, 1s. 6d., post free.

From Mr. GEO. BOND, *Gr. to the* Earl of Powis, *Walcot Gardens*. May 23, 1871.—" The flowers of the Calceolaria and Cineraria seed I had of you are splendid."

From Mr. CHAS WARCROFT, *Gr to* A. R. Hudson, Esq., *Pershore*. April 19, 1871.—" My Cinerarias from your last year's seed are very good, nearly two feet across."

SUTTON AND SONS, Seedsmen to the Queen, and H.R.H. the Prince of Wales, Reading.

Choice Seeds for Present Sowing, Free by Post.

JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton" Nurseries, Chester.

Per packet.—	s.	d.
ANTIRRHINUM, choice mixed .. .. .. 6d and	1	0
AURICULA, from choice varieties .. .. .. 1s. and	2	6
CALCEOLARIA, herbaceous, saved from a magnificent collection of choice flowers .. .. 1s. 6d., 2s. 6d. and	5	0
CARNATION, from prize flowers .. .. .. 1s and	2	6
CENTAUREA, candidissima and Clementei.. .. 1s. and	2	6
CINERARIA, from newest named flowers .. 1s. 6d., 2s. 6d. and	5	0
CYCLAMEN, Wiggins' prize strain .. .. .. 1s. 6d. and	2	6
GLOXINIA, erect and other varieties .. .. .. 1s. and	2	6
HOLLYHOCK, from choice named sorts .. 1s., 2s. 6d. and	5	0
HUMEA ELEGANS .. .. 6d. and	1	0
" " PURPUREA	1	0
MIGNONETTE, Parsons'.		
MYOSOTIS DISSITIFLORA	1	0
PANSY, from prize flowers.. .. .. 1s. and	2	6
PETUNIA, from choice varieties .. .. .. 6d. and	1	0
PINKS, from choice named sorts .. .. .. 1s. and	2	6
POLYANTHUS, from a choice strain .. .. .. 1s. and	2	6
PYRETHRUM AUREUM, Golden Feather .. 6d. and	1	0
PRIMULA SINENSIS FIMBRIATA ALBA, 1s. 6d., 2s. 6d. &	5	0
" " " RUBRA .. ..1s 6d., 2s. 6d. and	5	0
" " " Mixed .. ..1s. 6d , 2s. 6d. and	5	0
" " " FILICIFOLIA ALBA, 1s. 6d., 2s. 6d., and	5	0
" " " " RUBRA, 1s. 6d., 2s 6d. and	5	0
" " " " Mixed ..1s. 6d., 2s. 6d and	5	0
SOLANUM, of sorts.. .. .. 2s. 6d. and	3	6
STOCK, Brompton, finest German .. .. 1s., 2s. 6d. and	3	6
" East Lothian, collection of three colours	2	6
WALLFLOWER, finest Double German .. 1s., 2s. 6d and	3	6

The following, for early Spring blooming, can be supplied by weight, or in packets, 3d. and 6d. each :—

Alyssum saxatile
Calandrinia, of sorts
Candytuft, of sorts
Collinsia, of sorts
Erysimum, of sorts
Iberis sempervirens
Limnanthus, of sorts
Lupinus, of sorts
Myosotis, of sorts
Nemophila, of sorts
Saponaria, of sorts
Shortia californica
Silene, of sorts
Sweet William, fine mixed
Viola, of sorts
Wallflower, fine mixed

CATALOGUES of SEEDS and PLANTS post free on application.

WHEELERS' COCOA-NUT CABBAGE

WHEELERS' COCOA-NUT CABBAGE

Wheelers' Cocoa-Nut Cabbage, per pkt., 1s.
" " small packet, 6d.
Wheelers' Imperial Cabbage, per oz., 8d.
Wheelers' Tom Thumb Lettuce, p. pkt., 1s.
" " small packet, 6d.

N.B.—Wherever this charming little Lettuce is grown it is a remarkable favourite. It may be obtained *true* from either Gloucester, or Mark Lane, London. We recommend [everybody to try it who have not already done so.

All the above Post Free.

WHEELERS'

·BROCKWORTH PARK PEAR,

10s. 6d. each.

This magnificent Pear is a cross between Williams' Bon Chrétien, and Louise Bonne of Jersey. It considerably surpasses both its parents in SIZE, fine QUALITY, BEAUTY, and FLOWER, ripening about the same time, viz., September and October ; grown against a wall, the fruit is remarkably large and handsome, the Pears weighing about 12 oz. (¾ of a lb. each). On the dinner-table well-ripened specimens are remarkably conspicuous for their size and beauty, and their flavour and juiciness are fully equal to their appearance.

A First-class Certificate was awarded to this handsome variety last autumn by the Royal Horticultural Society, and Trees were ordered by the principal Nurserymen in the kingdom ; but the demand was so great that we were Sold out of all our Saleable Plants immediately they were offered. Coloured Plates, taken from Nature, may be had at 6*d.* each.

We are now Booking Orders to be executed in November next ; all Orders will be executed in exact rotation as received, as far as the Plants will go ; but we expect to be Sold out long before the season is over.

The price of young PYRAMIDS is 10*s.* 6*d.* each. We have a few Plants trained for walls at 15*s.* The Pyramids will furnish plenty of buds next summer for budding Trees of other varieties established against walls. This fine variety is well worthy of a wall, and of a good aspect.

☞ Orders are now being Booked.

J. C. WHEELER & SON,
NURSERYMEN,
GLOUCESTER ; and
59, MARK LANE, LONDON, E.C.

New and Choice Flower Seeds, Post Free.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Per packet.—	s.	d.
Williams' superb strain of PRIMULA, Red, White, or Mixed 1s. 6d., 2s. 6d., 3s. 6d., and	5	0

Plants from this seed have always been awarded First Prizes wherever exhibited.

	s.	d.
Neill's extra choice CALCEOLARIA, 1s. 6d., 2s 6d., 3s. 6d., and	5	0
Weatherill's extra choice CINERARIA, 1s. 6d., 2s. 6d., 3s. 6d., and	5	0
Wiggins' prize strain of CYCLAMEN 1s. 6d., 2s. 6d., and	3	6
ECHEVERIA METALLICA	2	6
HOLLYHOCK, from Chater's finest varieties .. 1s. and	2	6
HUMEA ELEGANS PURPUREA, new	1	0
LAPAGERIA ROSEA, new seed	1	0
MYOSOTIS SYLVATICA, true	0	6
PANSY, finest show varieties .. .. 1s. and	2	6
POLYANTHUS, Wiggins' prize strain .. .. 1s. and	1	6
PYRETHRUM GOLDEN FEATHER	1	0
East Lothian STOCKS, per collection of three colours	2	6
SOLANUM HYBRIDUM COMPACTUM, new, awarded a First-class Certificate by the Royal Horticultural Society, March 16, 1870 .. .. 3s. 6d. and	5	0
Williams' Improved Hybrid SOLANUM .. .. 1s. 6d. and	2	6
SWEET WILLIAM, Hunt's Auricula-eyed	0	6
VIOLA CORNUTA var. PERFECTION 1s. 6d., 2s. 6d., and	3	6
VIOLA ODORATA LAUCHEANA, new, superior to the old Russian Violet	2	6
WALLFLOWER, Saunders' fine dark variety	1	0

New Choice Flower Seeds.

DOWNIE, LAIRD, AND LAING have the pleasure of offering the following CHOICE FLOWER SEEDS for present Sowing :—

ANTIRRHINUM.—Extra choice ; saved from our magnificent collection of the newest named flowers. 6d., 1s., and 1s. 6d. per packet.

CALCEOLARIA.—Hybridised ; saved from the superb flowers that gained the First Prize at Kensington. 2s. 6d., 3s. 6d., and 5s. per packet.

CALCEOLARIA —Hybridised ; saved from the celebrated strain at Dalkeith Palace. 1s. 6d., 2s. 6d., and 3s. 6d. per packet.

CINERARIA.—Extra choice ; saved from an unequalled assortment of named flowers 1s. 6d., 2s. 6d., and 3s. 6d. per packet.

COLEUS, GOLDEN. —Hybridised ; saved from our First Prize, Crystal Palace and Kensington collections. 1s., 1s. 6d., and 2s. 6d. per packet.

CYCLAMEN.—Extra Choice ; saved from the Amateur's Collection who was First at Kensington. 1s., 2s., and 3s. per packet.

HOLLYHOCK.—Extra Superb ; saved from the most distinct of our famous assortments of Prize Flowers. Twelve Colours. 5s. per collections.

HOLLYHOCK.—Extra Fine ; saved from the finest varieties of our magnificent collection. Mixed. 1s , 2s. 6d., and 3s 6d. per packet.

PANSY, SHOW.—Extra Superb ; saved from the most choice of our own unrivalled exhibition flowers. 1s., 1s. 6d., and 2s. 6d. per packet.

PANSY, FANCY.—Extra fine ; saved from the most beautiful of our admirable collection. 1s., 1s. 6d., and 2s. 6d. per packet.

PENTSTEMON.—Most superb ; saved from our own collection of the choice varieties introduced last season. 1s., 1s. 6d., and 2s. 6d. per packet.

PHLOX.—Perennial, early and late ; saved from our magnificent pot plants, which have taken prizes at Oxford, Kensington, and Regent's Park. 1s. 6d., 2s. 6d., and 3s 6d. per packet.

PRIMULA, FRINGED.—Red and white ; saved from the finest strain in cultivation. 2s 6d , 3s 6d., and 5s. per packet.

PRIMULA, FERN-LEAVED —Red and white ; saved from a most magnificent strain specially for ourselves. 2s. 6d., 3s. 6d , and 5s. per packet.

PYRETHRUM, GOLDEN.—Very select ; saved from a very deep golden-coloured strain of this popular bedder. 6d., 1s., and 1s. 6d. per packet.

STOCK, INTERMEDIATE.—Scarlet, Purple, and White ; saved from our celebrated strain of these flowers, which rival the East Lothian varieties. 1s., 1s. 6d , and 2s. 6d. per packet.

SWEET WILLIAM.—Extra dark ; saved from Hunt's choice strain, carefully selected and improved. 6d., 1s., and 1s. 6d. per packet.

WALLFLOWER.—Blood Red ; saved from a very pure strain, compact in growth, and deep in colour. 6d and 1s. per packet.

Stamps may be sent in payment. Packets forwarded free by post.

Stanstead Park, Forest Hill, London, S.E. ; and at Edinburgh.

ROYAL HORTICULTURAL SOCIETY.—HORTICULTURAL DEPARTMENT of the LONDON INTERNATIONAL EXHIBITION, 1871.

The following Awards to Foreign Exhibitors were made in this Department on Wednesday, July 19 :—

SILVER FLORA MEDALS.

Group of Agaves,
12 Standard Orange Trees, } From M. J. Verschaffelt, Ghent.
Æchmea Marie Regina, from M. H. Wendland, Herrenhausen.

FIRST-CLASS CERTIFICATES.

Agave Regeli macrodonta,
Agave sp. nova,
Agave mescal, fol striatis,
Agave elegantissima, } From M. J. Verschaffelt.
Zamia sp. nova, New Caledonia,
Dicksonia sp. St Catherine's,
Zamia (Encephalartos) Vroomi,
Æchmea Marie Regina, from M. H. Wendland.

ROYAL HORTICULTURAL SOCIETY.—SHOW of LILIUMS, CARNATIONS, &c., JULY 19.

AWARDS of the JUDGES.

CLASS 1.—6 LILIUMS in pots. (Amateurs.)

CLASS 2.—6 LILIUMS in pots. (Open.)

CLASS 3.—12 CARNATIONS, cut, distinct. (Open.)

1st, Mr. C Turner, Royal Nursery, Slough, £1.
2d, Mr. N. Norman, 98, Crescent Road, Plumstead, 15s.
3d, Mr. H. Hooper, Vine Nursery, Widcomb Hill, Bath, 10s.

CLASS 4.—12 PICOTEES, cut, distinct. (Open.)

1st, Mr. N. Norman, £1.
2d, Mr. C. Turner, 15s.
3d, Mr. H. Hooper, 10s.

CLASS 5.—6 DELPHINIUMS, in 12-inch pots. (Open.)

CLASS 6.—6 PENTSTEMONS, in 8-inch pots. (Open.)

CLASS 7.—6 PHLOXES, in 8-inch pots. (Open.)

1st, Messrs. Downie, Laird & Laing, Stanstead Park Nursery, Forest Hill, S.E., £1 10s.

CLASS 8.—6 LOBELIA FULGENS, in 8-inch pots. (Open)

CLASS 9.—12 PERENNIALS, to be grown in 12-inch pots, the plants not to exceed 2 feet in height. (Open.)

1st, Mr. R. Parker, Exotic Nursery, Tooting, S.W., £4.

PRIZES OFFERED by MESSRS. JAMES CARTER AND CO.

CLASS 10.—Collection of VEGETABLES, to include 3 dishes of Peas (including Carter's Imperial Wonder and Laxton's Supreme), and Carter's Improved Garnishing Parsley.

1st, Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe Abbey, High Wycombe, Bucks, £2 2s.

MISCELLANEOUS.—EXTRA PRIZES.

Messrs. J. Veitch & Sons, Royal Exotic Nursery, Chelsea, Group of Plants.

Mr. B. S. Williams, Nurseryman, &c., Upper Holloway, Miscellaneous Collection of Plants.

Messrs. E. G. Henderson & Son, The Wellington Nursery, St. John's Wood, Group of Miscellaneous Rare Plants.

Mr. H. Hooper, Cut Blooms of Carnations, Cloves, Picotees, Pinks, and Pansies

PRIZES GIVEN by the METROPOLITAN FLORAL SOCIETY:

12 CARNATIONS.

1st, Mr. D. Pizzey, Gr. to Sir E. Perry, Fulmer, Slough.
2d, N. Norman, Esq., Crescent Road, Plumstead.

12 PICOTEES.

1st, N. Norman, Esq.
2d, Mr. D. Pizzey.

NEW DOUBLE GERANIUMS, &c.—12 fine varieties Double Geraniums, 4*s* ; 12 vars. new Double Geraniums of 1870, 12*s.* ; 12 fine new Zonal Geraniums of 1870, 6*s.* ; 12 superb vars. Gold and Golden Bicolor Geraniums, 6*s.* 12 vars. new FUCHSIAS (1870), 3*s.* ; 12 best select Fuchsias, 2*s.* 12 select COLEUS, 2*s.* 12 select PHLOXES, 3*s.* 12 new CHRYSANTHEMUMS (1870), 2*s.* 12 new VERBENAS of 1870, 2*s.* 12 vars. new CHILEAN MIMULUS, 3*s.* New AGARATUMS :—White Tom Thumb, 6*d.* ; White Imperial Dwarf, 6*d.* ; Tom Thumb's Bride, the best white, 1*s.* 6*d.* ; Sultan, the darkest blue, 1*s.* 6*d.* ; the above four new Ageratums, 3*s.* ; 12 vars. Ageratums, including the above, 5*s.*

B. W. KNIGHT, Florist, Battle, Sussex.

New H.P. Rose, Louis Van Houtte.

H. BENNETT has to DISPOSE OF 1000 young, strong, thriving plants, in 5-inch pots (having from 12 to 14 working buds each) of this exquisite Rose, the best yet sent out by Monsieur Lacharm. Characteristics : habit vigorous, and branching ; growth and blooming continues throughout the season ; colour, dense rich velvety-crimson, the tips of the petals most brilliantly illuminated with a lighter shade ; form, most perfect. A fine pot Rose, blooming to a certainty when forced. Price, per single plant, dozen, or 100, on application. Also very strong plants, in 5-inch pots, of the following new Roses of 1870 :—

H.P. ROSE, Mademoiselle Eugénie Verdier.
H.P. ROSE, Marquise de Castellane.
TEA ROSE, Madame Levet.

HYBRID PERPETUALS of 1871.
Capitaine Lamuret. | Mademoiselle Marie Gonod.
Henri Pages. | Monsieur Cordier.
Madame Guillat de Mont-Favet.

TEAS of 1871.
Frères Souper et Notting. | Madame Emilie Dupuy.
Madame Azëlia Imbert. | Victor Pulliat.
Madame Berard.

General ROSE CATALOGUE free on application.
Manor Farm Nursery, Stapleford, near Wilton, Wilts.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz. :—Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A. ; and E. J. LOWE, F.R.S.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

The Gardeners' Chronicle

SATURDAY, JULY 22, 1871.

FARMERS long held the notion that the presence of the Barberry (Berberis vulgaris) in their hedges was prejudicial to the Wheat crops in the adjacent fields. As there seemed on the surface no good reason for this, botanists and scientific men scouted the notion. That the Fungus so common on the Berberis (Æcidium Berberidis) should have anything to do with the Uredo rubigo of the Wheat, or with the Puccinia, seemed too absurd a notion to be at all credible. Nevertheless, changes as strange do occur in other cases, and the forms and stages through which some of the Fungi pass should at least lead us to give a fair hearing even to the enunciation of the most startling notions, provided they are made by persons whose attainments are such as to warrant us in placing some confidence in their judgment.

Few things in Nature, for instance, can be more unlike than the fleshy orange-coloured FUNGUS so often found on the SAVIN (Podisoma Juniperi Sabinæ), and the small crisp flask-like Fungus which appears on the leaves of PEARS (Rœstelia cancellata), yet it was shown by Prof. OERSTED, of Copenhagen, that the one is but a form of the other. The Danish Professor, as we have previously recorded, proved this by inoculating the Pear with the Fungus of the Savin. Naturally the statement was received with incredulity, and requires the concurrent testimony of many witnesses before it can be definitely accepted. One such witness is M. ROZE, who repeated OERSTED'S experiments with success. Last May we had an opportunity of seeing in Paris another case of the same nature, in which the French botanist just named had succeeded in inducing the presence on the Hawthorn of Rœstelia (Æcidium) lacerata, by placing on the young shoots the minute spores of another fleshy Fungus commonly found on the Juniper, viz., Podisoma clavariæforme.

The method of procedure adopted by M. ROZE was to detach from the Juniper some of the fleshy tongue-like masses of the Podisoma. These were just moistened with water, and placed in watch glasses, under a bell glass. After twenty-four hours the Fungus had swollen greatly, from the imbibition of water, the sporangia or spore-cases became erect, and from several of them proceeded fine threads, bearing the sporidia or seeds. Some of these latter were removed by a camel's-hair brush, and transferred to the leaves and young shoots of the Hawthorn. The sporidia so sown immediately germinate, emit a filament which penetrates the epidermis of the young branches. Eight days afterwards yellowish spots were observable on the Hawthorn, and in a month's time the leaves of the Hawthorn were more or less thickly covered with the Rœstelia lacerata. Similar experiments made with Podisoma fuscum, an allied form, had only negative results.

These experiments require to be repeated with the greatest caution by other observers ; but we think enough has already been done to show that the ridicule excited at the onset by the statements of the Danish botanist was ill-timed and out of place.

—— WHEN informing us of the entire success of the first or experimental Rose show at Manchester, alluded to last week at p. 911, Mr. FINDLAY threw out an excellent suggestion as to a CONFERENCE for fixing DATES, which the different societies would do well to take into consideration. The success realised on this occasion leaves, he thinks, little room to doubt that Manchester will see an annual show of the same kind ; and he goes on to make the following apposite remarks :—"There are so many Rose shows held in the country just now, that I think the time has arrived when there should be a kind of conference of the representatives of the leading societies throughout the country, in order to arrange dates, with a view to avoid clashing. The week before last, for instance, three important Rose shows were held—Kensington on the 5th, Birmingham on the 6th and 7th, and Manchester on the 7th and 8th. The dates should be arranged not later than Christmas." It would be a manifest advantage if some arrangement of this kind could be adopted ; and the suggestion need by no means be confined to Rose shows, but might well be extended to all great floral gatherings, and to none with more reason than to the Metropolitan exhibitions, which are becoming much too numerous, and which we believe would be thought far more of by the public if each Society would confine itself to one *Great Show*, and endeavour to make that as perfect and attractive as possible. We are not now alluding to the bi-monthly meetings at Kensington, which are mainly held for the sake of exhibiting novelties ; and which have latterly been somewhat amplified, in consequence of the proximity of the International Exhibition ; but we refer to what the Societies themselves designate and advertise as their Great Summer Shows. In any case it would seem that the amenity of conferring together, as to dates, could have no other than a salutary effect.

—— MONSTER MUSHROOMS seem to be unusually abundant this year. At the meeting of the Royal Horticultural Society, on the 5th inst., Mr. COLBOURNE, of Woolhampton, showed a boxful of very large and succulent specimens, measuring from 8 to 10 inches across ; but these seem to have been eclipsed by others gathered in different parts of the country, as recorded in the local papers. Here are some of these modern instances :—"A large Mushroom, lately gathered in the parish of Fenton-by-Newark, Lincolnshire, was 54 inches in circumference, the stem was 9 inches round, and the weight was 4½ lb. (*sic*). It was a fine and perfect specimen, and of a beautiful red colour." Again : "Two monster Mushrooms were gathered in a mowing meadow at Old Hays, Ratby, Leicestershire ; they were perfect in shape, without a blemish of any kind, and of the following dimensions :—No. 1, circumference, 2 feet 9 inches, diameter, 9¾ inches, weight, 14½ oz. ; No. 2, circumference, 2 feet 5½ inches, diameter, 9 inches, weight, 14 oz." Again : "At Bromsgrove, a specimen 10½ inches in diameter, and 5 inches high, weighed 1 lb. 2 oz." Again : "At Enstone, Oxfordshire, a specimen was gathered which measured 2 feet 10 inches in circumference, and was perfectly sound and fresh." These, no doubt, are all examples of Agaricus arvensis. The gigantic Gooseberries must look to it, or they will be quite superseded.

—— One of the most remarkable productions at the South Kensington meeting on Tuesday last was the fine group of LILY OF THE VALLEY, in full bloom, from Messrs. STANDISH & CO. The flowers were as fresh and perfect and fragrant as in spring. We understand from Mr. STANDISH that they are part of a considerable quantity obtained last autumn for forcing purposes, but that it was found they would not force, the usual stimulating influences being quite ineffectual in their case, but that when planted outdoors in shady places they have come thus late into bloom. They must be of a distinct variety, the leaves being unusually short and broad, and marked with darker green veins, and the investing sheaths at the base of their stems being of a deep red colour. As extending the season of the Lily of the Valley, this variety will be invaluable.

—— One of the most remarkable plants to be seen at the Jardin des Plantes last year was the ZAMIOCULCAS, an Aroideous plant, having deciduous pinnate or bipinnate leaves, like those of some Aralia, and thus affording, it is believed, a solitary instance of the existence of compound leaves among endogenous plants. We know not whether the plant has escaped the destruction from frost or fire which befel so many of its companions. The genus was founded on the Caladium zamiæfolium, of LODDIGES' "Botanical Cabinet," a plant of south-east tropical Africa, very imperfectly known till last year, when it produced its flowers, and was examined by M. DECAISNE. This plant has pinnate leaves, but a second species, also from Zanzibar, has bipinnate leaves, the leaflets of which are deciduous, and the common stalk swollen as in Anthurium. LODDIGES' plant was supposed to have been derived from Brazil, but this is now shown to be an error. The name, Zamioculcas, given by SCHOTT, and which signifies Zamia-like Colocasia, affords, says M. DECAISNE, an illustration of the inconvenience that accrues from founding a generic name upon the aspect of a species, since the name is only significant of the first species, Z. Loddigesii, with impari-pinnate Zamia-like foliage, and not to the new species, Z. Boivinii, which has bipinnate leaves like an Aralia. The technical description of the genus, and of the two species above referred to, will be found at p. 321 of the "Bulletin de la Société Botanique de France," vol. 17 (1870).

—— The following letter from a correspondent in reference to THE HORTICULTURAL PROVINCIAL DINNER (see p. 907), deserves consideration :—"If the dinner is looked upon as an honour to the Council chiefly, your view is the right one. Common modesty, as well as etiquette, forbid them to move in the matter ; but I hold that the dinner should be held for the *good of horticulture*, and, looked at thus, there is no more egotism in eating a dinner with one's friends than in gathering them together to see a show. Horticulture has a social as well as a cultural side to it, and while the one has been stimulated to the utmost, the other has been neglected. Is it, therefore, any wonder that it sometimes runs to seed? I know of no greater service that the Royal Horticultural Society could render to horticulture at the present time than the binding of its practical supporters more closely to itself by social intercourse, such as an occasional dinner, *soirée*, *conversazione*, or congress. I will not say we want the patronage of any, but many of us yearn for sympathy. We are accustomed to manifestations of respect and kindly feeling from the highest and the best in the land, and have a right to expect something different than hurried impatience and cold shoulder from the representatives of a Society which exists for the advancement of horticulture : and, as one great means to this end, the elevation of horticulturists."

—— At last something is to be done with the ALEXANDRA PALACE, at Muswell Hill. The principle of a prospectus now before us is the Tontine one, by which every subscriber is to have what are termed Right Certificates, to which are attached certain privileges in proportion to the price paid. These include admission to the palace and grounds, and participation in art unions, giving a chance to each 21*s.* subscriber of securing five prizes of £500 each. In 1886 the whole property will be sold, and the proceeds divided amongst the Tontineers. To provide against loss in the event of death, an insurance office has agreed, in consideration of the payment of 1*s.* on every 21*s.* right, to refund 20*s.* of every such guinea upon the death of the life so insured should it occur before the close of the Tontine. As all the profits on this undertaking are to go towards the improvement of the property, the value of which (with the building land surrounding the grounds) stands at present very high in the market, it is probable that on the sale in 1886 the return to the Tontineers will be such as to have made the investment of a lucrative character. For the details of the scheme we must refer to the prospectus, but we may mention that no subscriber incurs any liability, as it is a trust matter. It will be remembered that Captain FOWKES' domes for the Exhibition of 1862 were removed to Muswell Hill, where they form a landmark for miles around. The garden arrangements are, we believe, entrusted to Mr. MCKENZIE.

—— We are informed that a SUPPLEMENTAL ROSE SHOW will be held at the Crystal Palace on August 5 next.

—— With reference to the SISYRINCHIUM BERMUDIANUM, alluded to in our last number as having been found in Hampshire, we have this further information from the finder :—"The plant grows in one part of a wood, within a radius of 10 or 15 yards, where it is pretty abundant. It grows amongst low, thick Oak underwood, and long rank grass, the place being a moist one, and near a small running stream, which comes from the direction of the New Forest. There is a small cottage and garden near the edge of the wood, about 100 yards from the place where the Sisyrinchium is found to the northwards, the prevailing wind being W.S.W. No other garden is near, and the wood is a private one." It is possible the plant is an escape from the garden aforesaid, or from some other ; but in any case, it is singular it should have hitherto escaped notice.

—— The extreme MAXIMUM TEMPERATURES recorded at each of the stations in England during the week ending July 15, ranged from 80°.6 at Blackheath to 69° at Newcastle, with a mean for the different stations of 74°, or about 2° above the mean for the several stations in Scotland—where 75° at Perth and 69° at Aberdeen were the highest and lowest. The extreme MINIMUM TEMPERATURE registered at any station was 45°.9 at Salford, whilst at Newcastle the lowest recorded was 54°. The means for the two countries were very nearly of the same value, viz., for England 48°.4, and Scotland, 48°.6. The MEAN TEMPERATURE of England, as deduced from the observations taken at the different stations, exceeds that of Scotland by 1°.7. In the former country 61°.7 at Blackheath and 61°.3 at Norwich were the highest, and 57°.6 at Salford the lowest, mean temperatures, and in the latter country the extremes are represented by 59°.5 at Perth, and 56°.6 at Paisley.

RAINFALL.—The principal falls of rain appear to have taken place south of latitude 53°, the mean fall for the stations below that parallel being 1.17 inch, and for the English stations above, 0.57 inch—the Scotch stations having a mean of 0.33 inch only. The principal falls in the two countries were, at Portsmouth 1.92 inch; Blackheath, 1.51 inch; and Nottingham, 1.26 inch. (See Mr. GLAISHER'S Tables in our present issue.)

—— In the last volume of the "Transactions of the Botanical Society of Edinburgh" mention is made of a Brazilian plant, the scientific name of which is not given, the leaves of which are eaten by a large lizard during or after its combat with venomous snakes. The people of the country say that it is an ANTIDOTE to all SERPENT POISON. It is interesting to notice here the similar superstition which in former times attached in Europe to the Michaelmas Daisy, Aster Tripolium, of which we are told that "when a spider stings a toad, and the toad is becoming vanquished, and cannot defend itself, it bursts asunder. But if such a burst toad is near this plant, it chews it, and becomes sound again." The same belief occurs in another form in more than one German fairy-tale. Hares are similarly defended from all disease by eating of the Sowthistle, which used to be called on this account 'Hare's Palace;' and must have been to the leporine race as invaluable as Parr's Life Pills and similar specifics are said to be to human beings.

—— Amongst ECONOMIC PLANTS the TOBACCO is undoubtedly the most widely used. Volumes of matter have been written on the subject in its various phases, which are about as numerous as the range of its applications is wide. The "weed" is an important article in the commerce both of civilised and uncivilised countries, and some ingenuity is frequently shown, and much trouble gone through, in preparing the leaves, and afterwards enjoying their narcotic effects. In some parts of the East Indies, for instance, the natives use a black, disagreeable-looking and heavy smelling compound of dried and pounded tobacco leaves, palm-sugar from Borassus flabelliformis, the pulp of the Banana, and Rose water; these are all well mixed together, and constitute hookah tobacco. To keep this damp, clammy stuff alight in the hookahs they use fire-balls, which are somewhat larger than a walnut, and are made of the charcoal of teak-wood, mixed with rice paste and a little sandal-wood to give it a perfume. In different parts of Africa various plans prevail in the curing of and trading in tobacco, On the Zambesi River, and on the Mangwe River in Matabililand, the leaves after being cured are pressed into wooden moulds of a bowl shape, a stick with a knob at the bottom being first placed upright in the centre of the bowl, and the tobacco pressed tightly around it; this stick is afterwards used to withdraw the compressed mass from the bowl, and the hole left by the stick after it has itself been withdrawn is used to pass a string through for convenience in carrying. A very tightly rolled kind, something like Cavendish, is manufactured by the Kaffirs in very large quantities, which they use not only for smoking, but also for making snuff. At certain periods of the year the bushmen,—a wandering race, who neither sow nor plant, but live entirely upon game, wild roots, and plunder—come down from the mountains they inhabit to purchase this commodity from the Kaffirs, for which they make payment in horses and mares they have stolen, either from the European settlers, or other Kaffir tribes, hundreds of miles distant from the place of exchange.

—— Botanists are frequently taxed with the want of euphony and of poetry in the PLANT NAMES which they bestow; and it must be admitted that many fearful "jawbreakers" might be cited in support of the charge. Occasionally, however, we find names bestowed in a more romantic spirit; and such is the case with the Andromeda, a title which Linnæus first bestowed upon our British example of the genus, A. polifolia. In his "Tour in Lapland" he tells us of the connection between the flower and the heroine of mythology which led to his selection of the name:—

> "As I contemplated it, I could not help thinking of Andromeda, as described by the poets; and the more I meditated upon their descriptions, the more applicable they seemed to the little plant before me; so that had these writers designed it, they could scarcely have contrived a more apposite fable. Andromeda is represented by them as a virgin of most exquisite and unrivalled charms; but these charms remain only so long as she retains her virginal purity, which is also applicable to the plant now preparing to celebrate its nuptials. This plant is always fixed on some little turfy hillock in the midst of the swamps, as Andromeda herself was chained to a rock in the sea, which bathed her feet, as the fresh water does the roots of this plant. Dragons and venomous serpents surrounded her, as toads and other reptiles frequent the abode of her vegetable resembler, and when they pair in the spring, throw mud and water over its leaves and branches. As the distressed virgin cast down her blushing face through excessive affliction, so does this rosy coloured flower hang its head, growing paler and paler till it withers away. . . . At length comes Perseus, in the shape of summer, dries up the surrounding water, and drives away the monsters, rendering the damsel a fruitful mother, who then carries her head (the capsule) erect."

—— We gave at p. 771, a figure of Mr. DRECHSLER'S Carrot-bearding machine, and now add a representation of his WINNOWING MACHINE, which being made of various sizes will be useful to all those who grow seeds, whether for private use or commercially. The following description will, with the aid of the woodcut (fig. 200), make it clearly understood:—A is the passage for the dust; B, handle inside the hopper, by which to carry the machine; C, lever to regulate the fall of the seed from the hopper at D; E shows where the second quality of seed falls down, the best quality falling down the inclined plane A, and coming out in the middle of the machine near F. A box must be placed under the machine, reaching from 1 to 2, to receive the clean seeds, and another much smaller under E to take the second quality of seeds. The lever-guide is saw-like underneath, and the lever has a wedge-like point falling or rather pressing into those notches; the lever is made of spring steel for this purpose, and made to press from the machine, which is considered an improvement on all previous arrangements. This winnowing machine affords a medium between the slow and imperfect fan, and the cumbrous, unwieldy, and complicated winnowing machines, which are not at all suited for small quantities of flower or vegetable seeds, especially when they are light. The blast may be regulated by turning slower or faster, and is powerful enough for any kind of seeds. The machine may be used on a counter, or table, or on the floor. It is also intended to send it out packed in a close substantial case, made so as to be readily converted into a stand. This stand, while admitting of working the machine without stooping, will also guide the seeds into any shallow box which it may be convenient to use. THe different sizes will respectively hold 1 to 2 pecks, 3 to 4 pecks, and 5 to 6 pecks Mr. DRECHSLER'S address is 63, Arlington Street, N.W.

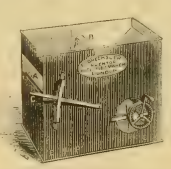


FIG. 200.—DRECHSLER'S WINNOWING MACHINE.

—— At one of the recent meetings of the Scientific Committee, Mr. BERKELEY exhibited ROOTS of ADIANTUM SETULOSUM studded with small tubercles, like those found on the roots of many leguminous plants. We are now, thanks to Mr. BERKELEY, able to give an illustration (fig. 201) of the roots, of the natural size, a detached tubercle enlarged, and a section showing the structure, which consists of an epidermis with long hairs, enclosing a mass of hexagonal cells filled with ovoid starch grains of very unequal size.

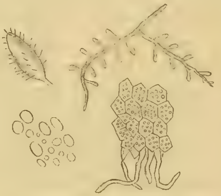


FIG. 201. TUBERCLES OF ADIANTUM SETULOSUM.

New Garden Plants.

SACCOLABIUM BUCCOSUM, *n. sp.*

Foliis ligulatis, apice oblique obtuseque bilobis; racemo paucifloro, subdensifloro; floribus erectis, parvis; bracteis triangulis ovariis pedicellatis multo brevioribus; sepalis oblongis acutis; petalis ovatis bene brevioribus, labelli lamina libera trifida laciniis lateralibus ovatis acutis, lacinia media lanceolata acuta carinulis geminis per discum, calcari cylindraceo depresso apice dilatato obtusato emarginato angulo prominulo in pariete superiori intus; columna brevi, triloba, fovea stigmatis tegmine cincta, ad latera bucculis prominulis obtusangulis; anthera rhombea rostrata; polliniis triangulis inferne sulcatis; caudicula lineari bene incurva, glandula minuta.

A plant in the way of Saccolabium micranthum (Lindl.), but with yellowish flowers, with a few dark purplish-brown dots on the side laciniæ of the lip, and the spur, and a very peculiar, queer column, that would perhaps be sufficient to establish a new genus, if we knew in all cases the structure of the columns of the Saccolabia which have been only seen in a dried state. I am indebted for this very interesting botanical novelty to my invaluable correspondent, J. Day, Esq., who imported it from India. *H. G. Rchb. fil.*

CALANTHE PLEIOCHROMA, *n. sp.*

Foliis petiolatis oblongis acuminatis; pedunculo elongato minute velutino; bracteis oblongis acutis; ovariis pedicellatis velutinis plus triplo brevioribus; sepalis petalisque oblongis acutis; labelli adnati laciniis posticis semiovato-falcatis abbreviatis antrorsis; lacinia media ab ungue lato flabellato biloba; calli seriebus tribus a basi in basin unguis, multipapulosis; calcari gracili filiformi; ovario pedicellato bene breviori.

Very near Calanthe versicolor and sylvatica, but these have a much wider, usually straight spur, a much shorter-stalked ovary, and a nearly sessile middle part of the lip. The flowers are as large as those of the species just named, whitish, with a light purplish hue in front, then they become yellowish, the lip darker ochre colour, with reddish-orange calli at the base. This very unexpected novelty came from Japan to the Veitchian Royal Exotic Nursery, flowering in May. *H. G. Rchb. fil.*

ODONTOGLOSSUM TRIPUDIANS, *Rchb. fil., Warsw.; Seemann's Bonplandia*, ii., *Walp. Ann.* vi. 830; *Hamb. Gtz.* 1857, 212.

Sepalis cuneato oblongis acutis; petalis subæqualibus, labello ab ungue brevissimo panduræformi obtuse emarginato toto limbo serrulato, ima basi cordato; carinis supinis in dactylos liberos acuminatos exeuntibus, radiantibus, a basi in discum, geminis ibi maximis uncinatis, nunc interjecto pari minori secundo; columna supra unguem angulata, alis circa foveam serratis.

A very nice Odontoglossum, in the way of Odontoglossum cristatum, but with a blunt lip. The sepals and petals are brown, with yellowish-green edges and dots few in number. The lip has a white basilar disk. The region around the calli is of a beautiful purplish-violet, and there are some brown bars and blotches around the basilar part of it. The column is whitish, with purplish-brown wings, and a similar limb to the anguli. The species was originally discovered by Von Warscewicz in New Grenada. Then it appeared in 1857, in the Lindenian establishment; at Christmas, 1870, once more in the celebrated Dayan collection. J. Day, Esq., kindly informs me it came from Mr. Low's great sale in February, 1870. *H. G. Rchb. fil.*

THE AMATEUR GARDENER.

Culture of Hyacinth Bulbs in England.—The conclusion appears to be generally arrived at that Hyacinths must be imported from abroad year by year if good, healthy bulbs are to be secured, since, after flowering in pots or glasses, they are put into the borders of the garden, with no great expectation of their doing much good. We believe that, in most instances, these bulbs, which have done their work for a season, are generally neglected, perhaps left in a tool-house, or thrown aside in some corner of the garden, so that it would be wonderful if anything more were seen of them in a growing condition, or, at the most, they reappear in some small imperfect growths in the borders. There can be no doubt that the soil and climate of Holland are specially favourable to the successful growth of these beautiful flowers, yet there is no valid reason why its culture should not be successfully carried on in England. The soil should be sandy, and it can be artificially made so; and the substratum should be moist to feed the deeply descending roots—a condition which may, partly at least, be secured by art; for instance, by placing a thick layer of well-rotted cow-dung 3 or 4 inches below the crown of the bulb. By observing these important requisites there is no doubt that Hyacinths may be grown from offsets till they acquire a fair size, and become available for pot or glass culture.

For the last three years we have turned out our Hyacinth bulbs from the pots and glasses as soon as the beauty of the flower was over, planting them in a warm border, in light sandy soil. This spring, there being a large accumulation of these old servants, some of them with fine healthy trusses of flowers, we took the whole up, and were agreeably surprised to find bulbs fully developed, and as round and compact as any foreign ones we have ever seen. A more healthy set of bulbs we do not desire to have, and we have set aside the best for pot and glass culture, intending not to purchase any in the coming autumn, as we have always done before. On former occasions we have found the bulbs get mouldy and become injured, by storing them away in boxes or drawers, but last year we avoided these evils entirely by keeping them in the open air from the time of taking up till that of planting. We place them singly, in semicircular drain tiles, and put one over them, so that a circulation of air is secured. We then stand the tiles one at the top of another, looking at them occasionally. They keep quite healthy in such a position, and we shall plant our present full-grown stock about the middle of September, putting some in glasses at the same time. We have separated all the offsets, planting them at once, as they are apt to wither when kept too long out of the ground. We hope in two or three years to find these fully grown, and, if so, we shall become nearly independent of the florist for a stock as good as we can wish for, only purchasing for the purpose of adding new sorts to our collection.

Besides the saving of expense, there is more interest in growing one's own Hyacinths from season to season, but it is only the careful amateur who can expect to succeed in the process we have described. This year, as we hinted above, the Hyacinths put out into the nursery border had flowers of the finest size and character, and that led us to take up the whole for examination. In future we shall make home culture an express part of our garden work, and we hope our readers will follow our example, and record the result of their experiments. *H. B.*

ORCHID CULTIVATION.

[In compliance with a suggestion made by a valued correspondent, we reprint from the Preface to Dr. Lindley's "Orchidaceæ Lindenianæ" such portions as are relevant to the discussion going on in our columns on the subject of cool treatment of Orchids. We may here state that the disastrous events which have happened in Paris have hitherto prevented M. Triana from fulfilling the promise made some time since of communicating some notes on the climate of New Grenada. EDS.]

IT was not without reason that Humboldt thus characterised the Orchids of Equatorial America. "Although," says that illustrious philosopher, "such plants are scattered through every part of the torrid zone, from the level of the sea to the height of 10,000 to 11,000 feet, yet it must be admitted that in the number of species, the colouring of their flowers, delicious fragrance, rich foliage and brilliant colours, none can be compared with those which inhabit the Andes of Mexico, New Grenada, Quito and Peru, where the shade is moist, and the breezes mild, the mean temperature of the year at an elevation of between 4800 and 6600 feet, being from 64° to 69°." Mr. Linden's collection shows that of 129 species nearly half are found in such localities.

If, however, any general conclusions are to be drawn from Mr. Linden's useful notes, it is necessary to examine the species in detail, and for that purpose they are classified in the following lists according to their elevation above the sea; the temperature of each group being computed from the data furnished by Humboldt:—

12,000 *to* 13,000 *feet.* (*Mean Temp.* 40°.)

Epidendrum frigidum.

11,000 *to* 12,000 *feet.* (*Mean Temp.* 46°.)

Restrepia parvifolia.
,, maculata.
Masdevallia affinis.
,, polyantha.
Epidendrum chioneum.

10,000 *to* 11,000 *feet.* (*Mean Temp.* 49°; *Min. Temp.* 32°.)

Pleurothalis aurea.
,, Lindeni.
,, intricata.
Dialissa pulchella.
Masdevallia tubulosa.
,, caudata.
,, affinis.
Epidendrum tolimense.
,, fimbriatum.
,, refractum.
Odontoglossum densiflorum.
Pachyphyllum crystallinum.
Telipogon angustifolius.

9,000 *to* 10,000 *feet.* (*Mean Temp.* 52°.)

Pleurothallis aurea.
,, intricata.
,, roseopunctata.
Stelis? triura.
,, sesquipedalis.
Masdevallia caudata.
,, affinis.
,, coccinea.
Epidendrum tolimense.
,, carneum.
Epidendrum flavidum.
Evelyna furfuracea.
,, bractescens.
,, lupulina.
Odontoglossum dipterum.
,, divaricatum.
Pachyphyllum crystallinum.
Telipogon latifolius.
Acræa multiflora.
Cranichis parvilabris.

8000 *to* 9000 *feet.* (*Mean Temp.* 56°; *Max. Temp.* 69°; *Min. Temp.* 36°.)

Pleurothallis chloroleuca.
,, bivalvis.
Epidendrum fimbriatum.
,, torquatum.
,, leucochilum.
,, tigrinum.
Evelyna bractescens.
,, kermesina.
,, columnaris
,, ensata.
Evelyna furfuracea.
,, capitata.
Oncidium cucullatum.
Solenidium racemosum.
Odontoglossum Hallii.
,, epidendroides.
,, luteo-purpureum.
Maxillaria albata.
Uropedium Lindeni.

7000 *to* 8000 *feet.* (*Mean Temp.* 59°.)

Pleurothallis bogotensis.
,, semiscabra.
Restrepia maculata.
Masdevallia coriacea.
,, cucullata.
,, Schlimii.
Epidendrum brachychilum.
,, tigrinum.
Epidendrum fallax.
Evelyna flavescens.
,, furfuracea.
Oncidium cucullatum.
,, halteratum.
Odontoglossum megalophium
Maxillaria nigrescens.
Sobralia violacea.

6000 *to* 7000 *feet.* (*Mean Temp.* 62°.)

Pleurothallis ruberrima.
,, undulata.
Stelis Lindeni.
Epidendrum recurvatum.
,, xylostachyum.
,, macrostachyum.
,, sceptrum.
,, tigrinum.
,, fallax.
Evelyna furfuracea.
Oncidium maizæfolium.
Odontoglossum odoratum.
Odontoglossum angustatum.
Nasonia sanguinea.
Maxillaria meridensis.
,, longissima.
,, nigrescens.
,, pentura.
Ornithidium niveum.
Rodriguezia stenochila.
Sobralia violacea.
Ponthieva maculata.
Altensteinia fimbriata.
Cranichis monophylla.

5000 *to* 6000 *feet.* (*Mean Temp.* 65°.)

Pleurothallis chamensis.
Stelis spathulata.
Epidendrum dichotomum.
,, ceratistes.
,, Lindeni.
,, carneum.
,, tigrinum.
Schomburgkia rosea.
Chondrorhyncha rosea.
Pilumna fragrans.
Fernandezia longifolia.
Oncidum falcipetalum.
,, linguiforme.
Brassia glumacea.
Govenia fasciata.
Zygopetalum gramineum.
Cyrtopera Woodfordii.
Maxillaria scabrilinguis.
,, grandiflora.
,, melina.
,, nigrescens.
,, luteo-alba.
Lycaste gigantea.
Anguloa Clowesii.
Scaphyglottis ruberrima.
Camaridium luteo-rubrum.
,, purpuratum.
Ornithidium sanguinolentum.
Cyrtopodium bracteatum.
Comparettia falcata.
Sarcoglottis picta.
Physurus rariflorus.

4000 *to* 5000 *feet.* (*Mean Temp.* 68°.)

Masdevallia triangularis.
Warrea bidentata.
Mormodes Cartoni.
Trichocentrum maculatum.
Cleistes rosea.
Sobralia dichotoma.
Epistephium sessiliflorum.
Physurus Preslei.

3000 *to* 4000 *feet.* (*Mean Temp.* 71°.)

Epidendrum stenopetalum.
Cattleya Mossiæ.
Ghiesbreghtia calanthoides.
Habenaria maculosa.
,, Lindeni.

2000 *to* 3000 *feet.* (*Mean Temp.* 75°; *Max. Temp.* 80°; *Min. Temp.* 55°).

Schomburgkia undulata.
Odontoglossum hastilabium.
Burlingtonia granadensis.
Ionopsis pulchella.

From this we learn that a species of Epidendrum is found where the mean temperature of the year is about 40°, where trees are wanting, pastures only being found, and where it occasionally snows. This would be incredible upon worse testimony than Mr. Linden's, if we did not know from Professor Jameson that one Oncidium (nubigenum) is found in Peru at the height of 14,000 feet, and rarely below it. Mr. Linden tells us that his plant, which grows at only a short distance from eternal snow, is covered all over, flowers included, with a varnish, which is perhaps intended for a safeguard. It is remarkable that all the Epidendrums, with one exception, occur above 5000 feet, and that they form a continued chain of species up to the ground of E. frigidum.

It is, however, the Pleurothals that principally occur in such elevated regions: Masdevallia, Restrepia, Stelis, and Pleurothallis itself, constituting the most striking feature of the Orchideous flora until the mean temperature rises to 56°, where they begin to disappear.

The genus Odontoglossum appears to be more impatient of heat than its nearly allied genus Oncidium, for a species is found where the mean temperature is only 49°, and where it sometimes even freezes; the others are scattered over the mountain slopes till they reach the lowest limits of their order, where the mean temperature rises to 75°, where it is never cooler than 55° nor hotter than 80°; in such a climate not one of the race is found except a Schomburgkia, a Burlingtonia, an Odontoglossum, and an Ionopsis. In the hot lands on a level with the sea the Orchids do not seem to be able to exist.

It is evident indeed that these Colombian species have no affection for a high temperature, and that many prefer a low one. No fewer than 13 occur between 10,000 and 11,000 feet, where Humboldt tells us it is as cold as the mean of the month of March near Paris; 19 where the mean is that of May in the same city; while the mean temperature of the zone between 5000 and 6000 feet, where the largest proportion exists, is only that of Paris in August, according to the same authority.

These, and many more interesting facts of a similar kind, will strike every intelligent observer; they seem on the one hand to show to the gardener the great importance of studying well the climate of the plants he cultivates, and on the other they ought to teach the collector the incompleteness of any memoranda in which the details of climate are not fully given. General observations are not sufficient; particulars are indispensable. Suppose, for example, on the assertion of some generalising traveller, we were led to believe that the Masdevallias all require a cool climate, because the mass of them disappears below 9000 feet, how erroneous would be that conclusion when we find a species peculiar to a zone 5000 feet lower, and possessing a mean temperature of 16° higher.

It must not, however, be supposed that temperature is the only influence to be considered in the cultivation of these plants; it should in all cases be regarded in its relation to humidity, light, and atmospheric pressure; but unfortunately we have little information concerning the first, and the two last are beyond our control.

ROYAL GARDENS, KEW.

[The following are extracts from the report of the Director on the progress and condition of the Royal Gardens at Kew, during the year 1870.]

THE total number of visitors in the year 1870 has been 586,835, as against 630,594 in 1869, and 502,369 in 1868.

Total number on Sundays	265,585
Total number on week-days	321,250
	586,835
Greatest monthly attendance (June)	145,029
Smallest monthly attendance (December) ..	2,871
Greatest week-day attendance (Whit Monday, June 6)	41,572
Smallest week-day attendance (December 9) ..	11
Greatest Sunday attendance (June 5)	19,365
Smallest Sunday attendance (February 13) ..	70

Number of Visitors in each month of the year 1870.

January	4,971
February	5,494
March	10,487
April	88,557
May	65,307
June	145,029
July	102,878
August	74,831
September	58,119
October	21,706
November	6,585
December	2,871
Total	586,835

1. *Botanic Gardens.*—The improvements in the laying out of the grounds of this department, which have been in progress for the last five years, are now nearly brought to a close, by the remodelling, during the past year, of the herbaceous ground; by the construction of the Rose walk, 215 yards long, along the wall bounding the herbaceous ground on the west, which has been heightened by the addition of 3 feet of pierced brickwork; by the fencing off of the reserve ground; by the completion of the terrace on which the new range of stoves, &c., stands (which is, however, only partially planted); and by the formation of the paths leading to this. Many Pines and other evergreen trees have been transplanted, chiefly by the transplanting machine, and placed as screens to shut out the view of the backs of the houses on Kew Green, and the fronts of those along the Richmond Road; and many deciduous trees have been introduced along the walks; large beds of Rhododendrons, Laurels, and other shrubs, have also been planted along the principal paths.

An attempt has been made to utilise the Deodars, with which some parts of the garden were too much crowded, by placing a number of them at equal distances along a line concentric with the Yew fence which encloses the Palm-house area, leaving a broad grass walk between the fence and the Deodars. Similarly, many of the scattered Atlas Cedars have been transplanted, and now form an avenue along the curved walk leading to the back of the old Victoria-house. Other Conifers, together with the scattered Wellingtonias, have been planted along the vista which leads from the west door of the Palm-house to the great Cedar in the pleasure-grounds.

Large beds of mixed flowering, evergreen and deciduous shrubs, have been planted on both sides of all the gates leading through the wire-fence into the pleasure-grounds, and in other exposed places, with the view of mitigating the effects of the hot summer winds and cold winter ones, which since the denudation of the grounds by the loss of trees and old shrubberies, every now and then devastate the gardens. The terrace on which the Palm-house stands has been relevelled for the first time since its construction in 1846; its angles have been filled with large beds of Laurels and Rhododendrons, and the whole terrace bordered with Ivy.

A great deal remains to be done in bringing the many young trees that have from time to time been planted in old shrubberies and on the lawns, into picturesque groups, and many more have still to be introduced. Most of the old shrubberies want renewal or clearing away, and the American garden behind the Palm-stove, which has suffered severely from the summer drought, requires replanting throughout.

The banks of the ornamental water are constantly being washed away by the ripple, owing to the depth of water close to them; they should be wattled, and planted with clumps of Osier, Sedge, &c.

The heating apparatus throughout the hothouses and conservatories has worked well, and notwithstanding the severity of the weather no accident has occured.

2. *Pleasure Grounds.*—The effects of the long and severe summer's drought on the old trees in this department have been disastrous; they have perished by hundreds—Elms, Ashes, Beeches, and Sycamores especially; many, no doubt, from having approached the limits of the age which such trees attain on so excessively poor a soil as that of Kew, but more, perhaps, through having been drawn up in thick plantations, and thus starved from the first.

In pursuance of the Board's directions, active steps have been taken to clear large areas of dying and dead trees, to trench the ground, and clear it of old roots, and plant closely a mixture of young trees of all sorts, which will be thinned out as they grow. This operation has enabled me to arrive at an approximate estimate of the ages of some of the more common trees in the grounds, and of the average duration which the several sorts have attained.

The oldest trees in the grounds are undoubtedly Oaks, English Elms, and perhaps Hawthorns; of which some of the first and last may be relics of the aboriginal forests that covered this part of England; whilst the oldest of the Elms were undoubtedly all planted. No data have been obtained for ascertaining the age of the Oaks, but probably none exceed 300 years, and the majority date from the reign of George II. The only large ones that remain are several near the Brentford Gate, one near the upper end of the lake, and several near the Queen's Cottage grounds.

The largest English Elms of which the rings have been counted are about 250 years old, but there are a few near the palace gates which have probably attained 300 years. Of these the top of that nearest the gates was blown off this winter, and the stump removed; but the butt was too far decayed for its rings to be counted. All the old Elms in the grounds and their outskirts are in rows, and were either planted along former walks, or came up in hedge-rows, and were spared when the domain was enclosed and the hedges removed. Of Elms under 200 years old there were innumerable examples throughout the grounds; these were for the most part suckers from the roots of older Elms, which, coming up amongst the other and better trees, have done irreparable damage to them; the English Elm being of all plants the most impoverishing of light soils.

Of the old Hawthorns, the last fine one perished during the summer's drought; they abounded at one time on the gravelly parts, and appeared to be of the same age as the old Richmond Park Hawthorns.

Beech, Oak, and Maple are the only other trees that have sprung up spontaneously in the grounds, and all from originally planted trees. The oldest Beeches were planted in George II.'s reign, and are about 150 years old; but of these there are very few indeed; the largest of them is a magnificent tree near the Brentford Gate, with a trunk 10½ feet in girth at 5 feet above the ground; its branches, which sweep and root in the ground, form a circle 116 paces in circumference. It is showing signs of decay.

The majority of the Beeches, which formed eight-tenths of the arboreous vegetation at Kew, are part of an extensive and dense plantation, made about 1750, but which, having been wholly neglected during the succeeding hundred years, have impoverished one another to such an extent that the majority are already diseased and fungused. It is upon this Beech forest that the winter gales and last summer's drought have told most heavily; the majority, having no root-hold, could not resist the blasts, and the loss of one is immediately followed by that of its neighbours, both from the admission of the wind, and from the sun's rays drying and heating the surface of the previously shaded soil over their roots.

Of other trees there are several good Limes, evergreen Oaks, Spanish and Horse Chestnuts, all from 150 to 200 years old; these trees have thriven well, and last long in the soil of Kew. The Ashes, Poplars, Acacias, and Willows average only from 100 to 150 years, and the Birches 60 to 80 years.

The only good Coniferous trees of any age at Kew are Cedars of Lebanon and Larches; many of the former were planted about 1750, but of these not a dozen remain; the largest have attained a girth of 11 feet at 5 above the ground. The Spruces, Scotch Firs, Pinasters, and Weymouth Pines, have all been ruined by being crowded amongst forest trees. The Hemlock Spruces, with which the path by the Richmond Road was ornamented 20 years ago, are every one dead; the last, which stood near the Pagoda, having succumbed to the drought of the past summer. Of Planes there never were many; a few fine orientals, planted in 1740-50, remain in the King of Hanover's grounds, one near the old palace, and one near the Temple of the Sun.

The above enumeration comprises all the trees of which there were any quantity in the grounds previous to their being made over to the public in 1845; since which time four-fifths have either died or have been removed to make way for buildings, avenues, paths, &c.

Between 1840 and 1865 many efforts were made by my predecessor to keep up the sylvan scenery of the pleasure grounds, by planting Conifers amongst the old trees, in every available open space, especially Deodars, Cedars, Scotch, Douglas, Austrian, Corsican, and Weymouth Pines, Pinus longifolia, Smithiana, and Spruces of various sorts, besides forest trees innumerable; but as permission could not be obtained, either to make sufficient clearances, or to disturb the roots of the old trees by trenching the ground, these plantations have utterly failed. On the other hand, he covered many acres of unoccupied land, by the river and elsewhere, and in the Queen's Cottage grounds, with plantations, which have all done well, and are now being thinned, by transplanting young trees from them to fill the clearances which are being made elsewhere.

Eight hundred yards of "blind paths" for carts, &c., have been made through the woods, with gravel from the lake-bed.

The lake in the pleasure-grounds, which was half finished in 1869, has since been completed, and the whole of the ground on the south side of it cleared, covered with good soil, and prepared for the formation of the new Pinetum, the planting of which will be begun forthwith. In reference to this Pinetum I have to state that, as no complete public arranged and named collections of hardy Conifers exists in England, the establishment of such an one at Kew is looked forward to with much interest by both collectors and nurserymen. Of the latter, two of the most eminent, Messrs. Lawson, of Edinburgh, and Dickson & Turnbull, of Perth, have presented to the Royal Gardens specimens of every species and variety that was to be found in duplicate in their extensive collections. Mr. McNab, of the Edinburgh Botanic Gardens, has also sent many valuable plants for this department. Many thousand loads of good loam from the lake-bed have been carted to those parts of the grounds, especially on the east side, where the soil is excessively poor, preparatory to forming new plantations; and the rest of the soil has been put round the roots of the trees wherever it was thought advisable.

3. *Interchange of Living Plants and Seeds.*—The demands upon this establishment, especially from India and the Colonies, for tropical and temperate plants and seeds; and from planters, forest and garden superintendents, for information of all sorts, increase annually; and these demands are of so miscellaneous a nature that it is often difficult to keep up with them.

Six more active and intelligent young gardeners have been sent to the Cotton, &c., plantations in India, in which country there are upwards of 30 former Kew *employés* engaged in various departments of horticulture and arboriculture. A skilful gardener has been sent to the botanic gardens in Jamaica, which are being revived under the energetic government of his Excellency Sir J. P. Grant; and another to take charge of the Agri-Horticultural Society's Garden at Madras.

The success of the Cinchona experiment is now fully established in the Sikkim-Himalaya, the Nielgherries, Khasia Mountains (East Bengal), Ceylon, and Jamaica. The bark from the first-named localities has commanded a price equal to the Peruvian in the English market, 19 cases of red bark from Darjeeling having been bought by Messrs. Howard & Sons for 1*s.* 9*d.* per lb., which these gentlemen inform me is what South American bark of the same age would have fetched. No less than a ton of prepared bark has been sent to London from Ceylon, the produce of seeds sent to Dr. Thwaites from Kew in 1861.

I was assured by the late Dr. Anderson, Superintendent of the Calcutta Botanic Garden, and the successful introducer of the plant into Sikkim, that it will in a very few years be produced there in any quantity at the rate of 3*d.* per lb.

I continue to have demands for Cinchona seed from many quarters, which I am enabled to supply from seeds ripened in the Ceylon plantations under Dr. Thwaites' superintendence.

Great exertions are being made by the Indian Government to introduce the Ipecacuanha plant into India; in which operation this establishment has been called upon to take an active part. This is due partly to the limited and uncertain supply of the drug received from America, and more to the revival of the old practice of administering it in large doses in cases of dysentery, upon which it acts as a specific. It is a singular fact that the introducers of the Ipecacuanha into European practice, the Brazilian traveller Marcgrav and the physician Piso (in 1648), explicity stated that the powder is a specific cure for dysentery, in doses of a drachm and upwards; but that this information appears never to have been acted upon till 1813, when Surgeon G. Playfair, of the East Indian Company's service, wrote testifying to its use in these doses. Again, in 1831, a number of reports of medical officers were published by the Madras Medical Board, showing its great effects in hourly doses of five grains, till frequently 100 grains were given in a short period; testimony which, notwithstanding its weight, was doomed to be similarly overlooked, till quite recently, when it has been again brought directly under the notice of the Indian Government, which is making very vigorous efforts to introduce the culture of the plant into suitable districts of India.[*]

The number of plants, seeds, &c., sent out, is as follows:—

Hardy trees and shrubs	1494
Stove and greenhouse plants	5186
Herbaceous plants	1317
Packets of seeds	4911
Ward's cases	34
Recipients	150

The receipts have been:—

Hardy trees and shrubs	971
Stove and greenhouse plants	1409
Herbaceous plants	1219
	3599
Seed packets	2676
Ward's cases	30
Donors	152

The greater proportion of plants sent out has been to Jamaica, Ceylon, India, Australia, Algeria, the United States, and to Continental gardens; of seeds to all the Colonies, and the United States; and of Ward's cases to the West Indies, Australia, and Natal.

A very extensive correspondence was commenced last year with H. Capron, Esq., the active Commissioner of the Department of Agriculture of the United States of America, by which means a vast number of American seeds, and especially of Californian and Rocky Mountain trees, have been procured, and distributed to the Colonies.

Messrs. Booth, of Hamburgh, have presented a second selection of the rarer European and American forest trees of their nurseries, to the Arboretum, including many kinds that are not to be found in English collections. It is a curious fact that the rage for introducing Coniferous trees into English parks and gardens has almost extinguished the culture of all but a few deciduous trees; and I have now to apply to foreign nurseries for the rarer Maples, Oaks, Ashes, Limes, Poplars, &c., which were so extensively planted in English parks in the early part of this century, and which, when the Kew Arboretum was made, in 1840-50, were to be procured at the suburban nurseries. Messrs. Lee, of Hammersmith, have promised a full set of their hardy deciduous trees, &c.; and Mr. W. Paul, of Waltham Cross, and others, have most liberally supplied many deficiencies.

Besides the above, the following contributions are of special value or interest:—

Mr. C. F. Carstensen, H.B.M. V.-Consul, Mogador; the true Euphorbium of commerce, the drug of which has been imported into Europe for upwards of 2000 years, whereas the plant producing it was never previously known to Europeans. Seeds of the Argan tree.

M. Kuffmann, Botanic Gardens, Moscow; live plants of the drug Sumbul, from central Asia, another important medicine, whose origin was previously unknown.

A third hitherto unknown plant, yielding a drug of the greatest value, has been for the first time introduced into Europe during the past year, namely, the true medicinal Rhubarb, from Western China, of which a healthy live plant has been received from the Jardin d'Acclimatation of Paris.

HOTHOUSE BOILERS.

It has been said that in the multitude of counsellors there is wisdom, and it is to be hoped that amid the multiplicity of boilers, economy in heating may ultimately be attained. Considering, however, the number in use, and the suggested improvements which almost every experienced horticulturist is prepared to offer offhand concerning the best of them, perhaps the marvel after all is, not that we have so many boilers, but so few. The greater number, too, are made after a few well known types. Starting almost with bells hung over the fire, we have advanced to saddles, single and double, backed, topped, arched, and convoluted astride of it. We have also filled tubes and cylinders, vertical and horizontal, with fire inside, and wrapped them round with fire jackets outside, and cast or built up stacks of tubes of all heights or styles into boilers, with fire playing round and among them in all directions. The size of boilers has fluctuated more than their shape has varied; the best size for a given amount of pipe is still, I believe, a moot point. If I remember rightly, Hood laid down certain rules upon the subject; whatever these rules were they have not been adhered to by horticultural engineers. We have rushed to considerable extremes in the matter of size, at one time using boilers about the size of cash boxes, and actually heating them to such a degree that the water could neither get out nor come in. From this extreme contraction many rushed headlong into the one-boiler mania. Now I find a good many seem to be returning to their first love of small boilers. Mr. Grix, as I understand him, is decidedly of opinion that more heat is got out of two or more small boilers than one of the same capacity as the series of small ones. I confess I cannot see it thus, but doubtless there is a considerable loss of heat in working a large boiler for a small result. The one-boiler system I consider the best when worked up to its full power; but supposing it capable of heating 10,000 feet of piping, and only 500 feet are wanted, then there must be a tremendous loss of heat upon the boiler, and the great volume of water that it contains. It is something like filling a dry dock to float a child's boat. Of course this is putting it in a very extreme way, as no one could scarcely require to use such a small proportion of heating power at any one time who needed so much at any other. But nevertheless large boilers require large furnaces, and there is a marvellous waste of fuel on both when not worked up to their full capacity. Attempts have been made to remedy this evil by dividing the boiler itself. Mr. Baines, I think, showed how this was done with his flued saddle boiler; and I think the boilers of Messrs. Weeks, Ormson, and others, are made in duplicate when desired, not only to guard against accident, but likewise to enable part of them to be employed at pleasure. The Messrs. Dennis, of Chelmsford, also offer a boiler formed of a series of horizontal pipes, which can readily be stacked higher or lower, thus increasing or diminishing the volume of water heated as occasion requires. All these are steps in the right direction. By such arrangement the boiler power is no longer a constant quantity. When little is wanted from it, it is reduced—when more, it is enlarged. This flexibility of capacity and power of boiler results in a great saving of fuel. The chief difficulty hitherto in working adaptable boilers has been the danger arising from the escape of water, or the action of the fire on joints or unions. It takes exact work to keep water in it, and better still, perhaps, to withstand the scathing action of glowing flame. Hence such boilers have not been very popular. But keep the connections wholly from the fire, and the chief objections to adaptable boilers vanish at once. This is what Mr. Cannell, of Woolwich Nursery, proposes to do with his Registered Hot-water Circulator. I have not the pleasure of knowing this gentleman, but as my letter to the *Gardeners' Chronicle* (p. 274) brought me plans and a model of this invention, I venture to bring it before your readers. The inventor claims fourteen or more special merits for his new fuel economiser. But with these I will not trouble your readers. By his courtesy I have been enabled to form an independent judgment as far as models and diagrams will help one to do so; and I wish rather to describe the new boiler than to dogmatise upon its merits. The mode of enlarging or reducing the area of the circulator is new, and the whole thing is novel in form. It is not unlike a railway carriage without wheels or windows, with a door in the end, and two guards to protect it on each side. These projecting guards are the pipes that connect all the parts of the boiler together, and convert it into one whole. The boiler is complete in itself, forming its own furnace and flues. It only requires a few bricks at each corner to raise it sufficiently to form the ash-pit and admit the air. The fire-bars and plate at the far end are parts of the boiler. There is no dead-plate at the mouth of the furnace, but a movable section of the boiler fits on, to contract the end, and throw the furnace-door further back, so that less heat can be wasted through it. The sides and top of the boiler are slightly convoluted, after the manner of Mr. Ormson's, but nothing like to the same extent. The furnace is of the same area throughout, and the entire centre of the boiler is filled with a square compact mass of fire; the back is cast in a separate piece, and, like the front section, attached to the other at the corners with patent universal leakless joints. So far this circulator differs little from other boilers, excepting in its square slightly bent sides and three curved crown. Also in the fact that there is no contraction of the fire, nor forcing of it through narrow flues, so apt to be choked up by careless stoking at the far end; on the contrary, the fuel may fill the furnace throughout without fear of a block anywhere.

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[*] I am indebted for most of these facts to my friend, Dr. Christison, F.R.S., who informs me that he has habitually referred to them in his courses of University lectures, and has long wondered how it was that medical men should have so long and so obstinately shut their eyes to this truth.

The merit of proposing the introduction of the Ipecacuanha plant into India, is, I believe, due to Dr. Murray, Director of the Medical Staff of the Indian Army, and the operation was being energetically conducted by Dr. Anderson, late Superintendent of the Calcutta Botanic Gardens, who at the period of his untimely death (in October last) had procured a large quantity of plants for transport to India.

The boiler might have finished here, and proved a complete, simple, and useful one; but its chief characteristics begin at this point. It would never do to allow all the caloric generated in that roomy square furnace to make its exit at the end into the open air. The usual course is to divide the fire at the far end and make it branch back in two or more divisions along the outside of the boiler, and return by skirting its top. Doubtless there is a marvellous loss of heat involved in this arrangement. The flame hits the boiler sideways, or from above, and the direction is unfavourable to the full development of force in both cases. Heat is ever struggling upwards. Eagle-like, it is ever soaring towards its grand source, the sun. It is only on this tack that its full energy and force can be brought out, and hence the chief merit, I believe, of Mr. Cannell's hot-water circulator. The caloric is carried along the best line for heating the water, and none of it is expended in brick flues. Above the boiler proper other and fleeter ones are arranged, like a series of gas retorts, one above the other, and these are not only waterways but fire-flues as well; the flame and smoke are carried backwards and forwards in these till their heat is exhausted. Each of these additions is complete in itself, and is merely laid on the top of the boiler or each other. They are united together by the side pipes only, so that where the fire goes all is solid iron without joint or union, or any such thing.

There is no doubt that more heat will be absorbed from flame travelling thus than in side flues, or flues above the boiler. Besides, in this arrangement the fire is wrapped all round with iron and water only. Hitherto, the heat has not touched brick, excepting at the four corners. Those of us who have burned out fire-brick furnaces with the fierceness of our fires this winter can estimate to some extent the amount of caloric wasted on such destructive work. It seems as if Mr. Cannell's Circulator might have utilised nearly the whole of this wasted heat in driving the water through the pipes to heat our houses. If so, the saving of coal must have been immense. Mr. Cannell promises ocular demonstration of this at his nursery very soon. He certainly deserves credit for originality of construction and a simple mode of doubling or trebling the force.

If the joints can be warranted leakless, and can be so readily put together as Mr. Cannell asserts, and the flues can be warranted not to choke at the ends, or rather the far end from the furnace-door, the Circulator is likely to have a future that will more than satisfy its inventor. Then, again, if the side pipes with their union-joints can be made to bear fire, the flame could be carried round the sides as well as over the top, until the smoke vanished into the air—cold, almost delicately blue, and sootless, that is, without unburnt coal. Possibly, if coke were used, there would be no danger of the spaces between the lids blocking up. But it is needless to pursue the matter further, for I observe the inventor claims it among the advantages of the hot-water circulator that it can easily be cleaned out of either sediment from the inside or soot from the flues, when required, both being the work of a few minutes only. I can see how the first can readily be done, as a tap is shown in front at the bottom of the boiler. But how the flues are to be cleaned without detaching the far end of the boiler itself is not so obvious, as, of course, every addition to the bottom boiler abuts at one point against the end; otherwise, the flame would stream up there in a vertical current, instead of moving backwards and forwards in horizontal lines, to the warming of every portion. The end of the boiler would also have to grow with the addition of every part; or rather, several ends would, I presume, be provided to fit each size of the boiler, while detached from brickwork. Such points in its working are simple enough, as it would remain accessible at all points, and the inventor asserts that it can be built up or taken down with the utmost despatch; besides which, though these regulations of size, heating force, and, consequently, of consumption of fuel, are important characteristics of this Circulator, they are by no means essential to its working. A certain size, with so many retorts mounted on its back as shall exhaust the heat of the fire, may be fitted up at once, and worked as any other permanent boiler. The heat from the Circulator itself might likewise be economised for the warming of Mushroom-houses, back sheds for forcing Seakale, Asparagus, Rhubarb, &c., or it might be sent into the houses with proper precaution. The whole surface could also be wrapped round with rough sacking, felt, or other non-conductors, so as to retain the heat in the iron and the water, instead of allowing it to escape from its sides.

But all these are matters of detail—mere trifles some will say. Quite so. But successful heating consists in attention to such trifles, as an inch more or less air, a shovelful more or less fuel, ashes or clinkers in the right or wrong place, or a single turn of a stopcock here or there. The fact is, there are no trifles in our business. The greatest results arise from the smallest things. The art of heating, like that of gardening itself, can only be mastered a trifle at a time. It is upon the sure and solid foundation of numberless trifling facts—the grasping, collating, interpreting and applying an endless series of minute details—that all sound theory and good practice are based. Even genius itself may not be inaptly defined as trifles utilised, quickened, glorified, if you will, by the touch of a master mind. To the gardener, I suspect, no fact is trifling. These trifles are the rounds in the ladder by which, if at all, he must reach to fame and fortune. As to this hot-water circulator, experience will soon determine whether it is to become one more useless trifle to be added to the long list of abortive inventions—or is really the coming boiler, that is to cut our coal bills in twain, and save the largest half of them. *D. T. Fish, F.R.H.S.* [We ought to state that the publication of this paper has been unavoidably delayed, and further, that we have others in hand from Mr. Fish totally disposing of the reversal of the circulation. Eds.]

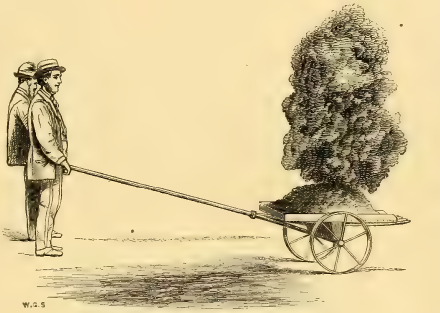

Fig. 202.—Reid's transplanting machine.

TRANSPLANTING MACHINES.

With the accompanying illustration (fig. 202) of an implement I have in use, it may perhaps be unnecessary to give minute details of its formation, as I presume it will be perfectly clear to any one having a small measure of constructive genius, and understanding the nature of a lever, that it is adapted to raise and remove a mass of earth in proportion to the strength of its make and size. Under this impression, it may be briefly termed a combination of a huge shovel and fork mounted on an axle, with two wheels. The axle, it will be observed, is bolstered with timber, by which it is raised to the top of the wheels; this timber is cased at back and front with strong iron straps, which are perforated, so that the six iron prongs being shouldered and threaded, pass to the shoulder, and are fastened by nuts. The prongs are 2 feet 8 inches in length, having a slight lift. The lever is 10 feet in length, with two side stays, supported at each end by the prongs and stays, &c., to which it is firmly riveted, and fastened to the axle in lines likely to afford strength; the wheels are 2 feet in diameter, and the length of the plate 3 feet 10 inches, by 3 feet 4 inches in breadth, these dimensions allowing the prongs to project 6 inches beyond the plate. The plate is flanged at both sides, and at the front.

The preparation for lifting is done after the usual manner, but I prefer a square to a round ball in general; and perhaps the best way is to cut down at both sides at a proper distance from the stem, undermining it a little at back and front. The machine is then brought forward and the prongs jerked under, the lever is then applied, raising the block of earth to an angle of 45°, at which it is easily balanced, when another jerk brings the plate and the bottom of the ball to an equal angle; the ball is then pressed forward, the lever being at the same time pulled down, which elevates the back part of the ball in turn to a similar angle, and is now moved off to its destination. The pit being ready, a track is cut for the wheels; the ball is then gently slid into its place, and nothing else is required but watering to complete the work, and the usual careful adjustment of the soil. A weight of 10 cwt. is conveyed and planted with surprising facility with this machine. *John Reid, Haigh Hall Gardens.*

Home Correspondence.

The Cultivation of Loranthaceæ.—I have read Dr. Welwitsch's interesting account of the African Loranths at p. 835, and as I can fully endorse all he says as to the great beauty of many of the species, permit me to supplement his remarks with some further particulars regarding them. My observations will be confined to such representatives of the order as are found in southern India, at various elevations. I have seen Loranths growing only too luxuriantly from the level of the sea up to elevations of 7500 feet and upwards; some of these have gorgeous red and yellow flowers, others have beautiful berries, and most of them have foliage charmingly contrasting with that of the trees they live upon. One very common species has a very striking silvery pubescence on the under side of the leaves; the flowers are much the same in colour as Mignonette, and the berries are also of a dull greenish white; but as it grows principally upon dark-foliaged trees, such as the Acacia robusta, so called, and other evergreen trees, such as the Tea, the Citron, &c., the contrast is very striking. Another species, which would certainly be a great acquisition to our greenhouses, has most beautiful flowers, reminding one somewhat of the Trumpet Honeysuckle. It grows very commonly on the Peach trees about Coonoor and Ootacamund, on the Nielgherries, although I have not seen it flower on the Peach. On many of the indigenous forest trees, however, it is often so covered with bloom as to entirely colour up the tree upon which it grows, and to lend it a glory which ought to compensate it somewhat for the loss inflicted upon it by the beautiful but ravenous parasite. The leaves of this species are of a dark shining green when young, and are as large as those of the Portugal Laurel. In the dry season, however, they often have a reddish hue, particularly on worn-out trees. There are other species too numerous to describe in a short note, even if I could recollect their peculiarities: indeed Loranths are so numerous that when I told Mr. Black, the late talented curator of the Botanic Gardens at Bangalore (and formerly of the Kew herbarium), that I had brought with me berries of the Mistleto, with a view to attempt their cultivation on the hills, he assured me that no one would thank me if I succeeded, as there were too many representatives of that order already in India for the well-being of arboriculture. I, however, duly inserted all my berries on either Apple or Pear trees, but although I had carefully packed them in sand, not one of them grew; possibly the failure resulted from the tin box being too close, so that the berries were parboiled in their passage through the tropics. Some of the seeds were inserted in Coorg when comparatively fresh, the bulk were, however, quite dry and shrivelled, having been three months in the sand. I believe, however, that fresh berries could be had, and at Kew, the Crystal Palace, and other large conservatories, there are plenty of large trees of the kinds that the Loranths would be likely to grow upon. The Ficus, of species, is a great favourite of the tropical Loranthaceæ. *James McPherson.*

The Condition of Peach and Nectarine Trees.—I have read the Rev. W. F. Radclyffe's sweeping assertions on this subject, but I have no intention of adding to the disclaimer made by Mr. D. T. Fish, as that gentleman is quite a host in himself, in defence of the British gardener. I confess myself much indebted to the reverend gentleman as a writer on many subjects, but I must assert that his last is not one of them. Still we should not criticise too severely. These assertions, made in an unguarded moment, while being elated with his great success in the midst of what appeared to him universal failure, seem to me foreign to his usual liberal heart. That this failure is universal, however, I most positively deny, and also demur from his statement that the cause of his success is owing to short pruning. I have under my charge about a dozen and a half Peach and Nectarine trees, all pruned on the long-shoot system, that occupy the usual space on a wall nearly 20 feet high, and which have on them at present an enormous crop of fruit. They are also perfect specimens of good health—scarcely a blister, an aphis, or a red spider to be seen. These trees I have thinned at different times, and have taken bushels of fruit off them; indeed, I have just lately finished that operation entirely (but I don't think I should be sorry if some one else were to go over them again). Although the crops on walls are not so bad in this neighbourhood as your correspondent asserts, yet from various sources I understand they are not up to an average. I do not know how it is that I am so favoured, as my treatment differs nothing in this from former years, nor, so far as I know, from that of my neighbours. Were I to offer an opinion, I should say that it is owing to soil and situation. The latter is slightly elevated; the former is light and rich, of deep tilth, and well drained—such soil as is well adapted for growing early vegetables. When the fruit is swelling, I several times give the soil about the trees (with a water-hose) a good soaking of sewage water; this ensures a good growth of wood, while the nature of the soil is favourable to its early ripening, and if the wood is well ripened I do not think that an English winter, however severe, will affect them in their dormant state. I am of opinion that the hard winter had nothing at all to do with the present unsatisfactory state of Peach trees. If we look for it anywhere, we must look to last year's unusually heavy crop. From my earliest recollection, I cannot remember such a crop of Peaches as we had last year. The northern markets were so glutted that I actually saw beautiful Peaches sold at 9*d*. per score. Last summer was very favourable to the growing and ripening of the fruit; but not for the formation of wood, hence I think the advantage of my sewage application. Of course this must be applied with some discretion—such a summer as this, when it is raining (in this neighbourhood at least) every day, I would never dream of applying it, nor yet when the crop is scanty. I wish I could report as well of the Plums as I can of the Peaches on the same wall—in fact, between the Peach trees. I thought at one time they would succumb altogether during that week of cold, north-easterly winds, which all gardeners must remember. Every leaf curled up, being as full of aphis as it could be. For a time they appeared mere wrecks, as it were, hanging between life and death; they have now, however, grown out of it, and look better than I expected to see them this year. *A. Yorkey.*

Odontoglossum Bluntii.—I send you by this post two flowers from separate plants of Odontoglossum Bluntii in the large collection here. I find one of the flowers to be 4 inches across, with ten flowers on the spike: bulb 6¼ inches round; the other flower 4½ inches across, nine flowers on the spike: bulb 5½ inches round. *E. Culley, Gr., Ferniehurst.*

The Thinning of Grapes by the Syringe.—This is no new fancy, it has cropped up at different times for years past, and this is by no means the first time that I have pointed out that it is a fancy and nothing more. No amount of syringing will remove any berries after they are properly set, without an amount of force being used that would seriously bruise and injure the berries left. But a great many Grapes, and notably Muscats, never set one-half of their berries, often not a fourth part, and some people use the syringe to the bunches before thinning, which, of course, drives off all these unset berries, and this they call the thinning of Grapes by such means. It is mere nonsense, a mere tap or shake does the same thing, that is, brings off all the berries which are not set. *A Practical Hand, July* 15.

The Implement Yard at the Provincial Shows of the Royal Horticultural Society.—I wish to endorse and add force to—if that be possible—all that Mr. Baines says upon this subject at p. 908. I believe the local secretary was solely responsible for stuffing the yard full of baby's perambulators, and all sorts of fancy-fair things, which certainly do not comport with the dignity of a Royal show. But apart from things of this sort, which ought not to be admitted, surely some attempt might be made to offer prizes for, and test the merits of, horticultural implements or inventions. I would suggest that prizes should be offered for the best specimens of hothouse building, also for new modes of ventilating hothouses and arranging them internally for the different purposes of gardening. Something might also be done to break up the monotony of colour in glass houses by offering a prize for the most effective or chaste coloured house, or sample or model of the same. In this age of new boilers, also, prizes should be given for the best, and some means of testing devised. These are mere suggestions, and others will readily occur to your readers. Under the present arrangements, the implement makers and house builders seem rather hardly dealt by. They have to pay pretty high for space; at times they are badly located, and better places are taken up with refreshment tents or fancy-fair goods that have no possible connection with horticulture. I heartily endorse Mr. Baines' view, that the trade-yard ought to be revised and improved. *Quercus.*

Laxton's "Alpha" Pea.—In reply to your correspondent at p. 875, as one of your "disinterested" readers, I would beg to say that my trial differs somewhat from his. The stock was obtained from the same source, and was sown on a well-manured piece of ground, in the same row with Daniel O'Rourke. I counted the number of pods on both, and certainly the Daniel O'Rourke had a slight advantage in that respect, in productiveness, but the Alpha is rather earlier, and the Pea of a sweet juicy consistency, possessing the merit of its own (wrinkled) class, which will secure for it a precedency over the other. It is rather earlier than Maclean's Gem, and follows Carter's First Crop so closely, that I would prefer it for my earliest pulling. It must be remembered, however, that for earliest crops the wrinkled varieties are not quite so certain in every soil and climate as the round or smooth kinds, as these are less liable to burst and rot in unfavourable circumstances than the other. This season, however, in many respects a very trying one, Alpha was fully as healthy as Carter's First Crop. Dr. Maclean's Peas are certainly worthy of high commendation, but that is no reason why Laxton's should be depreciated. In all fairness, while Laxton's Supreme is not a wrinkled variety, it is not only "a grand show Pea," but a splendid second early of good quality, deserving of general culture. I will only add that it was ready for use in my trial three or four days before the Champion of England. *W. J. C., Stirling.*

—— I have seen this variety in several places this year, but for one instance, in reply to your correspondent "A. D.'s" inquiry, I will name that of Messrs. Standish & Co., as doubtless many other gardeners besides myself have seen it there. On June 20 I saw this fine Pea there in really good condition, being only a few days later than Sutton's Ringleader; its only drawback appears to be its inability to withstand severe winter frost. Mr. Standish considers it ought not to be sown till the end of February or beginning of March, and sown at that time it is only four or five days later than Ringleader sown in November, is a much heavier cropper, and of first-class flavour. If sown on turves or in trough-like boxes, and planted out early in March, I believe it would be quite as early, and a long way in advance in other qualities. Mr. Standish has so good an opinion of it, that he is crossing it with various sorts, to improve them, and to all appearance will some day give us some fine Peas. *John May, The Gardens, Westfield, Havant.*

—— I forward you herewith a small box of Laxton's Alpha Pea for your own opinion. Your correspondent "A. D." is quite in error in saying that they bear only single pods, for the majority have pairs, as you will see; and I can with truth say that Laxton's Alpha is the best early Pea that I know. *G. R.*

Odontoglossum Culture.—In a collection of New Grenada Odontoglots everything is doing well but O. coronarium. Can any of your readers tell me if any special treatment is necessary for this species? Imported plants appear as though they had been exposed to the sun. *P.*

Flower Show Appeals.—In your last issue, at p. 907, in answer to Mr. Simpson, you state that Alocasia Lowii and A. macrorhiza variegata are distinct species. Now, if they are distinct species, by what rule are exhibitors allowed to show them with Caladiums? At the last show of the Royal Botanic Society at Regent's Park there were in the 1st prize lot Alocasia Lowii and A. Veitchii, and in the 2d, Alocasia metallica and A. macrorhiza variegata. My question is—What rule do the judges act upon when the schedule says Caladiums, and they see Alocasias instead, and award them the prizes? *A Young Exhibitor.* [There was a misprint in our note on Alocasias at p. 907. It should read:—They are "distinct species," not "a distinct species." As regards the present inquiry, Alocasias should not be shown as Caladiums, if the schedule is to be strictly interpreted. As, however, they form a desirable variety, it would be well if the schedules were made to include both. EDS.]

Grape Judging at the Royal Botanic.—In principle I think it unwise to complain of the decision of judges, but when they depart from the established rules of making awards, as they did in my case at the Royal Botanic, July 13, I think I should be wrong not only to myself, but to the general interest of Grape growing, if I did not do so. And in this opinion I am supported by most, if not all the exhibitors of Grapes at the show that day. Mr. Johnston and Mr. Osborne, who competed against me for the basket of not less than 12 lb., and who won the 2d and 3d prizes, assured me that they disclaim the right to have been placed before me, and think it most unfair I was not awarded the 1st prize; and yet no award whatever was made to my Grapes, though for colour and finish, I shall be bold enough to say, they were the most perfect Hamburgh Grapes in the show, while the winners of the 1st prize in this class fell far below perfection of colour and bloom, and that, too, as your reporter observes, with an irregular-sized berry. *Emanuel Sage, The Grapery, Atherstone.*

Ivy Against Buildings.—I am at present threatened with a lawsuit by a neighbour for growing Ivy against a gable-end of his house, which forms the boundary of my garden, and which was a sad eyesore before I did so. Although I have had the opinion of an experienced architect and also of a practical builder, that the Ivy is a positive benefit to the wall in question, the proprietor stubbornly insists that some damp, really caused by salt bricks, is owing to the Ivy. I have no fear for the result of a trial, but it is no joke to be run to great expense and anxiety by a pig-headed opponent ignorant of natural history. I shall be glad if any of your readers can tell me of any legal decision on the point, or otherwise aid one who likes an Ivy-covered wall rather than a horrid mixture of bricks and plaster. *LL.D.* [We believe if a wall be in good condition that no harm, but rather good, results from the Ivy. EDS.]

Fruit Growing at Okeford Fitzpaine.—No one who knows the kind and genial nature of my friend Mr. Radclyffe will suppose for a moment, I think, that he meant in his observations to brand gardeners, as a class, with ignorance; his idea was, I believe, simply to assert that very often that is put down to the freaks and caprices of Nature, or to the effects of inclemency, which is owing to culpable neglect or gross ignorance. I do not think that he meant more than this. Whether my opinion on this fact is of any value or not, at any rate my statement of what I have seen of the condition of his fruit trees may be worth something, as showing that he is not one of those who preach and do not practise. Let it be distinctly borne in mind that he possesses no advantages in either soil or situation; that his garden stands right in the wind's eye of the south-westerly gales which prevail so much in this part of England; that his soil is a tenacious sort of loam, and not peculiarly adapted for any of his special cultures; and that, therefore, his success is to be attributed not to any special opportunities that he possesses. And what in this very trying season is the condition of his trees? I have been in many gardens, large and small, this summer. I have seen blight, and canker, and red spider, and all sorts of things on the wall trees, but here I saw none. There is not a blighted leaf or a sign of disease of any kind from beginning to end. His Peach and Nectarine trees, let it be remembered, are small, but there is an excellent crop on them—more than I have seen this year on some walls three times their length, and the whole appearance of the trees such as any man might be proud of. I attribute this result, 1st, to a thorough good practical knowledge of the physiology of plants; and, 2d, to unceasing vigilance in supplying their meat at the proper time—giving them such food as they require, protecting them when in bloom, stopping at the right time, watering and syringing when required. I might dilate on his wonderful crops of Strawberries, &c., but have thought that this testimony ought to be borne to the success of one who is so well qualified to teach as my friend is. *D., Deal.*

Caterpillars and the Fruit Crops.—I have just been reading "J. T.'s" article, entitled "Caterpillars and Fruit Crops." He has got hold of the "right pig by the ear" in one instance, but there are several more for him to catch yet. When he speaks of the hard rings round the twigs of Apple, Plum, and other fruit trees, I presume he alludes to the circular clusters of eggs of the Lackey Moth (Ctisiocampa neustria), which are laid in August, and in early spring produce a number of gaily-coloured hairy caterpillars, striped with white, orange, blue, and black, living till nearly full growth in colonies in silken nests, which they construct among the branches, and stripping all the twigs in the vicinity of the nest completely bare of leaves. This very conspicuous species of caterpillar is, however, very easily got rid of by simply cutting off the twig at night, when the inmates, which feed only in the day-time, have retired to rest. The great enemies of our fruit trees are the larva of the two winter moths, Cheimatobia brumata and Hybornia rupicapraria, especially the former. These larvæ, which are of various shades of green more or less marked with white, are the produce of moths which emerge from the chrysalis and deposit their eggs from November till the beginning of March. The larvæ live when not feeding between two or more leaves spun together; they are so common, and appear in such numbers, that I consider it a hopeless task to attempt to get rid of them: probably every twig of a fruit tree has eggs deposited upon it in the winter months. Sparrows, hedge-sparrows, robins, and numerous other birds destroy these larvæ by wholesale, choosing the breeding season for the purpose of feeding their young. These larvæ do but little damage to our Gooseberry and Currant bushes; the mischief here is done by a caterpillar, which does not produce a moth at all, but a saw-fly, Nomatus grossularia, which deposits its eggs along the ribs at the back of the leaves, and of which there are several generations in the course of the year. I am told that Hellebore powder sprinkled over the bushes with a flour duster will destroy these larvæ, but I have not tried it, and know of no other cure. But few birds (of whom the cuckoo is one) will eat this caterpillar. The larva of the Currant Moth and the V moth, Abraxas grossulariata and Halia wavaria, the former black, white, and yellow, and the latter green, yellow, and black, occasionally do a little damage to our Currant trees by eating the leaves; and that of the little Clear-wing, Trochiluna tipuliforme, by feeding internally on the pith of the branches; but they never occur in sufficient numbers to excite any alarm. *H. Harpur-Crewe, the Rectory, Drayton-Beauchamp, Tring, July* 17.

Sudden Rise of Temperature.—After an unwonted long cold period, the thermometer here registered at 4 P.M., July 16, 110° in the sun—the day having been uniformly hot and fine throughout. *Wm. Earley.*

Luminous Plants.—In your late article on this subject (pp. 904-906), you anticipate additional information from correspondents. Allow me to submit a first fruit of such addenda. In the year 1838 I was pursuing the study of natural history in the State of Alabama. About the middle of September I was traversing, together with a friend, in the early hours of night, one of the gloomy swamps that border the river in the neighbourhood of Cahawba. The timber, at the part of which I speak, was almost wholly of one kind, the Beech, Fagus americana, a noble tree, with the same smooth, blue, pillar-like trunk as its European congener, but attaining a loftier elevation. In the deep, rich soil of these swamps, it frequently exceeds 100 feet in height, with a magnificent head of foliage. The roots spread to a great distance, and form a sort of network on the surface of the ground, in some measure impeding the progress, or at least making it more tortuous than the trunks seem to require. As we plunged into the deep swamp, the scene every moment grew grander and more gloomy. The ground was damp and mouldy, but not wet; so that, in this respect, we could walk with ease. The trees were, as I have said, large, set far apart, with little underbrush. On one of these hoary Beeches, I saw an object that interested me much. A spot of bluish light appeared at a distance, resembling that of a glow-worm; which, on my coming to it, I found to proceed from a foliaceous Lichen or Fungus, growing on the bark within reach, in the form of a rosette or cockade, about as large as a shilling. The substance of this was somewhat fleshy, or rather cartilaginous; and was luminous throughout, as if penetrated with light, which was feeble, and of a pale blue tint, like that which proceeds from wood decomposing under certain circumstances, popularly known as touchwood. The above particulars are already published in my little volume, "Letters from Alabama," p. 257; and though the incident is vividly painted on my memory, I regret that I cannot add anything to their precision. My acquaintance with botany was not at that time sufficient to determine the exact character of the luminous plant; the appearance was rather that of a Lichen than that of an ordinary fungoid; but more than this I am unable to say. I am sorry that I did not preserve the specimen. *P. H. Gosse, F.R.S., Torquay, July* 17.

Hardiness of the Araucaria.—As an observation has been made in your columns that planters are discouraged from cultivating the Araucaria, owing to the many instances in which these trees have suffered severely from our winters, I have thought that an instance of their extreme hardiness in a most unpromising situation, which has come under my notice, is worthy of record. Leith Hill is known to be the highest land in the south of England (more than 900 feet above the sea), yet on the very summit are now growing a number of Araucarias, which were planted without the least shelter, apparently six or eight years ago. These trees appear quite healthy, though of slow growth; their foliage remains quite green, as if never at all browned by past winters, and they maintain their uprightness in this bleakest of all situations, where one should suppose even a Scotch Fir would with difficulty raise its head. *P. P. C.*

The Palmete (Prionium Palmita), mentioned in your journal as likely to "be found of use in the fabrication of ropes and paper," is a plant whose utilisation has been many times attempted in this country, but hitherto without success. Some of the uses for which it has been recommended and tried are as a substitute for bristles in brush-making, as a substitute for horse hair for stuffing cushions, and also, as you state, for ropes and paper. Though it has been well known and recommended for these purposes for many years, the prospect of its general application seems as far off as ever. *John R. Jackson, Kew.*

The Potato Murrain.—I am not an alarmist, but "for a' that" I am sorry to state the fact, that although our Potato prospects have been very first-rate, there are unmistakable symptoms of a determined attack from the disease from which we have enjoyed some slight immunity for a year or two. Around here, in Essex, in fields of great extent, in which may be seen the finest descriptions of Potato growth, the dire pest is but too plainly observable in patches here and there of acres in extent. Early Shaws seem to succumb to its influence first, for these plainly discerned patches are principally of that variety. Other early sorts, such as varieties of Regents, have also been smitten by the unrelenting enemy. Already I hear young Potatos have fallen by 20*s.* per ton in the metropolitan markets, owing to the influx caused by growers hurrying in the produce of their palpably smitten crops. *W. Earley, Valentines.* [We hear also of wholesale destruction by the disease in Leicestershire and in Kent. EDS.]

Horizontal Sash Bars.—At the late show of the Royal Horticultural Society at Nottingham, Mr. Bickley, of Smallbrook Street, Birmingham, exhibited an ingenious mode of glazing, which we noticed at p. 842. We are now enabled to supplement the remarks there made by the following illustrations (figs. 203, 204) and description, furnished by the patentee:—"A, zinc plate; B, wood bar; C, portion of rafter; D, groove or rebate in wood bar to receive upper edge of glass; E, clips, formed in zinc to receive lower edge. At certain distances, they are turned the reverse way, and a nut fixed on them (see H); at these spaces the glass is inserted and slid along the groove to its place. The projecting portions of metal, F, serve two important purposes, viz., to carry the water far down on to the next lower row of panes, and also to hold them firmly down, acting as a spring. I find one or two of them ample for this purpose to each pane, it should be slightly bent downwards, just before the glass is slid under it. The sloping part, G, carries all condensed moisture safely away from the inside of the glass on to the top of the next row of panes, thus preventing drip, which exists in all other methods of glazing. The bars may be either screwed or nailed on the rafters with zinc or iron nails, and the roof will be much firmer if they are let into the rafters a quarter of an inch. They may be painted ornamentally blue, with turned up part white, &c. They may be used for a variety of purposes, viz.:—Double glazing greenhouses, over an existing roof, curved roofs, ground vineries, frames, skylights, shedding with rows of glass and boards, or slates alternately, &c. I have constructed an orchard-house, 100 ft. by 18 ft. with these bars, glazed with 20 by 16 sheet glass, and though roughly put together, it carries the whole of the water off in the heaviest rain without the slightest drip inside the house."

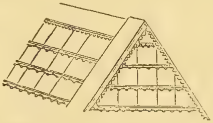

FIG. 203.—BICKLEY'S MODE OF GLAZING.

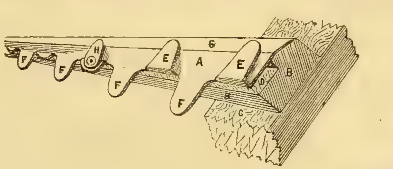

FIG. 204.—BICKLEY'S MODE OF GLAZING.

New Pears.—A correspondent of yours dissents from a dictum of Mr. Rivers upon this subject, and sends you a list of no less than 120 new Pears "of first-rate quality," sent to him from the Continent during the last 20 years. I have fruited about a sixth part of these, of which only two (or 10 per cent.) have proved up to and over the second-rate; one of those two, viz., Doyenné du Comice, is perhaps the very best Pear known; at any rate there is no better. The other, viz., Marie Louise d'Uccle, is decidedly a good second-rate, and a fine handsome fruit. Of the rest I would speak as follows:—B. Bachelier is large and fertile, but miserably tasteless; B. Durand (if identical—which I only suppose—with a Pear received from the Continent as "Durandeau") is very handsome, but never loses its coarse acridity; Beurré Six is quite worthless; Calabasse Delvigne the same; Désiré Cornelis is large and a fine grower, a juicy and sweet Pear, but with very little flavour; Dr. Nelis and Dr. Trousseau are worthless; and so is Duchesse Hélène d'Orléans; General Todtleben is worse, if that be possible; which Leopold I. quite proves. Madame Elise is very poor, Marie Guise never ripens, neither does Napoléon Savinieu. Passe Crassanne (in spite of even Mr. Rivers' good word) is a wretched thing; and Poire Pêche is quite contemptible. If "Poiteau" be the same as Nouveau Poiteau, it is never fit to eat. These Pears have turned out as above, not in a cold ungenial situation, but in Middlesex, and in a garden where we gathered Peaches from the open wall on July 14 of the present backward season. I do not charge your correspondent with any desire to mislead anybody, for I hold it to be one of the very worst features of horticultural discussion, that it seems to beget personalities, even more than religious dissension. He may have a soil and climate of extreme optimising power as regards foreign fruit, while it sympathises more judiciously with our native products. But one thing he seems to pay small heed to, which is of first-rate importance, I mean the effect of season—an influence of undeniable force upon all fruit, but of paramount import as regards the Pear, which is the most sensitive and capricious of all English fruit. There is no Pear as yet in our knowledge which can be relied upon for first-rate excellence every year; *e.g.*, D. du Comice was first-rate with me for three years in succession, the fourth year it was second-rate upon trees of all ages, and it might well be proud of premiership for three years out of four. Knight's Monarch has twice been A 1; but no Pear can be insured as "A 1 for seven years." Hence I venture to submit that we cannot draw so precise a line as your correspondent would establish. We must allow for stock, soil, and normal climate, and the effect of these three as diversified by perpetually mutable seasons. Only one thing seems reasonable, to wit, that a Pear which is not good in one year out of three, or a Pear which rarely ripens here, should accept the Chiltern Hundreds. I have piled and over-piled my list, having at one time 400 sorts, and being perhaps as enthusiastic as your agreeable correspondent; but long experience has convinced me that five-and-twenty kinds of Pear are ample for any garden, or even for a nurseryman who wishes to please his customers. Even the *furor* of young people is worn out at length with a tale which is "all sound and fury." I cannot but doubt whether your correspondent is correct in his ethnology, *e. g.*, B. d'Aremberg and Uvedale's St. Germain are usually believed to be foreigners, and so is Gansel's Bergamot, according to the well-known story; and why does he omit from the English list Huyshe's Bergamot, and Thompson's [Thompson's is not English], both first-rate sometimes? Moreover, there is at least a tradition, which I have heard confirmed in this neighbourhood, that Marie Louise was gained in England, and by Mr. Braddick; neither do I think that your correspondent, so charitable to foreign stuff, is justified in banishing B. d'Aremberg (whatever be its origin) to the second class. It is not always, but surely it often is first-rate. Broom Park, on the other hand, has never been good here, neither has Dunmore, but Gansel's Late Bergamot has. Hacon's Incomparable, on the other hand, never was worth eating here. In short, the moral of my tale is this:—We cannot dogmatise upon Pears, and there are very few sorts indeed which can be generally, much less universally, recommended; and no amateur who cannot afford to put up with loss of time and money, should place any faith in foreign catalogues, nor even in an English one, unless it be that of Mr. Rivers, nearly all of which is true, according to my experience. Through that great veteran's enterprise, the date of outdoor Peaches is extended a good month either way. His Early Louise ripened, on my walls, before the earliest Apricot, and his Princess of Wales prolongs the season, not of Turnips, like Late Admirable, but of first-rate Peaches, to the battle of Trafalgar. *Pari Passu.*

—— Allow me to call your attention to a few clerical or typographical errors in the lists of Pears at pp. 903–904. In the first place, should we write Bergamotte, or "Bergamote"? The Continentals, I think, generally spell it with one "t," and the dictionary of the French Academy has it with one "t." M. Decaisne writes it with one also, as does MM. Leroy, Van Houtte, &c.; but M. Lirou d'Airoles has the double "tt," as have several of the older writers. I follow the dictionary of the Academy. There is also the word Arenberg, often written "Aremberg." Nearly all the French and Belgian writers write it with an "n." I think the Germans write it with an "m." I suppose that they should know best. The following names require correcting:—Elshan Hoft to "Haft"; Bergamote Flou to "B. Flon"; B. Jolais to "Jalais"; B. Luiget to "B. Luizet"; Doyenné Flou Ainé to "D. Flon Ainé"; Général Davevier to "G. Duvivier"; Jacques Chamoret to "J. Chamaret"; and Madame Vagille to "Mme. Vazille." I am sorry that I did not take greater pains in forming my letters, which no doubt caused the misprints. *J. Scott, Merriott.*

Diverting a Watercourse.—Your correspondent "J. K." (p. 876), asks for information respecting water-rights, but does not give the name of the stream he is situated upon. My opinion is that he can place a bay or dam across the stream, provided it does not obstruct the watercourse to the injury of any land or property above or below, and he can erect any machinery, and use the water as a motive-power, if no injury can be proved to the flow; if so, he will be liable to an action for damages. He certainly cannot divert or abstract any water from the stream or river, even with a pail, unless he can prove a right to do so. No person has a right to take water from any stream above the intake of any mill, unless such a right was gained before the erection of the mill, or by purchase since. Every landed proprietor has a right to use the water (if not polluted by him) flowing through or over his land by a natural stream, but he cannot deprive or injure the rights of other proprietors over whose land the stream runs, unless he has a title or prescriptive right to otherwise use it. *Thomas Garratt, Sele House, Hertford.*

Societies.

Royal Horticultural: *July* 19.—James Bateman, Esq., F.R.S., in the chair. At the conclusion of the preliminary business, which included the election of one new Fellow—Mr. J. T. Peacock—Mr. Berkeley remarked, in regard to the show of Picotees and Carnations, in another place, that these flowers had not been shown in such good condition as on this occasion for several years, and directed attention to Messrs. Veitch's cut flowers of Spiræas, which included S. sorbifolia, one of the most charming of the series, and S. Lindleyana, of which nothing could be more beautiful for planting in shrubbery borders. Mr. Berkeley then commented upon some coloured plates of Melastomaceous plants, from M. Linden, and upon some leaves of trees and shrubs, sent by MM. Ottolander, of Boskoop, of which further particulars will be found below; and then directed attention to a remarkable new variety of Lily of the Valley, shown by Messrs. Standish & Co., to whom a very large batch was forwarded by mistake from the Continent some months ago. Mr. Standish bought them to force early in the spring, but do what he would, a start into growth they would not make. At last he turned the lot into a cold frame, and the result was the plants now in flower, fully six weeks later than those out-of-doors. It was quite distinct from the common variety, having shorter, blunter, and more rigid leaves, and the flowers were very sweet-scented, which makes it a valuable acquisition. Alluding to the small group of plants from Mr. W. W. Saunders, attention was directed to a Rush-like plant, the flowers of which resembled those of the Statice, but which on examination were found to have the three stamens and inferior ovary of the Iridaceæ; and to a white-flowered species of Rochea, which he had not seen before. Coming next to the subject of stoneless Grapes, Mr. Berkeley remarked that the production of a stoneless variety of Black Hamburgh had long been the object of hybridisers. To obtain this, the above-named variety was crossed with the Black Monukka, an exceedingly good flavoured, stoneless Grape, which it was very difficult to catch just in the proper condition for crossing. This had, however, been done by Mr. Barron, of Chiswick, at great inconvenience to himself, and he (Mr. Berkeley) was glad to say that the cross had taken place, as in plants raised from the crossed seed this year the distinct foliage was plainly discernible, and he hoped that the fruit which these canes would produce next year would prove stoneless.

Concerning the Potato disease, Mr. Berkeley observed that, in his own garden, the Potatos were attacked by it in a more virulent form than he had ever seen. The disease in question was due to a species of mould, and the reason why it was more prevalent in wet seasons than dry ones was owing to the fact that this mould was capable of producing another form, resembling animals, or, as they were called, Zoospores, and these are unable to move without wet.

Mr. Bateman then made some observations on Orchids, and the meeting was adjourned.

Scientific Committee.—A. Murray, Esq., in the chair. Rev. M. J. Berkeley exhibited fragments of Rhododendron ferrugineum with a large fleshy gall-like body on the leaves, and which he considered to be the result of a Fungus mould, a species of Ascomyces, similar to that which produces blister in Peach trees.

Professor Karl Koch, of Berlin, made some comments on the large and interesting collection of leaves of trees and shrubs, sent to the last meeting by MM. Ottolander, of Boskoop. The following is the substance of M. Koch's remarks:—

"The Scientific Committee has honoured me by referring to me a collection of branches of trees and shrubs to report on. I know the establishment where they are grown very well. The nursery of Messrs. Ottolander, of Boskoop, is perhaps the largest establishment for the culture of trees in Holland. Boskoop is a village near Gouda, where nurserymen alone reside. The collection contains 83 species and varieties of ligneous plants, especially Oaks (43) and Maples (18). Many of them are interesting, and not much diffused in the gardens, also some quite new. Time does not permit me to speak about all the species and varieties which Messrs. Ottolander have sent, but I may allude to some of the most interesting. Among the 43 Oaks are worthy to be mentioned the varieties with red and yellow leaves. The best are nigra and Concordia. I have seen in Belgium trees already large and wonderfully beautiful. All these are varieties of Q. pedunculata. Another section of that species are very remarkable for their small and incised leaves. Some of these have long been known, the others are new.

"Among the species I recommend especially the Caucasian Oaks, Quercus castanæfolia and macranthera (not macrantha), because the trees grow quickly and make a very good appearance. Quercus alba Rousseau is not the American species, but the true Quercus pubescens of the mountains of middle Europe. Quercus dentata is a Chinese species, much resembling Quercus coccifera of the Levant. Quercus glabra longifolia is the finest Oak with evergreen leaves, and merits recommendation. I do not know 'Quercus Fan,' but I believe it is a variety of Quercus pedunculata, with almost black petioles and branches.

"Among the Maples, all the varieties of Acer polymorphum, Sieb. (not Spach), merit the greatest recommendation; but I believe that the trees suffer in England in the winter time. An interesting variety of Acer platanoides is that which received the name palmatum long ago. I saw that variety in my youth in the park of Weimar, but since that time it has disappeared.

"Cornus sibirica is the true C. alba, L., and a fine decorative plant in the winter time, because the branches have a coral-red colour. The branches are also so flexible, that they afford excellent material for binding.

"Finally, I have the honour to call attention to the variety heterophylla of Fagus sylvatica. In Germany it is much used for decoration by reason of its beautiful appearance. This tree is the Oak-leaved Beech of Goethe and other German poets."

A yet larger collection, containing, *inter alia*, a great number of Hollies, including many new seedlings raised at Boskoop, was exhibited. Messrs. Ottolander also sent Pterocarya caucasica and lævigata, two species which are often confounded. This collection, like the former one, was referred to M. Koch to report on at a future time.

Major Clarke exhibited an interesting case of herbaceous grafting in a variety of Cotton, in which a young seedling, some ten days old, had been successfully grafted on a plant of Gossypium herbaceum, and had made rapid growth.

The Chairman showed portions of a Pinus attacked by an insect, Tortrix histrionella, which seems increasing.

Professor Dyer showed capsules of Papaver dubium deformed and enlarged by some insect larva.

Dr. Masters exhibited, on the part of M. Linden, of Brussels, some coloured drawing of the flowers of Melastomaceous plants exhibited on a former occasion under the provisional names of Amaraboya princeps, splendida and amabilis. These are plants with all the habit of Melastomaceæ, but the flowers differ in their size and texture. A. princeps has in the drawing magnificent flowers of a pale pink colour; A. splendida has smaller flowers of a bright carmine, while A. amabilis has small flowers of a pink colour. The petals in all cases are six in number, and represented as being thick and coriaceous in texture. In all three species the stamens are represented as partially united at the base, and forming an incomplete ring. These stamens are stated to be of a waxy or ivory colour. The fruit is described as capsular. The plants were found in Choco, New Grenada, by Mr. Wallis, but the drawings, though serving to give a general idea if the plants, are not sufficient, from a botanical point of view, to enable a definite opinion to be formed as to the genus. Dr. Hooker suggested a relationship to Bellucia, but were it not for the capsular not baccate fruit, the plants would appear to be nearer to Blakea. In any case the plants are grand additions to our gardens, and it is to be hoped that M. Linden will soon flower them, and enable their botanical *status* to be ascertained.

Dr. Masters also exhibited, on the part of Mr. Earley, some double flowers of Sweet Pea. Major Clarke stated he had occasionally met with similar flowers.

From Mr. Grote came specimens of Maize, in which the female inflorescence had the branched form of the male flowers. It was stated that this was common in some parts of India, and that it occasionally occurs in this country.

Dr. Masters, alluding to the four styles of Eschscholtzia californica, and two of which were described by Payer as processes from the placenta, stated that an examination of the course of the development had led him to the conclusion that the supernumerary styles were really the rudiments of a second whorl of carpels above and at right angles to the first pair. This second pair of carpels remained in the rudimentary condition.

Dr. Masters then read the following communication from Mr. Grieve, relating to the possibility of inducing variegation in the leaves of a stock by engrafting on it a variegated scion. The result of Mr. Grieve's experiments, like those of Mr. Laxton, alluded to at the last meeting, are of a negative character. Mr. Grieve's paper is subjoined:—

"I have been recently reminded of some experiments made by me during the spring of 1869, with a view to ascertain if possible something of the influence which the stock exercises upon the scion, &c.

"The experiments referred to were described by me in a paper which I had the honour of reading before the Horticultural Congress held at Manchester on July 21 and 22 of that year; and this paper was subsequently published, with others, in the *Gardeners' Chronicle* and other horticultural periodicals. It may be remembered that, with a view of ascertaining the possibility of producing the condition of variegation in the scion on the stock by their influence upon each other, I stated that I had engrafted variegated varieties of plants upon green-leaved varieties of the same species, and plain or green-leaved varieties upon variegated stalks, &c.; and in most instances allowing the stock to develope itself as well as the scion. And I have now to state that up to the present time the result is of a strictly negative character, and can now point to green-leaved varieties of plants, which have been growing for upwards of two years upon variegated stocks, without having in any instance shown the slightest indication of becoming variegated. Also to variegated varieties growing upon green stocks, which have never in any instance reverted to the green or normal condition.

"The plants on which these experiments have been tried are principally Pelargoniums, but I also endeavoured to transmit or reproduce the quality of scent by grafting many of the highly-perfumed Cape varieties, such as "tomentosum," upon green-leaved zonal sorts, &c., but all with a like negative result.

"I also at the same time, viz., early in the spring of 1869, grafted or inarched many varieties of leguminous plants, such as dwarf French Beans upon Scarlet Runners, and Scarlet Runners upon dwarf varieties, Green Windsor Beans upon Early White Mazagan, and White Mazagans upon Green Windsor, Green Marrow Peas upon early white sorts, and early white sorts upon green marrows, &c. I carefully saved the seeds from all the grafted plants, and during the spring of the following year, viz., 1870, sowed them at the same time, place, and under precisely similar conditions, with ordinary seeds of each respective variety, and carefully watched for the development of any peculiarity which might be ascribed to the influence of the stocks upon which the plants which had produced the seed had grown. As regards the dwarf French Beans which had been produced upon Scarlet Runners, I could perceive no difference whatever, while the Scarlet Runners which had been produced upon dwarf sorts were exceedingly productive, but did not grow so luxuriantly at any time during the season as the plants produced by the ordinary seeds. But this season up to the present time I cannot perceive any difference.

"With regard to the Mazagan and Green Windsor Beans the operation of grafting had no visible effect, and the birds having made free with the produce of the grafted Peas, I only succeeded in saving a very few seeds of the variety known as Yorkshire Hero, which had been grafted on Sutton's Ringleader, one of the earliest sorts in cultivation. These few seeds I saved by themselves during the spring of 1870, and managed to secure about half a pint of seed from them, and this I sowed as far as it went in a long row or line in the kitchen garden—on February 23 finishing the line with ordinary seed of the variety Yorkshire Hero, also the produce of last year; and they are now (July 15) quite fit for use, while the descendant of the grafted plant, although the tallest by quite a foot, will not be ready for at least a week from the present time, so that earliness has by no means been obtained by using an early variety as a stock. The pods of the latter have also the appearance of being considerably longer than the former, and contain more Peas. Altogether the line has at present the appearance of being composed of two very distinct varieties of Peas. But, notwithstanding all this, the conclusion I feel forced to come to respecting the results of the experiments I have endeavoured to describe are, in the first place, that variegation cannot be produced by inoculation, and if there are really any authenticated instances of its having followed that operation this fact will not by any means prove that it was the result of inoculation, as variegation is found in so many instances to produce itself spontaneously.

"I am also inclined to doubt the existence of a 'graft hybrid,' for although, as in the case of the Pea alluded to—where a variety appears to have been produced distinct from both stock and scion, I still apprehend that, as in the case of the Scarlet Runner, this divergence will in the course of another year or two entirely disappear. Still this divergence, produced to all appearance by the influence of the stock, whether it may prove permanent or otherwise, appears to be interesting, and may be considered as not unworthy of further investigation." *P. Grieve, Culford, July* 15.

Floral Committee.—J. Fraser, Esq., in the chair. The most interesting feature of this meeting was perhaps the exhibition of a group of fine new Agaves and other plants, from the nursery of M. Jean Verschaffelt, of Ghent. Of Agaves there were a dozen, and the following were selected by the International Committee for First-class Certificates:—A. elegantissima, A. sp. nov., A. Regeli macrodonta, and A. Mescal foliis striatis. We hear that this fine lot will not return to the Continent, having passed into the hands of Mr. J. T. Peacock, Sudbury House, Hammersmith, a gentleman who makes this class of plants a speciality, and whose collection is already a rich one, gathered together within the last few years, from every available source. M. Verschaffelt also received similar awards for Encephalartos Vroomi, a very beautiful form; for a new species of Zamia from New Caledonia; and for a new form of Dicksonia (? Sellowiana) from St. Catherine's, Brazil. Continental exhibitors were also represented by Messrs. Makoy & Co., Liege, who had a First-class Certificate for a new dwarf Tillandsia (Platystachys) complanata, which bears beautiful blue flowers; and by M. Wendland, the Royal Gardens, Herrenhausen, Hanover, who had a like award for Æchmea Maria Regina, a very attractive plant, with clear, deep, rosy-pink bracts. Messrs. E. G. Henderson & Son exhibited several beautiful new hybrid bedding Lobelias, which, from the compactness of their habit and the density and bright colours of their flowers, give much promise. The most noticeable were Sunset, a medium variety, with very flat petals, in colour the nearest approach to a red that we have; Ivory Pearl, the best white, so far, in the pumila section; Erinus Charming, white centre with cœrulean-blue margin; Purple Prince, a medium variety, flowers shaded purple, with a small white eye, very dense, and flat; Celestial Blue, one of the pumila section, very dwarf and free-flowering; and Brilliant, rich deep blue, also belonging to the Erinus section, and having large flat flowers. The two last named had First-class Certificates. A very free-flowering white variety of the speciosa type was also shown by Messrs. J. & C. Lee, under the name of White Perfection, and a similar award was made in its favour. Mr. Norman, Plumstead, exhibited several new seedling Picotees, and received the highest honours for two varieties, named respectively Mrs. Brown and Morning Star. Special Certificates were awarded to Mr. Stevens, Trentham, for a fine cut spike of Odontoglossum hastilabium, and a nice plant of Barkeria spectabilis; to Messrs. Veitch, for a box containing cut flowers of 8 distinct sorts of Spiræas; to G. F. Wilson, Esq., for a beautiful group of Lilies, including one of the canadense type, brought by Mr. Robinson from the Rocky Mountains; to Mr. Lawrence, gr. to Bishop Sumner, Farnham Castle, for a wonderfully fine specimen of Dendrochilum filiforme, on which were 150 spikes of flowers; and for a nice plant of the beautiful white Maxillaria venusta; to Mr. Denning, for a group of Orchids, alluded to elsewhere; to Mr. Mackintosh, Hammersmith, for a well-grown specimen of the Ivy-leaved Pelargonium; and to Mr. Cranston for some very fine cut Roses, of which several good boxes also came from Messrs. Veitch. Messrs. Paul & Son had First-class Certificates for Roses Comtesse d'Oxford, and Louis Van Houtte, and the same award was made to Mr. T. Milner, Bradford, for Fuchsia (tricolor) Sunray. Messrs. Paul & Son sent 9 boxes of cut Roses, Mr. B. S. Williams had an interesting group of new plants, and the same may be said of a small collection from the gardens of W. W. Saunders, Esq. Mr. Croucher, gr. to J. F. Peacock, Esq., exhibited a new Agave, under the provisional name of miradorensis, which the Committee requested might be shown again when further developed. Mr. Hepper, Acton, sent a group of very dwarf Cockscombs, and from Mr. Cunningham, Moor Park, Rickmansworth, came flowers of a pure white Verbena named White King, of which the Committee requested to see a plant. If it has the well known habit of the old Purple King it will be a grand acquisition as a bedder.

In addition to the above, a medium-sized tent was erected near by, and was made exceedingly attractive with large collections of very choice plants from Mr. B. S. Williams, Messrs. Veitch, Messrs. E. G. Henderson & Son, Mr. Denning, gr. to Lord Londesborough, Mr. Parker, Messrs. Downie, Laird & Laing, and Mr. J. Mann, Brentwood, &c. In Mr. Williams' excellent group were a specimen of Cochliostema Jacobianum, with four spikes of flowers, a very healthy example of Thunia alba, with 13 beautiful spikes, capital pots of Miltonia spectabilis, Cypripedium superbiens, and Cattleya Warneri; some handsome medium-sized Palms, Dracænas, Heaths, Yuccas, Pandanads, &c., and a glorious plant of Adiantum farleyense. Messrs. Veitch had beautifully grown plants of Dracænas Mooreana, regina, Youngii, Wisemanii, Chelsoni, porphyrophylla; of Orchids, Grammatophyllum Ellisianum, with one charming spike; four beautiful examples of Dendrobium Bensoniæ, Oncidium obryzatum, Saccolabium Blumei, Dendrochilum filiforme, Masdevallia Veitchii, Cattleyas, Cypripediums, Palms, Liliums, &c. From Messrs. E. G. Henderson & Son came a nice group of Palms, Caladiums, Dracænas, and other fine-foliaged plants; and Mr. Denning had in his rich collection of Orchids an example of Oncidium macranthum with a spike about 10 feet long, on which were 29 flowers, splendid in size and more brilliant in colour than it has been seen before; a very healthy specimen of Saccolabium Blumei, with a dozen beautiful spikes; and nice plants of Anguloa Ruckeri, Miltonia Regnellii purpurea, Cattleya Schilleriana, Stenia fimbriata, &c. Messrs. Downie, Laird & Laing sent a capital collection of Phloxes, (including 6 in 8-inch pots), which took a 1st prize. The remainder were in much larger pots, and from their compact habit, capital spikes, and brightly coloured flowers, it is evident that the size above mentioned is much too small. Mr. Mann sent a dozen nice baskets of Zonal and Tricolor Pelargoniums, and from Mr. Parker came a wonderfully rich group of 12 perennials in 12-inch pots, which took the 1st prize. The plants were about 18 inches through, and under 2 feet in height, clothed with foliage to the pots, and covered with flowers, especially Campanulata carpatica, Coreopsis lanceolata, Œnothera venusta, Betonica hirsuta, Tradescantia virginica rubra, &c. Prizes were offered by the Metropolitan Floral Society, for 12 Picotees and 12 Carnations, Mr. N. Norman, Crescent Road, Plumstead, being 1st, and Mr. Pizzey, gr. to Sir E. Perry, Fulmer, Slough, 2d in the class for Picotees, the awards being reversed in the class for Carnations. Similar classes were also made by the Society, Mr. Norman being 1st for Picotees, and Mr. Turner for Carnations. Mr. Hooper, Bath, had an extra prize for capital boxes of cut blooms of the above-named flowers, and some fair Pansies, Pinks, &c., came from Mr. Bragg and Messrs. E. Shenton & Co. M. Verschaffelt, Ghent, sent over a dozen excellent standard Orange trees, nice bushy heads on clean stems, about 4 feet high.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair. Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, Bucks, sent very fine specimens of four varieties of Pine-apples cut from plants 16 months old; their weights were as follows:—Enville, 11 lb. 4 oz.; Smooth Cayenne, 7 lb. 8 oz.; Charlotte Rothschild, 6 lb. 8 oz.; and Queen, 5 lb. 10 oz. A Special Certificate was awarded. Messrs. Rivers & Son, Sawbridgeworth, sent fruit of a new large deep black Cherry, named Bigarreau Noir de Schmidt, to which a First-class Certificate was voted. The same award was also made to Mr. Bradley, Littledale, Southwell, for a large fine flavoured Strawberry, named The Amateur; and to Messrs. Standish & Co. for their excellent new Grape the Ascot Citronelle, a variety having a very high flavour, and the excellent character of hanging well and not cracking. Special Certificates were voted to Mr. Tillery, Welbeck, for a collection of fruit, consisting of Cherries, Nectarines, and three varieties of Strawberries; and to Mr. Bland, gr. to Earl Kilmorey, Gordon House, Isleworth, for a dozen finely-ripened and coloured Early Grosse Mignonne Peaches. Mr. Hepper, gr. to P. S. Millard, Esq., Acton, sent capital specimens of Veitch's Autumn Giant Cauliflower, and Mr. Smith, gr. to the Earl of Gainsborough, Exton Park, sent a brace of Cucumbers, a hybrid between Worcester Prize and Carter's Champion. Messrs. Carter & Co. offered two prizes for a collection of vegetables, the 1st of which was taken by Mr. Miles, gr. to Lord Carrington, he being the only exhibitor. His collection was a large one, and comprised first-rate examples of Asparagus, Carrots, Turnips, Parsnips, Salsafy, Scorzonera, Potatos, Globe Artichokes; Carter's Hundredfold, Laxton's Supreme, and Carter's Imperial Wonder, Peas; capital Broad and Kidney Beans, Cabbage, Celery, Lettuce, &c. Mr. James, gr. to W. F. Watson, Esq., sent a seedling Pea of considerable merit, named "James' Prolific," which grows to the height of about 3 feet, carrying a first-rate crop of well-filled straight pods, about 3—4 inches long.

THE CHANNEL ISLANDS EXHIBITION.—This exhibition, in its scope and object, the variety and excellence of its details, and its successful financial results, by far the most remarkable in the annals of the Channel Islands, has just closed after a three weeks' career. It was held in the building and grounds belonging to Victoria College, Jersey, a site which, by its natural beauty, materially contributed to the success of the show, in which were comprised agricultural, horticultural, and native art and industry departments, with such rare objects as the islands possessed added, and lent for the occasion.

Though our remarks in these columns are necessarily confined to the horticultural section, it is obvious that the most distinctive and interesting feature was the display of native cattle in numbers nearly equalling the great English shows, and exhibiting an amount of beauty unprecedented, and worthy of foreign admiration. Since Oxford, of last year, the cattle of Guernsey and Jersey have been classed separately, an arrangement which has obviated future disputes, and which any observer would here acknowledge as just, and long delayed. To the English mind these breeds, so distinct, were long known as Alderney—an island which contributed no specimen to the show. It is sufficient here to say that the characteristic features of the Jersey and Guernsey cattle, while assimilating as opposed to the larger English breeds, have each their sturdy partisans in the islands, and are now generally recognised as best when kept from intermingling. But to our task.

The horticultural section, though deficient in some parts, owing to the cold and backward spring, and lately to the incessant rains—this is our fabulous spring and glowing summer!—presented, as a whole, great excellence. The florist accustomed to London, Manchester, or Leeds, would miss the gorgeous foliaged plants which by their facility of grouping diversify the monotony of staged specimens.

There is not a stove-house, worthy of such designation, in either island, and those scientific head gardeners, the glory of the mother country, would not find scope here. The work seen is, therefore, mainly amateur, and very good as such.

The same may be said of fruit culture, and especially in Grapes, which are largely exported, and generally grown to suit the market, and do not exhibit that standard of merit which scientific training produces. The best grower in either island is Mr. Pond, the well known proprietor of the St. Lawrence Nurseries. The Grapes exhibited by this veteran were of an excellence and perfection in staging seldom seen in our best metropolitan shows.

The tent containing the fruit, vegetables, and flowers was designed by the secretary, Major Howell, and a great advance—resisting bravely the fierce easterly gale which raged round the exhibition buildings, and had previously ungallantly poured its fury on the choir of ladies, and raised the hair on many an official head during the momentous instant devoted to photographic skill. *Eheu! fugaces.*

The blooms of Roses were generally good, though the lateness of the season and the cold rain had been most adverse. In these Mr. De Faye was 1st. The Roses from Guernsey had besides a rough sea voyage to endure, but sustained the competition without disadvantage. Much of the show consisted of Zonal Pelargoniums, Captain Saumarez taking the silver medal, Mr. Le Sueur was 2d. Mr. Markland showed very good double Pelargoniums. In Ferns the competition was keen, Mr. Cutlan taking the silver medal. Mr. Saunders, nurseryman, showed the rarest Ferns in the sixes. Probably the choicest gems of this section were Mr. Pond's seedling Pelargoniums, Silver Tricolors, in which were Mrs. Rousby (which Mr. Turner lately exhibited, and was 1st as the best new variety of its class), a beautiful plant, of good size; and Miss Pond, which to us seemed even superior and richer in colour, though not so flat in the leaf as Mrs. Rousby. These two will prove decided acquisitions.

Among the fruit were dishes of Peaches and Nectarines, Mr. Pond being awarded the silver medal for his collection of Grapes, comprising noble Canon Hall, Black Hamburgh, Muscat of Alexandria, Golden Champion, and Muscat Hamburgh.

Vegetables were few in number, but very good; the American Potatos as usual fine, but, Early Rose specially, too apt to degenerate in these climates to make them profitable.

A Silver Medal was awarded to Bréhaut's new lawn conservatory and fruit case (Rendle's patent), and another to Messrs. Haynes & Son, of London, for their syringing apparatus.

The other departments of the exhibition were well filled, and the whole matter has proved a great success, originating, as it did, with the energetic President, Mr. C. P. Le Cornu, and patronised by as many as 10,000 visitors in a single day.

WOODBRIDGE HORTICULTURAL: *July* 13.—This Society held its annual summer show in the grounds of W. P. T. Phillips, The Grange, a situation admirably adapted for such a display; indeed, a more beautiful spot it is scarcely possible to conceive. The mansion stands upon rising ground in a well-wooded park, in which may be seen many fine examples of Cedars, Oaks, and Beeches; it also commands many enchanting views of the surrounding country, with the pleasant waters of the river Deben in the distance. The visitors were further permitted to feast their eyes upon the beauties of a very nicely laid-out and well-kept garden, which added materially to their enjoyment. Not only did Mr. Phillips assist the Society by thus throwing open his beautiful grounds to the visitors, but he also rendered material assistance to the show with the productions of his own gardener, thus making it the finest and largest exhibition ever yet held in the town of Woodbridge. One plant in particular, from Mr. Phillips' garden, deserves special notice, a remarkably handsome and well grown pyramidal Fuchsia, called Julius André, which measured 8 feet in height and nearly 6 feet in diameter; it was, indeed, a perfect model, from which many of our London exhibitors of this graceful plant might take a lesson with advantage.

Stove and greenhouse plants, both those with beautiful flowers and those with ornamental leaves, were well and creditably represented, so also were hardy and exotic Ferns, the best collection of fine-foliage plants coming from Mr. Mill, gr. to Lord Rendlesham, and the best collection of Ferns from Mr. G. Berry, Ipswich. Heaths, Geraniums, and quantities of soft-wooded plants, were also shown in excellent condition, proving how valuable they are for decoration at this particular season of the year, for, without them, our greenhouses and conservatories would almost be without flowers; amongst them may be named Achimenes and Balsams, which were shown in excellent condition by Mr. Goldsmith and Mr. King. Cut Roses were another conspicuous feature in the show, Mr. Cant, of Colchester, carrying off the silver cup for the best 24; whilst Mr. Keen, gr. to J. G. Sheppard, Esq., was 2d with a very fine set, and Mr. W. Nicholl, 1st in the class for 6. Carnations and Picotees are extensively grown in the neighbourhood, and the flowers exhibited on Thursday were amongst the finest we have ever seen. We were also very pleased to see prizes offered for herbaceous plants, which brought several very creditable collections, Messrs. J. Gilbert & Son, of Ipswich, being 1st, and Mr. J. Buxton 2d. This is undoubtedly a step in the right direction, for we have certainly been losers by banishing so many of our fine hardy plants from the flower-borders. The table decorations produced exhibited excellent taste, the prize offered by Lord Mahon for the best going to Mrs. Wrinch for an exquisitely-arranged epergne: Mr. Goldsmith, gr. to Mrs. Day, also carried off 1st honours for dinner-table plants. Hand bouquets were shown in quantities, and were very tastefully arranged, Mrs. Keen carrying off the 1st prize in this class. The Woodbridge show has always been famous for its excellent display of fruit, and this season has been no exception to the rule. The Grapes, in particular, were very fine, both as regards size of bunch and berry, as well as general finish and colour; indeed, we have not seen their equals at any exhibition during the present season. The principal contributors were Mr. Blair, Shrublands Gardens; Mr. Wright, of Whitton; Mr. Wallace, of Nacton: and Mr. Irving, of Easton. Peaches, Melons, Cherries, and Strawberries were also very good. For the best basket of fruit, artistically arranged, not less than 8 varieties, Mr. Blair, of Shrublands, was 1st with a choice lot, and Mr. J. Groom 2d.

The cottagers' classes were admirably sustained, and the fine collections of fruit and vegetables contributed gave ample proof that great attention must have been given to the garden after the usual toil of the day was over, especially when we consider the many difficulties with which every one has had to contend during this changeable and fickle season. There was a large attendance of visitors, to whose enjoyment the band of the 2d Queen's Bays, under the leadership of Mr. Cousins, added considerably, continuing to enliven the company with exquisite music up to 10 o'clock in the evening, when the gathering was brought to a close by a grand display of fireworks, thus ending the most successful meeting the Society has yet held.

SOUTH NOTTS HORTICULTURAL.—The 20th annual exhibition of this flourishing society was held on the Sconce Hills, Newark, and was by far the best ever held (with the exception of Nottingham) in the county. The floral and horticultural exhibition took place in several large tents, and immediately adjoining them was a tent devoted to a show of poultry by the Newark Society. All the tents were well stocked with an excellent display. The stove and greenhouse plants were a manifest advance upon previous years, while the fruit in quality was very good, the Roses fine, and the vegetables even superior to the late show at Nottingham. The great prize of the day was a silver cup, value ten guineas, for 12 stove and greenhouse plants, half to be blooming, the other foliage. For this prize three competitors put in an appearance — Mr. Cooper, nurseryman, of Derby; the Rev. S. R. Hole, of Caunton; and Mr. Nevile. Many of Mr. Cooper's were large plants, especially the foliage, but several of them had seen their best day, while some of the flowering plants were not A 1. The specimen of Stephanotis floribunda was first-rate, but the Dipladenia amabilis, though nicely bloomed and coloured, rather spare in foliage. Allamanda cathartica and Hendersonii wanted finish, while Erica Parmentieriana rosea, though a nice plant, was not in bloom. The specimen of Pandanus elegantissimus was superb, and the same must be said of Croton angustifolium, finely coloured, with its golden tresses sweeping almost to the ground. The other Crotons were not good, but there was a fine plant, 10 to 12 feet high, of Seaforthia elegans, and fine Fan and Sago Palms. Mr. Hole's plants were smaller, but more rare, most of them in fine health. Anthurium Scherzerianum, with a dozen or more of its brilliant spathes; Dendrobium chrysanthum, in nice condition; Dipladenia amabilis rather pale; Ixora coccinea, with a dozen or more nice heads of bloom; Erica Parmentieriana rosea, in good condition. The foliage plants comprised fine masses of of Alocasia Jenningsii and Lowii, both fine plants; A. metallica; the Thief Palm, Phœnicophorium sechellarum, with its broad, handsome foliage; Thrinax radiata, another elegant Palm, and nice specimens of Maranta Veitchii, Sanchezia nobilis, and a very promising young specimen of Croton angustifolium. The plants matched well, and formed an admirable group. In the collection sent by G. Nevile, Esq., the best plants were Croton augustifolum, Alocasia Lowii, very fine, in fact superb; Croton variegatum, a pyramid, 6 feet high; Rhynchospermum jasminoides, nicely bloomed; and Alocasia metallica. In the collections of 6 plants Mr. Cooper also obtained 1st honours, with a finely bloomed Allamanda grandiflora, Erica Aitoniana, E. Turnbullii, in fine condition, E. Irbyana, E. Spenceri, not good; Dipladenia amabilis, fine in colour; and a passable D. crassinoda. The 2d prize went deservedly to Mrs. G. Gilstrap, who had a superbly bloomed Pleroma elegans, the bright purple flowers producing quite a glow; Stephanotis floribunda, finely bloomed, but rather formal; Rhynchospermum jasminoides, good; Erica depressa, an upright growing and very remarkable variety, nearly 3 feet high.

For foliage plants Mr. Hole obtained the 1st position with some nice healthy plants—Caryota urens, Blechnum corcovadense, Maranta vittata, Gymnostachyum Piercei, and Fittonia argyroneura. Mr. Cooper sent Dicksonia antarctica, the Fan Palm, two Crotons, Gymnogramma Martensii, and Dasylirion gracile. A 3d prize was awarded to Mr. Moore, gr. to Earl Brownlow, who had the most perfectly powdered silver Ferns, Gymnogramma peruviana argyrophylla, we ever saw. In the Ferns Mr. Moore took the 1st position, with really fine plants of Woodwardia radicans, Cyathea medullaris, Adiantium cuneatum, and the singular Lomaria cycadifolia. Mr. Cooper was 2d, and W. Newton, Esq., and Mrs. Bradley took equal 3d prizes.

In Lycopods Mr. Hole was again 1st with some clean well-grown specimens, the best being Selaginella Poulterii, inæquifolia, Martensii, formosa, apoda, and cæsia. Mr. Moore sent smaller plants of S. flabellata, lævigata, Willdenovii, Wallichii, and Martensii. Mr. Newton had also some nicely-grown small plants, among which we saw the rather scarce S. involvens. In the class for 6 foliage plants, Mr. Hole was again 1st, and Mr. Moore sent the most elegant of all Palms, Cocos Weddeliana. Cut flowers were abundant, but most of them clumsily arranged, while the judging of them was in several cases anything but satisfactory.

Roses were grand, far superior to those at the Nottingham show, and the competition close and spirited, In the nurserymen's class, for 48 blooms, Mr. Frettingham, of Beeston, obtained the 1st place, with the following flowers, most of them superbly grown, though a little bruised from the storms of the last few days:—Abel Grand, Alfred Colomb, Beauty of Waltham, Centifolia rosea, Charles Lefebvre, Charles Margottin, Charles Verdier, Comte de Nanteuil, Comtesse d'Oxford, Dr. Andry, Duchesse de Caylus, Duchesse de Morny, Duc de Wellington, Duke of Edinburgh, Elie Morel, Exposition de Brie, François Lacharme, Henry Ledechaux, Horace Vernet, John Keynes, John Hopper, Jules Calcot, La France, Leopold Hausburg, Lord Macaulay, Mademoiselle Annie Wood, Madame Boll, Mademoiselle Bonnaire, Madame Clémence Joigneaux, Madame Charles Wood, Madame Charles Verdier, Mademoiselle Marie Rady, Madame Rivers, Madame Victor Verdier, Maurice Bernardin, Miss Ingram, Princess Mary of Cambridge, Prince de Portia, Sénateur de Vaisse, Victor Verdier, Souvenir de la Malmaison, America, Climbing Devoniensis, Gloire de Dijon, Madame Willermoz, and Céline Forestier. Mr. Merryweather, of Southwell, took the 2d place. In the class for 36 Roses, the Rev. S. R. Hole obtained the 1st place with fine blooms, among which the following, in fine condition: — Madame Furtado, Madame Boll, Madame Caillat, Charles Lefebvre, Maréchal Niel, Sénateur Vaisse, Souvenir d'un Ami, John Hopper, Maréchal Vaillant, Elie Morel, and President. The Rev. E. A. Pochin took the 2d place with flowers scarcely inferior to the preceding, the best being Leopold Hausburg, Comtesse de Paris, Madame V. Verdier, Niphetos (rarely seen), Gloire de Vitry, Madame C. Joigneaux, Madame Julie Daran, Jean Cherpin, Duc de Rohan, Turenne, and Abel Grand. These flowers were remarkable for the richness of the colours. In 18 Roses, the prizes were taken by the Rev. C. C. Ellison, Mrs. G. Gilstrap, T. Parkinson, Esq., and G. Fillingham, Esq., in the order in which their names stand. In 12 Roses, one of our amateur growers put up a superb stand, containing Marie Baumann, Madame la Baronne de Rothschild, Mrs. C. Wood, Centifolia rosea, Charles Lefebvre, Sénateur Vaisse, Dr. Andry, Gloire de Dijon, Beauty of Waltham, Jean Lambert, Madame Canrobert, and La France. These were almost faultless. The fruit put up by Mr. Moore, gr. to Lord Brownlow, formed an excellent collection. It contained a nice Queen Pine, superb bunches of Black Hamburgh and Foster's Seedling Grapes, two dishes of Peaches and the same of Nectarines, Golden Perfection and Hybrid Melon, the latter of large size; Alma and President Strawberries, some nice Bananas, and Brown Turkey and other Figs. These were all clean, neatly set up, and thoroughly first-class. Mr. Moore also took 1st prize for Black Grapes with the Hamburgh, for White Grapes with Foster's Seedling. A nice pot Vine was shown from Kelham, G. Manners-Sutton, Esq., who had prizes for Peaches and several other things. Strawberries, Cherries, and Apples, of last year, were shown by several exhibitors.

Vegetables were perfectly marvellous, especially the collection sent by the Rev. C. C. Ellison, which contained a Cauliflower nearly a foot across, close and curly, as if still folded by the leaves; Lettuce little short of 5 lb. each, and other things in proportion. These would be grand in any season, but from the past they were extraordinary. Potatos were a grand show, and seemed to have special charms for the working people, and the same may be said of Onions, some of which must have weighed more than 1 lb. each.

St. Ann's Amateur Floral and Horticultural: *July* 13.—The people of Nottingham, more especially the working classes, are devotedly fond of a garden; and, consequently, the show-grounds were visited by immense crowds. The flower and fruit show was held, as usual, in a large tent, at the entrance to which there was a very handsome collection of plants, including a young Fig tree in fruit, some very handsome Ferns contributed by Mr. Hampson, and a collection of wild Thyme, Musk, and other plants. The great feature of the show was the collection of Roses, which indicated an improvement, both in quantity and quality, upon any previous exhibition. There was a splendid array of Fuchsias, the chief prizes being taken by Mr. Hampson and Mr. Green. A selection of Coleus, shown by Mr. T. Mallett, attracted attention; Mr. R. Beard also showed some excellent greenhouse plants; as did Mr. Bull. Sweet Williams and Antirrhinums were in abundance, and the latter were remarkable for delicacy and mingling of colour. Stocks were not so good, owing to the season. Mr. W. Thompson, of St. Ann's Street, sent a gigantic Mushroom, measuring 10 inches across. The show of wild flowers was admirable. A class of pot Roses, the extra prize for which was given by Mr. T. B. Cutts, brought out some beautiful specimens. The designs for geometrical gardens brought together several competitors. The season has been somewhat against the fruit, but, notwithstanding, there was a very creditable show, the Raspberries being a good feature. The Cucumbers were of fine quality, and the Potatos, Cauliflowers, Parsley, and Shallots, particularly worth an inspection.

For 12 Roses the highest honours were taken by Mr. G. Johnson with some splendid flowers, while a very good 2d collection was staged by Mr. H. Grundy, who had, amongst others, fine flowers of Madame la Baronne Rothschild, a superb variety, of a delicate flesh colour; and our old friends, John Hopper and Centifolia rosea, the latter a fine flower in splendid condition. Mr. W. Milton was 3d, with a nice stand, containing Duc de Rohan, Marie Baumann, very fine; and a good flower of Charles Lefebvre. Mr. Frettingham, nurseryman, of Beeston, staged a very fine collection of cut blooms, not for competition. These included some of the finest varieties, and were much admired.

The 1st prize for a collection of fruit was taken by Mr. E. Loseby, who had excellent Strawberries, Raspberries, fine Gooseberries, Currants, &c. This was a nice assortment, and very neatly arranged. Some splendid Apples of last year's growth were exhibited by Mr. Whitworth, viz., Lord Nelson, Carolina Pippin, and Golden Russet, &c. The vegetables were the next to the Roses in importance and interest, Potatos being especially good. The Early Rose figured very conspicuous, being easily recognised by its colour. Some exhibitors had been unfortunate in the choice of deep-eyed varieties, and these were very properly overlooked by the judges.

Society of Biblical Archæology: *July* 4.—Samuel Birch, Esq., LL.D., F.S.A., &c., in the chair. B. T. Lowne, Esq., M.R.C.S., F.R.M.S., read a paper on the flora of Palestine. He considered that it comprised eight distinct elements,—four the dominant existing floras of Southern Europe, Russian Asia, North Africa, and that of Arabia and North-Western India. Each of these floras were stated to occupy a distinct region of the country. Interspersed with these are found numerous examples of plants belonging to Palearctic Europe, constituting its fifth element. The arctic flora of Hermon and Lebanon constitute the sixth. Mr. Lowne thought further that the Cedars of the Lebanon moraines, and the Papyrus of the Jordan lakes were the remnants of two ancient and almost extinct floras belonging to two distant geological periods.

James Collins, Esq. (Pharmaceutical Museum), read a paper upon the gums, perfumes, and resins mentioned in the Bible, particularly pointing out the fact that few of them were indigenous to Palestine, and that many had been wrongly named by the Greek and later Latin botanists. In the course of his observations Mr. Collins detailed the characteristic differences between the true and false Balm of Gilead, Ladanum, Sandal-wood, &c., and the greater or less efficacy of their medicinal properties. In concluding, the author promised to examine the subject of the gums of the Bible, at greater length, on another occasion.

Mr. Lowne and Mr. Collins brought for exhibition a large number of mounted specimens, and a complete collection of gums, perfumes, &c., to illustrate their respective papers. Messrs. Veitch & Co., of Chelsea, had also sent some pots of Palestine flowers, which were by a most unfortunate accident returned before the meeting.

Florists' Flowers.

In the hope of in some measure giving an impulse to the cultivation of The Auricula, and of inducing a more ample display of them at our spring shows, at which these quaint and interesting flowers are beginning again to attract some attention, we reproduce in a condensed form some excellent instructions for their cultivation, communicated to the "Florist and Pomologist" by Mr. J. Hepworth, of Huddersfield:—

As regards the healthy growth and preservation of the Auricula, I believe that a sound, sweet, wholesome soil is the first consideration. The mixture which I have prepared and made use of for over thirty years has brought me the most complete success, and, therefore, I cannot do better than describe it. Half a century ago, Mr. Emmerton, of Barnet, gave us his work on the culture of the Auricula. His plan of management through the different seasons of the year is excellent, if duly followed out; but the labour and expense attending the procuring of the soils which he recommends I look upon as time lost, and money spent to little purpose. Goose dung, night-soil, sugar-bakers' scum, bullock's blood, &c., having been got together and having gone through all the processes recommended, are not a whit better for the purpose than the one plain, simple manure, cow-dung, which is easily obtainable in all parts of the country. I have tried horse-dung, as recommended by some of the Lancashire growers; also night-soil, cow-dung and night-soil mixed, and sheep-dung mixed with yellow loam, and again with black turfy loam. This latter I found to answer better than anything I had then tried; but after all the experiments, Emmerton's into the bargain, I have never found anything answer so well for securing a continued healthy growth, and for the preservation of the plants, as the one manure,—cow-dung, got together and mixed up as I shall now recommend.

Take two-thirds cow-dung clear from straw or other littery stuff used as bedding for the cows. It will answer well enough if taken from the cow-shed at any time of the year, but if it can be got from the fields about the end of May or beginning of June, when the cows are feeding on grasses alone, the manure will be more suitable for the purpose. Previously to getting in the dung, be prepared with a sufficient quantity of the right sort of earth. Black peaty loam from the moors, such as may be got on the moors in Yorkshire and Lancashire, is far preferable to any other kind of loam, being more congenial to the nature and habit of the Auricula and of most other alpine plants. Along with this loam, if got from the localities just indicated, will be obtained a portion of white, gritty sand (not sufficient for the purpose, though a sufficiency may be got about the same places) which will be all the better if a little coarse. First mix a sufficient quantity of this sand with the black peaty loam, and run the mass through a fine sieve; then take, say, three barrowsful of clear cow-dung, and one barrowful of the mixed mould and sand, and incorporate, beating them up together in a similar way to that in which bricklayers or stonemasons beat their mortar for building purposes. After this, wheel the compost on to some open space in the garden or field, where it may have the benefit of exposure to all weathers—frost, sun, and air. When got into a heap in this way, allow it to lie for about six weeks, and at the end of that time chop it down, and give it a regular turn-over, repeating the chopping and turning every three weeks or so, until it is fit for use, which will be in about 15 or 18 months. Thus, if the ingredients are got together in May or June, as recommended, the compost will, by this frequent chopping and turning over, be quite fit for use by the following November twelve months; but as that is the wrong season for repotting the plants, it should be fetched in, put into tubs, and covered up till the spring dressing-up time—February, and repotting time—July.

A few days previously to making use of the compost, the quantity required should be taken from the tub, and run through a sieve not over fine, say ½-inch or ¾-inch mesh, as the plants thrive best in rather lumpy earth, and certainly do not like their roots and fibres choked up in fine close stuff. After sifting the earth in this way, spread it out in the open air for a day or two before using it, so as to clear it of mouldy matter (a very requisite precaution), at the same time keeping off the rain and wet, as it is best to have it rather dry, both for top-dressing and re-potting.

July is the month I most recommend for performing the operation of repotting. Those, therefore, who have the compost in readiness by about the second week in July, cannot do better than commence without delay. First of all, if the compost has been stowed away in a heap for any length of time, it should be spread out thinly for a day or so in the open air, where it can have the sun and air. It is necessary, however, to keep off rain or damp of any kind, for the drier the condition in which it is used the better. Should new pots have to be employed, they should be soaked in water for at least 24 hours before using; or if old ones, in which the plants have been growing, have to be again worked up, soak them also, and with a brush cleanse them thoroughly of all dirt and mouldy matter they may have about them. This thorough cleansing is very important. All those plants which have been in their pots and in the same mould for the whole year will be best taken out, and should have the old earth shaken entirely from the roots, and then with a sharp knife the fibrous roots should be shortened, so that they can be spread out in the pots without being cramped or bent when filling in the new compost. The main carrot root, too, if long, should be cut clean off to within an inch and a half of the top, leaving just a few fibrous roots sufficient to give the plant a start in its fresh earth. Young plants or offsets which were taken off and fresh potted in early spring, might do as well if just changed into larger pots, with part of the old ball of earth about them.

As the plants are potted, they should be placed in a shady situation, and the lights should be placed over them for ten or twelve days, at the end of which time they may be taken off. Should the weather at the time be moist or rainy, allow the plants the full benefit of such rain as may fall gently upon them, but carefully guard them against thunderstorms or very heavy showers. On the other hand, if the weather should be dry without appearance of rain, take a watering-can with a very fine rose, and give them just a gentle run over with soft water. Rain-water is the best, and should be used at about the temperature of the atmosphere at the time. At first give the plants only just a slight run over, to revive them, and to moisten the soil on the top of the pots; but repeat this gentle watering every evening after sunset for a week or so, by which time the mould will have got sufficiently saturated. After that the plants may be placed out in their summer quarters, the best situation being at the back of a north wall, where they can get a little morning and evening sun. In this position the plants will keep all right—allowing them now and then the benefit of a nice shower, but guarding against and keeping off heavy or long-continued soaking rains—till the middle of October, when they will require removing to their winter quarters, where, however, they must still be allowed to be open and exposed during all fine dry weather. After November sets in, the plants should be kept tolerably dry, by keeping off the rain entirely, and only just allowing them sufficient to keep them alive.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, JULY 15, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	FALL OF RAIN.
	Deg.	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	75.2	47.4	27.8	70.4	51.2	19.2	58.9	1.92
Blackheath ..	80.6	49.0	31.6	71.9	54.7	17.2	61.7	1.51
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	71.0	48.3	22.7	68.2	53.0	15.2	58.7	1.10
Wolverhampton	72.0	47.5	24.5	69.0	52.0	17.0	58.6	0.78
Leicester ..	77.2	46.0	31.2	72.6	52.5	20.1	60.7	1.11
Norwich ..	79.5	48.0	31.5	72.4	54.0	18.4	61.3	0.51
Nottingham ..	75.0	46.3	28.7	72.0	52.4	19.6	60.3	0.26
Sheffield ..	73.0	48.0	25.0	69.3	53.6	15.7	59.5	0.36
Liverpool ..	72.2	50.6	21.6	67.6	54.9	12.7	59.4	0.91
Manchester ..	73.0	47.0	26.0	68.8	52.8	16.0	58.9	0.58
Salford	71.9	45.9	26.0	68.3	50.8	17.5	57.6	0.60
Bradford ..	73.7	50.7	23.0	69.9	54.9	15.0	60.5	0.66
Leeds	72.0	50.0	22.0	68.0	54.3	13.7	59.2	0.83
Hull	75.0	47.0	28.0	71.6	53.6	18.0	60.7	0.32
Newcastle ..	69.0	54.0	15.0	67.0	56.3	10.7	59.8	0.33
Edinburgh ..	72.7	48.0	24.7	..	..	..	57.2	0.20
Glasgow ..	72.5	47.5	25.0	..	..	..	57.7	0.53
Dundee.. ..	72.0	49.0	23.0	..	..	..	58.0	0.25
Aberdeen ..	69.0	50.3	18.7	..	..	..	57.7	0.30
Paisley	70.0	48.5	21.5	..	..	..	56.6	0.00
Greenock ..	..	..	..	..	..	..	..	..
Leith	73.2	50.2	23.0	..	..	..	59.0	0.30
Perth	75.0	47.0	28.0	..	..	..	59.5	0.74
Dublin	74.9	45.5	29.4	..	..	..	58.0	0.31

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, JULY 19, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
July.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
13. Thurs. .	29.71	64.0	60.9	58.4	82	5.4
14. Friday .	29.84	64.3	62.9	61.8	92	6.1
15. Satur. .	29.89	71.1	62.7	56.0	60	5.0
16. Sunday.	29.99	71.3	66.1	61.9	72	6.1
17 Monday	29.97	65.2	63.5	62.1	90	6.2
18. Tues. .	29.92	70.9	61.2	53.4	55	4.6
19. Wednes	29.67	73.1	65.4	60.0	63	5.6

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
July.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
13. Thurs. .	71.7	54.3	17.4	62.0	— 0.3	S.S.W.	320	0.02
14. Friday .	74.2	61.9	12.3	65.5	+ 3.0	S.S.W.	300	0.00
15. Satur. ..	80.6	61.0	19.6	68.5	+ 6.0	S.W.	280	0.08
16. Sunday.	81.2	60.6	20.6	69.0	+ 6.6	WSW	210	0.00
17. Monday	82.6	58.7	23.9	68.8	+ 6.6	S.W.	180	0.00
18. Tues. ..	76.6	59.6	17.0	66.2	+ 4.3	N.: N.E.	170	0.00
19. Wednes	80.3	54.0	26.3	65.3	+ 3.7	S.E.: S.W.	230	0.00

July 13.—Overcast throughout. A little thin rain fell occasionally.
— 14.—Large amounts of cloud were generally prevalent. A little rain fell. Distant thunder heard at 9.30 A.M.
— 15.—Rain fell between 1 A.M. and 4 A.M Cloudless about 9 A.M., and again at night. Cloudy between those times.
— 16.—Generally cloudy. Hazy and misty, but fine.
— 17.—The amount of cloud gradually decreased as the day advanced. Fine throughout.
— 18.—Nearly cloudless till 3 P.M, afterwards variable.
— 19.—Cloudy till night, and a few drops of rain fell between 6 and 7.30. A.M. Generally cloudless after 9 P.M.

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THE *Victoria regia* will now be making rapid growth. Be particular at this juncture to keep the water within the tank as clean as possible, by means of a constant flow of pure fresh water. It does not matter much how small is the quantity, as the antidote to slimy formations consists in the fact that the water does not become absolutely stagnant. Sometimes when these unwholesome substances are permitted to form, they collect freely on the undersides of the leaves, and especially upon the younger ones. In an instance where the tank was of sufficient dimensions, I used to turn the more moderate-sized leaves upside down, and then removed all such particles as were attached. Some care, however, must be taken not to damage the leaves in any way, and the operator must look after his bare arms if the leaves have attained to anything like maturity, if he does not wish them lacerated by the sharp prickles to be found on their undersides. Let the surfaces of the latter be syringed occasionally, and thus assist the blooms to push by every possible means. These remarks apply in general terms to smaller *Aquariums*, whether these consist of tanks for *Nymphæas* or the more simple forms employed indoors. The more frequently the water is changed the better, and the oftener the sides of the glass, or slate, &c., are washed, the easier will all be kept clean and wholesome. Now that we have something like warm weather, it will be possible to dispense with fires in ordinary stoves for a short period. If, however, the weather suddenly turns cold again, the fire should be "lit up" daily, between 3 and 4 P.M., and be damped down finally by 5 o'clock, or after burning for about two hours. Be very particular not to cause too high a night temperature by artificial means, as few things are more injurious. Keep together the *Cape Pelargoniums*, which gradually come in from flowering, in a properly cindered corner, until a sufficient number are obtained to operate upon, in the matter of cutting back, &c., after the wood has been better ripened by exposure to the air and sun. Give to *Oranges* and *Citrons* a good mulching with thoroughly decomposed cow-dung and yellow loam, pressing it down firmly after first removing a fair portion of the old surface soil. Where the above were mulched earlier in the spring, as was then suggested, it will aid them materially to afford all thrifty growing specimens an occasional watering with rather strong liquid manure. By the term strong, I do not mean such crude stuff as is generally to be met with in farmyards and the like, but rather such as has been properly prepared in the usual manner. Use the liquid in a day or so after making it, and when it has become moderately clear.

FORCING HOUSES.

I fear in many instances, where the borders of old *Vineries* are out-of-doors, and have had to undergo the rigours of the past inclement period with its excessive rains, the roots will not now be in a very happy condition, consequently that most disheartening malady, shanking, will in all probability be somewhat prevalent. The only remedy is to follow the most rational course, as by these means we can meet its onslaught hand to hand, and contend with it somewhat successfully. By a rational course, I mean affording an abundance of fresh air both by day and by night. This we shall be better able to do if the fine weather continues. As I take it, shanking is but the effect of a want of health, a languid supply of nutriment, and, owing to a want of greater vigour, the non-capacity to turn the crude sap to a good account. I look upon the shanking of the fruit-stalk in precisely the same light as I view the ill effects of immatured wood. If the young wood of the current season's formation shows a blotchy state of ripening, is over succulent, and not possessed of that hardened yellow hue which gardeners so much admire, then the Grapes will not come to a proper state of maturity; and if even no shanking exhibit itself, bad colouring will ensue, the primary causes of the latter defect springing from a like foundation. Those who possess small vineries in which it is necessary to maintain a miscellaneous collection of plants should act freely on this suggestion, and by doing their utmost to insure the young wood upon the Vines being speedily ripened, insure the proper finishing-off of the fruit at the same time.

HARDY FLOWER GARDEN.

That good old favourite flower, the *Auricula*, which has certainly become much more popular amongst us of late, may now be fresh potted with much hope of finishing off a goodly summer's growth. Good rich, fibrous, yellow loam, which has been well exposed to the air, and which is now moderately dry, should be used in admixture with a moderate quantity of thoroughly decayed cow-dung, adding just sufficient sand to resist any too great binding tendency which the soil might possess. Following the possession of a properly prepared compost, clean pots are of the next importance. Do not make shift with pots simply wiped out, but thoroughly scrub and rinse them, so that the original porosity of each be assured as much as possible. In instances where new pots are employed, let them be well soaked in water for six or eight hours, and then moderately dry off any excess of moisture from their surfaces. When taking the old plants out of the pots they have been growing in, remove as much of the old soil as possible, and shorten with a sharp-edged knife all the longer roots, severing a piece off the main root also, if of undue length. In potting them judge nicely so as to have the collar of the plant moderately exposed. Too deep potting is one of the chief errors made through a want of practice. Lay each root out separately upon a bed of soil properly pressed into the pot, and then finish off by distributing the soil evenly and firmly amongst them. When potted place them into a moderately shaded cold frame for a week or so. Let the surface of the soil become just dry, and should rain follow, take the lights off and permit it freely to fall on to them. If no rain ensues at the proper time, give them a nice soaking with a fine-rosed watering-pot, and with soft water if procurable. When the surface soil again becomes moderately dry, just pass the fingers over it to freshen up the surface, following with the watering, and so continue to keep them uniformly moist. In about 12 or 14 days they may be placed out-of-doors in their permanent summer quarters. One point I find I have omitted to notice, *i. e.*, that thorough good drainage must be afforded. Let it be a moderate one in regard to the quantity of crocks used, but most efficient in connection with the free egress of all water which reaches the ball. Younger plants or offsets should also be potted on. These, however, simply need a shift, and it is not desirable to remove the soil from around the roots this time.

HARDY FRUIT GARDEN.

Persist in keeping the runners removed from all *Strawberry Plants* intended for another season's crop, if these are not wanted for forming further stock. *Figs* should have some of the grosser shoots thinned out, where these are too redundant and fruitless. *Outdoor Vines* should also be gone over, and tacked to the walls. It is very questionable whether these can carry any crops this season. The Vines need not, however, be neglected on that account. It is a commendable practice to pinch off the points of any very free-growing shoots upon red and white *Currants* at this season; and in instances where the many young shoots which form have not been previously thinned out, do so now, the better to ripen off the wood intended to bear the next season's fruit crop.

KITCHEN GARDEN.

Transplant summer *Cauliflowers* from seed-beds, to induce further growth, in preparation for planting them out upon ground which may shortly come in, following a crop of Potatos, &c. These will then afford a crop, it may be, for drawing and placing in a frame or so when the early frosts arrive. Persist in filling up every vacant space, as it occurs, with the various kinds of *Winter Greens*, *Broccoli*, &c. Give fresh plantations of *Celery* copious waterings, using during bright hot weather clear water only, unless of long continuance, when manure-water will become a desideratum. It should, however, only be applied as late in the day as possible, so that its burning tendencies may not be increased by the heat of the sun. Those who require *Sorrel* for use in the early autumn, should now cut a portion down, that young growth may be formed in readiness. Make a final sowing of *Dwarf Kidney Beans* on a sheltered sunny aspect. These may afford a supply at a very acceptable season. Transplant Little Pixie *Cabbages*, previously sown, for early winter use. The Rosette *Colewort* is an equally valuable variety. Make another large sowing of *Turnips* in instances where no dependence can be placed upon a field supply; which, owing to the large quantities required in most establishments during the long months of winter, should always be sought after. Thin out the Carrots sown last, and finish transplanting *Leeks* into prepared and well-manured shallow trenches. Cut away all Cabbages not required upon the main bed, and induce sprouts to form; this will afford a good permanent supply of greens away into the winter months. For the rest keep the hoe going freely amongst all crops, not alone for the purpose of destroying weeds, but also as an incentive of more rapid growth. Particularly hoe well amongst *Asparagus* beds at this time, and before the young growth has become so dense as that weeds are not readily destroyed should damp weather supervene, and they have been permitted to get too far ahead. *W. E.*

Notices to Correspondents.

BOILERS: *E. F.* According to all the principles of heating by hot-water pipes, you seem to have them well placed. Still you say that the return-pipe rarely heats. Is there no stoppage? Is the boiler properly set, and does the fire burn well? We think the error must be there somewhere. The boiler is quite large enough to heat all the piping. The flow-pipe should, if possible, always rise from the boiler to the extreme end, and the return-pipe to follow in the same line, entering the boiler at the bottom.—*W. B.* A saddle boiler of the second or third size, or the Cornish boiler, as modified by Mr. Stevens, if properly set, would do all you require. It is not economical to have too small a boiler.

BOOKS: *G. C. B.* You do not say whether you want a work on British Botany or what. Lindley's "Vegetable Kingdom," the "Treasury of Botany," Hooker's "Students' Flora (British)," will probably suit you.

CLIPPING BOX EDGING: *Alex. Boyle.* Box edgings should be clipped annually in the middle of June, in the first place, to economise labour, of which a considerable amount is required for this work in some places; and, secondly, because by permitting a part of the spring growth to be made before being cut back, the edgings so treated will "break" more densely, and yet afford time to make a neat growth before winter sets in. If you clip twice there is just the danger that many parts so cut back will remain bare and unsightly during the winter. Hence the suggestion referred to. If your position is sheltered, your edging vigorous, and you can fairly expect a further growth, clip it now without delay, but not otherwise. *W. E.*

FERNS: *R. A.* If a prize is offered for Ferns, these only being specified, you certainly cannot show Selaginellas, which belong to a totally different natural order. F.R.H.S. signifies a Fellow of the Royal Horticultural Society, and the initials may be used by all who are elected to that position. Apply to the Assistant-Secretary, South Kensington, for particulars.

FLOWER POTS: *S. R.* writes: "Please inform me whether the idea that plants grow best in porous pots is exploded or not?" Certainly not. "Will they flourish in zinc or cast-iron jars or pots? Or in glazed earthenware?" No. "Would not oil-paint on the pots exercise a deleterious influence on plants?" Yes.

FUCHSIAS: *W. H.* The specimen plant in question was undoubtedly grown from a cutting less than 12 months old. We suppose its resemblance to a pot of cuttings, 12 or 14 in the pot, is attributable for the style of training adopted.

Gardeners and the Trade: *Somerset.* We quite agree with you that no transaction of the kind should take place without the express permission of the employer. It is the tradesman who is most to blame here.

Gardeners' Aprons: *A Gardener.* Blue serge is the more commonly used material now, but the real thing is blue shalloon, a kind of worsted stuff, named from Châlons, in France, where it was first made. Gardeners of the old school would have repudiated the idea of using anything but the last-named article.

Grapes from one-year-old Vines: *W. W.* The fruit sent were in every way commendable; bunches of a good serviceable kind, berries large and well coloured, and thoroughly ripe. We submitted them for inspection to several of the foreign delegates to the Exhibition, who also expressed their admiration of the fine quality.

Indian Foeests: *R. M.* Apply to the Secretary, India Office, London.

Insects: *I. H. A.* Your Melon plants are infested with a species of Aphis. Fumigation, properly applied, will certainly destroy them. Washing the leaves over alternately with lime-water mixed with soft soap-suds and clear water, will also be efficacious. *I. O. W.*

Lawn Sand.—We have no experience of this, but it is well spoken of by several of our correspondents. It is to be had of Mr. W. D. Barbour, 3, Park Row, Leeds.

Mushrooms: *J. C. N.* If you will send a specimen, we will endeavour to name it for you. It is impossible to do so from your description.

Names of Plants: *Mansfield.* We cannot undertake to name plants without flowers.—*W. K.* We cannot name your succulent kind of plant from the scrap sent us.—*G. W.* Davallia elegans.—*H. M.* The plant sent is not Specularia hybrida but S. Speculum, the Venus' Looking-glass, which, if gathered wild, must be an escape from some garden.—*Rob.* Potentilla reptans.—*W. D.* The common Marjoram. — *Mr. Macilwain.* The grasses you have sent are Agrostis vulgaris, variety pumila, a denizen of poor dry soil, generally, and some Luzula, probably L. campestris.—*F. P. C.* Alcheinilla vulgaris.—*A Five Years' Subscriber.* 1, Diplacus glutinosus; 2, Metrosideros floribunda; 3, apparently Neja gracilis; 4, Cystopteris fragilis; 5, Polypodium Dryopteris.—*J. H. F.* No. 2 is Goniophlebium appendiculatum, certainly; the other next week.—*W. D.* 1, Nephrolepis tuberosa; 2, Cystomium Fortunei; 3, Asplenium flaccidum; 4, Cystomium caryotoides. Williams' Book on Fern Culture.

Nectarines: *H. F. J.* Your Nectarines are attacked with some peculiar disease, which shall be inquired into, meanwhile we would recommend you to destroy the tree altogether. The sort is at best but a poor one.

Pelargonium: *Bell & Thorpe.* The truss of your double-flowered variety, Miss Evelyn, is one of the finest we have seen, round as a cricket-ball, and quite densely filled out with full double flowers of a vivid carmine-rose.

Physosiphon: *G. W.* Physosiphon Loddigesii, a native of Mexico, is a curious small-growing, small-flowered Orchid, allied to Stelis and Pleurothallis. It should be grown on a block.

Removing Trees and Shrubs: *Old Subscriber.* No; unless by consent.

Veronicas: *Devonian.* Very pretty for home growth, but not so good as some of the Continental varieties. Several of the shrubby Veronicas are almost hardy, even in the climate of London; we are, therefore, by no means surprised to hear that they often survive in Devonshire.

Yellow Bedding Pansy: *Oldroyd & Son.* The specimens sent are good, both in form and colour, and must, on account of its neat habit, hardy constitution, and free flowering capabilities, be a desirable acquisition.

Errata.—At p. 907, col. *a*, five lines from the bottom, for "re-announced," read "renounced." Same page, col. *c*, four lines from bottom, for "Pear," read "Pea."

Communications Received.—M. W.—Fragaria.—H. P.—J. M.—P. P. C.—C. O'D.—M. M.—J. R. J.—A Gardener. A Perplexed One.—O.—M. W.—Ellemeet. P. H.—J. A. (too late for this week).

Markets.

COVENT GARDEN.—July 20.

The markets generally during the past week have been much more active, and a steady demand has ruled for most of the articles in general consumption. Bush fruit is now at its best. Strawberries still hold out good. Hot-house and West Indian Pines are also very plentiful and good; prices low. The Potato market is thoroughly glutted, inferior samples being the rule.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve ..		to 3 0	Oranges, per 100 ..	6 0	to 10 0
Grapes, per lb. ..	2 6	— 6 0	Peaches, per doz. ..	8 0	—20 0
Lemons, per 100 ..	6 0	—10 0	Pine-apples, per lb.	2 6	— 5 0
Nectarines, per doz.	6 0	—12 0	Strawberries, p. lb.	0 6	— 1 6

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d*
Asparagus, p. bundle	4 0	— 6 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz. ..	2 0	— 3 0	Lettuces, per score ..	0 9	— 1 6
Cabbages, p. doz. ..	1 3	— 1 9	— FrenchCos, each	0 9	— ..
Carrots, p. bunch ..	0 8	— 1 0	Mushrooms, p. pott.	2 0	— 3 0
— French, per bundle	1 0	— 1 6	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	0 4	— 0 6
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, round, per bunch	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Rhubarb, p. bundle	0 3	— 0 6
French Beans, p. lb.	1 0	— 1 6	Shallots, per lb. ..	0 8	— ..
Gooseberries, per quart	0 4	— 0 6	Spinach, perbushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch ..	0 4	— 0 9

Potatos, New Round, 6*s.* to 10*s.*; Kidneys, 8*s.* to 10*s.* per cwt.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO., who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

Water Your Gardens.

CANVAS TUBING for the above purpose more durable than India-rubber, and bearing very much greater pressure, at a third the price. Can be seen at, or particulars with prices, &c., will be sent by post on application to
BUTLER, M'CULLOCH, AND CO., 27, South Row, Coven Garden Market, London, W.C.

THE ACME GARDEN FRAME and GROUND VINERY.
The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.
The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

For Horse Rakes,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

TANNED GARDEN NETTING, for Preserving Seed Beds, Fruit, Strawberries, from Frost, Blight, Birds, &c., and as a Fence for Fowls, &c.—One yard wide, 1*d.*; two yards, 2*d.*; three yards, 3*d.*; and four yards, 4*d.* per yard run, in any quantity.
May be had of CHARLES WRIGHT AND CO., 30, Cartergate, Newark-on-Trent. To be had only at the above address. No Agents.

One Penny per Square Yard.

TANNED GARDEN NETTING, for Garden purposes, such as Protecting Fruit from Birds, Blossom from light Frosts, &c. Widths, 1, 2, 3, and 4 yards. The Trade also supplied.
HOOPER AND CO., Covent Garden, London, W.C.

NEW TWINE NETTING, 2 yards wide, 4*d.* per yard; ¾ mesh, 2 yards wide, 8*d.* per yard. HEXAGON NETTING, 76 mesh to square inch, 4½*d.* per square yard. Repaired TANNED NETTING, 1½*d* per yard, 2 yards wide RABBIT NETS, FISHING NETS, BIRD NETS. See List, post free.
W. CULLINGFORD, Forest Gate, London, E.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING for Protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards, 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards, 20*s.* NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¾-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard. Also TIFFANY. Can be had in any quantity of
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge, E.C.

WANTED, a HEAD GARDENER, to take the Management of a large Garden, with Vineries, Forcing-houses, &c. Also a SECOND GARDENER.—Apply, by letter, to M. M., Frederick May's Advertising Offices, 160, Piccadilly, W.

WANTED, a FOREMAN GARDENER.—Must be married, without family; and his Wife be able to do Plain Cooking, and undertake charge of the Laundry. Good wages given.—JAMES DICKSON AND SONS, "Newton" Nursery, Chester.

WANTED IMMEDIATELY, a practical NURSERY FOREMAN.—One that thoroughly understands Shrubs, Fruit Trees and general Nursery Stock.—Apply by letter, stating reference and wages required, to J. SALTMARSH AND SON, The Nurseries, Chelmsford, Essex.

WANTED, a Practical WORKING FOREMAN (Single), where Vines are grown extensively both in Borders and in Pots for Sale; must have a thorough knowledge of Forcing, Thinning Grapes, and Stopping the Shoots of Vines: also must understand, and have had considerable experience of, the Value and Sale of Plants, as well as being a thorough good Propagator of Roses, Camellias, Azaleas, Heaths, and particularly choice Stove and general Plant Stock for Sale to the Trade. To live on the premises.—Address in own handwriting, stating wages required and references, to J. MEREDITH, The Vineyard, Garston, near Liverpool.

WANTED, a MAN, to grow Pelargoniums and Cucumbers, for market. Wages, 25*s.* per week. Character as to ability, &c. required.—Mr. CHILDS, Florist, 65, Rye Lane, Peckham, Surrey, S.E.

WANTED, a PROPAGATOR.—Mr. CARTER, Nurseryman, Keighley, Yorkshire, is in want of a steady experienced Man, as above, principally indoors No Stove Plants. Wages, 25*s.* Mr. C hopes none but sober competent men will apply.

WANTED, a PROPAGATOR of HARDY PLANTS.—Messrs. F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester, require in the above capacity, an active industrious Working Propagator, well-experienced in Propagation of Conifers, Rhododendrons, Hollies, Ivies, Clematis, and other Hardy Ornamental Plants, by the most improved methods.—Apply, as above, stating age, situations previously held, time in each, references, and wages expected.

WANTED, an experienced PACKER.—One who can Bud, Graft, and Train Fruit Trees would be preferred, and who is willing to make himself generally useful.—Apply, with references, to THOMAS HAMILTON AND SONS, The Nurseries, Botcherby, Carlisle.

WANTED, a CARPENTER, by a Gentleman in the Country.—Must know something about Masonry and Painting. To be employed on the House and Grounds.—Address, HANDY-MAN, Hayward, Bookseller, Bristol.

WANT PLACES.—Letters to be Post Paid.

Gardeners.

B. S. WILLIAMS has much pleasure in stating that he has upon his GARDENERS' REGISTER many Men of the strictest integrity, thoroughly qualified to undertake the duties of HEAD GARDENER, GARDENER and BAILIFF, or UNDER GARDENER. Ladies or Gentlemen requiring such may rely upon B. S. W. recommending only those whose conduct and abilities are worthy of their trust.
Victoria and Paradise Nurseries, Upper Holloway, London, N.W.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Age 38; well understands the profession in all its branches. Good character. Wife a good Laundress, if required.—A. B., Stoner Wood, Strep, Petersfield.

GARDENER (HEAD).—Has a thorough practical knowledge of the profession in all its branches. Four years good character from present employer.—W. G., Post Office, Reading Berks.

GARDENER (HEAD).—Age 36, married, no family; thoroughly practical in all branches of the profession, capable of making Improvements or Relaying Out. Excellent references from present employer.—A. B., Post Office, Ramsbury, Wilts.

GARDENER (HEAD).—Age 34, married, without family; thoroughly experienced and practical Man. Eight years with a Nobleman. Will not treat for a single-handed place.—Reference to Rev. C. B. REID, Hanworth House, Hounslow.

GARDENER (HEAD).—Age 25, single; well up in the various branches of Gardening. Five and a-half years' unexceptionable character from present employer.—T. C., Park Gate, Wanstead, Essex, N.E.

GARDENER (HEAD).—Age 35, married; now leaving one of the principal places in Ireland, owing to death of his employer. Testimonials of the highest class.—A. B., Mr. R. B. Matthews, Seed Merchant, Belfast.

GARDENER (HEAD).—Age 35, married; thoroughly experienced in Early and Late Forcing, Fruit, Flower, and Kitchen Gardening. Character unexceptionable.—D. THOMSON, 18, Pomona Place, King's Road, Fulham, London, S.W.

GARDENER (HEAD).—Age 30, married, without incumbrance; understands all the duties. Good recommendations from present and past situations.—T. MASLEN, The Gardens, Marwell Hall, near Winchester, Hants.

GARDENER (HEAD).—Age 30, married, no family; thoroughly understands the profession in all branches; good Plant Grower, and a practical Man in the Kitchen Garden; also good Fruit Grower. Good reference.—A. Z., Post Office, Leatherhead, Surrey.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a Man thoroughly practical in all the various branches of Gardening.—Married. No objection to Land or Stock. Seven years' personal character; good references.—S. E. S., 4, Park Terrace, Upper Richmond Road, Putney, S.W.

GARDENER (HEAD), Age 32, married; has had 14 years' experience in first-class gardens, and thoroughly understands early Forcing, Pines and Vines, Stove and Greenhouse Plants, and Kitchen and Flower Gardening. Character will bear the strictest investigation.—19, Hill Street, Leamington.

GARDENER (HEAD), age 30.—CHARLES BUTTERS, for six years Head Gardener to the Duchess Dowager of Cleveland, at Downham Hall (whom he has left because of the Sale of the Estate), is at liberty to engage with any Nobleman or Gentleman in want of a thorough practical Gardener. Excellent references from late employer.—CHARLES BUTTERS, White Hart Street, Thetford.

GARDENER (HEAD).—Married, without family; thoroughly understands the Management of Pines, Vines, Peaches, Stove and Greenhouse Plants, also Flower and Kitchen Gardening. Wife can fulfil the duties of Housekeeper, or live in a cottage. Both can have good recommendations.—G. MACKAY, Oakwood Cottage, near Westbromwich.

GARDENER (HEAD).—Age 41, married, no children thoroughly understands the profession in all its branches, including Early and Late Forcing, Vines, Melons, Cucumbers, &c. Can refer any Nobleman or Gentleman requiring a thoroughly practical Man, to the Gentleman with whom he has lived as Head Gardener for 11 years, for his character.—B. B., 9, Commercial Street, Lower Road, Rotherhithe, Surrey, S.E.

GARDENER (HEAD).—The Advertiser, a young Man, possessed of a good education, wishes for an engagement in the above capacity. He has had a thorough experience in first-class establishments in the Culture of Grapes, Pines, Peaches, Melons, Cucumbers, &c.; is well versed in the Nomenclature and Culture of Stove and Greenhouse Plants; in the Management of the Flower Garden for early Spring, Summer, and Autumn effects; and in Dinner-table Decorations and other Indoor Floral Displays. Unexceptionable references as to character and ability can be produced.—ALPHA, Ashburnham Park Nursery, King's Road, Chelsea, S.W.

GARDENER (HEAD, WORKING).—Age 28, married; thoroughly well up in all branches of the profession. Three and a half years' good character.—64, Bouverie Street, Northampton.

GARDENER (HEAD, WORKING).—Age 32, married, no family; has a thorough practical knowledge of the profession; a good grower of Melons, Cucumbers, Vines, &c. Wife could do Laundry work if required.—J. C., Park Street, St. Alban's.

GARDENER (HEAD, WORKING).—Age 40, married; thoroughly practical in all branches of Horticulture. Can be highly recommended. No single-handed place accepted.—A. B., Mr. Wood, Tooting, London, S.

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GARDENER, or GARDENER and BAILIFF.—Married, one child; has had excellent experience and has high recommendations.—All particulars on application to A. R. M., "Newton" Nurseries, Chester.

GARDENER AND BAILIFF.—A Lady wishes to recommend a married couple (ages 40, no children) for employment—Man as above, Wife to take charge of Dairy and Poultry. Very respectable and active. Four years' character; five years previous.—W. S., Post Office, Penshurst, Tonbridge.

GARDENER, in a good single-handed place.—A young Man, married, one child. Three years' character.—JAMES SAUNDERS, Hanworth Road, Sunbury, Middlesex.

GARDENER (SINGLE-HANDED, or SECOND in a Nobleman's or Gentleman's family).—Good references.—G. H., 7, Arthur Street, Well Street, Hackney, E.

GARDENER, where two or more are kept.—Age 41, married, one child; thoroughly understands the profession. Seven and a half years' good character.—W. W., Mr. Bracketts, Stationer, Station Road, Red Hill.

GARDENER and GROOM, in the country.—Age 26, married. Recommended by a Gentleman, in whose service he has been for several years.—Mr. LOVELL, 86, St. Paul's Road, N.W.

GROWER, or FOREMAN and GROWER, where Plants are grown for the London markets. Good character.—C. GAY, 2, Percy Terrace, King's Road, Mortlake, S.W.

ASSISTANT.—A Young MAN; has had six years' experience in the Seed Trade; is an active Counter Hand.—A. B., Post Office, Perth.

To the Seed Trade.

MANAGER or SHOPMAN.—Fifteen years' experience in England and Scotland. The Advertiser seeks a re-engagement.—O. K., Post Office, Kilmarnock, N.B.

CLERK, or BOOK-KEEPER, or ASSISTANT CLERK.—Age 23; has a very fair knowledge of the Nursery and Seed Business; can be highly recommended.—WILLIAM WOOD AND SON, Nurseries, Maresfield, near Uckfield, Sussex.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 32, King William Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER. Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need therefore hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully.

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—

PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
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MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

FRETTINGHAM'S LIQUID COMPOUND, for the DESTRUCTION of INSECTS of all kinds, and MILDEW INFESTING PLANTS, has been proved to be the most effectual application for destroying Aphis of all kinds, Thrip, Mealy Bug, American Blight, Green and Brown Fly, Red Spider, Wasps, Ants, &c., hitherto offered to the Public. It will be found invaluable for Vines, Peaches, and Fruit Trees of all kinds, as in most cases one dressing will keep off the ravages of Insects for a whole season.

The Liquid Compound will not injure the most tender foliage of Stove or Greenhouse plants; and, if mixed occasionally vith the water ordinarily used for syringing, will, if applied before the appearance of insects, prove a certain preventive. Broccoli and other Greens may be thoroughly cleansed from insects and filth of all kinds by sponging, or using the Liquid Compound by means of the "Horticultural Vaporiser."

We select two voluntary Testimonials from a great number we have recently received :—

"Elvaston Nurseries, Borrowash, June 28, 1871.

"DEAR SIR,—We beg to bear testimony to the efficacy of your Liquid Compound, which we have used in our Nursery, both out-of-doors and under glass, with perfect success. We consider it the best preparation we have tried. It thoroughly clears the plant without injuring the foliage.—We remain, dear Sir, yours faithfully,

"Mr H. C. Frettingham. "WILLIAM BARRON & SON."

"Upton Nurseries, Chester, July 11, 1871.

"DEAR SIR,—We have very carefully tested your Liquid Compound for destroying insect life. We have tried it upon most of the pests which prey upon vegetable life, and find it very effective in cleansing all kinds of plants from scale, mealy bug, aphides, thrip, red spider—in fact all kinds of insect life seem to succumb to its power most effectually and rapidly, and that without injuring the tenderest foliage, as far as we can observe. We consider the Compound most valuable to all growers of plants.

"FRANCIS & ARTHUR DICKSON & SONS."

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R. G. Backstone, Esq., The Ash Hall.
Mr. G. Westland, Gr. to Earl Dudley, Witley Court.
Mr. Wm. Jackson, Gr. to Lord Scarsdale, Kedleston Hall.
Mr. H. Gadd, Gr. to Lord Middleton, Wollaton Hall.
Mr. Speed, Gr. to the Duke of Devonshire, Chatsworth.
Mr. Wm. Parker, Gr. to the Misses Strutt, Derwent Bank, Derby.
Mr. F. Harrison, Gr. to F. Wright, Esq., Osmaston Manor, Ashbourn.
Mr. W. S. Milford, Gr. to T. W. Evans, Esq., M.P., Allestree Hall.
W. P. Ayres, C.M.R.H.S., Consulting Landscape Gardener, Nottingham.
Mr. W. Thompson, Gr. to Sir Seymour Blane, Bart.
Thos. Crump, Esq., Quarndon, near Derby.
Fitzherbert Wright, Esq., The Hayes, Swanwick.
Mr. James Tegg, Clumber Gardens, Worksop.
Messrs. G & W. Yates, Market Place, Manchester.
Mr. H. Ellis, The Gardens, Alfreton Park.
Messrs. Cole & Son, Manchester.
Manufacturers, PARR AND ATHERTON, Long Row, Nottingham.

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

WANTED to PURCHASE, in one of the fashionable suburbs of London, or in the neighbourhood of a large Town, a SMALL SEED and FLORIST BUSINESS, or the LEASE of a DWELLING-HOUSE and PIECE of LAND, suitable for establishing the same.—Apply, stating terms and full particulars, to

D. C. J., Post Office, Newbury, Berks.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

In one of the finest and largest Towns of Germany.

TO BE SOLD, on account of the illness of the Proprietor, a very extensive HORTICULTURAL ESTABLISHMENT. It consists of a fine comfortable Mansion, good Stables and Coach-house, standing in a very tastefully laid-out Garden, whilst other parts of the ground are reserved for Horticultural purposes. There are several fine and extensive Houses for the Culture of Orchids, and Stove and Greenhouse Plants. A splendid Palm-house has been built quite recently, and a new Heating Apparatus of the most perfect system, laid in all Houses, has just been finished. The whole would be well adapted for an Amateur, as well as in the future for a Nursery, more so as the name of the present Proprietor enjoys a just reputation, and the Business is carried on in the highest style of the profession.

For further particulars address (prepaid) F. G., *Gardeners' Chronicle* Office, W.C.

TO BE SOLD, by Tender, pursuant to an Order of the High Court of Chancery, made in a cause of Meldrum *v.* Hayes, with the approbation of the Vice-Chancellor Bacon, at the Office of Mr. John Bolton, of Kendal, in the County of Westmoreland, Solicitor, on TUESDAY, the 25th day of July, 1871, at 3 o'Clock in the afternoon precisely (unless previously disposed of by Private Contract), the GOODWILL and STOCK in TRADE of the BUSINESS of NURSERYMAN and SEEDSMAN of the late JAMES MELDRUM deceased, now carried on by his Executors, at the Nurseries, at Castle Street, Mints Feet, Canal Head and Skewbarrow Garden, at Kendal aforesaid, and at the Shop and Premises situate in the Market Place, Kendal. The said Nurseries consist of about 14a. or. op., of Land laid out as Gardens and well stocked.

Particulars of the Stock, and particulars and conditions of Sale and Forms of Tender may be had gratis of the said Mr. JOHN BOLTON, of Kendal, aforesaid, and of Mr. JOHN WILSON, Solicitor, Kendal.

Dated this 23d day of June, 1871.

JOSHUA BIRD ALLEN, Chief Clerk.
NICOL & SON, 88, Queen Street, Cheapside, London,
Plaintiff's Solicitors.

SALES BY AUCTION.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, July 31, at half-past 12 o'Clock precisely, the following recently imported ORCHIDS, which are all in good condition :—Barkeria spectabilis and Skinneri, splendid masses; Oncidium ornithorhynchum and Wentworthianum, Odontoglossum grande and pulchellum, Lycaste Skinneri, and Oncidium Krameri. Also a few plants of a fine-looking Aerides, and some good pieces of Aerides Warneri and other good kinds.

On view the morning of Sale, and Catalogues had.

In Bankruptcy.

TO BE SOLD, by PUBLIC AUCTION, at the Establishment of M. Emile Vincke-Haybreese, Nurseryman, of Scheepsdale-lez-Bruges, Belgium, on MONDAY, August 7, and following days, at 10 o'Clock, under the direction of M. Philippe de Groot, Nurseryman, Steenbrugge, and of the Clerk of the Registrar of the Tribunal of Commerce, Bruges, a large quantity of ORNAMENTAL and other PLANTS, consisting of about 32,000 Palms, 4000 Dracænas, 100 Cycas revoluta, 22,000 Camellias (single), 5000 Camellias (double), 5000 Laurels, 3000 Laurustinus, 12 Phormium tenax (variegated), 300 Araucaria excelsa in varieties; a fine collection of Agaves, Bonaparteas, Pandanads, Yuccas, hardy Conifers, &c. Conditions—cash payment.

Catalogues may be had on application to M. DE GROOT, Nurseryman, Steenbrugge, or from the Office of the Tribunal of Commerce, Bruges.

Shropshire Sheep.

The TWELFTH GREAT CENTRAL SALE at BINGLEY HALL, BIRMINGHAM.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, on THURSDAY, July 27, at 11 o'Clock punctually, 150 PURE-BRED SHROPSHIRE RAMS, and 400 EWES, from the noted Flocks of

The Most Noble the Marquis of Exeter,
The Right Hon. Lord Willoughby de Broke,

Mrs. Beach,
Isaac Downing, Esq.,
James Dugdale, Esq.,
Mr. J. H. Lees,
W. Lort, Esq.,
Mr. Lythall,
Mr. Nock,
Mr. Wm. Picken,
Mr. S. C. Pilgrim,
H. J. Sheldon, Esq.,
John Stubbs, Esq.,
Mr. Tolefree,
Thomas Walker, Esq.,
Z. Walker, Esq.,
Mr. Yates,
And others.

The above will include Prize Rams and Ewes at the R. A. S. at Wolverhampton and other important Shows

Auctioneers' Offices, 39, New Street, Birmingham.

Model Farm, Upper Winchendon, Bucks,

Seven miles each from Aylesbury, on the London and North-Western Railway, and Thame on the Great Western, and four miles from the Quainton Road Station on the Aylesbury and Buckingham Line, at all of which Stations Conveyances will be ready to meet the Morning Trains, returning in time for the Evening Trains.

MR. JOHN TREADWELL has fixed his ANNUAL SALE of about SIXTY OXFORDSHIRE SHEARLING RAMS, and a few OLDER SHEEP, for WEDNESDAY, August 2, at half-past 2, prompt (Luncheon at 12 o'Clock), when he hopes to be favoured with the Company of his Friends. The Sheep this year have all been bare shorn, are very big, and full of Wool, although darker in colour than usual.

N.B.—This Flock has obtained during the past four years Forty-nine First and Seventeen Second Prizes, including last year First for Ewes at Oxford, Birmingham, and London; and this year First for Shearling Rams at the Royal Agricultural Society's Meeting at Wolverhampton, and at the Bath and West of England Show at Guildford. They may be seen previously

J. A. MUMFORD, AUCTIONEER, Chilton Park, Thame, Oxon.

Important Shorthorn Sales.

MR. JOHN THORNTON will SELL by AUCTION the following HERDS of PURE-BRED SHORTHORNS, several of which are of a very first-class character :—

THURSDAY, August 3, the second day of the Yorkshire Show, at BOOTHAM, Stray, York, about FORTY HEAD, from the Rev. J. D. Jefferson's herd.
WEDNESDAY, August 23.—The celebrated and first-class HERD bred by the late Thos. Barnes, Esq., at WESTLAND, Kells, Co. Meath, Ireland. The small select HERD, the property of R. W. Reynell, Esq., will be SOLD at the same time and place.
FRIDAY, August 25.—The entire and first-class HERD bred by J. G. Grove, Esq., at CASTLE GROVE, Letterkenny, Ireland.
TUESDAY, September 12.—At BROCKTON HOUSE, Eccleshall, Staffordshire, Mr. T. Bell's entire HERD.
THURSDAY, September 14.—Messrs. Dudding's entire HERD, at PANTON HOUSE, Wragby, Lincolnshire, of about 100 head.
TUESDAY, September 19.—The late Sir John Rolt's entire HERD, FLOCK of COTSWOLD SHEEP, HORSES, &c., at OZLEWORTH PARK, Wootton-under-Edge, Gloucestershire.
FRIDAY, September 22.—The first-class herd at CHAPEL BRAMPTON, Northampton, the property of J. N. Beasley, Esq.
TUESDAY, September 26.—About FORTY HEAD, belonging to Mr. Ashburner, at NETHERHOUSES, Ulverstone.
The entire HERD, bred by the late Mr. Elias Clarke, at LILLINGSTONE DAYRELL, Buckingham, consisting almost entirely of the Seraphina blood, will be SOLD during the Autumn.

JOHN THORNTON, 15, Langham Place, Regent Street, W.—July 1.

Biddenham Annual Sale.

MR. STRAFFORD is instructed by Mr. Charles Howard, of Biddenham, near Bedford, to announce that the ANNUAL SALE by AUCTION will take place on FRIDAY, July 28, and will consist of about FIFTY OXFORDSHIRE DOWN SHEARLING RAMS and a few OLDER SHEEP; also Two young well-bred SHORTHORN BULLS.

Luncheon at 1 o'Clock; the Sale immediately afterwards.

Biddenham is within a mile of the Midland Station at Bedford, where Conveyances will meet the Trains.

Farnley Hall, near Otley.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions from the Executors of the late Francis Hawkesworth Fawkes, Esq., to announce that the SALE of the entire and far-famed FARNLEY HERD of PURE-BRED SHORTHORNS will take place on TUESDAY, August 1 next, being the day previous to the Yorkshire Agricultural Society's Meeting at York, and will consist of about 36 Head of Bulls, Cows, and Heifers, that have been long and carefully bred, and maintained a high position at the various Meetings of the Royal Agricultural Society of England, and the Yorkshire County Shows.

Catalogues, with Pedigrees, may be had on application to Mr. SCOTT, Farnley Hall, near Otley, Yorkshire; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Duncombe Park, Yorkshire.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD is honoured with instructions to announce for SALE by AUCTION, without reserve, at Duncombe Park, Helmsley, on THURSDAY, August 10, next, some very superior SHORTHORN BULLS, and a choice selection of COWS and HEIFERS, the property of the Right Hon. the Earl of Feversham, which have been long and carefully bred from the best and most fashionable sorts. Bulls of distinguished character have been used, principally of the Kirklevington blood.

Catalogues, with Pedigrees, will shortly be issued, and further particulars given in future Advertisements.

Brailes House, Shipston-on-Stour.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to announce that he has received instructions from Henry J. Sheldon, Esq., of Brailes House, Warwickshire, to fix the FOURTH BIENNIAL SALE of PURE-BRED SHORTHORNS for WEDNESDAY, September 20, which will consist of about 45 Bulls, Cows, and Heifers, chiefly of Kirklevington and Fawsley blood. The Sire now in service is the 18th Duke of Oxford (25,995), bred at Holker from this justly renowned tribe of Shorthorns.

Catalogues, with Pedigrees and other particulars, will be issued in due time, and announced in future Advertisements.

London: 13, Euston Square, N.W.—July 18.

HIGHLAND and AGRICULTURAL SOCIETY of SCOTLAND.—PERTH SHOW, 1871.

WEDNESDAY, July 26.—Showyard open at 9 A.M.—Members and Exhibitors of Stock admitted during the Judging at 5*s.*; Non-Members, 10*s.* After 2 P.M. Members and Exhibitors free; Non-Members, 2*s.* 6*d.* Horse Parade at 4 P.M.—Admission to Gallery, 1*s.* President's Dinner in County Hall at 6.45.—Tickets, 10*s.*; application for which to be made to the SECRETARY before July 26, or Mr. RICHARDSON, 1, George Street, Perth.
THURSDAY, July 27.—Showyard open at 8 A.M.—Admission, 2*s.* 6*d.* till 2 P.M.; after 2, 1*s.*; Members and Exhibitors, free. Horse Parade at 1 and 4 P.M.—Admission to Gallery, 1*s.* Ball in the County Hall—Application for Tickets (Gentlemen, 15*s.*; Ladies, 10*s.*), to be made to Mr. RICHARDSON, 1, George Street, Perth.
FRIDAY, July 28.—Showyard open from 8 A.M. till 5 P.M.—Admission 1*s.* till 12 noon; after 12, 6*d.*; Members and Exhibitors, free. Horse Parade at 12 and 3 P.M.—Admission to Gallery, 1*s.*

F. N. MENZIES, Secretary.
3, George IV. Bridge, Edinburgh.

BIRMINGHAM HORSE SHOW, 1871.—The SIXTH GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, &c., will be held in Bingley Hall, Birmingham, on TUESDAY, WEDNESDAY, THURSDAY, and FRIDAY, August 15, 16, 17, and 18.

ENTRIES CLOSE on SATURDAY, July 29.

For PRIZE LISTS and all other particulars, apply to the Secretary, 39, New Street, Birmingham. J. B. LYTHALL, Secretary.

MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY.—Prize Lists for the Show at Liverpool in SEPTEMBER NEXT may be had on application to the Secretary. Upwards of THREE THOUSAND POUNDS are offered in PRIZES, including £100 for the best Hunter, £80 for the best Short-horned Bull, upwards of £220 for Dogs, £250 for Poultry, upwards of £225 for Pigs, and £300 for Sheep. ENTRIES CLOSE AUGUST 1.

Winsford, Cheshire. THOMAS RIGBY, Secretary.

The Agricultural Gazette.

SATURDAY, JULY 22, 1871.

MEETINGS FOR THE ENSUING WEEK.

July 26 to July 28	Annual Meeting of the Highland and Agricultural Society, at Perth.
July 26 — 27	Annual Meeting of the Royal North Lancashire Agricultural Society, at Blackburn.

WE have received some samples of injured Wheat from Lincolnshire, and as a field on our own farm threatens a loss of as much as 10 per cent. of the crop from a similar injury, we direct attention to the matter, in the hope that our friends may furnish us with their experience upon so important a subject. The following was the letter by which the specimens of Wheat from Lincolnshire were accompanied :—

> "My object in sending you a few roots of diseased Wheat, which I have now growing, is to ascertain whether the injury was done by horse-hoeing, or by an insect or worm at the root. I have a field of 37 acres, and a portion of the crop is broken down, in the rows, and, although it breaks off at the root, when pulled, it is now growing up again. The previous crop was Flax, afterwards steam-cultivated, and then well manured. The land it grows upon was reclaimed from the sea upwards of 50 years ago; it grows good Flax, but the Wheat crop afterwards is not nearly so good as when following Clover, Peas, Beans, &c."

Our own affected crop, of 12 acres, was sown upon a clover-lea, and we distinctly call to mind a crop of 32 acres in 1864 upon clover-lea that was similarly affected, for then, as now, we recollect that at first sight so much Wheat appeared to be scrawled on the ground as to lead to the belief that sheep had found their way into the crop and trodden it down.

This was the appearance of our 12-acre field on July 3, and what made our first thought seem the more reasonable was, that sheep were hurdled on an adjoining plot of Italian Rye-grass. Moreover, the fallen ears, all in full flower, presented a green appearance, as though the falling, from whatever cause, had taken place suddenly. The truth is, the Wheat had suffered from the recent heavy rains and high gales; but we ascertained before quitting the field that another cause had rendered much corn too weak to stand against the weather, so that, as before stated, about one-tenth was spread upon the ground in all directions.

On taking up some of the scrawled specimens we found them to break off in the hand, which induced us the more carefully to lift the roots out of the soil, when we soon discovered what will be best explained by the accompanying illustration (fig. 205). This represents the appearances observed in our own crop, but we failed to find any insect specimens in the examples received from our correspondent. The partially eaten stems, however, and the whole appearance of the sample, point to insects as the cause of the mischief to his Wheat as to our own.

In both cases we observe the effects of an effort of Nature to repair the mischief done by voracious larvæ, the early attack of which, it would appear, was between the two lower nodes of the stem; and while these creatures were severing the straw, new roots were not unfrequently sent out from the upper node, and it was by means of these that the injured straws were kept in position until the ears began to get heavy, and then the wind and rain soon sent them to the ground.

From many of the straws being thus half cut through (see *a*, fig. 205), our correspondent was impressed with the notion that the injury was done by the hoe. In our own case the crop had been hoed, but, even if carelessly done, this operation could not have made mischief in the regular manner we have witnessed.

The Wheat had fallen before any injury had been detected; and this will account for our not having seen the insect in the larva state; but the pupæ are of a rich brown colour, and in some cases as many as five of these have been observed together, wrapped close to the stem by the leaf-sheath.

We have collected some of these, in order to make out the fly—for we doubt not it is a two-winged fly—by which the injury to our crop has been brought about. It seems, too, to be highly probable that it is some member of the genus Chlorops, but the nature of the creature itself, and other effects of its life and labours upon the Wheat crop in our own and other fields, we hope soon to determine, as we have no doubt further information will arrive upon this interesting matter, and we shall then have the pleasure of reviewing the subject.

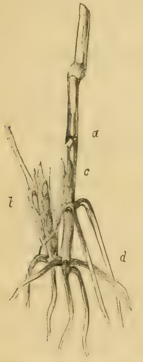

Fig. 205.—A root of injured wheat.

a, Stem, nearly eaten through by the larva of a fly; *b*, Pupæ of fly attached to a portion of the straw, the sheath of the leaf thrown back to expose them; *c*, An indentation from whence a pupa has been removed; *d*, Roots of Wheat.

—— Wheat fell 1*s.* to 2*s.* per qr. at Mark Lane on Monday, and could obtain a sale on Wednesday only at Monday's lowest rates.——In the Metropolitan Cattle Market on Monday trade was dull; on Thursday, however, it was brisk, with an upward tendency in price for everything.——Wool is advancing in price.——Hops are dear, the accounts from the plantations being still very unfavourable.

—— After a week of unwonted summer sun one is the more willing to give circulation to the impressions of an optimist and enthusiast on the current Food Produce of the Country. The following is Mr. Mechi's last letter on this subject, written on July 16:—

"Another week of heavy rains caused alarm, but an unprejudiced examination of my own and other crops has convinced me that the rains have done quite as much good as harm, especially on well-drained and highly-farmed lands, on which there is a promise of abundance, provided that we get seasonable weather. The change of colour in the cereals indicates that rapid ripening which frequently follows abundant summer rainfalls. Potatos and all roots and vegetables promise to be large crops, and although I have heard of Potato disease, we have none at present in our immediate neighbourhood. Barley, Peas, and Beans are all over average. Oats have been greatly improved by the late rain. There are fine crops of Wheat on well-drained and well-farmed lands, but there are a great many instances of thin plant on ordinary soils, and opinions vary between average and near average. I am sorry to see cases of root-falling, which always diminishes the crop. Hay-getting has been anxious, tedious, and expensive; a few fine dry days are sadly wanted. Those who persist in thick sowing with high farming have their Barleys sadly laid. I am confirmed in the opinion I recently expressed in your columns, that, including meat, butter, cheese, milk, and vegetables, there is much more food for the people than there was last year."

So far to the *Times.* We have since received the following note to ourselves:—"I am sorry to find some of the Wheat root-fallen. So far as I can judge, and also gather opinions, Beans, Peas, and Barley are likely to be over average. Wheat average, or somewhat less. Oats much improved. Potatos, roots, green crops, and grass over full average. There are some cases of Potato disease, but not in my immediate neighbourhood."

—— The following was the Attendance in the Showyard at Wolverhampton last week:—

On Monday, 2654 paid 5*s.* each	£663	10	0
,, Tuesday, 706 paid 2*s.* 6*d.* each.. ..	883	0	0
,, Wednesday, 11,514 paid 2*s.* 6*d.* each..	1439	5	0
,, Thursday, 53,000 paid 1*s.* each.. ..	2650	0	0
,, Friday, 33,624 paid 1*s.* each	1681	4	0
Total, 108,456	£7316	19	0

These figures compare favourably with those of the last few years, being 36,000 more visitors and £2000 more money than collected at Oxford, and 10,000 more visitors and £700 more money than obtained at Leicester. At Manchester, however, midway of these two last-named shows, the number of visitors was not less than 194,733, while the money collected was £15,629. Wolverhampton must, nevertheless, be reckoned amongst the largest and most productive of the Society's meetings.

——Several of our leading agricultural machine-makers have addressed a memorial to Lord Dunmore, who presides over the Lords' Committee on the Road Locomotives Bill, proposing the following conditions as proper for enactment:—

(1). That the speed of engines travelling on the high-road shall not exceed 5 miles per hour in the country, and 3 miles per hour in the towns, power being given to the Board of Trade to grant permission for increased speed under special rules and regulations.

(2). That in all cases an extra man accompany each train, whose duty it shall be to lead horses and assist carriage traffic in passing.

(3). In order to insure as far as possible the public safety, any new or more stringent rules for the conduct of locomotive engines on highways which the committee may think it advisable to issue, in order that the responsibility of the owners of these engines may be clearly set forth and definitely settled, it being understood that, if the laws and regulations in the Act be strictly adhered to, to the satisfaction of the Board of Trade, the liability of the owner of the engine, in case of accident, should cease.

(4). That a notice be fixed to every bridge, signed by the county surveyor or other responsible person, stating the load which such bridge will bear, and should any accident or damage occur after such notice, no responsibility shall fall upon the owner of the engine, provided such load shall not have been exceeded; and, in case of any difference of opinion respecting the safe working load of any bridge, the Board of Trade shall send a surveyor to report on the said bridge, whose decision shall be final.

—— We learn from the Journal of the Society of Arts that the Paris Academy of Sciences is occupying itself seriously with the question of the Cattle Disease, which has raged so fearfully in France since the war. M. Bouley, who is specially engaged on the subject, declares the disease to be endemic in all that part of Europe comprised between the Ural and Carpathian mountains; that it is permanent, and constantly perpetuated by contagion. In Paris the mortality caused by it has been terrible, not more than 1 to 2 per cent. of the animals attacked having survived. In reply to those who have asserted that the disease in question arises in western countries from climacteric causes, or want of care, M. Bouley cites the following striking fact:—The 4000 bullocks and 220,000 sheep enclosed in Paris during the siege were placed in peculiarly unfavourable circumstances; all suffered, but not a single animal was attacked by the epidemic during the whole period of the siege. When the armistice opened the circle around the city, cattle were purchased from Prussian sources, and the disease immediately made its appearance, the stock was affected, and the animals died at the rate of 200 per day. M. Bouley declares the flesh of animals attacked by the disease to be perfectly innocuous. He protests against the practice which prevailed in the department of the Nord, where even animals suspected of being attacked were killed and buried. He protests in like manner against what has been done in Brittany, where 800 diseased animals a-day had been placed on board old ships, and sunk by cannon-shot in the Atlantic. Experiments are being made under M. Bouley's direction in the treatment of the disease with phenic acid, and Dr. Déclat is pursuing other experiments with an analogous substance. M. Bouley expresses great hopes of the success of these modes of treatment, the results of which will be reported shortly. M. Dumas, the perpetual secretary of the Academy, communicated another mode which had been suggested, namely, to surround the animal with an antiputrid atmosphere by means of a considerable dose of napthaline in the litter, to wash it with water containing phenic acid, and to administer daily from 10 to 12 litres of water containing a one-thousandth part of phenic acid—this by way of preventative. In cases of positively diseased animals, a like course is recommended, but with an increase in the quantity of the acid to 25 grammes (nearly an ounce) a-day. In case the remedy should fail to save the animal, the flesh, it was observed, would be impregnated with the antiseptic, and cease to be an element for propagating the disease.

—— Mr. Odams, of Fenchurch Street, thus writes to the *Times*:—

"'The supply of beasts is limited.' Such is the heading of your Market Report this morning. It may be asked,—Why this great irregularity of supply and consequent fluctuation in price? Simply from the fact that our own producers dare not risk their cattle within the cordon which surrounds our Metropolitan Market. On the 12th ult. your reporter writes, 'Meat, 4*d.* to 6*d.* per stone lower.' I would ask consumers whether their butchers' bills have undergone any change within these dates, or into whose pocket does the difference go? Surely it is high time these restrictions upon our food supply should be got rid of? We are importing animals weekly from countries where disease exists, and sending them broadcast over our own. Why, then, should the transit of our own stock be prevented? It is now five years since cattle plague made its appearance. Legislation on the subject has become a dead letter, and the Corporation, who were to complete a waterside market by 1872, have not yet commenced. No wonder, then, that when to these restrictions on home cattle we add the severe drought and loss by disease, consumers suffer from the high price of meat."

—— The *Inverness Courier* announces that last week's Wool Market was a brisk one; and, in estimating the result, it must be remembered that last year there was an advance in the price of sheep of from 4*s.* to 7*s.* on Cheviot stock, and on blackfaced of from 3*s.* to 6*s.* each. This year the advance on the prices of last July is as follows:—Cheviot wedders, £4 to £6 per clad score; Cheviot ewes, £4 to £7 do.; Cheviot lambs, £2 10*s.* to £2 15*s.* do.; half-bred lambs, 3*s.* 6*d.* to 4*s.* 6*d.* each; blackfaced wedders, £6 per clad score; blackfaced ewes, £3 to £4 do.; blackfaced lambs, £1 10*s.* to £2 10*s.* A great deal of wool changed hands, and the rise may be quoted at 5*s.* to 6*s.* per stone for good-laid Cheviot wool, and 3*s.* to 5*s.* for laid Highland; in white Highland the rise has been extraordinary—from 7*s.* to 9*s.* a stone.

OUR LIVE STOCK.

CATTLE.

On Wednesday a draught from Her Majesty's Shorthorn herd was sold by Mr. Strafford, at the Shaw Farm, Windsor Park. The herd was founded by the late Prince Consort, with the object of breeding animals of real utility for the dairy and the butcher. Several of the pedigrees were traced back to *Alix*, *Cold Cream*, and *Florimell*, bought at the celebrated Fawsley sale, in 1856; others were descended from the herds of the Marquis of Exeter, Lord Sherborne, and other breeders. From the animals sold we select the following:—*Honesty*, a handsome cow, calved in 1864, sold to Mr. Langham for 50 gs.; *Alix 2d*, a cow calved in 1867, by Rajah, sold to Mr. G. Garne for 49 gs.; *Princess Louise*, a cow calved in 1863, sold to Mr. Banyard, of Poplar Hall, near Cambridge, for 33 gs.; *Princess Mary*, a heifer, 29 gs.; *Princess Christian*, calved in 1870, sold to Mr. Blandy Jenkins for 50 gs.; *Princess Beatrice*, calved 1871, sold to Mr. Woodward for 42 gs. Of the bulls, Prince Leopold, a roan, calved in 1869, was sold to Mr. Sturgeon for 45 gs.; Prince Albert Victor, calved in 1869, was sold to Mr. Banyard for 43 gs.; Earl Russell, calved in 1870, sold to Mr. Thornton for 63 gs.; Marquis of Lorne, calved Jan. 10, 1871, sold to Mr. Thornton for 46 gs. Other animals fetched rather lower prices.

—— Lord Dunmore has concluded an important purchase of two heifer calves. They are from *Duchesses* 101*st* and 103*d*, which, it will be remembered, were sold to Mr. Cochrane by Captain (now Major) Gunter for 1000 gs. and 1500 gs. respectively, last summer. The calves of these two cows have been purchased from Mr. Cochrane by Lord Dunmore at precisely similar prices, or 2500 gs. for the two, and will be shipped for this country in September.

—— Some important "Hereford" sales were effected on the Wolverhampton show-ground. The 1st and 2d prize yearling bulls were sold, the 1st to Mr. Nowlan, and the 2d to Mr. Taylor, both of Sydney, Australia; also *Lizzie Jefferys*, the property of Mr. Harding, and the 1st prize heifer in the yearling class, was bought by Major Fenning, also of Sydney. The 1st prize yearling bull was the property of Mr. Hill, of Orleton Court, and is a son of Triumph (2837) and *Gift* by Umpire (2764), and the 2d was exhibited by Mr. G. Child, of Westonbury, Pembridge, and is by North Star (2138), and out of *Pigeon* by Young Treasurer (1473).

—— We learn that the sale of Mr. J. P. Foster's Shorthorns at Killhow, is fixed for Friday, Sept. 8, when Mr. Strafford will sell about 50 head of carefully bred cattle. 17th Duke of Oxford (25,994), the sire of most of the young stock, is still in service.

—— The following important Shorthorn sales are at present advertised by Mr. Thornton. On August 3, 40 head from the herd of the Rev. J. D. Jefferson, of Thicket Priory, will be sold at York. These cattle are principally of the Waterloo, J, Daisy, Emma, and Flourish tribes. The sale of the late Mr. Barnes stock at Westland, County Meath, takes place on August 23, when a large number of famous Booth cattle will be disposed of. On August 25 the entire Castle Grove herd, comprising 50 head, will be dispersed. On Sept. 12 the Brocton House herd, bred by Mr. Thomas Bell, will be disposed of; September 14 will witness the dispersion of the Panton House herd, numbering 100 head, belonging to the Messrs. Dudding; on Tuesday, September 19, the sale of the late Sir John Rolt's Shorthorns and other stock takes place; and afterwards sales are advertised as late as September 26, at Chapel Brampton, Northampton, and Netherhouses, Ulverston.

—— We understand that there has been a delay in the publication of Mr. Bell's "History of the Improved Shorthorns," owing to the prints not being ready, but it will appear in about 14 days. It promises to be not only a complete history of the Shorthorns, but very interesting to all agriculturists. It will contain copious accounts of the scientific education of Mr. Bates, and his intercourse and correspondence with all the leading agriculturists and noblemen of his time. The alloy and cross-breeding are very fully discussed, and the pedigree question much cleared up, and a full account of George Coates and the origin of the "Herd Book," and his private remarks on the animals, extracted from his manuscripts. The work will be very interesting and instructive to the American breeders, and Mr. Bates' appeciation of their character and exertions in Shorthorn matters.

—— At Havering Park Farm, on June 12, *Grand Duchess 21st* gave birth to a roan bull calf, got by 3D DUKE OF GENEVA (23,753). The calf is a fine strong one, and has done exceedingly well since his birth. As far as one can judge at present, he promises to do credit to his distinguished lineage; shows already good loins, quarters, and girth, fine shoulders, and altogether a good back, with plenty of nice soft hair. Mr. M'Intosh's small, though select herd, is also otherwise doing remarkably well.

SHEEP.

THE season for ram sales has again come round. Mr. W. G. Preece informs us of his numerous engagements to sell Shropshires, beginning on August 2 with 45 ewes and 150 rams, bred by Mr. Mansell, of Adcott Hall. Messrs. Lythall & Clarke will sell Shropshire rams at the 12th great central sale at Bingley Hall, so early as the 27th inst. Messrs. Lyne & Acock again advertise their Cotswold sales, in which the names of Lane and Garne are conspicuous. All the breeds are well represented, and it would be a vain task to enumerate the coming sales of Hampshires and Southdowns, of Lincolns and Leicesters, which occupy the advertising columns of our agricultural papers. We hope, however, as these interesting events occur to place the results before our readers.

PIGS.

A CONTEMPORARY asks why Berkshire pigs should be favoured with a separate class at the Royal Agricultural meeting? There is, of course, room for two opinions in such a matter, but we submit that the Berkshire is a very characteristic and widely-distributed breed of pigs, that it is purely bred, and much thought of in America as well as at home. While it is somewhat difficult to discriminate between many white and black races, there is never any doubt as to the Berkshire. His short head, turned-up nose, and white points, mark him as a pig of unmistakeable personal character; his quick growth and fitness for both pork and bacon, render him desirable as a profitable animal, and his hardihood and activity fit him in his younger days to range stubbles and ransack fold-yards. Surely, when a breed has definite and recognised points, a large number of promoters (breeders), and commands a ready market at home and abroad, it is much better to allow it a class. How indeed could a judge decide between an Essex and a Berkshire competing together? The heads alone would make the task a very difficult one; and although this might be got over in a small county show, it would be insurmountable in the case of such a meeting as that just held at Wolverhampton.

PRESENT APPEARANCE OF THE CROPS.

EAST NORFOLK.—As far as I can at present judge, the Wheat in this district will be an average crop. It presents generally a bulky appearance, and has shot a good ear, but it is rather wide set, and not likely to be so well filled as it was last season. Much depends on the weather during the next two or three weeks. Barley is long in the straw; the early-sown promises to be good in quality, but I do not anticipate anything beyond an average yield. On our best lands I think the crop is rather light. Peas and Beans not much grown here—the latter are blighted. Hay is various; some very heavy crops, others indifferent—secured without any material damage. Turnips promising; but in many cases have come in too fast, and could not be singled in due season. Harvest in about five weeks time: with forcing weather, like the present, may be a little earlier. Stocks of old Wheat never more exhausted. *W. Cubitt, Bacton Abbey, July* 18.

KENT.—Our Wheat crops will, I think, be under an average, there is so much injured by the recent high winds. Barley I call an average crop, and Oats, on the whole, are very good. The early crops of hay and fodder came down very short, but the later ones are a good growth. Mangel Wurzel came up pretty well, but has been till now growing very slowly. The last few fine warm days appear to have done it much good. Turnips are an extraordinarily good plant, and grow away well; there is a first-rate look on for winter feed. This makes store and fat stock very dear. *M. Sandford, Martins, Dover, July* 18.

MERSE OF BERWICKSHIRE.—A most favourable season for Turnip sowing was brought to a close (with one or two exceptions) about the middle of June; and since that time we have had nearly 3 inches of rain, but no growing weather until the close of the month. To our neighbours on the west it has come with a vengeance; Turnips washed away, corn buried, hail in blocks, and inches of snow lying for hours. We were permitted to hear the thunder at a safe distance. Turnips are certainly taking advantage of the situation, and thinning engages all hands—which we may term a novel and pleasing experience. The fleas were exceedingly active for a few days, but soon made off, never settling to their work, except where fresh salad was provided by repeated sowings. Again, be it noted, the first time of sowing is the best, if but a plant here and there be left uneaten. Mixed grasses for hay are much twisted and laid, and what is cut is in bad case. Pastures were very growthy for some time, and scoured stock remarkably, but the surplus is less than it was. Many of us had our Potato sets lying cut during three weeks of wet in April, and these sets are almost a failure; while fresh-cut sets look well. Corn looks middling, and harvest will be two or three weeks later than last year. Frost and drought have "slain" and "legged" a deal of Oats. Wheat does not look any worse than it did; but Barley is light and thinly planted. Beans seem to be the crop of the season, but the acres are few. *J. T., July* 8.

NORTH LINCOLNSHIRE.—Our crops of Wheat have very much improved this last week, and have come out with a good ear. I hope, with fine weather, we may have an average crop; it very much depends upon the next month. Spring corn looks well, and will be a full average. Roots of all descriptions are a full plant, and look remarkably well. Hay a good crop, and pastures most abundant. So that altogether farming prospects look favourable: and if it please God to give favourable weather for the next two months the farmers have no occasion to fear. *F. A. Sowerby, Aylesbury, July* 18.

NORTHUMBERLAND.—Corn crops have improved much during the past month, but still, with the exception of Barley, will be below average. Wheat below average, Barley full average, Oats most miserable. I have not seen a full crop of Wheat anywhere this year, and even a decent Oat field is not known. Turnips and Potatos look now like being full crops. Seeds light. Meadows good, but very bad weather for winning. *Thos. P. Dods, Anick Grainge, Hexham, July* 15.

SHROPSHIRE.—The crops in this neighbourhood are very variable. With very few exceptions, Wheat will be far below an average, the plant being thin on the ground, and the ears generally small. It is, moreover, in many places considerably damaged by maggot, and some crops we have seen are nearly smothered with Poppies and other weeds. A large breadth was either cross-sown or was ploughed-up early, and resown with April Wheat or Barley, with variable results. Barley presents generally a promising appearance, and will prove an average crop if we have fine weather, but in many places it is lodged with the heavy rain. Oats will be also an average, but are little grown in this district. Winter Beans in general are a decided failure, in consequence of the severity of the winter, but spring-sown ones and Peas will turn out well. The hay crop is generally not a heavy one, except in low-lying situations. Seeds are especially thin, the Clover being almost universally killed by the frost, &c. The weather has been wretched for securing this crop, which is, consequently, much damaged. Turnips are generally very promising, not having been damaged by fly, but late-sown ones have suffered from the cold, wet weather we have experienced during the last month. Mangels are partially good in some places; they are injured by grub. Potatos are looking well, and, if the weather is suitable, will turn out a good crop. *W. D. P., West Felton, July* 18.

SUFFOLK: *Bury St. Edmund's.*—Business engagements gave me a run from the east into the midland counties at this time. And going by the Midland Railway, and returning by the Great Northern and Great Eastern, and halting at several points, and keeping an eye on the crops all the while, a pretty true estimate could be formed of their state and condition. In the eastern counties great corn crops of Wheat and Barley still look well. There will be lots of straw, but the ears are of good size, and if the weather, even now, takes up, the yield promises to be heavy. These continuous rains, however, will soon tell injuriously upon the Wheat, and it is looking too pale for robust strength. Many crops must likewise be considerably damaged by the hailstorm that crossed a large portion of Suffolk last Wednesday. The Barley still looks well, and the few Oats that one sees here and there are very strong indeed. Beans are a large crop of straw; but we hear of scant podding here and there. Those I have examined are fairly heavy. But an excess of straw on strong land is generally inimical to a good harvest of Beans. Moderate growth and height of straw is the most favourable to fertility. Peas are a wonderful crop generally—quantities of straw, well podded, and free from lice. Peas set more freely in wet weather than Beans, though some of the later want sun to ensure maturity in reasonable time. Green crops are mostly a good plant, but there are exceptions. The cold, frosty nights, and an excess of wet on cold lands seem to have killed the seed in some cases, and Turnips and Swedes grow but slowly; whereas, Mangel and Sugar-Beet make scarcely any progress at all. It is too wet for them. Water is constantly passing by the roots, either upwards or downwards, and either way it chills the earth, and consequently checks growth. On clear nights the evaporation is so rapid as to cause instant frosts at the ground-line, and this renders growth impossible. Even when the days are warm, the rains have sodden the ground into such puddly softness, that Beet and Mangels push out fibres there instead of enlarging their roots, the tops make little progress, and upon the whole the prospect of a full crop of Mangel or Beet is not encouraging at present. Late Turnips are a good plant, and are growing faster. Potatos, where they have escaped the frequent frosts, which have continued at intervals up to July, produce well, and the early crops in East Anglia are remarkably good. I saw, however, a great many from Nottingham to Peterborough brown and stunted, looking as if they had been frozen through. Cabbages everywhere are a wonderful crop, they suffered much during the winter, but have grown in an extraordinary manner ever since. Parsnips seem also at home in the wet, Carrots do not look so well, Onions are fine as yet, and promise a heavy crop. The Wheat in the Fens when I passed through about a week ago, was still standing, but the ears were small in proportion to the strength of the straw, and in many places the plant was thin. I also observed a larger proportion than usual of Mustard, and on making inquiry found that a good many of the fields had been sown on Wheat that had failed. Clover and Sainfoin were heavy crops, but a good deal had been lost in the Fens through bad weather. I saw one field between Cambridge and Huntingdon nearly wholly under water, with the Clover lying in the swathe, and the young plants springing up through it. Some farmers in the train assured me that a good many crops had found their way into the muck-yard. It certainly has been a most ticklish haysel. Grass everywhere is a prodigious yield. All that is needed is weather to make and cut it. Much hay was carted in this neighbourhood yesterday; but it began to rain in the night, and has poured all day, and still rains. Everywhere the grass is getting past its best. A good deal has been cut, and snatched as it were from the rain; but thousands of anxious farmers are waiting till a change comes. It is to be hoped it will come soon, for notwithstanding the Mechian proverb about rain in June—which, however, as I take, does not mean rain all the time—things will soon be sadly out of tune, alike for haysel and harvest, if the rain does not stop now June is over. There is another old saw, which seems more likely to be verified this season: "Wet barking, wet haysel, and a wet harvest." We had a wet barking time, though the bark was never better than this season. It is needless to fill in the haysel, or to forebode the harvest; but should this saying come to pass, I fear it may be added to thus—a cold and a hungry winter. For famine, or scarcity in England, never yet did come by drought but by water. But let us hope that the weather may soon change, and settle down fine, so that the moderate abundance of food for man, the superabounding store for beast, with which the earth is covered, may be garnered in safety. *D. T. Fish, July* 11.

WORCESTER.—It really is too soon to say what the Wheat and other crops of this neighbourhood will be. A continuance of the wet weather we have had for the last five weeks would be most disastrous, whereas three weeks of sunshine might do wonders. The present position of the Wheat crop of this district is this:—A large portion of the early-sown, on clay land especially, was much killed by frost and part replanted. All this must be a deficient crop. The later sown stood the winter, is a very bulky crop; much of it laid and twisted by heavy rains and wind, which have prevailed during the whole blossoming season, and must be prejudicial. I have no faith in the probability of a good crop. If mildew be the consequence of the saturated state of the clays, it will be a very bad one. A late harvest is inevitable. Barley is a great crop, but much of it is laid; the quality of such must be inferior. Beans: An immense crop of straw; too bulky, and much blighted; not likely to be an average crop. Hay: Our first fodder crops, Trifolium, entirely spoiled; only fit for litter; the first part of the hay very much damaged; the remainder, in process of cutting, we hope to be more fortunate with. Roots are likely to be the greatest crop grown for many years; they want dry weather. *C. Randell, Chadbury, near Evesham, July* 17.

THE IMPLEMENT YARD AT WOLVERHAMPTON.

We continue our notes of the Implement Yard. The following are some of the entries of cultivating tools to be worked by steam power :—

Ashby, Jeffery & Luke, Stamford, exhibit an 8-horse traction engine, which they recommend as suitable for every description of agricultural work, and specially adapted for working Fisken's steam-culture tackle.

John Sainty, Barnard Sainty & John Sainty, Wisbech, exhibit a corn-drill adapted for either steam or horse power.

Barrows & Steward, of Cherwell Works, Banbury, Oxon, exhibit a steam-cultivating set on the Woolston principle, consisting of an ordinary 12-horse portable engine, detached windlass, rope-porters of several kinds, tackle, snatchblocks, cultivators with 3 and 7 tines, iron clam, and "dead anchors," which were tried both at Barnhurst and New Buildings Farm, and met with considerable approbation.

John Hensman, of Ampthill, Beds, exhibits a 13-row drill, fitted with patent steerage behind, which gives greater facility for steering than the old front steerage, and at the same time saves the labour of the person in front. It has a self-acting balance-box for corn and seeds, and is adapted for either horse or steam power. A drill with any number of rows may be constructed which the steam-power employed may require.

Priest, Woolnough & Michell, Kingston-on-Thames, exhibit a new patent combined corn-drill for steam-power, fitted with improved turn-tables, chain, and fore-steerage. It is 12 feet wide, and can be converted into two horse-drills each 6 feet wide.

Mellard's Trent Foundry (Limited), Rugeley, Staffordshire, exhibit Godfrey's American revolving mould-board two-furrow plough, and single-furrow plough for deep culture.

Cambridge & Parham, Bristol, exhibit a Cambridge roller and clod-crusher, 8 feet wide by 30 inches in diameter.

Edward Hayes, of Stoney Stratford, Bucks, exhibits, under steam culture, eight entries for trial, viz. :—(1), a complete set of steam cultivating machinery and apparatus, consisting of a 12-horse power portable engine; a self-acting windlass, also entered singly; self-acting anchors, also entered separately; a 5-tined cultivator, auxilary claw-anchor, snatchblocks and rope-porters; (2), a 12-horse portable engine; (3), patent self-acting windlass, which prevents stopping at the headland; (4), a 5-tined cultivator; (5), an improved snatchblock; (6), an improved claw-anchor; (7), an improved rope-porter; (8), a pair of patent self-moving anchors, for roundabout work. The clip-chain movement, taken from the rotating pulley, over which the wire rope passes by means of a worm working in a spur wheel, is very simple, effective, and ingenious, as it enables the anchor to move forward the breadth of the implement, so as to permit of fresh ground being taken on. There is a similar anchor at the opposite headland. On the direction of the rope being reversed, one of the anchors is stopped by a ratchet catch, and remains at rest whilst the other anchor is moving a breadth forward. There are several changes of gear wheels to suit different lengths of land.

John Fenwick, engineer, Grantham, Lincolnshire, has three entries for trial, viz. (1), a snatchblock; (2), an anchor; and (3), winch barrel with chain, and spring anchor and pulley, all manufactured by Picksley, Sims & Co., Leigh, Lancashire.

William Ashton, of Horncastle, Lincolnshire, exhibits, his "chisel-toothed harrow, on wheels," improved by Henry John Seels, for horse or steam culture,—can be lowered into and taken out of the ground at pleasure without stopping.

The following is a list of articles claiming novelty entered for trial for the 10 Silver Medals :—

John Freer & Co., Rothley, Leicestershire, show a corn-planting machine having six dibbling wheels.

James Coultas, Grantham, shows a 14-row corn and seed drill, with Fowler & Co.'s patent steerage.

G. W. Murray & Co., Banff, show a double-drill plough, which can be hauled by two horses, which promises to economise horse-labour in getting in Turnips and other drilled crops.

Matthews, Son & Co., Driffield, enter a new substitute for linseed cake, made chiefly from home produce.

Benjamin Perowne, of Great Snoring, Norfolk, has invented an attachment to turnip-cutters, to prevent the last piece of root escaping uncut.

William Walker & Son, Tithley, Notts, enter for trial a 12-row corn-drill, with canisters for turning two rows down one conductor if necessary. It has wrought-iron sides, screw gearing, and waterproof box with patent lid prop, and the conductors are proof against wind, dirt, or rain; also a 12-row drill, with newly-invented barrel for rough and uneven surfaces.

Henry Pooley & Son, Liverpool and Manchester, enter a new patent automatic grain scale, self-acting, and registering the quantity weighed.

Hayward, Tyler & Co., London, enter the universal steam-pump, one of which was selected by the Bath and West of England Society for supplying their showyard with water; also their patent upright feed-boilers, by which water can be supplied to the boiler at any required temperature.

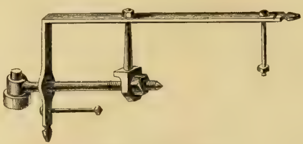

FIG. 206.—TOP GATE-HINGE.

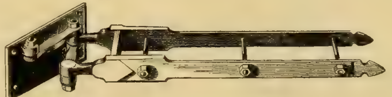

FIG. 207.—BOTTOM GATE-HINGE.

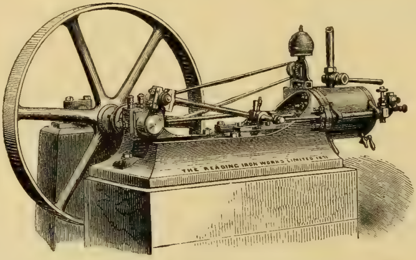
THE READING IRON WORKS LIMITED 1871

FIG. 208.—THE READING COMPANY'S 2-HORSE FIXED ENGINE.

Schäffer & Budenberg, of Manchester, enter a new hand fire-engine and double-action pump, the valves of which are so arranged in the cylinders that they can be easily removed for cleaning.

H. R. Marsden & Co. enter an improved stone-breaker with vertical engine combined.

John Robertson Mackenzie, Birmingham, enters three patent pneumatic fire-extinguishers and garden-irrigators; also two fire and garden engines.

Milburn & Co., London, enter a patent cylindrical steam-heated drying-machine, adapted for desiccating brewers' grains; also a patent combined portable engine and drying-machine for corn and roots.

It will be seen from the prize list (p. 927) that none of the above entries for medals have been successful; but the justice of this may be called in question, for only three out of the 10 medals have been awarded, whereas, in our opinion, there is ample merit in the yard for the whole.

We add a few paragraphs relating to three or four items in the catalogue which seem to deserve further notice :—

The Reading Iron Works Company exhibited their very neat, well-packed, and compact little 2-horse power horizontal fixed engine, of which we present their block (fig. 208). It is provided with high-speed governors, feed-pump, &c., complete on metal plate.

Two-row Turnip and Mangel Seed-drill, exhibited by Mellard's Trent Foundry, Rugeley, Staffordshire, is decidedly the best machine of the kind we have seen. The seed boxes, hoppers, and conductors have a balance motion, which adapts them for hill-side work. The front rollers have not only a projection at each end to keep them on the drill, but a central V-ring, projecting the depth at which the seed should be placed; along the rut made by this ring the coulter passes, depositing the seed at the proper depth. The two small rollers behind follow up on even ground, thus running better, and are more easily kept clean, whilst they at the same time cover the seed more evenly. The result of all this is a more uniform braird and healthier plants, which is everything in the growth of root crops. The drill is made entirely of iron, the shafts being of tubular wrought-iron. The loss in using bad machines which require to be lifted every now and then to keep them clean, and which thus make blanks and place the seed at irregular depths, is incredible; and we venture to say that on a large farm Mellard's machine will pay for itself in a single season.

Patent Adjustable Gate-hinges for Park, Field, or other Gates.—James Braggins, of 8 and 9, Fish Street, Banbury, Oxfordshire, has fitted up on his stand an ornamental gate and side gate of very high merit. The posts, framing, and stay-bars are made of English Oak, filled up with horizontal bars and vertical standards of twisted wrought iron; the top rail or bar is ornamented with cast-iron scroll. The parts are well proportioned, and the style of the whole agreeably antique. What gives the gates their real value is the patent adjustable swing hinges, of which fig. 206 is the top hinge and fig. 207 the bottom hinge. It is necessary to understand that the hinge is fixed to a bed-plate, which is bolted to the post by four bolts; besides the two principal fastenings, one for each side of the hinge, each side of the hinge is double-jointed, the two being connected by a short bar-lever, the farther side bar-joints being above the near side bar-joints. In both cases the bed-plate on the post is the fulcrum upon which the gate turns. In the engraving the lower hinge is shown opening outwards, the upper jointed bar resting against the bed-plate, the near-side lower joint receding from the bed-plate, so as to give the gate swing. The moment the hand is removed from the gate the receded joint comes up to the bed-plate, rests against it, both the short bars being close to the plate, the one above the other. Were the gate drawn inwards the upper and further joint would recede from the bed-plate, the same as the engraving shows the near joint. The mechanism is complete, simple, and effective, for no bullock or force of any kind applied can throw the gate off its swing-centres without breaking the gate itself. It is otherwise with the common swing-gates, for they are continually being thrown off their pins. Should the posts or gate be thrown off its perpendicular, provision is made for adjusting the gate by undoing the bed-plate and placing a piece of wood or iron behind to bring the centres right. The top hinge (fig. 206) is also adjustable, by means of the nut and screw. Thus, should the gate drop at the opening, or latch end, by the post giving way or the hinge wearing, then by turning the nut the gate can be adjusted and always kept right. Practically speaking, to keep the gate-hinges right is to increase its durability, so to speak, for it is when gate-hinges go wrong that the gate goes to the dogs. All who have any experience in keeping a number of gates right are familiar both with the expense and bother they give, and Mr. Braggins' hinges will do much to obviate this botheration and expense.

Beare's Manure Distributor.—This is another valuable addition to our implement list. The principle of delivery is a rotating barrel with flat-threaded zig-zag screws kept clean and of uniform working order by means of a number of scrapers driven by a cam-wheel on the axle of the barrel, which corresponds with the zig-zag groove and small portion of the screw that brings up and delivers the manure. A second bar, furnished with a number of stirrers, works backwards and forwards in the manure-box by a cam movement, breaking the manure fine, thereby supplying the delivery-barrel uniformly without clogging. The speed of delivery is regulated by a slide actuated by rack and pinion. The machine can be made to sow, either broadcast or in drills, all kinds of artificial manure without any other mixture, at the rate of from 2 to 10 cwt. and upwards per acre, with a seed-box attached for sowing Turnips and Mangel Wurzel any distance apart. A number of these machines are now in use, and those who use them write favourably of their performance.

Patent Folding Balance-Elevator.—Wm. Tasker & Sons, of the Waterloo Iron Works, Andover, Hants, have effected a most valuable improvement in elevators, which effects two important purposes. First, the elevator, when the stack is built, can be folded up, removed with ease, and stowed away in an ordinary cart-shed. Second, it can be made almost to any height by adding joint after joint, without increasing its length when folded up. Practically, the highest elevator required for stacking either hay, straw, or corn in the sheaf, can be folded up so as to go into a shed. Thus, fig. 209 shows Tasker's balance-elevator and ricker, open for work; and fig. 210, the same folded for travelling and housing. In this position it is balanced over the large wheels, hence it is termed a "balance-elevator." When exposed to the weather, elevators soon get out of truthful working order, and are expensive to keep in repair, and soon become worn out. The housing of them will save much expense of repairs, and otherwise increase durability and efficiency of working. When pitching straw it can be worked by the engine used in threshing, and when used in pitching hay or corn it can be worked by horse-gear and a small pony, or by a small engine and gear strap. Those in use are giving great satisfaction. Mr. C. Read, of South Charford Farm, says his one "will deliver the hay on the rick from four pitchers in the field, and it is very easily worked with a small pony."

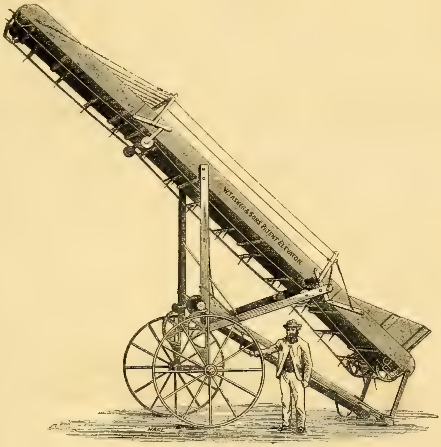
W. TASKER & SONS PATENT ELEVATOR
HARE

FIG. 209.—TASKER'S BALANCE ELEVATOR.

The *Department for Seeds, Roots, Models, Manures*, &c., is better arranged than usual, articles of a kind being exhibited in close proximity.

Mr. Goss, of Plymouth, exhibits stencil-plate letters cut in zinc for marking sacks and the like, branding-irons, &c.; Davis & Co., London, thermometers, barometers, &c.

Alfred Welsh, of Southall, Middlesex, exhibits two models, the one a railway horse-van, and the other a cattle-van, with means for supplying food and water.

Passing over cattle foods, medicines, horse harness, mowing-machines, &c., we come to a series of stands of sewing-machines, which may be termed the "Ladies' Corner," and which form an excellent exhibit. Mr. Jones, of Gloucester, also shows as usual his waterproofing for boots and shoes, which is much needed in the showyard.

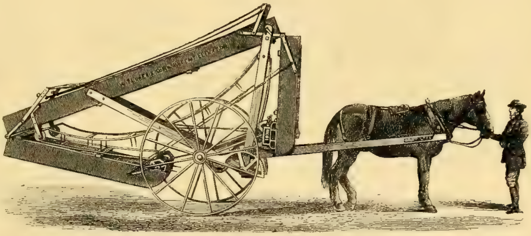

FIG. 210.—TASKER'S ELEVATOR, PACKED FOR TRAVELLING.

GARDENING AND FARMING.

Mr. Mechi, who for more than a quarter of a century has been pounding away at the agricultural head, and trying to knock common sense into it, has, in a recent issue, under the head of "Gardening and Farming," again returned to the attack, and is trying to inculcate the common sense principle of little and good being preferable to much and bad. He hits the right nail on the head when he says:—"Take a farm of 300 instead of 600 acres, and you will at once double your acreable capital, and from my practical experience I can assure you that you will thus considerably increase your percentage of profit." The principle involved in that sentence ought to be written in letters of gold. Did the farmer, as a rule, instead of taking his chance of a favourable season for getting his livelihood from a large acreage, simply act as any manufacturer would, and confine himself to an acreage proportional to his capital, he would, as a matter of course, rent and rates being constant quantities, find it more for his advantage to make 30*s*. an acre profit from 300 acres than to make 10*s*. an acre from 600. Now, as far as I can see, he is not so sure of making even 10*s*. an acre nett profit from a holding of 600 acres with a farming capital of £10 an acre as he would be of making 30*s*. with an outlay of £20 per acre, after debiting his farm with 5 per cent. on capital employed. The land, as a matter of course, will do nothing for you, if you do nothing for it. The only question that arises is this, Has the maximum amount of capital that can be laid out on land to advantage been laid out? I should scarcely think it has, if one may look on the amount laid out on the 100 acres of a market garden as compared with what is laid out on 100 acres farmed in the highest manner. The quantity of vegetable matter produced on an acre of market garden ground is manyfold that of an acre farmed in farmers' style. I was reading a little book I purchased in the Rue Jacob in Paris, being a brochure on market gardening near Paris, when to my surprise I found that a capital of not less than 26,000 f. was required to work a market garden of a surface not exceeding 5 acres. True it is, there were several heavy items for glass, in the shape of hand-glasses, *cloches*, &c., but there was a prominent figure of nearly £60 an acre for manures. I say, to be profiable farming must be gardening. To do it, however, holdings must be smaller and capital employed greater.

My experience in England has not been long, but sufficiently long to tell me that the only chance of the farmer is a heavy expenditure judiciously laid out. I profess myself a true follower of Mechi. I have read his book, enlarged from time to time, over and over again; among the many forcible remarks made by him was the one in which he asks a neighbour why he trenched his garden. I would simply ask, Why does not the farmer trench his land, or give it a stirring up equal to a trenching? I have in my time cultivated a considerable amount of land in the tropics, I have always found that where I dug my ground to the depth of 12 or 13 inches for crops like Jute, Hemp, Tobacco, Chilies, Indigo, or other tropical crops, I got my outlay back with a considerable addition over and above what I got from ordinary ploughing. On my return to England in 1869 I was determined to try the same plan, but I could not get labour for digging, except at a price absurdly high. So I took the best substitute I could find, a plough drawn by four horses, followed by a subsoiler drawn by three others. I moved the ground from 16 to 20 inches, having previously drained it with 2-inch pipes 4 feet deep, 30 feet apart. Previous to this, about 4 inches below the surface, there was a pan as hard as slate. My neighbours looked on me with a sort of contempt mixed with pity. My ploughing and subsoiling brought an *emeute* into my establishment. Ploughman No. 1 led the way. He did not understand these new-fangled ways; he did not like to see the country ruined, &c.; that Major Monsoon, who had College Farm, on the other side of the road, nearly ruined *hisself* with deep ploughing, and if he had not died would soon have ruined the country; with a lot of like rubbish. By dint of keeping my bailiff close on the ploughman's heels I got my work done, say 16 to 20 inches deep, and left as much of the ground as I could get finished to mellow through the winter. On a portion of the ground so treated I made up my mind to try what luck I should have with Mangel. I did this because I was told my land would not grow roots. As soon as ever I could get on the land in the spring, I had it broken up, rolled, and ploughed, and in due season applied 18 to 20 large cartloads of muck, made and kept under a covered yard by about 45 horned animals, fed on cake and corn; 3 cwt. of guano, and 3 of bone superphates. My farmyard manure I valued at 8*s*. 6*d*. the load. The total cost of ploughing, subsoiling, horse-hoeing, hand-hoeing, earthing up, pulling, drawing, and pitting, I put at £14 8*s*. an acre, exclusive of rent, rates, &c.

My sowing took place about April 29. May passed —not a sign of a single plant. My neighbours, who had throughout ridiculed the notion of my growing roots on such land, seeing nothing coming up, gave me the usual "Did I not tell you so?" and laughed at my disappointment. I attributed the failure to the seed, not to the cultivation. I telegraphed on the last Wednesday of May to the seedsman, requesting the instant despatch of fresh seed by passenger train. By a singular stroke of good luck, either the telegrah miscarried, or the seedsmen were too busy to attend to the order, or they had sent the seed by goods-train, and it had miscarried. Up to the Saturday night no seeds came. On Saturday night, June 1, a strong shower came, and on Monday morning the old seed came forth in shoots without a single gap—at the same time came the usual cry of my neighbours, "Who would have thought it? Why, you are going to have five-and-forty tons an acre? Why yourn beats Mr. D. hollow, and he never grows less than five-and-forty tons an acre." For my part, I had as little faith in their prognostications as to quantity of produce as I had in the previous "Did I not tell you so?" My faith was pinned to the result in the scales. When pulled in the latter end of October, I had an acre measured across each field; this acre was weighed to an ounce on one of Fairbank's weighing machines, which will turn with sixpence, and the roots put into pit, and the cubic dimensions taken. From these cubic dimensions the result of the whole cultivation came to 27 tons 19 cwt. 2 qr. per acre. Now, my whole and sole object in going into all this detail, is, having shown the cost and the produce and its market value, to show that, as far as that crop went, my outlay was profitable, and that but for deep and expensive cultivation, I should, like my neighbours, have had no Mangel. I could have sold the whole of it. I did sell a great portion; as I fell short of straw for fodder, and as my beasts were in first-rate condition, I sold beasts and sheep except lambing ewes. I sold more than 100 tons at the pit at 22*s.* per ton as they stood, without topping or trimming. I realised at the rate of £30 16*s.* an acre, at a cost, including 50*s.* for rent and taxes, of £16 18*s.*, thus realising a profit [at the rate] of £13 18*s.* per acre. As a matter of course, 22*s.* a ton was an exceptional price, it could not be got every year, but even taking the selling value of Mangel at 15*s.* per ton, there would have been a nett profit of £4 2*s.* I must not, however, charge all the amendment to the Mangel crop; on a portion, viz., 5 acres, I have as fine a crop of Canada Oats as are to be seen. I reckon on getting from 8 to 10 qr. of grain and 50 cwt. of straw. As an illustration of the benefit of deep cultivation, I may state that, notwithstanding the very dry season, I observed my plants grew very vigorously (more so than those of my neighbours). In the latter end of July I took a small garden hand-fork, and took away the earth from around the root of a plant, and traced root and rootlets without beaking to their extremities. The tap-root went straight down, say 16 to 18 inches, to the full depth of the subsoiling; as it could get no further down, it struck off at right angles, and I traced it about a foot further, until it got so fine I could not trace it further.

On another piece of land treated in the same way, I had 7 acres of the finest Cabbages to be seen, part of which I drew for the bullocks, and the remainder I soiled with sheep. On that land I have as fine a crop of Barley and seeds as any one could wish. The value of my Cabbages I cannot estimate, as they all went back into the land through animals' stomachs. I need not weary your readers with further detail as to the doings on the remainder of my farm. Suffice it to say, independently of the cost of drainage, my tenants' capital has been more than £20 an acre, and could I rely on steady labour I could employ advantageously considerably more. Although I have only 96 acres, I keep fully employed eight horses, each of which I give from 12 to 14 lb. of grain a-day throughout the year, without which they could not stand the work they have. As I am building largely with concrete I am forced to hire for all my leading in the building line; the expenditure is great, but I am beginning to see my way ahead. It may be asked by some of your readers, Why write all this? Others have done the same on a far larger scale than yourself, why should you teach us to suck eggs? My simple answer would be: The food question is rapidly becoming a serious question in Great Britain; what it is and has been for a long time in China it shortly will be here. In China every available inch of ground is made the most of. In Great Britain this is not the case. Her present production is subsidised by a payment for imported cereals of not less than 20 millions yearly. This is paid for by the produce of the loom, the forge, and the workshop. All our best customers are rapidly becoming manufacturers for themselves. We cannot always expect to get a large portion of our food through the loom and the forge. The manufacturing class, sooner or later, will be thrown back on the land: as at present cultivated it cannot support them. If it cannot support them some curious questions will arise as to the rights of property. As these rights are simply founded on an idea, a future idea may probably come to the conclusion that property held by the few in large extent might be held more advantageously by the many in smaller allotments. Having property, I trust this will not happen in my day. The small speck, however, can be seen on the horizon. To prevent its rising higher we must grow more food. To do this farming must be gardening, or something next akin to it. To make farming gardening more capital must be put into the land. Holdings must be smaller. Landowners will have to make the outlay required for drainage and homesteads, and tenant-farmers must be prepared to take smaller holdings, or somehow find a working capital of not less, if not more, than £20 per acre. *Khoda Bux.*

JOURNAL OF THE STEAM CULTURE TRIALS AT WOLVERHAMPTON.

[We conclude our short journal from p. 884.]

Wednesday, July 5.—From the heavy storm of rain yesterday, the trials were suspended for a time, but the weather having cleared up to-day, the work continues without interruption. The four fields of old grass selected for operation are divided into 14 plots, and these are appropriated to competitors as follows:—The first field is divided into two large plots for the trial of the extensive assortment of implements entered by the Messrs. Fowler & Co. in class 1. Their ditching plough is also tried here. The second field adjoining on the left is divided into four plots, viz., 3, 4, 5, and 6. Plot 3 is occupied by the Messrs. J. & F. Howard, who here compete for the prize, class 3. Plot 4 is in the possession of Barrows & Steward, who enter for classes 1, 2, and 3. Plot 5 falls to Fowler & Co., who enter for the prize, class 3. Plot 6, if it belongs to Fowler, has not been broken. The third field, on the left of the second, is divided into four plots, plot 7 falling to the Ravensthorpe Company (Fisken), who enter for class 1, class 3, and Lord Vernon's cup. Plot 8 is occupied by Amies, Barford & Co., who enter for class 3 and Lord Vernon's cup. Plot 9 is the Bedford firm's, who enter exclusively for the cup, and plot 10 is the Leeds firm's, who enter for class 1 and the cup. This field was technically termed throughout the day "the cup field." The fourth field is divided into four plots. Plot 11 falls to the Messrs. Howard, who enter for class 1. Plot 12 is Fowler & Co.'s, who compete for class 1 and class 2. Plot 13 is occupied by the Bedford firm, who enter for class 2. And the last plot, No. 14, falls to the Ravensthorpe Company, who enter for classes 1 and 2. The four fields are far from being of a uniform quality of soil or, we may add, evenness of surface. Field No. 1 is very undulating, the inclination in some places measuring 1 foot in 2 feet in plot 1, where Fowler & Co. started yesterday with their 20-horse double set, ploughing, digging, and cultivating. In some parts there is much drift mixed with the Stafford clay, giving it the character of a light gravelly clay. The upper portion of this field (plot 2) has a uniform slope, and the soil is also more uniform. In this plot, Fowler's 12-horse double set was tried in ploughing, digging, and cultivating, making rather rough work in ploughing, owing to the great speed and softness of the land from the heavy rain of yesterday. The digging and cultivating were excellent in the lower portion of the field, plot 1. Some excellent work was also done by the 20-horse double set with a 4-furrow balance-plough, about 12 inches deep, and also with a 3-tined knife, going from 20 to 24 inches deep.

During the day, the rope of one of Fowler's 20-horse engines was yoked to Mellard's double-furrow American rotating mouldboard-plough, which made very good work. In field 2 the Messrs. J. & F. Howard got their 3-furrow balance-plough and detached windlass tackle into position, and started, making good work, from 7 to 8 inches deep. Their 3-tined cultivator followed. The Messrs. Barrows & Steward also commenced in this field, the surface of which is very undulating, with a 3-tined cultivator. This was followed by a 4-furrow balance-plough, which made more satisfactory work than the cultivator, the shares of which were too narrow for the plasticity of the soil, *i.e.*, they "stripped."

The Messrs. Fowler also commenced in this field with their roundabout tackle, and a 4-furrow balance-digger. They also got to work in field No. 3, with their 8-horse double drum system—first, with a 4-furrow balance-digger; second, with a 4-furrow balance-plough; and third, with a 7-tined cultivator. Amies & Barford also did some fair work with a 3-furrow plough in field No 3. The Bedford firm also got into position. In field No. 4, Fowler & Co. yoked their clip-drum set, making good work with a 7-tined balance-cultivator from 8 to 9 inches deep. This was followed by a 4-furrow digger, going 7 to 8 inches deep. The Ravensthorpe Company also did some good work on their plot in this field, first with a 4-furrow balance-plough 8 inches deep, and second with a 5-tined cultivator, or rather with a 7-tined cultivator, two of the tines being removed to obviate choking. The soil in this field is a very tenacious clay.

Thursday, July 6.—In field No. 1, the Messrs. Fowler & Co. continued their trials with their 12-horse double set, and in the afternoon after the trials were over they made better work in ploughing and digging than they did before. The plough had disc coulters before the common ones, which appeared well adapted for the peculiar softness and plasticity of the surface from the heavy rain of Tuesday, as the furrow-slice was turned over less broken and more evenly laid. No doubt the slower pace at which the implement was moving partly conduced to this result, a rapid pace having a tendency to break the furrow-slice and lay it unevenly. In this field the Leeds firm did some work with their ditching plough. This implement, we were informed, is intended for the Sugar-cane and Cotton plantations, Louisiana, where it will be of more use in keeping the open ditches or rather irrigation water carriers and gutters clean than in cutting new ones. The plough is somewhat similar to those made by the late Mr. Smith, of Deanston, the writer, and others, who attempted to open drains by means of draining ploughs hauled by horses. In field 2, the Messrs. Howard, Barrows & Steward, and Fowler & Co., did some ploughing, digging, and cultivating with their respective roundabout tackle, finishing what they began the previous day. In field 3, the Ravensthorpe Company got their light rope into position, so as to exemplify one of the peculiar advantages of this system. At the lower end of their plot, and at the further corner of the adjoining field, there was a supply of water, and instead of carting this water to the engine, the engine was taken to the water, and the light manilla rope laid out through the entrance to this field and around their plot. This done, they commenced ploughing, making very good but rather broken work. Amies & Barford finished their work in this field, and the Messrs. Howard made, if not the best, some excellent ploughing on their plot for the cup. After the judges were through, most of the competitors did some excellent work to the Council and a larger number of visitors than were present on any previous day.

There was a good deal of complaint amongst practical farmers relative to the quality of the work done, which they considered below the standard of the everyday practice of those who use steam-culture implements. They had come to see something better than what they saw at home, but were disappointed. At Barnhurst, too, better things were promised at New Buildings Farm, whilst something worse has been realised. Of course the comparison of Barnhurst and New Buildings Farm goes for nothing, but the prior argument has material weight, for at the national steam-ploughing match farmers have a right to expect something better than they see and do at home.

"There are reasons for everything," it is said, and there are two reasons for the complaints in question which ought not to be passed over unnoticed. First, the exceptional character of the season and land, and the question, How far provision was made for such in the construction of the implements and the racing speed at which they were driven? Second, the surface of the ground was not only undulating longitudinally but transversely. The former did not materially deteriorate the quality of the work even in the worst place, but to the latter much of the objection of unequal depth, unequal flatness in laying of the furrow-slice was due. Thus the old outcastings of the ridges are in many cases deep whilst the crowns are high, which accounts both for the inequality of the depth and the flatness of the furrow-slice in places, seeing that the plots were laid out angularly across these. A moment's reflection will suffice to satisfy any intelligent mind practically versed in the matter, that it is impossible to make a 4-furrow plough sole at an equal depth and breadth over such a surface. In short, land thus laid down to grass ought not to have been selected for the trials. But the fact that it has been selected, and the results that follow, ought not to prejudice any observant farmer against steam-culture.

On Thursday the five road-steamers which competed at Barnhurst on Saturday and Monday last started from Wolverhampton at an early hour for Stafford, each attended by a judge or engineer to report its performance, consumption of coal, water, &c. The distance going and returning is nearly 32 miles, and to to those that went up to near the trial fields at New Buildings Farm it exceeded this, so that the test was rather a severe one. They started separately, each with a load of some kind or other of a known weight, but sufficiently near each other to enable Mr. Bramwell, who rode in a cab, to inspect the whole. There is some discrepancy in the weight of the loads and engines themselves as communicated to us, and as marked upon the engines and waggons with chalk, and until differences are reconciled, we forbear giving either. "Sutherland," the engine of the Messrs. Ransome, Sims & Head, was the first to start, and has quite effaced all misfortunes at Barnhurst; Aveling & Porter's 6-horse and 10-horse roadsters followed, and Burrell's two engines of 8-horse each came last. The Government road-steamer "Chenab" and carriage, known as "the Indian train," also made by Ransome, Sims & Head, started from Wolverhampton some half-hour later, *i. e.*, about 7.30, the carriage or steam-omnibus being well filled with officials, &c., but running at 11 miles per hour it soon passed the others, stopping to allow their inspection. The journey going and returning is highly creditable to all the engines, proving road-traction an accomplished fact.

Friday and Saturday, July 7 *and* 8.—The judges return to Barnhurst to test the draught of special implements, which was not concluded on Monday last, July 3. The engine of Mr. Hayes, Stoney Stratford, was specially selected and engaged to remain at Barnhurst during the Stafford trials to finish the work. According to the official programme of proceedings, the testing should have been continued on Tuesday the 4th, but the heavy rains of that day were unfavourable; and besides this, it was as well to see what took place at New Buildings Farm. There were also a number of drills, rollers, clod-crushers, and ridging-ploughs, that had to be tried. On Friday forenoon, owing to the showers which occasionally fell, the season for drilling and rolling was unfavourable, but in the afternoon the weather cleared up, and the several operations were proceeded with, and finally brought to a close on Saturday by the trial of the ridging-ploughs and subsoiling-ploughs of the Bedford and Leeds firms.

Home Correspondence.

Utilisation of Sewage.—My letter to you of June 20, inserted in your journal of July 1, has failed to procure from Mr. Mechi the information it sought. I am, however, obliged to Mr. Hope for the information which his letter of July 8 contains, notwithstanding that it fails to make clear to a "simple inquirer" what the practical results upon the Romford farm have been. Mr. Hope had previously announced the population of Romford to be 6000, by his declaration that he paid a rental of £600 a year at 2*s.* a head of the population. He does not absolutely contradict the figures given by Mr. Mechi in his communication to the *Times* of June 26 last, but speaking of the quantity of sewage he receives, he says that "the average dry weather sewage" is estimated, in round numbers, at 1100 tons daily. Mr. Mechi's figures may, therefore, still be quite right, as he of course endeavoured to inform the public, not what the estimated dry weather flow of sewage was, but what quantity of sewage was sent on to the farm from Romford; and what I desired to learn was, what number of acres received this supply? Although Mr. Hope, writing during a very wet season, assures us that the sewage of Romford does not average 100 tons per head per annum, as I gathered from Mr. Mechi's letter, he argues upon the average dry weather sewage as "estimated," and which, by the way, gives an annual quantity of 67 tons per head for the population on which he pays. This quantity can hardly be a fair sample of what is delivered on to the farm. I regret that I fell into the error which Mr. Hope corrects, but I was led to believe that the pumps were worked night and day, by a statement of his having utilised the sewage of Romford "night and day continuously;" and when I alluded to the subject I was not aware that he could so use the sewage without pumping it for distribution. I am not at all disposed to discuss the question of the intrinsic value of town sewage, and it may be 8*s.* a head, as Mr. Hope states it is; but it is very essential to obtain facts—what quantity of sewage is used, how much land it is applied to, the condition of it as it is received and as it leaves the farm, and the results in an agricultural point of view. If the sewage of Romford is purified, as Mr. Hope states that it is, upon something between 100 and 115 acres of land, the solution of the question is here satisfactorily arrived at, for the land receives and passes to the crops the manure which the town supplies, and 60 persons annually provide something between 67 and 100 tons of sewage apiece to very little more than an acre of land, and obtain, as Mr. Mechi tells us, excellent crops of all kinds. Mr. Hope, it is true, complains that the farm is too small for the quantity of sewage he receives, but if he can purify between 4000 and 6000 tons an acre, on the average, in producing various crops, nothing but extended experience will show that the same quantity of sewage can be more advantageously distributed over a larger area. *F. P., July* 11.

Labourers' Cottage.—It appears to me that Mr. Makins' (p. 851) criticism of Mr. Denton's cottage plans, published by you on May 15, is rather harsh; the plans were intended for the country. Mr. Makins' plans are admirably adapted for towns, where land is expensive and a narrow frontage desirable, but I, as a land-agent, should generally prefer Mr. Denton's. On June 24 you published another of Mr. Denton's plans, in which the bed-room accommodation must be pronounced deficient. Accompanying is a copy of a plan of mine that has given satisfaction (fig. 211). Its outer form is similar to Mr. Denton's, but it has better bed-room accommodation, and a good dairy (the smallest bed-room has an area of 80 feet). It has only one outer door. Any style of elevation may be adopted. *W. G. Gibson, St. Clement's Terrace, York, July* 6.

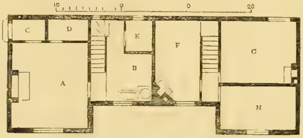

FIG. 211.—LABOURERS' COTTAGE, PLAN.

A, Kitchen; B, Scullery; C, Porch; D, Fuel; E, Dairy; F, G, H, Bedrooms.

Co-operative Societies.—I certainly thought, as well as hoped, that the controversy respecting the Co-operative Supply Association had come to an end—that the arguments *pro* and *con*, having been freely stated by myself and my antagonists, our readers might have fairly been left to form their own conclusions, but it appears this is not to be the case. Mr. Greening, in a communication in your columns (which reads uncommonly like an advertisement), whilst he does not object to my allegation that it is the craving after cheapness which is the indirect cause of a great deal of the adulteration in manures and oilcakes which exists, is yet very indignant that I should also state that it is by the attraction of cheapness that these societies seek to attract their customers. Well, I cannot withdraw the charge, but am quite content to leave the matter to public opinion. He wishes to enlist my evidence that the existence of a high percentage of soluble phosphate is a proof that the superphosphate containing it was made from the highest class of phosphates; but this is not the case, for low class materials, such as English coprolites, by skilful treatment will yield the percentages mentioned, whilst bone-ash, which is really a high-class material, and which costs about double the price, viz., about £6 per ton by the cargo, is far too costly to be employed in the manufacture of these cheap superphosphates. It is a great mistake to ignore the value of what is called insoluble phosphates, even when not derived from bones. I have proved their value in the open field by unmistakable experiments, and by avoiding the errors which had led other experimenters to wrong conclusions. I have, however, no wish that this discussion should wander into other fields, but in concluding it I must remind our readers that, without impugning the motives of members of co-operative societies, or the right of private individuals to avail themselves of their real or supposed advantages, I have contended that, inasmuch as they destroy trade, interfere with commerce, are injurious to the public revenue, and opposed to local interests and that sympathy which ought to exist between one class and another, the existence of which is one of the strongest sources of our national strength—that inasmuch as they tend to centralism, which, in a neighbouring country has led, more than anything else, to the evils of Communism, and the destruction of property—and that for these several reasons the existence of these co-operative supply associations is opposed to public policy, and ought not to be supported by public men. *W. C. Spooner.*

The Sheep Tick.—Many sheep in this neighbourhood having been attacked by what are called here "grass ticks," soon after being driven to pasture this year, and in many cases have died from the effects produced by those creatures, I have been led to inquire into the matter, and am told that these "ticks" differ from the ordinary sheep ticks, but in what way I cannot ascertain; also that certain lands are more subject to them than others. I should feel much obliged if you could give me any information about these creatures, and if there is any means of exterminating them. Many flockowners (some friends of mine included) have been obliged to have all their sheep looked over singly, and these ticks picked out by hand, and the losses in some instances, especially in the case of lambs and tegs, have been serious. *A Subscriber, Chislet Court, near Canterbury.* [To this we append a letter of explanation by our correspondent, Mr. Wilson, of Edington Mains, which appeared at p. 906 in our last year's volume, wherein he refers to the two different insects to which the name tick is applied. "O. F." had commented on a previous letter by Mr. Wilson (p. 600, 1870), wherein he had expressed his belief that the so-called "louping-ill"—a convulsive attack—to which sheep are liable, is owing to these true ticks (Ixodes Ricinus).

"'O. F.' says of my letter:—'There must be some error in your writer's idea of certain lands in certain districts being infested with sheep tick.' This sentence makes it evident that when 'O. F.' and I write about ticks we respectively apply this name to two entirely different insects. His remarks apply to the fag or kaid (Melophagus Ovinus), which breeds upon the sheep, and is, I suppose, to be found in every flock, probably on every sheep, in Great Britain. My remarks had reference to the true tick (Ixodes Ricinus), which breeds in the ground, is found only in certain districts, and fastens itself on sheep and other animals during a part only of its existence. Instead of moving about amongst the wool like the kaid, the tick at once inserts its head deeply into the skin of its victim, and remains fixed in the same spot—so firmly fixed that it is difficult to pull it out—until it has completed its course, when it drops off into the ground. It makes its appearance among the herbage in spring in its active stage, gets upon any animal that comes in its way, and fastens upon it in the manner already mentioned. There are some grazings in the South of Scotland so infested by these ticks that the occupiers dare not put sheep upon them until midsummer or even later. Cows and Shorthorn yearlings also suffer severely from them; the only stock that sustain their attacks with impunity being West Highland and Irish cattle. A great deal of misunderstanding has arisen from the name tick being applied indiscriminately to these two distinct parasites, which differ so entirely in their habits, and in the effects which they produce on the animals upon which they are found. On consulting such books as I happen to have by me, including Youatt, Spooner, 'The Book of the Farm,' and 'Morton's Cyclopædia,' I find more or less of this vague use of the name, tick; some of the statements made applying to the one parasite, and some to the other. In the *North British Agriculturist* of the 22d inst., there is an article on the dipping of sheep, all through which the name tick is used, although the context makes it evident that it is the Melophagus or kaid that is meant. The same thing constantly occurs in advertisements by the manufacturers and vendors of sheep-dipping stuffs. My object in now writing to you is to try to clear up this confusion; and in particular to explain to your correspondent, 'O. F.,' who appears to be an experienced flockmaster, that my former letter had exclusive reference to the true tick (Ixodes Ricinus), from which his part of the country seems, happily, to be exempt." *John Wilson.*

See also the following veterinary report, taken from p. 509, 1870:—

"Some other novel cases occurred in lambs, in which death resulted from parasites existing on the skin. The parasites in question were those commonly known as ticks (Ixodes Ricinus). These parasites abound in most countries, and are met with both on wild and domesticated animals, firmly attached to the skin, from which they draw blood as their food. Until now they have not been found on animals in Great Britain to an extent injurious to health, much less as causing death. In hot countries, however, and particularly in many parts of South America, these parasites attack animals in such vast nnmbers, that even oxen succumb to the irritating and exhaustive effects of their attacks. Specimens of the skin of lambs, thickly covered with these epizoa, were sent from Kent by a veterinary surgeon consulted on the case. In his communication he writes that 'they had attacked the sheep and lambs, both on uplands and marshes, and that one farmer found a large quantity of them on some colts which were at pasture near to the sheep.' There are few parasites more tenacious of life than ticks, but experiments having shown that they can easily be destroyed by carbolic acid, it was recommended that a trial should be given to dipping the sheep and lambs in a diluted mixture of the acid. This proved most effective in the destruction of the ticks, and thereby prevented a further loss of lambs."]

Large's Brick-Machine.—This brick-machine, shown in the International Exhibition, invented by Henry Large, and manufactured by H. Clayton, Son & Hewlett, is chiefly for concrete bricks that do not require burning. The moulds are filled with semi-dry material and compressed by the central plunger, actuated by an eccentric on the axis of the large spur-wheel. A second plunger, on the right, is worked by a rocking lever, and when the mould with the compressed brick comes under it, its downward stroke presses it through on to a receiving table, which descends with the stroke so as to allow the brick being removed by hand. This done, the receiving-table rises to its former position by a weighted lever, ready to receive another brick, and the empty mould is taken off and refilled. On the left-hand side a bent lever is furnished at the lower end with a small roller, against the side of a newly filled mould, which it forces in below the central plunger, and in doing so pushes the compressed brick out from below forwards, and also the second compressed brick on to the receiving-table under the second plunger. When the bent lever is drawn back, a newly filled mould is again placed before it. About 500 bricks are made per hour, or 5000 per day of 10 hours. Moulds are made of any size or shape ordered. This machine may also be used for compressing peat or small coals into brick for fuel. The utilisation of our peat bogs is just now a question of national interest, and if machines on this principle can be profitably used, it will be a triumph. Some promising specimens of compressed peat are shown at the Atlas Works. *W. B.*

Sewage Irrigation at Rugby.—I have read with interest the article by Mr. Palmer on sewage irrigation at Rugby, in the *Gardeners' Chronicle* of July 1. On one point Mr. Palmer's statements appear contradictory, but a word of explanation from him would probably clear up the apparent inconsistency. Mr. Palmer states, "Nothing in the shape of storage is possible. The sewage must be distributed at the earliest possible moment, to prevent decomposition and consequent nuisance, as well as to secure its full value to the land." But a little further on, in stating the mode of application, Mr. Palmer recommends that the land should be well irrigated before the crop is sown, that a slight irrigation should be given after the crop is up, another dressing in the spring, and a copious dressing after each cutting of the crop. Now, in order to act upon these suggestions, there must surely be a storage of the sewage. If not, in what manner is it to be dealt with? Another point in which Mr. Palmer would add to the value of his communication, would be to state what amount of sewage per acre he considers most valuable to the land. Of course the answer to this question must depend on the strength of the sewage. *J. M.*

Fisken's Steam-plough.—At p. 854 you give an extract from the Highland Society's Proceedings, which contains a very interesting account of Fisken's steam-plough, as worked upon Offerton Hall Farm, near Sunderland, by Mr. M'Laren. There is, however, one extraordinary statement in this account which it is very hard to understand. Messrs. Swinton and Wilson, who were deputed by the Society to inspect the working of this plough, report that the engine was a Clayton & Shuttleworth's 12-horse power traction engine, with two 8¼-inch cylinders and 12-inch stroke, and they say it was working at 180 to 200 revolutions per minute, with a pressure on the boiler of 60 lb. to 75 lb. They then say "from these data it will be seen that at 70 lb. pressure the engine was giving off a power equal to about 20 horses." Surely this is a mistake! We are not told that the engine was working "expansively," and if we suppose it was working with full steam, shutting off, say, at three-quarter stroke and 70 lb. steam, the gross theoretical power would be upwards of 73-horse power, so that we must suppose 53-horse power to be absorbed in friction, cooling, waste, and back-pressure, to bring down the effective power to 20 horses. Here is the calculation, taking the lowest rate of speed named, 180 revolutions, or 360 feet per minute in the piston. The two cylinders have an area of rather more than 100 square inches, and 70 lb. steam cut off at $\frac{3}{4}$ of the stroke will give an average pressure of 67 lb.; therefore 67 × 100 × 360 = 2,412,000 lb. raised 1 foot per minute, or "foot-pounds," as they were called. Now, a horse-power is 33,000 foot-pounds, therefore $\frac{2,412,000}{33,000} = 73.09$, or 73-horse power. According to Tredgold a non-condensing engine wastes four-tenths of its whole original power by friction, cooling, waste, and back-pressure, leaving six-tenths as the effective power, but $73.09 \times 0.6 = 43.85$, or nearly 44-horse power "effective." Modern inquirers do not allow so much as four-tenths for waste and friction, some call it three-tenths, others $\frac{1}{4}$, or others, again, as little as two-tenths. If we allow three-tenths, which I believe to be a very fair allowance, then seven-tenths are effective, and seven-tenths of 73.09 would be 51.16, or upwards of 51-horse power effective. How, then, do Messrs. Swinton and Wilson make out only 20-horse power? But Clayton & Shuttleworth's traction engines are furnished with link-motion for reversing, and by means of this the engine can be made to work expansively to a certain extent. And if we suppose the steam cut off at one-third of the stroke, it would give an average pressure of 42 lb. on the piston, and a gross theoretical power of 42 × 100 × 360 = 1,512,000 foot-pounds, or $\frac{1,512,000}{33,000} = 45.82$ horse power; and if (as there is considerable back-pressure in working expansively with only link-motion gear) we allow four-tenths of this to be wasted, and only six-tenths effective, it would still give 27½-horse power effective. I cannot therefore conceive how Messrs. Swinton and Wilson arrive at their estimate of 20-horse power. But there is another element in their paper which is also curious; it required 8 lb. pressure on the boiler to keep the engine going at 160 revolutions a minute, and to keep both the engine and the flying rope going required 20 lb. on the boiler, although no other work was done except keeping the machinery moving round. If we suppose the same pressure, 20 lb., would keep the whole moving at 180 revolutions (360 feet) per minute, then the power absorbed by friction, waste, &c., assuming the engine to be cutting off at three-fourths of the stroke, would be as follows:—20 lb. steam would give about 19 lb. average pressure, therefore 19 × 100 × 360 = 684,000 foot-pounds is the power absorbed in keeping the machinery in motion at that speed without doing work. Now, when it was moving the implement, it was said to use up 70 lb. steam, which, as mentioned before, will give an average pressure of 67 lb., and the whole power developed would be 67 × 100 × 360 = 2,412,000 foot-pounds; and if we deduct from this the power required to overcome friction, 684,000 as above, we get 1,728,000 foot-pounds as the power absorbed in merely moving the implement and the windlass-wheels; but $\frac{1,728,000}{33,000} = 52.36$ horse-power, or more than 52 actual horse-power, after deducting friction and waste! It certainly seems to me that there must be some error in the figures that are given in Messrs. Swinton and Wilson's report. *G. A. H.*

Foreign Correspondence.

BERLIN: *July* 20.—*Liernur's Pneumatic Sewerage* (see p. 755, June 10).—In my last communication upon this subject, I have been asked in an editorial parenthesis what I mean by irrigation having come to grief. Well, I am not going to be aggravating; however, I can't help stating that it has. I know very well that Mr. Mechi himself has given up irrigating his own fields, and has again begun to cart his dung in a sober manner—everybody nearly in Germany knows as much as that of Tiptree Hall proceedings; it has gone the round of the fifty agricultural journals in Germany. But I will not dwell upon this. England, I suppose, cannot do without irrigation, as she has not been able to do without sewerage, which without would be blurred and unfinished; and, mayhap, irrigation will suit England as a very comfortable and cleanly thing—it certainly will not suit Germany, where it is regarded as a squandering, dear, unpractical, and out-of-the-way institution altogether, *i.e.*, sewerage and irrigation as an unit.

They have tried it in the south of Berlin, on the Tempelhofer-Feld, and have found out that the German winter, with an average of 15° R., will not permit of the irrigation going on for at least two months at all—in some years this period would even last four months. During all this time the sewage would have to go down the river, do away with the fish, create nasty sediments in the little Spree, which is the name of the Berlin rivulet, and poison the watercourse also of the Elbe. Besides, about 25 per cent. of the whole town manure would be lost in the course of the year; and, worse still, a certain smell which an impartial nose could not fail to discover in the very winter on the fields, would become insupportable in summer,—a rather hot time in the interior of the Continent. The glorious waves that surround England make the winter warm and the summer cool, the rivers short and broad and full, the air pure and ever-changing, and make the people of that country rich and generous, so as to enable them to afford squandering money and manure in sewers, water-carriage, irrigation, and irrigation dinners, all for the sake of the comfort of their national economists. The Germans are a stingy nation—they cannot help being it, as they are rather out of the way of the money-courses, and the world's great storehouse, the ocean. This stinginess is the more prominent the more you get into the interior, and although money here is dearer than anywhere else, the stinginess of the people drives up the prices of everything in proportion, and you live no cheaper in Saxony than in Hamburgh. This stinginess makes people slow about taking up new ideas practically, and makes them rather sharp about the costs; so, they have found out the water-carriage system to be the dearest in getting up and on, and the least likely to pay; which, indeed, cannot be denied to be true. The Germans, and the Saxons most so, have Chinese ideas upon comfort, their highest comfort being saving money, storing knowledge, and utilising every available thing except rats' tails. They will utilise Englishmen, I can tell you, and they will utilise English institutions, if so be that they are anything like paying for any amount of trouble; but they will not, and do not care for comfort, if it be too dear a piece of furniture.

In this turn of mind they have calculated that every conveyance above ground is cheaper than below; that a railway and a locomotive will carry any amount of non-diluted town-manure 600 times as far as a sewer and a pumping machine for the same money; that the undiluted town-manure is more useful and more easily utilised than the best sewage can be by irrigation; that the farmers will take to the undiluted manure very readily, and that they abhor the sewage; that they will pay for the former, but not for the latter (if they are not paid for paying), and thus that a contractor for the scavengering business can be found, but not for the sewerage and irrigation (as there is no land-letting system). Thus again the townspeople see their way to the alleviation of local taxes by making their scavengering-man pay for the things he carries off to the country, whilst there is no doubt that sewerage aggravates the local expenses. Now Mr. Liernur steps forward and tells them that he will procure for the townsmen all the comforts of the water-closet and water-carriage system by his pneumatic works, save the time of hundreds of scavengering-men, keep the houses from abomination by his machine, give the farmers what they are in need of for a cheap price, if he be allowed to have the proceeds, or, as I understand, if he is paid for his patent.

The thing can be set agoing like a gas or a water company, to the works of which Liernur's have the greatest resemblance possible, although, indeed, they are not in the least as ponderous. Nevertheless, the three systems correspond and are of the same importance. The gasworks have done away with darkness, with oilyness, tallow-universality, soot, torches, pitch, and the like mediæval comforts; the waterworks have done away with dirt, open wells to fall into, street-pumps to run your head against in a starless night, dearth, oriental water-managing, and the like; and Liernur's works, which are the inverted gasworks, only a deal more simple, will in their turn do away with those beastly apartments that make German towns at present nearly uninhabitable for Englishmen, and, what is not much less, will do away with those retorts for miasmatic exhalations, those sources of impregnation of soil, air, and water, which we delight in calling sewers.

There is no denying that all infectious diseases have been on the increase ever since sewers have begun to brew underground; mortality has risen in London for diseases, such as bronchitis, typhus, consumption, in a fearful ratio—during the period between 1849-1866, from 4333 to exactly 8666 in the million. Sewers are the cause of the subsoil-water lowering its level, and of the infective germs finding their hothouse enlarged underground. However, this subject has been ventilated all the more, as the thing itself is unventilateable; and, indeed, with the loose Berlin soil, the slowness of the river, and the absence of all fresh sea-breezes, with the impossibility of all irrigation proceedings, on account of both heat and cold, there is hardly a less comfortable thought, and a thing so much to shrink from, than the undermining of the towns, and the living, walking, eating, drinking, and sleeping upon sewers, with the Pettenkofer hypothesis disturbing our dreams.

Thus I find every reason to be rather enthusiastic when speaking of Liernur's invention, which, of course, has its adversaries—not so much among the brick-makers and contractors, who naturally prefer building sewers to anything else, as amongst the people themselves; for Germans, on the whole, are the most conservative people in Europe, and fearful of any invention that has not been in practice somewhere else for a score of years at least. I will drop my enthusiasm for once, just for the sake of convenience, and proceed to Prague where the system has been in use during three winters.

Professor Ranke, a delegate of the Munich magistrates, went to Prague to study the subject, and did it slily too, for he never discovered his mission to anyone there. He had read about the systems being a swindle, and was fearful of being swindled himself. On the night of March 23, 1870, he arrived, quite in the way of a Carbonari, and took a dose of sound sleep, to be all awake in the morning. Well, we cannot be so circumlocutive though as he is himself about all his precautions, and must simply state what he saw and heard upon the subject in hand.

There were great barracks, with 2200 soldiers in, and there was Major Gerstenbraur, who took care of the Professor, led him all about the place, where there had been terrible stinks in former times, for the soldiers were Polonians from Galicia; but all these stinks had been done away with by Liernur and his ventilating closets at the end of every corridor, which are as cleanly as can be expected under such circumstances. There are syphons under each closet, made to block up the iron tubes that go down the walls into the ground, and have never been frozen up. The health of the garrison has been perceptibly better than in pre-Liernurian times. Then there is another military gentleman, Captain Cornetzki, turning up, to show the Professor the more serious business belowground. He tells him first that the Austrian Government is highly contented with the working of the patent, which it seems has now been bought by the Government, and that some other barracks in Prague and Vienna are going to be provided in the same manner. He is permitted to have a look at the documents belonging thereunto, which, however, are less interesting to the reader than satifactory to the Liernurian disciple. The chief is a contract for daily removal of the fæces from all the Prague barracks, and for the due provision with all the apparatus for the purpose of their removal by the Liernur Company, in pay for which services the Liernur Company asks and demands no more than the right of disposing and selling the fæces on their own terms.

The sale of the manure is insured by contracts with certain great Beetroot cultivators near Prague, one of whom has contracted for 1000 tons per annum, paying 7½*d.* per 1 lb. of nitrogen, the manure containing 1 per cent., and being regarded as equal to five times the weight of common stable dung. The like contracts have now been made at Berlin, Cologne, Haag, Antwerp, and other towns of the Netherlands. The transport by rail (in petroleum casks, containing 3 cwt. each) is charged at 4*s.* per 10 tons carried 20 English miles. Under these circumstances, not exceedingly fortunate at all events, the rather expensive machines, tubes, syphons, reservoirs, tenders, air pumps, &c., will be—putting aside one-half of the income at 10 per cent. for redemption, and leaving the other half to pay for coals, workmen, horses, inspectors, and officials—renewable, so to say, in every period of 15 years. However, if the system be once adopted generally, and going on on a larger scale, the replacement will take place in the time of three years at most—such, at least, is stated in the calculations of the Berlin project. Here there will be a great central engine-house, doing the work for whole quarters of the town, in the same way as a gas reservoir, with the only difference, that the reservoirs will be localised, and merely connected with the central station by evacuation tubes.

The tubes can be of any possible length. The Professor is quite assured that technical difficulties have been and will be most successfully vanquished. He has been shown rats, soldiers' breadbags, boots, caps, and even brooms, that had passed the whole course of the tubes at the barracks, which are indeed highly complicated, by the foundation walls not being allowed to be injured, and which had turned up like cannon balls bumping against the sides of the tender. The velocity inside the tubes must be something quite shot-like, even with but half a vacuum employed. In the beginning they had once, with inexperienced workmen, evacuated down to 25 inches, and had forgotten to shut the valve of the air-pump, in consequence of which it had been flooded, and had to be purified by five minutes' pumping. This, indeed, seems to be the only accident that ever happened, except a piece of iron rod once obstructing the syphon of one of the closets, and being driven down into the main pipe. This had to be got out by unscrewing, and they found it quite bent. The sides of the tubes were seen to be covered by a thin film of slime, protecting the material, and diminishing both adhesion and friction. Such accidents are owing to the closets not being constructed anew, and according to the Liernur plan, which has provided against anything obstructive passing the system, by narrowing the prime syphon, and giving it an extra bend. The air-pump now is self-regulating, so that there is no longer any flooding it.

The Professor, who saw things going on at 6 o'clock next morning, found the whole process of evacuation, both of the subterranean reservoir and of the tender, finished in five minutes' time, without bustle, smoke, smell, and anything except fire-engine-like expertness. He followed the tender to some back-yard place, saw its contents decanted into barrels, put on waggons, and then pulled out of sight by sundry pairs of oxen, which was quite a lyrical end to the matter. There is a factory, too, at Prague, with 300 workmen, provided with the Liernur machine, and the Professor went there, slyly entered the office, and asked the principal (Mr. Hüse, maschinenfabrik, Carolinenthal) what he thought about it; whereupon the principal said he had never thought at all upon the matter ever since it was going on, which it has been ever since the month of November, 1869, and that he only knew about the tender coming every morning, and something being done outside the building in a most gentlemanly manner, which the Professor means to say was the best answer to be had.

I will put a stop to this letter now, apologising for its extreme length, however, I cannot do so without giving expression to some slight feeling of hope, that your readers may look more leniently upon the Germans for their not yet having adopted the sewerage and irrigation system, the which Old England glories in. *O. Beta, Berlin.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

THE close of a successful annual meeting, when readers are most impressed by a sense of the valuable services rendered by our national society, is perhaps the fairest time in which to lay before them a criticism of the management of its affairs; and we therefore reproduce now, from the columns of the agricultural papers of May last, the discussion which took place on that subject before the general meeting then held. We had not room for a report of this discussion at the time:—

Sir J. H. MAXWELL moved the adoption of the report.

Mr. MECHI, in seconding the motion, said that that Society was conferring great benefits on British agriculture. Its publications would have alone entitled it to the thanks of the agricultural community; while the annual shows, by causing comparisons to be made between various breeds of stock and various kinds of machinery, had done a great deal towards removing that prejudice, self-esteem, and pride which were to be found among agriculturists as well as other classes of the community. As regarded the motto of the Society, "Practice with Science," it was impossible to deny that one great difficulty of that Society had been that it had had to contend against a want of education among agriculturists, and a sort of abhorrence on the part of many practical farmers of the very name of science. This had compelled the Council to be very cautious in its movements, but they had at length succeeded in their endeavours to bring science to bear fully upon agriculture. Witness the lectures and papers of Professor Voelcker, which were of very great importance and value to the interests of agriculture. Another evidence of progress was furnished by the Royal Agricultural College at Cirencester, which was now somewhat improved in the estimation of practical farmers. He could not help remarking that the number of members of that Society was so small as to be discreditable to British agriculture. There were in England and Wales about 300,000 farmers, and it appeared that only about 6000, or 1½ per cent., could afford £1 a year to belong to that Society, or else only that number were desirous of gaining the knowledge which was communicated in the admirable papers published in the Journal. He (Mr. Mechi) believed that British agriculture was now entering upon a new phase. He believed that the Education Bill which was passed last session would indirectly so change the position of British farmers as regarded education and science within the next half century, that if some of them could come back again—he almost wished they could on that account — they would find agriculture presenting an aspect altogether different from that which it now wore.

Dr. CRISP said Mr. Mechi had remarked that the numbers of members of that Society was not as great as it ought to be. Everybody knew that, and everybody felt that there must be something wrong and rotten at the very foundation of the Society, seeing that it had under 6000 members. It behoved them to ask what was wrong—why it was that that Society was not more popular? It was clear to him that before it could become popular there must be a revision of the Charter, and they must be enabled to introduce many matters intimately connected with agriculture, and with the welfare of the people, the exclusion of which had been a clog, and exceedingly detrimental to the advancement of agricultural science. He had found that during the first decennial period of the Society's career, that is from 1840 to 1851, the number of members was 60,545, and that during the last ten years the number was only 55,067, showing a diminution of 5476 in the latter as compared wiih the former. At the same time he found that the number of members of Chambers of Agriculture was 18,000. One great reason, he believed, why they had not progressed as a society was, that the Charter had crippled them, so that they had been unable to touch upon matters which were most important in reference to the advancement of agriculture. He must, however, now call attention to the fact, that the Council had positively deviated from the Charter. In some respects they had, in fact, never adhered to it; they had broken their own laws, and might be called poachers, having gone upon manors which did not belong to them. At the last meeting he spoke particularly of improvements which might and should be effected in the Journal, remarking that the members ought to know what was going on in other countries, such as Germany and America; and that if the abstract were given of such matters, it might convey many useful hints to farmers in this kingdom. What did the Charter say with regard to the objects of the Society? The Charter said that the Society was—"First, to embody such information contained in agricultural publications, and in other scientific works, as has been proved by practical experience to be useful to the cultivators of the soil; 2d, to correspond with agricultural, horticultural, and other scientific societies, both at home and abroad, and to select from such correspondence all information which, according to the opinion of the Society, may be likely to lead to practical benefit in the cultivation of the soil." Now, that had never been done. Having looked very carefully through the Journals, he had never seen an abstract of any single foreign publication. It was all very well for gentlemen to visit Belgium or some other country on a sort of holiday tour; but he believed that if the published results of practical knowledge abroad were put into a small compass and concentrated as it were in the Society's Journal, that would be of infinitely more service than many of the papers which had appeared there. Another object stated in the Charter was "to collect information with regard to the management of woods, plantations and fences, and on every other subject connected with rural improvement." Now, how had that been carried out? There had been a constant avoidance there of the question of the Game Laws, which he had not the slightest hesitation in saying had been very injurious both to tenant-farmers and to agricultural labourers. If that were a proper occasion for doing so, he could adduce evidence which would convince anyone that what he said on that point was correct. How could they properly investigate "the management of woods, plantations, and fences," without saying something about hares and rabbits; or how could cultivation be properly carried on where game abounded as it did in many places? He believed that the connection between that Society and the Veterinary College had been extremely detrimental to the veterinary profession and to veterinary science. Let him explain what he meant. Although they did not cull from other journals, nearly all persons in the scientific world read their Journal. In reports in their Journal mention was made of the worm Filaria Bronchialis (he must know something about that worm, for he was the first to speak about it in this country) as very destructive to lambs. There was no such thing as the Filaria Bronchialis; that was altogether a misnomer. The worm that injured and destroyed the lamb was the Strongylus Filaria, a different genus altogether. You might as well call a badger a bear, or a bear a lion, as call the worm in question Filaria Bronchialis. It might be said that was a matter of no importance; but he presumed that the Council wished the Journal to stand well before the scientific world, and it could not do that while it contained such a monstrous misnomer. Another object of the Society described in the Charter was "to promote the comfort and welfare of labourers." He did not see how the comfort and welfare of labourers could be promoted in many districts while the Game Laws remained in their present form. He might remark that, being anxious to ascertain beforehand whether he would be allowed to introduce the subject of the Game Laws, he applied to the secretary for information, and he was told in effect he might do so by a side-wind, advocating a revision of the Charter, and giving his reasons for so doing. He would not enter into the matter then, but he had desired to bring the subject before the meeting, and secure a discussion, in order that at some future time the Council might propose a revision of the Charter. It was, he repeated, impossible that the comfort and welfare of labourers could be promoted in districts where labourers were corrupted through the operations of the Game Laws. He had known little children sent out to get possession of the pheasants' eggs, for which a shilling would be obtained; and what must be the ultimate destination of children who were led to steal, and liable to the demoralisation of a prison? Again, it seemed to him a great hardship to farmers that they should be obliged to keep poachers while they were in prison, besides paying the expense of prosecutions. He knew that that subject was not a very pleasant one, and as he was precluded from entering into it on that occasion, he should take another opportunity of doing so in a different way. He had observed that he considered the connection between that Society and the Veterinary College was detrimental to veterinary science. In France a veterinary student could not pass his examination under four years; in this country a student might pass at the end of one year, and all kinds of animals might then pass through his hands. It appeared to him a great stigma upon that Society that while £200 a year was paid by it to the Veterinary College, on condition that the members should have their horses and pigs examined—a matter about which nothing was said in the Charter—and when £100 had been granted towards a memorial to his late Royal Highness the Prince Consort, when an application was recently made for a grant in aid of the French Farmers' Seed Fund, it was refused by the Council, on the ground that compliance would be against the Charter. He thought it would require a good deal of hair-splitting to defend such a distinction, or to show why, if it were right to grant £100 for the memorial, it would have been wrong to grant £500 for the Seed Fund! Feeling great interest in the subject of the Game Laws, and in scientific matters connected with agriculture, he had ventured to make these remarks, in the hope that they would hereafter be discussed at a much fuller meeting.

After remarks by Sir Walter Stirling, in corroboration of Dr. Crisp's argument, and a denial by Sir G. Jenkinson of its justice, so far as the game question was concerned, the CHAIRMAN (Lord Vernon) said:—

Gentleman, it is always a very healthy thing for the Council to be brought face to face with the constituents whom they represent, and to receive the measure either of censure or of praise which, in the opinion of the agricultural public, they deserve. I must say, with regard to the picture drawn by Dr. Crisp of the condition of this Society, that the statistical comparison drawn by him between two periods of ten years does not convey the same impression to my mind as it does to his. I think it would be far more satisfactory if he were to compare one period with another more directly antecedent to the present for the purpose of making comparison, because I cannot tell what causes may have operated in the earlier days of this Society; though I think I may fairly assume that the existence of Farmers' Clubs and of Chambers of Agriculture and other societies has tended to diminish the amount of support accorded to this Society. If you compare the number of subscribers in December, 1869, with the number in December, 1870, you will find that there is a gain of 12; while if you compare the number in May, 1870, with the number in May, 1871, you will find a gain of 210: so that it is quite clear that an increase has recently been going on. I quite admit, however, that in the case of a great society like this—a society which has, I may say, created agriculture in this country, and is still doing so much to improve it in matters of detail—it is a surprising thing that it should not be more largely supported than it is. The discussion to-day has, I believe, gone beyond the strict limits of what is authorised by the Charter, and it appears to me that the proper course for a gentleman who holds such views as Dr. Crisp does is, not to write to a newspaper to complain that certain subjects which are unpalatable to the Council are not allowed to be introduced, but to ask the Society to entertain the question whether the Charter should not be revised; and until that question has been decided in one way or other, the subject of the Game Laws should not, I think, be introduced at a meeting like this. At the same time I must remark that the position of the Chairman on an occasion like the present is not a very easy one. I see myself a very great distinction between Game Laws and game, game being an agricultural question, and Game Laws a political one. I did not, therefore, feel it to be within my province to stop the discussion which has taken place, but I am glad that it has not gone beyond the limits which it reached. I must say that I was very much afraid it would go further, and I am obliged to those gentlemen who met my wishes by not entering more fully into the question. Now, it appears to me that there is one very grave reason why this Society could not undertake to deal with those questions which have been taken up by the Chambers of Agriculture, and that is the practical one that the business of the Society occupies for several days in each month the close attention of gentlemen who come from all parts of England; and I have never been associated with a body of gentlemen who more thoroughly and conscientiously performed their duty. The greatest attention is paid by the Council to the opinions of agriculturists outside; and if you were to tack on to their duties the consideration of such questions as those which occupy the attention of the Chambers of Agriculture, coming as the members of the Council do from all parts of England, I cannot but think that you would put on them an amount of work under the pressure of which they would break down. If the question of an alteration of the Charter is to be raised—and my opinion a few years ago was greatly in favour of altering it—I should certainly not wish to see it altered in such a way as to lead to the including of those questions which are now so ably, satisfactorily, and carefully dealt with by the Chambers of Agriculture.

Mr. ROBERTS, in seconding a vote of thanks to the auditors, alluded to the last paragraph in the report, where the Council say they "cannot but express their regret that more candidates have not come forward for the prize offered, and that out of the number entered more than half did not present themselves for examination," said he hoped that regret would not lead to an abandonment of the plan of offering prizes, as the comparative failure of the examinations proved how much such a stimulus was needed; adding that, if the offering of prizes for implements had ceased after the first Oxford meeting, agriculture would have suffered great loss in consequence. It was, he added, an open question whether the best way for a young man to learn farming was to live with a farmer, and daily observe with him the operations of husbandry, or to go to an agricultural college; but in his opinion the latter course was on the whole the best. He thought something should be done to afford an agricultural education to the children of agricultural labourers, and it occurred to him that the most inexpensive and effectual mode of accomplishing that object would be for that Society to offer prizes to persons in training for the office of village schoolmasters for a knowledge of agriculture and the power of teaching it. Children would always take an interest in lessons on agriculture if they saw a practical application of them near the school. He did not see why the Society should maintain its connection with the Veterinary College, while the Council abstained from forming any connection with an agricultural college.

NOTTINGHAM.

The Tenure of Land.—At a recent meeting of the Notts Chamber of Agriculture, Mr. CHRISTOPHER NEVILLE, of Thorney, said that although he professed to be acquainted with subjects as affecting landlord and tenant, he would not rise to speak on the point, except in the expectation that it would elicit some observations from gentlemen besides himself, and especially from tenants, because the parties who were deeply affected were the landlord who let the land, and the tenant who took it. His notion was, that both parties had to be considered. With this little preface he would move a formal resolution, which he had hastily drawn up, to the following effect:—"That a yearly tenancy, with six months' notice to quit on either side, does not in all cases give sufficient security to the tenant for the investment of his capital in the due cultivation of his farm." This might be a matter of opinion; but, as a matter of fact, he certainly did know many cases where the tenant had cultivated his farm very highly, and had invested a good deal of capital, and from some, perhaps accidental, circumstances, had received notice to quit at six months, and could not possibly get his capital out again. No man in his senses, who knew anything about farming, would disagree with him when he said that it was impossible, if a man received notice to quit in October to go out in April, that he could get his capital out of that farm, for he must leave a great amount of artificial manure and other things in it. He thought, therefore, that it was unjust to the tenant and injurious to the country; and he maintained that it would be a good thing if an arrangement could be made by lease, tenant-right agreement, or anything else, to render such an injustice an impossible occurrence. He, as a landlord, did not approve of the views of the democratic party in London, though he was a great Liberal, for they spoke of landlords as trying to rob the tenants, and that sort of thing. This was all a heap of rubbish. The majority of landlords did nothing of the sort. He knew estates of 50,000 acres, where the landlord was as honest and liberal as possible, and did not want to do anything wrong. If any gentleman would show him one tenant who had been robbed by being turned out of his farm unjustly, he would show 50 or 100 who had never been robbed at all. Of course, if a tenant had been robbed of £1000 or £1500, it was no consolation for him to be told that there were others who had not been robbed at all; but, as a landlord, he declared he should be glad if some agreement could be hit upon to suit all parties, and to render it possible for the tenant to feel that, in any event, he would be fully compensated. The difficulties at first sight seemed enormous, but when the Government were obliged to do it, they did it, for they granted a measure of great security to the Irish tenants. He did not approve of the whole of that Irish Bill, but he approved of the principle of it, and as an honest man he could not see why, if the Irish tenantry were to be rendered secure from any casualty, the English tenantry should not have the same advantage. He had been all over Ireland three times, and knew a good deal about the country, but the only difference he found between the Irish and English was this, that the Irish tenant farmed a great deal worse than the English, that the Irish tenant shot his landlord, which the English did not, and that the English tenant paid his rent a good deal better. These were the only differences he could see, and so far from sanctioning their going on year after year without trying to do anything, he thought that if landlords had honour and honesty about them it was a reason why they should exert themselves more. The better their tenants behaved, the better they ought to try to behave to them in return; and for his own part he was very willing to bring forward the subject on which he had made a motion. He had hoped it might receive some consideration at Worksop, and he was glad to find Mr. Foljambe, who was a larger landowner than himself, express his willingness to enter into any discussion of the sort so as to grant the tenant greater security. He thought he had now satisfied them or any reasonable person that the object was a good one, and he would therefore go on to consider what could be done towards giving the tenant the security necessary.

The Lease.—The Scotch plan was that of a lease of say, 21 years, but this involved some other conditions. He found the Scotch papers full of advertisements of farms to let for 21 years upon offer, and it seemed to him like a sort of auction. He knew a great many tenant-farmers whom this arrangement would not suit, because they would rather go on under a large landlord year after year, than have their farms advertised in the papers, and have to bid for them by auction, as it were, for 21 years, for they could often go on under a landlord for a much longer period. There was another objection that was felt against leases. If a tenant held a farm he might leave to get a better under a larger landlord; and on his (the speaker's) own estate, for instance, if a farm of 200 or 300 acres was vacated, and a tenant who had hitherto held only 50 or 100 acres was able to take it, he always let it to him in preference to a stranger, and so on. Men of enterprise and capital would not, under these circumstances, like to tie themselves for 21 years to a farm of 100 acres or so, because they were hoping to get larger and better farms. Another disadvantage of a lease was that it necessarily involved some agreement as to cropping. An able land-agent would say to a landowner, If you part with your land for 21 years, you ought to have a strict agreement as to cropping, to provide for the due cultivation of the farm. He had heard that this had been admitted by tenants to be just and reasonable, and not outrageous at all; but still, his tenants being from year to year, he had no occasion to do this. He let them crop as they pleased, with one condition—namely, that they did not injure the estate. If they did not injure him or his family, the more money they got the better for him. In this matter a good agent was of great use, but he should only act as an impartial mediator between landlord and tenant, doing equal justice to both. He told his agent at his rent-day, "I think you are a good agent, for if anything you rather go against me, and that is a good fault." If a tenant was not injuring his farm, it is a great advantage to him to be able to crop as he pleased, and he had never heard how it could be arranged under a 21 years' lease. He granted a lease was absolute security, but there were those disadvantages, and he had set them forth for their consideration.

Tenant-right.—Another security was that of tenant-right, and they had carried this so far in Ireland that now, when a man took a farm he had to have two capitals, one to buy the tenant-right, and another to stock his farm. It was consequently no uncommon thing for a man to exhaust all his capital in buying tenant-right, and then to have none to put upon the farm. He considered it was quite right for a tenant to be compensated; but several gentlemen had put the matter in this way—Suppose a farmer had two or three sons, and placed them upon farms, and the tenant-right on one was £6 and £7 an acre, and on another £8 or £10, he had a great difficulty in fixing his sons. Therefore, in the management of his estate, with Mr. Bartholomew, his agent's, assistance, he endeavoured to keep the tenant-right as low as he possibly could; and, in order to do this, he had adopted a principle which he had not the smallest doubt whatever would be the best for both landlord and tenant, and it was this, that he never allowed a tenant to invest a single farthing in the permanent improvement of his farm. Perhaps he ought not to say that he did not allow it; but he told his tenants, when he came to the property 25 years ago, never to spend a farthing on building or draining, or any really permanent improvement. If they wanted any building or draining done, and Mr. Bartholomew said it ought to be done, he did it, and told them they must pay him interest by way of rent. The tenant thus kept his capital to work his farm with instead of burying it in his landlord's estate, and when he quitted his farm he was able to put his money in his pocket. He had proposed to Mr. Gladstone, some six months before that gentleman introduced his Irish Bill, that a court of equity should be established for the adjustment of these matters, as things seemed to be in such confusion in Ireland. He suggested that whenever a landlord gave a tenant notice to quit he should have the power of calling in a court of equity or an arbitrator, or some one to judge whether he really had a claim or not. It was a thing which he, as a landowner, would be quite willing to do himself if the tenantry desired it. A running lease of three and a half or four years had also been suggested, so that when a tenant received notice to quit he should have the opportunity of having a course of cropping before leaving, and should thus be able to get back what he had spent on the land. The objection, however, which would strike everybody, to this arrangement was, that if a tenant was farming badly the landlord would be injured by giving so long a notice; and then, again, if a tenant had a chance of getting a better farm, he would be three or four years before he could leave, and might thus lose it. Some arrangement might, perhaps, be made for a landlord to give his tenant six months' notice to quit, and then keep his farm on six months, and the tenant to be able to quit in six months, an arbitrator to be called in to give a just claim to either party. A court of equity would obviate the cost of a trial at the assizes, if the matter should ever be pressed so far as that; but if the landlord was willing to have an arbitration, and they could not agree as to who should be the man, he would leave the selection to the chairman of the Council of the Chamber of Agriculture in the county. He did not want Acts of Parliament; his plan was entirely voluntary; but if some arrangement could be made to grant the tenant greater security, he was confident that in the long run it would be for the interest of both parties.

Mr. Barrow, M.P., said he had followed the plan Mr. Neville had recommended. He did not think there ought to be any hesitation on the subject to tie the hand of either landlord or tenant. He was for freedom of action very much on both sides. He agreed for the most part with almost everything that had fallen from Mr. Neville. Having himself been a landlord for 50 or 60 years, and in a larger way for between 30 or 40, he could only say that his tenants were all from year to year, and he had never given one notice to quit, and he had never received it. He did not, therefore, see that there was any difficulty in landlord and tenant agreeing on a yearly tenancy. On his estate, if there was any drainage or building to be done, he did it himself; but at the same time, if the tenants wished to drain rather more on more particular land under his agreement he found them tiles, and if they did the work by their agreement they were entitled on leaving to be repaid what they had paid for labour, so long as it expired within a certain number of years, within which he supposed they might have got back all that was due to them. If a man did any permanent improvement, it was to be subject to the same valuation as Mr. Neville had mentioned. He believed it to be perfectly practicable, for he had found it so himself with the small number with which he had to do. There was one difficulty Mr. Neville had suggested regarding agreements, and it was with respect to these permanent improvements whether or not if it was binding on the landlord to pay for them it was worth while for the tenant to pay additional rent on account of them. He only wished, however, to second what Mr. Neville had said.

Mr. R. Butler, of Ratcliffe, thought that tenure of land was in an unsatisfactory state with a yearly tenancy. A farmer had not the advantages which a tradesman received, because he was not in the same position for investing his capital. He might cultivate his land as well as he could wish, but he did not know what might happen. His landlord, as Mr. Neville pointed out at a previous meeting, might be killed in a railway accident, and another succeed who would be a bad one. He should say leases would be very beneficial to the country, subject to certain restrictions, and to investigations on behalf of the landlord or his agent, to see that the land was not deteriorated, and subject to dilapidations and to enhanced tenant-right, supposing the tenant had improved his land. A tenure which would be for the protection of the landlord and the security of the tenant would be very beneficial to the country. He had great pleasure in seconding the motion which Mr. Neville had proposed.

Mr. Gilbert, of Barnby, said Mr. Neville objected to legislative enactment, but he thought that that was just what they wanted. Suppose, for instance, that a landlord could not afford to make necessary improvements, and the tenant was to make them himself, what that tenant wanted was security for the permanent improvements which he had made; and he himself would have a legislative enactment, to the effect that every tenant on quitting his farm should receive an equivalent for the permanent improvements that he had made. He did not see how they could compel landlords to grant leases or tenants to take them, and, besides, it might be a very adverse thing either one way or the other. A man knew when his lease would expire, and he would get as much out of the land as he could before he left. He did not see any remedy at all except a uniform system of tenant-right and compulsory payment for permanent improvements.

Mr. Hemsley, of Shelton, said he should be sorry if the impression was left on the meeting that they, as a body, were desirous of having leases. His own opinion was, that where they had large landed proprietors they were far better off without leases, where they had a sufficient feeling of confidence between landlord and tenant. There were certain matters binding on leases, and certain things which rather disengaged the two parties. He should be rather sorry, therefore, if Mr. Butler's remark as to leases went from the meeting without a little dissent. He occupied land under a liberal and worthy landowner, and he should insult him and his agent if he asked for a lease, and should be extremely hurt himself if they, on their part, desired one. It was the same on many other noblemen's estates, and he was not, therefore, in favour of leases. He thought the question before them was the small amount of notice to quit, and this he considered might be discussed with a good deal of advantage. With reference to running tenant-rights, as a rule, they were not too high, and in a country like this, where capital could not find employment, surely they ought not to say there was not sufficient capital to farm land. It was rather away from what they might expect for the improvement of land to say that tenant-right might be a little more confined. He himself did not think that advisable at all. It was a point of more consequence now than it was, because farms were becoming very much enlarged; but at the same time he did not think, as a rule, that landlords found it difficult to meet with tenants with sufficient capital. He thought the arguments that had been used were rather in favour of extending tenant-right than curtailing it.

Notices of Books.

Poultry, their Varieties, Management, Breeding, and Diseases. By Hugh Piper, Author of "Pigeons," &c. Groombridge & Son.

Pigeons, their Varieties, Management, Breeding, and Diseases. By Hugh Piper. Groombridge & Sons.

The Homing or Carrier Pigeon (*le Pigeon Voyageur*): *its History, General Management, and Method of Training.* By W. B. Tegetmeier, F.Z.S. G. Routledge & Sons.

We have not before met with Mr. Piper's name in the literatuure of the poultry-yard, but these little books, which bear it, appear to us to be the production of a practical man and a trustworthy writer. From the first we make an extract on food and feeding:—

"Over-feeding is a common mistake with inexperienced poultry-keepers. A fat hen ceases to lay, or nearly, and is subject to many diseases, while an over-fed cock becomes lazy and useless, and may die of apoplexy. Half-fed fowls never pay, whether kept for the table or to produce eggs. A fowl cannot get fat or make an egg a day upon little or poor food. A hen producing eggs will eat nearly twice as much food as at another time.

"Barley, reckoned by weight, costs less than Wheat or Oats, and possesses a very fair proportion of flesh-forming substances, but contains a lesser amount of fatty matters than other varieties of corn. Barley-meal contains the same component parts as the whole grain, being ground with the husk; but only inferior Barley is made into meal.

"The best Wheat is dearer than Barley both by weight and measure, and possesses but about 1-12th part more flesh-forming material; but it is fortunate that the cheap Wheat is the best for poultry, for Professor Johnston says, 'the small or tail corn which the farmer separates before bringing his grain to market is richer in gluten (flesh-forming food) than the plump, full-grown grain, and is therefore more nutritious.'

"Oats are dearer than Barley by weight. The heaviest should be bought, as they contain very little more husk than the lightest, and are cheaper in proportion. Oats and oatmeal contain more flesh-forming material than any other grain, and double the amount of fatty material than Wheat. Fowls frequently refuse the lighter samples of Oats, but if soaked in water for a few hours, so as to swell the kernel, they will not refuse them.

"Maize or maize-meal must not be given in too great a proportion, as it is very fattening, from the large quantity of oil it contains; but mixed with Barley or barley-meal, it is a most economical and useful food. Whether whole or in meal, the Maize should be scalded, that the swelling may be done before it is eaten.

"Buckwheat is about equal to Barley in flesh-forming food, and is used greatly on the Continent.

"Peas, Beans, and Tares contain an extraordinary quantity of flesh-forming food, and very little of fat, but are too stimulating for general use, and would harden the muscular fibres and give too great firmness of flesh.

"The meal of Wheat and Barley are much the same as the whole grain, but oatmeal is drier, and separated from a large portion of the husk, which makes it too dear, except for fattening fowls and feeding the youngest chickens, for which it is the very best food.

"Fine 'middlings,' also termed 'thirds,' and in London coarse country flour, are much like oatmeal, and may be cheaply and advantageously employed, mixed with boiled or steamed small Potatos or roots.

"Potatos, from the large quantity of starch they contain, are not good unmixed, as regular food, but mixed with bran or meal are most conducive to good condition and laying. A good morning meal of soft food for a few fowls may be provided daily almost for nothing by boiling the Potato peelings till soft, and mashing them up with enough bran, slightly scalded, to make a tolerably stiff, dry paste. The peelings will supply as many fowls as there are persons at the dinner-table. A little salt should always be added, and in winter a slight sprinkling of pepper is good.

"If the soft food is mixed boiling hot at night and put in the oven, or covered with a cloth, it will be warm in the morning, in which state it should always be given in cold weather. It should be put into a trough railed across at the top, to prevent its being trodden upon by the fowls, and should always be mixed rather dry, for fowls do not like sticky food.

"Rice is not a cheap food. When boiled it absorbs a great quantity of water and forms a large substance, but, of course, only contains the original quantity of grain, which is of inferior value, especially for growing chickens, as it consists almost entirely of starch, and does not contain quite half the amount of flesh-forming materials as Oats.

"Fowls should be fed at regular hours, and will then soon become accustomed to them, and not loiter about the house or kitchen-door all day long, expecting food, which they will do if fed irregularly or too often, and neglect to forage about for themselves, and thus cost more for food.

"A little chopped raw meat may be given occasionally, especially to fowls that do not get many insects or worms, but the latter are more natural food when they can be had. Greaves, so much advertised for fowls, are very bad, rapidly throwing them out of condition, causing their feathers to fall off, and spoiling the flavour of the flesh.

"Where they have no grass plot, fresh vegetables must be thrown in daily, or it will be impossible to keep them in health. Cabbage and Lettuce leaves, Turnip-tops, Turnips cut into small pieces, and scattered like grain, or cut in two, or any refuse vegetables will do, but the best thing is a large sod of fresh-cut turf.

"A constant supply of fresh clean water is indispensable, and should be kept in a vessel so contrived that the fowls cannot make it dirty. In frosty weather it should be emptied every night, and snow must never be allowed to fall into it, snow-water being most injurious to poultry.

From the book on pigeons, by the same author, we take the concluding sentence :—

"In conclusion, we can confidently boast that this little manual contains more complete directions for the management of pigeons than have been given in any other work. The larger part of most books upon the subject is devoted to descriptions of the different varieties, which appears to us to be beginning at the wrong end; for through the want of plain and full directions upon some important point inadvertently omitted, the pigeon-keeper may lose valuable birds. We have consequently had to limit the descriptions of the varieties, both in number and length, although we have treated of all the most important breeds; but should this little manual meet with the patronage that we hope it deserves, we may present the public with a larger, complete, and elaborate work upon this interesting subject."

Mr. Tegetmeier's book on the carrier pigeon is the work of a naturalist, and will be received as the production of an unquestionable authority on its subject. It is an extremely interesting work, and any one taking it up will read it to the end. The history of the carrier or homing pigeon, its training, and its performances—the interest taken in it, especially in Belgium, where every small town has its pigeon club—will be new to a large number of our readers, and they will do well to procure the book. The following passage may be taken as an illustration of the style and material of the performance :—

"It is certain that hereditary-trained intelligence has much more to do with the goodness of homing pigeons than their size or the exact nature of the variety. The process of 'natural selection,' or the 'survival of the fittest' in the struggle for life, eliminates all the imperfect animals when in a state of nature, and, by a perfectly parallel course of artificial selection, the Belgian colombophiles have got rid of their inferior birds, and are continually breeding, year after year, from those that have performed the longest journeys in the shortest space of time. If a stranger wishes to know the value these experienced fanciers put upon their best birds as breeding stock, let him visit, as I have done, the Belgian lofts in the spring, and hear £10 or £12 refused for a single pair of birds; and if still pressed to sell, listen to the remonstrance of those genuine colombophiles :—'Do not ask us to sell our best birds, we do not like it, but wait a couple of months, and we will give you plenty of young ones.'

"This process of selection of the best stock is continually being carried on. Each pair of old birds will breed seven or eight young ones every season; of these, let us regard five or six as being reared, and ask what becomes of them.

"The very worst are lost in training; the weakest are struck down by the hawks; the slowest, those that return, but not in good time, find their way to the dealers; and, during the summer season, thousands weekly are shot at the pigeon-shooting clubs in this country, where aristocratic gunners stand with double-barrelled guns, 25 yards from the traps, and think they are worthy of the title of sportsmen if they succeed in butchering their prey in this ignoble manner. I am no maudlin sentimentalist; I know that Nature is prodigal of life, and that of every 20 pigeons born, not more than one can be allowed to arrive at maturity, and increase its kind, or the world would soon be overstocked with pigeons, but this does not increase my respect for their slayers. I believe the best possible use you can put a deliberate murderer to is to hang him, *pour encourager les autres*; but this belief does not raise the hangman to the dignity of a gentleman in my estimation; nor can I see any more true sport or manly dignity in the performance of a languid swell who backs himself to kill 45 pigeons out of 50, his *valet-de-chambre* loading his gun, than in that of the vulgar snob who wagers that he will kill and dress a dozen sheep in less time than any other butcher—gambling, not sporting, is the aim of both.

"This process of selection having been universally followed by the Belgians, has eventually produced good birds of various types, all having, however, the common characteristics of a large brain, and consequently a capacious brain-case or skull, a well-developed chest, with large pectoral muscles to move the wings, and broad overlapping flight feathers, the ten primary feathers being exceedingly well developed, so as to overlap each other to a much greater degree than in any of the ordinary varieties."

Farm Memoranda.

HAMPSHIRE: *July* 5.—The cold, cloudy weather which prevailed up to the middle of June, together with the absence of rain, gave to the crops a very unpromising appearance. The fine showers which have since fallen have greatly improved the face of the country, and offer a more hopeful prospect for the harvest. The harvest, under any circumstances, must now be late, and should the weather continue dark and wet, with the present low temperature, it may be unusually late; and it is this prospect which threatens the Wheat crop, as it is well known that late harvests are proverbially unproductive as regards the Wheat crop, and should the weather prove ever so favourable we cannot now expect an average crop of Wheat, the plant being so very deficient and the blooming time too cold and sunless, taking also into consideration the quantity ploughed up and re-sown with Lent corn will tell against the average produce of the county. The appearance at present of the Barley crop is favourable, the plant being strong and stiff in the straw, and is showing a good ear. There is no doubt a large breadth has been sown and got in early, but should the weather prove favourable it may give an abundant yield. Still, however, this crop delights in a warm climate peculiar to our eastern and southern counties. If the weather continues as at present, there may be a large crop of straw, producing inferior grain.

Oats may be said to be a very promising crop, as they thrive best in the western and northern counties, where the rainfall is greatest, therefore the late rains have proved highly favourable, and the crop is likely to be over the average.

Beans, winter-sown, are not a good plant, and are affected by the black aphis in some instances. This crop will be deficient. Spring Beans, on the other hand, as well as Peas, are looking altogether exceedingly well, perhaps never better, Peas being especially well podded, and show no blight.

Trifolium has been a remarkable good and valuable produce this year, in fact, the late varieties are at present in full value for feeding, and will continue available for soiling cattle for another fortnight. Thus we shall have had this excellent food in use for a period of ten weeks, showing the advantage of sowing the early and late crops for a succession. Vetches are also an abundant produce, but will not bear comparison with Trifolium for stock feeding. The produce of feeding grass has been under an average, and only about one-fourth got up before the rains set in, consequently the remainder has been seriously damaged, and in many instances can only be used for litter, and thus prove a substitute for straw, for which it must be considered valuable, because the farmers now know how to utilise straw for feeding purposes. This being the case, the loss of the hay crop will not be so severely felt, especially as there is promise of an excellent second cut of Clover. All late pastures are loaded with a heavy crop of grass, now awaiting favourable weather to be converted into hay. The prospect of Mangel, Swedes, Turnips, &c., is very fine, and the land being in excellent tilth, there is probably a good crop of all the later sorts to be expected. Potatos also are looking well at present, but the early sorts are not yielding a heavy crop.

Both fat and store cattle are excessively dear and scarce, and are likely to continue so. As regards sheep, the draft upon the stock of the county has been enormous. The companies, or gangs, of sheep shearers who traverse the county during the months of May and June, all report a great diminution of numbers offered for shearing; in some districts, several thousands less than usual. This is strong evidence of the encroachment made upon the stock of the county. We may therefore expect sheep to be a brisk sale, and dear at the coming fairs, the principal being at Stockbridge, Overton, and Alresford, during the present month. The fine and abundant rains fallen lately have so altered the appearance of the chalk hills and light land farms, that no doubt it will compensate and revive the spirit of many occupiers of land who have suffered severely from the effects of several dry and unproductive seasons. *Joseph Blundell, Southampton.*

TILLYFOUR, DORSELL, AND BRIDGE END, ABERDEENSHIRE.—These farms are all in the occupation of Mr. W. M'Combie, M.P. for West Aberdeenshire, and together comprise about 1200 acres of arable and pasture land, besides between 200 and 300 acres of valuable hill pasture. Tillyfour measures about 600 acres, of which 120 are in permanent pasture; Dorsell includes 325 acres of arable land, and the hill pasture just mentioned; and Bridge End consists of 225 acres, which are exclusively arable. Mr. M'Combie also rents 50 acres of probably the best grass land in Aberdeenshire, from Sir W. Forbes, of Craigie Var. It is almost unnecessary to state that on these farms the whole management is arranged with a view to breeding and feeding a large number of cattle, chiefly of the polled black Angus or Aberdeenshire breed.

Permanent grass land, as already stated, is by no means abundant in Aberdeenshire; but, without it, there would be great difficulty in keeping on, in improving condition, a large feeding stock from the time that the seeds begin to fail, viz., about the middle of July, until Turnips are ready to commence upon. Even with the advantage of this grass, it has been found desirable to tie up the most forward beasts before the early Turnips are ready, and it is probable that Mr. M'Combie's success as a feeder is due in no inconsiderable degree to the judicious manner in which this gap has been filled up.

Some of the grass land is of remarkable feeding quality, and will carry bullocks of any size, making them fat, so as to fetch prices ranging from £30 to £50 per head, without any adjunct, whether roots, cake, or corn. The beasts are always bought in good condition, and the best land, in a favourable year, will feed nearly one beast per acre, so as to bring it into this first-rate marketable condition.

The old grass is never cut, being far too valuable for pasturing. Most of it was laid down about 20 years ago, in exactly the same manner as seeds are now sown in the usual course of cropping; and about 10 years afterwards it was top-dressed with a compost of lime and earth.

The three farms are situated on the somewhat steep sides of the valley of the Don and its tributaries, at a height of 750 to 800 feet above the sea-level. The climate is therefore too rough for the profitable cultivation of Wheat, and Barley not unfrequently gives place to the more hardy Bere on the stronger land. The subsoil consists of the well-known Aberdeenshire granite, the decomposition of which results in the formation of a fertile, but somewhat heavy soil.

The farms are worked on an alternate five and six-course system, the former being Oats, Turnips, Barley, and seeds for two years; the six-course is an extension of the same, by keeping the seeds down another year. A small breadth of Tares is sown every year, either in the Oat course, or instead of Turnips; these are cut when three-fourths ripe, and given with Clover to the forward beasts until the early Turnips are ready. A portion of the new grass is pastured in the early part of the season for a few weeks, after which it is relieved so as to be ready for cutting by the end of July, and thus produce the valuable fodder given with the Tares.

CROPS.

1. *Oats.*—After harvest, the first operation is to plough the Oat stubble, and, when that is finished, the Clover lea is broken up by a strong furrow of from 7 to 10 inches in depth, the whole being finished by Martinmas, if possible. The climate being very backward in spring, a large quantity of seed is required; and, in a bad season, as much as 5 or even 6 bush. per imperial acre may be deemed necessary. As a rule, the seed is sown broadcast on the furrows; but in some seasons it is possible to go over the land with harrows, and afterwards to drill the seed. After the seed is in, a plain roller is drawn over the land to prepare it for the scythe or the reaping-machine, thus completing the operations of seed-time. Harvesting Oats generally commences about the beginning of September, and finishes from the middle to the end of the month. Cutting is now sometimes done with the reaping-machine, although that implement is not held in such high estimation for Oats as for Barley. It is said that the Aberdeen labourers are such good hands with the scythe, that the machine possesses but little advantage over them. With a good bottom, they can cut from 2 to 2½ acres per day of 11 hours; and, as they leave a shorter stubble than the machine, they get more straw, which is an important consideration to the cattle-feeder. Piecework is not much in vogue, but sometimes the field operations of harvesting have been done by contract, at from 7*s.* to 9*s.* per acre. The most general system is to get hands at the hiring fairs, which are held in anticipation of the harvest throughout the county. These are men engaged at a stipulated sum (from £3 to £4, with food and beer), for the whole period of harvest, however long it may last. This period varies in length from five to eight weeks, according to the weather; and it was once known to last as long as eleven weeks. Women are employed for sheafing and other of the lighter operations, and get from 55*s.* to 60*s.*, with food, for the whole harvest. Stacking and thatching are done by

the harvestmen and the ordinary farm servants, who work at their usual rate of payment.

2. *Turnips.*—Immediately after harvest the oat-stubble is ploughed as deeply as possible, the deeper the better, from 7 to 13 inches, according to the depth of soil. It is then left until after Oat sowing is finished, generally until about the middle of April, when it is grubbed as deeply as possible, sometimes, if the land is not very clean, getting a cross-ploughing before the grubber is used. Ridging is delayed until immediately before seed-time, which commences with Swedes about May 12. When this work is commenced, no time is lost in completing it. Farmyard manure, to the weight of from 10 to 20 tons, is put in the drills, and upon it not less than 10 or 12 bushels of bone dust, and probably from 2 to 3 cwt. of guano; but the quantities of manures used vary with the quality and condition of the land. After the ridges have been split, from 2 to 4 lb. of seed are immediately drilled, the sorts most used being Skirving's Purple-top Swede, Shepherd's Swede, and Aberdeen Yellow Turnips. No white Turnips are grown, as they are not considered to possess sufficient feeding properties, being regarded as fit only for cows and young stock; but the yellow Aberdeens constitute about one-half of the root-course. The plants are horse-hoed two or three times as may be required, and are finally hand-hoed, and singled by the hoe. The quality of the land determines the distance apart to which they are set out, and which varies from 9 to 13 or 14 inches. About the middle or end of October is the time when it is usual to commence topping and tailing, care being taken not to bleed the bulbs, which are "pitted and secured every night to keep them free from frost and rain."

In his book, just quoted, Mr. M'Combie states, "I have adopted my friend Mr. Porter of Monymusk's plan (in a late climate, and where Swedish Turnips in some years never come to full maturity) of pitting them upon the land where they grow, from one to two loads together; and, although not quite ripe, I have never seen a Turnip go wrong when stored in this manner. The land also escapes being poached as the Turnips are carted in frost, and at a time when the other operations of the farm are not pressing. A foot of earth will keep them safe, and they are easily covered by taking a couple of furrows with a pair of horses on each side of the line of pits."

Twenty-seven or 28 tons of yellow Turnips, topped and tailed, are considered a fair average crop, and from 32 to 35 tons a good crop of Swedes.

For Tares the land is prepared as for Turnips, and the seed is mixed with Oats. If the land is heavy, white Peas and Beans are also mixed to hold up the crop. Tares are sown at different times, the earliest being in spring with the first portion of the Oat crop.

3. *Barley.*—The Turnip land is not touched until after all other spring cultivation has been completed, which is about the middle of April, when it is ploughed from 6 to 8 inches deep, and, without further preparation, sown with 4 bush. per acre of Barley on the light land, or Bere on the heavier soils.

4. *Seeds.*—The preparation for seeds consists of harrowing until a sufficiently fine tilth is obtained, when the roller is passed over the land previous to sowing, and the harrow and roller are again used after the seed is in. The mixture of seeds generally used is 1 bush. of Pacey's Rye-grass, 5 or 6 lb. of red Clover, and 4 or 5 lb. of white Dutch, if the land requires it; but some portion of Mr. M'Combie's occupation grows white Clover naturally. Upon the poorer soils an addition is made, consisting of 4 or 5 lb. of Alsike, but this is omitted on the better land, as cattle are not fond of it. Occasionally a few acres of Italian Rye-grass are sown for early cutting; but red Clover is the "seed" which is considered the great stronghold of the cattle-feeder. The quantity of hay made is only just enough for the horses, and never exceeds 30 acres. So great is Mr. M'Combie's dislike to cutting his seeds, that he frequently prefers to buy hay, especially as he considers pasturing by cattle equal to a year's rest.

STOCK.

1. *Herd.*—The breeding stock consists of about 80 head of the black-polled Angus breed, including one old bull, two yearling bulls, and 30 cows, the remainder being 1 and 2-year-old heifers. The bull calves are generally sold privately, and there is also a sale of breeding stock every second or third year. Cows are put to at any season; but is preferred that the calves should drop early in spring, when they are allowed to suck their dams until October. The treatment of cows during winter, previous to calving, is based on the principle of keeping them as low as possible. They run over the grass that has been left by the feeding beasts, and are never taken under cover until the end of October, when they go in at night; but they get no food except that afforded by the fields until after Martinmas, or even the end of November. About this time, or the beginning of December, the most forward of the feeding beasts go off, and the breeding cows take their places in the stalls; but their food is still kept down, consisting merely of straw, and once a day a barrowful of Turnips divided between three or four of them; and, except in very bad weather, they still go out two or three hours every day. The only difficulty is to keep the breeding stock from becoming too fat.

After calving, the feeding regulations are very much relaxed in favour of Turnips, so that the cows may give enough milk for their calves, which remain with their mothers for several months. The older calves are weaned about the end of October, no matter how early they drop; and the late calves remain with their dams throughout the winter. The latter lie behind their mothers at night; during the day they get the run of the steading, and sometimes are given a turn in the yard; they also get from 1 lb. to 2 lb. of oilcake daily, with a little meal, the trough being placed in the stall behind the dam. By this method Mr. M'Combie has made some of his best beasts from late calves; it enables them always to retain a good coat, and to withstand the cold and ungenial climate in spring.

When the older calves are weaned, they are put into a strawyard, and given as much as they can eat of straw and sliced Turnips, with from 1½ to 2 lb. of oilcake each per day. After the first winter, and when the young breeding stock are rising two and three years old, they are kept upon Turnips and straw, without any allowance of cake. The calves are all carefully setoned, a good hold of the dewlap being considered necessary, as well as the renewal of any seton that may slip. These measures have been so effectual that not more than one case of blackleg has occurred amongst the high-bred stock at Tillyfour. Weaning time, however, is not quite so simple a matter for the cows, as some will not allow themselves to be milked. In these cases, the practice is to let their calves suckle once a day at first, then once in two or three days, and thus, in the course of a fortnight, the cow gradually becomes dry; but unless these precautions are taken, the cow may lose two or three of her teats, and be ever afterwards useless as a milker. The younger calves are treated in precisely the same manner.

The calves are kept regularly growing on until the earliest grass is ready for them, after which time it is considered that there is little or no further risk from quarter-ill or other diseases incidental to young stock.

The after treatment of heifer calves is a matter which requires sound judgment; and if the allurements of shows are avoided, Mr. M'Combie finds it comparatively easy to produce breeding animals that will pay, and will exhibit very fine quality. The system he has adopted, except in cases of show pets, is to give them good grass during the summer, and during the ensuing winter to keep them on unlimited oat-straw and a fair supply of Turnips. It is essential to keep them in good growing condition without a check, but at the same time to guard against their laying on too much flesh. Open strawyards, in the winter, are thought best both for young breeding cattle and for store beasts to be grassed the next summer; and a covered yard is therefore regarded as an abomination. The principal of treatment of store or breeding animals is to avoid making the high-bred heifers valuable to the butcher; and as it is well known that they have a great tendency to lay on fat if well fed, it behoves the farmer to work accordingly, for servants in charge of high-bred stock seem to take a pride in over-feeding them. Heifers are not put to the bull until fully two years old, as the polled Angus females become stunted in growth and otherwise deteriorated if used before they arrive at that age. In-and-in breeding is also found to produce a diminution in size and delicacy of constitution, although it undoubtedly produces finer quality, as Mr. M'Combie has shown in his work already quoted.

2. *Feeding Beasts.*—Between 300 and 400 head of cattle are fed off between October and March, the number varying with the weight of the Turnip crop and the luxuriance of the grass and seeds. About 50 of these beasts are bred and wintered on these farms, and the remainder are bought in Morayshire in March and April, arriving at all times up to the beginning of May. After arrival they are kept on the remnant of the Swede crop, or, in default of that, on hay and cake, in sufficient quantity to prevent their losing condition, until the grass is ready. This is not until from the 10th to the 15th of the month, although a certain breadth of first-year's seeds on each farm is top-dressed with from 2 to 3 cwt. per acre of sulphate of ammonia, dissolved bones, or guano, for the purpose of providing an early bite for these beasts. From about May 15 until May 20, the cattle begin to go on ordinary first-year's seeds, where they remain for two or three weeks, when they are removed for a change of bite to a piece of two-year-old seeds, or an old pasture. It is considered an essential part of good grazing to give beasts a clean pasture and fresh grass at frequent intervals, say once a fortnight at farthest. In July seeds begin to fail, and without the assistance of old and late grass it would be almost impossible to carry on the stock in a thriving condition. No cattle are sold off grass, as Mr. M'Combie's experience shows that beasts do not pay unless they get at least two months' Turnip feeding. The interval between the failure of the seeds and the maturing of the early Turnips is therefore a critical period; and there can be little doubt that Mr. M'Combie's success as a grazier is, to a great extent, due to the manner in which he has kept his cattle supplied with nutritious food at this time of the year.

Part of the cattle are sent to the old pastures in the middle or end of July, and by the middle of August ome of the best are put in the strawyards, and receive Clover, Tares, &c.; thus reducing the numbers on the pastures, and giving more chance to those that remain, by reserving the second bite of the early-fed first-year's seeds until that time. As the seeds contain plenty of red Clover, they form a most valuable food, and enable cattle to be kept on in thriving condition until the Turnips are ready.

The forward bullocks are tied up very early; and, at the time of my first visit to Tillyfour (August 30), no less than 125 beasts were under cover. Sixty of these were 3-year-old bullocks, in strawyards, getting food consisting of Tares (three-fourths ripe), and Clover, mixed with Oats, white Peas, and Beans, and 3 lb. of linseed cake each per diem. In about a week's time they would be entirely on Turnips and cake with straw. They were in good condition when bought from the Morayshire strawyards, where they had got some of the finest Swedes grown in Scotland, and they had been kept during the summer on capital grass in Aberdeenshire, so that they were in high condition when turned in. By giving them as many Turnips as they could eat, it was expected to turn most of them off quite "ripe," without any addition to their allowance of cake, by the first or second week in October.

The remaining 65—the largest and best of Mr. M'Combie's feeding stock—were intended for the Islington Christmas market, Liverpool, and Edinburgh. At the end of August they were feeding on yellow Turnips, remarkably well matured for so early a period in the season—and such a season!—with a proportion of partially ripened Tares, but without cake or corn. Cake is never given to "commercial beasts" until within six weeks of the date when they are destined to go to market, when they get from 3 to 4 lb. per day to give them the "last dip" when necessary A great many of the beasts sent to London by Mr. M'Combie never taste cake or corn, but only those pushed early to market, and the sluggish feeders amongst the lots that come afterwards. Indeed, some of those sent to the Christmas market are not unfrequently considered too fat by certain butchers. Many of the best of these beasts had been bred by Mr. M'Combie himself, and in April were worth, he considered, from £28 to £30 each. The remainder had been bought the previous winter and in the spring, and had cost from £25 all the way up to £32 per head.

All these cattle had been selected as better adapted for the earlier than the later markets; but we now come to the description of those which take the places of the 125 whose treatment has just been sketched. These were still in the fields; they had cost from £20 to £24 each in the spring, and would be all tied up immediately after the first 60 had been disposed of, getting Turnips and straw as the others. They would go off gradually during the months of January, February, and March. The stalls vacated by the Christmas beasts are filled up by half-fed beasts, bought in the neighbourhood, and either finished for the London market the same spring or kept on for the grass, and sold the following autumn or winter. For the latter purpose a bullock that has not been too well kept, especially if from the high grounds, well-bred, and not stunted in growth, will pay for its keep far better than one that has been kept on the higher priced lands in the valleys.

3. *Sheep.*—From 400 to 800 three-shear blackfaced wedders from Deeside are bought at Braemar or on the hills, about the beginning of September, and put on the grass left by the feeding cattle until Martinmas. They then get Turnips for a couple of months, and go to the Edinburgh and Glasgow markets. Occasionally they get a little corn or cake, but they seldom require it, as they thrive very fast on the lowland pasture after coming off the hills. An average sheep will weigh about 17 lb. per quarter, but some are much heavier. It does not answer to buy lambs, as they get braxey and die very fast; but aged sheep stand the change very well. The profit on one lot of 400 sheep paid Mr. M'Combie's election expenses; but it does not appear whether the profits were very large or the expenses very small.

4. *Horses.*—A somewhat light but active breed of carthorse is preferred; and as so large a proportion of the arable land is in seed, it is not found necessary to keep more than ten pairs in addition to four pairs of working oxen. The horses are turned entirely into the fields after Turnip sowing is finished, and until the commencement of leading at harvest time. When taken in, they are given as much hay as they can eat, and are allowed 2 bush. of Oats each per week. Every night they get a mash divided into two portions, one being given before the dry food and the other in the course of an hour or two; it consists of light Oats or Bere, mixed with cut Swedes, and boiled together. About a bucketful is given to each horse every night, and in the spring a good feed of Swedes is also given in the forenoon.

LABOUR.

Married servants are engaged by the year, at Whitsuntide, for from £20 to £22 per annum with house and allowances; and unmarried men are engaged for six months at Whitsuntide and Martinmas, getting from £10 to £11 10*s.* for the term, with the usual allowances. The "allowances" are 2 pecks of oatmeal per week, as many Potatos as they can eat, and either milk or 21*d.* per week in lieu of it. The unmarried men get their food cooked for them in the "bothy," as already described. The bailiff, or "grieve," as he is termed, is allowed to keep a cow, and sometimes a pony. Unmarried women are not employed, as a rule; but for hoeing Turnips and at harvest time they are in great request. *Journal of the Royal Agricultural Society of England Paper on Scottish Agriculture, by Mr. H. M. Jenkins.*

The Week's Work.

JULY 22.—*Winter Peas* are generally harvested by the close of the month in our southern provinces. The crop is commonly cut with a long-handled bagging-hook, and left in loose parcels on the stubble when grown broadcast, and across the stetches when thus grown. Harvest operations in the field are simple in dry weather, all that is necessary being once turning or so, to prevent the haulm roasting and the pods opening. In wet weather, however, it is otherwise, for when soaked with rain, the crop is difficult to dry in the field, and liable to mould in the stackyard. Pea stacks are bad defenders of rain, and, therefore, whether stacked in a good condition or a bad, they should be thatched immediately they are built, or be covered with the rick-cloth until they can be thatched. Some thatch to the eaves, others down to the bottom, purposely to protect both roof and sides from harm. The sides may be covered with webs of machine-wove straw, made fast with pegs in the same way as the ridge-gables and eaves are secured.

Seeds' Harvest.—Rye-grass, when left to ripen its seeds, is generally harvested during this month. In Scotland, where from a fourth to an eighth of the farm is annually sown with Rye-grass and Clover, most farmers grow their own Rye-grass seed; Clover seed cannot be profitably grown in the North, consequently seed is obtained either from the South of England, the Continent of Europe, or America. Like Wheat, Rye-grass is cut before it is dead-ripe, and it is better to cut rather green than otherwise, to avoid losing the best seed in the harvesting. The crop is usually bound in sheaves, stooked and stacked as Wheat, Barley, and Oats. It requires to be thoroughly dry before carrying, as it is very liable to heat in the stack, and thus destroy the vitality of the seed. To avoid heating some farmers allow the grass to lie in the swathe until the hay is fit for the trampcock, or handcock in difficult weather; they then thresh and spread the seed thinly over the granary, turning it frequently until thoroughly dry. Others thresh out what seed they require during the general operation of haymaking, the hay from the temporary threshing floor in the field being built into cocks, the size depending on the weather. But this practice cannot be commended, for the grass must either be too ripe before it is cut, or else there is much inferior seed in the sample. There are besides two objections to threshing in the harvest field and storing the seed in the granary, for broken straw does not keep well in the stack, and the seed is liable to injury in the granary. The best plan is to stook and stack and then thresh, when the seed and hay can both be used fresh. Some lands produce finer seed than others, and therefore it is common for the occupiers of such to grow for market, and for those farmers whose seed degenerates to get their supplies from this source. Again, farmers who allow their land to lie two years in grass, take their seed from the second crop, purposely to avoid annual seed and degeneracy.

Flax intended for the finest muslin and cambric fabrics, requires to be pulled earlier than that for the coarser description of linen, or for rippling seed. There may be a week to fourteen days difference, according to the weather. This year, much of the flax crop in Ireland is said to have suffered heavily from the cold, dry, east winds, so that it will be no easy matter to determine whether the crop is best suited for coarse or fine linen, especially when not very equally grown. A considerable diversity in the primary and secondary processes of preparing Flax fibre for the market, has recently been introduced; but the old familiar plan of pulling, steeping, and dew-retting on the grass, continues to be the common practice. When the crop is fit for yielding the finest quality of fibre, it is pulled when it comes into flower, or shortly after, as the peculiarities of the crop may direct. In pulling, the operator stands with his or her right or left side to the standing Flax, going backwards, and with both hands firmly laying hold of small parcels of the standing Flax at a time, so as not to raise earth and injure the fibre; and when he gets a handful he lays it down, so that the next handful or two can be laid across; the object of laying the Flax crosswise being to keep it as much as possible off the ground. In this position it is allowed to lie until fit for being tied up in small sheaves for the steep, with a band made of a few stems of the Flax. As the sheaves are tied, they are carted to, and placed upright in the steep, and loaded with wood and stones to keep them under water. A slow fermentation sets in, depending for degree and force upon the temperature of the water and the atmosphere; and when sufficiently far advanced to allow the fibre to separate freely from the stem when broken—which in warm weather will be in about a week's time; and in cold weather from ten to fourteen days—the Flax is ready for the next process, dew-retting, which is done by spreading the steeped Flax evenly over a grass field, previously mown, so as to have an even surface. Spreading Flax is a very dirty but nice operation, and we have always found women better spreaders than men. In spreading the spreader goes backwards, shaking out gently with both hands sheaf after sheaf, thinly, evenly, and equally over the points of the fingers. Like all similar manipulations in art, it must be learned by an apprenticeship, and not book-rule. When sufficiently dew-retted, the fibre separates freely from the stem by rubbing. The retted Flax is next tied up in large sheaves or bundles and stacked, where it remains until sent to the flax-mill Stacking Flax is a work *per se*. In the first course the sheaves are placed vertically on their butts, slanting over these the next course is laid horizontally, projecting about a foot over the vertical course. The body of a large stack rises perpendicularly, but smaller ones are of a pear-shaped form from the base course, and this is the finish of both large and small, so that a few handfuls of straw at the top secures the stack from rain. When straw is not to be had, a sheaf or two of Flax is used as thatch, and here we may observe that Flax forms excellent thatch for houses, and is frequently grown for this express purpose. When the seed is to be used for sowing or crushing, or when the bolls are to be given to cattle, the Flax is allowed to become more ripe before it is pulled, but the degree of ripeness is just about as diversified as the opinions of growers. For seed and bolls it is common amongst the larger farmers of Ireland to ripple into the body of a cart, one person supplying two or three ripplers with handfuls of Flax as pulled, another binding up the rippled handfuls for steeping. The work of steeping, spreading, and dew-retting are as above described.

Sheep Shearing in the highlands of Scotland, north of England, and Wales, will this year be attended with greater risk from frosty nights than usual, and on that account the shearing may be later. Some shepherds put their newly-shorn sheep through the pool, in order to prevent catching cold. *W. B.*

Markets.

ENGLISH WOOL.

During the last week Wool has continued in good demand, at hardening rates. Many classes of foreign Wool are as dear or dearer than during the American war, though English grades are still below these values, and must, we consider, still advance considerably between this and Christmas; so that our advice to farmers would be to hold out for advanced rates.

HOPS.

BOROUGH MARKET, July 20.

Messrs. Pattenden & Smith report that the accounts from the plantations are still very unfavourable, and although the bine has made considerable progress during the last week, still vermin follows up, and there are reports of fresh fly this morning. The market is very firm, though not active, but for choice samples there are always buyers at full rates.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, July 20.

Prime Meadow Hay	140s. to	160s.	Clover, old ..	..160s.	167s.
Inferior do. ..	..110	126	Inferior do. ..	..130	140
New Hay ..	.. 60	120	Prime new do.	..100	130
Inferior do. ..	.. —	—	Inferior do. ..	.. —	—
Straw	.. 40	50			

CUMBERLAND MARKET, Thursday, July 20.

Sup. Meadow Hay	158s. to	170s.	Inferior Clover	..140s. to	150s.
Inferior do. ..	..120	130	Prime 2d cut do.	.. —	—
New do.	.. 80	126	New do. ..	.. 90	130
Inferior do. ..	.. —	—	Straw	.. 52	57
Superior Clover	..170	180			

JOSHUA BAKER.

METROPOLITAN MEAT MARKET, July 20.

Best Fresh Butter	15s. per dozen lb.
Second do. do.	13s. ,,

Small Pork, 4s. 4d. to 4s. 8d.; Large Pork, 3s. 8d. to 4s. 0d. per 8 lb.

METROPOLITAN CATTLE MARKET.

MONDAY, July 17.

We have a larger supply of Beasts to-day, and the weather unfavourable for slaughtering largely; consequently trade is dull, and prices are rather lower. The number of English Sheep is unusually small, of foreign about the same as lately. Trade is, however, slow, the demand is smaller than of late, and prices on the average are not higher. Choice Lambs and Calves find purchasers, at about late rates, but inferior are lower. Our foreign supply consists of 1370 Beasts, 10,900 Sheep, 550 Calves, and 50 Pigs; from Scotland there are 12 Beasts; from Ireland, 240; from Norfolk and Suffolk, 500; and 1470 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. a.
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	.. to ..
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	5 8—6 0
2d quality Beasts	3 8—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do. Shorn ..	5 0—5 4
Do. Shorn ..	6 2—6 6	Lambs	6 4—7 4
		Calves	3 8—5 10
		Pigs	3 4—4 8

Beasts, 3600; Sheep and Lambs, 21,930; Calves, 574; Pigs, 100.

THURSDAY, July 20.

We have a fair supply, both of foreign and English Beasts; trade is not brisk, but Monday's quotations are well maintained. The number of Sheep is smaller than last Thursday; trade is active, and a good clearance is effected, at an advance on Monday's quotations. Choice Lambs are in demand, and rather dearer. There is a large supply of Calves; prices are rather lower. Our foreign supply consists of 400 Beasts, 4500 Sheep, and 824 Calves.

	s. d. s. d.		s. d. s. d
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	.. — ..
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	6 0—6 4
2d quality Beasts	3 8—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do Shorn ..	5 0—5 6
Do. Shorn ..	6 4—6 8	Lambs	6 8—7 8
		Calves	3 8—5 8
		Pigs	3 4—4 8

Beasts, 1000; Sheep and Lambs, 12,775; Calves, 1002; Pigs, 15s

MARK LANE.

MONDAY, July 17.

There were very few samples of English Wheat at this morning's market, but millers were not anxious buyers, and the sales made were at a decline of 1s. to 2s. per qr. upon the prices of this day week. The attendance was good, but the business done in foreign was in retail, at a similar reduction. Barley and Peas were unchanged in value. Beans 1s. per qr. cheaper. The Oat trade was steady; Russian and inferior qualities 3d. to 6d. per qr. lower. Flour was 6d. per barrel and 1s. per sack cheaper.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk..White	47—60	Red......	55—60
— fine selected runs ....do.	57—63	Red......	56—62
— Talavera	60—66		
— Norfolk	—	Red......	—
— Foreign	50—68		
BARLEY, grind.&dist.,30s to 34s..Chev.	43—46	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
OATS, Essex and Suffolk	26—28		
— Scotch and Lincolnshire..Potato	28—30	Feed	—
— Irish ....Potato	27—29	Feed	25—28
— Foreign ......Poland and Brew	23—26	Feed	20—23
RYE	34—36	Foreign ..	33—36
RYE-MEAL, Foreign..................			
BEANS, Mazagan....37s. to 47s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian .	33—34
PEAS, White, Essex, and Kent..Boilers	38—40	Suffolk ..	40—42
— Maple, 40s. to 44s. ....Grey	36—40	Foreign ..	36—40
MAIZE	—	Foreign ..	33—36
FLOUR, best marks, delivered..per sack	42—50		
— 2d ditto ....ditto	36—42	Country ..	36—42
— Foreign ....per barrel	25—29	Per sack..	38—60

WEDNESDAY, July 19.

The Corn Exchange was thinly attended by millers; the business doing was very limited, at prices favouring buyers. The supply of English Wheat was short, but of foreign the arrivals were on a liberal scale; sales were effected slowly, at about the reduced rates current on Monday last. Barley, Beans, and Peas were purchased cautiously, at prices tending downwards. Oats were in good supply. The demand was inactive, and prices were exceedingly weak. The Flour trade ruled dull, at declining prices.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	40	—	—	—
Irish ..	—	—	—	—
Foreign ..	11,670	510	45,510	1060 1020 brls.
	11,710	510	45,510	

LIVERPOOL, July 18.—There was only a moderate consumptive business done in Wheat, at a decline of 1d. on white, and 1d. to 2d. per cental on red from last Tuesday's prices. Flour was exceedingly dull, and nominally cheaper. Beans 6d. per qr. cheaper. Peas unchanged. No sound Barley in the market. Oats and Oatmeal at previous rates. Indian Corn at last Friday's improvement, and must be quoted 3d. per qr. under last Tuesday's rates; a fair business was done.

AVERAGES.

	Wheat.	Barley.	Oats.
June 10	59s 9d	38s 6d	25s 11d
— 17	59 7	35 11	26 10
— 24	59 11	36 10	27 8
July 1	59 1	36 10	27 5
— 8	59 0	34 10	27 1
— 15	58 6	34 7	27 10
Average ..	59 3	36 3	27 1

SEED MARKET.

The weather is now more settled, and consequently favourable for harvesting seeds. New Essex Dwarf Rape seed is now at market, and offering at a very considerate reduction from the price of old, and is of good quality and condition. The same remarks may be applied to new Trifolium, which is offering in large quantities, and it is expected that prices will go still lower. Mustard is in fair demand, and rather cheaper. Hemp and Canary quiet, at late rates. In other articles but little doing.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

COALS.—June 19.

West Hartley, 17s. 9d.; Walls End Gosforth, 15s. 9d.; Walls End Harton, 16s. 3d.; Walls End Thrislington, 17s.; Walls End South Hetton, 18s.; Walls End Hartlepool, 17s. 6d.; Walls End Heugh Hall, 17s. 6d.; Walls End Original Hartlepool, 18s. 6d.; Walls End South Kelloe, 17s. 6d.; Brancepth Cannel, 18s.—Ships at market, 25; sold, 20; unsold, 5; at sea, 10.

VASES, FOUNTAINS, and JETS, FOR THE GARDEN AND CONSERVATORY.

ILLUSTRATED CATALOGUE, containing Prices and full information concerning FOUNTAINS and VASES, and with 30 large Pages of beautifully Lithographed Designs, Post Free for 12 stamps, which will be allowed if an Order is given

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London Office –32, Walbrook

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100s. ; Petersburg, 60s. and 80s. ; superior close Mat, 45s., 50s., and 55s. ; packing Mats, 20s., 30s , and 35s per 100 ; and every other description of Mats at equally low prices, at

J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.

4-4 Scrim, from 2d. to 5d. per yard, advancing ¼d.
54-inch Hessian and Scrim, 3d., 3½d., 4d., 4½d. and 5½d
72 " " " 4½d., 5½d., 6d., 6½d., and upwards

J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at 1d. per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.

EDGINGTON'S RICK CLOTHS for 66 years have maintained their celebrity as the best.

EDGINGTON'S MARQUEES for Hire, are the most elegant and capacious.

EDGINGTON'S CRICKET and GARDEN TENTS are the prettiest.

SHAW'S and WALLER'S NETTINGS, samples of material free on application. Be particular—FREDERICK EDGINGTON AND CO., 52, Old Kent Road, London, S.E.

A quantity of good Second-hand Government TENTS from Abyssinia, for Sale, cheap. A Liberal Discount to the Trade.

International Exhibition, 1862. Class XIX. Honourable Mention

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST FROST.*
WOOL NETTING, 2 yards wide and 1s. 6d. per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1s. 9d. per yard.
Three yards wide	2s. 8d. per yard.
Four yards wide	3s. 6d. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d. to 8½d. p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾d. and 8¾d. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C. ; and of all Seedsmen in London or the Country.

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No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent ; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½d. per yard run
No. 2.—54 inches wide	at 7d. per yard run.
No. 3.—54 inches wide	at 5½d. per yard run.
No. 4.—54 inches wide	at 4d. per yard run.
No. 5.—54 inches wide	at 5½d. per yard run

In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

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CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows :—

PROPAGATING GLASSES.

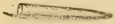
	Each.—s.	d.		Each.—s.	d.
2 inches in diameter	0	3½	12 inches in diameter	1	9
3 " "	0	4½	13 " "	2	0
4 " "	0	5½	14 " "	2	6
5 " "	0	6½	15 " "	3	0
6 " "	0	8	16 " "	3	6
7 " "	0	10	17 " "	4	0
8 " "	1	0	18 " "	5	0
9 " "	1	2	19 " "	6	0
10 " "	1	4	20 " "	7	0
11 " "	1	6			

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter	0s. 6d.	9 inches in diameter	1s. 8d.
5 " "	0 8	10 " "	2 0
6 " "	0 10	11 " "	2 6
7 " "	1 1	12 " "	3 0
8 " "	1 4		

Either flat or conical tops.

CUCUMBER GLASSES.



24 inches long	2s 0d.	16 inches long	1s 4d
22 "	1 10	14 "	1 2
20 "	1 8	12 "	
18 "	1 6		

WASP TRAPS, 3s. 6d. per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—s	d.		Each.—s.	d.
12 inches	6	6	20 inches	10	6
14 "	7	6	22 "	11	6
16 "	8	6	24 "	12	6
18 "	9	6			

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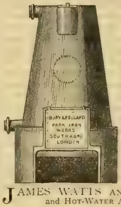

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Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5s. each. GLASSES, all sizes.

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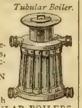

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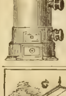

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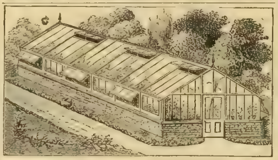

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20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

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3 ft. by 4 ft. lights, 2 in. thick, unglazed	3s. each
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THE

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BY THE LATE SIR JOSEPH PAXTON, M.P.

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(TO TERMINATE ON THE 30th JUNE, 1886.)

This being a "TRUST," Subscribers incur no Liability.

Certificates representing 850,000 Guineas (of which 1*s.* of each Guinea is to be appropriated to Insurance of Subscribers), will be issued at the following Rates:—

			£	s.	d.
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C	**(or 25 Right)** ,, ...	,,	26	5	0
D	**(or 50 Right) Certificates**	each	£52	10	0
E	**(or 100 Right)** ,, ...	,,	105	0	0

Payable on application.

CERTIFICATES PASS TO AND ENTITLE THE BEARER:—

1. To participation in the proceeds of sale of the property if the representative life upon which the Tontine privilege depends shall be living on the 30th June, 1886.
2. To the receipt from a life assurance of the sum of 20*s.* in respect of each Guinea paid upon any Certificate, if the representative life shall die before the said 30th June, 1886.
3. To admissions to the Palace and Park.
4. To participation in Art Union Distributions proposed to be hereafter established.

(As explained in detail in the body of the Prospectus.)

The acceptance of a Certificate involves no liability. The rights and privileges of Certificate holders are governed by the Trust Deed.

The whole nett Income of the undertaking, after defraying interest charges and management expenses, will be devoted to the improvement of the Property, and also (when power is obtained) to Art Union Distributions.

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JOHN HACKBLOCK, Esq., Bolton Gardens.
JOHN HORATIO LLOYD, Esq., Inner Temple.

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Secretary—THOMAS DIXON, Esq.

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PROSPECTUS.

An advantageous Contract has been concluded for the purchase, free from incumbrance, of the Alexandra Palace Park and Lands adjoining, situate at Muswell Hill, Hornsey, in the county of Middlesex (comprising about 470 acres of Freehold and 28 acres of Leasehold Land), and the contents of the Palace, for the sum of £675,000. Of this amount £450,000 may remain on security of the Property for 5 years, represented by Mortgage and Debentures Power is taken to raise further capital not exceeding £150,000, if deemed desirable, for the improvement or enlargement of the property and for the benefit of the Tontine.

The object of the Tontine is to complete the purchase and improve the property, and thus to provide for all classes of the inhabitants of the Metropolis, and especially of its northern and eastern portions and suburbs, and for the many thousands of country excursionists, a Grand Institution of healthful recreation and elevating instruction, which will combine the solid advantages of the South Kensington Museum and Schools of Art, with the lighter pleasures and pastimes of the Crystal Palace at Sydenham, thus giving effect to the large and enlightened views of the late Prince Consort.

In furtherance of this design it is proposed to inaugurate a series of Exhibitions, Art Unions, and distributions, to the support of which, and as soon as the necessary power can be obtained for the purpose, it is proposed that the chief portion of the profits of the Park and Palace, after making proper provision for management, improvement, and other charges, should be applied.

Under "The Muswell Hill Estate and Railway Act 1866" the Palace and about 200 acres (which then constituted the Grounds) are to continue a place for public resort and recreation, subject to the observance of such rules and regulations as may be prescribed by the owners, and to the payment of such reasonable sums as may be fixed for admission to the Grounds and Palace or to any exhibition or sights therein.

It is now intended to enlarge the Park, and to lay out the whole of the lands as pleasure grounds, with the exception of about 80 acres of beautiful freehold land on the border, which will be reserved for building purposes, so that there will be a Park surrounding the Palace, and within a ring fence, of about 400 acres in extent. But power is taken with the consent of the Trustees to sell or lease for building purposes any part of this land not subject to the provisions of the Act of 1866, should such a course appear desirable in the interest of the Tontineers or subscribers.

The Palace is a splendid, capacious, and substantial structure, requiring but a comparatively small outlay to keep it in repair, admirably adapted for Exhibitions, Museums, and Lectures, and for Musical Festivals and Concerts, as well as for festive and social gatherings of the greatest magnitude.

A grand organ, which is reputed to be one of the largest and most perfect in the world, has been erected in the Palace by Mr. Willis, under the direction of Sir Michael Costa.

Archery, Cricket, and Croquet Lawns, Turfed Rides, a Race Course with Grand Stand, well levelled Carriage Drives, Groves and Gardens, will be found in the Park, which is nobly timbered, and commands extensive and magnificent views into several counties. This Institution, therefore, which can be opened to the public in a very short space of time, will combine the advantages afforded by museums, exhibitions, and schools of art, with scenery of the utmost beauty, and pure air, thus contributing alike to the instruction, amusement, and health of the visitor.

There will be easy access to the Palace by railway communications in connection with the Great Northern and Metropolitan Lines, and a Bill is awaiting the Royal Assent for authorising the construction of a short line to connect the Park with the Midland and Great Eastern systems. The Committee will have power to aid these enterprises, which are of great importance to the success of this undertaking.

The Exhibitions and Art Union Distributions will constitute a distinctive feature of the general plan, and will comprise every characteristic of the Fine Arts. An Inaugural Exhibition will be held as soon as the requisite powers are obtained.

It is intended to apply to Parliament for power to devote part or the whole of the surplus income to Art Union Distributions, to be held every third year during the term of the Tontine, and to appropriate a number or chance in each Distribution to every Certificate in respect of every 21*s.* paid thereon. It is estimated that the fund for distribution will amount triennially to £100,000, and the prizes will range from £500 to £2.

The following Table indicates what any Certificate holder may derive from this source.—

ANALYSIS OF THE PROBABLE ART UNION PRIZES AT EACH OF SAY FIVE TRIENNIAL EXHIBITIONS.

25	Prizes of	£500	each	£12,500
30	,,	400	,, ...	12,000
40	,,	300	,, ...	12,000
50	,,	200	,, ...	10,000
50	,,	100	,, ...	5,000
50	,,	80	,, ...	4,000
50	,,	60	,, ...	3,000
50	,,	50	,, ...	2,500
50	,,	40	,, ...	2,000
50	,,	30	,, ...	1,500
100	,,	25	,, ...	2,500
100	,,	20	,, ...	2,000
100	,,	15	,, ...	1,500
100	,,	10	,, ...	1,000
100	,,	9	,, ...	900
100	,,	8	,, ...	800
100	,,	7	,, ...	700
200	,,	6	,, ...	1,200
400	,,	5	,, ...	2,000
800	,,	4	,, ...	3,200
3,000	,,	3	,, ...	9,000
5,350	,,	2	,, ...	10,700
10,895				**£100,000**

The value represented by the Prize Tickets is to be applied wholly in the selection of articles contained in the Alexandra Art Union Exhibitions, and it will be seen that it is possible for the holder of a single right Certificate to receive Five Prizes of £500 each for his investment of 21*s.*

The Certificates will be issued under the powers of the Trust-Deed, which will define and regulate the rights and privileges of the Certificate Holders, and a covenant will be contained therein on their part to observe the provisions of the Deed.

The whole of the nett income of the Tontine during its existence will be applied as above explained, to the improvement of the property and to Art Union Distributions.

An established Insurance Company has agreed, in consideration of the payment to them of a premium of one shilling for every A (or single right) Certificate, and so on in proportion for any plural rights certificate (*i.e.*, one shilling for each right), to pay to the holder £1 for each guinea paid on such certificate upon the death of the representative life in respect of which the Tontine privileges depend, if such death happens before the 30th June, 1886, provided such Certificate shall not have been previously surrendered, or the bearer of such Certificate for the time being shall not have drawn a prize in an Art Union Distribution in respect of the right representing such guinea. Such premium will be paid out of the Tontine funds. The agreement is subject to 20,000 representative lives being nominated.

For the purposes of the Insurance and Tontine, every applicant for a Certificate must, when requested, nominate some life (which may be his own), between the ages of 10 and 30 years; such lives should not be those of prominent individuals, but, if possible, of members of the applicant's family, or friends. Applicants may nominate a life for each right the certificate they apply for represents. If the applicant chooses to waive the insurance he may nominate any life.

To meet the case of any selected life having been previously nominated and assured to the amount of £500, an applicant may be required to furnish some other life or lives in substitution for that first nominated

Upon the 30th June, 1886, the Tontine will absolutely cease; and as soon as may be after that date the whole of the property will be realised, and the nett proceeds will be distributed amongst the Tontineers or Certificate holders

The holder of an A, or single right Certificate, in addition to his other privileges, will be entitled to free admission to the Park (and also to the Palace, if open), upon every Sunday during the existence of the Tontine

The holder of a B, or 10 right Certificate will, in addition, be entitled to free admission on two days (not being fête days), to be fixed by the Committee, in each week.

The holder of a C, or 25 right Certificate, will be entitled to similar privileges for himself and another on foot or on horseback.

The holder of a D, or 50 right Certificate, will be entitled to free admission on four days in each week (not being fête days), to be fixed by the Committee, for himself and two others, either on foot, horseback, or with a single horse-carriage.

The holder of an E, or 100 right Certificate, will be entitled to free admission for himself and four other persons at all times, either on foot, horseback, or with any carriage.

The Tontine rights and privileges attaching to certain Certificates may, at the option of the holder, be surrendered for the right of admission on other days, according to a plan or scale to be published by the Executive Committee. The surrender will involve the loss of every right and privilege offered in this Prospectus to the holders of Certificates, except so far as the same are reserved as part of the consideration for the surrender.

The holder of a Certificate which shall not have been surrendered, will be entitled to participate in the proceeds of the property, at the end of the Tontine, in respect of every right depending on a representative life which shall be living on the 30th June, 1886

Thus every subscriber of 21*s* and upwards to the Tontine, or the holder for the time being of his Certificate (the same not having been previously surrendered) will, in addition to the privileges of entry to the Park and Palace as above enumerated, obtain the repayment, in case of the death of the representative life or lives, of 20*s.* in respect of every 21*s.* paid by such subscriber, or will have previously drawn a prize of at least £2 in the Art-Union Distribution in respect of such 21*s* subscription, and will, when the Tontine ceases, have, in respect of each of his rights of which the representative life shall be then in existence, the right to a share in the proceeds of the Tontine property. Looking at the rapidly increasing value of Building Land near London there can be no doubt that at the expiration of the Tontine, in 15 years, the property to be then distributed amongst the holders of Certificates entitled to participate will be of enormous value

For the convenience of management of the Tontine and property, and with that object only, a Company (limited by guarantee), has been incorporated by the title of "The Alexandra Palace and Muswell Hill Estate Management Company Limited." The Executive Committee of the Tontine are the Directors of that Company The certificate holders will not be members or contributories of such Company.

All the landed property to be acquired for the purposes of the Tontine will be vested in the Trustees upon trust, to permit the Management Company to manage the same, and with the consent of the Trustees, so far as required by the Trust Deed, to grant leases, and deal therewith for the benefit of the general undertaking, and raise further capital, not exceeding £150,000, if required, for the undertaking by mortgage or debentures (in addition to the working Capital provided by the Tontine), and upon the termination of the Tontine (the 30th of June, 1886), or so soon after as may be convenient, to Sell the Tontine property and distribute the proceeds.

By the terms of the Trust Deed all questions (if any) which may arise relating to the Tontine, during its existence or on its termination, stand referred to such counsel as the Attorney-General for the time being may appoint.

The Purchase Contract, the Trust Deed, the Insurance Contract, and the Memorandum and Articles of Association of the Management Company may be perused at the Offices of the Solicitors.

If no issue is made the subscription will be returned in full.

The following documents have been executed:—

(1). An Agreement, dated 13th July, 1871, between the Muswell Hill Estate Company Limited and the Alexandra Palace Company Limited of the one part, and the Alexandra Palace and Muswell Hill Estate Management Company Limited of the other part

(2). A Deed of Trust, dated 13th July, 1871, between the Alexandra Palace and Muswell Hill Estate Management Company Limited of the one part, and Henry Markby of the other part.

(3). A Deed of Covenant, dated 13th July, 1871, between the London and Lancashire Life Assurance Company of the one part, and the Alexandra Palace and Muswell Hill Estate Management Company Limited of the other part.

Prospectuses (with an outline sketch of the Palace) and Forms of Application for Certificates may be obtained of the Secretary at the Offices of the Tontine and of the Brokers.

Other Agencies for the receipt of Applications will be shortly advertised

Applications for Certificates must be left with the Bankers at the time of payment of the deposit; and no application will be noticed unless the sum of 21*s*, in respect of each single right, or the amounts specified for plural rights applied for as above stated, shall have been paid.

THE ALEXANDRA PALACE AND MUSWELL HILL ESTATE TONTINE.

FORM of APPLICATION for A or SINGLE RIGHT CERTIFICATE.

To be left with the Bankers or authorised Agents.

TO THE EXECUTIVE COMMITTEE.

GENTLEMEN,—Having paid the sum of 21*s.* to the Bankers or authorised Agents, I desire to have issued to me a Single Right Certificate in the Alexandra Palace and Muswell Hill Estate Tontine; and I hereby agree to accept the same upon the terms of the Prospectus and of the Trust Deed of July 13, 1871.

Upon hearing that you are prepared to issue the Certificate, I agree to nominate a representative life of the age stated in the Prospectus, upon which I desire the Tontine privilege in respect of such Certificate to depend.

Name in full of Applicant ....
Address ....
Profession or Business ....
Date ....

THE ALEXANDRA PALACE AND MUSWELL HILL ESTATE TONTINE.

BANKERS' RECEIPT. ———, 1871.

Received from ——— the sum of 21*s.* on account of the Executive Committee of the Alexandra Palace and Muswell Hill Estate Tontine.

21s.

NOTE.—This Receipt must be delivered to the Secretary of the Tontine in exchange for the Certificate. Due notice will be given of the Certificates being ready for issue.

THE ALEXANDRA PALACE AND MUSWELL HILL ESTATE TONTINE.

FORM of APPLICATION for PLURAL RIGHT CERTIFICATE.

To be left with the Bankers or authorised Agents.

TO THE EXECUTIVE COMMITTEE.

GENTLEMEN,—Having paid the sum of £* ——— to the Bankers or authorised Agents, I request to have issued to me† ——— Certificates in the Alexandra Palace and Muswell Hill Estate, Tontine; and I hereby agree to accept such Certificates or any less number of Rights that may be allotted to me, upon the terms of the Prospectus and of the Trust Deed of July 13, 1871.

Upon hearing that you are prepared to issue the Certificate, I agree to nominate a representative life or lives of the age stated in the Prospectus, which I desire the Tontine privileges in respect of such Certificates to depend.

Name in full of Applicant ....
Address ....
Profession or Business ....
Date ....

* The sum of 21*s.* must be paid in respect of each Right applied for. † Here state, B, C, D, or E.

THE ALEXANDRA PALACE AND MUSWELL HILL ESTATE TONTINE.

BANKER'S RECEIPT. ———, 1871.

Received from ——— the sum of £ ——— on account of the Executive Committee of the Alexandra Palace and Muswell Hill Estate Tontine.

£ : :

NOTE.—This Receipt must be delivered to the Secretary of the Tontine in exchange for the Certificate. Due notice will be given of the Certificates being ready for issue.

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, July 22, 1871.

THE GARDENERS' CHRONICLE
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No. 30.—1871.] SATURDAY, JULY 29. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3*s.* 10*d.* for 12 months, including postage to any part of the United Kingdom. May be had of all Booksellers.
Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

State of the Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 5, will contain a FULL and TABULAR STATEMENT of the STATE of the CROPS throughout the UNITED KINGDOM.

May be had of all Booksellers. Price 5*d.* ; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

Condition of the Fruit Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 12, will contain a FULL and TABULAR STATEMENT of the CONDITION of the FRUIT CROPS throughout the United Kingdom.

May be had of all Booksellers. Price 5*d.* ; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

NOTICE.—FLOWER SHOW, FRUIT and FLORAL COMMITTEE MEETING, on WEDNESDAY NEXT, August 2, at 11 o'Clock. GENERAL MEETING at 3. Band of the Royal Horse Guards from 4. Admission 2*s.* 6*d.*

CRYSTAL PALACE.—A GRAND SUPPLEMENTARY SHOW of ROSES and other FLOWERS, and of TABLE DECORATIONS, will be held in the Crystal Palace on SATURDAY NEXT, August 5.

Admission Half a-Crown, or by Guinea Season Ticket.

A GREAT NATIONAL HORTICULTURAL EXHIBITION will be held in the ROYAL BOTANIC GARDEN, GLASGOW, on the occasion of the CENTENARY FESTIVAL of SIR WALTER SCOTT, AUGUST 9, and three following days.

The Grounds being very extensive, every facility will be afforded to Exhibitors of Horticultural Erections, Appliances, Implements, and other Goods of General Utility or Ornament.

For Schedules of Prizes, or other information, apply to ROBERT BULLEN, Royal Botanic Gardens, Glasgow.

Worcestershire Agricultural Society.

A GRAND HORTICULTURAL EXHIBITION in connection with the above will be held in the SHOW GROUND at MALVERN, AUGUST 22, 23, and 24, when PRIZES to the amount of ONE HUNDRED and TWENTY POUNDS will be awarded.

For List of Prizes and Rules, &c., apply to Mr. J. S. HAYWOOD, 26, Broad Street, Worcester, Hon. Secretary to Horticultural Show, or to ALBERT BUCK, Secretary, Worcester.

SEVENOAKS HORTICULTURAL SOCIETY.—The Committee beg to announce that their FOURTH ANNUAL SHOW of FLOWERS and FRUIT will be held, by the kind permission of the Right Hon. Baron Buckhurst, in Knole Park, Sevenoaks, Kent, on THURSDAY, August 24.

Particulars and Schedules of Prizes to be obtained by application to the Secretary, Mr. C. WILLIAMS, 3, Sylvan Place, St. John's Hill, Sevenoaks, Kent.

PETERBOROUGH HORTICULTURAL SOCIETY SHOW, in conjunction with the Northamptonshire Agricultural Show, SEPTEMBER 20 and 21.—Special Cup, General, £10 and £5; Special Cup, Gentlemen's Gardeners and Amateurs, £5, £2, £1; Special Vase, Amateurs, £5; and General Schedule.

Peterborough. J. G. BUCKLE, Secretary.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready in April. Descriptive LIST on application.

Nurseries, King's Acre, near Hereford.

Roses—One Hundred Thousand Blooming Plants.

JOHN CRANSTON'S superb COLLECTION of ROSES, including all the newest and best varieties, is NOW in BLOOM. Carefully compiled Priced and Descriptive CATALOGUES forwarded post free on application.

King's Acre Nurseries, near Hereford.

MITCHELL'S renowned ROSES are NOW in BLOOM, the largest stock and the best plants in England. This magnificent Collection are all propagated in the open ground, possessing a hardy constitution suitable for all climates.

Pilt Down Nurseries, Uckfield, Sussex.

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.

Floral Nurseries, Hailsham, Sussex.

Roses.

H. LANE AND SON'S magnificent COLLECTION, upwards of 100,000, is NOW in FULL BLOOM.

Patrons and Friends are respectfully invited to pay an early visit.

The Nurseries, Great Berkhamstead, Herts, 28 miles distant from London (Euston Station).

NEW H. P. ROSE, LOUIS VAN HOUTTE (LACHARME), not to be confounded with H. P. Rose, Louis Van Houtte (Granger). Bushy, own root, strong, 2*s.* 6*d.* In autumn.

N.B.—L. V. H.s BULB CATALOGUE, No. 139 O, is ready for delivery, containing also PALMS, CALADIUMS, &c.

No. 140 P, including the PERENNIALS, TREES and SHRUBS, ROSES AZALEAS, CAMELLIAS, RHODODENDRONS, FRUIT TREES, &c., is in preparation

LOUIS VAN HOUTTE, Royal Nursery, Ghent, Belgium.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Strawberries.

CHARLES TURNER'S descriptive CATALOGUE of the above is now ready, which contains several new kinds, as well as the finest established varieties.

C. TURNER'S Plants are now ready. Early planting is recommended to insure a good crop of fruit the first season.

The Royal Nurseries, Slough.

New Strawberry, The Amateur.

SAMUEL BRADLEY, the raiser of OSCAR, SIR J. PAXTON and DR. HOGG STRAWBERRIES, begs respectfully to intimate that he is now booking orders for Plants of his fine New Seedling, THE AMATEUR, to be sent out this autumn.

It was awarded a First-class Certificate of Merit on June 29, 1870, at a Meeting of the Nottingham Horticultural Society, and also a First-class Certificate at a Meeting of the Fruit Committee of the Royal Horticultural Society, July 19, 1871, at South Kensington.

Descriptive CIRCULARS, with prices, post free to all applicants.

SAMUEL BRADLEY, Littledale, Halam, near Southwell, Notts.

Rare Orchids.

MR. WILLIAM BULL has just received from the West Indies a splendid importation of the rare and beautiful EPIDENDRUM BICORNUTUM. The plants are in huge masses, each with from 12 to 20 stems, with nice fresh leaves and growths. Also, of CATTLEYA DOWIANA, from Costa Rica, and VANDA CATHCARTII, from the East Indies. An inspection is invited.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Orchids.

JAMES BROOKE AND CO. beg to offer the following choice collection for 25 guineas:—Dendrobium Devonianum, chrysotis, Falconeri, heterocarpum, transparens, Cambridgeanum; Cattleya Warneri, Mossiæ, Trianæ, citrina, amethystina, Leopoldi; Odontoglossum Alexandræ (Bluntii), Pescatorei, citrosmum, grande, Insleayi, Schleipperianum, Bictonense; Oncidium Lanceanum, O. papilio, O. Krameri; Lælia purpurata, Vanda cœrulea, Pleione Wallichii, Cypripedium hirsutissimum, Cymbidium Mastersii, Phaius albus, Trichopilia suavis, Barkeria spectabilis, B. Skinneri, Calanthe vestita, C. Veitchii, Cœlogyne cristata, Aerides Warneri.

CATALOGUES, with full Descriptions, Remarks on Culture, prices, &c., on application.

18, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

LOAM.—Loam, unequalled for Fruit and Plant Culture. See Report of New Vineries, Gunnersbury. For price, &c., apply to
Mr. R. TANTON, F.R.H.S., The Nurseries, Epsom.

WANTED, ADIANTUM CUNEATUM and LOMARIA GIBBA, in store pots. State cash price per 1000 to
T. P., Royal Nursery, Clapham, S.W.

WANTED, BUDS for BUDDING, of CLOTH of GOLD, MARECHAL NIEL, SOUVENIR DE LA MALMAISON, and other Tea and Noisette Roses, either for cash, or in exchange. State quantity to offer to
L. WOODTHORPE, Munro Nursery, Sible Hedingham, Essex.

WANTED, SPECIMEN PLANTS of the following, to complete a Collection:—

AGAVE
ALOE
CEREUS
ECHINOCACTUS
ECHINOPSIS
EUPHORBIA
GASTERIA
OPUNTIA
PHYLLOCACTUS, and
MAMMILLARIA generally.

Apply by letter to J. CROUCHER, Gr. to Mr. J. T. Peacock, Sudbury House, Hammersmith, W.

Wanted, Seeds of Choice Strains.

MR. WILLIAM BULL will require NEW SEEDS, when ripe, of the following:—

Auricula, self
Auricula, show
Antirrhinum
Carnation
Cineraria
Pelargonium, fancy
Pelargonium, show
Pansy, fancy and show
Pinks
Polyanthus
Pentstemon
Violas

And Seeds of other choice Florist Flowers.

State quantities and prices per ounce. Satisfactory proof must be given that the strains of the above seeds are all of the first quality.

Apply to WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen to the Queen, Reading, Berks.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.

Bardney Manor, Lincoln.—July 6.

CABBAGE PLANTS.—Enfield Market, Battersea, and Drumhead Cabbage; ditto SAVOYS, at 3*s.* per 1000. Packing included.

W. VIRGO AND SON, Wonersh Nursery, near Guildford.

EVERY GARDEN REQUISITE KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

New Catalogue.

JOHN H. LEY, Exotic Nursery, Croydon, S.E., will be happy to forward, post free on application, his NEW CATALOGUE (price very low) of PALMS, FERNS, STOVE PLANTS, &c.

Seeds for 1871.

WM. CUTBUSH AND SON'S Descriptive Priced CATALOGUE contains every requisite for the Garden. Post free on application.

Highgate Nurseries, London, N.

Summer Flowering and other Ornamental Plants.

PETER LAWSON AND SON will be glad to forward their NEW CATALOGUE, just published, free upon application. It contains all the leading Hothouse and Greenhouse Plants, Bedding-out Plants, and many novelties well worthy of a place in every Flower Garden.—Edinburgh and London, May, 1871.

B. S. WILLIAMS' SPRING CATALOGUE of NEW and RARE PLANTS is now ready, in which will be found a selection from all the best Plants of recent introduction; and in addition, descriptions of some very fine Plants, which B. S. W. now offers for the first time. Post free to all applicants.

Victoria and Paradise Nurseries, Upper Holloway, N.

To the Trade only.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, have published their NEW WHOLESALE CATALOGUE of BULBS for the season, and will be glad to forward it to Nurserymen, Seedsmen, and Florists only, free, upon application.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2*s.* 6*d.* per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

Hunt's Superb Sweet William.

JAMES HOLDER can supply SEED of the above, in 24 choice varieties, at 2*s.* 6*d.* and 5*s.* per packet; also PLANTS, 24 sorts, distinct, for 5*s.*, 50 plants for 8*s.*, or 100 for 15*s.*, basket included. Crown Nursery, Reading.

THOMSON'S SUPERB HERBACEOUS CALCEOLARIA.—Seed of the above, as grown by the Subscriber for many years at Dalkeith Park, is now being sent out in sealed packets at 2*s.* 6*d.* and 1*s* 6*d.* The Trade supplied on liberal terms. Post Office orders payable on Galashiels.

WM. THOMSON, Tweed Vineyard, Galashiels.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

Climbing Ferns.

LYGODIUM SCANDENS, the most beautiful of all Climbers. Can be supplied by the dozen at 6*s.* to 9*s.*; 40*s.* to 60*s.* per 100, all nice plants. Package gratis for cash.

JOHN H. LEY, Exotic Nursery, Croydon, S.E.

To the Trade.

STOVE PLANTS, in 50 or more choice and new varieties, at 9*s.* to 12*s.* per dozen; 50*s.* to 75*s* per 100. Package gratis for cash. Names on application for CATALOGUE.

JOHN H. LEY, Exotic Nursery, Croydon, S.E.

ASPLENIUM GERMANICUM.—Very nice plants of this scarce Fern, in 60-pots, for 6*s.* per dozen.

JOHN H. LEY, Lansdowne Road, Croydon, S.E.

AQUILEGIA GLANDULOSA, the true variety. Seed, 6*d.* and 1*s.* per packet.

Seeds of choicest FLORIST FLOWERS A LIST on application.

STEPHEN BROWN, Seedsman and Florist, Weston-super-Mare.

NEW DOUBLE GERANIUMS, &c.—12 fine varieties Double Geraniums, 4*s.*; 12 vars new Double Geraniums of 1870, 12*s.*; 12 fine new Zonal Geraniums of 1870, 6*s.*; 12 superb vars. Gold and Golden Bicolor Geraniums, 6*s.* 12 vars. new FUCHSIAS (1870), 3*s.*; 12 best select Fuchsias, 2*s.* 12 select COLEUS, 2*s.* 12 select PHLOXES, 3*s.* 12 new CHRYSANTHEMUMS (1870), 2*s.* 12 new VERBENAS of 1870, 2*s.* 12 vars. new CHILEAN MIMULUS, 3*s.* New AGARATUMS:—White Tom Thumb, 6*d.*; White Imperial Dwarf, 6*d.*; Tom Thumb's Bride, the best white, 1*s.* 6*d.*; Sultan, the darkest blue, 1*s.* 6*d*; the above four new Ageratums, 3*s*; 12 vars. Ageratums, including the above, 5*s.*

B. W. KNIGHT, Florist, Battle, Sussex.

Ixora amabilis.

ROBERT PARKER has great pleasure in offering this beautiful and distinct variety; habit vigorous and compact, with fine foliage; flowers deep orange-salmon, trusses very large, borne in the greatest profusion—young plants in 4-inch pots yielding two and three large trusses of flowers: very desirable for decorative and exhibition purposes. First-class Certificates have been awarded by Royal Horticultural and Royal Botanic Societies. Strong, healthy plants, 21*s.*, 42*s.*, and 63*s.* each.

Exotic Nursery, Tooting, Surrey, S.W.

Seed Warehouse: 44, English St., & Blackfriars St.

NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE.

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.

LITTLE AND BALLANTYNE.
WM. BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

WHEELERS' COCOA-NUT CABBAGE

WHEELERS' COCOA-NUT CABBAGE.

Wheelers' Cocoa-Nut Cabbage, per pkt., 1s.
,, ,, small packet, 6d.
Wheelers' Imperial Cabbage, per oz., 8d.
Wheelers' Tom Thumb Lettuce, p. pkt., 1s.
,, ,, small packet, 6d.

N.B.—Wherever this charming little Lettuce is grown it is a remarkable favourite. It may be obtained *true* from either Gloucester, or Mark Lane, London. We recommend everybody to try it who have not already done so.

All the above Post Free.

WHEELERS'

BROCKWORTH PARK PEAR,

10s. 6d. each.

This magnificent Pear is a cross between Williams' Bon Chrétien, and Louise Bonne of Jersey. It considerably surpasses both its parents in SIZE, fine QUALITY, BEAUTY, and FLAVOUR, ripening about the same time, viz., September and October; grown against a wall, the fruit is remarkably large and handsome, the Pears weighing about 12 oz. (¾ of a lb. each). On the dinner-table well-ripened specimens are remarkably conspicuous for their size and beauty, and their flavour and juiciness are fully equal to their appearance.

A First-class Certificate was awarded to this handsome variety last autumn by the Royal Horticultural Society, and Trees were ordered by the principal Nurserymen in the kingdom; but the demand was so great that we were Sold out of all our Saleable Plants immediately they were offered. Coloured Plates, taken from Nature, may be had at 6*d.* each.

We are now Booking Orders to be executed in November next; all Orders will be executed in exact rotation as received, as far as the Plants will go; but we expect to be Sold out long before the season is over.

The price of young PYRAMIDS is 10*s.* 6*d.* each. We have a few Plants trained for walls at 15*s.* The Pyramids will furnish plenty of buds next summer for budding Trees of other varieties established against walls. This fine variety is well worthy of a wall, and of a good aspect.

☞ **Orders are now being Booked.**

J. C. WHEELER & SON,
NURSERYMEN,
GLOUCESTER; and
59, MARK LANE, LONDON, E.C.

New Begonia.

BEGONIA CARMINATA, an elegant tuberous-rooted Hybrid of the "boliviensis" group. The leaves, which are narrowly ovate acuminated and biserrate, are stained with a coppery brown tint between the veins, while the Flowers are large, of a pretty delicate salmony hue tinged with rose, the males having four oblong segments upwards of an inch long, and the females five petals of smaller size. The Plants come into Flower while quite dwarf, and continue blooming in the most profuse manner. Price 5*s.* each.

Apply at Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

WM. PAUL'S ROSES are NOW in BLOOM, inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

Choice Seeds

For PRESENT SOWING.

LEE'S CHOICE CALCEOLARIA, from James', Dalkeith, and other choice strains, carefully selected and hybridised. Unsurpassed for colour, habit and form. In packets, 2*s* 6*d.* and 5*s* each.

LEE'S CHOICE CINERARIA, from our own collection of named flowers In packets, 2*s.* 6*d.* and 5*s.* each.

LEE'S CHOICE PRIMULA FIMBRIATA, in separate colours or mixed. In packets, 2*s.* 6*d.* and 5*s.* each.

Do. do., 6 distinct varieties for 10*s.* 6*d.*

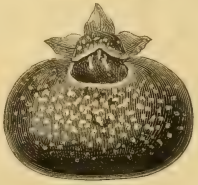
JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

JAMES CARTER AND CO.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.



INTERNATIONAL PRIZE CALCEOLARIA.

	Per packet —*s. d.*
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2 6
CALCEOLARIA, finest Hybrid, 2*s.* 6*d.*; smaller packets ..	1 6
,, finest Spotted, 2*s* 6*d.*; smaller packets ..	1 6

Saved with the greatest care, and from one of the largest collections in the kingdom.

CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2 6

PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.

PRIMULA, choicest Mixed Fringed, 2*s.* 6*d.*; smaller packets..	1 6
,, dark Carmine	2 6
,, new Scarlet	2 6
,, Rose Fringed	2 6
,, choicest White Fringed	2 6
,, choicest Fern-leaved Carmine	2 6
,, choicest Fern-leaved White	2 6
CARNATION, extra choice	2 6
CENTAUREA CLEMENTEI	1 0
CYCLAMEN, James' prize varieties	2 6
HEARTSEASE, saved from named varieties	1 0
,, Cliveden, five varieties, each	1 0
HOLLYHOCK, saved from named varieties	1 0
MYOSOTIS DISSITIFLORA..	1 0
PELARGONIUM, new Tricolor varieties	2 6
PICOTEE, extra choice	2 6
SOLANUM, new Hybrids	2 6
SWEET WILLIAM, Auricula-eyed .. .. .. 6*d.* and	1 0
WALLFLOWER, double German	1 0

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free. Five per cent. discount for cash.

JAMES CARTER AND CO., The Royal Seedsmen, 238, High Holborn, London, W.C.

Choice Seeds for Present Sowing, Free by Post.

JAMES DICKSON AND SONS (Old Established Nursery and Seed Business), 102, Eastgate Street, and "Newton" Nurseries, Chester.

	Per packet —*s. d.*
ANTIRRHINUM, choice mixed	6*d* and 1 0
AURICULA, from choice varieties	1*s.* and 2 6
CALCEOLARIA, herbaceous, saved from a magnificent collection of choice flowers	1*s.* 6*d*, 2*s.* 6*d* and 5 0
CARNATION, from prize flowers	1*s* and 2 6
CENTAUREA, candidissima and Clementei.. ..	1*s.* and 2 6
CINERARIA, from newest named flowers ..	1*s.* 6*d.*, 2*s.* 6*d* and 5 0
CYCLAMEN, Wiggins' prize strain	1*s* 6*d.* and 2 6
GLOXINIA, erect and other varieties	1*s.* and 2 6
HOLLYHOCK, from choice named sorts ..	1*s.*, 2*s.* 6*d.* and 5 0
HUMEA ELEGANS	6*d.* and 1 0
,, ,, PURPUREA	1 0
MIGNONETTE, Parsons'.	
MYOSOTIS DISSITIFLORA	1 0
PANSY, from prize flowers..	1*s.* and 2 6
PETUNIA, from choice varieties	6*d.* and 1 0
PINKS, from choice named sorts	1*s.* and 2 6
POLYANTHUS, from a choice strain	1*s.* and 2 6
PYRETHRUM AUREUM, Golden Feather ..	6*d.* and 1 0
PRIMULA SINENSIS FIMBRIATA ALBA,	1*s.* 6*d.*, 2*s* 6*d.* & 5 0
,, ,, ,, RUBRA ..	1*s.* 6*d.*, 2*s.* 6*d.* and 5 0
,, ,, ,, Mixed ..	1*s.* 6*d.*, 2*s.* 6*d.* and 5 0
,, ,, ,, FILICIFOLIA ALBA,	1*s.* 6*d.*, 2*s* 6*d.*, and 5 0
,, ,, ,, ,, RUBRA,	1*s.* 6*d.*, 2*s* 6*d* and 5 0
,, ,, ,, ,, Mixed ..	1*s.* 6*d.*, 2*s* 6*d.* and 5 0
SOLANUM, of sorts..	2*s.* 6*d.* and 3 6
STOCK, Brompton, finest German	1*s.*, 2*s.* 6*d.* and 3 6
,, East Lothian, collection of three colours	2 6
WALLFLOWER, finest Double German ..	1*s.*, 2*s.* 6*d* and 3 6

The following, for early Spring blooming, can be supplied by weight, or in packets, 3*d.* and 6*d.* each:—

Alyssum saxatile
Calandrinia, of sorts
Candytuft, of sorts
Collinsia, of sorts
Erysimum, of sorts
Iberis sempervirens
Limnanthus, of sorts
Lupinus, of sorts
Myosotis, of sorts
Nemophila, of sorts
Saponaria, of sorts
Shortia californica
Silene, of sorts
Sweet William, fine mixed
Viola, of sorts
Wallflower, fine mixed

CATALOGUES of SEEDS and PLANTS post free on application

Cabbage Seed, for present Sowing.

For the GARDEN, for SOWING at ONCE, to come in next Spring and Summer.

SUTTONS' IMPERIAL, the finest in cultivation, and earliest for Spring use, 8*d.* per ounce.
LONDON MARKET, 4*d.* per oz.
ENFIELD MARKET ,,
EARLY DWARF YORK, ,,
NONPARIEL, ,,

For the FARM.

	Per lb.—*s. d.*
SUTTONS' IMPROVED DRUMHEAD, the largest in cultivation: should be sown in July and August ..	2 6
ROBINSON'S CHAMPION DRUMHEAD	2 6
COMMON DRUMHEAD, or FLAT DUTCH	2 0

Also GRASS SEEDS, TURNIP SEEDS, MUSTARD, RAPE, &c., for Autumn Sowing, particulars of which may be had on application.

SUTTON AND SONS, Seedsmen to the Queen, Reading.

CARTER'S
PRIZE MEDAL GRASS SEEDS,
for SOWING in JULY and AUGUST.

As supplied to H.M. THE QUEEN, H.R.H. THE PRINCE of WALES. the IMPERIAL COMMISSIONERS for the PRESENT EXHIBITION, the PARIS EXHIBITION, &c.

For PERMANENT PASTURES,

Carefully arranged to suit the various conditions of soils.

For LIGHT SOILS } 27*s.* to 31*s.* 6*d.* per acre.
For MEDIUM SOILS }
For HEAVY SOILS }

Second quality, 20*s.* to 26*s.* per acre.

CARTER'S RENOVATING MIXTURE, for OLD PASTURES,

Per cwt., 80*s.*; per lb., 9*d.*

Sow 8 to 12 lb. per acre.

"CARTER'S AUTUMN MIXTURE" of fast-growing Grasses and Clovers.

This Mixture comprises several quick-growing varieties, and will produce a Crop of Green Food, for Feeding-off, before Christmas, if sown "at once." Sow 2 bushels per acre. Price on application.

FOR PRESENT SOWING.

NEW ENGLISH TRIFOLIUM INCARNATUM,
NEW AGRICULTURAL MUSTARD,
NEW DWARF ESSEX RAPE.

Price on application.

CARTER'S EARLY NIMBLE TURNIP,

Very quick growing, Price per lb., 10*d.*

All Seeds Carriage Free; 5 per cent. discount allowed for cash.

JAMES CARTER AND CO.,
SEEDSMEN to the QUEEN and the PRINCE OF WALES,
237 and 238, High Holborn, London, W.C.

THOMAS THORNTON,

HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS; a large stock of Green and Variegated HOLLIES, VINES, &c.: all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS

will soon be ready, and can be had on application.

ALEXIS DALLIERE, NURSERYMAN, Faubourg de Bruxelles, Ghent, Belgium, begs to offer the undermentioned Plants, which will be ready for sending out in and after August:—
100 well-assorted AZALEA INDICA, with buds, nice specimens, for £4 and £5.
100 do. CAMELLIAS, with buds, beautiful plants, £6.
100 do. do. " strong plants, £8.
100 HOTEIA (SPIRÆA) JAPONICA, nice tufted plants, £1 12s.
1000 " " " £14.
12 beautiful varieties of CALADIUMS, 10s.

Also a large stock of DRACÆNAS, PALMS, FERNS, MARANTAS, and many other Ornamental Foliaged Stove and Greenhouse Plants, the prices and sizes of which will be sent on application to A. DALLIERE, as above.

Established 1793.

JOHN K. KING, SEED GROWER, Coggeshall, Essex, will be happy to supply his unrivalled Hardy Prize Stocks of MANGEL WURZEL, SWEDES, and other TURNIP SEEDS (carefully selected from large roots), at moderate prices.

Large purchasers supplied at special moderate prices.

FARM SEED LISTS post free.

Carriage free on orders of 20s. and upwards.

Special Offer at Low Prices.

ORCHIDS.—Broughtonia sanguinea, 5s.; Cattleya Dowiana, 10s. 6d.; Dendrobium taurinum, 15s.; Sophronites grandiflora, 10s. 6d; Epidendrum dichromum, 5s.; Vanda gigantea, 5s.; Oncidium barbatum, 5s.; Dendrobium japonicum, 5s.; Dendrobium macrophyllum, 7s. 6d.; Vanda Batemanni, 31s. 6d.; Epidendrum sceptrum, 7s. 6d.; Cattleya Aclandiæ, 10s. 6d.; Oncidium Kramerianum, 15s.; Eulophia lurida, 5s.; Eulophia scripta, 10s. 6d.; Odontoglossum platyodon, 15s.; Oncidium Roezlianum, 21s.; Oncidium panchrysum, 31s. 6d.; Oncidium triquetrum, 7s. 6d; Cœlogyne Bensoniæ, 21s.; Saccolabium Blumei majus, 15s.; Aerides Lindleyanum, 21s.; Calanthe vestita luteo-oculata, 5s.; Calanthe vestita rubro-oculata, 5s.; Aerides crispum, 10s. 6d.; Brassia verrucosa major, 10s. 6d.; Burlingtonia venusta, 10s. 6d.; Cattleya Mossiæ, 5s.; Cattleya Leopoldi, 10s. 6d.; Cypripedium barbatum, 3s. 6d.; Dendrobium Dayanum, 10s. 6d.; Dendrobium speciosum, 5s.; Dendrobium Devonianum, 15s.; Epidendrum erubescens, 10s. 6d.; Angræcum funale, 7s. 6d.; Lælia autumnalis, 10s. 6d.; Lælia purpurata, 10s. 6d.; Lycaste Skinneri, 5s.; Lycaste lanipes, 10s. 6d.; Lycaste Deppei, 7s. 6d.; Miltonia Morelliana, 15s.; Odontoglossum Bictonense, 7s. 6d.; Odontoglossum citrosmum, 10s. 6d.; Odontoglossum cordatum, 10s. 6d.; Odontoglossum nebulosum, 15s.; Saccolabium curvifolium, 21s.; Trichopilia suavis, 7s. 6d.; Cypripedium barbatum biflorum, 21s.; Brassavola caudata, 7s. 6d.; Vanda Roxburghii, 21s.; Vanda Roxburghii cœrulea, 21s.; Cypripedium niveum, 21s.; Phalænopsis grandiflora, 63s.; Aerides Warneri, 21s.; Cypripedium Stonei, 15s.; Oncidium ampliatum, 7s. 6d.; Dendrobium Bensoniæ, 42s.; Dendrobium primulinum, 15s.; Phalænopsis Schilleriana, 84s.; Phalænopsis amabilis, 84s.; Odontoglossum grande, 5s.; Goodyera Dawsoniana, 3s. 6d.; and numerous other Orchids at equally low prices. Selections of 12 Orchids made for £3. Many extremely rare species, almost unique, at equally low prices. Apply at

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

"PHYTOSMEGMA," or PLANT CLEANSER, destroys Scale, Mealy Bug, Red Spider, &c., without injury to Plants; 6d. and 1s. per bottle.

The NEW SHOWERER, for applying the above, 6d., 1s. and 3s. 6d. each.

Wholesale of T. A. POOLEY, Sussex Wharf, Wapping, E.; and Retail of all Nurserymen, Seedsmen, and Florists.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy all the Insects, and not injure the Plants, and burns without the assistance of blowing. Price 3s. 6d. per lb., carriage free. A reduction in price for large quantities.

To be had of Messrs. R. ROBERTS AND SONS, 112, St. John Street, Clerkenwell, London, E.C.; and of all Seedsmen and Nurserymen.

Blight.

GARDENERS TROUBLED WITH THE ABOVE, WOULD DO WELL TO TRY

"WILKIE'S BLIGHT COMPOSITION" for their DESTRUCTION. It offers a safe and speedy remedy, and at a moderate price. Taken in quantities, A. W. would be happy to make a considerable reduction. Sold in 1 and 2-gallon jars at 3s. 6d. and 6s. each. It bears being considerably diluted. Post Office orders from unknown Correspondents.

WILKIE'S CONDENSED COMPOSITION, in bottles at 2s., 3s. 6d., and 6s. each.

The above articles may be had through all the principal Nurserymen and Seedsmen, and wholesale of

A WILKIE, Oak Lodge Gardens, Addison Road, Kensington, W.

FRETTINGHAM'S LIQUID COMPOUND, for the DESTRUCTION of INSECTS of all kinds, and MILDEW INFESTING PLANTS, has been proved to be the most effectual application for destroying Aphis of all kinds, Thrip, Mealy Bug, American Blight, Green and Brown Fly, Red Spider, Wasps, Ants, &c., hitherto offered to the Public. It will be found invaluable for Vines, Peaches, and Fruit Trees of all kinds, as in most cases one dressing will keep off the ravages of Insects for a whole season.

The Liquid Compound will not injure the most tender foliage of Stove or Greenhouse Plants; and, if mixed occasionally with the water ordinarily used for syringing, will, if applied before the appearance of insects, prove a certain preventive. Broccoli and other Greens may be thoroughly cleansed from insects and filth of all kinds by sponging, or using the Liquid Compound by means of the "Horticultural Vaporiser."

We select two voluntary Testimonials from a great number we have recently received:—

"Elvaston Nurseries, Borrowash, June 28, 1871.

"DEAR SIR,—We beg to bear testimony to the efficacy of your Liquid Compound, which we have used in our Nursery, both out-of-doors and under glass, with perfect success. We consider it the best preparation we have tried. It thoroughly clears the plant without injuring the foliage.—We remain, dear Sir, yours faithfully,

"Mr H. C. Frettingham. "WILLIAM BARRON & SON."

"Upton Nurseries, Chester, July 11, 1871.

"DEAR SIR,—We have very carefully tested your Liquid Compound for destroying insect life. We have tried it upon most of the pests which prey upon vegetable life, and find it very effective in cleansing all kinds of plants from scale, mealy bug, aphides, thrip, red spider—in fact all kinds of insect life seem to succumb to its power most effectually and rapidly, and that without injuring the tenderest foliage, as far as we can observe. We consider the Compound most valuable to all growers of plants.

"FRANCIS & ARTHUR DICKSON & SONS."

Voluntary Testimonials have also been received from the following:—
R. G. Backstone, Esq., The Ash Hall.
Mr. G. Westland, Gr. to Earl Dudley, Witley Court.
Mr. Wm. Jackson, Gr. to Lord Scarsdale, Kedleston Hall.
Mr. H. Gadd, Gr. to Lord Middleton, Wollaton Hall.
Mr. Speed, Gr. to the Duke of Devonshire, Chatsworth.
Mr. Wm. Parker, Gr. to the Misses Strutt, Derwent Bank, Derby.
Mr. F. Harrison, Gr. to F. Wright, Esq., Osmaston Manor, Ashbourn.
Mr. W. S. Milford, Gr. to T. W. Evans, Esq., M.P., Allestree Hall.
W. P. Ayres, C.M.R.H.S., Consulting Landscape Gardener, Nottingham.
Mr. W. Thompson, Gr. to Sir Seymour Blane, Bart.
Thos. Crump, Esq., Quarndon, near Derby.
Fitzherbert Wright, Esq., The Hayes, Swanwick.
Mr. James Tegg, Gr. to the Duke of Newcastle, Clumber Gardens.
Messrs. G. & W. Yates, Market Place, Manchester.
Mr. H. Ellis, The Gardens, Alfreton Park.
Messrs. Cole & Son, Manchester.

PRICE LIST.—One gallon bottles, 5s. 6d.; half-gallon bottles, 3s.; pints, 1s. each, bottles included. In Casks:—10 or 12 gallons, 4s. 6d. per gallon; 20 gallons and upwards, 4s. per gallon, casks returnable. Carriage paid on all orders to the amount of 20s. and upwards.

May be obtained of the principal Seedsmen and Nurserymen throughout the country.

Manufacturers, PARR AND ATHERTON, Long Row, Nottingham.

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 32, King William Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER. Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need therefore hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully.

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Caution.

F. J. DRECHSLER'S ADDRESS is now, and has been for several months past, No. 63, ARLINGTON STREET, LONDON, N.W.

See this year's PORTABLE WINNOWING-MACHINES, FUMIGATORS, SEMINATORS, &c.; only made at the above address, and not at North Street, &c.

See Notice in *Gardeners' Chronicle*, page 938.

THE HYDRONETTE (ROBIN'S PATENT).

For Gardens, Greenhouses, Conservatories, Hotbeds, Washing Windows, Carriages, &c.

Unrivalled ease of action, simplicity, convenience, and force.

The HYDRONETTE is a more useful, easy-working, reliable, and convenient water-throwing machine than any other in use. In five sizes, viz.:—No. 1, with 4 feet of Suction Hose, Strainer, Jet and Rose, 12s. 6d.; No. 2, 15s. 6d.; No. 3, £1 1s.; No. 4, £1 5s.; No. 5, £1 10s. Extra Hose and Union Joints to order.

PATENT WATER BRINGER.

HAYNES AND SONS' PATENT WATER BRINGER, price 21s.—This simple Machine will draw water from a pond or well 10 feet below the level of garden, and 100 feet over the surface, with the Hydronette or any other Garden Engine.

HAYNES AND SONS, 227, 229, and 231, Edgware Road, W.

CAUTION.—None are genuine unless labelled "HAYNES & SONS, Proprietors, London."

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

Great Reduction in Prices for 1871,

OF

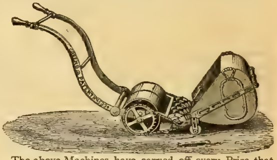
GREEN'S

PATENT SILENS MESSORS

OR

NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices:—

To cut	8 inches	.. Price	£2	10	0	Can be worked by one person.
"	10 "	.. ..	3	0	0	
"	12 "	.. ..	4	0	0	
"	14 "	.. ..	5	0	0	
"	16 "	.. ..	6	0	0	This can be worked by one person on an even Lawn
"	18 "	.. ..	7	0	0	By Man and Boy.
"	20 "	.. ..	7	10	0	"
"	22 "	.. ..	8	0	0	"
"	24 "	.. ..	8	10	0	"

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED

PATENT ROLLER,

FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	7	10	0	20 in.	22 in.	3	10	0
24 in.	26 in.	4	10	0	16 in.	17 in.	2	15	0

PRICES of ROLLERS, fitted with Shafts,
Suitable for Pony or Horse-power.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	10	0	0	30 in.	60 in.	15	10	0
30 in.	36 in.	10	15	0	30 in.	72 in.	17	10	0
30 in.	42 in.	11	15	0	30 in.	84 in.	19	10	0
30 in.	48 in.	13	10	0					

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

24 inches by 26 inches	.. .. ..	£4	0	0
20 " 22 "	.. .. ..	3	2	6
16 " 17 "	.. .. ..	2	10	0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

NEW CRIMSON PRIMROSE,
PRIMULA JAPONICA.

MR. WILLIAM BULL

Begs to announce that he is NOW SENDING OUT this NEW HARDY PRIMROSE. It has been recently figured in the "Florist and Pomologist," "Floral Magazine," and "Botanical Magazine," and the opinion of every one who has seen it in blossom may be expressed in the one word, "lovely!" When exhibited before the Floral Committee of the Royal Horticultural Society, it was voted a First-class Certificate by acclamation.

The "Florist" says of it,—"Hail! Queen of the Primroses! for so its introducer designates the lovely flower we now figure, which is hardy as a peasant, resplendent as a princess. It is just ten years since Mr. Fortune met with it in Japan, a basketful of blooming plants having been brought to his door; they were, of course, secured, but the journey home was too much for them, and despite every care none reached England alive. Ever since that time endeavours have been made to introduce this lovely plant, but till now without success, the seeds having been found to lose their germinating power in the course of transmission to Europe. At last, however, perseverance has been rewarded, and from seeds imported by Mr. Fortune plants have been raised in the establishment of Mr W BULL, of Chelsea. Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely Primrose, one which is really valuable on account of its intrinsic beauty. Of the hardiness of the Primula japonica there can be no doubt, since plants which have been standing all the winter, fully exposed, in the trying atmosphere of London, are perfectly healthy, and came into bloom about the middle of May, some two or three weeks later than the plants which had been potted and flowered under glass."

The "Floral Magazine" remarks,—"Since the day when Lilium auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as by that which we now figure, when Mr. W. BULL exhibited it on May 3 of the present year. Its history is now well known, and of its merits too much cannot be said. To Mr. Fortune, already so successful in enriching our gardens, are we indebted for it; and Mr. BULL may well congratulate himself on being the first to introduce it into Europe. A Primula a foot and a half high, bearing four or five separate whorls of flowers, each flower an inch in diameter, and of a splendid magenta colour, and the plant moreover perfectly hardy—can anything be added to this to indicate its value? We hardly think so, and everyone who saw it will fully bear out our assertion, that a more beautiful and more useful plant has not been for many years introduced into Europe. Of its hardiness there can be no doubt, as it has stood the ordeal of the last severe winter in the neighbourhood of London."

The plants now offered are very strong and healthy, in 4-inch pots, and will be sure to bloom beautifully next spring. Early orders are respectfully solicited to insure having the strong plants, for the demand is expected to be very large. Price **10s. 6d.** each, or **£4 10s.** per dozen. Coloured Plates can be supplied at 1*s.* 6*d.* each.

Those wishing to add this splendid Primula to their gardens are recommended to procure Plants, for even if imported Seed should be offered this season, it can scarcely be expected to grow. Mr. Fortune imported Seeds many times during a period of 10 years, but they always failed to vegetate, except in one instance, when sent to this country in a special manner.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA,
LONDON, S.W.

THE CELEBRATED COLLECTION OF ORCHIDS,

FORMED BY

S. RUCKER, ESQ., OF WANDSWORTH.

MESSRS. JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE PURCHASED THE ABOVE

MAGNIFICENT COLLECTION OF ORCHIDS

In its entirety, Mr. Rucker having decided on relinquishing their culture.

This Collection is, without doubt, the richest as regards variety and rarity which has ever been formed; Mr. Rucker having during the last 30 years purchased, regardless of expense, both in England and on the Continent, every fine and distinct kind he could meet with.

The Plants are in the finest possible health, and the FIRST PORTION will be offered for SALE at Mr. STEVENS' AUCTION ROOMS, Covent Garden, on AUGUST 8 and 9, details of which will appear in Mr. Stevens' Advertisements. The dates of future Sales will be duly announced hereafter.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

FOR PRESENT SOWING.

E. G. HENDERSON & SON

respectfully offer the following, in SEEDS of first-class quality:—

PRIMULA SINENSIS, MAGNUM BONUM.—One of the most beautiful and effective yet raised, showing a great improvement, the result of many years successful culture. With a vigorous habit, it produces large conspicuous trusses of very rich violet-crimson flowers, elegantly fringed, of good substance, and as a variety for the winter decoration of the conservatory and the drawing-room, it will be found one of the most effective for grouping with opposite colours in its own tribe, and valuable for giving effect to miscellaneous plants by its rich petal tints and prolific bloom.

PRIMULA SINENSIS FIMBRIATA-ALBA } mixed, or in separate colours, 2*s.* 6*d.* each.
,, ,, ,, ROSEA }
,, ,, NEW STRIPED } elegantly fringed, 3*s.* 6*d.* each.
,, ,, ,, BLUSH WHITE }
,, ,, ,, MAGENTA COLOUR }
,, ,, FILICIFOLIA, elegant Fern-leaf } 2*s.* 6*d.*
,, ,, ,, ,, white flowered }
CALCEOLARIA, finest quality, in great variety, and beautiful colours, 2*s.* 6*d.*
CINERARIA, from best named kinds, mixed } 2*s.* 6*d.*
,, the fine blue or crimson flowered sections separately }
CYCLAMEN, mixed, from fine named varieties, 2*s.* 6*d.*

Visitors calling at the Establishment will find, amongst other beautiful new forms and varieties, the following, in their respective groups:—

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Fine illustrations of CAMPANULA TURBINATA, VERBENA BASILISK (scarlet bedder), CINERARIA ASPLENIFOLIA, SENECIO ARGENTEA, and other select silvery-leaved species; a beautiful centre group of the most novel, unique, and beautiful LEUCOPHYTON BROWNI (silver-hued decorative plant); the new dwarf LOBELIA ERINUS PUMILA, CELESTIAL BLUE, CINDRELLA, CHARMING, and BRILLIANT.

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Plants from this seed have always been awarded First Prizes wherever exhibited.			
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ECHEVERIA METALLICA		2	6
HOLLYHOCK, from Chater's finest varieties ..	1*s.* and	2	6
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LAPAGERIA ROSEA, new seed		1	0
MYOSOTIS SYLVATICA, true		0	6
PANSY, finest show varieties	1*s.* and	2	6
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PYRETHRUM GOLDEN FEATHER		1	0
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SOLANUM HYBRIDUM COMPACTUM, new, awarded a First-class Certificate by the Royal Horticultural Society, March 16, 1870	3*s.* 6*d.* and	5	0
Williams' Improved Hybrid SOLANUM	1*s.* 6*d.* and	2	6
SWEET WILLIAM, Hunt's Auricula-eyed		0	6
VIOLA CORNUTA var. PERFECTION	1*s.* 6*d.*, 2*s.* 6*d.*, and	3	6
VIOLA ODORATA LAUCHEANA, new, superior to the old Russian Violet		2	6
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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A.; and E. J. LOWE, F.R.S.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

State of the Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 5, will contain a FULL and TABULAR STATEMENT of the STATE of the CROPS throughout the UNITED KINGDOM.

May be had of all Booksellers. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

Condition of the Fruit Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 12, will contain a FULL and TABULAR STATEMENT of the CONDITION of the FRUIT CROPS throughout the UNITED KINGDOM.

May be had of all Booksellers. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, JULY 29, 1871.

MEETINGS FOR THE ENSUING WEEK.

WEDNESDAY, Aug. 3	Royal Horticultural (Fruit and Floral Committees), at S. Kensington ..	11 A.M.
	Ditto (General Meeting)	3 P.M.

IN the course of certain observations, made some few years since, on the GROWTH of CUTTINGS, we had abundant opportunity of ascertaining that nutritive materials, and in particular starchy matters, were stored up in the young shoots used as cuttings, and that as these commenced to callus, and subsequently to produce roots, the solid starchy material disappeared, just as in the case of germinating seeds. We were also led to the conclusion that the occasional failures in getting cuttings to strike properly might, other things being equal, be attributable to a deficient store of nutritive material in the cutting, in consequence of which the desired growth can not take place. Circumstances prevented us at the time from following up the subject, and the only record we made of the fact is contained in some notes of lectures delivered before the Royal Horticultural Society. M. ERNEST FAIVRE, of Lyons, has, however, pursued the subject much more fully than we did; and, as the results at which he arrived are of much importance horticulturally, we believe we shall be doing good service by calling attention to them. M. FAIVRE'S experiments were made, from October till April, on cuttings of the Mulberry. One object of the experimenter was to ascertain the nature of the material stored in the tissues of the cutting, its mode of formation, and its purport. M. FAIVRE early saw, as we had done, that the callus and the exuded matters were formed at the expense of material previously stored in the shoot, and, moreover, proved the fact by causing the cutting to strike, and even produce new leaves, branches, &c., in pure sand, watered with distilled water only.

In further proof of this, M. FAIVRE made a ring-like cut round a branch at about half an inch from its point, a large callus was produced at the expense of the material above the incision, while the bud placed in that situation ceased to grow. Another experiment of M. FAIVRE'S showed that if by any means the deposit of nutritive matter could be exhausted, no callus was formed in the cuttings. This was accomplished by allowing the cuttings to develope as freely as possible long weak blanched shoots, and then making a ring-like cut below them, when no callus was produced. In autumn the cuttings readily callus, while the new shoots are tardy in their formation. In spring, on the other hand, the shoots are active, and grow rapidly while the callus is not developed [to so great an extent?]. M. FAIVRE'S further experiments go to show that the nutritive material, at whose expense the callus and the young growths are formed, is stored in the bark, and especially in the liber. Now, in the case of the Mulberry, the liber is permeated with latex-vessels, and hence the inference that the latex supplies at least in part the exuded material and that deposited in the callus. In confirmation of this, M. FAIVRE states that in those cases where the growth of vigorous shoots had used up the stored material, the latex-vessels, when examined under the microscope, were found void of latex.

M. FAIVRE'S next experiments were devoted to the object of ascertaining how the nutritive material accumulated in the wood or bark could be made available. In the first place the absorption of water was found to be essential. Moreover, it was determined that water could be absorbed by the wood alone, or by the bark alone. These facts were proved by cutting off access of water to the bark, leaving the wood free to absorb it, and *vice versâ*. These experiments not only prove the fact of absorption, either by the bark or by the wood, but also show that there must be a lateral, as well as a vertical diffusion of the absorbed liquid.

That the wood alone, even though it is known to contain a store of nutritive material, is not sufficient of itself to promote the growth of shoots, is shown by the circumstance that the buds on a cutting from which the bark is entirely removed, will not push, and moreover, that a cutting so decorticated will not callus over. On the other hand, the bark alone is not sufficient to cause the bud to push, the co-operation of bark and wood is necessary to ensure the growth of the shoot.

These experiments of M. FAIVRE then prove, that for the successful striking of cuttings, as for the successful germination of seeds, a proper store of nutritive material must exist beforehand, and, moreover, that the other conditions for insuring growth are the same in the two cases.

Other observations go to show that the swellings which occur above the obstruction, when an incision is made, or a ligature tied round a branch, do not, as they are generally assumed to do, necessarily prove the descent of the sap, because these swellings are sometimes formed in situations, and under circumstances, which preclude the idea of any special descent of elaborated fluids having taken place.

Again, the fact that the ascending sap, usually considered as not nutritious, is really a source of nutriment, has been shown by the circumstance that cuttings grown in sand, and watered with distilled water only, will grow and produce shoots. In this case, of course, the notion of a special nutritive fluid descending is out of the question.

FEW matters probably are of more vital importance in the management of a garden at the present juncture, than the treatment to which WALL FRUIT TREES are subjected. Crippled by summer drought and winter frost, and attacked in this disabled condition by the bitter blighting blasts of such a wintry spring as the past, they need every care and every encouragement to reinstate themselves, if their permanent health and persistence is made a consideration. Indoor culture, when it can be adopted, is no doubt the plan best suited to cope with the vicissitudes of our climate, but outdoor wall trees there must also be, and the remedial measures to secure their return to a convalescent state must be prompt to be effectual—if indeed we have enough of summer weather in store, to really mitigate the evil which is, in too many places, so painfully apparent.

In order to secure the improved health of trees, which have been affected in the manner indicated, two things are essential in an eminent degree; first, a free growth of new wood must be promoted and secured; and secondly, the new wood must be thoroughly ripened. These objects being realised, we may be tolerably certain that the trees will recoup themselves for any losses which may have been sustained, if only they have time to do so.

To secure healthy and vigorous growth in the trees, root-action must be encouraged by measures which suggest themselves to the judgment according to the circumstances and conditions of each case. In light soils, where watering would be beneficial, give the roots a good soaking with tepid water, and follow it up by occasional doses of liquid manure. If the circumstances, either as regards soil or subsoil, are such, that the application of water is not considered judicious, have recourse to mulchings of warm dung, or even of any light, dry material, not in a fermenting state. By these or other means, such as loosening the surface to admit sun-heat, supplemented by such pruning as may seem judicious under the circumstances, including the removal of all dead or dying parts, the development of young wood must be secured; and this, reacting on the roots, will do what is possible towards keeping up a healthy state of progressive growth.

As to ripening the new wood thus secured, where a tree has been much punished there is a strong tendency to retain more young wood than can be duly exposed to the influence of light, and this is antagonistic to ripening. Rather let the shoots be thinned beyond the average so that they are fully and completely matured, or, at least, that maturation may not be arrested by overcrowding. Secure and retain as many leaves as may be able to perform their functions in a complete and satisfactory way, but rigorously remove any surplus beyond this. In the same way, blistered or disordered and therefore useless leaves should be removed, so that they may not rob those which are healthy and active.

The two points, then, to be aimed at in the treatment of tender wall fruit trees from this time onwards, is to get growth out of them by any means, and to take care that that growth shall be thoroughly matured before the trees are exposed to the rigours of another winter and spring such as the past.

—— WE regret to hear that one of our most distinguished amateur collectors of ORCHIDS, and one whose name has for many years been, amongst Orchidologists, familiar as a household word—SIGISMUND RUCKER, Esq., has determined to relinquish the culture of these marvellous plants. The celebrated and unrivalled collection which has been gathered together at Wandsworth—doubtless the richest as regards rarity and variety which has ever been formed—has, we understand, passed into the hands of the Messrs. VEITCH & SONS, of Chelsea, by whom the plants, which are in the finest possible condition, will shortly be offered for sale at STEVENS' rooms. An opportunity will thus be offered to those who have already entered on the culture of these magnificent flowers to improve their collections, while others may be induced by the occasion which thus presents itself to commence forming an Orchid collection, and thus fill up the gap in the ranks of Orchid growers occasioned by Mr. RUCKER'S withdrawal therefrom.

—— The OXFORD BOTANIC GARDEN was the subject of a petition presented to Vice-Chancellor MALINS' court on the 21st inst. The petition was presented under Sir SAMUEL ROMILLY'S Act (52 George III., cap. 102) by the University of Oxford, the Vice-Chancellor of the University, Dr. LIDDELL, and the Professor of Botany, Mr. M. A. LAWSON, for the purpose of obtaining a variation of a scheme made in pursuance of a Master's report, dated in 1833, whereby a perpetual committee, consisting of the Vice-Chancellor, the Proctors for the time being, and the Regius Professor of Physic, with "the seven seniors resident upon the physic line," was established for the management of the Physic Garden at Oxford, in accordance with the will of Dr. WILLIAM SHERRARD, made in April, 1728. Dr. SHERRARD by his will gave £3000 for the maintenance of a Botany Professor of the Physic Garden at Oxford, upon condition that the University should settle a perpetual fund for maintaining the garden. A suit was instituted shortly after Dr. SHERRARD'S death, in which it was settled that the University should pay £150 a-year for keeping up the garden in question, and the Royal College of Physicians were appointed visitors of the gardens. It was now proposed that the committee constituted as above-mentioned should be replaced by three resident members of Convocation, who should be nominated by the Vice-Chancellor and Proctors of the University, subject to the approbation of Convocation, and should hold office for ten years, and be styled "Curators of the Botanic Garden." The Vice-Chancellor approved the proposition, and made an order to carry it into effect.

—— On Tuesday last a special meeting of the Market Gardeners, Nurserymen, and Farmers' Association was held at the Bedford Head, Maiden Lane, Covent Garden, under the presidency of Mr. H. MEYERS, to consider the question of REMOVING the business of COVENT GARDEN MARKET to FARRINGDON MARKET. The CHAIRMAN and several speakers addressed the meeting, and from their statements it appeared that the refusal of the Duke of BEDFORD to afford proper accommodation to the stall-keepers in the market, whereby they suffered considerable loss, was the cause of the present movement. The consequence of his Grace's refusal was that in wet weather the stalls were flooded—the water standing 5 or 6 inches on the ground. Hence the fruit became useless, and having been thrown aside, found its way to the barrows and baskets of the costermongers, by whom, in its half-decayed state, it was retailed in the poor districts, creating diarrhœa and other diseases among the humbler classes. One speaker, who was corroborated by others, said that Mr. GYE, the lessee of the Royal Italian Opera premises, had asked the permission of the Duke of BEDFORD to open the Floral Hall as a fruit and vegetable market, offering at the same time to indemnify his Grace against the expense of alterations, and to pay 25 per cent. on the tolls. His Grace, however, refused the offer. Under these circumstances the market gardeners and stall-keepers felt themselves compelled to look out for some other place. Application had been made to the Corporation respecting the site of Farringdon Market. The plans of the proposed improvements at the latter place, prepared at the instance of the Markets Committee of the City of London, by their architect, Mr. HORACE JONES, were laid on the table, and inspected by the meeting. The CHAIRMAN then read a letter he had received from Mr. BONTEMS, of the Architect's Office, Guildhall, stating the Markets Committee were not quite prepared to speak definitely as to the question of rent, but when ready to do so they would ask the Association to meet the Committee. Mr. POTTER, living at Farringdon Market, was in favour of having the new floral and vegetable market closer to the new meat market than Farringdon Market was. Mr. RUDKIN, Common Councillor, explained the plans, and assured the tenants of the old (Farringdon) market that the Corporation were not antagonistic to their interests. The interests of the old tenants would be the first to be considered. There was a larger area in Farringdon Market than in the other suggested site, and if the site between the railway and the new meat market were fixed on, the streets in the neighbourhood must be widened to accommodate the additional traffic, and the stall-keepers would have to pay the cost. At present Farringdon Market was almost a dead letter in the hands of the Corporation, as it brought them in only £350 a year. It was intended to lower the market to a dead level with Farringdon Street, and to do the same with Stonecutter Street, just leaving an incline sufficient to carry off the water. As to rent, he could say in his individual capacity—not pledging the Corporation—that the rent would not exceed that paid in Covent Garden. Within a month he thought the Corporation would be able to provide the needful accommodation. After further discussion, a deputation, consisting of five vegetable growers and five florists, was appointed to wait upon the City Markets Committee as to rent, tolls, &c., and to report to a future meeting. Votes of thanks to the CHAIRMAN and Mr. RUDKIN closed the proceedings.

—— The ornamental GARDENS on the THAMES EMBANKMENT, of which we gave a plan and description (p. 1600, 1870), were formally thrown open to the public on Saturday last. The designs were made by Mr. M'KENZIE, and the works were executed by Mr. MESTON. We have SHAKSPEARE'S authority for the statement that Roses flowered once in the Temple Garden: we can aver of our own knowledge that they are now to be seen in bloom on the Thames Embankment.

—— The *Times* states that the POTATO CROP in Cornwall has thus far turned out exceedingly satisfactory, the yield being larger than for some years and the quality very good. Unfortunately, however, the disease is reported to be spreading rapidly in many localities, owing to the long-continued rain.

—— The MAXIMUM TEMPERATURES recorded at the different stations in England during the week ending July 22 attained to a much greater height than at any other period of the summer. The highest temperature recorded was 82°.6 at Blackheath, Portsmouth being second with 81°.4, closely followed by three other stations with 80° and upwards. As might be expected, the temperatures decline as we proceed northwards, for while the mean of the extreme temperatures of the eight southern stations was 79°.4, that for the eight northern was 75°.7, and for the Scotch stations was over 6° less, being 69°.6. Of the MINIMUM TEMPERATURES, 46° at Edinburgh and 46°.7 at Salford were the two lowest, the former showing a range of 8° compared with the minimum at Blackheath. Of the groups, the eight northern stations of England were slightly warmer than the eight southern, and these in their turn were rather more than a degree warmer than the Scotch stations, the mean of which was 49°.3. MEAN TEMPERATURES.—As in the other two values, so in this, Blackheath is first with 65°.5, Portsmouth retaining its second place with 64°.6, following which we have Norwich with 63°.1; these three stations mainly contributing to raise the mean of the southern English stations to 62°.8, or about 1¾° above the mean of the northern English stations, and nearly 5½° above the mean of the Scotch. RAINFALL.—At two or three of the stations in the two countries the falls have exceeded 1 inch, but not to any great extent, without we except Greenock with 1.52 inch. The mean for Scotland was above that of England: the mean fall for the former country being 0.74 inch, and for the latter 0.37 inch. (See Mr. GLAISHER'S Tables in our present issue.)

—— Of a different strain entirely from the ZONAL PELARGONIUMS noticed at p. 869 are those bred by Dr. DENNY, and which we have lately seen in Mr. W. PAUL'S nurseries at Waltham Cross. They are specially distinguished for the form and size of their flowers amongst the hybrid nosegay race, to which they belong. Wellington is a magnificent crimson-scarlet, with immense trusses, and in every respect fine; Sir John Moore is a lighter scarlet, and very effective; Iago is an orange-scarlet, of remarkable brilliancy; while Ianthe is one of those beautifully rose-tinted varieties, in which the suffused blue comes out so charmingly. They are all of free-blooming habit, and take rank in one of the most advanced lines of the host of Zonal Pelargoniums by which we are surrounded.

—— The accompanying illustration (fig. 212) represents one of a great many forms of flower pots—FERN and FLORAL ARBORETS, as the designer calls them—which were exhibited at Wolverhampton by Mr. W. HUDSPITH, of the South Tyne Works, Haltwhistle, Northumberland. Great taste and skill were shown in the various forms of gnarled and knotted tree stems, here turned to useful account in providing stands for flowers and Ferns.

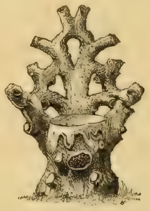

FIG. 212.—ARBORET.

—— The Corporation of Rochester is, it is stated, about forthwith to proceed with the laying out of the ROCHESTER CASTLE GARDENS for a public garden, and to perform certain works at the Castle itself, which will form a great attraction to the place. Plans have been approved, and a good sum has been subscribed towards the cost of the work.

—— A few days ago Mr. W. BAXTER SMITH (of LITTLE and BALLANTYNE'S, Carlisle), and Mr. JAMES WATT (of ROUGHEAD and PARKS, Haddington), were entertained by their friends of the trade at a complimentary dinner at the Albert Hotel, Edinburgh, on the occasion of their entering into partnership with the view of taking over the old established and well-known business of LITTLE and BALLANTYNE, Carlisle. The large company, including representatives from nearly all the leading firms in Scotland, showed the feelings of esteem and respect in which the guests of the evening are held by the seedsmen and nurserymen throughout the country. Mr. DAVID ROUGHEAD, Haddington, occupied the chair.

—— The present season seems to be an exceptional one for the FRUITING of CONIFERS. We learn from Mr. BENNETT, Enville, that nearly all the trees there are very heavily laden, and that the cones are remarkably large, even very small plants of Picea nobilis having some exceedingly fine, full cones upon them. The large specimen tree there, which is upwards of 50 feet high, is so heavily laden with them, that he will be compelled to take them off for fear of injury to the tree, which presents just now a grand, majestic appearance, the cones being of immense size. Mr. BENNETT also sent us a few cones of great beauty of Picea nobilis, taken some weeks since from a tree only 12 feet high.

—— Reference has been made, says the American correspondent of the *Times*, to the "CONDURANGO PLANT of ECUADOR, an alleged remedy for cancer, to which the attention of the United States' Government was called in an official communication from the American Minister in that country. The samples of the plant sent here were distributed by the State Department as an efficient remedy, and a physician was quoted as having experimented with it and vouched for its healing powers. But it appears that a board of physicians have been conducting experiments in Washington at the hospitals, and although they have made no final report, yet their judgment, so far as the experiments have gone, is against the plant, which is said to be entirely inefficacious. A decoction of the wood of the Condurango is used, but careful analysis fails to show that it has any unusual properties. The bark contains an insoluble gum, but no recognised medicinal principle. Both the wood and the bark have been subjected to minute examination, and are pronounced worthless. The patients afflicted with cancer who have been placed under treatment with Condurango are said to fail to show any improvement in condition. There are hints that the stir which has been created about this alleged remedy was a part of a well-laid plan to get extensive advertising for a new quack medicine, for which a patent has already been obtained, and of which Condurango is an ingredient."

—— A good hint for fixing SCREWS in old HOLES is contained in the American "Gardeners' Monthly." The ordinary method is to drive into the hole a piece of wood, cut it off flush with the surface, and then put the screw in. It often happens that wood, screw, and all work out after a time; hence the suggestion to make the plug of some elastic material, for which purpose strips of cork are recommended as very serviceable.

New Garden Plants.

CŒLOGYNE SULPHUREA, *Rchb. fil. in Seemann's Bonplandia*, 1857, *p.* 43.

Pseudobulbo ovato nitido subtetragono seu tetragono monophyllo; folio cuneato oblongo-ligulato obtuse acuto; racemo elongato, parvifloro; sepalis oblongis extus carinatis; petalis lineari-ligulatis reflexis; labello ima basi subsaccato dein utrinque unidentato, isthmo modico a lacinia antica reniformi biloba separato carina una laterali utrinque a basi ad basin laciniæ anticæ; columna integrimarginata.—*Chelonanthera sulphurea*, Blume! Bijdr., 383; *Cœlogyne Crookewitsii*, Teysm. et B. Tijds., Ned. Ind. iii. 666, et fid. hort. Bogor.

A modest Cœlogyne, with flowers in the way of those of Cœlogyne undulata, yellowish green, bearing a white lip with yellow streaks, and a yellow two-shanked blotch at the base of the column, with a pale brownish streak on each side of it below the stigmatic hollow. The original discoverers may have been Blume's collectors in Java. We obtained also specimens from Von Schierbrand and Zollinger. At length it came to us in a living state from Messrs. Veitch. *H. G. Rchb. fil.*

RODRIGUEZIA LEOCHILINA, *n. sp.*

Pseudobulbis oblongo ancipitibus; folio oblongo ligulato obtuso valde carnoso, rhachi obscura, apice flexuosa racemosa; bracteis ovatis obtuse acutis ovaria pedicellata tertia æquantibus; sepalis ligulatis obtuse acutis, externis lateralibus linea media extus carinatis; petalis subæqualibus obtusis; labello ima basi angulato, ligulato pandurato retuso emarginato; lamella angulata parva utrinque ante basin, carinis geminis in disco; columna angulis porrectis obtusis.

A neat little Orchid in the way of Rodriguezia maculata, but at once seen to be distinct by the totally different even white lip. The sepals and petals are yellowish, with brown dots. It came from Costa Rica, and flowered in the Royal Exotic Nursery of Messrs. Veitch & Sons. *H. G. Rchb. fil.*

PATENT IMPERISHABLE HOT-HOUSES.

PONDERING over the perishability of hothouses built of wood, and the constant attention required to keep paint and putty perfect even in those constructed of metal, the idea occurred to Mr. Ayres that they might be advantageously built without either sash-bars or putty, and that they might also be made up by a mere multiplication of similar parts, such as might be fitted together with ease and facility by any intelligent workman. Thus originated the Patent Imperishable Hothouses, of which we subjoin one or two illustrations, and the advantages of which, as claimed by the inventor, are imperishability, superior warmth and lightness, portability, and reduction of material, and of the cost of maintenance.

The framework of these houses is constructed of cast and wrought iron in combination, while the side walls are formed of slabs made of terra-cotta or cement. The framework is both light and strong, and through the combination of the necessary maximum of strength with the minimum of material, the actual shade cast by a span-roofed house 30 feet long by 12 feet wide, is only 76 feet, or 8½ yards super. Then the houses are as light as day, and may be said to form a continuous sheet of glass, supported by strong light rafters of T-iron, 6 feet apart, and with purlins to receive the ends of the squares of glass, 30 to 40 inches from each other. In this dull climate it is essential that in constructing plant-houses the light admitted should be as little intercepted as possible, for though for a few months in the height of the growing season we have more light than we may consider beneficial, and hence use shading, yet for the remaining portion light is frequently painfully deficient and the plants suffer accordingly. Nor is the gain of light the only advantage derived frrom this system of building. The great fault and failing of iron houses, as ordinarily constructed, is that metal is a rapid conductor of heat; but glass is an insulator of heat, and taking advantage of this property the patent hothouses have been made externally, as far as possible, a continuous sheet of glass, both to protect the more perishable metal, and also to act as an insulator of the internal (warm) and external (cold) atmospheres.

Another advantage claimed for these structures is their perfect portability. Where this is desired, as it is with all leaseholders, yearly tenants, or even freeholders who have a life interest only in the property upon which they may find it necessary to build, it is important to be able to put up hothouses which in the legal sense of the word shall be "tenant's fixtures." In this case the iron standards, which are fixed into blocks of stone or concrete, have a recess or chasing, into which the concrete or terra-cotta slabs, which form the walls of the houses, fit with perfect ease, and can be removed at any time, and consequently no brickwork or masonry is required. The shelves or stages for the plants to stand upon are formed of the same material, and thus the cost and annoyance of wooden stages are done away with. As to the reduction of material and cost of maintenance, the houses are formed of an ironwork skeleton, the parts of which are the standard or mounting, the spandril or head-piece, and the rafters of ┳-iron connecting the two together, and forming a span; they may be called the principals, and are connected and tied together by light recessed purlins, which receive the ends of the squares of glass, the latter being held in place perfectly tight by metallic clips, which pass through the purlins and fasten with a pin. These, with the front and lower ventilators, complete the house, so that it will be seen that it presents but a small surface upon which it will be necessary for the painter to exercise his vocation.

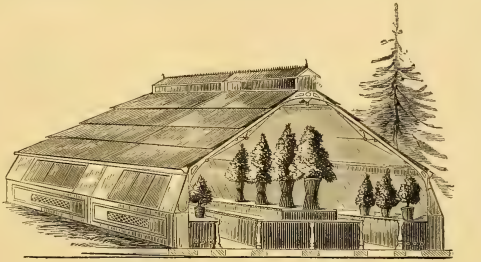

FIG. 213.—AYRES' PATENT IMPERISHABLE HOTHOUSE.

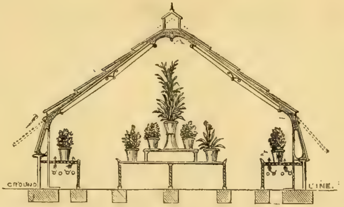

FIG. 214.—SECTION OF THE ABOVE.

The accompanying sketches (213, 214) show the general character of one of these houses as adapted for plant culture. It will be seen that, except the ends, the structure has no perpendicular glass, the fronts or sides, which other designers make perpendicular, being here on the slope. The reason assigned for this is, because no light — speaking comparatively — passes through perpendicular glass. To obtain the power of the sun's rays the glass must stand at a right angle with them. With perpendicular glass almost every ray is refracted, and for positive life-invigorating purposes rendered almost useless; but with sloping sides some direct light may be obtained, and that at a most important season, viz., in the dark months of winter. The house is ventilated through the side panels, which admit the cold air in contact with the heating and evaporating troughs; through the side lights, which open simultaneously; and through movable sashes in the louvre box. This house is designed either for the cultivation of stove or greenhouse plants, the heating power introduced constituting the difference.

Various other forms of building, applying the same principles, are designed for different objects, such as Grape growing, Pine growing, orchard-house culture, &c. The latter house has a sunk path, with a central border and trellis, for planted out trees, and side stages for fruit trees in pots.

"Orchard-houses," remarks Mr. Ayres, in his descriptive pamphlet, "have become a regular garden institution, and as, from the fickleness of our climate, the demand for them appears likely to increase, it is desirable that we should leave the region of toy, and take our stand upon the ground of solid cultivation. Pot fruit trees are all very well; indeed, they are admirable, as managed by some cultivators; but, taken upon the average, they are by no means a remunerative, not to say a profitable investment. Hence we say, for a permanent supply adopt open border planting, and you may do so with the conviction that the trees will serve you when the daily trouble of pots has ceased to charm. For this reason we recommend a central trellis, which, being from base to base 23 feet in girth, offers a training surface nearly equal to two 12 foot walls. It may be argued that upon the permanent plan we cannot have so great a variety of fruit, but that is a mistake, for nothing is so easy to bud as a Peach, Apricot, or Plum; so that, if so desired, every main branch (or even branchlet) may be a different variety of fruit. Amateur pomologists may seek a great variety of fruit; gardeners, whose reputation centres in an abundant supply of good fruit at all seasons, are content to confine themselves to proved kinds of superior excellence, and sure bearing properties."

A company has been formed for carrying out Mr. Ayres' patent, with works at Newark-on-Trent.

LINNEAN SOCIETY.

[The following are extracts from Mr. Bentham's Presidential Address, recently published. EDS.]

SINCE 1862 systematic biology has to a certain degree been cast into the background by the great impulse given to the more speculative branches of the science by the promulgation of the Darwinian theories. The great thunderbolt had indeed been launched, but had not yet produced its full effect. We systematists, bred up in the doctrine of the fixed immutability of species within positive limits, who had always thought it one great object to ascertain what those limits were, and by what means species, in their never-ending variations and constant attempts to overstep those limits, were invariably checked and thrown back within their own domain, might at first have been disposed to resist the revolutionary tendency of the new doctrine; but we felt shaken and puzzled. The wide field opened for the exercise of speculative tendencies was soon overrun by numerous aspirants, a cry of contempt was raised against museum zoologists and herbarium botanists, and nothing was allowed to be scientific which was not theoretical or microscopical. But this has been carried, in some instances, too far. If facts without deductions are of little avail, assumptions without facts are worse than useless. Theorists in their disputes must bring forth the evidences they rely upon, and these evidences can only be derived from and tested by sound systematic biology, which must resume and is resuming its proper position in the ranks of science, controlled and guided in its course by the results of those theories, for which it has supplied the basis.* If the absolute immutability of races is no longer to be relied upon, the greater number of them (whether genera, species, or varieties) are at the present or any other geological period, practically circumscribed within more or less definite limits. The ascertaining those limits in every detail of form, structure, habit, and constitution, and the judicious appreciation of the very complicated relations borne to each other by the different races so limited, is as necessary as the supplementing the scantiness of data from the depths of Teutonic consciousness by the vivid flashes of Italian imagination, or as the magnifying minute as yet undeveloped organisms, with a precision beyond what is fully justified by our best instruments.

I am, however, far from denying on the one hand how much biological science has of late been raised, since it has been brought to bear through well-developed theories and hypotheses upon the history of our globe, and of the races it has borne; and on the other, how very much the basis upon which it rests has been improved and consolidated by the assiduous use of the microscope and the dissecting knife; but I would insist upon the necessity of equal ability being applied to the intermediate process of method or nomenclature and classification, which forms the connecting link between the labours of the anatomist and the theorist, reducing the observations of the one to forms available for the arguments of the other. All three, the minute observer, the systematist, and the theorist, thus assisting each other, equally contribute to the general advancement of science, and for all practical application, the systematist's share of duty is the most important.

The quicksands to which I have alluded as besetting thus the foundation of biological science, may be classed as imperfect data and false data, imperfect method and false method. To show what progress is making in removing or consolidating them, it may be useful to consider what these data are, and what are our means of fixing them so as to be readily available for use.

It must, in the first place, be remembered that the races whose relations to each other we study, can only be present to our minds in an abstract form. In treating of a genus, a species, or a variety, it is not enough to have one individual before our eyes, we must combine the properties belonging to the whole race we are considering, abstracted from those peculiar to subordinate races or individuals. We cannot form a correct idea of a species from a single individual, nor of a genus from a single one of its species. We can no more set up a typical species than a typical individual. If we had before us an exact individual representative of the common parent, from which all the individuals of a species or all the species of a genus have descended—or, if you prefer it, an exact copy of the model or type after which the whole species or genus had been created, we should have no possible means of recognising it. I once heard a lecture by a German philosophical naturalist, of considerable reputation in his day, in which he thought he proved that the common Clover was the type of Papilionaceæ. His facts were correct enough, but his arguments might have been turned in favour of any other individual species that might have been selected. Suppose two individuals of a species, two species of a genus, two genera of a family, in one of which certain organs are more developed, more differentiated, or more consolidated than in the other, if we agree upon the first question of which is the most perfect, a point upon which naturalists seldom do agree, how are we to determine which represents the common parent or model?—whether the perfect one is an improvement upon, or an improved copy, or the imperfect one a degeneracy from or a bad imitation of the other? No direct evidence goes beyond a very few generations; reasoning from analogy is impossible without direct evidence to start from, and the imagining a type without either is the business of the poet, not of the naturalist.

It follows that every such abstract idea of a race must be derived from the observation, by ourselves or by others, of as large a number of the constituent individuals as possible. However fixed a race may be, if fixed at all in Nature, that is not the case with our abstract idea of it, no species or genus we establish can be considered as absolutely fixed, it will ever have to be completed, corrected, or modified, as more and more individuals come to be correctly observed. Hence it is, that a species described from a single specimen, and even a genus established on a single species, always excites more or less of suspicion unless supported by strong reasoning from analogy or confirmed by repeated observation.

Our means of observing and methodising biological facts, of establishing and classifying those abstract ideas we call varieties, species, genera, families, &c., consist in the study (1) of living individual organisms; (2) of preserved specimens; (3) of pictorial delineations; and (4) of written descriptions. Each of these sources of information has its special advantages, but each is attended by some special deficiencies to be supplied by one or more of the others.

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* The great importance of morphology and classification, the elements of systematic biology, has been forcibly illustrated by Prof. Flower in his last year's introductory lecture at the Royal College of Surgeons.

1. The study of living individuals in their natural state is without doubt the most satisfactory, but very few such individals can be simultaneously observed for the purpose of comparison, and no one individual, at any one moment, can supply the whole of the data required relating even to that individual. Some additional facilities in these respects are given by the maintenance of collections of living animals and plants, particularly useful in affording the means of continuous observation during the various phases of the life of one and the same individual, and sometimes through successive generations, or in facilitating the internal examination of organism immediately after death, when the great physiological changes consequent upon death have only commenced. But there are drawbacks and difficulties to be overcome, as well as a few special sources of error to be guarded against, and in this respect, as well as in the progress recently made in their application to science, there is a marked difference between zoological and botanical living collections, or so-called gardens.

The great drawback to living collections, especially zoological, is their necessary incompleteness. At the best it is individuals only, not species, and in a few cases genera that are exposed to observation; genera, indeed, can always be better represented than species, for a few species bear a much larger proportion to the total number contained in a genus, than a few individuals to the total number which a species contains. Whole classes are entirely wanting in zoological gardens, which are usually limited to vertebrata. Of late years means have been found to include a few aquatic animals of the lower orders, but insects, for instance, those animals which exercise the greatest influence on the general economy of Nature, the observation of whose life and transformations is every day acquiring greater importance, are wholly unrepresented in zoological gardens. The shortness of duration of their individual lives, their enormous power of propagation, the different mediums in which they pass the different stages of their existence, will long be obstacles to the formation of living entomological collections on anything like a satisfactory scale. The cost also of the formation and maintenance of living collections is very much greater in the case of animals than of plants; but on the other hand zoologists have the advantage of the attractiveness of their menageries to the general unscientific but paying public, and, under judicious management, some sacrifices to popular tastes are far outweighed by the additional funds obtained towards rendering their collections useful to science.

The false data or errors to be guarded against in the observation of living zoological collections are chiefly owing to the unnatural conditions in which the animals are placed. Ungenial climate, unaccustomed food, want of exercise, &c., act upon their temper, habits, and constitution, and confinement materially modifies circumstances connected with their propagation. Such errors or false data are, no doubt, as yet very few and unimportant compared to those which have arisen from the reliance on garden plants for botanical observations, but, as zoological gardens multiply and extend, they will have to be more and more kept in view.

In my younger days there were already a number of small collections of living animals, but almost all either travelling or local menageries exhibited for money by private individuals, or small collections kept up as a matter of curiosity for the benefit of the public, such as those of the Pfauen-Insel at Potsdam, the park at Portici, or our own Tower menagerie. At Paris alone, at the Jardin des Plantes, in the flourishing days of the Jussieus and Cuviers, was the living zoological collection rendered essentially subservient to the purposes of science. Since then, however, matters have much changed: the Jardin des Plantes, which so long reigned supreme, has, by remaining stationary, sank into a second rank. She may indeed be as justly as ever proud of her Milne-Edwards, her Brongniart, her Decaisne, and many others, but long out of favour with the Government and the paying public, who transferred their patronage to the high-sounding Jardin d'Acclimatation, now no more, she has been almost abandoned to the resources of pure science, always of the most restricted in a pecuniary point of view. We in the mean time, and after our example several Continental states or cities, have made great advances. The formation of our Zoological Society and Gardens opened a new era in the cultivation of the science. After various vicissitudes, the Society had the good fortune to secure the services of one who combined in the highest degree zoological eminence with administrative ability, and thus our great living zoological collection is now raised to the proud relative position which the Jardin des Plantes once held, and which there seems every reason to hope it will long maintain. With an annual income of about £23,000 the Zoological Society is enabled to maintain a living collection of about a thousand species of Vertebrata, and although some portion of the surplus funds is necessarily applied for the sole gratification of the paying public, yet a fair share is devoted to the real promotion of that science for which all the fellows are supposed to subscribe, the accurate observation of the animals maintained, the dissection of those that die, and the publication of the results. Physiological experiments are either actually made in the garden, or promoted and liberally assisted, such, for instance, as those on the transfusion of blood, the effects or non-effects of which were recently laid before the Royal Society by Mr. F. Galton. A very rich zoological library has been formed, and last year's accounts show a sum of about £1800 expended in the Socicty's scientific publications.

Zoological gardens, after the example of the London one, have been established not only in several of our provincial towns, but in various Continental cities, amongst which the more important ones, as I am informed, are those of Amsterdam, Antwerp, Hamburgh, Cologne, Frankfort, Berlin, Rotterdam, and Dresden; the receipts of the one at Hamburgh, for instance, amounting annually, according to the published reports, to between £8000 and £9000. There are also so-called gardens of acclimatisation; but these have not much of a scientific character; their professed object indeed is not so much the observation of the physiology and constitution of animals as their modification for practical purposes, and practically they are chiefly known as places of recreation, and are not always very successful. The great one in the Bois de Boulogne, now destroyed, out of an expenditure in 1868 of about £7200 showed a deficit of about £1600; a smaller one at the Hague is enabled to pay an annual dividend to its shareholders.

Living collections of plants have great advantages over those of animals, they can be so much more extensively maintained at a comparatively small cost. In several botanical gardens several thousand species have been readily cultivated at a comparatively small cost, and species can be represented by a considerable number of individuals, a great gain especially where instruction is the immediate object, the lives of many can be watched through several successive generations, and great facilities are afforded for physiological experiments and microscopical observations on plants and their organs whilst still retaining more or less of life. On the other hand the false data recorded from observations made in botanical gardens have been lamentably numerous and important. A plant in the course of its life so alters its outer aspect that each one cannot be individualised by the keeper of a large collection, and at one period, that of the seed in the ground, it is wholly withdrawn from his observation. He is therefore obliged to trust to labels, these are often mismatched by accident or by the carelessness of the workmen employed, or again, one seed has been sown and another has come up in its place, or a perennial has perished and made room for a sucker or seedling from an adjoining species. The misnomers arising from these and other causes have become perpetuated and sanctioned by directors who, for want of adequate libraries or herbaria, or sometimes for want of experience or ability, have been unable to detect them. Plants have also been so disguised or essentially altered by cultivation that it has become difficult to recognise their identity, and new varieties or hybrids, which, if left to themselves, would have succumbed to some of the innumerable causes of destruction they are constantly exposed to in a wild state, have been preserved and propagated through the protective care of the cultivator, and pronounced at once to be new species. If, moreover, a misplaced label indicates that the seed has been received from a country where no plants of a similar type are known to grow, the director readily notes it as a new genus, and, proud of the discovery, gives it a name and appends a so-called diagnosis to his next seed-catalogue, adding one more to the numerous puzzles with which the science is encumbered. So far, indeed, had this nuisance been carried in several Continental gardens in the earlier portion of the present century, that, excepting perhaps Fischer & Meyer's and a few other first-rate indexes, the great majority, perhaps nine-tenths, of the new species published in these catalogues have proved untenable, and, from my own experience, I am now obliged, *a priori*, to set down as doubtful every species established on a garden plant without confirmation from wild specimens. Fortunately the custom is now abating, and directors of botanic gardens are beginning to perceive that they do not add to their reputation by having their names appended to those of bad species.

Living collections of plants, or botanical gardens, are of much older date than zoological ones, and since the sixteenth century have been attached to the principal universities which have medical schools, that of Padua, dating from 1525, that of Pisa, from 1544, and of Montpellier, from 1597. The Jardin des Plantes of Paris, which in botany, even more than in zoology, so long reigned supreme, was established in 1610, our own first one at Oxford in 1632. These university gardens having been generally more or less under the control of eminent resident botanists, have contributed very largely to the means of studying the structure and affinities of plants, especially in those Continental cities where a milder or more steady climate has facilitated the maintenance of large collections in the open air or with little protection. Continental gardens have also been long and are still made largely available for the purpose of instruction as well as of scientific experiments, of which the recent labours of Naudin and Decaisne are an excellent illustration. For these scientific purposes the arrangement in large and small square compartments is peculiarly suitable, and I confess that I have frequently had greater pleasure in witnessing the facilities afforded to zealous students in following up, book in hand, the straight rows of scientifically-arranged plants in these formal university gardens, than in watching the gay crowds that flock to the more ornamentally laid out public botanic gardens.

I do not think that generally much advance has been made of late years in Continental botanical gardens. Those that I first visited in 1830 appeared to me to be but little improved when I again went over them in 1869. Some have acquired additional space, others have paid more attention to ornament, but most have remained nearly stationary, and a few have even fallen back. In our own country we have made great progress. Kew Gardens had indeed, in former days, rendered assistance to the investigations of Robert Brown and a few other favoured individuals, but they were the Sovereign's private property, and were kept very close, with little encouragement to science at large. But 30 years' unceasing exertions on the part of its distinguished directors, the two Hookers, father and son, have raised them to a point of scientific usefulness far beyond any other establishment of the kind at home or abroad. Of the large sums annually voted for it by Parliament, a portion has indeed to be applied to mere ornament and to the gratification of visitors, but yet, with all the drawbacks of our climate and consequent expenditure in houses, the largest named collection of species ever brought together in one spot, representatives of all parts of the globe, are there maintained, freely exhibited to the public, and submitted to the examination of scientific botanists.

RHODODENDRON EXCRESCENCES.

AT the meeting of the Scientific Committee of the Royal Horticultural Society, held on the 19th inst., the Rev. M. J. Berkeley exhibited fragments of Rhododendron ferrugineum with a large, fleshy, gall-like body on the leaves, and which he considered to be the result of a Fungus mould, a species of Ascomyces, similar to that which produces blister in Peach trees (p. 944). I do not know on what grounds the learned gentleman has formed his opinion, and I willingly bow to the decision of a veteran in science, who studied galls before I was born; but I would respectfully suggest a further investigation of these excrescences, as in their location, build, and substance they show an exceedingly close resemblance to the galls caused by some saw-flies. The present seems precisely one of those cases in which botanists and entomologists can work hand in hand. If the latter have lately had occasion to relieve the former of the study of the large genus Erineum, by proving its exponents to be excrescences caused by the presence of four-footed mites belonging to the genus Phytoptus, perhaps botanists will render their entomological brethren a similar service, by proving satisfactorily that the gall-like excrescences of Rhododendrons are real Fungi.

In the meantime I offer a first instalment of the knowledge extant on the subject, hoping that other observers will follow suit.

In 1859, Dr. Laboulbène communicated to the Entomological Society of France an extract from a letter written by M. Léon Dufour, on the subject of the gall of the Rhododendron, observed near the Grande Chartreuse, and of which gall mention has been made in the "Rapport sur le Congrès de Grenoble." (*Vide* Annales de la Soc. Ent. de France, 1858, p. 839.) The extract reads as follows: "Your gall of the Rhododendron, which I have often met with in the Pyrenees, has much intrigued me, and I have never been able to make out its originator. It must be a Diplolepis (Cynipidæ), similar to that which produces the gall *en pomme d'api* of the Oak." (Bulletin de la Soc. Ent. de France, 1859, p. 96.)

In 1868 I penned the following note:—"Alpine Rose (Rhododendron ferrugineum): Fleshy, fruit-like galls on the leaf, of about the size of a Raspberry, smooth; one gall grown right on the edge of a leaf. For an inspection of these to me novel galls on the far-famed Alpine Rose I am indebted to Mr. Stainton . . . . who, at my request, has furnished the following precise particulars, which will enable any tourist to investigate the subject further, if they are not already described somewhere. Mr. Stainton writes:—'They were common enough at Andermatt, from 100 to 200 feet above the chapel, which is itself just above Andermatt; the colour was green, with a slight rosy tinge in places. The date was July 30' (1866). Insect unknown to me." ("Zoologist," s.s. 1868, p. 1206).

In 1869 I wrote a hint respecting the Nematus gall of Rhododendron ferrugineum. On July 30, 1866, Mr. Stainton first met with this gall near Andermatt, in the Ursern Valley, and his courtesy enabled me soon afterwards to examine specimens, and to offer a few particulars on the subject in the "Zoologist" (p. 1206, s.s.), but these specimens were too far decayed to give any clue to the insect. On June 23, 1868, and the days following, during a journey devoted almost entirely to the search after galls, I had the pleasure of myself gathering plenty of these excrescences near the road above Hospenthal, in the same valley, at an altitude of about 4500 feet. The galls, looking with their glowingly red cheeks not unlike small-sized White Heart Cherries of irregular shape, were most conspicuous amongst the sober, dark-green foliage of their foster-plants, which at that time only just began to expand their lovely blossoms. An examination of many specimens showed that at first they are filled with a spongy white substance enveloping a solitary egg, and that subsequently, when this hatches, the larvæ begin to feed on the surrounding matter, thus gradually forming a chamber around itself. The location of the galls is either each separate upon a leaf or else in the centre of a top of a shoot, in which case the latter, instead of bringing forth its bunch of leaves or blossoms, produces a bundle of more or less crowded galls, *i.e.*, converted leaves or blossoms. Taking into account all I have seen of this gall, I consider it to be the production of a saw-fly, belonging, probably, to the genus Nematus; but, although there is ample precedent for doing so, I abstain from burdening nomenclature with a new appellation,* which task I leave to the finder of the perfect insect; adding that it will probably occur in August or September, when sweeping the Rhododendrons would probably lead to the desired result, for the attainment of which I appeal to all entomologists who may happen to be in the subalpine region at that time of the year. ("Zoologist," s.s., p. 1838.)

Then followed a memorandum on the Nematus gall on Rhododendron hirsutum. In the September number of the "Zoologist," s.s., p. 1838, I called attention to the occurrence of the gall of a saw-fly on R. ferrugineum in the Ursern Valley. I have now to record, that this same gall also occurs on Rhododendron hirsutum in the Bernese Alps, whence specimens collected by Herr Bischoff-Ehinger, of Basle, on the Gemmenalphorn, near Interlaken, at an altitude of about 6000 feet, have just reached me, but, I am sorry to say, in a condition which precludes the possibility of rearing the insect. However, this production, being now signalled as occurring in two localities on different species of the so-called Alpine Rose, is likely to be found all over the alpine range, and I hope that entomological tourists will bear in mind that the perfect insect is unknown to us. ("Zoologist," s.s., 1869, p. 1869.)

Now, Mr. Editor, I hope you will not cancel any of the circumstantial evidence repeated above, for the sake of saving space. I claim a full hearing in the matter, and that it is worth while ventilating is shown by the fact that, hardly a month ago, while visiting Professor Heer, at Zurich, he deliberately put to me the question—"Do you know that gall on Rhododendrons? I meet with it everywhere in the Alps, and cannot fathom its origin, &c." What could I do but shrug my shoulders, and relate my repeated attempts to get at the perfect insect? And now we are told, on the highest authority, that it is a fungoid growth.

Have my eyes deceived me—is it a gall or a Fungus? "that is the question." If the former, who will first show its maker; if the latter, then I shall console myself with the thought of having procured particulars of its geographical range, for let it be known that there is a rumour afloat of its having been seen also on cultivated Rhododendrons in Scotland, and as to its insect origin, in which I still firmly believe, I shall then, but only then, have to excuse myself with the unphilosophical saying that *errare humanum est!*

It would be interesting to learn whether this excrescence also occurs on the Rhododendrons from Sikkim. *Albert Müller, July* 24.

BOTANY FOR BEGINNERS.—XII.

THOSE who are inclined to twit botanists with the *cui bono* argument—and the race is not quite extinct—may be met by the fact that neither they nor anyone else could exist without plants. Plant life is essential to animal life, animal life is the complement to that of plants. Hence some knowledge of plant life may be deemed essential. We do not intend at present to enter upon physiological questions, but it may surely be said that an acquaintance with the plants producing the *staff of life* comes under the head of useful knowledge. Nevertheless, we think we do not err when we state that even among those who have a smattering of botanical lore less is known of the grasses than of almost any other group of plants. This arises no doubt from the difficulty of dissecting their flowers, and from the fact that their construction is, at first sight at any rate, so different from that of other plants. The difficulty of dissecting the flowers of grasses arises from their general small size, their dense approximation, and from the dryness and rigidity of their flowers, which renders the dismemberment of them a matter requiring some patience and dexterity. For these reasons we have deferred the consideration of their structure till the beginner, presuming that he has followed us so far, may be supposed to have attained something of the requisite dexterity from practice on flowers of easier construction.

The Wheat (Triticum), chosen for our illustration, will now be in flower, or if, in the south, a little past its flowering stage, will hardly be too far advanced to prevent its parts being clearly made out; or at any rate, if Wheat be not available, what we are now about to say is applicable, *mutatis mutandis*, to other grasses now in full flower. Before passing on to the flower, however, let us glance at the other parts of the plant.

The fibrous roots demand but little explanation at our hand, but the stems of the grasses—the straw, being in many respects different from that of other plants, requires some notice. In the first place, it is herbaceous, that is, not woody; then it may be noted that its form is cylindrical, and that it is hollow in the interior. The stem, in fact, is tubular, but the tube is interrupted here and there by partitions which will be found at the points whence the leaves proceed—points, moreover, marked in the case of the grasses by a little thickening called technically a *node* or knot. It is useful to know that the spot whence a leaf proceeds is always called in botany a node, even though a swelling be not always present in that situation. The space between two nodes is in like manner called the *internode.* When the leaves are crowded together the internodes are necessarily very short; but here in the Wheat the leaves are separated by rather long internodes. The tubular form of the stem, or straw of Wheat, secures considerable strength, at the same time that economy of material is secured. Strength is also secured by the hard flinty substance which is contained in the skin or rind of all the grasses, and which exists in such quantities that the stem may with care be burnt, or destroyed by strong acids, and yet the skeleton of the plant as it were will remain, showing the form of the stem. To do this, however, requires some skill, and the beginner will probably realise the fact almost as well when we tell him that the rigidity of grasses as well as the glossy appearance of the straw is due to this silex, or flinty material. All grasses, with the exception of the Sugar-cane, and one or two others, have these tubular jointed stems. The leaves, too, of grasses are characteristic. If the leaf of the Wheat plant be carefully stripped off, it will be seen to consist of a sheathing portion wrapping round the stem, and a flat, ribbon-like portion, the *blade*, quite detached from the stem, and having no one rib larger than the rest—no midrib, in fact, but a great number, all of about the same size, and running parallel from the base to the point of the leaf. The blade of a grass-leaf is always entire, not notched or divided in any way. Just at the junction between the sheath and the blade of the leaf may be seen in all grasses a small but characteristic membranous outgrowth, technically called a *ligule*, and which is peculiar to grasses.

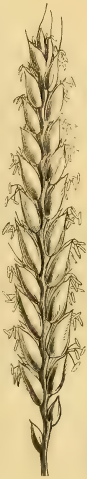

FIG. 215.

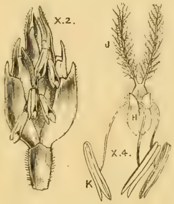

FIG. 216.

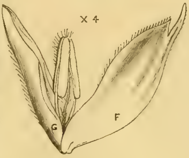

FIG. 217.

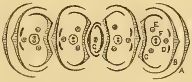

FIG. 218.

FIG. 215. Ear or spike of Wheat, bearing numerous spikelets (seen from the side).—FIG. 216. Left-hand figure: Spikelet separated, the two lowermost scales are the glumes. Right-hand figure: The flower divested of the glumes and pales (see text).—FIG. 217. Flower of Wheat invested by the flowering glume and pale (see text).—FIG. 218. Diagram showing the arrangement of the parts in a spikelet of Wheat (see text).

A botanist seeing a fragment of a leaf with this little membranous process emerging from it, would at once pronounce the fragment to have belonged to some grass. Sedges, which in so many cases resemble grasses, and are constantly confounded with them, may be recognised at once by their triangular stems, and their leaves destitute of *ligules*.

Coming now to the flowers of the Wheat, we find them closely packed on either side of the top of the stem, and if they be pulled off from the ear, the inflorescence, that is, the stem, may be seen to have lost its cylindrical form, and to have become flattened and bent zig-zag fashion. Here again is a provision for securing economy of space; the flattening allows more room for the flowers, and the zig-zag bends allow the flowers above, as it were, to fit into those below. It may be well to state that the inflorescence of the Wheat is called a *spike*, and its flattened portion is called the *rachis* (fig. 215).

It might at first be supposed that what we have just called the flowers, and which we recommended to be stripped off to show the flattened rachis, were single flowers; this, however, is not the case: they are groups of flowers, and to each little packet or group the term *spikelet* is applied (fig. 216). These spikelets are densely packed in the case of Wheat, but in the Oat they are more loosely arranged, and form a panicle. We have then to see what these spikelets are composed of. The beginner must not be disheartened if at first he can see nothing but a confused mass of scales; let him be assured that there is no real confusion, and that a little patience will enable him to see that each spikelet consists, first, of two scales, one to the right hand, the other to the left. By seizing with the fingers the top of the spikelet, these two lower scales, or *glumes*, as they are called, may be left *in situ*, and may then be seen to be attached to the main stem or rachis, and to be of the nature of bracts, enclosing three or more small flowers, supposed to be pulled off by the observer.

Each of these tiny flowers (the numbers vary in different grasses, and even in different varieties of Wheat) has an exceedingly short stalk or peduncle, so short, indeed, that the beginner may be pardoned if he fail to see it. Proceeding with his dissection of a flower, he will next come to a scale like those already referred to in form and appearance, but clearly not attached to the main stem or rachis, inasmuch as it is pulled off with the flower; it must, then, belong to the exceedingly short peduncle already referred to as supporting the flower, and is indeed the best evidence we have of the existence of the stalk, as that is too short to be readily seen. That the scale does not belong to the flower is seen by the fact that it completely encircles the flower below, which it would not do if it formed part of the flower proper. This scale is called the *flowering glume*, and is of the nature of a bract; it is often provided with a long thread at the top, called an *awn* (fig. 217, F). The "beard" of some varieties of Wheat or of Barley or Oats is constituted by the awn springing from the flowering glume. If this be now carefully removed with the needle or point of the penknife, yet another scale may be seen on the other side of the flower to the one last mentioned, and a little higher up (fig. 217, G); this may be readily recognised, because it is marked by two ribs, whence it is supposed that it may really be made up of two scales united together. But this is still a moot point, as is also the question whether we are to consider this two-ribbed scale or *palea* as a bract or a part of the flower proper.

The beginner will do well to fix his attention on the form and position of this pale, and to leave the consideration of its structural significance to more experienced botanists. If the pale be now removed, three (in some grasses, as Rice, six or even more) very delicate stamens will be seen (fig. 216, K). As the student should proceed in all things systematically, before he examines these stamens let him carefully search for two very minute white membranous scales at the base of the stamens (fig. 216, H); he will very probably fail to see them at first, but a little patience will enable him to disentangle them. These two scales or lodicles are fringed at the top in the case of the Wheat, and are the only representatives of the sepals or perianth of more perfect flowers (unless, indeed, which is possible, the pale really constitute the outer investment of the flower); the filaments of the stamens are entirely separate, both from each other and from other parts of the flower, and each bears a long narrow anther, so delicately poised that it moves with a touch, hence the term *versatile* as applied to the anthers of grasses. Each anther (fig. 216, K) is divided into two lobes, which are separate at each end, thus forming a notch at both extremities of the anther. Next we come to the pistil (fig. 216, J), here composed of a single oblong carpel, downy at the top, and provided with two rather long feathery stigmas. In the interior of the carpel is the seed or grain, which as it ripens becomes confluent with the carpel, and ultimately inseparate from it. In the young state the carpel may be distinguished by its white or colourless appearance, while the outer portion of the seed is green. The interior seed consists of a mass of floury substance, the albumen (flour), and at one end, from a little cavity of it, may be picked out a little button-like mass, which is the embryo plant, and on whose structure we may perhaps say more at another time.

Complicated as the structure of the inflorescence of grasses seems, it is not so much so in reality—thus, to sum up:—There is a main stem (the rachis) which bears at each notch two glumes or bracts, arranged alternately. Within these latter the rachis divides, and on each secondary branch or peduncle so formed are again two bracts, arranged alternately one over the other, *i. e.*, the flowering glume and the pale, then comes the flower proper with its two lodicles. In some grasses three are present, and then we have a whorl of three lodicles, like a calyx of three sepals. The stamens are regular enough. The pistil is peculiar in having but one carpel, it may be assumed that two are suppressed, as very rarely, by accident, the other two are developed. The fruit is remarkable for the intimate blending that occurs between it and the contained seed.

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* Naturalists have over and over again bestowed specific names upon insects, of which only the galls or cases, &c., were known to them at the time they published their writings.

The diagram fig. 218 represents a plan of the arrangement of the parts in a spikelet of Wheat, supposed to be cut across to show it, four perfect and one imperfect flower in the centre; A represents one of the two glumes common to all the flowers; B is the flowering glume, of which there is one to each flower; C, the two-ribbed pale, with one of which each flower is also provided; D shows the lodicle, of which each flower possesses two, rarely three; E indicates a stamen, of which there are generally three, and F is the pistil.

To make our account of the Wheat complete, we ought to add that the topmost flower (or in some cases flowers) of the spikelets are rudimentary merely. In other grasses, *e. g.*, Barley, two of the lower flowers are rudimentary, the central one alone perfect. The man who can make two blades of grass grow where only one did before is a benefactor to his kind, so also is he who can induce the Wheat or the Barley to perfect there usually barren flowers and make them productive, and to a certain extent this has been done. As we started with an allusion to the *cui bono* cry, let us end by asking how this could be done if the benefactor knew nothing of the structure of the flower of grasses?

Home Correspondence.

New Pears.—"Pari Passu" (p. 943), in reviewing the list of new Pears, as quoted by me at p. 903, does not appear to me to be quite up to the mark about some of the sorts he mentions. I will begin at the beginning, as Byron has it, and allow Doyenné du Comice to be an A 1, generally speaking, and, I may say, always upon a Quince stock. As to Marie Louise d'Uccle, it is so very near, in all its bearings, to Marie Louise, as to be scarcely different; yet there is a difference; this was pointed out in the *Gardeners' Chronicle*, p. 1060, 1865, where it is figured and described, and the following observations made regarding it:—"This very excellent Pear differs from its type in having a peculiar fine aroma—that of Gansel's Bergamot—and also in growing freely when grafted upon the Quince stock, on which it forms a robust and prolific pyramid." All this is perfectly correct with regard to this locality, and the fact that the Marie Louise does not do on the Quince, whilst the M. L. d'Uccle does, is evidence that there is a constitutional difference, however near they may be in outward appearance. Beurré Bachelier is both large and handsome, with an abundant juice, which is sugary, acidulated and vinous, although without perfume. This, like Easter Beurré, should be gathered before getting quite ripe, as both sorts are inclined to get dry and mealy if not caught at the right time. Beurré Durand is a very different Pear from B. Durandeau, more properly Durondeau, or Tongre, one of the most juicy and melting Pears I know. B. Durand is a highly perfumed and savoury fruit, rarely otherwise here. Beurré Six, ripened here October 27, 1870. My note against it is: "Most delicious, rich, juicy, and sugary; one of the very best—A 1, xxx." I have had some of the fruit keep to December, and still excellent. Can your correspondent have had the kind true? Calebasse Delvigne: My note against this sort is: "Ripe September 22; a beautiful fruit, tinged with bright vermilion, and of excellent flavour." This, like many others, requires to be gathered before being too ripe, and to be carefully watched, as it rots without giving outward signs. Désiré Cornelis is one of our largest and earliest sorts, ripe here August 12, 1870; melting, very juicy, very sugary, and nicely perfumed. Dr. Nelis is generally second-rate. On September 30, 1870, it was juicy and rich; it is a pretty little Pear. Dr. Trosseau is not always good. On November 14, and December 24, 1870, it was rich, refreshing, and aromatic; it is one not always to be trusted, excepting against a wall, on which it becomes a noble fruit. Duchesse Hélène d'Orléans: My note of this says: "Ripe October 10, 1870; a fine and delicious fruit, beautifully coloured on the sunny side; very melting, very juicy, acidulated, sugary, and exquisitely savory." General Todtleben: If this is a worthless fruit, then I must think myself no judge. Note: "Ripe October 16; a beautiful, large, and handsome fruit, finely covered with vermilion on the sunny side, and spotted like the Forelle; variable in shape, from pyriform to turbinate. Some of the fruit remain quite green, whilst others are highly coloured; these last are the best flavoured, and are A 1. Flesh tinged with rose, more so than any Pear I know, and is melting, juicy, sugary, and finely aromatic." This must not be confounded with Triomphe de Jodoigne, which is much like it in shape and size. The trees are very different, so are the fruit, in quality; it is just probable that this has reached "Pari Passu" as The General. I shall have no fruit this season, otherwise I would have sent him a dozen of each. Leopold I.: My note against this is: "November 16.—Fine, very melting, very juicy, aromatic, and delicate. January 28.—Getting woolly and dry." This was a seedling of Van Mons, but did not fruit until several years after his death, and was considered worthy of bearing the name of a truly worthy man. Madame Elise I know as rather an indifferent Pear. Madame Elisa I know as follows:—Note made November 1, 1870: "A delicious fruit; flesh fine and melting, juice excessively abundant, rich, sugary, and very savoury, very variable in size and outline." Marie Guise: Note, January 24, 1871: "A handsome and fine fruit, skin golden-yellow, much covered with nettings and reticulations of fine cinnamon-coloured russet, with a tinge of vermil on the sunny side; flesh rich, aromatic, and highly-flavoured." Napoléon Savinieu, one sort, received from France; not true: it ripened September 15, and was not above second-rate. Another tree received from Belgium is the sort described by Bivort, and is the true one, for, peeling the fruit, it scents like a Rose or Violet, and has also an odoriferous taste. My fruit are exact in figure and description with Bivort's sort; it is a beautiful fruit, ripened December 25, 1870, and kept till January 28, 1871. At both periods it was rich, juicy, sugary, and slightly musky, with a fine delicate flavour. Passe Crassane I grow largely as a first-class fruit. I have unfortunately made no note against it, but am at one with Mr. Rivers about it, and with all who have gown it, excepting "Pari Passu." Pêche: Note says: "Ripe September 3, 1870. From Quince, juicy and delicious, flesh very melting and fine, juice most abundant, very sugary and vinous, with an excellent perfume." Dr. Hogg gives a description of the Peach Pear almost the same as I have, and I am surprised to find it belie its general character in Middlesex. Poiteau has no resemblance whatever, except in name, to Noveau Poiteau. The first is a nice, high-flavoured fruit, of a Bergamot shape; whilst the second is a very large pyriform fruit, ripening here from November to January. My note says: "Ripe October 30; flesh excessively fine, rich, juicy, and delicious. A 1 in every way—xxx." This is, like my other notes, verbatim—as they were taken in my fruit-room. Both Thompson and Hogg give this a high character. As above, I have faithfully given the qualities of all the Pears objected to by your correspondent, whose remarks I could not well pass over, especially as I thought them incorrect. It was evident, on perusing his article, that he did not well know all the Pears of which he has taken notice, and, therefore, I wish to put him right in a friendly manner. I decry personalities as much as he does. I do not think that I imported any personality into my article, pp. 903-4, but merely tried to place facts before your readers. That all the Pears I have enumerated are good, in all places or in all seasons, I never for a moment supposed to be the case. No one knows better than I do the extreme variability of the Pear, whether we take its size, form, colour, taste, season, time, or place into account. No other fruit presents so much variation as it does, and "Pari Passu" may be right with regard to the sorts he has mentioned, as regards his locality, but he will allow me to doubt whether he has got some of them true to name. He makes use of the remark that I may have a soil and climate of extreme optimising power as regards foreign fruit, &c. I do not quite understand his meaning, but may say that our soil is one admirably adapted to the healthy development of fruit trees. He says that I seem to pay small heed to the effect of season. I do not know that I have ever given cause for such a supposition. He is right about Doyenné du Comice. I hope he has it upon the Quince, if not, let me advise him to get it on that stock. I think, then, he will nearly always have it first-rate. I have grown it as Beurré Robert for some years, and always found it up to the mark. Your correspondent says Knight's Monarch has been "twice A 1" (in how many years?). I have never known it to be otherwise than A 1. I suppose that all good pomologists know, or should know, that when Knight's Monarch was first intended to be sent out a great mistake was committed, and Althorpe Crassane was sent out instead of the true sort. I believe Mr. Knight would have rather given any reasonable amount of money than that the mistake should have occurred. "Pari Passu" may not have Knight's Monarch true. It is indeed a fruit of which England may be proud. I do not wish to draw a precise line, nor could I if I wished; the variability of the Pear, clime, soil, and situation, all forbid it. Will "Pari Passu" say what a "normal" climate is? I have during my life been in a great many climates, several of them in the same locality, in the same day, but which of them was the normal state I am not philosopher enough to tell. I have been drenched to the skin and have had my clothes almost frozen to the said skin, in one locality, in little less than one short hour; but I suppose "Pari Passu" has never lived in the mountains. Another of his ambiguous phrases is about a Pear accepting "the Chiltern Hundreds." I cannot see any point to it; I think some of our law-makers might do so with advantage to themselves and the country, but how a Pear is to do so is a little *trop* for me. He says he has cultivated 400 sorts of Pears, and I take some credit to myself for having produced a list of 120 sorts, out of which a man, with such an extensive acquaintance with sorts, could only pick out so few faulty ones from the list. As to 25 sorts being enough for any "nurseryman who wishes to please his customers," I need only say that I think your correspondent has never been a nurseryman. Again, I am at a loss about "the tale that is all sound and fury." What does it mean? Nor do I exactly know what is meant by my being incorrect in my "ethnology" of "Beurré d'Aremberg, Uvedale's St. Germain, and Gansel's Bergamotte." "Pari Passu" must mean Early Beurré d'Aremberg. Mr. Rivers, I believe, claims it; and although we find it in the South to be rather austere, it belongs to the Estranguillon section. I believe in the North it is considered nearly first-class; it is at least a great bearer. Uvedale's St. Germain is of English origin; see Lindley's "Guide to the Orchard," p. 414. It has for many years been extensively cultivated in France, and especially in the Channel Islands, under the name of Tonneau, and I have bought it several times in the Weymouth market, under the name Belle de Jersey. Your correspondent, I think, alludes to Belle Angévine, and supposes that it is the Uvedale's St. Germain. The fruits are somewhat alike, but the Tonneau never gets to so high and brilliant a colour as does the B. Angévine. As to Gansel's Bergamot, I refer your correspondent to p. 358 of Lindley's Guide. I never heard that it was ever claimed by the French, although they have it under the name of Bonne Rouge, and consider it of hardly second quality, being too astringent. As to Huyshe's Bergamot, I refer your correspondent to Prince of Wales. As the Editor remarks, Thompson's is not an English fruit, and I refer "Pari Passu" to M. Decaisne's "Jardin Fruitier," 1863—4, for its history. I may say that I do not know a more delicious sort, it is a pity it bears so badly upon a Pear stock. It, however, does pretty well upon a Quince or double grafted; it is an excellent bearer, and far surpasses Doyenné du Comice in richness. Your correspondent is so palpably at sea about Marie Louise, that in this instance he requires no correction; Broom Park and Dunmore may be, as "Pari Passu" says, never good with him: the first with me is always good, and the second often so. Your correpondent is lucky with Gansel's Late Bergamot; of all worthless Pears I think it the most worthless. I will be happy to send "Pari Passu" all the trees I have got of it. Hacon's Incomparable is so well known throughout the country to be good that I need not debate the question. I now come to the most sweeping clause of "Pari Passu's" criticism, where he says, "No amateur should place any faith in foreign catalogues, nor even in an English one, unless it be that of Mr. Rivers, nearly" (will "Pari Passu" point out the errors?) "all of which is true." Mr. Rivers should be highly obliged to "Pari Passu" for his great and distinguishing recognition; I could myself drive a waggon and six horses through any fruit catalogue printed in this country—my own amongst the rest. I would like to know your correspondent by name—I do not like fighting a myth, yet I have faithfully tried to correct him, although he has been unable to convince me that he is *au fait* at "Pear" ethnology, &c. *J. Scott, Merriott.*

—— It is no doubt very hard to decide as to the native places of fruit, and even the great Van Mons has been charged with sending out, as of his own raising, Pears which he received from other people and from other countries. Therefore I speak with great diffidence when I venture to differ with Mr. Scott, who has evidently paid no little attention to the subject. The other day I wrote in haste, and had no time to search the authorities, but if one impression of mine was wrong, viz., that "Thompson's" is an English Pear, another seems to be right enough, viz., that Beurré d'Aremberg is of foreign origin. In that beautiful work, "Pomologia Britannica," fol. 83, Dr. Lindley says:—"This Pear is truly characterised in the Horticultural Transactions as deserving to be placed at the head of all the Pears in cultivation. We certainly do not know any variety which can, upon the whole, be said to equal it, &c." "It was introduced from Flanders about eight or nine years ago, along with a variety called the Glou Morceau." I cite this because I raised the question, not in contradiction to Mr. Scott, for upon looking at his list again I find that I may have mistaken his meaning, and that he does not quote the old B. d'Aremberg as of English race, but some Pear raised in England, and named "Early B. d'Aremberg." The distinctive adjective should have been written with a capital letter, if this last supposition of mine is correct. As to the origin of Thompson's Pear, I find nothing in any of my books, but have heard that it was raised in England, and named after Dr. Lindley's well known coadjutor; finding also no French or German synonym, I believed it to be of English birth. Uvedale's St. Germain (which some would identify with our old Warden Pear, although it is but a stewer), and which appears so regularly in Covent Garden, to the astonishment of the natives, under the name of Belle Angévine, seems, on the whole, a foreigner. I owe Mr. Scott an apology for suggesting that he omits from the English list Huyshe's Bergamot; he has it under its *alias*, Prince of Wales, but without the name of the raiser. There is already so much confusion in the nomenclature of fruit, that it is most desirable that all pomologists should comply with a suggestion long since made in your columns, and always quote in their catalogues (when known) the name of the originator of any variety worth a name [as Mr. Scott has already done in a supplement to "The Orchardist"]. This would save a great deal of vagueness and uncertainty, and is no more than a patient and skilful originator may fairly claim. As to the orthography of the word "Bergamot," there is a great deal to be said, with which I will not trouble you; but as it can scarcely be maintained that the word is of French extraction (but either Italian or Turkish), it seems a needless relapse from our usage to encumber it with a French termination. In fine, my object in entering into this discussion was, not to assert the excellence of any English varieties, or to depreciate those of France and Belgium, or any other country, but simply to raise the question, whether we should admit, without thorough test both of excellence and of distinctness, a vast number of new names into a list which seems already too long by a thousand per cent. It has been proved by cultivators that many a newly imported fruit is of high quality for a year or two, and then falls off in our English climate.

> "Pomaque degenerant, succos oblita priores."

This happened to me with Prince Albert, Fortunée, and Fondante d'Ingendäel, and several others. Virgil, Pliny, and Columella all complain of the perplexing and wearisome length of the Grape list (which only a man of the name of Democritus ever could keep at his fingers' ends). Pear catalogues now are just as bad, therefore I beg all your readers to make much allowance for *Pari Passu.* P.S. Mr. Scott omits from English Pears the well-known Autumn, York, or English Bergamot; and from the Continental list B. Hardy, a grand gain.

—— I have been amused, on looking over the list of 120 sorts given by Mr. Scott, who says he has "proved their claim to the first rank," and so it seems has M. André Leroy in his "Dictionary," for he describes the greater portion of them as first-rate at Angers, which, I have no doubt, is quite correct; but as to their quality, when cultivated in England, I fear I must tell a different tale, for most of them have borne fruit in my garden. In my experience, Williams' d'Hiver, Beurré Flon, Napoléon Savinieu, Henri Bivort, and some of the others, described in his list as having a claim to the first rank, are not worth such a position. From all that I have seen and tasted I should find some difficulty in selecting 20 from his list as worthy of cultivation in England. As to American Pears the less said about them the better, for 2 or 3 per cent. will be a fair calculation of sorts worthy of culture here. The American bright climate brings out qualities which our cloudy atmosphere fails to do. As regards new Belgian and French Pears their name is legion, and if I pleased I could at once select from 150 to 200 varieties not as yet known in this country. Like new Roses, they amuse an amateur, and if he can fix on such an early Pear as Madame Treyve or Beurré de l'Assumption out of 50 new Pears, he will be repaid for his trouble. Incorrectness of nomenclature in good English fruit nurseries is almost unknown. Mr. Scott may easily grapple with his imaginary "hydra." He has merely to exercise close observation and couple it with long experience, which, to look at his list, one fears he has not. Williams' Bon Chrétien, when gathered in a seasonable time, is quite A 1. King Edward is not an English Pear, neither is Uvedale's St. Germain, neither is Tillington nor Beurré d'Aremberg. *Bon Chrétien.*

Caterpillars *v.* Fruit.—For several years I could never get a single ripe Gooseberry, because green caterpillars ate every leaf on my bushes, and the fruit dropped off. I tried hot lime, hand picking, shaking the trees at night, and, in fact, every suggestion that was made, but all in vain, until a friend happened to mention "Hellebore Powder" as a certain cure. I tried it, and since then have never missed a crop. I use from 3 to 4 lb. weight of it every year, and the moment my green friends make their appearance the trees are dosed with it, by simply throwing it upwards out of the hand. It is usually done in the morning or the evening, while the leaves are damp. The caterpillars shrivel up, blacken, and drop off, and those which escape at first are poisoned by what adheres to the leaves on which they feed. I have now had six successive crops since I began using the Hellebore, and have never lost a single bush by caterpillars, although I have many hundreds of bushes—I believe, over a thousand. *G. A. H.*

Laxton's Alpha Pea.—My note upon the merits of this new Pea seems to have elicited quite a chorus of dissentients to my expressions of opinion concerning it. I do not complain, as I asked for practical experience, and no doubt got it. I may, however, take exception to the "Broad Bean" comparison, put forward by Mr. Morgan, as being rather too stiff. Another correspondent says that I am "in error" when I state that Alpha produces but one pod to a stem. As I distinctly stated that I wrote only of my own growth, I trust I may be permitted to give expression to the results of my own growth of Alpha without being esteemed mendacious, and I distinctly state again that with the whole of the produce of the quart of it that I grew, not a single case of double blossom could I detect. If his sample produced twin pods, as he states, I trust I know good manners too well to cast a doubt upon his assertion. As evidence, however, that "all is not gold that glitters," I can quote the evidence of a well-known Irish gardener, published recently in the "Gardeners' Record," who states that he was greatly disappointed with Alpha, and that it fell a long way short of the character he received with it. A well-known gardener in Hants also writes privately his opinion that "Alpha is no good," so it will be seen that I am not alone in my ideas of its merits. I trust that the expressed intention of the Fruit Committee not to grant any more certificates to new Peas until they have been grown for trial at Chiswick will be fully adhered to. A fair, public, and impartial trial of their merits before being sent out may in the future save much disappointment and such discussions as this. It is a step in the right direction, and I should imagine that with the large promise of new Peas that is before us, there will be no lack of sorts for trial. *A. D.*

Bickley's Mode of Glazing.—I cannot understand how the glass is kept tight between the sides of the panes. They seem simply to butt against each other right and left; but glass is not always cut parallel or truly square; if so, how is this joint kept tight? Glass, too, is often not flat; one piece may be slightly bent upwards, the next piece may be flat and straight, and another piece bent downwards. How are all these to fit together, side by side, so as to keep out wet? In the old plan of glazing with putty, the two sides of the glass are bedded in putty, and these inequalities do not signify, as they rest in a bed of putty on the up and down bars on each side; but in fig. 203, p. 943, there are no up and down bars. *G. A. H.*

The Weather at Aberdeen.—A glance at the Table appended will give a general idea of the character of the weather during the first six months of the present year in the Aberdeen district. But two circumstances that tended to intensify the injurious effects of the month of June do not appear from the Table. The mean maximum (day) temperature was 5° under the average day temperature of June during the last 15 years; and on the mornings of the 24th, 25th, 26th, and 27th, a (verified) thermometer on the grass, in a somewhat too sheltered position, registered 28°.6, 27°.4, 28°.5, and 28°.6. During these nights much injury was done in low-lying and exposed places; Potatos were quite blackened, young vegetables were nipped, many bedding-out plants were killed outright, and many more were seriously injured.

	MEAN TEMPERATURE.			RAINFALL.		
	Mean 1871.	Mean 15 years.	Difference.	Total. 1871.	Mean 15 years.	Difference.
	Deg.	Deg.	Deg.	Inches.	Inches.	Inches.
January	34.1	36.5	—2.4	1.533	2.896	—1.363
February	40.7	37.6	+3.1	3.992	1.991	+2.001
March..	42.9	39.1	+3.8	0.529	2.299	—1.770
April ..	41.5	43.9	—2.4	4.997	2.028	+2.969
May ..	48.9	48.4	+0.5	0.786	1.771	—0.985
June ..	52.1	55.0	—2.9	1.227	1.907	—0.680

A. B., Aberdeen.

The Potato Disease.—We are once more face to face with this calamitous visitation. Its ravages are not confined to Mr. Earley's neighbourhood, and that gentleman will be as sorry to hear as I am to tell that in West Middlesex it is appearing in all directions. As far as I can gather, no serious results have yet accrued to the tubers; the most visible appearance of it in the haulm here took place last week, since when we have, until now (the 24th inst.), been free from rain; still it is spreading rapidly in the haulm. Plots of Potatos that look one day the picture of health are on the next day found to be largely marked with the plague spot, and from thence the entire destruction of the haulm, either rotting from moisture or charring up in the heat, is only a question of time. The weather now is very cold, and a large rainfall looks imminent; should it be so, then woe betide our darling Potatos. One scarcely knows what to do for the best, especially where a winter's supply has to be maintained. Market gardeners are pushing their crops upon the market with all possible speed, but at a great sacrifice; they wish to be rid of them as early as possible. Other gardeners are not so situate, and having the knowledge that all the late or keeping kinds are not more than half matured, naturally hesitate before lifting them, even with the disease staring them in the face. That early kinds are best got up as speedily as possible there can be no doubt; the sacrifice with them will not be great, but if erring at all it will be on the safe side. I wish to warn everyone not to expose their intended seed stock to the influence of the external atmosphere a moment longer than needful this ungenial season. Store them in a dry place as soon as possible—that is the most efficient safeguard that can be adopted. It would be well if this renewed attack of the disease could be the means of once more inducing our scientific men to turn their attention to the operating causes of this visitation, and endeavour to discover wherein lies the fountain-head of the offence. We seem still to be ignorant of its mode of operation in the vegetable growth, whether it originates in the old tuber or original set, or whether it is conveyed from the soil into the sap by means of the rootlets, or whether it comes first into the foliage by atmospheric means, and is thence conveyed through the physical system of the plant. We want to know really what the disease is, and how it operates, and this needful information cannot be got for us by means of off-hand discussions, or by the publication of mere assertions. We want the power of enlightened science brought to bear upon the question for its elucidation. This is no Fungophobia sentiment, neither is it one to be settled by the enunciation of a few theological platitudes. It relates to the important subject of the food of the people, and is a question of paramount interest. A week of wet weather may destroy 50,000 tons of Potatos throughout the three kingdoms. Should such a sad calamity ensue, the effects that it will exert upon the labouring classes of the community will be most disastrous; but it may not come to that, let us hope not. Still it would not be too much to ask the natural science teachers and students of the Royal Horticultural and Agricultural Societies, and the British Association, to direct just now, whilst the evidences of the disease are abundant, their energies and experience to the study of the disease and all its concomitants. A hundred recipes for its cure or alleviation have been told to us long since, and they will be again, but they all too much resemble a quack's medicine; for whether applied or whether left alone, the result is much the same. When we fully comprehend the nature of the disease, we may then be better able to apply a remedy. *A. D.*

Bedding Plant Trials at Chiswick.—I notice that several First-class Certificates have this season been awarded to dwarf bedding Lobelias, amongst which are some white ones. Now, white Lobelias, as bedders, have not hitherto been altogether satisfactory, some of them lacking good habit, others constancy of colour—defects not noticeable in plants got up expressly for the Floral Committee, but which are too often revealed when submitted to the ordeal of a summer's bedding-out. Would it not be a matter of general interest to gardeners if a good trial for one season of all good bedding Lobelias, of whatever colour, and whether new or old, could be afforded at Chiswick? And if the granting of certificates to such plants in future were to be consequent upon a successful passing of that ordeal, would not purchasers of these novelties be the gainers? There is another class of plants to which considerable attention has of late been called, a trial of which at Chiswick would certainly be a matter of great interest also. I allude to bedding Pansies, including Violas. Some of these are better adapted for spring work than for summer bedding; some for summer only, and others will flower all through the season. To hundreds of horticulturists a trial on a large scale of these interesting plants would be productive of much more pleasure than a survey of the eternal scarlets and pinks of the bedding Pelargonium. Possibly in the future it may be arranged, both with regard to bedding plants and to vegetables, that sections of each may get a public trial at Chiswick in each succeeding year. Mr. Barron might thus be able to do as good service to gardeners, by telling us what to grow and what to avoid, as does Professor Voelcker to the farmers in relation to manures, and assist, not a little, too, in adding some much needed popularity to the doings of the Royal Horticultural Society. *A. D.*

The Giant Puff-ball.—The Fuzz or Puff-ball sent herewith was gathered from the foot of a large Oak in one of the coverts here by the Earl of Stamford and Warrington, and forwarded by his lordship's request. These, as well as Mushrooms, seem to attain an immense size this season; some of the latter have been gathered much larger than usual. *Edwd. Bennett, The Gardens, Enville.* [The specimen, which was very fresh, measured 12 inches in diameter. EDS.]

State of Peach and Nectarine Trees.—I believe in many cases the failure of these fruit-trees may safely be attributed to the exhaustion of the soil. Perhaps Mr. Radclyffe's trees have not been planted many years, and also that they were planted in good soil and well drained. I am almost certain the last condition is correct, and which has more to do with the health of his trees than all his attention all the year round at the top. I have had to do with Peach and Nectarine trees in different localities, and under different circumstances over 20 years. I have seen fine trees covering spaces, individually, something like 30 to 40 feet by 14 to 16, carrying yearly immense crops, and continued in perfect health for years, yet under precisely the same treatment as regards the top I have seen them fail and yearly sicken, not from "gross ignorance," but for want of means to supply fresh nutritive soil. Other trees which I have had the care of, when first taken in hand, made scarcely any wood; their leaves fell in August, and they produced no fruit. These trees, however, have since for many years never missed in producing a fine crop of fruit, tens of thousands (as has been the case this year) being picked off. The leaves have also been healthy, and although I cannot copy your correspondent's description exactly, yet I am seldom troubled with any of the blights he enumerates until late in the season, when a little spider will come, so that I very rarely have occasion to use the engine for that purpose. This change was brought about, not by long or short pruning (for I had nothing to prune), but by taking away the soil which had become exhausted, and replacing it with fresh, securing good drainage, which is the best antidote for blighted trees. If the trees are saturated with cold water all through the winter and spring, when the blossom and leaves are unfolding, it is impossible that they can make growth or keep up supplies and nourish the blossom or the young fruit. The system of the whole tree is checked in such a situation, warm days force the top to the utmost of its power, while the roots are cold, wet, and sour. In such a state the sap comes to a standstill. In seasons like the present is, and has been, when checks are also constantly repeated on the top of the trees as well as at the bottom or roots, the effects of bad root-action are more clearly seen. The exciting influence of a warm day is more than counterbalanced by cold nights; cold wind neutralises all efforts of the top. If the roots were in a comfortable healthy condition, they would push on the top against these odds; instead of that, the whole tree is waiting, as it were, in this enfeebled state for the increase of its adversaries. Blister comes on, the leaves curl, the few winged aphides which the warm sun has brought forth get into those uneven blistered leaves for shelter, and they soon multiply by the thousand, and before the tree has sufficient energy to grow out of reach it is assailed at every shoot by swarms of these pests. The fruit will set, but get little supply of sap, and many will fall to the ground. Now, under good drainage such a state of things is never seen; the roots would be ready to supply the top, and the tree would have made shoots and hardy shining leaves before the insect pest could be ready to pounce upon them; and if not, they would find no hiding-place among the leaves, as in the case of blister. I believe if those two matters were more attended to there would be less complaints of the Peach and Nectarine trees being so blighted. In many gardens the Peach border is cropped more than any other spot in the garden. This is, to my mind, a great mistake. Where this is done, it certainly takes two or more years out of the tree instead of one, but I know in some cases this practice is almost unavoidable; and if your correspondent had to please French cooks, and supply all their needs, he would have less time for his Peach trees, if they did not suffer in other ways as well. I believe Mr. Radclyffe is right in not allowing more wood in his trees than is wanted for the coming year. The more exposure the leaves and fruit have all over the trees the better for both. Insects dislike nothing so much as exposure; I therefore practise and advise early disbudding. This destroys in a great measure the means used, especially by the aphis, spider, &c., in affording shelter for propagation. As some thousands of those whom Mr. Radclyffe has accused will not (like myself) be able to go to see his trees, we can only hope he will give us a clue through your columns to the means he uses to prevent his trees—or, to use his own words—"not suffering them" to become afflicted by winter or spring, or aphis or spider. I think we have a right to say to him, after what he has said to us—*Scire facias. Henry Mills, July* 7.

The Artisans' Gardens around Nottingham.—Your admirable description of these gardens made me anxious to visit them. Consequently I was up with the lark on the last morning of the show (Saturday, July 1), and on the road to the Hunger Hills, the head-quarters of the St. Ann's Horticultural Society. Towards 6 o'clock I found several of the gardeners at work, and from one and all of them received a hearty welcome. Although it was the morning of their great show in connection with the Royal Horticultural Society, and all of them were engaged in cutting and arranging their show Roses, they were most kind and courteous, showing me the flowers they intended to take to the show with the utmost openness and frankness. I can safely say that I never saw such Roses before. Nearly the whole of the plants were dwarfs. To my inquiry, "On their own roots?" "Yes, *now*," was the answer. I found the practice was to graft or bud very low on the Manetti, bury the point of union an inch or two deep, and thus induce the scion to root on its own account. The Manetti was looked upon as a sort of short cut to the rapid increase of choice varieties; but the best blooms were almost invariably cut from plants on their own roots. The foliage was even more extraordinary than the flowers, so large, green, and glossy, without spot. Doubtless, a powerful aid to this perfection of leaf and flower is given by the multiplicity of hedges that surround and subdivide these gardens in all directions; these average from 6 to 7 feet in height, and tower far above the dwarf, or, indeed, any standard Roses seen here; hence the stiff breezes that play around the outskirts are fined down into zephyr-like gentleness before they reach the Roses. Almost each favourite flower again has its little roof of sloping pasteboard to cover its beauty from the mid-day sun's broad glare, and to pitch all heavy rains clean over it, so that the Roses are neither tarnished by friction, their beauty burnt out by the fierce sun, nor their purity spotted with big drops of rain pattering heavily upon their delicate petals. These growers take marvellous care of their favourites, they have a keen eye for insects, and are adepts in the use of shelter; their skill is likewise very special and particular, they know the peculiarity of each Rose, and can time its swelling or opening buds to a day or hour almost. Their affection for their flowers is unbounded, and the Roses seem to respond to their gentle and loving touch. Is the weather dry?—they water or dew their Roses, the latter by a peculiar process, new to me, which it would hardly be safe to indulge in unless for show Roses. Clean water is taken into the mouth and blown out upon the Roses in an invisible stream of the finest dew, so like Nature's own, that it would take an expert in such matters to tell the difference. It is quite thrilling to see how gently and lovingly hard-handed mechanics handle their Roses. They cut them affectionately, set them up tenderly, and the Roses respond by displaying their full beauty. It is impossible to estimate the effects of this passionate attachment to Roses and other flowers upon character. It softens, refines, elevates, gladdens. On the early morning of Saturday I met a veritable-looking Nottingham "lamb"—the only one I saw. He was a powerful, ill-favoured-looking man; but I noticed he carried a handful of Roses. When we met I congratulated him on their sweetness and their beauty. His whole face lighted up instantly; in fact it was transformed as I smelt his Roses, and he told me where much better were to be seen, grown by others. These were only to take home, not for the show. Surely these Roses, dripping with dew and bathed in sweetness, were veritable messengers of light, laden with blessings to that poor (and he looked very poor) man's home. But these town gardeners put more into their gardens than love and skill. They have boundless faith in manure. The gardens average 400 square yards, and one of these gardeners told me that he generally bought from 4 to 5 tons of manure every year! Four or five tons of manure on 400 yards, that would satisfy Mr. Mechi! All the crops grow, as it were, in dung; the roots find dung above, dung below, dung on each side, dung wherever they go. The consequence is that everything, whether it be Pears, Potatos, leaves, flowers or fruits, are as near perfect as may be. In some of the gardens the Gooseberries seemed to be as great a favourite as the Rose. The largest Lancashire sorts are grown as cordons within 4 and 6 inches of the ground, A few tall Peas or other vegetables are allowed to grow over them, for a partial shade. The surface is mulched with strong muck, the fruit thinned, and where two very large ones grow close together, they are tied apart by threads attached to their corolla, or nose, as they call it. It is thus that the prize Gooseberries are developed into such monstrous prodigies of juicy sweetness. Now all this perfection of culture is reached on the Hunger Hills—a piece of poor, comparatively worthless, sandy soil, that a few years ago would not have paid for labour and seed. It would do the farmers as well as the gardeners of Britain good to spend a day amid these gardens. If any one wants to know what the earth will bring forth when man feeds it well, attends it lovingly and skilfully, let him go to the Hunger Hills around Nottingham—mark, learn, and inwardly digest the full purport of all he sees and hears there. He will be sure of a hearty welcome from the enthusiastic horticulturists that he will find there swarming like bees. However wise and clever he may have been before, he will return a wiser, and, if he reads his lesson aright, a happier, ay, and a better man. This passion, and it is nothing less, of the artizan for gardening is one of the most hopeful signs of the times, and deserves the earnest attention of social reformers and statesmen, and, indeed, of all who care to see the world grow wiser, happier, better. Men absorbed in such pleasing and engrossing pursuits are like seats ticketed with the word "engaged." They have no room and less time for vice, and it turns aside to find other victims. Were all equally well employed, it would find it difficult to entrap any. Every one ought to be able to find a fragment of Eden in his home and his garden, and then fewer would roam after forbidden pleasures. Gardens for the million really mean, in the end, virtue, yes, and I will add, godliness for the million. *D. T. Fish.*

The Produce of a Peach Tree.—Having read in the *Gardeners' Chronicle* of May 19, 1866, a record of the value of forced Peaches, the produce of one tree from 1862 to 1866, both years included, at Roehampton Park, Surrey, I paid a visit to the place on June 25 last, to see how the tree has fared since then, and to my gratification I found it looking exceedingly well. Mr. Davis, the gardener, told me that on an average the tree bore since then as well as before, and gave me the following record of the quantity of forced fruit which it produced, and the sums realised by the sale of the fruit for the last five years:—

Date.	Fruit Ripe	Produce.	Sum Realised.
		Dozen.	£ s. d.
1867 ..	May 3	39½	49 17 0
1868 ..	April 21	37½	50 0 0
1869 ..	April 29	54	60 0 0
1870 ..	May 3	5	6 3 0
1871 .	June 3	74	37 0 0

The total for the past 10 years amounts to 454½ dozen of fruit, which realised the sum of £530, or £53 per annum. In 1870 the tree produced only 5 dozen of fruit, the failure being ascribed to no other cause than over-forcing in previous years. Many gardeners who saw the tree last year advised Mr. Davis to take it up, as in their opinion its constitution was too far exhausted to do any more good, but he determined to give it another chance, and allowed it a longer period of rest. Mr. Davis says, "I commenced forcing it on the 1st of February of this year, and have given it no more fire-heat since than was necessary for the health of the tree and the security of the crop." The well-doing of the tree this year he entirely attributes to sewage water from the house, with which he watered the border once a week during the growth. In the same house, which is 38 feet by 16 feet, Mr. Davis planted a young tree of the same variety (Grosse Mignonne) three years ago, and this year it produced 33 dozen of fruit equal to those from the old tree. *M. O'D.*

Large Carpet Beds.—A bed, such as that of Mr. Cannell at Woolwich, 34 feet long by 11 feet wide, only gives an area of 41½ square yards, which is small compared with many beds of a like kind, for within some 3 or 4 miles of this place, I could point to half-a-dozen or more very much larger. At East Sutton Place and Newton Court are circular beds of 45 and 48 feet diameter respectively, giving an area of 176 and 200 square yards, or four and five times the size of Mr. Cannell's; while our largest bed here is an oval of 90 feet by 67½, from which, however, a grass margin of 3 feet wide has to be deducted: still, it leaves an area of 450 square yards, or nearly 11 times the size of the one you mention, and this bed has been planted carpet (or, as we often call it, embroidered) fashion every season for the last 14 years, as well as two curved beds or borders that adjoin it, each upwards of 80 feet long by 18 wide. Large beds at country places are not uncommon, and I should think the London parks exhibit larger beds than you have described. If my memory serves me right, there is one or more in Victoria Park of more than 42 square yards, and a very neatly planted bed or border in front of an Ivy-clad cottage or building in Kensington Gardens that I remember seeing last year, seemed also as large as the Woolwich one. Of the number of plants in Mr. Cannell's bed I have no doubt, as it would give something like eight to the square foot, which is not too many for Alternanthera, Sempervivum, Golden Feather, and suchlike. *J. Robson, Linton.*

Foreign Correspondence.

ALLAHABAD: *May* 4.—The new Phalænopsis, from Darjeeling, is showing a flower-spike with me; when it opens I will send it to you. The species I have are P. grandiflora aurea, amabilis, Parishii, now in bloom; Cornu-Cervi, rosea, Schilleriana, and the new one. What a magnificent sight that plant of Lady Ashburton's must have been. I think myself fortunate if I can produce 10 or 12 flowers. In 1869 there were 24 flowers on my large plant of P. Schilleriana. Last year nearly all my Phalænopsis flowered twice, in April and May, and again in October. I gave a very beautiful spray to Lady Napier a few weeks ago. I only use the Páu Garden plan for bulbs and seedlings, it is not sufficient protection for Orchids in the North-west Presidency; the hot winds are very penetrating and certain death to Orchids. I have a masonry greenhouse, thatched and tiled, in two places, *i. e.*, two-fifths of the whole roof is removed, and replaced by frames of white cloth (do-sootlie), all the sides and entrances are closed in with the same, except the west end, where there are kuskus tatties. The cloth is wetted two or three times a-day, and there is a large open tank inside the house. You would be surprised at the state of the thermometer in this house on the hottest day in May; it seldom rises above 90°, and immediately after watering it falls to 80°, or less.

At the present moment I have the following in bloom:—Phalænopsis grandiflora, aurea, amabilis and Parishii; Aerides Fieldingii, with three fine sprays; Saccolabium Blumei miniatum; Dendrobium macrophyllum secundum, and a pretty canary-coloured one I do not know; Oncidium ampliatum majus, and another; and a number of the Wreath Orchids and Phalænopsis are coming on well.

I do not know much about the American Orchids. Many of the Cattleyas I have are looking well, but never show a flower. I fancy their beauty lies more in the excellence of their single flowers, whilst the beauty of our East Indian varieties is their splendid masses of bloom.

I am surprised to hear that the Renanthera is so seldom seen at home. Have you got that beautiful pendent Renanthera, arachnites, in any of the English gardens? I would gladly send home any of my plants which would be rarities in England.

You will have heard that Dr. King has got the appointment vacant by the death of poor Anderson. He is a young man, and a very clever botanist. I visited him when he was in charge of the Saharumpore Gardens. *Samuel Jennings.*

Societies.

ROYAL CALEDONIAN HORTICULTURAL: *July* 13.—Upon the whole, this was the smallest show we have ever seen under the auspices of the Royal Caledonian in the Music Hall. Pot plants, that contribute so much of the furnishing in all shows, were deficient, and what there was of them were by no means conspicuous. The various nurserymen in and around the city do their share,—indeed, but for their united contributions it would have merely been a show of Roses and of fruit. Peter Lawson & Son took 1st prize for a miscellaneous table, and Thos. Methven & Sons 2d prize with plants of a mixed foliage and flowering character. The former firm had a very well-grown lot of variegated Pelargonium seedlings, not of that huge character we sometimes see, but neat, and distinct and uniform. P. N. Fraser, Esq., Canonmills, had a collection of upwards of 80 varieties of the sporting Harts's-tongue Fern (Scolopendrium vulgare), some of them very beautiful, and all fresh and healthy and captivating. Mr. John Paterson, gr., Millbank, had the best plants in the ordinary competition classes, taking several prizes. One of the most distinct and noteworthy objects in the show was a set of three Ivy-leaved Pelargoniums, grafted on the top of stems of some of the old scarlets. The stem would be about the size and length of a walking-stick, very like indeed in general appearance to an Ash sapling. The grafts had taken well, and the growths were depending in their irregular gracefulness to great advantage. The Silver Gem, or some variety very much like the one named, was a great beauty, and the set indeed elicited much admiration. They well deserved the special prize voted to them; the grower was Mr. McMillan, Broad Meadows.

Cut flowers of Roses were numerous, by far the best coming from Mr. Hugh Dickson, Belmont, Newtonards. These Irish Roses were in splendid style,—quite as good as is to be seen at metropolitan exhibitions, and showed, from the great disparity of size and condition of bloom, that Modern Athens is either not the climate for perfecting Rose blooms of first excellence, or that the growers in and around its neighbourhood have something to learn before they can take rank with accomplished rosarians. The sorts were very much the same as we see named over and over again, and the only special one that we would note as grand in every respect was Paul's Duke of Edinburgh. Mr. Henderson, gr. to John Christie, Esq., Cowden Castle, had a very good lot; and Mr. Marshall's name might also be mentioned as showing well for Miss Hay, of Kingston Grange. All the nurserymen's 1st prizes in all the classes went to Ireland, and the 2d and 3d prize lots were so inferior that it almost seemed injudicious to place them at all. Messrs. Dickson & Co. had a First-class Certificate for a very dense habited bedding Pansy,—a really good thing, named Regina.

Fruit is always fairly shown in Edinburgh, and there was no exception in this instance. Mr. Temple, Balbirnie, took the principal prizes with a collection of Black Hamburgh and with Duchess of Buccleuch, in a small state, for the best flavoured White Grape, as well as 1st for best flavoured Black with Muscat Hamburgh. His Hamburghs were quite ripe, the bloom and finish very good; indeed, although the bunches looked a little dampy, their colour and general style carried them successfully past 11 other dishes, some of them thrice the weight, but red instead of black. Mr. John Laing, Pitcairlie, took 2d place for Hamburghs, and for flavour in the Black class. White Grapes were not ripe, but looked magnificent in form and in size. The two 1st prize lots, gained respectively by Mr. John Laing and by Mr. George Greig, were Golden Champion, in quite as good style as we ever saw it at Dalkeith; so that, in justice to the raiser and to the vendors, it must be said that possibly opinions were too hastily expressed against its qualities. Certainly it looked well on the exhibition table, and would have done much better shown a fortnight hence. Peaches were in very fine condition from Mr. Mackay, Dunse Castle, and from Mr. Kirkpatrick, gr. to Lord Abercromby; while Nectarines, of the Elruge variety, from the same grower, and from Mr. Vair, were as fine as we ever saw staged. There were lots of Strawberries of all sorts, prominent among them being Moffat's Duke of Edinburgh, shown by Mr. Anderson, Oxenford Castle, some of them large enough to fill the famous Scotch gill-stoup; it looked a capital market garden fruit, lightly coloured. Vegetables, as usual, were good, Mr. Robert Robertson and Mr. James Turner showing excellent Cucumbers. The day was fine, the attendance not at all what it might have been, looking to the numbers interested in horticulture in the district.

Royal Horticultural of Aberdeen: *July* 20.—The summer show of this Society was held on the Links of Aberdeen, in connection with the show of the Royal Northern Agricultural Society. The number of plants, &c., shown was perhaps a fourth or fifth less than on former occasions, but the specimens were in quality fully equal to those sent in to previous exhibitions. The falling off in number is to be accounted for in part by the comparative deficiency on this occasion of large pot plants, but chiefly, we believe, by the character of the season. In fact, the show, though held at the usual time, according to the almanac, was at least a fortnight too early from a meteorological point of view. But, notwithstanding this, the exhibition as a whole was a very successful one. Generally speaking, the pot plants were admirable, especially the Heaths, Ferns, Tricolor and Zonal Pelargoniums. The Fuchsias and Caladiums were also a good show, though scarcely equal to those exhibited on previous occasions. Many of the so-called "new and rare" plants were very interesting and beautiful specimens, especially the variegated ones. Three in one collection were deservably much admired—Yucca quadricolor, Y. filamentosa variegata, and Begonia Pearcei. Among other plants deserving attention, though neither very new nor rare, were a large, well-grown, and richly-flowered Polygala Dalmaisiana, some magnificent specimens of Ferns, in particular Gleichenia dicarpa, Lygodium scandens, and several fine plants of Thamnopteris Nidus. One Fern, named Platycerium superbum (a name, by-the-by, we cannot find in Hooker & Baker's Synopsis, or in John Smith's Ferns) interested us very much, and it is certainly different from any Platycerium we have ever seen. There were also some excellent and well-grown varieties of our native Ferns.

The pot plants shown by the amateurs were fully equal in quality, and perhaps superior in arrangement to those shown by the professionals. The specimens of Lilium auratum shown on the table were fine, handsome plants, and most of the Ferns were remarkably good.

Among the cut flowers, the Roses were the most remarkable feature—indeed, they formed the great attraction of the show. We believe we are not overstepping the mark when we say, that so varied and superb a show of Roses was never before seen in Aberdeen; and this arose, not from some exhibitors sending in good stands, but from the fact that, almost without exception, every bloom shown in the tent was in excellent condition. We are glad that the Rose has at last come to the front at Aberdeen shows, and we hope it will long continue. There are many admirers of the "Queen of Flowers" in the district, but somehow or other the Rose has rarely before been a prominent feature in the shows. A firm that has sent in for exhibition year after year Roses of a high character, on the present occasion also exhibited three magnificent stands. The other cut flowers shown were remarkably good, considering the character of the season. The show and fancy Pansies were never, we believe, surpassed. The cut Pelargoniums also were admirable blooms; the Pinks and Verbenas were excellent, and some very fine Phloxes were exhibited. The working classes made a highly creditable display. The Stocks and Antirrhinums they exhibited were very fine; and their Roses, Pinks, and Pansies were, in quality at least, in no respect inferior to those shown by the professionals and amateurs.

Some very pretty bouquets for the table, the hand, and the button-hole were shown; but on the whole we could not help thinking that the taste for making up and arranging bouquets deserves more cultivation than it receives in Aberdeen.

From the backwardness off the season, it was anticipated that the show of fruit would be somewhat deficient, and to a considerable extent it was a failure. The chief exception we must make is the fruit for which Aberdeen has long been famous—the Strawberry, and the display in this case was superb.

The vegetables were remarkably good, in spite of the unfavourable season. The collections of vegetables were most excellent, and indicated great labour and care in the making up. We were agreeably surprised to see so large and beautiful Potatos after the damage done by the June frosts. The vegetables shown by the amateurs, though not so various, were in size and excellence quite equal to those shown by the professionals; while those shown by the working classes were rather below the mark—a circumstance which gave us considerable disappointment.

Notices of Books.

Domestic Botany; *an Exposition of the Structure and Classification of Plants, and of their Uses for Food, Clothing, Medicine, and Manufacturing Purposes.* By John Smith, A.L.S., Ex-Curator of the Royal Botanic Gardens, Kew. London: Lovell Reeve & Co. Pp. 547.

The amount of ignorance on the subject of economic botany, or the nature and source of the commonest articles of daily use, which prevails, even amongst those who would be called educated people, is very great. We believe that not more than one person out of every hundred of the middle-class population would be able to answer questions satisfactorily as to what plants yield—let us say tapioca or sago, and from what part of the plants, and how the substances in question are obtained. Nevertheless, we believe that economic botany is becoming more thought of. The museums at Kew, the food collection at South Kensington, together with similar institutions, have done much to show to the thinking portion of the community the importance of this branch of science; and we are glad to find that the author of the work before us has in his preface pointed out the desirability of "a general and complete work on this subject."

"Domestic Botany," as will be seen from its full title, which we have quoted above, is not confined entirely to economic botany, the first part being devoted to an "explanation of the parts, structure, life, organism, and classification of plants," wherein the author goes over the same ground traversed by other teachers of botany.

In part 2 we have "the families of plants systematically arranged, with a description of their characters, properties, uses," &c., commencing with Cryptogams, and proceeding to the higher organisations. Each order is placed with its relative order, or orders, under its own alliance, according to the system of Dr. Lindley, in the "Vegetable Kingdom." Then follows a short description of the character of the plants comprising the order, the number of species, and their geographical distribution, concluding with an enumeration of those plants which are either useful or are well known in gardens or hothouses.

Mr. Smith tells us that "the purpose of this work is to endeavour to teach botany to those not conversant with Greek and Latin;" and it is evident that another, and perhaps the chief purpose, is to impart a knowledge of and taste for applied botany.

We cannot help thinking that, bearing in mind the numerous introductions to botany that are in existence—Professor Oliver's cheap and excellent little book amongst the most recent—and also bearing in mind the absolute want of a good work on Economic Botany, it would have been far better if the whole volume had been devoted to that branch of the science; and even if this had been done, the subject is so large that it would be far from having been exhausted. Mr. Smith's greatest difficulty must have been in deciding what to say and what to leave unsaid. It is much more trying to an author to have to squeeze into a small space a large quantity of important matter, than it is to enlarge upon any given subject. The necessary consequence of this *embarras de richesse*, and the restriction of space to bring the book within its present bounds, is a much too short notice of many important plants. The author has, however, been careful in his selection to bring together a great many species, some of which must needs, in point of space, give place to others having a greater claim.

The work is illustrated by 16 coloured and tinted plates by Fitch, each plate representing the characteristic plants of one or more orders, as well as groups of plants of similar habit, as, for instance, that devoted to the pitchers of Nepenthes, Sarracenia, Cephalotus, and Darlingtonia, which plate forms the frontispiece. Woodcuts are also inserted to exemplify the various botanical terms.

Before concluding our notice, we must say a few words about the index. We think it is a mistake to have given references only to the natural orders and common names of the plants. Thus, we find Leguminosæ, but we look in vain for the name of any genus in that large order, without the generic name happens to be the common name likewise: so we find Judas Tree, but not Cercis; Crab's-eyes, but not Abrus; Cow-itch, but not Mucuna, &c. It is well, indeed necessary, to have vernacular names in an index to a book of this description, but the addition of the scientific names would make the book more useful for reference, and would accommodate all readers, scientific and unscientific alike. The addition to the index of every genus mentioned in the book would of course have somewhat increased the number of pages, but we think such increase would have been fully compensated, and we hope the addition will be made in a future edition.

It is a pity that the work should not have been more carefully revised. The author's experience is so extensive, and his knowledge so great, that the reader will the more regret the infirmity which has prevented him from exercising that careful superintendence which he assuredly would have exercised under happier circumstances.

On the whole, we may state that the book contains a great deal of valuable matter, and much information that scarcely any one but Mr. Smith could give us. A thoroughly good manual of Economic Botany, however, remains a desideratum, and we know not where such a manual could be better drawn up than at Kew.

—— From the annual report of the *Royal Society of Arts and Sciences of Mauritius* we learn that a fine butterfly (Papilio Demoleus) has recently been seen in considerable numbers in Mauritius. This is of interest, as the insect is a native of Madagascar and Natal. Another Madagascar species, Junonia Rhadama, has also made its appearance in the island; while several other butterflies, *e. g.*, Vanessa Cardui, which were common 30 or 40 years since, are becoming scarcer and scarcer. The introduction of the above mentioned Lepidoptera is a fact worthy to be placed among those collected by M. Albert Müller, and alluded to at p. 901. We are also told that several plants introduced into the colony have increased with such rapidity and vigour that in certain parts of the island they have covered the soil and the borders of the forests to the prejudice of the indigenous plants, which seem to be daily losing ground before them. One such introduction to St. Brandon, a neighbouring island, is the Entada Pursætha, the seeds of which are supposed to have been wafted by currents. The same report contains some information from Sir Henry Barkly, the late Governor of Mauritius, and whose communication to the Linnean Society on the Flora and Fauna of Round Island, last year, excited so much attention. From this communication it appears that the number of reptiles found in that island is much less in point of species than was at first supposed; nevertheless the island has a genus of snake of which no other species is known, and whose nearest congener, according to Dr. Günther, is only found in Loyalty Islands, in the South Seas, while the common lizard of the island is peculiar to its own shores and to distant Madagascar, and is not in existence either in Mauritius or Bourbon, close by.

—— A third edition of the Rev. J. Fountaine's pamphlet on a *New Method of Growing Fruit* (Swaffham, Farr) is before us. As will be remembered, the method is one advocating the combination, where circumstances do not permit of their being kept distinct, of a vinery, orchard-house, and conservatory, and in which Grapes, stone fruit, and flowers may be grown together in perfection in the same house. This is accomplished by growing the fruit trees, &c., in pots, sunk in holes in the surface of a truck which runs on wheels over railway metals. In this manner the plants can be taken out for an airing, and returned when necessary. In summer time the Peaches and Nectarines are forced under cover during the day, and run out in the evening, the radiation at night being thought to enhance the flavour of the fruit. How radiation does this it were difficult to say, but no doubt the rest, or rather the change of work in the plant, consequent on its exposure to the cool night air, is highly beneficial when judiciously managed. Even human beings would be better for having their bed-room windows open summer and winter under proper regulations.

—— Dr. George Bennett has lately issued a paper on the *Introduction, Cultivation, and Economic Uses of the Orange, and others of the Citron Tribe, in New South Wales.* The author has got together a great deal of information concerning these plants; and some relating to the disease of the Orange tree is new to us in this country. We may take an opportunity of alluding to this subject at greater length hereafter.

—— Mr. G. W. Yapp, a gentleman well qualified for the task he has undertaken, has just published a *Popular Guide to the London International Exhibition of* 1871 (Johnson & Sons), which we recommend intending visitors to peruse before paying a visit to the Kensington labyrinth.

—— Dr. Ferd. v. Mueller has recently published a very useful report on the principal *Timber Trees* readily eligible for industrial culture in the *Colony of Victoria*, with indications of their native countries, and some of their technologic uses. The list comprises nearly 160 coniferous trees, and an almost equal number of miscellaneous trees.

—— Amongst New Publications we have received the following:—*The Horticulturist*, by J. C. Loudon, edited and revised by William Robinson (F. Warne & Co.).—*Kelly's Post Office Guide to London* (Kelly & Co.).—*Explanatory Mensuration*, by the Rev. Alfred Hiley (Longmans).— *Handbook of the British Fungi*, Part II., by M. C. Cooke, M.A. (Macmillan).

Florists' Flowers.

I have just returned from a tour in the West of England, and being a great admirer of the Gladiolus, as well as an amateur cultivator of this beautiful flower, I availed myself of the pleasure of visiting the nurseries of the renowned growers, Messrs. Kelway & Son, of Langport, Somerset. I will not attempt a description of the nurseries, which are well kept, and contain most of the new, as well as old, kinds of florists' flowers, nursery stock, &c.; but I wish to note the extent and mode of culture of the Gladioli adopted by the Messrs. Kelway, who have deservedly gained some notoriety in this particular branch of culture, carrying off as they do many first prizes at the London and other exhibitions.

The soil I found to be a mixture of sandy clay and gravel, about 2 feet deep. The situation is open and exposed to the west and north-west winds. Upwards of 300,000 bulbs, comprising 2000 named sorts, are planted, exclusive of seedlings, the latter being also very largely grown. The planting is commenced in February, and continued at intervals of a fortnight until May 1. Those grown for exhibition are planted in rows from 18 inches to 24 inches apart, with a broader space at every second or third row, to allow for a narrow path; the ground being previously trenched 2 feet deep When the plants have attained about a foot in height, the soil has a good mulch of half-rotten manure; and as soon as the spikes show for bloom, a liberal supply of manure water made from a concentrated manure which they have prepared for the purpose, is applied. Unfortunately I was too early to see many blooms, but from the extraordinary substance of hundreds of the plants we may anticipate a great treat at the forthcoming exhibitions at South Kensington and the Crystal Palace. I ascertained that the Messrs. Kelway intend staging 100 spikes at the International Exhibition, South Kensington; these will be renewed and displayed during the latter part of August and the early part of September. I observed that the bulbs not arrived at maturity are planted from 3 to 9 inches apart, in beds about 5 feet wide. The spawn or bulblets are all grown in the open air, in pots, during the first year. I saw many thousands of these, each variety carefully kept apart and numbered.

I need hardly say that this visit proved very pleasurable to me; and I hope I may profit by what I saw. Upon my return home, I felt very dissatisfied with my own culture of the plant; and I was further led to reflect that floriculture is deeply indebted to the Messrs. Kelway for the wonderful advance which they have helped to bring about in the growth of the Gladiolus. We have only to compare the old varieties with the new to see this. The elder Mr. Kelway has devoted very many years to the culture of the plant, and the raising of seedlings is a study with him. I am quite convinced that if his valuable life and that of his son be spared, they must produce many more marked improvements in this lovely flower, which every one can and should grow. Monsieur Souchet is held in high estimation, and properly so, as a grower, and more especially as a raiser of seedlings of the Gladiolus; and so also should be the Messrs. Kelway. One only regrets that the lamentable war between France and Germany at once prevented the great international exhibition of Gladioli, which was to have taken place at South Kensington last autumn. We lost a golden opportunity of comparing notes and of placing our two distinguished Englishmen in rivalry and contrast with our Continental neighbours. As regards seedlings, the Messrs. Kelway will recognise nothing but that which is of the highest standard. *F. W., Croydon.*

The Apiary.

Endosmosis, or Feeding the Bee Larvæ.—I have to apologise for having taken up so much space to describe a simple fact in natural history—that the bee larvæ grow by absorption of the honey and water, or bee pap, which any bee-master may prove during the summer months by a little close inspection, remembering that 12 hours in the night is a life-time for bee metamorphosis.* If the eggs be seen laid by the queen bee in the cells, a simple mode of inspection of the interior of these cells will be, by attaching "talc," in slips, along one side of a series of hexagons, cutting out the intervening cells or sight-obstructing sides. These adjusted combs and cells should be fixed at proper positions in a common observatory hive, or two "bar frames" and combs, may be treated in the same way, in a glass case, which may be made for these experimental purposes. For an absorbing coloured material, sugar or honey and water with madder makes the most harmless ingredient. The best brush for moving larvæ or eggs will be found in the pinion feather of a woodcock, fixed in the end of a porcupine's quill. Distilled water had better be used in removing eggs or the larvæ for the microscope. The brush takes up the moisture too freely, whilst the feather is a soft-edged scoop not holding the water. With regard to the pollen feeding, or its being used as a forcing hotbed in queen or worker brood raising, it is not my intention to enter on this subject, of which I therefore take leave. I am quite ready to accept the term proposed by two of my medical friends, viz., "osmosis," nourished by absorption, and not feeding until the last stage of growth; and wish also to record my objections to the accepted notion of the eggs being fecundated, "that the seminal filaments are found at the top of the egg, and seen on it;" whilst, if these filaments are deposited with the eggs, the base with its fluid is the point of entrance of the spermatozoids. But the proof is wanting that the eggs may not have already been fecundated in the mouths of the ovaries; and then "parthenogenesis," so far as the honey-bee is concerned, would be difficult to prove with all the voluntary muscles in the bees's abdomen, or any pressure of the sides of the cells that might be brought to bear on the oviparous queen bee. Dr. Siebold has most accurately described the spermatozoa, as found attached within the egg to the superior pole of the egg, when the egg has been ruptured at the lower pole to discharge the yelk; but we are apt to jump to conclusions as to time in these most minute investigations, when we read even the statements of careful and earnest physiologists; and thus when we see the spermatozoa at one time described as active, and at another as motionless filaments, we have forgotten the succession of time at which these eggs were laid, and have forgotten to examine whether the absorption of the fluid, seminal or otherwise, at the base has taken place, and that the whole of the examined eggs are exactly in the same periods of development. On the incontrovertible facts of the ages of bees, how much has been written, and yet we know that queen bees have been raised in 10 days, and in other cases in 16; nor are these statements false, but simply indications of differences of time, which in such small creatures we will not recognise, but pin our faith upon some one, or some few observations of our own, or others, and find fault with writers who differ from our conclusions.

Let not this spirit of doubt, then, actuate us, but let us emulate the writers of former better days, and take the motto, as in the "Entomologist's Magazine":—"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise." *W. A. Munn.*

Garden Memoranda.

Grape-growing at Kingston Hall, Kegworth, the Seat of Lord Belper.—We have all heard a good deal about the Grapes at this famous place, and the unusual means adopted to ensure their perfect cultivation. The first word I have to say about them is, that these means have been eminently successful. Take them for all and all, one does not often see such Grapes as were to be seen here during the last week of June. They do great credit alike to the present gardener, Mr. Cruickshanks, and his predecessor, Mr. Westland. The vineries are unique in many respects. Their construction is peculiar. The roof is called ridge-and-furrow, but this conveys no true idea of its character. The ridges are so narrow, that, if I remember rightly, almost each Vine has one to itself; and the furrows are so narrow as to throw little or no shade. Then the width is unusual—over 30 feet; and the path along the middle of the houses gives a splendid view of a far-reaching amphitheatre, about 100 feet in length, of Grapes, in three divisions, such as one seldom sees. They were capital in bunch, berry, and finish. Not a few sensation bunches, alternated with blanks or small ones, as one often sees, but a wonderful crop all through, of first-rate, serviceable fruit. A more regular hang it would be almost impossible to find anywhere, nor, upon the whole, a heavier.

It is obvious at a glance that whatever special means may have been used outside the houses, the internal management must have been skilful and painstaking to secure such favourable results. It needs scientific management, as well as the assurance that comes by many years good practice, to order and finish crops like these. Such were the mental verdicts formed within the houses before venturing to explore the deep foundation of success in the heated caverns under the vineries and their borders.

I am not sure that heated vaults are favourable to clear mental vision. I should say that they were not. In a stifling atmosphere one's mental eye is apt to flicker like the candle that throws a shimmering light upon stone-covered passages—huge pipes, and far-reaching hot-air drains, losing themselves in a deep, descending strata of grosser darkness. Add to this a lively discussion of Cannell's theory of converting the return into the flow, and how it was to be done by cutting this pipe, and connecting that, &c., all deep down under the earth, and I fear disturbing causes not a few may be found to invalidate the value of the following opinion.

Virtually, it may be expressed in the words of your special correspondent, viz., that these borders can hardly be said to be heated at all. The floor of the vinery, where there are no roots, is heated a little—the borders beyond a great deal less. The boiler, like most others, is placed at the back of the vineries; but instead of the pipes entering the houses at once, they are carried along in a hot chamber—underneath the vineries at back and front. From these the flow and return pipes proceed through chambers connecting the two, and hot-air vaults or passages communicate with the back and front below the ground-floor of the vineries. Arrived at the front hot-air passage the pipes proceed into the vineries, and do their work of imparting surface-heat by flowing and returning in the usual manner inside the house.

But after what has appeared in the *Gardeners' Chronicle*, if I mistake not, about the roots of these Vines having been injured, or supposed to have been so, by an excess of heat, I was surprised to find that there were no pipes at all under the borders. But are the borders therefore unheated? Well, perhaps it will be better not to dogmatise on the matter. The borders are chambered, that is, pierced with open drains proceeding from the hot spaces already described. These chambers or drains become less and less as they proceed, as they near the extremity of the border, where they terminate. There seems nothing to lead or drive the heated air in this direction, and it is improbable that much of it proceeds thus in opposition to the natural tendency of heated air to ascend to the highest level, all of which in this case is without roots. I should not like to assert that no heat proceeds from and through these stone-covered chambers into the Vine borders, but I think it may safely be asserted that very little can do so; while as to excess, it appears quite impossible, under the present arrangements.

One thing, as already observed, is very certain—the Vines do exceedingly well; but whether the success is due to the chambering, and the perfect drainage resulting therefrom, to the heating of the soil, or the skilful management, it is impossible to say certainly. I am inclined to credit the last two with a large share of the success; for other fruits are exceedingly well done here as well as Grapes. It would be difficult to find a better show of Peaches and Nectarines under glass than those found here, and the borders for these are neither chambered nor warmed.

Is all the so-called heating of borders for Vines then a mistake? I think not; just the contrary. Whatever these borders may have cost, such Grapes as these year by year will soon amply repay the expense; and if the heat contributes to the success, which it may, it was well to heat them. Whether this is the most economical mode of heating is quite another question, which may safely be answered in the negative. That there is heat enough in these chambers to heat a border laid over the hottest portion is also certain. But the borders are not there, but over the coldest part of the chambers.

Perhaps the cheapest way of heating a Vine border would be to lay pipes at regular intervals, in the rough rubble forming the drainage; the heat would then pass upwards into the border. Better still would it be to have a tank of hot water under the border; or, if hot air was employed, as in this case, the heat ought to come in at the lowest point, and be wholly confined to the area of the border.

Doubtless there are great advantages in a heated root medium, for early forcing especially. It hastens the ripening process by a month or six weeks—a wonderful advantage when racing, as the early fruit-grower mostly is, against time. Heat at the roots also helps the finishing process mightily, and enables the cultivator to lay on heavier colour, and to lay in better flavouring; such, at least, is my opinion, after having some experience, and wider observation of Grapes grown with and without bottom-heat. This is one of those practical questions that need further testing, and it would be well for the Royal Horticultural Society to offer special prizes for ripe Grapes next March or April—for the best Grapes, grown either with or without bottom-heat. My own impression is that the bottom-heat Vines would have it. Such prizes repeated from year to year would be the means of settling the question. And when the full advantages of bottom-heat for early forced Grapes is generally recognised, doubtless better and cheaper modes of heating Vine borders will speedily be found than any that are yet adopted. Important light has been thrown on this vexed question by the fact that most of the best pot Vines have been grown with bottom-heat, or at least in a root-temperature equal, very often considerably in excess of, that of the top. *F.*

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* *Vide* p. 90, Letter 8, of Huber's "Natural History of the Honey-Bee," which was translated by Sir J. G. Dalyell, of Edinburgh, 1841.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, JULY 22, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg	Deg.	Deg.	Deg.	In.
Portsmouth	81.4	51.2	30.2	76.8	56.1	20.7	64.6	0.08
Blackheath	82.6	54.0	28.6	77.3	57.3	20.0	65.5	0.05
Bristol	..	..	..	..	..	..	..	..
Birmingham	75.3	52.0	23.3	71.4	55.6	15.8	61.6	0.80
Wolverhampton	77.4	49.2	28.2	70.5	54.1	16.4	60.4	1.06
Leicester	80.2	49.0	31.2	74.6	54.7	19.9	62.7	0.69
Norwich	81.2	40.0	32.2	75.1	55.0	20.1	63.1	0.07
Nottingham	78.0	48.7	29.3	73.5	54.3	19.2	62.0	0.33
Sheffield	79.0	51.0	28.0	72.1	55.4	16.7	61.8	0.08
Liverpool	71.3	53.0	18.3	66.8	55.2	11.6	59.1	0.43
Manchester	78.8	49.0	29.8	70.7	55.3	15.4	61.0	0.41
Salford	76.2	46.7	29.5	68.5	53.2	15.3	58.9	0.40
Bradford	74.7	53.2	21.5	69.7	55.3	14.4	60.6	0.17
Leeds	77.0	52.0	25.0	70.3	56.1	14.2	61.3	0.30
Hull	80.0	49.0	31.0	72.6	53.3	19.3	61.0	0.28
Newcastle	69.0	51.0	18.0	64.3	53.7	10.6	57.1	0.40
Edinburgh	72.7	46.0	26.7	..	..	..	56.9	0.70
Glasgow	67.7	47.8	19.9	..	..	..	56.4	1.04
Dundee	69.0	49.0	20.0	..	..	..	57.0	0.35
Aberdeen	71.1	50.2	20.9	..	..	..	57.5	0.38
Paisley	..	..	..	..	..	..	..	..
Greenock	66.0	51.0	15.0	..	..	..	56.4	1.52
Leith	68.5	49.0	19.5	..	..	..	58.1	0.52
Perth	72.0	52.0	20.0	..	..	..	59.4	0.67
Dublin	76.1	46.5	29.6	..	..	..	59.1	0.03

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, JULY 26, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
July.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
20. Thurs.	29.74	65.2	58.4	53.0	64	4.4
21. Friday	29.80	63.4	59.0	55.5	75	4.9
22. Satur.	29.51	60.3	57.4	54.8	82	4.8
23. Sunday	29.52	64.4	59.0	54.7	70	4.7
24 Monday	29.53	62.1	58.0	54.3	76	4.7
25. Tues.	29.24	62.6	57.4	52.7	71	4.5
26. Wednes	29.26	61.0	55.9	51.3	72	4.3

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
July.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
20. Thurs.	72.5	58.4	14.1	63.5	+ 2.1	NNW	270	0.00
21. Friday	75.1	54.9	20.2	63.2	+ 1.7	S.W.	230	0.00
22. Satur.	72.9	54.9	18.0	60.9	− 0.6	S.W.	310	0.05
23. Sunday	70.1	51.9	18.2	59.1	− 2.5	S.W	210	0.17
24 Monday	70.9	53.9	17.0	60.5	− 1.2	WSW	220	0.08
25. Tues.	67.5	54.1	13.4	58.9	− 2.9	W.	265	0.21
26. Wednes	70.5	52.7	17.8	59.8	− 2.1	WSW	420	0.02

July 20.—A very fine day. At night the sky became covered.

— 21.—A little rain fell about 6 A.M., and again at 9 A.M. Cloudy generally till night. Nearly cloudless after 9 P.M.

— 22.—A little thin rain fell in the morning, and several heavy showers in the afternoon. Variable amounts of cloud prevalent.

— 23.—Occasional heavy showers. Thunder heard about noon, and lightning seen at night. Very variable.

— 24.—Very fine till the afternoon, when several showers of rain fell. Overcast from 6 P.M. onwards. Rain again fell from 11 P.M. till midnight.

— 25.—Frequent heavy squalls of wind and rain were prevalent throughout the day. Fine at night.

— 26.—Cloudy. Windy during the day. Occasional showers of rain.

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

PLANTS of the beautiful *Anœctochilis* should, now that the outer elements are more favourable, receive a moderate quantity of fresh air daily. We know very well that these gems will succeed more or less satisfactorily in an undeviating, close, airless atmosphere. Often, as the cultivator knows from experience, plants are lost owing to a want of greater vigour, which, again, may in all probability be due to the want of this very necessary natural aid. When we take into consideration the fact that some of these gems inhabit the hedgerows of Ceylon—the Cornwall, so to speak, of the Indian peninsula—a promontory influenced by the sea temperatures, and that others come from the island of Java, situated at a like distance from the equator on the opposite side, we cannot fail to surmise that these are cogent reasons why more air should be afforded them than it is our custom to give under artificial treatment. Indeed I have reason to believe that my honoured tutor, the late Mr. May, of Durdham Down, was much more liberal in this matter of giving air than is generally considered to be good for them. At the above named nursery Mr. May grew them during the summer months in a conveniently-formed frame within the Orchid-house. I used to give air to this frame betimes in the morning, and sprinkled the plants and internal surfaces very early in the afternoon, at the same time shutting them down for the night. It is not necessary for me to add how well they prospered, even though they were but youthful introductions at that time. I advise, therefore, that they should receive a little air daily for a time, even such as are constantly grown under hand-glasses. It is very refreshing to the plants at this date to daily wash or swill the glass in clear water, replacing it without attempting to wipe it dry, which is not necessary. To maintain as much vigour as possible in the plants all flower-spikes should be pinched back after they have attained to a little firmness and are not so succulent as to decay, and in doing so bring danger or disaster to the hearts of the shoots from whence they proceed. Of course all moss or green moss-like formations should be kept from them by periodical cleanings, &c. The Carolina "flycatcher," *Dionæa muscipula*, should now be placed out-of-doors in a cool semi-shady aspect, or where a mean temperature of 70° to 75° is likely to exist, with occasional glimpses of sunshine. Place the pot or pan containing it in another one containing water, and haul a bell-glass over the plant, so tilted, however, that air may be freely and constantly afforded under its sides. Many quaint Bromeliaceous plants, such as *Æchmeas*, *Tillandsias*, *Billbergias*, and the like, should, immediately they have partly matured the young growths, be fully and freely exposed to the full rays of the sun with abundance of air of a proper temperature. We should bear in mind that the well-known Æ. fulgens, with others of its allies, are at least semi-epiphytal, growing aloft in the clefts of trees in South America, and that they require water in abundance at the roots, and plenty of humidity generally during the season of active growth. Subsequently they must have a drying, somewhat arid period, so as to ripen efficiently the growth made, and to force flowers to push forth. Encourage growth whilst it is being made, but have resort to extreme measures for ripening it immediately this has been secured. *Blandfordia nobilis* will now in most instances be showing flower in some stage or other. Cease to water it so freely when the blooms are past their best. *B. flammea* should now, on the contrary, be induced to make a good growth, for it will "come in" with the earliest Heaths in the autumn, to afford, by its pretty blooms, a very pleasing contrast. Specimens of *Kalosanthes* should be cut back immediately the flowers are past. Place the plants in a dry situation in moderate heat only, or where the sun cannot, during very hot weather, exert its whole influence upon them. Continue to give every possible attention to all plants in preparation for flowering during the coming winter.

FORCING HOUSES.

It may be said in regard to Pines that their full summer period of growth extends from the middle of the month of July to the end of August; hence they should be treated liberally to all the conditions favourable to a good growth. A mean temperature of 80° may now be freely afforded by artificial means by day, with an increase of 10° to 12° by sun-heat, and the customary decrease of 10° or 12° at night from that enjoyed as a mean by day. Make up the stock of the various kinds of *Pines* now from all strong suckers at hand, bearing in mind the fact that the larger the size of the sucker cuttings the sooner will goodly-sized plants be formed. It is well to remove these suckers from the parent plants when the fruits are ripened, or soon afterwards. The suckers, moreover, show their fitness or removal by possessing a brown-looking tint around the base. It should be needless to remark that these, whether crowns from the apices of consumed fruits, or suckers from the base of old plants, should be laid aside for a day or two, that the wounds formed by detaching them may become healed over, when they may be transferred to the proper sized pots. Use a rich porous loam with manure in admixture, choose rather small pots, and having three-parts filled them with this soil, press it moderately firm; make a small hole therein, and press the base of the sucker firmly down, fixing it perfectly firm subsequently, by filling in all around with more soil. Give a moderate watering, sufficient, in fact, to settle the soil to its base, and then plunge the pots into a tan-pit possessing the necessary warmth; or, if this be not convenient, a bed may be made up of any other kind of fermenting materials. Attend quickly to the final shifting into fruiting pots of all large successionals needing this aid, as there should be no standing still at this time. Progress in the matter of growth should not be neglected whilst the period most suitable lasts. Any *Peach trees* which have been forced in pots, and from which the fruit has been gathered, should now be turned out-of-doors into the full sun, and by being constantly and properly watered, should have all the aid possible to mature their wood for next season's crop. These remarks apply equally to most hardy orchard-house fruits, grown in a like manner. To neglect them now in regard to these details, is to endanger greatly the crops that might be anticipated as the produce of a following season,—facts well known by the professional gardener, but sometimes little heeded by the less constant practitioner.

HARDY FRUIT GARDEN.

Regulate *Fig trees* by cutting out all ill-placed shoots or any of very rampant growth, thereby affording a proper amount of light and air to the fruit. Beyond this, I do not advise pruning Figs too severely at this time. Nail all main or subsidiary shoots well against the walls, to neutralise the destructive tendencies of wind, storms, &c. Fruit trees may now in a general way be budded. This is done in a similar way to Rose budding, and is a very handy means in able hands of making up unsightly vacancies in *Apricots*, *Peaches*, *Nectarines*, &c.

HARDY FLOWER GARDEN.

The parterre, now becoming somewhat gay, even amidst the general gloom we have experienced, will, in connection with all flower-beds, need very frequent attention. Peg down and regulate all strong-growing kinds of *Verbenas*, *Heliotropes*, *Ageratums*, *Tropæolums*, &c., and by such aids induce all vacancies to become well filled. Take off and transplant the early-struck layers of *Carnations*, *Pinks*, *Picotees*. Cut them clean off from the old stools, and remove them very carefully with every root attached; then remove the old part of the old stem which remains beyond the young roots neatly with a sharp-edged knife. It is best to prepare good rich nursery beds for them, where they may be planted out somewhat thickly until the middle of October, following which they may be removed to open borders if necessary, or be transferred to pots for placing into cool frames to better protect them during the winter following. Perennial and biennal plants which were sown early should also be now transplanted. These consist, amongst others, of *Pyramidal* or *Canterbury Bells*, *Rose Campions*, *Wallflowers*, *Hollyhocks*, *Sweet Williams*, *Columbines*, and the like. All kinds of hedges maintained in a clipped state within pleasure grounds, consisting of *Privet*, *Box*, *Yew*, *Holly*, *Hornbeam*, *Beech*, *Thorn*, &c., should now be neatly clipped. *Laurels* and the like will need pruning back also, to keep them within due bounds, and from encroaching upon such other plants as may be growing in their immediate vicinity. Creepers or climbing plants upon walls or other trellis work will also now want considerable attention. It is far easier to keep them well in order by anticipating their wants, than by permitting them to run wild as it were, or to exceed their proper limits.

KITCHEN GARDEN.

It will be necessary to take up all choice stocks of *Potatos* at the earliest moment possible, and by this, the only means possible, to ward off in some measure the dire disease which seems to be but too universal within garden walls as in the open fields. Evidence adduced by trustworthy correspondents not long ago in these pages, confirms the fact that Potatos taken up in a moderately matured state are, if there be any difference, better for seed than such as are over ripened in the ground before they are taken up. What a season for vegetable growers! How hopefully is *Celery* and the winter stuff got out. I advise, however, that too "frim" a growth should not be encouraged, but rather endeavour to check all too robust *Broccoli*. I even go so far as to suggest that any too strong growing kinds be pulled up and transplanted or dibbled back into the rows again, and that mainly for this reason. We have it upon record that a very sharp winter sometimes follows a "dripping" summer; hence the more fibre we can get into such plants the better. Besides, large sappy leaves at this period of growth are no great incentives to the production of good heads in the ensuing spring. Of course I refer alone to such kinds as stand the long winter through. Prepare a good piece of ground for the main crop of *Winter Spinach*. Sow a moderate batch of Cabbage seeds; also a succession of *Endive*, *Onions*, *Carrots*, *Turnips*, *Lettuce*, in quantities according to the demand. Pull up *Garlick* and *Shallots*, and lay them in a dry place to ripen off. Give to *Globe Artichokes* and spring-sown *Cauliflowers* some assistance in the shape of manure-water between showers. Give also such aids to the *Cardoons* already making a sturdy growth if all necessary attention has been afforded. Stop all the points of the young shoots of *Tomatos*. Do this decisively, as they are already very backward, and to attempt too much with them will only militate against securing a good fair crop. *W. E.*

Miscellaneous.

THE CULTIVATION OF TALL CACTI.—The tall Cacti are plants of very easy culture, but they scarcely appear to be general favourites. Yet no one can have seen the beautiful specimens that have from time to time been exhibited—those, for instance, shown by the late Mr. Green—without admiring them. Some persons are of opinion that the habit of many of the tribe is unsightly, and the blooming season of short duration; but the same objection may be raised in the case of many of our most beautiful plants, and to meet difficulties of this nature it is merely necessary to call to our aid the practice and the intelligence of our most skilful manipulators, to teach us what to do and what to avoid. The propagation of tall-growing Cacti by means of cuttings is simple enough. It is of some importance that the cuttings should be prepared by the aid of a sharp knife, for if the wound be bruised the chances are that the cutting will decay. When taken off they should be potted into dry, gritty, open soil, or they should be partially dried by being laid by on a dry shelf for a week or 10 days. I generally put three or four cuttings into 2 or 3-inch pots, according to the size of the cuttings. The soil used for this purpose is composed of three-fourths of road grit, with the remainder mellow loam, charcoal, and lime rubbish, all tolerably fine. The cuttings being of a very succulent nature, they should not be placed in a humid atmosphere, but on a dry shelf in some warm and airy house, where they can be kept tolerably dry. Thus treated, they will be found to emit roots in a very short time, and may be potted singly into small pots, using plenty of drainage, such as charcoal or old mortar. As the plants grow they must be shifted into larger pots, using the soil somewhat coarser at each successive shift, and giving abundant drainage; this is essential, as the plants, although required to be liberally watered when growing and blooming, require that the water should percolate freely, and dry off quickly. One or two waterings during the flowering season with weak manure water will assist the blooming materially. During the dormant months of winter very few waterings will be necessary. As regards tying and training, the plants may be made to assume a variety of forms according to the taste of the cultivator. If large plants be the object, liberal shifts, with a higher temperature than that of a cool greenhouse will greatly assist them, especially if the pots could be plunged in a dry, half-spent tan or bark bed. The soil, too, may consist of a small portion of peat, chopped up, but not too small, and of very old thoroughly-decomposed cow-manure, added to equal parts of good fibrous loam and road grit, which is for the most part pulverised stone. The season of blooming can be prolonged by removing the plants into a cool house, and well shading them from intense sun-heat. Should they become at all sickly, and the soil about the roots sour and stagnant, they may be carefully shaken out of the pots, and repotted into smaller pots, the shoots being pruned and regulated, and the whole subjected to the treatment advised for plants when rapid growth is desired. In such cases it is necessary to be careful and judicious in the application of water. *F. K., in "Florist and Pomologist."*

THE RED CLOVER, which is now naturalised in many parts of the United States, was introduced into general cultivation in Chester county, Pennsylvania, between the years 1790 and 1792, the price of the seed at that time being 16 dols. per bush. According to Watson's "Annals of Philadelphia," Bartram had fields of it before the American revolution. The white Clover, which is very generally distributed in the States, may also have been introduced, although it was observed by the roadside, and recorded as early as 1719.

Notices to Correspondents.

BOOKS: *A Young Beginner.* If you mean a botanical dictionary, Paxton's is the best you can get.—*J. R., Springfield.* Thomson's "Handy Book of the Flower Garden" (Blackwood).

COMFREY: *A Correspondent* wishes to know if any of our correspondents can tell him why Comfrey (Symphytum) is called Hielkraut (Healing Herb) in German?

FAIRY-RING FUNGI. *A.* wishes to know how to get rid of Fairy-ring Fungi from lawns and fields, a more than usual nuisance this year.

FUNGUS ON YEW: *W. P., Shrewsbury.* Polyporus sulfureus, Fr.; see p. 212 of your copy of the Woolhope Transactions. *W. G. S.*

NAMES OF PLANTS: *F. Currey.* Ligustrum sinense (Lour.).—*E. C. C. D.* 1, Achillea millefolium, the Yarrow, or Milfoil; 2, Crepis virens, the Hawk's Beard; 3, Capsella bursa-pastoris, Shepherd's Purse; 4, Euphorbia exigua, Corn Spurge.—*H. H. C.* The white-flowered Salvia is S. pratensis, var. alba: the blue-flowered Labiate is no Salvia, but is the Nepeta macrantha of Ledebour, which also bears the Linnean name of Dracocephalum sibiricum, and is a most charming plant. Native of Siberia and the Himalaya.—*J. H. C.* (Mells). 1, Exceedingly crushed, and quite discoloured when it reached us, but no doubt is an example of Crinum capense, rather narrower-leaved than usual. 2. A well-known Cape bulb, Eucomis punctata, and was a very fine example; the others are Cyrtanthus angustifolius and Funkia ovata lancifolia.—*W. T.* Impossible to name them from single leaves.—*J. H. F.* 1, Selaginella caulescens.—*K. & S.* Campanula garganica, Ten.—*E. Shenton.* Alonsoa caulialata, R. & P. (A. Warscewiczii, Regel).—*A. S.* Primula villosa, Jacq. (see Bot. Mag., t. 14).—*C. W. S.* Your Dendrobium is entirely distinct from D. primulinum and D. macrophyllum. In so vast a genus we cannot pretend to identify species unless information as to their habit and habitat is supplied. But your Dendrobe is a poor thing.—*A Subscriber.* The common Dodder, Cuscuta europæa.—*Dab.* Centranthus ruber.—*H. M.* 1, Agrostis vulgaris; 2, Avena pubescens; 3, Aira cæspitosa.—*W. E.* 1, Some Chara, we cannot tell the species; 2, Myriophyllum, probably M. spicatum (no flowers).

PEACH TREES: *W. Stevens.* The condition of your Peach tree is exactly like what has been submitted to the Scientific Committee of the Horticultural Society several times earlier in the season. It is very difficult to suggest the cause without personal inspection. You should remark whether the tree is exposed to sudden changes of temperature or to drip from above, which is quite able to produce such an effect. The foliage seems over-luxuriant. *M. J. B.*

PRIZE MONEY: *W. C.* It is, we believe, the rule of the London societies to pay the prize-money, at the end of the season, to the person in whose name the entries and the exhibitions have been made.

ROSE FUNGUS: *A Northern Reader.* Your Roses are attacked by a parasitic Fungus, Coleosporium pingue, which is so prevalent this year that it is hopeless to attempt its destruction by picking off the leaves and burning them, which is the only remedy. *M. J. B.*—*P. H.* The Fungus on your Rose leaves is Aregma mucronatum. We know of no remedy. The yellow Fungus is merely a peculiar condition of the same species. *M. J. B.*

SEEDLING CHERRY: *Geo. Rawlings.* We cannot see that the seedling Cherry differs in any respect from the Morello. It is too acid for cultivation as a dessert fruit.

SYRINGING CATTLEYAS: *R. C.* Not in the growing season.

VASCULUM: *A Young Botanist.* Capital boxes of this kind are made by Mr. James How, 2, Foster Lane, Cheapside, E.C.

VINES AND MILDEW: *D.* Your Vines seemed to be but slightly affected with this pest. We can only advise you to persevere in the application of sulphur, and to employ a suitable amount of fire-heat to enable you to ventilate thoroughly and constantly.

CATALOGUE RECEIVED.—William Rollisson & Sons, a General Catalogue of Plants, Trees, and Shrubs.

ERRATA.—There are two or three errors in my letter on "Caterpillars and Fruit Trees," at p. 942. "C*t*isiocampa Neustria" should be C*l*isiocampa; Hyb*o*rnia should be Hyb*e*rnia; N*o*matus should be N*e*matus; Trochil*una* should be Troch*ilium*. *H. Harpur-Crewe.*

COMMUNICATIONS RECEIVED.—F. C.—W. S.—Mr. C.—C. H.—D. T. F.—C. B. S., Jersey.—P. H. G.—N. C.—W. T.—R. D.—F. W. B.

Markets.

COVENT GARDEN.—July 27.

A fair amount of business is doing here in most of its branches. The northern markets still take a considerable quantity of soft goods, which have been better in quality the last few days. We have heavy importations, chiefly in Apricots and Plums. Hothouse Grapes are now very plentiful, and the price rules low. No improvement can be noticed in the demand for hothouse Pines, which are more plentiful than they have been for some years; the West Indian ones still being very abundant and good. In the Potato market there is a fair average supply, principally from Kent, very few indeed coming in from the Channel Islands, the disease being so bad there.

FRUIT.

	s. a.	s. d.		s. d.	s. d.
Apples, per ½ sieve ..		to 3 0	Oranges, per 100 ..	8 0	to 12 0
Grapes, per lb. ..	1 6	— 6 0	Peaches, per doz. ..	8 0	—20 0
Lemons, per 100 ..	8 0	—12 0	Pine-apples, per lb.	2 6	— 5 0
Nectarines, per doz.	6 0	—12 0	Strawberries, p. lb.	0 6	— 1 6

VEGETABLES.

	s. d.	s. d.		s. d.	s. d
Asparagus, p. bundle	4 0	— 6 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz. ..	2 0	— 3 0	Lettuces, per score ..	0 9	— 1 6
Cabbages, p. doz. ..	1 0	— 1 6	— French Cos, each	0 9	— ..
Carrots, p. bunch ..	0 8	— 1 0	Mushrooms, p. pott.	2 0	— 3 0
— French, per bundle	1 0	— 1 6	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	0 4	— 0 6
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, round, per bunch	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Rhubarb, p. bundle	0 3	— 0 6
French Beans, p. lb.	1 0	— 1 6	Shallots, per lb. ..	0 8	— ..
Gooseberries, per quart	0 4	— 0 6	Spinach, per bushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch ..	0 4	— 0 9

Potatos, New Round, 6*s.* to 10*s.*; Kidneys, 8*s.* to 10*s.* per cwt.

WANTED, a Gentleman, as MANAGER of the Pine-apple Nursery and Seed Business, St. John's Wood, London, W. A liberal salary will be given to an energetic man, who thoroughly understands the business. Good references required—Apply first to Mr. JONES at the Nursery.

WANTED, a Practical WORKING FOREMAN (Single), where Vines are grown extensively both in Borders and in Pots for Sale; must have a thorough knowledge of Forcing, Thinning Grapes, and Stopping the Shoots of Vines also must understand, and have had considerable experience of, the Value and Sale of Plants, as well as being a thorough good Propagator of Roses, Camellias, Azaleas, Heaths, and particularly choice Stove and general Plant Stock for Sale to the Trade. To live on the premises—Address in own handwriting, stating wages required and references, to J. MEREDITH, The Vineyard, Garston, near Liverpool.

WANTED, an experienced PROPAGATOR and GROWER.—One who has been accustomed to Grow for Market preferred. To a suitable person the situation will be permanent.—T. C. P, Mr. Dickson, Centre Avenue, Covent Garden, W.C.

WANTED, at Mr. GOODINGE'S, East Lane Bridge, Sudbury, near Harrow, N.W, a married MAN, without incumbrance, to take charge of a small Nursery. Must understand Propagating, and reside on the premises.

WANTED, a young MAN, used to Nursery Work, to take, when required, charge of Greenhouses. A knowledge of Grafting and Budding Fruit Trees and Roses indispensable. Wages about 16*s.*—G. J. WOOLLETT, Nurseries, Caterham, Surrey.

WANTED, TWO APPRENTICES.—Wages, 6*s.* per week, with lodgings, milk and vegetables—A. T. BROOK, Portnal Park, Sunningdale, Staines.

WANTED, in a Gentleman's Establishment, a MAN and WIFE, to live on the premises The Man must thoroughly understand the Management of Milch Cows, Poultry, Pigs, &c, and be able to make himself generally useful in the Farmyard, which, with the Stock, is required to be kept in good order; the Wife must also be well acquainted with the Management and Rearing of Poultry The Man must not be over 40, and must have a character that will bear the strictest investigation for honesty and sobriety. A good PLOUGH and DRILL MAN may also hear of a situation.—E. H. G., *Woodford Times* Office, Woodford, Essex, N.E.

Seed Trade.

WANTED, a SHOPMAN, in a Wholesale London House Must be quick at Counter Work.—Apply, in own handwriting, saying where previously employed and amount of experience, also wages required, to W., *Gardeners' Chronicle* Office, W.C.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St John's Wood, N W.

Gardeners.

B. S. WILLIAMS has much pleasure in stating that he has upon his GARDENERS' REGISTER many Men of the strictest integrity, thoroughly qualified to undertake the duties of HEAD GARDENER, GARDENER and BAILIFF, or UNDER GARDENER. Ladies or Gentlemen requiring such may rely upon B. S. W. recommending only those whose conduct and abilities are worthy of their trust.
Victoria and Paradise Nurseries, Upper Holloway, London, N.W.

GARDENER (HEAD), age 40.—J. PRING, of Newsells Park Gardens, Royston, Herts, is open to an engagement, owing to the death of his employer, the Hon. Mrs Harcourt Can furnish the highest testimonials as to character and ability.

GARDENER (HEAD), in a Gentleman's Establishment—Married; thoroughly understands the profession. Good wages expected. Seven and a-half years' good personal character.—W. W., Mr Brackett's, Stationer, Redhill.

GARDENER (HEAD).—Age 34, married, without family; thoroughly experienced and practical Man. Eight years with a Nobleman. Will not treat for a single-handed place.—Reference to Rev. C. B. REID, Hanworth House, Hounslow, W.

GARDENER (HEAD), Age 32, married; has had 14 years' experience in first-class Gardens, and thoroughly understands Early Forcing, Pines and Vines, Stove and Greenhouse Plants, and Kitchen and Flower Gardening. Character will bear the strictest investigation.—J. S., 19, Hill Street, Leamington.

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GARDENER, in a Nobleman's or Gentleman's Garden (where Plants are grown for exhibition preferred).—Steady, active young Man. Good character.—X. Y. Z., 171, Malden Road, Haverstock Hill, London, N.W.

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To Nurserymen, Florists, &c.

PROPAGATOR, GROWER, &c., in a small, respectable Nursery.—A trustworthy, industrious Man, with a general Knowledge of the Trade, and accustomed to the Propagation and Growing on of Market Plants, Flowers, &c.; and willing in any department. Wages very moderate—E. J. P, Mr. Whomes' Nursery, Windsor, Berks.

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GARDENER (UNDER).—Age 20; been accustomed to Greenhouses, especially Forcing Good references—T. J. H., Colston Bassett Gardens, Nottinghamshire.

GARDENER (UNDER), age 24.—A respectable Man wishes to Improve; has been in a Garden two years. Can have a good personal character from last employer.—Address, stating full particulars, W. S., Mr. Starnes, Grocer, Sipson, near Slough, Middlesex.

PROPAGATOR and GROWER, where Fruit and Flowers are grown for the London Markets. Good character.—X. J., 10, Park Grove, Battersea Park, S.W.

To Nurserymen.

PROPAGATOR of Roses, Rhododendrons, Coniferæ, &c.; expert Budder and Grafter.—Ten years' experience; thoroughly steady—Address, for character, &c., to W. KNIGHT, Floral Nursery, Hailsham, Sussex.

CLERK and SALESMAN.—A young Man, who has been six years in the Nursery business. Willing to fill up his time in the Nursery. Good references.—R. C. F, Eastgate Nursery, Peterborough.

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GENERAL MANAGER, or MANAGER and PROPAGATOR.—Thoroughly understands the Propagation and Management of Stove and Greenhouse Plants, Heaths, &c., Fruit, and Ornamental Trees and Shrubs, and the usual stock of a first-class nursery. First-class references.—S. D., 39, Elgin Terrace, Maida Vale, London, W.

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MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

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TO BE LET, ELM COTTAGE, Taunton.—The Garden attached to this complete Residence is full of choice Plants, Shrubs, and Ferns, collected by the late Mr. John Young. A Tenant who would preserve the collection would be preferred. A good Kitchen Garden, Coach-house, and Stable attached.

Apply to W. YOUNG, at the above address.

FOR DISPOSAL, with immediate possession, a small first-class NURSERY and SEED BUSINESS, in the West of England, in good working order. Satisfactory reason for present Proprietor leaving, and every facility will be given for a thorough investigation, as it is a genuine concern. Full particulars of

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TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

In one of the finest and largest Towns of Germany.

TO BE SOLD, on account of the illness of the Proprietor, a very extensive HORTICULTURAL ESTABLISHMENT. It consists of a fine comfortable Mansion, good Stables and Coach-house, standing in a very tastefully laid-out Garden, whilst other parts of the ground are reserved for Horticultural purposes. There are several fine and extensive Houses for the Culture of Orchids, and Stove and Greenhouse Plants. A splendid Palm-house has been built quite recently, and a new Heating Apparatus of the most perfect system, laid in all Houses, has just been finished. The whole would be well adapted for an Amateur, as well as in the future for a Nursery, more so as the name of the present Proprietor enjoys a just reputation, and the Business is carried on in the highest style of the profession.

For further particulars address (prepaid) F. G., *Gardeners' Chronicle* Office, W.C.

SALES BY AUCTION.

Periodical Sale of Poultry, Pigeons, and Fancy Birds.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, August 1, at half-past 12 o'Clock precisely, 320 pens of choice POULTRY, PIGEONS, CANARIES, and FOREIGN BIRDS, from the Rev. G. Gilbert, Mr. Tegetmeier, and 50 other Breeders and Exhibitors.

On view the morning of Sale, and Catalogues had.

Choice Orchids and Ferns.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, August 2, at half-past 12 o'Clock precisely, several collections of established ORCHIDS, including fine plants of choice Odontoglossums, Cattleyas, Oncidiums, Dendrobiums, Anguloas, Vandas, Aerides, Masdevallias, Lycastes, Dendrochilums, Barkerias, Chysis, Bletias, Lælias, Cymbidiums, Phalænopsis, Saccolabiums, Angræcums, Sobralias, Cypripediums, &c. Also a collection of valuable Tree and other FERNS, ALOES, ANTHURIUMS, ALLAMANDAS, LATANIAS, CIBOTIUMS, MUSAS, &c.

On view the morning of Sale, and Catalogues had.

Highly Important Sale

Of the CELEBRATED COLLECTION of ORCHIDS FORMED by S. RUCKER, Esq., at WANDSWORTH.

MR. J. C. STEVENS has received instructions from Messrs. Veitch & Sons, who have purchased the entire COLLECTION, to offer for SALE by AUCTION, at his Great Rooms, 38 King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, the 8th and 9th of August, at half-past 12 o'Clock precisely each day, the first portion of the above magnificent lot of Plants, amongst which will be found—

ODONTOGLOSSUM ALEXANDRÆ, unmatchable varieties.
,, PHALÆNOPSIS, splendid specimens.
CYMBIDIUM EBURNEUM, splendid specimens.
MASDEVALLIAS, splendid plants of all the best kinds, many in bloom, or in bud.
VANDA LOWII, probably the largest plant known.
,, SUAVIS, the best variety.
,, DENNISONEANA
,, CŒRULEA, in fine health.
PHALÆNOPSIS AMABILIS, SCHILLERIANA, and GRANDIFLORA, very strong plants.
PLEIONE HUMILE, WALLICHIANA, and LAGENARIA, in fine masses.

Splendid plants and beautiful varieties of CATTLEYAS EXONIENSIS, LABIATA, WARNERI, SCHILLERIANA (very rare), &c.

LÆLIA ELEGANS, the best variety, &c.

All the Plants are in fine condition, and many are in bud, or blooming.

On view the mornings of Sale, and Catalogues had.

Hinckley.

IMPORTANT SALE of VALUABLE STOVE and GREENHOUSE PLANTS.

MESSRS. THOMAS AND GEORGE HARROLD are honoured with instructions from the Executor of the late Thomas Goadby, Esq., Bosworth House, Hinckley, to SELL by AUCTION, on TUESDAY, August 8, the whole of the valuable COLLECTION of STOVE and GREENHOUSE PLANTS, and a quantity of FRUITING and SUCCESSION PINES, &c.

Particulars in Catalogues, to be had of the Auctioneers, Castle Street, Hinckley.

Farnley Hall, near Otley.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions from the Executors of the late Francis Hawkesworth Fawkes, Esq., to announce that the SALE of the entire and far-famed FARNLEY HERD of PURE-BRED SHORTHORNS will take place on TUESDAY, August 1 next, being the day previous to the Yorkshire Agricultural Society's Meeting at York, and will consist of 36 Head of Bulls, Cows, and Heifers, that have been long and carefully bred, and maintained a high position at the various Meetings of the Royal Agricultural Society of England, and the Yorkshire County Shows.

Catalogues, with Pedigrees, may be had on application to Mr. SCOTT, Farnley Hall, near Otley, Yorkshire; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Duncombe Park, Yorkshire.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD is honoured with instructions to announce for SALE by AUCTION, without reserve, at Duncombe Park, Helmsley, on THURSDAY, August 10 next, some very superior SHORTHORN BULLS, and a choice selection of COWS and HEIFERS, the property of the Right Hon. the Earl of Feversham, which have been long and carefully bred from the best and most fashionable sorts. Bulls of distinguished character have been used, principally of the Kirklevington blood.

Catalogues, with Pedigrees, may be had on application to Mr. McLAUGHLIN, Duncombe Park Office, Helmsley; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Buckland, near Faringdon.

IMPORTANT SALE of SOUTHDOWNS.

MR. STRAFFORD has received instructions to announce that the ANNUAL SALE by AUCTION of PURE-BRED SOUTHDOWN SHEEP, belonging to Sir William Throckmorton, Bart., will take place at Buckland, near Faringdon, on FRIDAY, August 25 next, when 80 full-mouthed Ewes and 30 Theaves will be offered, as well as 30 Rams, a few of which will be let for the season; amongst them will be found the splendid Prize Rams at the Royal Show at Wolverhampton.

Catalogues, with particulars, may be had on application to Mr. GEO. T. WILLIAMS, at Buckland, near Faringdon; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Bulbridge Farm, Wilts,

Ten minutes' walk from the Great Western and South-Western Railway Stations at Wilton.

ANNUAL SALE and LETTING of RAM LAMBS and RAMS of the IMPROVED HAMPSHIRE DOWN BREED.

MESSRS. EWER and WINSTANLEY will SELL and LET by AUCTION, on the Premises, Bulbridge Farm, Wilts, on WEDNESDAY, August 2, at 1 o'Clock (Refreshments at 12), about 140 RAM LAMBS and RAMS, of the Improved Hampshire Down Breed, the property of Mr. James Rawlence.

Mr. Rawlence has been awarded during the present year Five Prizes for his Sheep exhibited at the Bath and West of England Society's Show at Guildford; at the Royal Agricultural Show at Wolverhampton he won the First Prize for Shearling Rams, First for Rams of any age, and First and Second for Shearling Ewes; and his well-known reputation and continued success for the last 25 years renders further comment from the Auctioneers unnecessary.

The Express Trains on the South-Western Railway will stop at Wilton Station on the day of Sale.

Model Farm, Upper Winchendon, Bucks,

Seven miles each from Aylesbury, on the London and North-Western Railway, and Thame on the Great Western, and four miles from the Quainton Road Station on the Aylesbury and Buckingham Line, at all of which Stations Conveyances will be ready to meet the Morning Trains, returning in time for the Evening Trains.

MR. JOHN TREADWELL has fixed his ANNUAL SALE of about SIXTY OXFORDSHIRE SHEARLING RAMS, and a few OLDER SHEEP, for WEDNESDAY, August 2, at half-past 2, prompt (Luncheon at 12 o'Clock), when he hopes to be favoured with the Company of his Friends. The Sheep this year have all been bare shorn, are very big, and full of Wool, although darker in colour than usual.

N. B.—This Flock has obtained during the past four years Forty-nine First and Seventeen Second Prizes, including last year First for Ewes at Oxford, Birmingham, and London; and this year First for Shearling Rams at the Royal Agricultural Society's Meeting at Wolverhampton, and at the Bath and West of England Show at Guildford. They may be seen previously.

J. A. MUMFORD, AUCTIONEER, Chilton Park, Thame, Oxon.

Important Sale of Pure-bred Shorthorns at York.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, at 2 o'Clock on THURSDAY, August 3 (the week of the Great Yorkshire Society's Meeting, and in a Field adjoining the Show Ground at Bootham Stray, York), about FORTY very superior SHORTHORNS, from the Herd belonging to the Rev. J. D. Jefferson, of Thicket Priory. Among them are some fine specimens of the Waterloo, J, Daisy, Emma, Flourish, and other fashionable tribes. Duke of Waterloo (21,616) and Lord Waterloo (24,475) are the sires of the majority, the latter being included in the sale. The stock, which consists principally of young animals, including several Yearling Bulls, is very promising.

Catalogues, with Pedigrees, may be had of Mr. BEARLAND, at Thicket Priory, York; or of Mr. JOHN THORNTON, 15, Langham Place, London, W.

THE LANDS IMPROVEMENT COMPANY.

(Incorporated by Special Acts of Parliament.)

Drainage, Reclamation, Farm Buildings, Labourers' Cottages, &c.

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The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

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The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

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Application to be made to ARTHUR MILMAN, Esq., the Secretary, at the Offices of the Company, 22, Whitehall Place, S.W.

MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY.—Prize Lists for the Show at Liverpool in SEPTEMBER NEXT may be had on application to the Secretary. Upwards of THREE THOUSAND POUNDS are offered in PRIZES, including £100 for the best Hunter, £80 for the best Short-horned Bull, upwards of £220 for Dogs, £250 for Poultry, upwards of £225 for Pigs, and £300 for Sheep. ENTRIES CLOSE AUGUST 1.

Winsford, Cheshire. THOMAS RIGBY, Secretary.

Condition of the Fruit Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 12, will contain a FULL and TABULAR STATEMENT of the CONDITION of the FRUIT CROPS throughout the UNITED KINGDOM.

May be had of all Booksellers. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

State of the Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 5, will contain a FULL and TABULAR STATEMENT of the STATE of the CROPS throughout the UNITED KINGDOM.

May be had of all Booksellers. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Agricultural Gazette.

SATURDAY, JULY 29, 1871.

MEETINGS FOR THE ENSUING WEEK.

Aug. 1 to Aug. 3 } Annual Meeting of the Royal Agricultural Society of Ireland, at Dublin; and of the Yorkshire Agricultural Society, at York.

◆

HINTS on SNATCH CROPS and double green crops can hardly come amiss when beef is 10*d.* a pound; and if the subject has no longer the attraction of novelty, it possesses a still more substantial interest from the pecuniary advantages that are reaped by increasing the green crops of the farm.

We fear the present season will be late and unfavourable for sowing snatch crops on stubbles, and we do not propose to repeat what has been often urged in reference to growing Trifolium, Turnips, Tares, Rye, &c., on stubbles, previous to next season's Turnips; but as we are likely to be disappointed in these crops, except on the earliest and most favourable soils, we propose to call attention to the cultivation of the Cabbage, to be grown on next year's fallow as a snatch crop, followed by a succession crop of Cabbage, or transplanted Mangel, or Turnips.

There are two ways of managing—1st, sowing now, *i.e.*, in the first week in August, and transplanting in the field in November; 2d, sheltering the plants in seed-beds during the winter, and transplanting them early in spring.

The first is the garden plan for early Cabbages, to heart in May and June; and where there is no danger from game it is to be preferred. The second is the safer plan where there are rabbits or hares, but the crop will not be ready for folding before June and July, and cannot then be followed by anything more useful than Turnips. In both cases the Cabbages are a manuring and cleaning crop. They must themselves be well manured; and they introduce fatting tegs, cake, &c., on the land and prepare it for the second green crop, will be folded or removed. We know of no other method by which 50 or 60 tons of green food may be grown in a year by ordinary farming, and the land improved at the same time.

With regard to the details of cultivation, if the Cabbages are for early folding, an early sort should be sown, unless you sow a large hardy kind, or the Thousand-headed Cabbage, in spring, and transplant them after Tares, early Peas, Potatos, &c., in which case they will be ready for the ewes and lambs, and may be followed by a root-crop, if it is desired to give the land the benefit of a double green crop. Returning, however, from this digression; for the early sort the land should be in good heart and tillage, and dunged and ploughed in November, and the plants set at 30 inches by 2 feet. At this distance the number of plants required will be 8712 per acre; the quantity of seed will be 1 lb. if it be good, and it should be sown thinly in the seed-bed. As soon as the weather permits, in spring, the plants should be hoed to encourage their growth.

The same general rules will apply to the growing of Cabbages at the other seasons, except that the larger varieties may be planted a yard by 30 inches apart, and only 5800 plants will be required for an acre of land.

With respect to tillage we hesitate to give rules for the preparation of the land. The Cabbage, if planted in spring, requires the same tillage as would be required for Mangel, and if planted in summer and autumn it requires similar tillage as for Turnips. The reader will determine the points of cultivation according to the character of his soil. There is, however, one rule we may mention: dung should not be ploughed under with a furrow exceeding 5 inches, or perhaps 6 inches, in depth. The nearer it is to the surface, the sooner the plants will come away and commence vigorous growth; and the deeper the dung is covered, the longer they will be in starting, and possibly they may break down altogether.

Plants feed chiefly at the surface, where atmospheric influences are greatest, and—not to discuss the matter on scientific grounds—even garden-farmers, whose annual purchase of dung is perhaps 1000 tons per 100 acres, take care not to cover it too deeply; and in the case of Onions, which must be started quickly, they apply the whole of an enormous dressing at the surface, in a rotten state, and do not cover it at all. A dressing of guano at the time of hoeing will, of course, be useful.

Having folded the Cabbages, the stalks should, if necessary, be raked into the furrows, or removed by boys as the land is ploughed. It will depend on circumstances whether the land will require twice ploughing or not. Garden farmers, from whose book we are borrowing a leaf, very seldom plough twice for any crop. The heavy dressings make their land friable. Manure in large quantities changes even stiff land into a kinder soil, which is worked much more easily, and it also has the effect of bringing the crops to maturity eight days earlier.

If the Cabbages were folded and the land properly cultivated not later than July 1, there is no second crop so desirable as Mangel, provided they are transplanted about the above date, or, in favourable weather, and on land in high condition, up to July 10. The Mangel seed should have been sown in beds at the usual time in April or early in May. There is no root crop, not even Kohl Rabi, which transplants better than Mangel. During this showery season we saw scores of acres of transplanted Mangel, which received only a few days' check by removal.

Mangel should be hoed so soon as they have taken good hold of the ground. The cost of transplanting the small plants referred to in this article is generally 1*s.* per 1000, or about 6*s.* an acre, for several of the crops named. In many instances the advantages of transplanting prove greater than the costs, considering that time is gained for tillage and double crops are obtained.

IF any one could convince the town populations of England that they have committed a great blunder in adopting water-closets, SEWERS and SEWAGE IRRIGATION, it would be our clever correspondent, Herr BETA, of Berlin (see p. 956). He knows that the whole system is doomed—all Germany knows that Mr. MECHI has given up the liquid plan of applying manure—everybody knows that LIERNUR'S vacuum carts for emptying cesspools is a perfect success, whether as a sanitary or an economical institution, or for the mere cleanliness and comfort of the arrangement. "The glorious waves that surround England make her winters warm and her summers cool [and so they favour the irrigation remedy for the sewage nuisance]: they make her rivers broad and full, her air pure and everchanging, and her people rich and generous, so that they can afford to squander money and manure in sewers, water-carriage, irrigation—even irrigation dinners—all for the sake of the comfort of their national economists." So says our German critic, who then proceeds to comment, with equally genuine approval, on German stinginess, and on the German idea of comfort, which consists, according to him, in saving money, storing knowledge, utilising everything, even Englishmen and English institutions, if so be they are worth the trouble. They do not mean, however, it would appear, to turn our ideas of sewerage and sewage to account, except by way of beacon for their warning.

We, on the other hand, holding that two things are inevitable, viz., first, on the score of the English idea of comfort, the universal adoption of the water-closet; and second, the coming enactment which shall forbid river pollution by it—are, we fear, committed past all power of German persuasion to our fatal blunder. Acting on a wholesome prejudice in favour of the ancient maxim, "Wash and be clean," we have supplied our towns with an enormous daily quantity of pure water, which washes them and their people, and thus makes sewers necessary. The sewage thus produced and delivered into the nearest watercourse is inevitably foul, whatever be the accommodation provided for the houses, and will not be allowed much longer to pollute the neighbouring river. It must be cleansed, and a great surface of soil, whose surface and whose substance is occupied by living plants, is the only practicable agency for this purpose. Being thus shut up to irrigation, let us load on this water all the filthy but fertilising matter it can carry, and thus increase the produce and the profit of our cleansing machinery—let us, in fact, universally adopt the water-closet and discard the privy.

We have come to the conviction in this country that the provision of cesspools for cleanness sake in the midst of wells for water supply is both disgusting and unwholesome—that a water supply of adequate amount from without the town necessitates some remedy for sewage pollution—and that sewage irrigation is the only remedy that is at once successful and productive.

We can leave our German critics for their ridicule of English wastefulness and sneers at English cleanliness to the statistics of scavenging and health; and for their "facts," which "everybody" on this subject knows, we can leave them in the hands of Mr. MECHI.

—— THE few samples of English Wheat at Mark Lane on Monday were sold at the prices of that day week. Anticipations of a wet harvest affected sales on Wednesday, when previous rates were easily realised. ——A short supply of beasts and sheep on Monday at the Metropolitan Cattle Market sent prices up—choice lambs and calves participating; a larger supply on Thursday lowered prices, and a clearance was not effected.——Accounts from the Hop plantations are not yet satisfactory.——English wool continues to rise, and the tendency is still upward.——The Seed Market has been affected this week by the supply of new seeds.

—— The HIGHLAND and AGRICULTURAL SOCIETY'S SHOW at PERTH, this week, is considered on all hands to be most successful, as is evidenced in comparing the entries with those of last year. Then there were 61 Shorthorns, while on the present occasion there have been 92; then there were 46 Polled Angus, whereas in the week just closed there were 76. All the cattle classes, except the Ayrshires, participate in this increase, but it is somewhat strange to notice the ranks of this favourite dairy breed thinned from 154 down to 90 entries. Horses remain almost *in statu quo* with reference to numbers; sheep have slightly diminished, from 322 entries to 300; swine have increased in numbers from 39 to 43, and poultry have increased from 34 to 225 entries! Altogether, the show of 1871 compares favourably with those of recent years. In giving a brief sketch of the Perth show we cannot but notice the salient points of difference between it and the great English meeting. First with regard to cattle; Shorthorns are well represented, while at the same time not a Devon, Sussex, or Hereford appears on the ground. This we look upon as a somewhat significant fact, bearing upon the adaptability of our many admirable breeds for diverse situations. Scotland, however, boasts her own most characteristic races of cattle, and it is no small novelty to an Englishman to walk through long ranges of sheds containing the beautifully symmetrical black polled cattle of Galloway and Aberdeen. Uniformity is always a "point" in considering a number of specimens of a race constituting a herd or flock. Nowhere, perhaps, can such perfect uniformity be met with as in the sheds of the Highland and Agricultural Society, where the cattle just noticed are exhibited in such perfection. Neither must we omit to mention the Ayrshires, which formed such an important section of the late show. These cattle are bred for milk, and have assumed the milking type or form. The colour is, however, exceedingly diversified, some of the bulls being really more properly black and white than red and white. A breed can be made, so to speak, "to order;" and the varied colour, especially the black shade in the Ayrshire cattle, indicates that small value is attached to this particular attribute. There was a noble show of Clydesdale horses, and a considerable number of thoroughbreds, carriage-horses, hacks, and ponies. It was, however, a pity to notice the large number of unfilled places in these as in other classes; the words "not forward" being far too commonly paraded over vacant stalls or pens. Another remarkable feature of the Highland and Agricultural Show is the large class of black-faced sheep, which, however, have more white about their features than we have been accustomed to in years gone by. We miss the hardy Cotswold, which might be reasonably expected to fare as well upon a north country district as the more delicate Leicester. It is indeed an important question how far the Border Leicester might not be improved by more frequent crosses with the hardy Cotswold sheep of the south-western counties. The Border Leicester has completely monopolised the field this year with respect to Leicesters proper, and there is not a single entry under the latter head. We were glad to see a class of Shropshire sheep, which may be looked upon as a novelty in the Scotch show. There were 29 entries under this head, while last year, and, we suppose also in previous years, there were none. This class, although containing a few excellent sheep, also comprised some very poor specimens; and, after the magnificent show of these sheep in their own district at Wolverhampton, a few middling sheep of the same breed, with a good one or two interspersed, does not invite special comment. That Shropshires were represented at all is, however, a matter of no small importance, and we trust the entries in this section may every year become more numerous. Even Southdowns appeared, though in numbers under the dozen; and there were a few entries as extra sheep stock, among which were some singular four-horned Barbary sheep, bred and exhibited by Mr. C. H. DRUMMOND MORAY, of Abercairney, Crieff. The pig show compared favourably with that of last year, and white breeds were well represented. Black pigs do not seem to make much way in North Britain, and the Berkshires were not very characteristic of their breed. The array of large implements was small, and the array of articles not in the remotest way connected with agriculture far too great. Pictures, photographs, jewellery, glass, and ornaments of various kinds, were exhibited in far too considerable profusion. There were also the usual useful appliances for assisting farm operations, upon which we have not more space to dwell, except to mention the want of shedding—a large proportion of the implements being exposed to the rain. The arrangements of the show grounds were excellent, although we might suggest a few improvements, such as some sort of indication as to where one class ended and another began. The "reserve number," too, which is in constant use in the English Society's grounds, is here wanting, and high commendations do not seem to be given in addition to commendations.

—— The GREAT ANNUAL EXHIBITION of the ROYAL AGRICULTURAL SOCIETY of IRELAND, which will take place during the coming week in Dublin, will be one of the largest and most important held under the auspices of the Society since its formation in the year 1841. This is the third time that the Irish capital has received the Society, and unusual success is anticipated, owing to its being honoured this year with a visit from His Royal Highness the Prince of WALES, President of the Society; H.R.H. Prince ARTHUR, the Princess LOUISE, the Marquis of LORNE, the Duke of CAMBRIDGE, and His Excellency the LORD-LIEUTENANT of Ireland will also be present. The last Society's show (1867) held in Dublin proved to be a most successful exhibition. The entries in stock amounted to 628, and in implements 105. The entries for the coming show will be about double these numbers. In horses alone there will be 600 animals brought forward, only 258 having been shown in 1867. The prizes to be offered include, among others, the Purdon Challenge Cup, value 60 gs., for the best Shorthorn bull; the Purdon Challenge Cup, value 60 gs., for the best Shorthorn cow; the Cork Challenge Cup, value 40 sovs., for the best shearling ram; the Croker Challenge Cup, value 100 gs., for the best thorough-bred sire; the Kerr Challenge Cup, for the best jumper. There are also money prizes to the amount of £600, besides a large number of gold and silver medals, honorary certificates, and other commendations. The judges, accompanied by the stewards, will commence the adjudication on Tuesday morning, and in the afternoon the Royal party will visit the show. On Wednesday the Royal party will again make an inspection of the exhibition, and in the evening the banquet of the Society will be held in the Winter Palace Exhibition, at which His Royal Highness the Prince of WALES will preside. Amongst the English agricultural implement exhibitors coming over on the occasion are Messrs. Garrett & Co., Howard & Co., Richmond & Norton, Ashby & Jeffrey, Young & Co., Burgess & Key, Fowler & Co., Ransome & Sims, Samuelson & Co., Hornsby & Co., Brigham & Bickerton, &c.

—— We have received from Whitfield Farm, Gloucestershire, the following note, with accompanying specimens, entirely bearing out last week's remarks on the WHEAT CROP:—

"By to-day's post I send you a few specimens of injured Wheat, which will bear out the opinion expressed in your leader this week. Wheat which looked well a fortnight ago has become very much scrawled. We at first thought that it must have been caused by the rough wind and heavy rain, but upon a close examination the real cause is but too plain. The root in some instances appears to be decayed, and is in consequence easily blown aside, while in others the straw is much damaged by the ravages of some insect which has nearly eaten it off, so that it is easily sent down with the wind and rain. The scrawled state of the crop reminds us of the year 1867, when the yield was far below an average."

—— Hear Mr. DISRAELI on the influence and independence of the English tenant-farmer. He spoke thus on Monday evening in the House of Commons—disputing the allegation "that the county constituencies are subjected to a certain degree of intimidation, and the old story of the tenant-farmer unduly influenced by his landlord:"—

"The tenant-farmers of this country are an influential body. I owe my seat in a great degree to them. I believe them to be on the whole the most independent body of men in the country. No doubt there are exceptions in which a proprietor may unduly exercise his influence over them, though to me those instances are unknown, and I believe they will soon be as obsolete as the dodo. But, after all, what is the influence of the tenant-farmer in the English counties? There are 800,000 electors in the counties, and only 100,000 tenant-farmers. How absurd, then, to contend that these returns of county members are owing to tenant-farmers unduly influenced by landlords."

—— The Agricultural Society of New South Wales, one of whose most active managers is Mr. Howard Reid, well known in agricultural circles here, proposes to make its judgment of merit and award of prizes in the cattle classes of its annual exhibition more a question of authentic and exact calculation than it has hitherto been. The judgment of cattle by separate valuation of points is not unknown in this country. The Channel Islands cattle are thus invariably judged in their own district. Each particular in the estimate has a possible value assigned to it, and in the proportion in which it reaches the ideal of perfection, a number is awarded within the maximum. The total effect of the several points is ascertained by a process of simple addition; and thus an animal of double merit in the matter of colour, hair, head, and chine, may beat one which in these points is deficient, although it is itself not worthy of a single figure under the head of general symmetry and style. We extract this possible result of the adoption of such a Table as is given below, although, perhaps, it is hardly probable that a bull or cow, possessing merit under other heads, should be altogether deficient in the matter of style and symmetry. It seems, however, plain that a system of valuation which excludes, as incapable of arithmetical computation, the supreme influence of health, vigour, and constitution, in determining the *status* of an animal, cannot be safely adopted. The following is the proposed award paper to which we have referred :—

1871. SECTION II.—(CATTLE.) Class ———.

[*Proposed*] *Award Paper, showing the Relative Value of Points. Maximum attainable*, 1000.

No.	Age	Colour and Hair.	Handle or Touch.	Head.	Neck and Shoulder.	Chest and Brisket.	Chine.	Fore Ribs.	Loin.	Hips and Quarter.	Twist and Thigh.	Flank and Belly.	Bone.	Even-ness of Fat.	Size.	General Symmetry and Style.	Total.	Award.
		40	60	60	40	70	50	60	60	120	60	80	40	120	70	70	1000	

—— Market Gardening, whether with the aid of sewage or without that help, is suffering from that which we once heard Lord Robert Montagu laugh to scorn as an impossible source of injury—a plethora of produce. Everything is abundant, and prices are bad. The comparison between sewaged fields and others under the highest ordinary cultivation, in a year like this, preceded by a drought, is rather disappointing to the sewage farmer. The manure put on the land last year by his neighbour, and not taken out again on account of loss of crop from drought, is joined by a fresh quantity this year; and the rain being the match which sets the lot on fire, up there come tremendous crops. That which has done them good has, so to speak, done him harm. There was never any want of water in his case. He could not even cease sewaging on account of rain, because he wanted to apply the manure which is thus carried. The additional water was, however, so much more a setting together of the cropped land, and a consequent injury, especially to the Potato crop; and when his neighbour dug five and six tons per acre, he has dug a smaller quantity, much later. He will learn from this experience that he cannot altogether abandon ordinary dung, if he wants the best price for an early produce. There is, no doubt, a good deal yet to learn of many kinds in sewage farming, and one problem is how to get an even crop. Myatt's Kidneys, in a case known to us, have yielded well--4 tons an acre—over good and bad places; but they produced 7 tons per acre at the top of the beds, and but one and two at bottom. Among other reasons one is plain—the bottom gets most wetted, and (being the line of approach to beds) it also gets most trampled on or poached with carting. It ploughed up hardest, and most clung together, but it was impossible to stop to work it and to weather it, for the routine of cropping would have been lost. This necessity has, however, resulted in a very uneven crop.

—— On Wednesday evening the House of Commons spent some hours in technical discussion of the Metric System. The compulsory adoption of it is proposed in a Bill entitled the Weights and Measures (Metric System) Bill, the second reading of which was moved by Mr. J. B. Smith. In its support he traced the history of the system from the time of its adoption by the first French Republic, and read numerous quotations from the reports of committees and commissions and the *dicta* of scientific men in favour of the superior convenience and precision of the system.—Mr. Beresford Hope moved the rejection of the Bill, and in his turn quoted scientific authorities copiously to show the superior convenience of our present mode of measurement. The Metric System he ridiculed as an absurd product of French vanity, which had not even the merit of scientific accuracy.—Mr. Stevenson, who seconded the amendment, dwelt chiefly on the practical objections to the change.—Sir C. B. Adderley, in supporting the Bill, pointed out that our colonies had made the change without any trouble, and argued that our home trade was more embarrassed by the infinite local varieties of our present weights and measures than it could be by any transition to a new system. As to our foreign commerce, he showed how constantly and invariably we lost in all exchanges and other transactions, and pointed out that in most cases the approximation was so close as to make but a small change necessary. He advised Mr. Smith to accept a permissive bill if the Government would agree to it.—Mr. Chichester Fortescue referred at length to previous debates and divisions to show that no direct decision had ever yet been given by the House, and, arguing against a compulsory system, he urged that it was impossible to make such a change unless the opinion of the people went with it.—Mr. Henley also opposed the Bill, which he treated as a product of the first French Revolution, and thought it time enough to make the change when there seemed a prospect of the system being universal.—Mr. C. S. Read and Mr. Pell expressed the strong desire of the agriculturists for an uniform system of weights and measures, and the Bill was also supported by Mr. Baines, Colonel Sykes, and Mr. Illingworth. On a division, it was thrown out by the narrow majority of 82 to 77.

—— An East Essex farmer writes thus of the Approaching Harvest in the columns of the *Times* :—

"I fear we must reconcile ourselves as best we may to the anticipation of a deficient yield of Wheat this year. Probably few of the gentlemen who write sanguine agricultural reports based on cursory observation of the crops as they drive or go by rail past them are aware of the extent to which the Wheat especially is blighted. Not only is there an unusually large number of completely blighted ears, which are plain enough to any one who walks into a field of Wheat, but partially blighted ears are in most fields that I have seen—especially where the crop is forward—the rule, and not the exception. Indeed, it is quite uncommon to find an ear which has the top set healthy, while what in healthy seasons would be the middle kernel, or one of the two middle kernels of each set (according to its position in the ear), is almost invariably nothing but chaff. Now it is common enough, indeed usual, to see one small false kernel in a set, but this year there are two. I looked in a field of white Wheat for some time this morning before I could find an ear containing a set of more than three kernels in the thickest part of the ear, where there should always be four, and where there frequently are five in prolific seasons. Besides this, many of the side kernels are either apparently rotten or contain maggots.

"Barley and Oats are also affected by the blight, though less extensively. In Barley it shows partly in the number of withered ears, but especially in the false kernels that may be seen on close examination on a considerable proportion of the ears. In Oats the strips of white 'flight' in place of grain are plain enough to see, even from the roadside."

—— The ensuing month brings round the sixth anniversary of the Birmingham Horse Show. Considerable alterations have been made in the schedule of prizes. The principal one is the omission of all agricultural horses except stallions, the funds devoted to this section being applied to increasing the prizes for hunters, for which there are four classes besides those for 2 and 3-year-old colts. The hack and harness horses classes have been remodelled, so as to secure more equality in the heights of the horses competing, and those for ponies are altered so that in no case do the saddle and harness points come into competition together. The interesting classes for tandems, both horses and ponies, and also those for pairs in harness, are continued. The prize list is on a most liberal scale, no less than £630 being offered. The days of exhibition are August 15, 16, 17, and 18, and the last day of entry is Saturday, the 29th inst.

OUR LIVE STOCK.

CATTLE.

The following are among the important sales which have recently been transacted among Shorthorns :—Mr. Beattie has sold his *Sonsie* by Brigade Major, and bred by the Messrs. Angus, of Broomley, to Sir Tatton Sykes. Mr. John Outhwaite, of Bainesse, has sold his *Lady Brough*, the 1st prize yearling heifer at Wolverhampton, to Mr. Gibson. Mr. Cochrane, of Compton, Canada, purchased the Rev. R. B. Kennard's 2-year-old heifer, *Oxford Duchess*; Lord Sudeley's 2d prize yearling bull, Cherub; Mr. Chas. Barnett's roan heifer, *Belinda Oxford*; and Messrs. Thomas Game & Son's *Nellie Booth* by Royal Benedict (27,348). Colonel Towneley has sold his red Baron Hubback 2d, the 1st prize yearling bull, and his roan yearling heifer *Alice of Oxford*, to Mr. Gibson; and his red yearling heifer, *Baron Oxford's Duchess*, the 3d prize winner, to Mr. Miller, for America.

—— Respecting the Farnley Hall Shorthorn sale, we are authorised to state that, notwithstanding the decease of the Rev. A. Fawkes, it has been determined that the sale of the herd shall take place, as originally fixed, on Tuesday next.

—— Mr. Finlay Dun, in a very interesting paper recently delivered before the Midland Farmers' Club, thus speaks of the important class of facts gathered together under the term "*reversion*, or calling back" :—

"In the breeding of stock, the progeny not only resemble their own immediate parents, they call back or revert to bygone generations. This constitutes the law of reversion or atavism. It is difficult to say during how many generations old peculiarities will continue to crop up. Shorthorn authorities demand four distinct crosses of accredited blood as the minimum amount, without which no animal can be admitted into the Herd Book, or regarded as of sufficiently pure Shorthorn descent. Such an animal would possess one-sixteenth of the unrecognised blood. But four generations do not certainly suffice to wipe out any stain, shortcoming, or defect. Such faults will slumber sometimes unsuspected during these earlier generations, and then from accidental influences, as from an infusion of some dissimilar blood, may again re-appear. In this way we believe, from their old Dutch descent, crops up every now and then the objectionable dark nose, which from time to time appears in some Shorthorn families. So, doubtless, arises the staring white stockings which still disfigure some Shorthorns, and which Mr. Strafford says often come down during six or eight generations from Ketton 2d, who possessed these conspicuous markings. Southdown and many other sorts of improved sheep have for many generations been bred without horns; but every now and then the old tendency comes out, and lambs are dropped which grow more or less perfectly developed horns.

"The slowness of the process of altering strongly-rooted characters is well illustrated by Fleischmann's experiments with Merino rams, put to coarse German sheep, which he says have 5500 fibres of wool on a square inch; grades of the third or fourth Merino-cross produced about 8000; the twentieth cross 27,000; the perfect pure Merino blood 40,000 to 48,000. Hence from this experiment, it appears that even 20 successive crosses with the Merino ram did not suffice to produce wool as fine as that of the pure breed. Recognising this law of reversion, it is evident that the more inherent of family characters, rather than the accidental or individual, are more particularly transmitted from the parents to their offspring. To ensure definite results in breeding, the pedigree and antecedents of the parents must be known. In this way alone is the transmission of desirable character constantly secured. This truth is fully recognised in the breeding of horses for the turf, and of the best of our Shorthorns; but amongst the less intelligent of our agriculturists, even male animals are chosen generally on account of their moderate price, sometimes perhaps on account of their good looks, but rarely on account of their goodness of descent. Purchasers if satisfied with the general appearance and quality of their stallion, bull, or ram, and perhaps with the look of the sire and dam, seldom make inquiries regarding pedigree. This is certainly wrong, for no animal, however good and shapely himself, can be expected to transmit his good qualities to his descendants unless such qualities have by transmission through several generations become by repeated repetition indelibly fixed and stamped. So far back as in the old days of Rome, Virgil enjoins the agriculturist 'to note the tribe, the lineage, and the sire whom to reserve for husband of the herd.' In highly-bred or good-pedigreed animals, carefully selected throughout a long line of illustrious ancestors, there must ever be a great uniformity of type, and the qualities thus inherited for many generations are still handed down with an ever-accumulating power and certainty. Amongst the Arabs, the most careful horse-breeders in the world, this truth is fully recognised. Spotless pedigree alike of male and female being regarded as so essential, that when a sufficiently aristocratic sire cannot be procured, the best mares are not bred from at all. Where such a system of continued careful selection is made, the stock, like that of the best Arab horses, attains a remarkable uniformity of character, and impresses with much greater certainty its characteristics on any commoner sorts with which it is mated. In illustration may be mentioned the well-bred and celebrated Eclipse, who, although he contended with some of the best horses of his day, never met with his equal. His power and certainty in transmitting his sterling qualities to his progeny are amply attested by the fact, that he was the sire of 134 winners, which brought their owners £160,000, exclusive of cups. Again, amongst Shorthorns, what grandeur, style, and quality have been handed down from generation to generation amongst the well-selected scions of Favourite, The Duke of Northumberland, Grand Duke, Duke of Gloucester, and Earl of Dublin. Well is it still remembered how once a year half the flock-masters in England crowded round the ring at Babraham to see the distribution of Mr. Jonas Webb's Southdowns, which were so well and carefully bred that they left their mark wherever they went.

"In the production of beef, mutton, or bacon, it might be supposed that a long line of illustrious ancestors might very well be dispensed with, and that any tolerably shaped sire would answer sufficiently well. But this is very emphatically contradicted by the fact that the best beasts in our fairs, at our stock sales, and pre-eminently at our great Christmas shows, are what may be termed pedigree animals, if not on both sides, at least on that of the sire. Surely the grazier, the breeder, and the feeder want no stronger evidence of the practical economy of using only well-descended, carefully-selected males. At the meetings of the Royal, and at other great shows of breeding stock, open of course to all comers, blood asserts its pre-eminence, and alone possesses the symmetry, style, and quality requisite to take honours at such gatherings. At Bingley Hall, Islington, and elsewhere, there is ample evidence of the value of the animals obtained by crossing Highland or Scotch polled cows with good Shorthorn bulls. Some of these superior half-breeds have themselves been reserved as sires; but usually with signal failure. They do not produce anything so good as themselves; their progeny vary greatly, and frequently call back to some of their plainest and commonest ancestors. In the successful breeding of sheep, the importance of using well-bred rams of established and fixed characters, is also now generally admitted by all intelligent flockmasters. From these premises the important practical corollary is fairly deducible—that in the selection, especially of male animals, whether it be horses, cattle, sheep, or swine, descent or pedigree should be regarded of primary importance. No careful breeder should, we think, rest satisfied without securing, say four or five distinct accredited crosses of superior recognised merit."

—— An important North Riding Agricultural Association held its ninth meeting on Tuesday, at Appleton, near Malton, under the presidency of the Rev. C. P. Peach. There were over 300 entries in the horse classes, one-third of which were hunters, and the judging lasted from 10 A.M. to 7 P.M., the weather getting up fine in the afternoon. The notable feature in the hunting classes was the competition for the special prizes, in which some of the best horses in Yorkshire competed. The president's cup of 10 gs. was carried off by Mr. T. Cattle's "Sir Roger," five years, by "Cootes," dam by "Moss Trooper." Mr. Thelluson's silver cup for 4-year-old hunter was awarded to the Scarborough winner, Mr. E. Nesfield's "Mischief," by "Fugleman;" Mr. Milner's "Captain Peel" being 2d. Mr. Cattley's cup, for 3-year-old hunter, was won by Mr. J. Cattle's "Hugo," by "Strathern." In the cattle classes, Mr. Stamper, of Highfield, took the principal award, and likewise the special cup given by Mr. Bower, of Welham Hall, for the best animal in the cattle classes, with GRINDEWALDE.

SHEEP.

Mr. Robert Garne's sale of Cotswold rams took place at Aldsworth on Friday last, when 54 sheep were offered (three of which were let for the season, one at 81 gs.), and realised an average of £19 1*s.* each.

—— The Cotswold ram sales commenced last week, at the hospitable residence of Mr. William Lane, at Broadfield. Fifty splendid sheep were readily sold at an average of £18 2*s.* 6*d.* each. Last year's average was £14 11*s.* 8*d.*, for 54 sheep. It may be interesting to mention that this celebrated flock made an average of £20 2*s.* 6*d.*, for 65 sheep, in 1856; £22 4*s.* 2*d.*, for 65 sheep, in 1857; £15 18*s.* 10*d.*, for 54 sheep, in 1868; and £20 3*s.*, for 54 sheep, in 1869, being the highest averages realised in those years.

PRESENT APPEARANCE OF THE CROPS.

Ayrshire.—Wheat, generally thin and small in ear, will be considerably under average. Oats thick and promising, though short of straw; probably a full average. Barley average. Beans looking well; full average. Hay generally thin and light. Turnips very backward and patchy; a large proportion still to single. Mangel also backward. Potatos: A considerable extent of the early kinds raised; crop rather lighter than usual; late kinds look very healthy and promising. *Andrew Ralston, Lagg-by-Ayr, July* 20.

Berkshire.—I consider our Wheat crop much improved, and may turn out rather above an average if not attacked with blight; our Barley I never remember better when the land was well done. Oats are not a heavy crop, about an average. Peas very good, a large breadth planted. The upland hay crop never worse, except Sainfoin, and most of that spoiled with the continued wet; I never remember to have seen so much hay spoilt. The root crop promises beyond any one's expectation, a better plant or more promising I never saw (all roots). Our Potatos were exceedingly good and promising up to last Thursday and Friday, July 12 and 13; every day since they have shown the disease more and more. Our harvest cannot, I think, commence (reaping) before the third week in August. *Thos. Owen, Clapton, Hungerford, July* 20.

—— The grain crops in this neighbourhood have improved in a magical manner since the rain that fell about the middle of June. During the early spring the Wheat crops were very thin indeed, having lost plant more than I ever remember them doing during the winter. Though they have recovered wonderfully, yet on the whole I consider the Wheats thin. Whilst they were in bloom we had a good deal of wind and many heavy storms, and as a general rule Wheat does not "set" well in rough weather. Taking, therefore, the thinness of the plant, and the chance of the ears not filling well, owing to the rough weather during blooming, I shall not be surprised to find that Wheat will be a bare average crop. Barley promises well, so do Oats. Peas are well podded, and no fly. Beans look well, but I hear of blight in some pieces. Hay, which early in June promised to be a poor crop, now turns out a fairly abundant one. A good deal, however, has been spoilt by floods in the meadows of the Ouse and Ousel. Mangel a full crop, and Kohl Rabi too. Swedes are backward, but I anticipate a good crop, as there has been no "flea" this year. Potatos are looking first-rate, but I fear disease owing to the superabundance of rain during the last four weeks. The pastures, as a matter of course, have plenty of feed in them. *W. G. D., Stony Stratford, July* 20.

Bucks.—The crops in this neighbourhood are as follows:—Wheat very various. Some heavy, thrown down by the wet and wind before or while it was in bloom, therefore is injured; some a good full crop, well up, and looks promising, yet late. Some thin ones have made up very much, and are not yet on bloom, therefore must be very late; some are a fair average crop, while some of the weak ones are a good bit root-fallen, therefore cannot be good, and some are very bad. The plough has turned some in, and Barley, &c., has been drilled amongst some, therefore we cannot expect an average crop, and harvest must be late. Barley is generally good, and must be over an average. Oats are not so good as Barley, but will be an average. Beans are a very heavy crop, the black fly is heavily upon them, but they must be over an average. Peas do not look anything like so well as they did a month back, yet they will be an average. Roots are generally a good plant, yet late warm weather now will make over an average of them. Hay is under an average, the worst got I ever remember; a lot of my own and others has been swam away by the flood. Clover was a very poor crop, as well as badly harvested. The grass fields have not turned up an average crop. *William Smith, Woolston, Bletchley Station, July* 18.

Dorset.—There is some difficulty in giving an opinion on the crops of this season. Must our verdict be satisfactory, or otherwise? We leave the decision of this question to the public generally, and proceed to the statement of the case which comes within our own notice. The hay, now mostly secured, is in bulk full two-thirds more than was the case last year. Much of it will, I fear, cut out injured with the rains. As to Flax, a neighbour tells he expects an average of 10 bush. of seed, and from 2 to 3 pecks of Flax per acre, from 36 acres, this season. Some, he admits, struck with the rust or blight, is much laid, but he trusts is nevertheless not seriously injured. In this locality we have annual Flax sales, and the price has varied from £7 to £16 per acre. The Wheat is uneven in straw and in thickness, yet some pieces look promising and regular, while other pieces are patchy and thin. The ears appear proportionately large, and with a good set the crop may not be very much below the average. We form our expectation somewhat from the older blossoms, which came out most promptly. Still very few berries are visible, and we fear the Wheat may have suffered in proportion. Certainly the weather has been anything but favourable during Wheat-blossoming. The Barley presents most promising large and long ears. These are so thick that they lean under the pressure of raindrops, to recover when the sun shines. Oats are good, but Potatos are much diseased in the stalks, which emit an unpleasant odour. The root crops I can describe as most cheering. Mangels very good; Swedes equally so, and the common Turnips most promising. *John Pope, Symondsbury.*

Essex.—We are still able to report the Wheat crop making satisfactory progress. All agree that there is straw sufficient for to give an abundant yield, but some think the ear is not sufficiently bold to warrant over an average crop. My impression is, with two weeks of fine weather, we will commence to harvest the finest crop of Wheat which has been cut in this locality for many years. The Barley, although not so important a crop, is also good, and is just beginning to change colour. The same may be said respecting Rye and winter Oats, and we expect to cut them about the 24th inst. Beans have made plenty of straw, but, just as they were going out of flower, the black-fly attacked them, but does not appear to make the progress which I have seen, and may not produce serious results. Mangel, which is the root crop here, is in every respect good, and where the grower, in the face of so much wet and dull weather, was able to keep the weeds under, no doubt need be entertained about the produce. On this farm, where we have 100 acres to struggle with, it required both capital and energy to accomplish the task. *T. Mitchell, East Hall, Rainham, July* 18.

—— In a ride last week of some 50 miles on the south-eastern coast of this county (Essex), I saw very promising indications of a full crop of Wheat, Barley, and Oats. In some ears of Wheat I found upwards of 80 kernels. A little damage occasioned by heavy rains must be deducted, leaving, I think, a full average, and perhaps something more. Bad farming is concealed by the wealth of vegetable life, but there is everywhere too much of it. I can report quite as favourably of the district in which I write this (Witham). The crop of Beans is somewhat questionable; some fields look blighted, and the pods not well filled. There is, as far as I have noticed, a full crop and growth of Peas of common sorts, and the same remarks apply to the early garden varieties, but the later sorts called wrinkled are much blighted, and the yield expected a fortnight ago must be short from 20 to 40 per cent. This is a district where these varieties are largely cultivated for the seed trade. Mangels are filling our fields with a vigorous growth, but within a few days the black aphis has made its appearance amongst them; a report about them, as well as the varieties of the Turnip, would be premature. I will add a few words about the prospects of the seed-growers, who occupy a large breadth of land in this part of our county for this purpose. The severity of last winter entirely destroyed many fields of Mangels planted for this purpose, and but few pieces escaped some damage. It must be a short crop; it is late, and I notice that the black aphis is beginning its ravages. Swedes are well podded off, and look like a good crop. Common Turnip seed is a great failure. Carrot seed defective in plant, and unkindly. We have not been visited here by destructive storms, such as are recorded in many parts of the kingdom. Our rainfall for the last four months is as follows:—April, 2.94; May, 1.14; June, 2.26; July, up to the 20th, 1.78. *Henry Dixon, Dorward's Hall, July* 20.

Kent.—From what I have seen, I should say the Wheat crop is excellent on stiff lands; thin on other soils, yet much improved for the late rains. Barley very good on all soils that are at all well managed. Oats a bad crop generally, except the winter Oats, which are good. Peas very good indeed; free from dolphin. Beans, which promised so well, are now generally attacked with the black dolphin, and this must injure the crop. Hops stand a chance to be a total blight, except in some favoured districts. The hay crop was bad for the early mowing, but for the marsh districts we are now getting a good crop. Clover and Sainfoin an average crop. *G. Witt, Tunstall, near Sittingbourne, July* 18.

Leicestershire: *Charnwood Forest.*—The crops generally in what is popularly known as the "Forest," are looking extremely well, much better, in fact, than in most places. The season seems to have suited this district better than lands which are naturally much more fertile. The Wheat and Oats are looking well, some of the Barleys exceedingly well, and others fair, and the Peas and Potatos are a splendid crop. The Turnips look very promising, but the Mangels are not doing so well; they have scarcely recovered the cold of June. Cabbages are extensively grown for sheep and cattle, and are very thriving. There would have been a heavy crop of hay, but a good deal has been injured by the wet. On one farm in the Forest, where the plan of piling the hay in very large cocks, holding about two cart-loads each, has been followed, about 50 acres have been saved in capital condition, but the hay in this district is generally much spoiled. The plan of having large cocks is not advisable in fine weather, but when followed judiciously in a wet and showery season, it is very useful. There have been two very heavy storms of rain, and one of hail, doing much damage—the rain by washing up the roads and the soil in the fields, and the hail by injuring the crops. I hear that the Royal Farmers' Insurance Company have acted with great liberality, and paid numerous compensations. *H. W., July* 18.

Lincolnshire.—I am glad to say that our present prospects are very good. Wheat and Oats, our principal crops in this locality, though later than the past few years will, I believe, be ready to cut by August 14, with sunny weather some days sooner, which will be about the average time of commencing the past 30 years; and upon referring to my record of yield I can find many years of good returns when we did not begin harvest before August 12; and if we get plenty of sunshine during the next month, I think we may have a full average crop of Wheat, and over average of Oats. The Oats never in my recollection presented so good an appearance. Other grain is grown in such small quantities as hardly to be worth notice. The Peas I have seen were very promising; Beans also. Rabi, as well as all other varieties of the Cabbage tribe, are very largely planted this season, and promising well. Mangels are not generally good, and unless on dry soils and well-manured, cannot be a good crop, a larger proportion than usual are running to seed. Carrots are looking well, and a very large breadth sown. Potatos are also looking well, excepting the flukes; some disease is showing, but we may have quite sufficient of a crop for human food though a third should fail. *Thos. Aitken, Decoy Farm, Spalding, July* 20.

Norfolk.—The last week of genial warmth and sunshine has had a wonderful, almost magical, effect upon the corn crops of this county. A few of the heaviest fields in some districts are badly laid, but generally the Wheats stand up well, are a good plant, with what appears to be a well developed ear. It is yet too early to tell how the ear is filled, but although the weather was wet, it was not cold or frosty when the Wheat was in bloom. Barleys promise well, save on the undrained clays and cold sands, and there the backward spring and ungenial summer have left their mark. The hay is not so much damaged as was at one time expected, and the Turnips grow with such rapidity that it is very difficult to set them out in proper time. Mangels are a poor, patchy plant, and have not grown well till within the last few days. *Clare Sewell Read.*

—— It is rather too early to form a correct opinion as to the real prospect of the growing grain crop, but from present appearance I am inclined to think that on good Wheat lands there will not be much cause for complaint, either as to quantity or quality; but still we must not look for heavy weights this year—much over 18 stones per 4 imperial bushels will, I think, be the exception rather than the rule. On poor badly-farmed land the crop will not be so good, but plenty of straw. Barley will probably be a full average crop in bulk, quality cannot determine at present. Oats promise well, also Peas and Beans; some of the latter are 6 feet high, with 40 and 50 pods on a stem, but in a few instances aphis has attacked them, and for about 6 inches on the top of the stems quite a black hue is apparent, and the leaves are dwinged up. Potatos rise well as to size, quantity, and quality. Hay a good crop; some little of upland injured by the rains. Roots are doing well, and promise an abundant crop; there is also a good prospect of a second crop of Clover, but probably not so good of a large yield of seed. Beef and mutton, although lower in price, sell well; wool is making high prices; and altogether, with the present propitious weather, the farmer's prospects look brighter than for some time past. I send you, sir, the above, and shall have much pleasure in giving you any further information at some future time, which, to be of service to the agriculturist, will be required, as with present appearances harvest cannot be general here before the third week in August, if then. *W. H. Taylor, Bank House, Wymondham.*

RUTLAND.—As far as my observation goes I consider the Wheats a full average plant, but have noticed the last few days red rust to some considerable extent, which must materially reduce the yield. Spring cropping looks very promising, especially Oats, but I consider it much too early to give an opinion as to the probable yield of any corn, as they are now just in the stage when blight would most affect them. A continuation of sunny weather is most desirable. *Conyers Peach, Stoke Dry, Uppingham.*

WARWICKSHIRE.—When I left Rugby all crops were looking well. Grass abundant. Hay crop very promising; rain has hindered the working, but the crop is above average. Wheat and Barley promised well, on my own farm never better, but the heavy rains, however, laid them flat. Mangel is first-rate, and Swedes coming away well. Peas good, Beans fine, and Potatos also. My dairy cows fed in the houses are not milking so well as usual, probably from the wet season and rapid growth of the grass. *Jas. A. A. Campbell.*

WORCESTERSHIRE.—The character of the season is a complete contrast to that of last year. Much rain has fallen during the last three months, with cold nights and but little sunshine. All the cereal crops are long in straw. Wheat in this neighbourhood is in great part thin, being injured by winter frost and wireworm, and much is very weedy; the ear is too early in stage yet to report on; it appears late in proportion to spring corn, and the yield is likely to be under average. Barley is a heavy crop and long in ear, much lodged in some places; Clover seeds, where sown amongst it, are getting high, and may injure the harvest. Oats appear fair, but are not much grown here; the straw is valuable when cut moderately green. Winter Beans very defective; spring Beans once bid fair to be very good, but are much injured by the blight, called blacks. Peas very good, with plenty of haulm for fodder. Roots of all kinds a fine plant, but foul with weeds, in consequence of too much wet hindering the hoeing. Hay a full crop, spoiled by rain. Grass and Tares plentiful, and good; the summer supply and prospect of keep for stock, particularly if straw should be well harvested, is favourable. Potatos: A prospect of heavy crop, but disease has made its appearance during the last few days. A month's fine open warm weather is now much required to bring all crops to maturity; and the final yield, as the grand result of the harvest, will much depend on it. *Stiles Rich, The Cedars, Fearnall Heath, Worcester, July 25.*

AMERICAN BUTTER.

[The following is an extract from a paper on Butter Factories in the States, vol. vii., English Agricultural Society's Journal.]

Working the Butter.—In working the butter, considerable skill and experience are required that the grain of the butter shall not be injured. The butter must have a peculiar firmness and fineness of texture, and a wax-like appearance when fractured, which an improper handling, in expelling the butter-milk and working, will destroy. Care is taken, therefore, not to overwork it, nor subject it to a grinding manipulation like tempering mortar, as this spoils the grain and renders the butter of a greasy or salve-like texture.

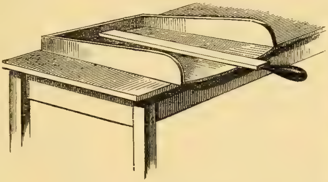

FIG. 219.—BUTTER-WORKER.

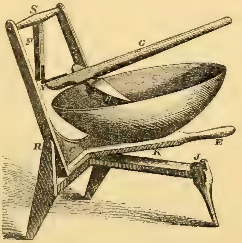

FIG. 220.—EUREKA BUTTER-WORKER.

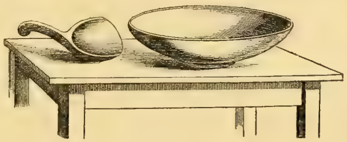

FIG. 221.—BOWL AND LADLE.

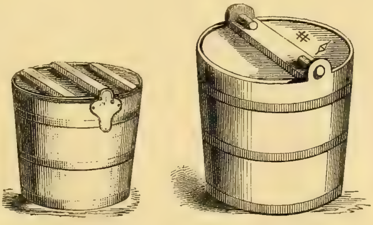

FIG. 222.—RETURN BUTTER-PAILS.

The butter is worked with butter-workers. The one in most common use consists of an inclined slab standing upon legs, and with bevelled sides about 3 inches high. The slab is 4 feet long by 2 feet wide at the upper end, and tapering down 4 inches at the lower end, where there is a cross-piece, with a slot for the reception of the end of the lever. There is also an opening at this end for the escape of the butter-milk into a pail below. The lever is made either with four or eight sides, and the end fits loosely in the slot, so as to be worked in any direction. It is quite simple, as will be seen by the figure below (fig. 219), but does good execution, and is much liked at the butter factories.

There are other butter-workers in use, and one of the more recent inventions is represented by the annexed cut (fig. 220).

A common butter-bowl is placed and held securely on a light, small stool, firmly against a solid rest (R), that protects it from breaking or springing. It may be revolved either way, at will, also easily tipped by a lever to drain off the fluids, and as readily removed from the stool as from a table, and bowls of different sizes may be used on the same stool.

The ladle (H) is attached to a pendant lever (F G) that enables a person to press directly through hard butter in all parts of the bowl without drawing or sliding it; also to cut, turn, and work it in every manner desired. It is light, strong, and simple, everything about it is practical, with nothing to get out of place or order, and it is as handily moved, washed, and dried as any butter-bowl and ladle, such as are shown in fig. 221.

The lever (E) is fastened to the slot (J) while the butter is being worked, and is raised up to discharge the butter-milk from the bowl as occasion requires.

There is a circular iron fastened to the bottom of the bowl, which slides in an iron groove attached to the lever K, and which allows the bowl to be moved round, and, when desired, to be removed entirely from the other parts of the worker.

After the butter has been washed in the trays, a batch, weighing 22 lb., is laid upon an inclined slab, or butter-worker, first described, and then spread out with the ladle. Pure Ashton or Onondaga salt, made fine by rolling, is now sprinkled over the mass and the lever applied, first beginning at one side, until the whole is gone over. Only a few manipulations of this kind are required to work in the salt, and complete this part of the process.

As it is important that the butter-milk should be completely removed, this is facilitated during the working process by applying a slightly dampened napkin to the surface, or by the use of a damp sponge covered with a napkin for the purpose.

Packing.—The butter is packed in firkins, in half-firkins, and in Orange County pails. The pails are "return pails," that is, they are not sold with the butter, but are to be returned to the factory after the purchaser has taken out the butter. They hold about 60 lb. of butter, are of white Oak, nicely made, and strongly hooped with heavy band-iron. They have movable covers, that fit closely, and are fastened with wooden bolts or metallic clasps. The firkins are also made of white Oak, heavily hooped, and the sides neatly turned.

The greatest attention is paid to have the packages perfectly tight, so as not to permit the least leakage. White Oak is regarded as the best material for packages, and the butter factories use no other. The firkins hold about 100 lb. each. The half-firkin is simply the firkin sawed in two, and provided with an Oak head, which is nailed on the top of the package after it is filled. Fig. 222 shows the form of these packages.

The firkin is prepared for use by soaking in cold water, after that in scalding water, and then again in cold water. It is then either filled with brine, and soaked 24 hours, or the inside is thoroughly rubbed with dry salt, and left to stand a short time, when it is considered ready for use.

In packing the butter it is pressed together as solidly as may be, and when the firkin is filled it is immediately headed up, and a strong brine poured through a hole in the top head, to fill all the intervening spaces. The orifice is then closed, and the firkin is set in a cool cellar until it is ready to be sent to market. When the half-firkin is filled, a dry cloth, cut so as to entirely cover the butter, is spread over it, and covered with a thin layer of salt. The cover is then fastened on, and the package is set away in a dry cool place until it is taken to market.

The butter factories usually have orders for butter as fast as it is made, so that the consignments are from week to week. In Orange County the manner of marketing butter differs from that practised in other localities. Consignments are not generally made direct to the city dealers, but they are intrusted to "Captains," as they are called, or persons who make it a business to collect freights of this kind, and take them in charge to New York, making the sales and returning the proceeds to the manufacturer. The "Captains" go with their freight twice a week, are men of standing and responsibility, who are well acquainted with the trade, and know how and when to obtain the best prices.

They receive a commission for their labours, and find it to their interest to make good sales, otherwise they lose the confidence of those entrusting freight to their charge, and are liable, therefore, to be displaced. The captains often receive proposals for large lots of butter, which proposals are submitted to the factories, when they are accepted or rejected, as seems best to the parties interested. They supply private families and hotels, and by having a line of customers who are willing to pay a high price for an extreme fancy article, very large returns are not unfrequently made to the factories.

THE WOLVERHAMPTON MEETING.

THE Royal races at Wolverhampton are now over; you have given reports throughout; I have sat quietly at home to watch them. The first thing you gave was the "correct card" (the prize list) for the steam cultivator trials. I need not give it, for your readers can refer to it at p. 848.

The 1st prize of £100 goes to Fowler's 12-horse power double engine set. This set is strictly applicable to the contract plan, therefore that plan is looked upon as "the best application" by the Royal Agricultural Society. I do not agree with that judgment; I am quite certain that England cannot be farmed upon that plan, even in the face of the late Lord Palmerston's words at p. 1240, 1864, "all farmers may not be buyers, but surely they may hire, as they do threshing." My lord understood law-making better than he did farming, or he would never have used those words, for they go against procuring the big loaf for the people, and he pretended to go for it, as a free-trader. A great free-trader told me years ago that I was the greatest free-trader that he had ever met with, for I practised while others talked. Lord Leicester, at p. 1022, 1864, goes almost as much against tackle buying as Lord Palmerston did, for he says that it would not do to buy a set on 1000 acres of light land; 400 acres of heavy land might do, but nothing less. So much for the opinion of the big-wigs, for I do well on 166 acres, therefore I back my opinion against the big-wigs, and here is my especial reason why the contract plan cannot do it. Nearly all the work done by steam-power must be done in September and October, and Mr. Isaac Robinson's evidence is dead against its ever being done in those months upon the contract plan. I now offer to back my opinion by offering to farm 100 acres of heavy clay land for seven years, with the well-known tackle with which I have worked my farm for 16 years, against any farmer who will hire a set of the 1st prize winning tackle and implements, and farm 100 acres of such land for seven years, for £2000 against his £1000—the cost of the working and results to decide; and I will make a like challenge against any man who will buy a set of the cup-winning tackle to work against me.

Reports show that my opinions are receiving support. It is well known that I started off with turn-round at land's-end implements, for at Chelmsford I showed my well-known turn-round implements; Fowler came out with a balance-plough, and the year after the Chester show, in 1858, with the balance-cultivator. When Howards became manufacturers of the implements known by their own name, they came out with cultivators that did not need turning at land's-end. At that period, and for some years afterwards, the Woolston system of turning the implements at land's-end was attempted to be written and talked down from all quarters. As a sample, I will give you the sayings of one man upon the point at p. 515, 1864. Mr. R. Ransome, in his paper read before the Suffolk Farmers' Club, said thus: "About this date (1858) Messrs. Howard, of Bedford, entered the field as manufacturers of Mr. Smith's apparatus, with which they continued associated until 1861; since then they have been manufacturing an apparatus upon the roundabout principle, with which Mr. Smith originally commenced, but further improved and developed in some of its mechanical details, especially in avoiding the necessity of turning the implement at the end of each furrow." Now we see what the attempt of Mr. R. Ransome and others at that period was worth, in trying to write and talk down the turning-round at land's-end implements, for at Leicester, in 1868, "John Fowler & Co." came out with a number of turning at land's-end implements; and now I read thus: "In spite of the disadvantage the system laboured under in being obliged to use a balance-cultivator, for such it undoubtedly is, the first prize went to the clip-drum," Fowler's, in class 2. In addition to this I read: "I am not surprised at the awards in class 8, for Fowlers' turning-cultivator appears to me as superior to Howards' as theirs is to the balance-cultivator." Therefore, according to the award of the judges and report, my turning cultivators are vastly superior to implements that do not turn at land's-end, whether balanced or otherwise. Time has thus overcome prejudice upon that point, and I am publicly pronounced the winner.

Here is another bit of evidence in support of my opinions. It is well known that I came out, and have always worked, upon the roundabout plan. Many have been the attempts to write and run it down. The Royal Agricultural Society's last attempt to do so, that I had anything to do with, was at the Worcester show, where they gave to Fowler's clip-drum £25, that broke to bits before it completed its plot, and never did complete it, against the roundabout (the Woolston) plan, that did its work well. Now, the grand Wolverhampton cup goes to a roundabout, a very similar set to one worked by the late Lord Hatherton, working a set of my implements, in 1858. Therefore, upon this evidence, the Woolston man has been right upon the point throughout; and as the contract plan (although puffed up by my Lords Palmerston and Leicester) cannot farm England, he must continue so upon all points. England wants the big loaf, and the contract plan cannot give it.

Poor "Sutherland!" My Lord Dunmore will now find that I did not use unjustly hard words against it, and my friend Mr. Isaac Robinson, of Wisbech, who warned me of its coming to Wolverhampton, will cool down a bit now in his expectations. Poor thing, it got in the mud, although some time back we were told to believe that it got over a newly dug Potato field without making an impression.

The rain at Wolverhampton did no end of good, for through it the land represented autumn work much more than it had done for many years past. The damage done by the engine going over the land could be plainly seen. The cultivator did not like the Twitch; the plough was just in its glee, for it could well cut and turn its furrow-slice even if there was a little Twitch in it, and made quite showable work. The dirt made a nasty mess of it to all, and the farmers would be able to judge as to how they would like to have their land thus messed about with road steamers.

The Royal Agricultural Society of England is a very antiquated body—its list of prizes proves it. It must and will have its old plough, so it gives the Royal makers £25 for making it, and that after the grand £500, and subsequent smaller prizes. Then it gives to the makers £25 for a half-bred thing, called a digger. In it there is the plough principle working upon the cultivator principle. Then it gives two prizes of £45 to the same makers for cultivators. This is getting after Smith a bit, following his teaching. It took him years to convince them of the use of that implement. Then the Messrs. Howard got £10 for the old antiquated harrow, and to make it appear that they are in earnest upon the steam question, the Council give drills £20, and they give a few prizes to some toys to please the children; but the grand cup goes to the plough, digger, and cultivator, all of which must be arranged in the same frame—thus buckling old things together, *i. e.*, two ploughs and a cultivator, to keep the whole within £700. The makers know how to please them, and they get paid for doing so. Those are the implements that I challenge £2000 to £1000, twice over. The combined things may have a good engine to work them, but they have no chance against Woolston implements worked by Mr. Smith's little engine upon Woolston practice, neither have the old plough and harrow, &c., worked by bigger engines upon the contract plan, for the Woolston man can thrash them in practice any day. His crops now stand forth as witnesses on his side. *William Smith, Woolston, Bletchley Station, Bucks, July* 18.

THE TENANT'S RIGHT TO UNEXHAUSTED IMPROVEMENTS.

[We take the following from Mr. Bence Jones' published "Letter to an Assistant Barrister on Unexhausted Tillages and Manure under the Land Act."*]

THE Land Act plainly does not put unexhausted tillages and manures under what may be called the penal jurisdiction of the Court. They are classed with permanent buildings and reclamation of waste, in all of which money (or value) has been laid out by an out-going tenant, and remains in the land, and of which his successor in occupation will get the benefit. In fact, it is just as much part of the case that the benefit shall be in the land for the successor, as that the out-going tenant shall have put it there. The out-going tenant may have been the best farmer in the world, but if the manures he put in the land are exhausted, he is not to be paid for them. Besides, tenants ejected for non-payment of rent, and those who give up voluntarily, are equally entitled to payment for unexhausted tillages and manures under the Act. It is clear, that when a tenant leaves voluntarily there can be no reason for a penalty on the landlord. In truth, in this part of the Act, I believe, it is certain than an honest commercial dealing, equally fair to both parties, was meant. The interest of the public in unexhausted tillages and manures is, that a tenant in the last years, before from any cause he leaves a farm, should have no motive to exhaust it, which is seldom any real gain to him. An out-going tenant exhausting his land for some years before he leaves it, and the in-coming tenant restoring it again by some years' expenditure, is no gain to either, and the public loses by less produce at more cost. This compensation, moreover, is one in which, except when the owner means himself to occupy the farm, it will soon be found that landlords are not directly interested either way. The benefit from unexhausted tillages and manures is to the succeeding occupier. Should he chance to be a bad farmer (not purposely bad, but only not good), he will exhaust in the first few years whatever was left in the land by his predecessor. It is certain that in a very few years this will come to be understood, and the payment for unexhausted tillages and manures will always be made by the in-coming tenant. It is always so in England; the landlord takes no part in the question, which is settled between the out-going and in-coming tenants. For the reason I have given, it is fair and right he should pay it; and even those landlords like me, who object to all payments by an in-coming tenant in the nature of fines, purchase of interest, &c., because they absorb the tenant's capital just when he most wants it to stock and manure his land, and so hinder his success in the farm, will be obliged, in self-protection, to throw upon him the payment for unexhausted tillages and manures.

From every point of view, therefore, it is very important this question should be placed on thoroughly sound principles, and more important for the tenant class than for the landlords.

It cannot be thought the Act meant to give the tenant a right to all unexhausted manures in any way existing in the farm, as if bare exhaustion was recognised as the normal state in which tenants are justified in leaving their farms.

Plainly, the meaning must be unexhausted manures which the tenant has himself added to those that, from any cause, natural or artificial, existed in the farm when he hired it. This is the meaning in which the words are always understood in England and Scotland.

This makes it needful to go into the question—What is the origin of the manures used?

Manures may be made from the consumption of plants, straw, hay, or roots, grown on the farm, with the help of previous manure made in the same way; or it may be manure from outside the farm, usually bought, as town dung, sea manure, lime, bones, guano, or superphosphate, or plants grown more or less by the help of such bought manures, or manure made from bought food.

Now the result of all the teaching, both of practice and science, is, that when a farm is even well farmed without the use of additional bought manures or food, *i. e.*, with only manures made from the hay, straw, roots, and grass grown on it, the corn, and stock, and dairy produce sold off cause a slow but steady exhaustion of the land; on good land, of course, much slower than on inferior land, because there is more to draw upon. It is often so slow as only to be perceived after a lapse of many years. The blame is often put on other causes; farmers, even good farmers, constantly deceive themselves on the matter; men of little education have no firm grasp of general principles, and often fancy they have found out some way of gaining in their particular case by what elsewhere would be a loss, and chance favourable seasons, or accidental quality of some fields above others, or insufficient observations of all the effects of their own doings, or short-sighted penny-wisdom, make them very sure they are right, and that principle is wrong. Yet the result is absolutely certain, that when more is sold off the farm than is brought on it, there is an exhaustion in proportion. In truth, when the point is once clearly stated, common sense will show, even to those who know nothing of farming, that it must be so, else—something would be made out of nothing. A man might eat his cake and have it afterward. In practice, among farmers of education, the fact is beyond question, and proofs that the result is such as I have stated can be given to any extent. It is the whole foundation of the modern system of good farming, and the immense trade in manures that is growing up in Ireland no less than elsewhere. To go through the proofs that can be given on this point would take too much space; even the fertile virgin soils of America have been thus gradually exhausted.

The food of all plants comes from the ingredients of the soil, with a small addition from the rain and air. By exposure to the weather, and the action of the roots of plants, especially of grass, the elements of the food of plants in the soil are made available for other plants. Part of these are sold as corn, meat, or butter—part returned to the soil as manure. But this manure belongs to the land; it owes nothing to the tenant. In every well-drawn lease in the three kingdoms, it is covenanted that all hay, straw, and roots shall be consumed on the land, and the manure made from them returned to it. If these are sold off the land for a few years, or if the cattle grazed on it are folded on other land, rapid exhaustion soon is evident. A tenant may take these elements of fertility from one field and put them on another, but the farm gains nothing thereby. Good farming, from making all the resources of the farm and soil available, will always show better than bad, though it may even more exhaust the soil; but unless the tenant has brought additional manures on the farm, or food for stock, as oil-cake, &c. (which is the same thing in another form), he cannot leave unexhausted manure on it in the sense of the Act.

The practice of compensation for unexhausted manures in England and Scotland rests wholly on these principles. The tenant is only compensated for so much of the extra manure, or food for stock, he brings on the farm within a certain number of years before, as he leaves behind. It does not follow, because manure was once brought on a farm that it is there still; it may have been exhausted since by cropping, and it is simply impossible to prove whether a course of cropping many years before was or was not exhausting, or what was the quantity or quality of the manure used. It is certain that much manure that has been used becomes unavailable for future plants—whether it is consumed in mere growth without appearing in the ripened produce—whether it is washed away by the percolation of rain, or whether it forms new but insoluble chemical compounds with other substances that it meets in the soil. But it is not there for use. Custom, based on experience, has taught in how many years manures are practically exhausted—lime, seven years; bones, four years; guano and superphosphate, two years; oilcake, three years; and the tenant is paid accordingly in proportion to the number of years since the manure was used, provided he has not cropped exhaustively since, and so taken the manure out again.

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* Hodges, Foster & Co., Grafton Street, Dublin.

In truth, the whole idea of the justice of recompensing a tenant for unexhausted manures rests on the view, that his money or labour has added a value in this respect to the farm which it did not before possess. It does not include the removing the elements of fertility already in the land, from one field to another, in the ordinary course of growing hay, straw, or roots, of which the profit is got in feeding the usual stock of the farm. When bought manure grows extra food, or extra food is bought, and so more stock is fed and more manure made, the tenant's claim is very just to what is unexhausted. The only question is, in what way such compensation shall be given, and how the facts can be best proved so as to avoid frauds, to which the question is peculiarly open.

NO MORE GUANO.

THIS means dearer bread, scarcer meat, more paupers, heavier rates, higher rents, smaller profits; bad times for farmers, short time for labourers, and more hungry and half-fed throughout the kingdom. It may mean more and worse than all this—semi-starvation to many, pinching poverty to more, more suffering and privation to all; embarrassing problems in politics, social strife, danger to order, and serious peril to our institutions. For, humiliating as the admission is, it is nevertheless largely true, that the security, happiness, stability of states rest largely on the state of their larders. Fill them with an abundance of good things, and nations wax fat and prosper, while ill-filled stomachs are the natural allies of treason, confiscation, sedition. No monster so unreasonable as gaunt famine, gnawing hunger, and these seem barking at our heels in the no very distant future. Every day swells the ranks of the bread eaters by the thousand, while the area of production, we are told, has reached its limits, and one of the most powerful promoters of fertility is exhausted. Truly the prospect seems most gloomy. It would be intolerable but for some gleams of light athwart the gathering darkness. We are not wholly dependent for life on home supplies of food. Corn comes to us from every land. Science has well nigh succeeded in bringing us fresh beef from the antipodes. We have been called a nation of shopkeepers—the cotton-spinners for the human family. We should be more truly described as a nation of bread and beef eaters. Our shambles and bakers' shops cover the earth, and our deliveries in transit block up the sea. Every breeze wafts us golden grain or preserved meats. The prairie and pampas alike are but wide fields on our outlying offhand farms. But it must never be forgotten that as the food from distant lands rolls in, the gold is drained out. We are fed, it is true, but we are likewise impoverished. Foreign food blesses us but once—home supplies many times. And it would be easy to show that food is to a large extent cheap or dear—and that means to the mass of consumers plenty or scarce—in proportion to the amount and quality grown at home. The more bread, beef, sugar grown in England, the cheaper these commodities; the less, the dearer—free trade and its invulnerable theory of exchanges notwithstanding.

Accepting your estimate, we have reached the maximum of home production; with all the land occupied, and one of our most powerful stimulants exhausted, we can hardly expect to get more out of the land. Hallam's *dictum* seems also irrefragable. "There are but two possible modes by which the produce of the earth can be increased; one by rendering fresh land serviceable, the other by improving the fertility of that already cultivated." You assume that the first mode has been worked out. No more commons to enclose, no fresh land to be possessed. Of course the statement is meant to be wide and general. There are still many exceptions to it, a good numbers of acres throughout the kingdom that might be profitably reclaimed. How frequently we pass over barren tracks, only separated from splendid fields of corn or roots by a fence. Surely if the one could not be made as fruitful as the other, then our geological boundaries are more sharp and capricious than we are wont to believe. They are likewise wonderfully easily obliterated, for I have never seen an unsuccessful attempt made to make the one land as good as the other. But it is not of such means of getting more land that I am writing at present, for these wastes cannot be had for nothing; on the contrary, they rise wonderfully in value as soon as wanted; but my light and hope for the future is—more land without more rent. Surely in these days of struggling competition for land, when a raid is made by eager farmers on every vacant holding, that cry will be listened to. No new land laws are needed to make that land yours. How then are you to get it? Get your smashers and ploughs deeper, and it is yours. Amid all the barbarous impediments to improved cultivation stereotyped in ancient lease. I have never read among them, "Thou shalt not go down and find new gold fields,"—that is, fresh land beneath each furrow. There it is in every arable field throughout the three kingdoms, waiting patiently through the long ages to be possessed by the well-fed roots of the future. No fresh land to be possessed, only every inch gained in depth adds 120 additional tons of productive force per acre to your fields. Let us pause a moment, and try to realise the meaning of this statement. A 4-inch tilth represents a productive earth force of 480 tons, a 5-inch of 600 tons, a 10-inch of 1200 tons. I do not assert absolutely that a 12-inch tilth would yield three times more than a 4-inch, but I do affirm that the capacity of the deep tilth would be three times that of the shallow, and were they both alike rich and good in texture, the possibility is that the 12-inch would yield even more, especially of root crops, than the legitimate ratio of three to one.

It may be well also to remind your readers that these views are not founded upon mere arithmetical data, nor natural philosophy formula—thus, two and two are four, the energy of mass is apportioned to its size—but that they have been abundantly proved in practice by many years of actual experience. It is amusing to read occasionally, in the discussions at farmers' clubs, of namby-pamby farming as mere gardening, as if the practice of horticulturists was in a laggard, benighted, to-be-commisserated state. So, evidently, does not think that busy, great, and intelligent farmer, Mr. Mechi. In his most suggestive letter on Liebig's theory vindicated, he points out how gardeners have long been familiar with the art of feeding the lower roots, and implores farmers to go and do likewise. And where are those lower roots to be found? On the farm, from 4 to 6 inches from the surface; in the garden, from 2 to 4 feet. Rather namby-pamby cultivation that, is it not? The wisdom and advantages of this radical treatment of the earth, this cultivation of the lower farm, is proved by the irresistible logic of such facts as these,—the increased produce and superiority of garden crops, and the higher rent of garden land. Similar good results are reaped from deeply-cultivated farm lands.

It will probably be another century at least before a maximum depth of tilth will be generally reached. Until that time come—if come it ever will—there is plenty of fresh land to be utilised. It is wholly a mistake to measure the productive force of the earth by square feet or yards. This mode of computation has led to intense competition for possession of surface only. The joint streams of capital, skill, and labour have spread wide--not run deep. The consequence has been a tremendous loss of productive force, and a wretched average return of about £4 per acre. By doubling the depth you get as much again land for the same rent; and surely it is almost as obvious as that two and two make four, that with as much again food, the things fed thereby—that is, the produce—ought also to be doubled. Some will doubtless cry, "I have tried it frequently; you cannot do any more than cover the surface. My crops cover the ground." Yes, but with what sort of covering? Might not these ears be longer, each kernel larger, heavier?—each Beet, Turnip, and Mangel reach double the size? I do not affirm too much when I say, you know they might. And for the development of quality and weight the unused earth at the bottom of the furrows is as good, nay, it may be better—at least it may be made so—than that on the surface.

But this brings me to my last point. How are you to get more out of your enlarged holdings? All your manure was too little to enrich your shallow tilths; how is enough to be provided to satisfy the deeper ones, especially as your old friend, guano, is worn out? These are vital questions, and I will endeavour to answer them briefly and fairly. The earth itself is a productive force of no mean value. This is too apt to be overlooked by the farmer; he treats the ground too much as he would a horse—so much corn in, so much work out; so much manure in, so many coombs or tons out.

But the earth can also produce somewhat without manure, and this natural force can be wonderfully augmented by aëration and admixture. This commingling of earths in the soil is somewhat analogous to the cross-breeding of animals. The product of the admixture of soils is a wonderful increase of growing force. Even the addition of a comparatively worthless earth to a good soil, gives, as it were, a fresh lease or a new infusion of growing power to the entire mass. That great and good teacher, Mr. Mechi, adverts to this in the letter already referred to, and I think a useful aid to deep culture might be rendered by republishing, in a cheap form, Mr. Smith's, of Lois Weedon, and Mr. Lawes' experiments on what might be called the normal productive force of the earth without manure. Again, deep tilths utilise to much more advantage all the manure applied to them. On shallow tilths it is no exaggeration to affirm that one-third of the manure is utterly wasted; it is either lifted up into the air or washed out into the water; it is not half covered, and its strength is rinsed out into the nearest ditch or blown out by the first breeze; but deep tilths hold manure tenaciously as a blacksmith's vice—the top covering is thick enough to be gas-proof, the bottom is deep and retentive of manurial juices as a sponge. There is, there can be, no loss.

But then, with a dearth of guano and more land, will not the farmer be in a worse dilemma than before? It certainly seems so at first sight, but we fall back on the common proverb, that when one door shuts another opens. We believe this will be verified in this instance to the letter, and that, moreover, the second door will prove by far the best for the farmer. While the guano store lasted it seemed useless to direct attention to other sources of enrichment, but close that door and our home guano will stand a chance of being fairly tried. Here, again, I am glad to find the views I have endeavoured to promulgate for years are in perfect accord with your own and Mr. Mechi's. Both reach the same point from opposite sides: the guano deposits are exhausted, therefore recoup your fields from the refuse of your consuming centres, is your cry; deepen your tilths 30 inches, and flood and enrich them with town sewage, re-echoes Mr. Mechi. I reiterate these cries. Possibly they may be heard now there seems no other means of getting more off the land than by recouping its productive force by the waste of our lives and the dirt of our labour. We are coming to this at last, by a process of exhaustion. All other means have been tried to enrich the earth. Battlefields have been rifled of their bare bones, islands in the distant oceans scoured for birds' dung; seeds, oils, and entire crops converted into feeding cake, and giving food for the hungry earth; and still the latter remains hungry, and cries out with a louder voice and from a deeper throat year by year, "Give, give."

We take more out of it, and must give it more, or break its back by exhaustion. The weakened earth revenges itself on us for our niggardly feeding by light yields; for in the matter of culture and manure it is emphatically true, as we sow so we shall reap. All the while we have been starving the hungry earth of its proper food we have been wasting it most lavishly in all directions, and filth, the proper food of the earth, has literally been sent a-begging. We begged the wind and the air to take it, and they reproved our folly by returning it in fiery fevers or the serpent trail of lingering disease. We poured it into the waters and they became black in the face with rage, and the pure water of life was transformed into the slimy draught of death to thousands. We offered it to the fire-god, and he licked it up in anger, and reproved our wasteful folly by scattering its elements broadcast throughout the air we breathe.

While all this folly, waste, and wickedness—for it was all three—went on, the mute, long-suffering, ill-used earth looked on, and greatly wondered at the so-called wisdom of its masters. At last the cry arose, To the land with all excrements and waste, the filth of towns, and the dirt of the country. And the earth heard it and rejoiced, and thought that its time—the time when it should be filled with marrow and fatness—had at last come. Vain hope—fond delusion. Ignorance, prejudice, habit, old saws and modern instances, even Mammon with his money-bags, blocked up the way—stood an impregnable barricade between the hungry earth and its natural supplies of food; and the year '71 finds us wasting manure at the rate probably of £50,000,000 sterling per annum, to the impoverishment of the earth, and the wasting of the very essence alike of vegetable and animal life; for it can never be too often repeated that the food of plants misapplied, wasted, unused, is disease, suffering, death to man; and all this while the wisdom of Parliament is expended upon the ways and means of raising three millions more revenue, and the struggling taxpayers are crying out that 2*d.* more Income-tax will break their backs. No wonder there is all this impatience of taxation, all this anxiety to play pitch and toss with local and imperial burdens, while we are undermining the energy of the earth itself, the foundation of all our riches, by our wasteful extravagance of our home-made manures. The Chancellor of the Exchequer has just tried to raise a small tax from our matches and tapers, I wish he would try to lay a large one on the waste of good manure. Such a tax, fairly levied and sternly collected, would set all future Chancellors' minds at rest about ways and means for this generation, while it would enrich posterity so much that they would pay all demanded of them without grumbling. Certain it is that only by doubling or trebling the depth of our tilths, and by enriching them by all our waste, can the circle of production be completed, and the strength of the earth, represented by our harvests, restored. The nation that wastes not manure shall not want bread but there need be no hesitation in affirming that the opposite is equally true. *D. T. Fish.*

Home Correspondence.

A General Invitation to Tiptree.—As it is desirable that both landowners and farmers should be enabled to judge whether poor land will make a grateful and profitable return for draining, deep and clean cultivation, and good manure, those who desire to see my farm are at liberty to do so at any time between this and harvest, which, we expect, will commence on August 13 or 14. I paid £23 an acre for this land, nearly all freehold, in 1841, and it has been heavily cropped ever since. As an instance of what such land may be made to produce, I will quote Willow Field, which produced, in 1867, a heavy crop of Clover; in 1868, 8 qr. of white Wheat per acre, sold for £23 per acre, without the straw; 7 qr. per acre of Rivett Wheat in 1869; 39 tons of Mangel per acre in 1870; and now a crop of red Wheat, which promises to be an excellent crop. Next year it will be cropped with Beans, and in 1873 with Wheat again; in 1874 (winter) with Tares, sown in October, 1873; followed by Kohl Rabi or Cabbage, transplanted in July, 1874; and in 1875, Oats sown down with red Clover. This finishes the rotation after red Clover. I thus get in nine years—one red Clover crop, four Wheat do., one Bean do., one Oat do., one Mangel do., one winter Tares do., one Cabbage or Kohl Rabi do. I consider the season very favourable for this neighbourhood. My object in giving this invitation is, as it always has been, a sincere desire to stimulate and encourage agricultural improvements. *J. J. Mechi, Tiptree Hall, Kelvedon, Essex, July* 24.

Utilisation of Romford Sewage.—The original estimate of the population of Romford, namely, 6000, was, I believe, erroneous. The real figure I believe to be about 8000; however, this we shall soon know with certainty. It will be seen, therefore, that 1100 tons daily would be a fraction over 50 tons yearly per head of the population, and not 67. This, then—or some such quantity—represents the sewage proper, and for all manurial calculations the adventitious addition of rainfall may be eliminated. A man becomes intoxicated in proportion to the amount of brandy that he has put into his grog, not in proportion to the amount of water. But it is in vain to attempt to go so deeply as "F. P." desires into a complicated question like sewage irrigation in the compass of a short paragraph. He must not suppose that he can start any new difficulty that has not been already faced, if not solved; and it is not possible for him to obtain answers to all the searching questions that he has asked, and that I see he has the understanding hereafter to ask, through the medium of your columns. If he really desires to sift the whole question in all its bearings, let him begin by reading my friend Professor Corfield's "Digest of Facts relating to the Sewage Question" (London, Macmillan), and if he wants further information about my farm he will, as I said before, find it in the last report of the British Association, including analysis of the soil, sewage, and effluent water, which will be further supplemented by the forthcoming report of the committee. And, finally, after my return from the meeting of the Association, I shall be happy to meet him at the farm, and give him any additional information in my power. Meanwhile, I will ask him to accept as a fact my statement, that my farm is too small, even when supplemented by 20 or 30 acres of my neighbour's land, to extract the full value of the sewage. I state this as the result of my experience, and no further experience can affect this fact in any way. *W. Hope, Parsloes, July* 23.

The Future of the Mangel Wurzel Crop is full of interest. I have watched its growth for many years, nay, almost from its first introduction as a British root crop. It is yearly increasing in public favour, and much larger breadths are sown. It is fast becoming the most valuable of our root crops. The varieties cultivated have become established, *i.e.*, the Long Reds and Yellows and the Globe Reds and Yellows, the first for deep and loamy soils, the latter for thin and light soils. The qualities have been so greatly improved, that a bad or indifferent variety can scarcely be found, and the produce now grown in many districts is almost beyond belief. I have for many years been connected with a local agricultural society, which has for many years given a distinctive prize for the best 3 acres of Mangel Wurzel. It is astonishing to what extent our competitors will go in competing for this little distinction, and what is more remarkable is, that the crops invariably amply repay the outlay; so that I have come to the conclusion that for the Mangel crop no reasonable amount of management and manurings can be thrown away—all will be compensated. The winner of our last year's "medal" produced 62 tons upon an acre, worth £46 10*s.*, the expenditure in management and manures amounting to near £20 per acre, so that notwithstanding the outlay he was well repaid. We have many competitors this year, eight (I think) having declared. These eight crops will, to all appearance, be very heavy ones, estimated to yield not less than 50 tons per acre. The manurings chiefly consists of Peruvian guano, superphosphate, blood manure, salt and fold-yard manure. The extent or quantity used is enormous, but which the growers do not readily inform us. In one instance 1 ton of Peruvian guano is said to be applied per acre; in another 1 ton per acre is used of Peruvian guano, superphosphate, and blood manure in equal proportions; and others in similar, but not such heavy dressings: all supplemented if required, according to the judgment of the grower, by salt sown between the rows. The fold-yard manurings, in addition, are in several cases very heavy. The great question, however, is—does it pay, and can such management be kept up? I fear not altogether, nor would I recommend cultivators of inferior soils to aim at such great results, although they may do much by ample artificial manurings. On useful loamy soils vast weights of these invaluable crops may be advantageously grown, and they might either be consumed upon the farms where grown, or they might open a new trade by growing them for exportation and sale to other districts, or the large towns. The fact is established, these crops can be produced. The best mode of their disposal is in the future. Landlords must permit their export. Tenants must lay out their money in buying aids to produce them. Railway companies must lower their rates of carriage for this heavy produce. In this way loamy soils of fair quality may all be made more useful and profitable than now. *O. F.*

Sewage Irrigation.—Referring to "J. M.'s" remarks, I am decidedly of opinion that nothing in the shape of storage is permissible [the word ".possible" in his note is a misprint], and sewage should be distributed on the land as soon as possible. I have good reason to know this, from the fact that under the system of irrigation formerly carried out here the sewage was stored in tanks, and proved a great nuisance; decomposition set in to a great extent, deteriorating considerably the liquid portion of the sewage. I certainly recommend that land should be well irrigated before being sown, but I entirely fail to see how this necessitates storage, as "J. M." seems to think. Surely if there is a sufficient quantity of land for the proper application of the sewage, there can be no difficulty in doing as I recommend, not only without storage, but actually preventing anything in the shape of storage becoming necessary. With respect to the quantity of sewage per acre, it is impossible, in my opinion, to lay down a precise rule. The quality and nature of the soil, the season, the crop growing or intended to be grown, and other circumstances of a like nature, combine to render this a matter for the exercise of judgment and experience, rather than of a rule of thumb. I hope at some future time to give the result of my experience as to the quantity of land required, but I feel that this is a matter necessitating the experience of varying seasons before definitive conclusions can be arrived at. *T. G. Palmer, Town Surveyor, Rugby.*

Wireworm, Crosskill's Clod-crusher, Roller, and Salt.—This implement will occasionally pay for its whole cost in a single year. Mine has a block of cast-iron (5 cwt.) on the back frame, which balances the shafts, takes the weight off the horse, and adds so much to the weight and efficiency of the roller. This spring I found the Wheat thrown out by frost, so, after the first horse-hoeing with Garrett's horse-hoe, I gave the Wheat a good Crosskilling on the heavy lands, thus giving the roots a firm foundation. When horse-hoeing a second time we were careful not to go too deep or too close to the rows. Our Wheats are 9 inches from row to row. On the light land subject to wireworm the Crosskill, aided by salt, secures our crops, that would be otherwise injured or ruined. We had an especial instance of this in the spring, on a Wheat crop which followed white Turnips, fed on the land. We sowed 6 bushels of salt before ploughing; but notwithstanding this, the wireworm attacked it in spring, so we Crosskilled twice in opposite directions, and then sowed 8 bush. more salt per acre. This was a settler for the wireworm, which had already done much mischief. The land was consolidated, the plants branched, and now we have a fine piece of Wheat that looks like 5 qr. per acre—very healthy, although a poor sandy and silty land. Our Barley, too, was Crosskilled and salted, and is a capital crop after Wheat on the same sort of land. I am quite surprised to find how little farmers generally are aware of this ready cure for wireworm. In former times, in this neighbourhood, most severe losses were caused by wireworm. But see how useful Crosskill is in summer tillage; the great blocks of earth torn up by deep steam cultivation or subsoiling are at once crushed into powder or small square pieces, and a clean fallow can be made in a very short period of dry weather. For old Crosskill makes an unfailing impression on the most obstinate clods, and grinds the earth away from the roots of weeds. Of course it is a dry weather tool on stiff clays. After Crosskilling, a moderate rain suffices to soften and pulverise the diminished clods. This has been in use for 28 years, and it has done much work on many other farms. I am a great believer in salt; I have used some 150 tons on this farm. I see that along our salt-water coast, and for some distance inland, the crops are healthy and fine. We know that in stormy weather salt from the sea-water travels a long way. I have been told that the windows of our Royal Agricultural College at Cirencester have been coated with salt after a severe gale, although I believe 30 miles from the sea. I always mix salt with the guano I sow, about weight for weight. Salted land should be drained. Liebig has explained to us how salt acts on the soil, more as a solvent than as, *per se*, a manure. *J. J. Mechi, Tiptree, July* 21.

Labourers' Cottages.—There is no doubt of the excellence of the plan for double cottages which you publish, and which Mr. Bailey Denton says that he has built in several parts of England, but I do not perceive from the plans as published in what particulars they are an improvement upon Messrs. Richardson & Ross's plan. I should be much obliged to Mr. Denton (and I think that others who are interested in the subject would be equally so) if he would point out the particular improvements upon the original plan; because, as this is perhaps the very best form of cottage for general use, it is of importance that it should be made as perfect as possible, and that every possible improvement should be carefully considered. In one respect I think that the elevations given in my book on cottages are better than the one given by Mr. Bailey Denton, in which he follows the original plan. There are objections to the double gable, because the level gutter between them is liable to get choked with snow or rubbish, and then to leak into the house. I think that some of the plans for roofing with a single roof are very decidedly better than the double gable. Whilst on the subject of cottages, I may mention that the plan No. 9 in my book has lately been built on the Duchy of Lancaster Estate near Olney in Bedfordshire. Its cost is about a third less than that of such a pair as Mr. Denton's. Of course, it is not quite equal to this in point of accommodation, but I believe it to be by far the best plan of a rather cheap cottage which has yet been published; and I have no doubt that, in proportion to the cost, it gives more accommodation than any other plan. *C. W. Strickland, Hildenley, Malton, July* 21.

Small Farms.—Among the various schemes of land reform now put forward, the most intelligible and practicable is that which is based upon the supposed superior advantages of small farms over large ones. Now, for carrying out this scheme, it is not necessary that it should first secure general approval. If good on a large scale, it would be good on a small. If so, and assuming its proposers to be in earnest, I would recommend them to bring it to a practical proof. Instead of calling for Acts of Parliament, as the carter called on Hercules, let them set their own shoulders to the wheel, buy a farm, and divide it. For £20,000 500 acres of good land might be bought, and divided into 50 holdings of 10 acres each; an addition of £10 to the price of each holding will cover law expenses. And if there really be this great want felt by the English people for small farms, surely 50 persons may be found to purchase outright, or at least by instalments. The scheme would thus scarcely cost its promoters anything, and no theoretical argument which they can now use would be so convincing as the actual spectacle of 50 thriving and happy yeoman, forming, as the poet tell us, "their country's pride." *G. S.*

Societies.

BEDFORDSHIRE.

AT the annual show on Thursday (last week), held on the day when we go to press, there were capital classes of horses, especially of agricultural horses—rather short classes of Shorthorns, and among the sheep a good class of Oxford Downs, Messrs. C. Howard, Treadwell, Harris, and Underwood, taking the prizes. At the dinner, held afterwards, in a tent on the ground—

The PRESIDENT (Mr. James Howard) said that in the course of his short life he had been called upon to occupy many public positions, but never had felt more complimented by election to office than when chosen president of this, one of the oldest agricultural societies in the kingdom. For many years he had taken a very lively interest in its prosperity, having heartily sympathised with its objects. It was founded for the purpose of raising the standard of farming throughout the county, for the encouragement of the agricultural labourer, and rewarding the meritorious. It was inaugurated at a time when there was very little public spirit or enterprise in agricultural affairs. Much ignorance prevailed, and throughout the greater part of the county agriculture was carried on after a most primitive fashion, and the live stock was of the most wretched quality. How much of the great advance which had since taken place was owing to the operation of this Society he would not take upon himself to say, but that it had improved it considerably no reflecting mind could doubt. He was glad to know that the Society had better support now than at any former period, and when the benefits it was calculated to confer on the agriculture of the county were more fully known it would be supported in a corresponding ratio. Bedfordshire, from being one of the most backward counties in agriculture, had now become one of the most forward. (Mr. READ, M.P.: Hear, hear.) The member for South Norfolk said "hear, hear;" when he (Mr. Howard) was in the county of Norfolk, which had a world-wide reputation for agriculture, he came to the conclusion that we in Bedfordshire were, if not superior to Norfolk, at least quite abreast of it. Still, we must not suppose that we have reached perfection. Far from it. Much of the soil of this country, by being deeper and better tilled, was susceptible of being made to raise a larger produce, and by the introduction of a larger amount of capital more meat could be produced. While there was such a scarcity of meat, and while we depended upon foreigners for one-third of our grain supplies, we could not look altogether with complacency on our agriculture. He believed there was not a practical farmer in that tent who would not agree with him that if all England were farmed like much of this county we should be a long way towards being independent of foreign supplies. There was one important obstacle, in his opinion, to the further progress of agriculture. He believed that until the tenantry of this country enjoyed a greater security of tenure the resources of the soil would never be fully developed. Fortunately, on the great estates of this county the relations between landlord and tenant were of a most amicable nature, but throughout the great extent of England a different state of things existed. He maintained that six months' notice to quit was altogether incompatible with high farming, and capital would never be attracted to the soil in the way it would be if the tenantry had a vested interest in the improvements they made. Dr. Liebig had long asserted, and Mr. Lawes had proved by experiment, that to exhaust the natural fertility of the soil was absolutely impossible. No amount of bad farming could permanently reduce it, but all that could be taken out of it was "condition," a word the meaning of which was known to every man who knew anything of an animal, and this was a fact which every landlord in the kingdom would do well to ponder, and they ought not to hesitate for a moment in consenting to liberal agreements with the tenantry. Mr. Harvey had alluded to the revolutionary doctrines which had recently been propagated on the land question. He (Mr. Howard) had no fear that the rights of property would be rudely interfered with if landlords did not stand in the way of progress. They knew that the tenants could not run away with their broad acres; and now it was demonstrated that the worst of tenants could not permanently reduce the fertility of the soil, landowners would do well to consent to liberal covenants with their tenants.

Mr. MAGNIAC, M.P., said there were two sides to many questions, and young as he was in the House of Commons he thought he had heard it stated in pretty strong language, that the interests of landlords and of tenants were not always identical. He did not mean to say that they were always in antagonism, but wherever there were two interests there were always two views. There was, for instance, the question of leases, the reference to which had been so well received, and there was also the question of the Game-laws. Mr. Harvey had referred to local taxation, but he had heard men who were competent to reason that question out say that it depended on the rent, and that it was as broad as it was long.

Mr. C. S. READ, M.P., said, in answer to Mr. Magniac, that the question of local taxation was not a question between landlord and tenant. Both these were perfectly united, knowing that local taxation as at present levied was wrong, but the question was whether land and houses should pay the whole of the local taxation, and why all the other property of the country should go scot free. In foreign countries almost all industries, but especially agriculture, looked to the State for protection and encouragement; in England there was a good saying that if we wanted to do a thing well we must do it ourselves, and his advice to the farmers was, never to go to the Government for anything they could have otherwise. As it was impossible for them as individuals to protect themselves, they therefore united in great agricultural societies, and foremost amongst these was the Royal Agricultural Society of England. Some time since, in the House of Commons, it was proposed that a department of the Board of Trade should take in hand the prevention of the adulteration of manures and feeding stuffs, but he ventured on that occasion to say that if the matter were left to the agricultural societies they could do better than any Government department, and he was glad that the Royal society had come forward and exposed the frauds to which the farmers had been subjected.

BRECON.

The Management and Treatment of Grass Land.—Some time ago Professor Wrightson read a capital paper on this subject before this Society. We here give the substance of it.

Professor WRIGHTSON said the subject would be considered under three or four sections, and the following headings appeared to him as allowing of an exhaustive treatment—1st, laying land down to grass; 2d, the improvement of already existing grass land, although it may not be in good condition; 3d, some hints on the general management of grass lands.

(1.) *The Laying of Land down to Grass.*—There was an immense difference between enjoying the possession or occupancy of old grass land and taking steps to exchange old going tillage land into a similar condition. The reason was obvious. It required time to give to old sward its characteristic verdure, vigour, and thickness of cover. The new laid was at once known to the practised eye by its sparse vegetation, want of elasticity under foot, and upstart appearance. The first question he had to answer was: "Why is this difficulty met with? How is it that land cannot be made to grow abundant grass crops as certainly as it grows corn and Clover?" He would ask them to call to mind the appearance of an old piece of grass land which had been just ploughed up. They might picture it situated in a clay arable land district, and when they made the comparison they would be at once struck with the marked difference between the newly broken up land and that which had for years been under the plough. If they looked at the land which had previously been pasture and which had been recently broken up, a peculiar black colour, an absence of stones, a friability and lightness of texture, and a large admixture of organic matter would be at once observed in contradistinction to the brick-like furrow, yellow or red hue, and stony character of the arable furrow. This black, friable, stoneless character of newly broken-up grass land was the result of the long-continued action of two or three simple forces. In the first place, there was the decay of successive generations of grass roots, which left organic matter in the soil, and tended to render it friable. Then, in the second place, there were the untiring labours of the common earthworm, which, but for Mr. Darwin, would, perhaps, have remained unknown. The earthworm obtained its nourishment by passing earth through its body. After it had absorbed certain nutritive properties from the earth, it expelled what it had taken in the form of earth-casts. The consequence was a continual top-dressing of the land. Sometimes their grass land might take well for the first year or two, and then they, perhaps, languished, and it was years before they had that character of land which was known as old permanent pasture land. This threw some light upon the difficulty of laying down arable land to pasture. Arable land, after it had been worked by the plough for many years, was apt to become very tenacious; and if grass seeds were sown upon it, they could imagine what would be the result at first.

Then there was another difficulty connected with newly-laid grass land, and that was with regard to sowing the proper seeds. It was found that various grasses were suited to various localities; and, therefore, if they went to a London seedsman and got a mixture of grass seeds, and sowed those seeds into the land about to be turned into pasture, they would probably find that there were many grasses which were not suited to the locality in which they had been sown. They might then get an improper mixture of grass seed, and if they did the wrong varieties of grass would have to die out. But they might not only get an improper mixture, they might get seed of bad quality. He could not approve of that plan which had been sometimes recommended, viz., sowing the hay seeds of the neighbourhood. If they examined the Tables of the growth of grasses, in which the period of the ripening of various grasses in pastures was worked out, they would see that there was an immense difference in the time of ripening. Some grasses ripened as early as the beginning of May, while some were as late as August. How could they then expect to get hay seeds all cut at the same time in equal perfection. Some of them would be over-ripe, and some not ripened.

In the next place, with reference to the laying of land down to grass, he thought that they would agree with him that it was necessary that the land should be clean and in good condition. With reference to fertilising power, it must be clean. If it were laid down when it was full of Couch, they would find that these pernicious weeds would overpower the grasses. Then, as to the time of year at which it was best to sow the seeds. The beginning of the year was the usual time, say April; but of late years, Messrs. Lawson had recommended that grass seeds should be sown in autumn. He was unable to give an opinion, but eminent seedsmen had held that August was a better time than the spring. Then there was a very important question which arose, viz., whether they should sow their grass seeds with a crop or without a crop. He had come to the conclusion that the plan of sowing grass seeds with a crop was the one which would be most wisely and generally followed. He thought this was the best plan on the score of economy. If they sowed land without a crop, they would have to go to great expense, and if it were done by a tenant he should be assisted by the landlord. But whether the landlord or the tenant undertook the work, he thought it was important that there should be a crop. The crop, he thought, would act as a shelter to the seed, and any exhaustion from the crop might be replaced by a dressing of manure. He thought that, theoretically, laying down without a crop was the best, but the laying down with a crop was the most likely to reimburse the sower.

Now, with reference to the best methods of sowing grass seeds. He should assume, then, that they were sown in the month of April, and either upon Wheat or Barley. One point which they ought to remember was, the delicate nature of the seeds with which they had to do. Mr. Stirling, in experiments he made, had taken great pains to ascertain the depth at which these seeds would germinate. The experiments were made upon a fine mould, which was kept moist. It was found that the large majority of grass seeds germinated at a depth of one-quarter to half an inch; only half the seeds germinated when the depth was half an inch to an inch and one and a half inch; and if they examined the Tables giving the results of these experiments they would find that few, if any, of the seeds germinated when they were buried at a greater depth. When, therefore, they were sowing grass seeds it was necessary that they should see that the surface of the land was smooth and in good condition. He would suggest that the use of the Cambridge roller would be the best previous treatment in preparation for the sowing. Then they should sow with the broadcast barrow, and bush or chain harrow. If this course were taken the surface of the soil was rendered fine, and the grass seeds were not buried at too great a depth. He should take it that a good mixture was sown.

In the next place they had to think of the after treatment of the young grass seeds when the crop had been removed from the land. This subject was one which demanded a great deal of attention. He thought it would be advisable, especially in the case of land intended for permanent pasture, that they should not stock the young seeds after the corn crop had been removed. They knew it had been much disputed whether Clover or Rye-grass should be stocked in the autumn; but without entering upon this question, he thought with regard to pastures that they would be wise to keep stock off them for the first winter. It would be advisable to keep sheep out of the pastures for the first three or four years, and he would suggest that the grass should be mown rather than fed for the first season. He recommended that cattle should be kept off the young pastures, because it was important that the land should not be trodden down by the passage of animals upon it, and it was important that the grass should not be eaten, especially by sheep. The horned cattle were more advisable for the laid down land than sheep, because the latter would bite closer, and therefore, were more liable to destroy the young grass. After the third or fourth year they might be more careless as to the kind of stock which they placed in the field. One of the best supports to this theory was found in an article which was contributed by Mr. H. T. Thompson to the Agricultural Society some years ago. In laying down some land to pasture Mr. Thompson had been of opinion that sheep with the "golden" foot were the best animals to bring a young pasture into condition. The sheep were allowed to feed over the land with a liberal allowance of oilcake. This was carried on for two years, and then it was found that the land had deteriorated in quality, and Mr. Thompson came to the conclusion that sheep should be kept out, and that the land should be mown for the first and second years and manured to compensate for the loss. The reason of this was to allow for the development of leaf, stem, and roots, and to prevent the consolidation of the ground by the trampling of stock.

(2.) *The Improvement of Land which was already in a state of Permanent Pasture.*—Upon the point whether grass land should be broken up the landlord and tenant might have different opinions. The tenant having only a transient interest in the land might like to break up even his first-rate grass land, because he might think it would benefit him, but the landlord, looking further ahead, might be sorry to see such land broken up. But with reference to inferior grass land a good deal had been said about the propriety of breaking it up. As regarded clay land of inferior pasture, they knew that Tables could be constructed to show that it would yield much greater produce if it were arable. But increased produce was not the only thing they had to consider. He had no hesitation in saying that if the greater portion of clay land pastures of a poor kind had the capital expended upon them which would be expended in breaking them up, and applied in the form of manure they would be brought into a more remunerative condition than if they were broken up in arable land. With reference to the improvement of land which was already in pasture a good deal had been written, and, considering the importance of the subject, a great deal more might be written. At the same time, in examining the essays upon this subject, he could not but be struck with the fact that there was very little to be said about it. Mr. Cadle contributed a very able essay to the Journal of the Royal Agricultural Society upon the treatment of grass land. The simple expedients set forth in this essay were draining and liberal management. This was his opinion, and he hoped they would bear him out. It appeared to him that the apparent failure [of drainage] in grass land was simply due to the dying out of injurious grass. Drainage must, however, be supplemented by liberal treatment. The lecturer recommended a dressing of farmyard manure if it could be obtained. If this could not be obtained, guano or superphosphate would be a good substitute. He then referred to the result of the treatment of Mr. Ruck (Braydon Manor Farm). He had visited Mr. Ruck's farm, and could say that this treatment of the pasture lands had rendered them very much more valuable. The land on this farm was mole-drained, and not tile-drained. The land lay upon Oxford clay, and the mole-drain was used by means of Fowler's 12-horse engine, the whole process costing £1 per acre. That was cheap. Mr. Ruck then manured with Peruvian guano and superphosphate and lime. These dressings were applied in the years '62, '63, '64, and '65, to which was added a very valuable compost by deepening the ditches, &c. The consequence of this was a very great improvement in the grass land. It was rather difficult for him to point out the exact improvements, but he might mention that in 1864 the land was considered to be worth 30*s*. per acre, whereas the land was bought in 1862, 300 acres for £4000, or about £14 fee simple per acre. It appeared upon comparing the experience of many men with regard to the improvement of grass land that the idea that draining was prejudicial to grass land must be dismissed from their minds. Draining might be followed by a certain diminution in the grass, but if supplemented by manure they would find that it would be an improvement.

(3.) *The General Management and Manuring of Grass Land.*—One of the first points in connection with this part of his subject was the collection of the droppings of cattle. Sheep distributed their manure very equally over the land, but cattle frequently dropped their dung in one place, and thus the dung was wasted. More than this, it had a prejudicial effect; for the next year in those spots were the manure had been dropped there would be hassocks of coarse grass which nothing could touch. He thought, therefore, that they ought to collect the manure of cattle, make it into a compost, and then proceed to distribute it equally over the land. The next point was one of some importance, viz., the even eating of grass land. They should not allow the grass in any part of a field to run to seed. There was nothing which exhausted the land so much as to allow grass to run to seed or to get too ripe. The grass should be eaten evenly, and if the cattle would not eat it evenly it should be cut.

Then there was another point which was of some importance, viz., that once a-year, at midsummer, the grass ought to be eaten down bare. They ought not to stock land too early in the spring; if they did, they would find that the prospects of the whole season were injured. Stock ought to be changed from a worse to a better pasture; and in buying stock, it was necessary that they should consider the pasture which they came from. As to manuring, farmyard manure, when it could be obtained in sufficient quantity, would be, perhaps, the best for improving permanent pasture, but there would probably be difficulty in getting a sufficient quantity. The lecturer then referred to the experiments which Mr. Lawes had made at Rothamsted. There certain plots of land had been portioned out for the growth of grasses under different treatments. These experiments had been carried on for a long series of years, and proved that under certain treatment the germenacious or true grasses preponderated greatly, that under different treatment the leguminous (which included Clover) grasses were produced in greater quantity, thus demonstrating that some manures had the power of developing certain species of grass. After expressing an opinion in favour of the use of farmyard manure if it could be obtained in sufficient quantity, he referred to the use of bone manure as a means of improving grass land, observing that a few years ago a good deal of excitement was caused by the wonderful effect of bone manures upon the grass land in Cheshire and in other parts of England. They had a great effect, but they would not find that the application of bone manures, or superphosphates, was invariably attended with great improvement. The lecturer concluded his address by observing, that he hoped to hear the opinions of the practical agriculturists present upon the subject he had been speaking of.

DISCUSSION.

From the discussion which followed the reading of the above paper, we make the following brief extracts:—

Mr. MORDECAI JONES agreed with what the lecturer had said about Clover. He took a farm at Aberdare about nine years ago. Everything had been allowed to go to ruin. He tried superphosphate, and soon the land appeared all white. He was asked what he had been doing. Had he been sowing lime? "No," he replied; and he showed to his querist the beautiful white Dutch which had come up.

Mr. OVERTON said he could vouch for the astonishing benefit which had been conferred on the land referred to by Mr. Jones by the use of superphosphate. The land was situated in a most bleak position, but good crops of hay had been raised on it. Mr. Overton then referred to a case in which he had used superphosphate unsuccessfully, but said, perhaps his failure was the result of misapplication. He thought they should be cautious as to the time when they applied manure. If applied about the month of April they would be likely to get the showers which would serve to dilute and convey the beneficial qualities of the manure into the land. He must say that he felt a good deal of interest in the subject, because he agreed with the able observations of the gentlemen who had moved the vote of thanks, that the time had come when they must direct their attention to the raising of beef and mutton. The price of corn was so low that it was impossible for the farmer to grow it to advantage. In that neighbourhood they had a wonderfully good market for their meat, and the present prices were highly remunerative. They had a large mining district surrounding them, and it was important that agriculturists should turn their attention more to the growth of beef and mutton than to cereal crops.

Notices of Books.

Vere Foster's Drawing Copy Books. Marcus & Co., 67 and 68, Chandos Street, Covent Garden.

We are possibly indebted to the article on the contrast between the ideal and the real in the common portraits of prize animals, on p. 883, for the specimen which has been sent us by the publishers of one of their series of copy-books, in which natural objects, trees, animals, architecture, man, are presented as the copies by means of which facility in the use of pen and pencil are to be acquired. The figures of cattle given as copies in the example before us, numbered O8 of Mr. Foster's series, seem to us exaggerated in an artistic sense rather than natural. The West Highlander is fairly drawn; the Ayrshire and Shorthorn, of the same size, and giving the outlines of gaunt old cows, are unsatisfactory. Neither the Devon nor Hereford, though they are better, are exactly what one wants; and the Kerry exhibits the fault of being presented as of the same size as the others. Certainly the specimens do not exhibit the fault to which our article called attention, as characteristic of the drawings of prize animals—they do not exhibit pampered monsters, of sleek and rounded symmetry.

Farm Memoranda.

A SOUTH AMERICAN POULTRY FARM.—I propose to describe a poultry farm, where fowls are kept by the thousand, whose proprietor counts his gains therefrom proportionately. It is situated in the southern extremity of Chili, South America, where the rainy season, of six months' duration, is as detrimental to the well-being of all fowl kind as the rigours of our own winters, and where great care and skill is very essential to satisfactory results.

Senor Don San Fuentes commenced his operations in poultry with a stock of 200 hens and eight cocks, to which he has added thereto, by natural increase from year to year, until now he has somewhere in the vicinity of 6000. Their range is unlimited, as his farm covers 3000 cuadras, equal to 7500 acres. To every 50 hens and two cocks is given a house of their own, of which there are 600 or 700 on the place. These are placed 200 feet apart, each way, thus isolating one lot from the other.

These houses are very cheap affairs, and are made by erecting two forked posts, 8 feet long and distant from each other 15 feet. On these rests the ridge-pole. On both sides of the centre post, 10 feet distant, a trench is dug, a foot in depth. Then small poles are placed for rafters, one end in the trench and the other tied to the ridge-pole, 2 feet apart, then another set of poles tied crossways, also 2 feet equidistant, and the framework is complete. This is covered over with thatch, which is found in plentiful abundance, and to be had for the cutting. The only framework about the house are the doors at the ends, both of which are 4 by 6, and contain each a window, pivoted in the centre of the sash, to be opened or shut as the requirements of ventilation demand. Each house has its complement of 20 boxes for laying placed under the eaves, and partly concealed by bundles of straw.

Near the family residence is a large building, devoted to the storing of grain and eggs; nursery for sick hens, a long room for hatching, and another for slaughtering purposes. In the sick room is arranged a series of boxes, each one large enough for the comfort and convenience of its solitary occupant, who is there placed, and treated for its malady with as much care as if its value was dollars instead of cents, and with such skill, that the ratio of deaths has been 1 in 280.

The sitting department is also provided with boxes, some 300 in number. Here all are brought from their respective coops as soon as their incubating propensity shows itself, and placed upon their quota of eggs. Food, water, and a large supply of sand and ashes, areprovided, and the sitting hen not allowed to leave the room until she takes her young brood with her.

The clutches are then "doubled up," that is, two broods to one hen, and the chickenless one sent back to her coop to resume her egg-laying. As soon as the young chicks are discarded by their mother they are taken to their future home, fifty in each lot, and the old ones back to their respective localities.

The fowls are fed three times per day, and their diet so arranged as to always present a variety, although Oats is their staple article of food, and always before them in unlimited quantity. To-day it will be Indian meal, made into a stiff dough, and given hot; to-morrow, Barley; next day, boiled Potatos mashed and mixed with pork scraps and bran, corn broken in a coarse mill, and so on in rotation; adding from time to time horse-flesh, or some other cheap and inexpensive animal food. Burned bones, pounded shells, and lime are supplied in profusion. These, with what they gather on their foraging expeditions, produce a wonderful supply of eggs.

During the rainy season they are not allowed to leave the coop, except the day be exceedingly pleasant, and then only for a short time. They appear to bear their confinement remarkably well, and with hardly any decrease in the quantity of eggs. While confined they are allowed an extra allowance of animal food.

The attendants requisite to the care of these 6000 fowls are one man and four boys. The houses are thoroughly cleaned once a week, and the interiors whitewashed every three months. Every morning each lot of fowls undergoes a careful inspection, and any one found moping or otherwise indisposed is immediately taken to the hospital, and cared for; and seldom is it but what the indisposition is cured, and she takes her place back again as well as ever. At evening the boys go the rounds to gather up the proceeds of the day's labours, which will average 200 dozen per day, the year through.

"Killing time" takes place twice during the year—in the spring, and again at the commencement of the rainy season. All the early chickens are thus disposed of at a good price, and the 2-year-old fowls decapitated to give room for the younger broods, as they are supposed to be past profitable service after the second year.

The profits from one year's business amounted to 11,000 dollars. The sales were 72,000 dozen of eggs, and nearly 20,000 chickens and 2-year-olds. Mr. San Fuentes expresses himself as being perfectly satisfied with the result obtained, and intends to double his stock each year, until every 200 feet of his extensive farm has its house of 50 tenants. *G. F. Pearce, of Freetown, Mass., in the "People's Practical Poultry Book," recently published by D. D. T. Moore, New York.*

Obituary.

WE sincerely regret to announce the death of SIR THOMAS DYKE ACLAND, Bart, one of the original members of the Royal Agricultural Society of England, whose bright eye and hearty manner we recollect so well at the first meeting of the Society at Oxford, where he was aspeaker at the banquet in one of the College squares.

Sir Thomas Acland had considerably passed his 80th year, having been born on March 29, 1787. He was the eldest son of the late Sir Thomas Dyke Acland, the 9th baronet, by Henrietta Anne, only daughter of Sir Richard Hoare, of Stonehead, Wilts, and sister of Sir Richard Colt Hoare, the celebrated Wiltshire antiquary. Her husband dying in 1794, her son, the subject of these remarks, succeeded to the title and family estates when still quite a child; and the mother married as her second husband the Hon. Matthew Fortescue, Captain R.N., brother of Hugh, Earl Fortescue, and died in 1841. At an early age young Acland was sent to Harrow, where he was three years junior to Lord Palmerston and Lord Ripon, and about a year senior to the late Sir Robert Peel, to whom through life he was personally attached. From Harrow he proceeded to Christ Church, Oxford, where he took his Bachelor's degree in 1808, and proceeded M.A. in 1814. In 1812 he had entered Parliament in the Tory interest as one of the members for Devon, and being again returned at the general elections of 1820, 1826, and 1830, he managed to divide the representation of that important county with his Liberal antagonist, but personal friend and connection, Lord Ebrington (afterwards Earl Fortescue), whose career in the House of Commons ran very much parallel to his own. He retired for a time from Parliament in 1831. He was re-chosen after the dissolution of July, 1837, as member for North Devon, Lord Ebrington being his colleague, as he had been before the county was divided by the first Reform Bill; and he continued to enjoy his seat without interruption down to the year 1857, when he retired from public life. After that date he lived quietly at his country seat of Killerton, near Exeter, occupying himself with agricultural improvements and the duties of a resident magistrate and gentleman. Sir Thomas was created an honorary D.C.L. of Oxford, in 1831, and was for many years a deputy-lieutenant for Devonshire. He also enjoyed the patronage of several livings. By his late wife, Lydia Elizabeth, daughter of the late Mr. Henry Hoare, of Mitchamgrove, Surrey, he had a large family—two daughters and seven sons; and he is succeeded in his title and estates by his eldest son, Mr. Thomas Dyke Acland, M.P. for North Devon, and formerly for West Somersetshire, who now becomes 11th baronet. He was born in 1809, and was formerly Fellow of All Souls' College, Oxford, having taken his degree at Christ Church as a "Double First" class. He has been twice married; firstly, in 1841, to Mary, daughter of the late Sir Charles Mordaunt, of Walton, county Warwick, who died in 1851; and secondly, in 1856, to Mary, daughter of Mr. John Erskine. The family of Acland, according to Sir Bernard Burke, is of great antiquity in Devonshire, tracing its pedigree through 23 generations of unbroken descent, from Hugh de Aclen or de Accalen, who held lands at Accalen, in the parish of Landkey, Devon, as early as the middle of the 12th century. John Acland, his descendant, maintained the Royal cause in Devon with great zeal and ability, and, according to Lord Clarendon, his force was at one time the only one left to the unfortunate Charles throughout the county of Devon. He was created a baronet in 1644-45; but, the original patent having been lost in the Civil Wars, he obtained in 1677 a re-grant of his title, with a special clause granting him precedence from the former date. From him the baronet just deceased was sixth in direct descent.

Miscellaneous.

NUTRITION OF THE RUMINANTS.—I must now say a few words respecting the manner in which this highly distinctive ruminating function is accomplished. An ox grazes with its head swinging, as it were, easily, and crops the grass with each motion; the sheep grazing in the same way. The head of an ox is supported in this swinging action by a large ligament attached to the vertebral processes, and also to the occiput, enabling the animal to move its head without the slightest strain or effort. Not having any incisor teeth in the upper jaw, nor any canines, their place is supplied by a very firm, callous pad. You would think it inconvenient, perhaps, to have to crop the grass without any upper teeth; but their place being thus supplied by a hard pad, and the incisor teeth being at the same time arranged in a continuous and even series, whilst the canines are also pushed forward in such a way as to increase the breadth of that cutting surface, the act of grazing is thus carried on with the utmost ease and the least possible expenditure of muscular energy. The grass, therefore, is not bitten off, as it would be by other animals, rodents for instance, but it is simply pressed against the pad, and, the weight of the head being carried forward, the grass is merely nipped off, so to speak. This food, being thus received into the mouth in the raw condition, is rapidly carried down, in the form of pellets or boluses, until it arrives at the lower part of the œsophagus. When it has arrived there, it next passes into the great paunch or macerating tub, where it remains for a considerable time. It is acted upon by the secretions from the interior lining of this large cavity, and after it has become pretty well distended, the animal drinks, part of the water passing into the second stomachal cavity. The remainder enters this great macerating tub, and by-and-by, when the animal is resting, and generally lying down, successive portions of this raw material are transferred to the reticulum or water bag; and there, being rendered much more moist, these portions are, by what we call a reversed peristaltic action, carried upwards along the gullet until they again arrive at the mouth. Here they undergo the process of remastication. This is technically termed, as you know, chewing the cud. Now, animals do not all chew the cud exactly after the same fashion; ordinary ruminants moving the jaw from right to left, or from left to right, and that goes on continuously for a time, perhaps for the whole day. Whichever way the motion is originally transmitted, it remains for a considerable time in that direction. But some of the animals, instead of chewing the cud in this continuous way, alternate the action of the jaws, making a single movement first in one direction and then in another. This method occurs in the camel tribe. When the bolus has been remasticated, and is nicely soft, it goes down again; but this time, instead of going into the stomach, there is an excito-motary agent, so to speak (acting like an intelligent person), placed at the common opening of the stomachs, to direct it where it should go, and instead of passing into the first or second stomach, it takes a turn in the other direction, and is transferred to the third stomach. How does it perform this feat? There is a most beautiful mechanism expressly constructed for that purpose; yet not arbitrarily formed, but differentiated or evolved by a process of development. There is, in short, a little canal, which is half closed and half open; and this so-called demi-canal, instructed, as it were, by certain reflex sensations, acts in such a manner as to ensure the passage of the bolus into the third stomach. In other words, it closes the lips of the orifices leading into the first and second stomachs. That is, I repeat, a most beautiful illustration of adaptation to a useful purpose. When the bolus has gained access to the third cavity, it is further acted upon by certain juices there secreted, and eventually passes into the fourth stomach, where, by the secretion of the ordinary gastric juice (and by the aid of other remarkable arrangements, into which we cannot now enter) it is finally reduced to such a condition as to be allowed to pass into the alimentary canal. Here the food is assimilated, being taken up by the lacteals, whence it passes to nourish the animal; and eventually, it may be added, to nourish ourselves. However, in this legitimate desire on our part to nourish ourselves at the expense of the ox we have formidable competitors, in the shape of those little animals called entozoa, which are also on the look-out to get hold of the nourishment that we think we alone ought to have. In concluding this portion of my subject, let me remark that there are many other structural features of great importance; but I do not propose to trouble you at further length with such details as belong rather to zoology or comparative anatomy than to the special object proposed in the delivery of these lectures. I may, perhaps, on a future occasion, have to point out one or two peculiarities in connection with the camels; but, in the meantime, I will only ask you to bear in mind the enormous length of the alimentary canal in the ruminants. It is twelve times the length of the animal itself in the camel and in the deer tribe; it is 22 times the length of the ox, and 28 times the length of the sheep. It is over 130 feet long in the giraffe. Having dissected three of these animals, I can speak with some confidence as to their remarkable anatomical peculiarities. *Dr. Spencer Cobbold's first lecture before the Society of Arts on the Bovine Ruminants, especially in relation to the Operations of Parasites.*

The Week's Work.

JULY 29.—*Odd Jobs* bring up. To these reference was made at the commencement of hay harvest (June 17), we now bring up some working details.

Winter Beans, in our southern provinces, are generally harvested this month. In Scotland and the north of England the crop is, for the most part, spring-sown, and, therefore, later, harvest seldom taking place before September and October. The crop is sometimes pulled, but more commonly cut low with the scythe or bagging-hook, and either left in small parcels, or in the swathe, until fit for being bound up into sheaves. Beans stand wet weather better before cut than after, and therefore, in prospect of a rain, the crop should be allowed to stand until the weather breaks up, as it will be sooner in the stack-yard the one way than the other. Some allow late crops to stand till fit for stacking, so that when cut or pulled, it is carried immediately and thatched; others tie up and stack the newly cut crop. But for July harvesting, under a southern sun, neither of those plans answer unless in exceptional seasons, for if allowed to stand on its foot in roasting weather, the haulm, which makes excellent fodder, will be wasted, and if tied up into sheaves green, the outsides will be burnt to snuff before the inside is fit for the stack. The more common plan is, therefore, to leave the sheaves open and spread out, turn to prevent scorching, and then bind up when ready for carrying. At the same time, in moist weather, something may be learned from the northern practice.

Ashes for mixing with artificial manures should be in store before corn harvest. If the work has not already been finished, no time should be lost in getting the requisite supply into store. Now that artificial manures are used for growing stubble Turnips, and for almost all crops onwards to next harvest, it follows that a suitable supply of ashes should be in store before corn harvest commences. When old pastures have been pared and burned, ashes may be obtained from this source, otherwise the roadsides, cleanings of rivers and ditches, and the accumulation of vegetable mould or headlands must suit the supply to the demand.

Artificial Warping, where there is a command of water, and, of course, warping materials, may be more profitably done at this season than at any other in many instances. Thus meadow hay and Rye-grass stubble, poor pastures, Bean, Pea, and Vetch stubble, poor sandy and gravelly land, or fenny land about to be laid down to permanent pasture, or about to be broken up from pasture to arable husbandry, may have any desired depth of clay or other warping material spread evenly over them by means of water. In most if not all these examples the water required to convey the warp will sink into the soil, thus leaving the warp on the surface, which mixed with the bottom, by means of the plough, will form a new soil. Practically apply the warp no faster than the soil drinks in the water to the drainage, whether the drainage is natural or artificial. Applied to burnt up, peaty, or poor sandy pastures, the warp, as soon as dry, may be chain-harrowed in, and renovating grasses sown to suit the change of soil, artificial manure being applied as the case may require. Warp applied to the stubbles of corn, pulse, and forage crops will produce equally favourable results. And in all these examples it must be observed that the water which conveys the warp supplies at this season food directly to plants which it does not do in the winter time, and that this peculiar difference turns the balance in favour of warping at this season.

Sewage Farms yield, during July, from 10 to 12 tons of Italian Rye-grass per acre, *i.e.*, a 31 acre field yields 12 tons daily for live stock. Mangels, Cabbages, &c., grow equally fast—results which cannot fail, sooner or later, of convincing farmers of their practical value; and more than this, for the present month is a favourable one for laying down land, the moment hay and corn crops are removed, for irrigation, either with town sewage or doctored river water.

Sundries.—Collect materials for the drainage of land immediately after harvest; also for new roads, rendered necessary by the straightening of fences and the enlargement of fields for steam culture. Carting can be done much better now than in the winter time. Examine the homesteads and labourers' cottages, and see that roofs, walls, doors, windows, stable fittings, cattle-stalls, boxes, tillage and barn implements, &c., are as they should be. July is a favourable time for cleaning out the mill-dam and watercourses when the threshing-machine is driven by water.

Live Stock, including all kinds, require special attention this month, health being more or less affected by changes of temperature, bad smells, improper food and drink, and so on. The patience of the dairymaid is sorely tasked at times, and the cause of the bad cream, butter, and cheese—due to the exposure of the milch cows to scorching suns, gad-flies, roast meat, and dirty water—is often very unfairly laid to her milking-pail and dairy utensils. And when the cows are brought home during mid-day, badly ventilated cow-houses are just as injurious to the milk as badly ventilated milk-rooms. Heat from the roof intercepts through currents, and down draughts, produced by the unequal heat of the sun on the opposite sides of the building, are easily obviated; and spreading dry earth over the litter and droppings will neutralise bad smells—on the principle of Moule's earth closet. Give newly weaned calves and lambs the best pastures, and see that they have plenty of shade from the sun and pure water to drink.

Scab, Lice and Ticks in sheep indicate a filthy state of the wool and skin; washing, therefore, so as to clean the wool and skin, is a rule as applicable to the flock as to the shepherd and his family. Put the sheep through Gwynne's washing cage, as they do in Australia, both before and after clipping; *i.e.*, frequent ablutions are necessary to keep sheep clean at this season.

The Fly is due to the same attractive cause—an unhealthy state of the skin, and may be obviated far more successfully by washing than by all the poisonous nostrums now in use. *W. B.*

Notices to Correspondents.

PIGS WITH WORMS: *A 21 Years' Reader.* It is unusual for pigs to suffer much inconvenience from intestinal worms. The parasites which infest the bronchial tubes are very injurious, and it is not unlikely that your pigs have them. Send some specimens of the worms in a little whiskey to Prof. G. T. Brown, 3, Princes Street, Westminster, and meanwhile give the animals five to ten grains of powdered Areca-nut every other day, in the food.

TURNIP SEED: *T. F.* We regret very much the delay of a week in answering your letter. We should not think it safe for the purity of the seed that Swedish Turnips, Kohl Rabi, and Rape be grown and seeded in the same field.

Markets.

METROPOLITAN CATTLE MARKET.

MONDAY, July 24.

The supply of Beasts is shorter than last week, and we have a brisk demand, consequently prices have advanced on all descriptions. The number of Sheep is nearly the same as last week, but very small for the time of year; they are all readily disposed of at higher rates. Choice Lambs and Calves are rather dearer. Our foreign supply consists of 1630 Beasts, 10,900 Sheep, 437 Calves, and 75 Pigs; from Scotland there are 25 Beasts; from Ireland, 150; from Norfolk and Suffolk, 280; and 1045 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	6 0to6 4	Best Long-wools	.. to ..
Best Shorthorns ..	5 8—6 0	Do. Shorn ..	6 2—6 6
2d quality, Beasts	4 0—5 0	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do. Shorn ..	5 4—5 8
		Lambs	6 8—7 10
		Calves	4 0—6 0
Do. Shorn ..	6 6—6 10	Pigs	3 4—5 0

Beasts, 3130; Sheep and Lambs, 21,525; Calves, 466; Pigs, 190.

THURSDAY, July 27.

We have a considerable increase in the supply of English Beasts, the number of foreign is rather less than last week. Trade on the average is not so good, and a clearance is scarcely effected. The number of Sheep is larger than last Thursday, the excess being entirely in foreign; trade throughout was not so active as on Monday, and lower prices were submitted to towards the close of the market. Lambs and Calves are selling about the same as on Monday. Our foreign supply consists of 370 Beasts, 6500 Sheep, 666 Calves, and 20 Pigs.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 10to6 2	Best Long-wools	.. — ..
Best Shorthorns ..	5 6—5 10	Do. Shorn ..	6 0—6 4
2d quality Beasts	3 8—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do Shorn ..	5 2—5 6
		Lambs	6 8—7 10
		Calves	4 0—6 0
Do. Shorn ..	6 6—6 8	Pigs	3 4—5 0

Beasts, 1410; Sheep and Lambs, 15,290; Calves, 811; Pigs, 30.

METROPOLITAN MEAT MARKET, July 27.

Best Fresh Butter	16*s.* per dozen lb.
Second do. do.	14*s.* ,,

Small Pork, 4*s.* 8*d.* to 5*s.* 0*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

English Wool still continues its upward course. The advance is not very rapid, but each week some small improvement is established, and apparently this is likely to be the case for some time, as everything points to a permanently higher range of prices than we have known for the last five or six years.

HAY.—Per Load of 36 *Trusses.*

SMITHFIELD, Thursday, July 27.

Prime Meadow Hay,	140*s.* to	150*s.*	Clover, old ..	..160*s.*	168*s.*
Inferior do. ..	..100	120	Inferior do. ..	..110	130
New Hay ..	..100	110	Prime new do.	..130	140
Inferior do. ..	.. 36	70	Inferior do. ..	.. 80	100
Straw	.. 50	60			

CUMBERLAND MARKET, Thursday, July 27.

Sup. Meadow Hay	160*s.* to	170*s.*	Inferior Clover	..140*s.* to	150*s.*
Inferior do. ..	..130	147	Prime 2d cut do. ..	—	—
New do.	.. 70	120	New do. ..	.. 90	130
Inferior do. ..	.. —	—	Straw	.. 52	60
Superior Clover	..168	178			

JOSHUA BAKER.

MARK LANE.

MONDAY, July 24.

There were very few samples of English Wheat at this morning's market, and they were disposed of at the prices of this day week. The attendance was good, and there was a moderate demand for foreign Wheat at about last week's rates, excepting for Russian, which was fully 1*s.* per qr. cheaper. Barley, Beans, and Peas were unchanged in value. For Oats there was a fair inquiry, at a decline of 6*d.* per qr. upon the prices of last Monday. Flour was unaltered.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk . . White	47—60	Red......	55—60
— fine selected runs ....do.	57—63	Red......	56—62
— Talavera	60—66		
— Norfolk	—	Red......	—
— Foreign	50—68		
BARLEY, grind. & dist., 30*s* to 34*s* . . Chev.	43—46	Malting . .	36—41
— Foreign . . grinding and distilling	29—33	Malting . .	35—43
OATS, Essex and Suffolk	26—28		
— Scotch and Lincolnshire . . Potato	28—30	Feed	—
— Irish ....Potato	27—29	Feed	25—28
— Foreign ......Poland and Brew	23 26	Feed	20—23
RYE	34—36	Foreign . .	33—36
RYE-MEAL, Foreign..................			
BEANS, Mazagan.... 37*s.* to 47*s.*. . Tick	49—50	Harrow . .	49—50
— Pigeon ....51*s.* to 59*s.*. . Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian .	33—34
PEAS, White, Essex, and Kent . . Boilers	38—40	Suffolk . .	40—42
— Maple, 40*s.* to 44*s.* ....Grey	36—40	Foreign . .	36—40
MAIZE	—	Foreign . .	33—36
FLOUR, best marks, delivered . . per sack	42—50		
— 2d ditto ....ditto	36—42	Country . .	36—42
— Foreign ....per barrel	25—29	Per sack . .	38—60

WEDNESDAY, July 26.

The anticipation of a wet harvest imparted a firmer tone to the Corn Exchange to-day, previous rates being more easily realised. There were limited supplies of English Wheat on sale, but from abroad a large quantity was sent forward; trade was not active, but prices were maintained. Barley, the supplies of which were moderate, experienced a quiet sale, at recent values. Malt was dull, but not quotably lower. The supplies of Oats were liberal, the demand was rather more active, and prices were supported. Beans and Peas were in slow request, at previous currencies. Flour was quiet, except American barrels, which being in demand for the Continent, were slightly firmer.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch . .	220	—	—	—
Irish . .	—	—	—	—
Foreign . .	43,290	9720	42,260	— 4570 brls.
	43,510	9720	42,260	

LIVERPOOL, July 25.—There was a more numerous attendance than usual, a good many millers appearing from the interior counties, and a healthy demand was experienced for Wheat, the decline noted on Friday being nearly recovered, and prices standing about the same as on Tuesday last. Flour did not move freely, but maintained the rates of this day week. Beans, with an increased quantity offering, declined 2*s.* per qr. for Egyptian. Peas unchanged. Oats and Oatmeal barely sustained late rates. For American Indian Corn there was a good sale, at an improvement of 3*d.* per qr. on the week.

AVERAGES.

	Wheat.	Barley.	Oats.
June 17	59*s* 7*d*	35*s* 11*d*	26*s* 10*d*
— 24	59 11	36 10	27 8
July 1	59 1	36 10	27 5
— 8	59 0	34 10	27 1
— 15	58 6	34 7	27 10
— 22	58 10	35 11	27 2
Average . .	59 2	35 10	27 3

SEED MARKET.

The last few days has been less favourable for the maturing and harvesting of seeds, which has had a hardening effect upon prices. We have had a considerable quantity of new Trifolium incarnatum on offer, which has lowered prices 4*s.* to 5*s.* per cwt.; also a few samples of fine new Rape, which sells readily at about 20*s.* per qr. less than the old realised. Red and white Clover, hardly any in offer, and with Trefoil held for a further advance of 2*s.* to 3*s.* per cwt. Canary, 2*s.* per qr. dearer. Hemp unchanged. In other articles no alteration.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

HOPS.

BOROUGH MARKET, July 26.

Messrs. Pattenden & Smith report a firm and steady trade for Hops of all descriptions. Choice samples are scarce, and command higher prices. The plantation accounts are of a very unsatisfactory character; vermin follow up the young shoots, which are very weakly from the exhausted state of the plant.

COALS.—June 26.

West Hartley, 18*s.*; Walls End Thrislington, 16*s.* 9*d.*; Walls End Hetton, 18*s.* 6*d.*; Walls End Hetton Lyons, 16*s.* 3*d.*; Walls End Heugh Hall, 17*s.* 3*d.*; Walls End Original Hartlepool, 18*s.* 6*d.*; Walls End South Kelloe, 17*s.* 3*d.*—Ships at market, 17; sold, 13; unsold, 4; at sea, 15.

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Catalogues free.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

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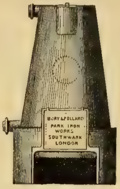

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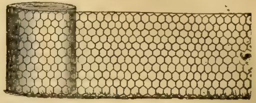
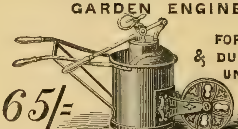


PRICES PER LINEAL YARD, 24 INCHES HIGH.

Mesh.	Mostly used for	No. 19.	No. 18.	No. 17.	No. 16.
2 inch	Dogs or Poultry	3¾*d.*	4½*d*	5¾*d.*	7*d.*
1⅝ inch	Small Rabbits, Hares, &c.	4¼*d.*	5¼*d.*	6¼*d.*	8*d.*
1½ inch	Smallest Rabbits . .	5¼*d.*	6¼*d.*	8*d.*	10*d.*
	Pheasantries, Small Birds, &c.	10*d.*	1*s* ½0*d*	1*s.* 4*d*	1*s.* 10*d.*

J. B. BROWN AND CO., 90, Cannon Street, London, E.C.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.
PROTECTION AGAINST FROST.
WOOL NETTING, 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."
Two yards wide . . . . 1*s.* 9*d.* per yard.
Three yards wide . . . . 2*s.* 8*d* per yard.
Four yards wide . . . . 3*s.* 6*d.* per yard.
SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.
ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.
NOTICE.—Removed from 7, Great Trinity Lane.



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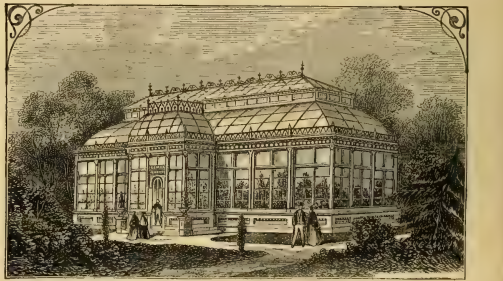
VASES AND FOUNTAINS FOR THE GARDEN AND CONSERVATORY.

ILLUSTRATED CATALOGUE, containing Prices and full information concerning FOUNTAINS and VASES, and with 30 large Pages of beautifully Lithographed Designs, Post Free for 12 stamps, which will be allowed if an Order is given.
ANDREW HANDYSIDE AND CO.,
Britannia Works, Derby;
LONDON OFFICE:—32, WALBROOK.

ST. PANCRAS IRON-WORK COMPANY.



CONSERVATORIES, GREENHOUSES, &c.
ARCHITECTS' DESIGNS CAREFULLY CARRIED OUT.
APPLY FOR ESTIMATES TO
OLD SAINT PANCRAS ROAD, LONDON, N.W.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

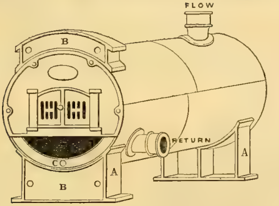
Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars. They are now in use, amongst other places, at—

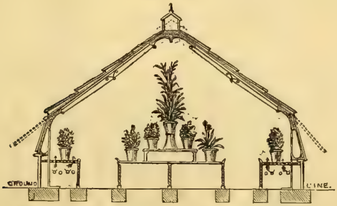
TRENTHAM GARDENS,
MESSRS. VEITCH AND SONS' NURSERY, CHELSEA,
COMBE ABBEY GARDENS,
INGESTRE HALL GARDENS,
HUNTROYDE PARK GARDENS,
ATHERSTONE GRAPERY (MR. SAGE).

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING COMPANY, LIMITED, FENTON, STOKE-ON-TRENT.

LONDON AGENTS—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

BY ROYAL LETTERS PATENT.



THE MOST PERFECT HORTICULTURAL STRUCTURE IS THE

IMPERISHABLE HOTHOUSE,

Perfectly portable, formed of Glass, Iron and Concrete. No Masonry, no Brickwork, no Putty, and little Paint.

Manufactured under the Patent of Mr. W. P. AYRES by the IMPERISHABLE HOTHOUSE COMPANY,

NEWARK-UPON-TRENT, NOTTINGHAMSHIRE.

The Company are now in a position to execute orders to any extent, for Plant and Forcing Houses of all descriptions, Railway Stations, Market Halls, Workshops, and Glass Roofs of all kinds.

A BOOK of DESIGNS, with explanatory particulars, will be forwarded in exchange for six stamps, and Special Designs and Estimates will be supplied when required. HEATING by HOT WATER upon the most approved principles. Noblemen or Gentlemen waited upon in any part of the country.

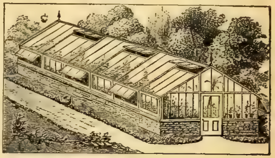
MANAGER—WM. P. AYRES,
FOREST ROAD WEST, NOTTINGHAM.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

6, Bankside, Southwark, London, S.E.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

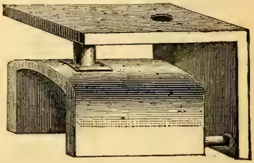
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
" " glazed, 16-oz. good sheet glass	6s. "
6 ft. " " 2 in. thick, unglazed	5s. "
" " glazed, 16 oz. good sheet glass ..	11s. "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. "
Portable box containing two ditto, 6 ft. by 8 ft.	55s. "

Estimates given for Conservatories or Greenhouses to any Design.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.

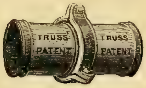


These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 "	18 "	24 "	450	6 0 0
20 "	18 "	30 "	600	7 0 0
24 "	24 "	24 "	700	8 0 0
24 "	24 "	30 "	850	10 0 0
24 "	24 "	36 "	1,000	12 0 0
24 "	24 "	48 "	1,400	15 0 0
28 "	28 "	60 "	1,800	20 0 0
30 "	30 "	72 "	2,600	30 0 0
36 "	36 "	96 "	4,500	50 0 0
48 "	48 "	108 "	7,000	75 0 0
48 "	48 "	144 "	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

HOT-WATER APPARATUS

erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

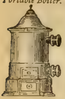
GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

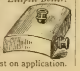
CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.



Portable Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.



Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

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Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

THE STEAM-ENGINE TRIALS
OF THE
ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz.:—
First Prize for Horizontal Fixed Engine of 10 H.P.; First Prize for Steam Engine, with Boiler combined.

At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel **Beater Plates,** and all other recent improvements.

GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

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JOHN WARNER & SONS, HYDRAULIC ENGINEERS,

Bell and Brass Founders to Her Majesty, Manufacturers of Hydraulic Machinery of every description, Wind Engines, Water Wheels, Water Rams, Deep Well Pumps and Frames for Horse or Hand Power, Garden Engines, Swing Barrows, &c., &c. Branch Pipes for Rubber Hose, with Jet and Spreader, or with Haswell's Patent Director, from 3s. 6d. Syringes from 5s., or, fitted with Haswell's Director, 12s. 6d. Lists sent on application.

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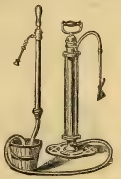
LONDON, E.C.

FOUNTAIN JETS,
In great variety, from 3*s.* 6*d.*

No. 547A.
GARDEN ENGINE.

12 Gallons	..	£3	0	0
16 ,,	..	3	16	0
24 ,,	..	5	1	0
30 ,,	..	5	13	0



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AQUAJECT.
Useful for every variety of purpose—in watering or washing Flowers or Trees in Gardens, Conservatories, &c.; also for washing Carriages or Windows, laying Dust, &c.

Price complete	£1	8	0
Small size for the hand, as an ordinary Syringe ..	0	15	0

THE CRYSTAL PALACE
GARDEN or FIRE ENGINE.

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CAST-IRON PUMPS.

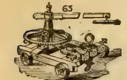
2½ inches	..	£1	9	0
3 ,,	..	1	18	0
3½ ,,	..	2	7	0
4 ,,	..	2	15	6

No. 42.
PORTABLE PUMP,
With improved Valves for Liquid Manure, £2 16*s.* 6*d.* Two-inch Flexible Rubber Suction Pipe, in 10, 12, and 15 feet lengths, per foot 2*s.* 5*d.*

No. 579½.—SWING
WATER BARROW.

Galls.				Galls.			
20	£2	2	0	38	£3	18	0
30	2	14	0	50	5	14	0

S. OWENS & CO.,
HYDRAULIC ENGINEERS,
WHITEFRIARS STREET, LONDON, E.C.



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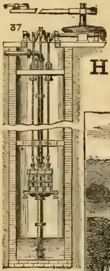

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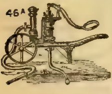

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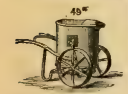

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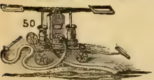

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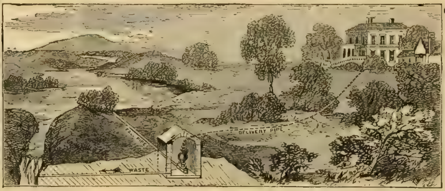

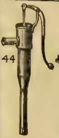

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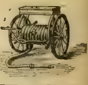

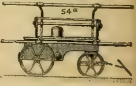

54a

THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

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No. 49. GARDEN ENGINES, of all sizes, in Oak or Galvanized Iron Tubs.
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No. 4. CAST-IRON GARDEN, YARD, or STABLE PUMPS.
No. 39*b*. IMPROVED HOSE REELS for Coiling up Long Lengths of Hose for Garden use.

S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GAS WORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c. *Particulars taken in any part of the Country. Plans and Estimates furnished.*

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THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO., who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

SLATE, for Gardening and Agricultural Purposes, &c. GARDEN BOXES, not liable to rot, and can be made of any size Pricesf rom 16*s*. 6*d*. [Prices from 35*s*

MANGERS, easily kept clean, non-absorbent, and not liable to rust.

GARDEN STEPS and PAVING, unsusceptible of vegetation.

DUST BINS, clean, take up little space, and do not decay.

CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.

ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.

CONSERVATORY and ORCHARD-HOUSE GLASS.

Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz
Fourth quality	15*s*. 0*d*.	19*s*. 6*d*.
Third quality	16*s*. 0*d*.	22*s*. 6*d*.
Seconds	18*s*. 6*d*.	26*s*. 0*d*.
English	20*s*. 0*d*.	27*s*. 0*d*.

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.

Stock sizes, 16-oz., in 100 feet boxes, boxes included.

These prices only apply to the sizes stated.

				4ths.	3rds.	2nds.
				s. d.	*s. d.*	*s. d.*
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..	16 to 17 oz. to the foot.		
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	12*s*. 6*d*.
by 6	8½ by 6⅜	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	13*s*. 6*d*.

Boxes 2*s*. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without, E.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100*s*.; Petersburg, 60*s*. and 80*s*.; superior close Mat, 45*s*., 50*s*., and 55*s*.; packing Mats, 20*s*., 30*s*., and 35*s*. per 100; and every other description of Mats at equally low prices, at

J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.

4-4 Scrim, from 2*d*. to 5*d*. per yard, advancing ¼*d*.

54-inch Hessian and Scrim, 3*d*., 3½*d*., 4*d*., 4½*d*. and 5½*d*.

72 " " " 4½*d*., 5½*d*., 6*d*., 6½*d*., and upwards

J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

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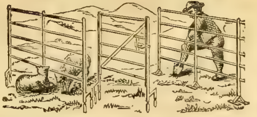

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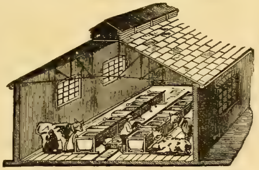

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April 14, 1871. **MANLEY HALL,** Manchester.

Gentlemen,—In reply to your letter, I have pleasure in stating that the works executed by your Firm, extending over the last nine years, have proved in all respects satisfactory. During the late severe winter the Boilers have acted efficiently and to my entire satisfaction.

I am, Gentlemen, yours faithfully, SAM MENDEL.

ZOOLOGICAL SOCIETY'S GARDENS,

April 12, 1871. Regent's Park, London, N.W.

Gentlemen,—I have much pleasure in adding my testimony in favour of Weeks's Patent Duplex Boiler. It does its work well and satisfactorily, being both economical in fuel and labour, and, in my opinion, cannot be surpassed in heating power, the late severe season having fully tested its capabilities. I may add that the amount of 4-inch piping heated by this one boiler is about 4600 feet.

WM. PASFIELD, Clerk of Works.

GOODWOOD,

April 4, 1871. Chichester, Sussex.

Gentlemen,—My opinion of your Upright Tubular Boiler remains unaltered, as I have never seen anything to equal it during my experience in gardening. Our new works have given the greatest satisfaction.

I remain, Gentlemen, faithfully yours, GEO. CAMERON,
Gardener to His Grace the Duke of Richmond.

CASTLE GARDENS,

April 6, 1871. Cardiff.

Gentlemen,—I have much pleasure in stating that the Upright Tubular Boiler and Heating Apparatus supplied by you here has in every respect perfectly answered my expectations.

Respectfully yours,
EDWARD N. COX, Gardener to the Marquis of Bute.

KITCHEN GARDENS,

May 9, 1871. Burghley.

The Upright Tubular Boilers set here two years back continue to meet my entire approval. One Boiler is doing the work which usually took *ten*. I have worked these Boilers *sixteen years* in many parts of England, always finding them there when wanted. I may add, if honours and medals were given to Hot-Water Apparatus manufacturers, John Weeks's breast would be covered with distinction.

R. GILBERT,
Head Gardener to the Most Noble the Marquis Exeter, of Burghley.

THE GARDENS,

April 12, 1871. Wilton House.

Gentlemen,—It is now ten years since your Upright Tubular Boiler was fixed here, and it gives me great pleasure to be able to say that during that time it has not cost a farthing in alterations or repairs. We have 5000 feet of piping attached to it, which heats 15 early forcing-houses and plant stoves. I find no difficulty in burning any kind of fuel in it, having used nothing but small cinders for some weeks past, with an occasional lump of coke when the weather is severe. During my experience I have proved nearly every kind of boiler, and can with confidence assert that yours is the most powerful and economical, and requires less attention, than any I have tried.

I am, Gentlemen, yours respectfully, THOMAS CHALLIS,
Gardener to the Earl of Pembroke.

THE GARDENS,

April 10, 1871. Severn Stoke.

Gentlemen,—In reply to your note, I am glad to say that the whole apparatus is in perfect working order, and gives every satisfaction. I have, during the last 10 years, worked a variety of boilers, but for power and economy I have not found one to equal your Upright Tubular; and to surpass it, I am convinced, is an utter impossibility. Therefore, I have much pleasure in adding my testimony to its very superior merit.

I am, truly yours, H. ROWBREE,
Gardener to the Right Hon. the Earl of Coventry.

THE GRANGE,

April 14, 1871. Alresford, Hants.

Gentlemen,—I find your Upright Duplex Tubular Boiler more economical in the consumption of fuel than the old Saddle, and does not require so much labour in stoking. During this last severe winter we were able to bank our fires up at half-past ten, and find the temperature all right in the morning.

I remain, Gentlemen, your obedient servant, ROBERT BAKER,
Gardener to Lord Ashburton.

RUXLEY LODGE.

April 8, 1871.

Gentlemen,—The Upright Tubular Boiler which you fixed here, gives entire satisfaction. From my own experience in working your boilers, I have no hesitation in saying that I believe them to be the best boilers in use.

I am, Gentlemen, yours, &c., J. HOWIE,
Gardener to the Right Hon. Lady Foley.

ASHTON COURT,

April 11, 1871. Bristol.

Gentlemen,—I am happy to state that the Horticultural Buildings erected by you here, during the past nine years, continue to give Sir Greville Smyth and myself every satisfaction. As for the Heating Apparatus, nothing could be more satisfactory, the two boilers at the Court Gardens, fixed in 1862, not having cost one shilling for repairs, and, so far as one can judge, are as sound as when originally fixed. I may further observe that during 40 years' experience as head gardener almost every description of boiler has fallen under my supervision, and without the least hesitation I impartially state that none have equalled Week's Upright Tubular. I prefer them with a safety expansion pipe, filled with rainwater, kept clean, and in constant operation. By attention to these rules, I believe they will last for 20 years.

I am, Gentlemen, yours obediently, WILLIAM DODDS,
Gardener to Sir Greville Smyth, Bart.

LEYBOURNE GRANGE,

April 6, 1871. West Malling.

Gentlemen,—It gives me much pleasure to inform you of the great satisfaction I have received from your New Tubular Duplex Boiler that you sent me last season. Of all boilers at present in use for heating horticultural structures there is nothing to equal the above for heating power. A boiler of such great power as the Duplex I should think offers great advantages to the successful heating of large public buildings of every description, where a certain amount of heat is often wanted within a very limited space of time. Your Duplex is the key to success.—I remain, Gentlemen, yours truly,

WILLIAM BOWMAN, Gardener to Sir Joseph Hawley, Bart.

THE GARDENS,

April 8, 1871. Drayton Manor.

Dear Sirs,—Your Upright Tubular Boiler has successfully and economically worked our Forcing department (2540 feet of piping) for upwards of seventeen years, without a single mishap of any kind, and when examined with the view of testing its soundness, about four years ago, it was found thoroughly sound, and to all appearance equal to the like term of years again. During the late severe winter I found no difficulty in maintaining the desired temperatures, and that by banking up the fires at 10.30, as in ordinary seasons.

OWEN THOMAS,
Gardener to the Right Hon. Sir Robert Peel, Bart., G.C.B., M.P.

THE GARDENS,

Beddington House.

Gentlemen,—You are at liberty to make use of my name in any way you think proper respecting your Upright Tubular Boiler, as it has given the greatest satisfaction here.

I remain, Gentlemen, your obedient servant, THOMAS PENFOLD,
Gardener to the Rev. A. H. Bridges.

STANSTED PARK,

April 15, 1871. Emsworth, Hants.

Gentlemen,—I have much pleasure, now that we may consider the winter past, to let you know that your Upright Tubular Boilers have done their work to my entire satisfaction; and if it were necessary for me to make a change, it would only be to substitute the Duplex Compensating for the old Upright Tubular, for I believe the Patent Duplex Compensating Arrangements have made the Upright Tubular Boiler as near to perfection as it is possible to be.

I remain, Gentlemen, yours respectfully, GEORGE THOMPSON,
Gardener to Mrs. Dixon, Stansted Park, Emsworth, Hants.

THE GARDENS,

April 8, 1871. Hooley Hall.

Sirs,—Having had your New Duplex Patent Boiler in constant work for the last six months, I have much pleasure in bearing testimony to its great superiority over any other boiler that I am acquainted with. I have found it to be most powerful, quick in its action, very moderate in fuel, and so constructed that it requires very little attention.

I am, Sirs, yours truly, JOHN JACQUES,
Gardener to J. C. P. Cunliffe, Esq.

WIDMORE LODGE,

April 18, 1871. Bromley, Kent.

Gentlemen,—It is rather out of my line of things to recommend *anything*, but in reference to your inquiry about the Upright Tubular form of Boiler, I may say I am quite satisfied with it. Giving all other inventors and manufacturers of hot-water boilers due praise for trying to meet the growing wants of horticulturists, yet, to Mr. Weeks alone, we, as *gardeners*, have to date the first steps in alleviating the midnight ordeal of young gardeners. The Upright Tubular Boiler has stood the test for years, and even now, as far as my experience goes, there is no other form of boiler equally powerful and so easily stoked.

I remain, Gentlemen, yours respectfully, PETER M'PHAIL,
Gardener to C. Telford, Esq.

THE MOUNT,

April 24, 1871. Bishopstoke, Hants.

Gentlemen,—I have much pleasure in reporting upon the working of your new Duplex Upright Tubular Boiler, and feel that I cannot do better than give a correct statement of its operations. Previous to the removal of the old boilers, our average consumption of fuel was, during winter, about 10 tons per month, and with the new boiler it averages from $5\frac{1}{2}$ to $5\frac{3}{4}$ tons, thus saving a little more than 4 tons per month. The quantity of piping heated is about 2300 feet. I may also add that we have a much stronger command of heat in every house and pit than we ever had with the two old boilers, which were of a large size. The whole apparatus now acts most satisfactorily, and further, I, having had upwards of 40 years' experience with almost every description of boiler, pronounce most impartially for the new Upright Tubular.

I am, Gentlemen, your obedient servant, THOS. LOWE.

THE GARDENS,

April 10, 1871. Hanbury Hall.

Dear Sirs,—I am much pleased to to be able to say that the Duplex Boilers you fixed here some time ago do their work well, and need as little care and attention as it is possible for boilers, doing the work they are doing, to need. We have never worked, but for trial, more than one, and that has needed nothing more than to be cleaned once a year. We have power enough to work double, or even treble, the houses we have here at present. I am, Sirs, yours truly, WILLIAM BISHOP.

NORMANHURST COURT,

April 14, 1871. Battle.

Messrs. Weeks & Co., Gentlemen,—We have one of your No. 5 Upright Tubular Boilers here, heating about 3400 feet 4-in. piping, with little trouble and great satisfaction. I am, Gentlemen, your humble servant, GEO. SMITH,

IWERNE HOUSE,

April 11, 1871. Blandford.

Gentlemen,—After twelve months' trial of your Patent Duplex Boilers, I feel perfectly satisfied with them in every way, and believe them capable of doing any amount of work you may require of them; they are very simple, and easy to manage, and a great improvement on your other boilers where only one boiler is required.

I remain, yours most obediently, E. JAMES,
Gardener to Thos. Bowyer Bower, Esq.

HALL PLACE,

April 14, 1871. Leigh, Kent.

Dear Sirs,—I give you the liberty of using my name in any way you please that will add weight to your testimonials. Nothing can answer better than your Duplex Upright Tubular Boilers, and I am very pleased with their operations; they act admirably. I could expatiate at some length upon the merits of your old pattern boilers, having worked them for a number of years, but have no doubt that the Duplex arrangement is a valuable improvement. I am, dear Sirs, yours truly,

JAMES KETTLE, Gardener to Samuel Morley, Esq., M.P.

For full particulars of Boilers, additional Testimonials, and Illustrated Book of Designs (12th Edition), apply to

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HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS,
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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by William Richards, at the Office of Messrs. Bradbury, Evans, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said William Richards, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, July 29, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 31.—1871.] SATURDAY, AUGUST 5. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for 12 months, including postage to any part of the United Kingdom. May be had of all Booksellers.
Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

Condition of the Fruit Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 12, will contain a FULL and TABULAR STATEMENT of the CONDITION of the FRUIT CROPS throughout the UNITED KINGDOM.
May be had of all Booksellers. Price 5*d.*; post free, 5½*d.*
Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

Worcestershire Agricultural Society.

A GRAND HORTICULTURAL EXHIBITION in connection with the above will be held in the SHOW GROUND at MALVERN, AUGUST 22, 23, and 24, when PRIZES to the amount of ONE HUNDRED and TWENTY POUNDS will be awarded.

For List of Prizes and Rules, &c., apply to Mr. J. S. HAYWOOD, 26, Broad Street, Worcester, Hon. Secretary to Horticultural Show, or to ALBERT BUCK, Secretary, Worcester.

FLORAL FETE at CASTLE BROMWICH HALL (by permission of the Right Hon. the Earl of Bradford), in AID of a FUND for the ESTABLISHMENT of a VILLAGE LIBRARY, on WEDNESDAY, August 23. Lists of Prizes are now ready, and may be had on application. CHAS. JAS. PERRY, Hon. Sec.
The Cedars, Castle Bromwich.

READING HORTICULTURAL SOCIETY.—The AUTUMN SHOW will be held on THURSDAY, August 24 (by permission of the Mayor), in the Abbey Ruins, Reading. A Band will attend, as usual. The Show will be open to the holders of Subscribers' Tickets at 1 o'clock, and to the Public at 3 o'clock, on payment of 1*s*.

ENTRIES must be made to the Hon. Secretary on or before THURSDAY, August 17.

Tickets and Schedules may be obtained of CHARLES COLLINS, Hon. Sec., 34, Chain Street, Reading.

WELCHPOOL HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will take place on THURSDAY, September 7, 1871, when SPECIAL PRIZES, open to all England, will be offered. ENTRIES to CLOSE on SEPTEMBER 2. LIST of PRIZES and ENTRY FORMS may be obtained on sending stamp to D. P. OWEN, Hon. Sec.

PETERBOROUGH HORTICULTURAL SOCIETY SHOW, in conjunction with the Northamptonshire Agricultural Show, SEPTEMBER 20 and 21.—Special Cup, General, £10 and £5; Special Cup, Gentlemen's Gardeners and Amateurs, £5, £2, £1; Special Vase, Amateurs, £5; and General Schedule.
Peterborough. J. G. BUCKLE, Secretary.

1872. | THE GRAND FLORAL FETE, YORK, will be held on JUNE 12, 13, and 14, 1872.
JOHN WILSON, Secretary.

GERANIUM CUTTINGS.—100 of the finest Tricolor, Gold and Bronze, and Zonal Geraniums in cultivation, in 100 sorts, for 10*s.*; 50, in 50 sorts, 6*s*; 25, in 25 sorts, 3*s*.
WM KING, High Street Nurseries, Lincoln.

Hunt's Superb Sweet William.

JAMES HOLDER can supply SEED of the above, in 24 choice varieties, at 2*s.* 6*d.* and 5*s.* per packet; also PLANTS, 24 sorts, distinct, for 5*s.*, 50 plants for 8*s*, or 100 for 15*s.*, basket included. Crown Nursery, Reading.

Seed Warehouse: 44, English St., & Blackfriars St.

NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE.

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs. LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.

LITTLE AND BALLANTYNE.
WM. BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

MITCHELL'S renowned ROSES are NOW in BLOOM, the largest stock and the best plants in England. This magnificent Collection are all propagated in the open ground, possessing a hardy constitution suitable for all climates.
Pilt Down Nurseries, Uckfield, Sussex.

JOHN HARRISON, Darlington, begs to refer his Friends to his ADVERTISEMENT of ROSES, &c., in the front page of *Gardeners' Chronicle*, July 22.

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.
Floral Nurseries, Hailsham, Sussex.

Roses.

H. LANE AND SON'S magnificent COLLECTION, upwards of 100,000, is NOW in FULL BLOOM.
Patrons and Friends are respectfully invited to pay an early visit.
The Nurseries, Great Berkhamstead, Herts, 28 miles distant from London (Euston Station).

NEW H. P. ROSE, LOUIS VAN HOUTTE (LACHARME), not to be confounded with H. P. Rose, Louis Van Houtte (Granger). Bushy, own root, strong, 2*s.* 6*d.* In autumn.

N.B.—L. V. H.'s BULB CATALOGUE, No. 139 O, is ready for delivery, containing also PALMS, CALADIUMS, &c.

No. 140 P, including the PERENNIALS, TREES and SHRUBS, ROSES, AZALEAS, CAMELLIAS, RHODODENDRONS, FRUIT TREES, &c., is in preparation.
LOUIS VAN HOUTTE, Royal Nursery, Ghent, Belgium.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready in April. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford.

Roses—One Hundred Thousand Blooming Plants.

JOHN CRANSTON'S superb COLLECTION of ROSES, including all the newest and best varieties, is NOW in BLOOM. Carefully compiled Priced and Descriptive CATALOGUES forwarded post free on application.
King's Acre Nurseries, near Hereford.

Strawberries.

CHARLES TURNER'S descriptive CATALOGUE of the above is now ready, which contains several new kinds, as well as the finest established varieties.

C. TURNER'S Plants are now ready. Early planting is recommended to insure a good crop of fruit the first season.
The Royal Nurseries, Slough.

New Strawberry, Royalty.

AWARDED a FIRST-CLASS CERTIFICATE by the FRUIT COMMITTEE of the ROYAL HORTICULTURAL SOCIETY, JUNE 29, 1870.

J. TROTMAN has much pleasure in offering the above STRAWBERRY to the Public, in the fullest confidence that its exceeding richness of flavour cannot be surpassed, while in constitution, habit, and growth, it is most hardy, vigorous, and free. Orders now received will shortly be executed. Price 21*s.* per 100; 4*s.* per dozen. Spring Grove Nursery, Isleworth, W.

New Strawberry, The Amateur.

SAMUEL BRADLEY, the raiser of OSCAR, SIR J. PAXTON and DR. HOGG STRAWBERRIES, begs respectfully to intimate that he is now booking orders for Plants of his fine New Seedling, THE AMATEUR, to be sent out this autumn.

It was awarded a First-class Certificate of Merit on June 29, 1870, at a Meeting of the Nottingham Horticultural Society, and also a First-class Certificate at a Meeting of the Fruit Committee of the Royal Horticultural Society, July 19, 1871, at South Kensington.

Descriptive CIRCULARS, with prices, post free to all applicants.
SAMUEL BRADLEY, Littledale, Halam, near Southwell, Notts.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2*s.* 6*d.* per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

Lauderdale House, Highgate, London.

To GENTLEMEN and NURSERYMEN.

THE well-known COLLECTION of PLANTS, the property of the late JAMES YATES, Esq., is NOW to be DISPOSED OF by the present Gardener, W. TAYLOR.

Climbing Ferns.

LYGODIUM SCANDENS, the most beautiful of all Climbers. Can be supplied by the dozen at 6*s.* to 9*s.*; 40*s.* to 60*s.* per 100, all nice plants. Package gratis for cash.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

To the Trade.

STOVE PLANTS, in 50 or more choice and new varieties, at 9*s.* to 12*s.* per dozen; 50*s.* to 75*s.* per 100. Package gratis for cash. Names on application for CATALOGUE.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

ASPLENIUM GERMANICUM.—Very nice plants of this scarce Fern, in 60-pots, for 6*s.* per dozen.
JOHN H. LEY, Lansdowne Road, Croydon, S.E.

WANTED, a PACKET of YELLOW FOXGLOVE SEED.
HOOPER AND CO., Covent Garden, London, W.C.

WANTED, SPECIMEN PLANTS of the following, to complete a Collection:—

AGAVE
ALOE
CEREUS
ECHINOCACTUS
ECHINOPSIS
EUPHORBIA
GASTERIA
OPUNTIA
PHYLLOCACTUS, and
MAMMILLARIA generally.

Apply by letter to J. CROUCHER, Gr. to Mr. J. T. Peacock, Sudbury House, Hammersmith, W.

Amateur growers and lovers of this neglected, interesting, but beautiful tribe, may obtain information of their culture, &c., and an order to view the collection of 6000 Plants, by letter to J. CROUCHER, Gr., late of Kew Gardens, as above.

EVERY GARDEN REQUISITE KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

New Catalogue.

JOHN H. LEY, Exotic Nursery, Croydon, S.E., will be happy to forward, post free on application, his NEW CATALOGUE (price very low) of PALMS, FERNS, STOVE PLANTS, &c.

Seeds for 1871.

WM. CUTBUSH AND SON'S Descriptive Priced CATALOGUE contains every requisite for the Garden. Post free on application.
Highgate Nurseries, London, N.

B. S. WILLIAMS' SPRING CATALOGUE of NEW and RARE PLANTS is now ready, in which will be found a selection from all the best Plants of recent introduction; and in addition, descriptions of some very fine Plants, which B. S. W. now offers for the first time. Post free to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, N.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALADIUM; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1*s.* 6*d.*, 2*s.* 6*d.*, 3*s* 6*d.*, and 5*s* per packet, post free.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.
Forwarders to all parts of the World.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen to the Queen, Reading, Berks.

LOAM.—Loam, unequalled for Fruit and Plant Culture. See Report of New Vineries, Gunnersbury. For price, &c., apply to
Mr. R. TANTON, F.R.H.S., The Nurseries, Epsom.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

Plants for Sale.

ONE HUNDRED THOUSAND CABBAGE, COLEWORT, and COTTAGE KALE, 2*s* 6*d* per thousand.
800 YARDS of BOX EDGING, &c.
T. MOSSMAN, Gardener, 213, Sumner Road, Peckham, Surrey, S.E.

CABBAGE PLANTS.—Enfield Market, Battersea, and Drumhead Cabbage; ditto SAVOYS, at 3*s.* per 1000. Packing included.
W. VIRGO AND SON, Wonersh Nursery, near Guildford.

Ixora amabilis.

ROBERT PARKER has great pleasure in offering this beautiful and distinct variety: habit vigorous and compact, with fine foliage; flowers deep orange-salmon, trusses very large, borne in the greatest profusion—young plants in 4-inch pots yielding two and three large trusses of flowers. Very desirable for decorative and exhibition purposes. First-class Certificates have been awarded by Royal Horticultural and Royal Botanic Societies. Strong, healthy plants, 21*s.*, 42*s*, and 63*s* each.
Exotic Nursery, Tooting, Surrey, S.W.

The Royal Norfolk Nurseries, Norwich.

EWING AND CO. respectfully invite inspection of their extensive NURSERY STOCK. Fifty acres of FRUIT TREES, ROSES, CONIFERS, ORNAMENTAL TREES, &c.
N.B. The ROSES, including the new varieties of 1870, are NOW in FULL BLOOM, and would well repay a visit.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

SEEDLING PALMS.—Nice healthy 1-yr. Seedlings of OREODOXA OLERACEA, at 30*s.* per 100. This is an excellent opportunity to obtain a stock of a good Palm at a low price.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

AQUILEGIA GLANDULOSA, the true variety.
Seed, 6*d.* and 1*s.* per packet.
Seeds of choicest FLORIST FLOWERS. A LIST on application.
STEPHEN BROWN, Seedsman and Florist, Weston-super-Mare.

Choice Specimen Orchids, Ferns, Stove Plants, &c.

WM. HENDERSON has to offer a few fine Plants of the above, suitable for exhibition. Among others, a remarkably fine plant of VANDA BATEMANII, 5 feet from the pot, and now in full bloom; together with a varied assortment of STOVE and GREENHOUSE PLANTS, and all other Garden Requisites.
Oxton Nursery, Birkenhead.

Imported Orchids and Palm Seeds.

W. PRESTOE, Basingstoke, Hants, respectfully informs his Friends that he has now on Sale some splendid Plants of ONCIDIUM PAPILIO and ONCIDIUM LANCEANUM, at 2*s* 6*d* to 10*s* each.

They are all fairly started and in excellent condition. LIST of PALM SEEDS on application. Usual terms to the Trade.

Orchids.

JAMES BROOKE AND CO. beg to offer the following choice collection for 25 guineas:—Dendrobium Devonianum, chrysotis, Falconeri, heterocarpum, transparens, Cambridgeanum; Cattleya Warneri, Mossiæ, Trianæ, citrina, amethystina, Leopoldi; Odontoglossum Alexandræ Bluntii, Pescatorei, citrosmum, grande, Insleayi, Schleipperianum, Bictonense; Oncidium Lanceanum, O. papilio, O. Krameri; Lælia purpurata, Vanda cœrulea, Pleione Wallichii, Cypripedium hirsutissimum, Cymbidium Mastersii, Phaius albus, Trichopilia suavis, Barkeria spectabilis, B. Skinneri, Calanthe vestita, C. Veitchii, Cœlogyne cristata, Aerides Warneri.

CATALOGUES, with full Descriptions, Remarks on Culture, prices, &c., on application.

18, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

DOUBLE SCARLET GERANIUM VICTOR LEMOINE, the finest double grown for Bedding or Winter Flowering 4s., 8s., and 12s. per dozen.

SURPLUS STOCK of SPRING FLOWERING and HERBACEOUS PLANTS.

	Per doz.—s.	d.
ANEMONE HONORINE JOBERT, fine white	3	0
ARTEMISIA STELLERIANA, white edging plant, hardy	3	0
AUBRIETIA PURPUREA VARIEGATA, good plants	3	0
" GRANDIFLORA	3	0
CHEIRANTHUS ALPINA	3	0
DAISIES, in four varieties per 100	10	0
DIANTHUS HIGH CLERE, finest of all	3	0
GEUM COCCINEA GRANDIFLORA	3	0
HESPERIS MATRONALIS ALBA FLORA PLENA, Double Rocket	3	0
Ditto, RUBRA PLENA, ditto	3	0
LATHYRUS GRANDIFLORUS	3	0
MYOSOTIS DISSITIFLORA, true per 100	10	0
PHLOX FRONDOSA	3	0
VIOLA CLOTH of GOLD, finest yellow grown	4	0
" IMPERIAL BLUE	6	0
" CLIVEDEN, in four colours per 100	16	0
" THE CZAR, fine, sweet per 100	12	0

The above are all good, strong planted. Price to Trade, per 100, on application.

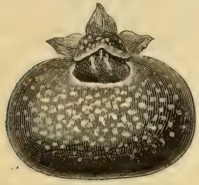
E AND J. PERKINS, Nurserymen, Leamington.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

JAMES CARTER AND CO.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.



INTERNATIONAL PRIZE CALCEOLARIA.

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CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d.; smaller packets	1	6
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Saved with the greatest care, and from one of the largest collections in the kingdom.

CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2	6

PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.

PRIMULA, choicest Mixed Fringed, 2s. 6d.; smaller packets	1	6
" dark Carmine	2	6
" new Scarlet	2	6
" Rose Fringed	2	6
" choicest White Fringed	2	6
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CARNATION, extra choice	2	6
CENTAUREA CLEMENTEI	1	0
CYCLAMEN, James' prize varieties	2	6
HEARTSEASE, saved from named varieties	1	0
" Cliveden, five varieties, each	1	0
HOLLYHOCK, saved from named varieties	1	0
MYOSOTIS DISSITIFLORA	1	0
PELARGONIUM, new Tricolor varieties	2	6
PICOTEE, extra choice	2	6
SOLANUM, new Hybrids	2	6
SWEET WILLIAM, Auricula-eyed 6d. and	1	0
WALLFLOWER, double German	1	0

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free. Five per cent. discount for cash.

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CARTER'S PRIZE MEDAL GRASS SEEDS, for SOWING in JULY and AUGUST.

As supplied to H.M. THE QUEEN, H.R.H. THE PRINCE of WALES, the IMPERIAL COMMISSIONERS for the PRESENT EXHIBITION, the PARIS EXHIBITION, &c.

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Carefully arranged to suit the various conditions of soils.

For LIGHT SOILS
For MEDIUM SOILS } 27s. to 31s. 6d. per acre.
For HEAVY SOILS

Second quality, 20s. to 26s. per acre.

CARTER'S RENOVATING MIXTURE, for OLD PASTURES,

Per cwt., 80s.; per lb., 9d.

Sow 8 to 12 lb. per acre.

"CARTER'S AUTUMN MIXTURE" of fast-growing Grasses and Clovers.

This Mixture comprises several quick-growing varieties, and will oduce a Crop of Green Food, for Feeding-off, before Christmas, if sown "at once." Sow 2 bushels per acre. Price on application.

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NEW ENGLISH TRIFOLIUM INCARNATUM,
NEW AGRICULTURAL MUSTARD,
NEW DWARF ESSEX RAPE.

Price on application.

CARTER'S EARLY NIMBLE TURNIP,

Very quick growing, Price per lb., 10d.

All Seeds Carriage Free; 5 per cent. discount allowed for cash.

JAMES CARTER AND Co.,
SEEDSMEN to the QUEEN and the PRINCE OF WALES,
237 and 238, High Holborn, London, W.C.

WHEELERS' COCOA-NUT CABBAGE

WHEELERS' COCOA-NUT CABBAGE.

Wheelers' Cocoa-Nut Cabbage, per pkt., 1s.
" " small packet, 6d.
Wheelers' Imperial Cabbage, per oz., 8d.
Wheelers' Tom Thumb Lettuce, p. pkt., 1s.
" " small packet, 6d.

N.B.—Wherever this charming little Lettuce is grown it is a remarkable favourite. It may be obtained *true* from either Gloucester, or Mark Lane, London. We recommend everybody to try it who have not already done so.

All the above Post Free.

WHEELERS'

BROCKWORTH PARK PEAR,

10s. 6d. each.

This magnificent Pear is a cross between Williams' Bon Chrétien, and Louise Bonne of Jersey. It considerably surpasses both its parents in SIZE, fine QUALITY, BEAUTY, and FLAVOUR, ripening about the same time, viz., September and October; grown against a wall, the fruit is remarkably large and handsome, the Pears weighing about 12 oz. (¾ of a lb. each). On the dinner-table well-ripened specimens are remarkably conspicuous for their size and beauty, and their flavour and juiciness are fully equal to their appearance.

A First-class Certificate was awarded to this handsome variety last autumn by the Royal Horticultural Society, and Trees were ordered by the principal Nurserymen in the kingdom; but the demand was so great that we were Sold out of all our Saleable Plants immediately they were offered. Coloured Plates, taken from Nature, may be had at 6*d.* each.

We are now Booking Orders to be executed in November next; all Orders will be executed in exact rotation as received, as far as the Plants will go; but we expect to be Sold out long before the season is over.

The price of young PYRAMIDS is 10*s.* 6*d.* each. We have a few Plants trained for walls at 15*s.* The Pyramids will furnish plenty of buds next summer for budding Trees of other varieties established against walls. This fine variety is well worthy of a wall, and of a good aspect.

☞ **Orders are now being Booked.**

J. C. WHEELER & SON,
NURSERYMEN,
GLOUCESTER; and
59, MARK LANE, LONDON, E.C.

NEW DOUBLE GERANIUMS, &c.—12 fine varieties Double Geraniums, 4s; 12 vars new Double Geraniums of 1870, 12s.; 12 fine new Zonal Geraniums of 1870, 6s.; 12 superb vars. Gold and Golden Bicolor Geraniums, 6s. 12 vars. new FUCHSIAS (1870), 3s.; 12 best select Fuchsias, 2s. 12 select COLEUS, 2s. 12 select PHLOXES, 3s. 12 new CHRYSANTHEMUMS (1870), 2s 12 new VERBENAS of 1870, 2s. 12 vars. new CHILEAN MIMULUS, 3s. New AGARATUMS:—White Tom Thumb, 6d.; White Imperial Dwarf, 6d.; Tom Thumb's Bride, the best white, 1s. 6d.; Sultan, the darkest blue, 1s. 6d; the above four new Ageratums, 3s.; 12 vars. Ageratums, including the above, 5s.

B. W. KNIGHT, Florist, Battle, Sussex.

For Present Sowing.

E. G. HENDERSON AND SON respectfully offer the following, in SEEDS of first-class quality:—

PRIMULA SINENSIS MAGNUM BONUM.—One of the most beautiful and effective yet raised, showing a great improvement, the result of many years' successful culture. With a vigorous habit, it produces large conspicuous trusses of very rich violet-crimson flowers, elegantly fringed, of good substance, and as a variety for the winter decoration of the conservatory and the drawing-room, it will be found one of the most effective for grouping with opposite colours in its own tribe, and valuable for giving effect to miscellaneous plants by its rich petal tints and prolific bloom.

PRIMULA SINENSIS FIMBRIATA-ALBA, }
" " " ROSEA, } Mixed, or in separate colours, 2s. 6d. each.
" " NEW STRIPED, }
" " " BLUSH WHITE, }
" " " MAGENTA COLOUR, } Elegantly fringed, 3s. 6d. each.
" " FILICIFOLIA, elegant Fern-leaf, }
" " " " white-flowered, } 2s. 6d.

CALCEOLARIA, finest quality, in great variety, and beautiful colours, 2s. 6d.

CINERARIA, from best named kinds, mixed, }
" the fine blue or crimson flowered section separately, } 2s. 6d.

CYCLAMEN, mixed, from fine named varieties, 2s. 6d.

Visitors calling at the Establishment will find, amongst other beautiful new forms and varieties, the following, in their respective groups:—

PELARGONIUM, Lass o' Gowrie (Silver Tricolor); Peter Grieve, and Beautiful Star (as Golden Tricolors); Jubilee, and Inimitable (miniature bronze zoned); St. John's Wood Star (large Bronze, yellow ground); Vesuvius, and Orbiculata (Scarlet Zonal); Anne Pfitzer (plain Scarlet Zonal).

Fine Illustrations of Campanula turbinata, Verbena Basilisk (scarlet bedder), Cineraria asplenifolia, Senecio argentea, and other select silvery-leaved species; a beautiful centre group of the most novel, unique, and beautiful Leucophyton Browni (silver-hued decorative plant); the new dwarf Lobelia erinus pumila, Celestial Blue, Cindrella, Charming, and Brilliant.

A fine selection of GREENHOUSE SUCCULENT PLANTS, for flower garden decoration; an extensive group of HARDY DWARF SUCCULENT, and other species, illustrating the groups of SEDUM, SEMPERVIVUM, ECHEVERIA, SAXIFRAGA, &c.

Wellington Nursery, Wellington Road, London, N.W.

Established 1793.

JOHN K. KING, SEED GROWER, Coggeshall, Essex, will be happy to supply his unrivalled Hardy Prize Stocks of MANGEL WURZEL, SWEDES, and other TURNIP SEEDS (carefully selected from large roots), at moderate prices.

Large purchasers supplied at special moderate prices.

FARM SEED LISTS post free.

Carriage free on orders of 20s. and upwards.

Cabbage Seed, for present Sowing.

For the GARDEN, for SOWING at ONCE, to come in next Spring and Summer.

SUTTONS' IMPERIAL, the finest in cultivation, and earliest for Spring use, 8d. per ounce.

LONDON MARKET, 4d. per oz.
ENFIELD MARKET "
EARLY DWARF YORK, "
NONPARIEL, "

For the FARM.

	Per lb.—s.	d.
SUTTONS' IMPROVED DRUMHEAD, the largest in cultivation: should be sown in July and August	2	6
ROBINSON'S CHAMPION DRUMHEAD	2	6
COMMON DRUMHEAD, or FLAT DUTCH	2	0

Also GRASS SEEDS, TURNIP SEEDS, MUSTARD, RAPE, &c., for Autumn Sowing, particulars of which may be had on application.

SUTTON AND SONS, Seedsmen to the Queen, Reading.

For Present Sowing.

SUTTONS' GRASS SEEDS FOR ALL SOILS.

Carriage Free.

AS SUPPLIED TO H. M. THE QUEEN AND H.R.H. THE PRINCE OF WALES.

(As also sown at the Eastern Annexe and French Court of the London International Exhibition.)

SUTTONS' PERMANENT PASTURE MIXTURES, for any description of Soil.

Best quality, 28s. to 32s. per acre.
Cheaper do., 20s. to 26s. per acre.
Carriage Free, and 5 per cent. for cash payment.

SUTTONS' RENOVATING MIXTURE of FINE GRASSES and CLOVERS, for Improving Pastures, should be sown at once, and will effect a great improvement in the quality and quantity of the succeeding Hay Crops.

Sow from 8 to 12 lb. per acre.
Price 9d. per lb.; much cheaper by the cwt.

EARLY SHEEP FEED, by sowing SUTTONS' IMPROVED ITALIAN RYE-GRASS, the best and most productive in cultivation, as supplied to the principal Sewage Farms.

Three bushels per acre, if sown alone; or, with Trifolium incarnatum, 2 bushels per acre.

Lowest price per quarter on application.

TRIFOLIUM INCARNATUM (ITALIAN CRIMSON CLOVER), the best Clover to produce an abundant supply of green food in the spring.

Sow 28 lb. per acre alone, or 16 lb. per acre with Italian Rye-grass.
Lowest price per cwt. on application.

SUTTONS' MIXTURE of RAPID-GROWING GRASSES and CLOVERS, for feeding next November, and producing a heavy crop for mowing or feeding in May and June. Sow 2 bushels per acre.

Lowest price per bushel or quarter on application.
All goods carriage free by rail.
Five per cent. off for cash payment.

SUTTON AND SONS,
SEEDSMEN to the QUEEN, and H.R.H. the PRINCE of WALES,
READING, BERKS.

To Florists and Amateurs.

TO BE SOLD, a fine Collection of CACTI, consisting of most of the choice varieties; many of them fine specimens, of 20 years' growth. Over 200 Pots will be sold for one quarter their value, on account of the bad health of the owner, and removing into the country. The Cacti can be had in lots to suit purchasers. Also a nearly new GREENHOUSE, 21 feet by 12 feet.

Mr. QUELCH, 360, Albany Road, Camberwell, Surrey, S.E.

ALEXIS DALLIERE, NURSERYMAN, Faubourg de Bruxelles, Ghent, Belgium, begs to offer the undermentioned Plants, which will be ready for sending out in and after August:—

100 well-assorted AZALEA INDICA, with buds, nice specimens, for £4 and £5.
100 do. CAMELLIAS, with buds, beautiful plants, £6.
100 do. do. „ strong plants, £8.
100 HOTEIA (SPIRÆA) JAPONICA, nice tufted plants, £1 12s.
1000 „ „ „ £14.
12 beautiful varieties of CALADIUMS, 10s.

Also a large stock of DRACÆNAS, PALMS, FERNS, MARANTAS, and many other Ornamental Foliaged Stove and Greenhouse Plants, the prices and sizes of which will be sent on application to A. DALLIERE, as above.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REES AND CO. (LIMITED), MANUFACTURERS of the BIPHOSPHATED PERUVIAN GUANO, and other CHEMICAL MANURES, beg leave to inform their Customers, and others, that they have REMOVED from 32, King William Street to their new and commodious Offices,

58, OLD BROAD STREET, E.C.

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—

PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30s. per cwt.; 36-lb. tins, 10s. Directions and testimonials on application.

Principal Agent:—W. D. BARBOUR, 3, Park Row, Leeds.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.

Of all Nurserymen and Seedsmen.

"PHYTOSMEGMA," or PLANT CLEANSER, destroys Scale, Mealy Bug, Red Spider, &c., without injury to Plants; 6d. and 1s. per bottle.

The NEW SHOWERER, for applying the above, 6d., 1s. and 3s. 6d. each.

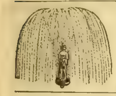
Wholesale of T. A. POOLEY, Sussex Wharf, Wapping, E.; and Retail of all Nurserymen, Seedsmen, and Florists.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.



J. TYLOR AND SONS' FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade

Great Reduction in Prices for 1871,

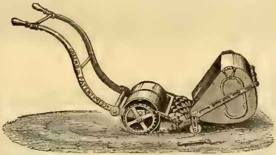
OF

GREEN'S PATENT SILENS MESSORS

OR

NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices:—

To cut		Price £	s.	d.	
8 inches	..	2	10	0	Can be worked by one person.
10 „	..	3	0	0	
12 „	..	4	0	0	
14 „	..	5	0	0	
16 „	..	6	0	0	This can be worked by one person on an even Lawn
18 „	..	7	0	0	By Man and Boy.
20 „	..	7	10	0	„
22 „	..	8	0	0	„
24 „	..	8	10	0	„

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED

PATENT ROLLER,

FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	7	10	0	20 in.	22 in.	3	10	0
24 in.	26 in.	4	10	0	16 in.	17 in.	2	15	0

PRICES of ROLLERS, fitted with Shafts,

Suitable for Pony or Horse-power.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	10	0	0	30 in.	60 in.	15	10	0
30 in.	36 in.	10	15	0	30 in.	72 in.	17	10	0
30 in.	42 in.	11	15	0	30 in.	84 in.	19	10	0
30 in.	48 in.	13	10	0					

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

		£	s.	d.
24 inches by 26 inches	.. .. ..	4	0	0
20 „ 22 „	.. .. ..	3	2	6
16 „ 17 „	.. .. ..	2	10	0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

VASES and FOUNTAINS for the GARDEN and CONSERVATORY.

Illustrated Catalogue, containing prices and full information concerning FOUNTAINS and VASES, and with 30 large pages of beautifully Lithographed Designs, post free for 12 stamps, which will be allowed if an order is given.

A. HANDYSIDE AND CO., Britannia Works, Derby.
London Office—32, Walbrook.

THE "HORTICULTURAL VAPORISER," for the Application of Frettingham's Liquid Compound, or other Preparations, for the Destruction of Insects on Plants.

By means of this Apparatus, liquids may be diffused over Plants in a state of minute division, or fine spray, in sufficient quantity to thoroughly moisten them, without ruffling or disturbing the most delicate flower or foliage.

Besides these advantages, great saving of the liquid is effected. A tablespoonful applied by the Vaporiser is equal to a pint applied by means of a sponge, or the ordinary methods in use.

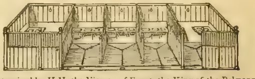
As a Disinfectant Distributor, for Sick Rooms, it is invaluable. The minuteness of the spray preventing a single particle of the liquid calling to the ground, thus the whole of the Disinfecting Liquid used comes into active operation at once, without fear of damaging the carpets or furniture. Price 3s. 6d. each.

May be obtained direct from PARR AND ATHERTON, Nottingham; or of their Agents throughout the country.

The Apparatus will be forwarded to any address in England on receipt of 4s. in stamps.

By Appointment to H.R.H. The Prince of Wales.

BARTON'S PATENT STABLE and HARNESS ROOM FITTINGS, BRACKETS, &c.



Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps.

For ALTERATION of STABLES a competent person can be sent to any part, to inspect and give Estimates.

JAMES BARTON, Iron Works, 370, Oxford Street, W.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.

CONSERVATORY and ORCHARD-HOUSE GLASS.

Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—s.	d.		Each.—s.	d.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 „ „ ..	0	4½	13 „ „ ..	2	0
4 „ „ ..	0	5½	14 „ „ ..	2	6
5 „ „ ..	0	6½	15 „ „ ..	3	0
6 „ „ ..	0	8	16 „ „ ..	3	6
7 „ „ ..	0	10	17 „ „ ..	4	0
8 „ „ ..	1	0	18 „ „ ..	5	0
9 „ „ ..	1	2	19 „ „ ..	6	0
10 „ „ ..	1	4	20 „ „ ..	7	0
11 „ „ ..	1	6			

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter ..	0s.	6d.	9 inches in diameter ..	1s.	8d.
5 „ „ ..	0	8	10 „ „ ..	2	0
6 „ „ ..	0	10	11 „ „ ..	2	6
7 „ „ ..	1	1	12 „ „ ..		
8 „ „ ..	1	4			

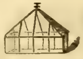
Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2s	0d.	16 inches long	1s.	4d.
22 „	1	10	14 „	1	2
20 „	1	8	12 „		
18 „	1	6			

WASP TRAPS, 3s. 6d. per dozen.

HAND GLASSES, WITH OPEN TOPS.



	Each.—s.	d.		Each.—s.	d.
12 inches	6	6	20 inches	10	6
14 „	7	6	22 „	11	6
16 „	8	6	24 „	12	6
18 „	9	6			

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

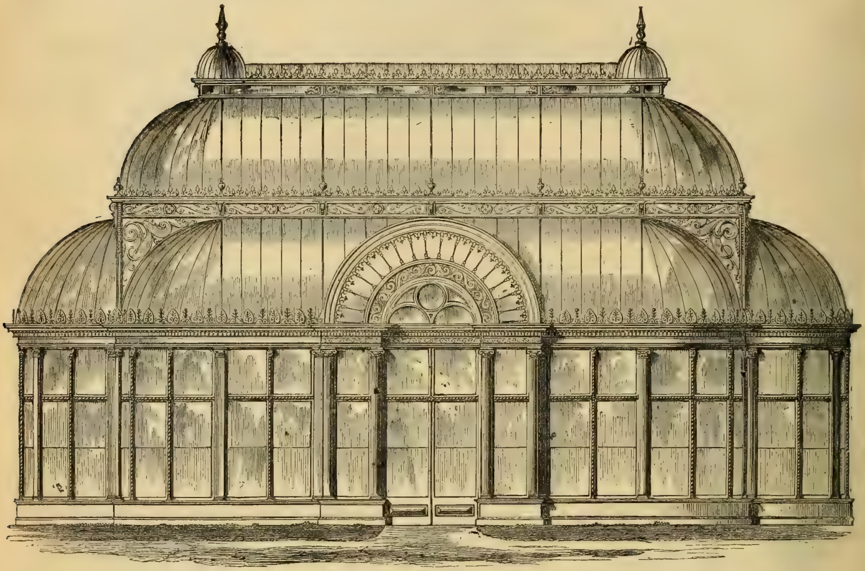
LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without, E.C.

ORMSON'S CONSERVATORY.

INTERNATIONAL EXHIBITION, 1862.



OPINIONS OF THE PRESS (*Extracts*) :—

"As a First-class Designer and Manufacturer, Mr. Ormson stands unrivalled."—*Bell's Weekly Messenger.*

"No object in the Horticultural Department attracts the eye sooner than the splendid Conservatory erected by Henry Ormson, of King's Road, Chelsea."—*The Illustrated London News.*

"This construction, however, not only stands first among the Conservatories at Kensington, and indeed of any we have ever seen, but is worthy of the highest commendation on account of its eminent fitness for the purpose for which it was made."—*The Illustrated News of the World.*

"The beauty of this structure is as good a lesson of the value of iron as any that could be furnished in the whole Exhibition."—*Gardeners' Weekly Magazine.*

H. ORMSON having a most complete Set of Steam-Power Machinery, is in a position to execute Orders with the greatest despatch, and at considerably reduced prices.

FIRST-CLASS IRON AND WOOD CONSERVATORIES,

Of the most chaste and elegant design ;

VINERIES, PINERIES, PEACH HOUSES, FORCING HOUSES,

GLASS CASES FOR WALL TREES, PITS, &c.

Designed and built, combining all the latest Improvements, so as to answer their intended purposes without risk of disappointment.

PLANS, SPECIFICATIONS, AND ESTIMATES ON APPLICATION.

ORMSON'S PATENT WROUGHT-IRON CONVOLUTED BOILERS.

H. ORMSON also supplies a select variety of other forms of WROUGHT-IRON BOILERS, for heating large or small quantities of pipe.

PRICES, &c., SENT BY POST.

HENRY ORMSON,

HORTICULTURAL ARCHITECT, BUILDER, AND HOT-WATER APPARATUS MANUFACTURER,
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

For Horse Rakes,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

Under Royal Patronage.

PHILLIPS' ROYAL POTTERY, WESTON-SUPER-MARE.
ESTABLISHED 1836.

JOHN MATTHEWS, late PHILLIPS, Manufacturer of STATUARY, FOUNTAINS, FLORAL ARBORETTES, VASES, EDGING TILES, &c. Plain and Ornamental GARDEN POTS. POTS, with movable bottoms, made to order.
Book of Drawings and Price List on application.
See Specimens in the EXHIBITION, No. 4321, and STAND at the Royal Horticultural Gardens.
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare, Somerset.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.
The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

SLATE, for Gardening and Agricultural Purposes, &c. GARDEN BOXES, not liable to rot, can be made of any size. Prices rom 16s. 6d. [Prices from 35s.
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

THE ALEXANDRA PALACE AND MUSWELL HILL ESTATE TONTINE.

(TO TERMINATE ON THE 30th JUNE, 1886.)

This being a "Trust," Subscribers incur no Liability.

Certificates representing 850,000 Guineas (of which 1s. of each Guinea is to be appropriated to Insurance of Subscribers), will be issued at the following Rates:—

A	**(or Single Right) Certificates**	**each £1 1 0**	**D**	**(or 50 Right) Certificates**	**each £52 10 0**
B	**(or 10 Right)** ,,	,, **10 10 0**	**E**	**(or 100 Right)** ,,	,, **105 0 0**
C	**(or 25 Right)** ,,	,, **26 5 0**		**Payable on application.**	

CERTIFICATES PASS TO AND ENTITLE THE BEARER:—

1. To participation in the proceeds of sale of the property if the representative life upon which the Tontine privilege depends shall be living on the 30th June, 1886.
2. To the receipt from a life assurance of the sum of 20s. in respect of each Guinea paid upon any Certificate, if the representative life shall die before the said 30th June, 1886.
3. To admissions to the Palace and Park, according to the number of Rights.
4. To participation in Art Union Distributions proposed to be hereafter established.

(As explained in detail in the full Prospectus.)

The acceptance of a Certificate involves no liability. The rights and privileges of Certificate holders are governed by the Trust Deed.

The whole nett Income of the undertaking, after defraying interest charges and management expenses, will be devoted to the improvement of the Property, and also (when power is obtained) to Art Union Distributions.

Trustees { JOHN CLUTTON, Esq., Whitehall Place.
JOHN HACKBLOCK, Esq., Bolton Gardens.
JOHN HORATIO LLOYD, Esq., Inner Temple.

Executive Committee { LORD FREDERIC KERR.
SIR WM. WISEMAN, Bart.
JOHN PARSON, Esq.
JAMES GOODSON, Esq.
JOHN BORRADAILE, Esq.
JOHN ALLDIN MOORE, Esq.
GRANVILLE R. RYDER, Esq.
CHARLES MAGNAY, Esq.
ROBERT FOWLER, Esq.

Bankers { THE LONDON and COUNTY BANK and BRANCHES.
THE CITY BANK and BRANCHES.

Auditors—JOHN BALL, Esq., and JOHN YOUNG, Esq.

Brokers { Messrs. WALKER AND LUMSDEN, 9, Old Broad Street, E.C.
Messrs. HUGGINS AND ROWSELL, 1, Threadneedle Street, E.C.

Solicitors—Messrs. COPE, ROSE, AND PEARSON, 26, Great George Street, Westminster.

Secretary—THOMAS DIXON, Esq.

OFFICES—5 and 6, GREAT WINCHESTER STREET BUILDINGS.

ABRIDGED PROSPECTUS.

CONTRACT for PURCHASE of PROPERTY.

An advantageous Contract has been concluded for the purchase, free from incumbrance, of the Alexandra Palace Park and Lands adjoining, situate at Muswell Hill, Hornsey, in the county of Middlesex (comprising about 470 acres of Freehold and 28 acres of Leasehold Land), and the contents of the Palace, for the sum of £675,000. Of this amount £450,000 may remain on security of the Property for 5 years, represented by Mortgage and Debentures.

OBJECT of TONTINE.—The INSTITUTION.

The object of the Tontine is to complete the purchase and improve the property, and thus to provide for all classes of the inhabitants of the Metropolis, and especially of its northern and eastern portions and suburbs, and for the many thousands of country excursionists, a Grand Institution of healthful recreation and elevating instruction, which will combine the solid advantages of the South Kensington Museum and Schools of Art, with the lighter pleasures and pastimes of the Crystal Palace at Sydenham, thus giving effect to the large and enlightened views of the late Prince Consort.

ART UNIONS.

In furtherance of this design it is proposed to inaugurate a series of Exhibitions, Art Unions, and distributions, to the support of which, and as soon as the necessary power can be obtained for the purpose, it is proposed that the chief portion of the profits of the Park and Palace, after making proper provision for management, improvement, and other charges, should be applied.

It is intended to apply to Parliament for power to devote part or the whole of the surplus income to Art Union Distributions, to be held every third year during the term of the Tontine, and to appropriate a number or chance in each Distribution to every Certificate in respect of every 21s. paid thereon. It is estimated that the fund for distribution will amount triennially to £100,000, and the prizes will range from £500 to £2.

SINGLE CERTIFICATES MAY OBTAIN PRIZES of £500 EACH for 21s.

The value represented by the Prize Tickets is to be applied wholly in the selection of articles contained in the Alexandra Art Union Exhibitions, and it will be seen that it is possible for the holder of a single right Certificate to receive Five Prizes of £500 each for his investment of 21s.

INSURANCE of CERTIFICATE HOLDERS.

An established Insurance Company has agreed, in consideration of the payment to them of a premium of one shilling for every A (or single right) Certificate, and so on in proportion for any plural rights certificate (*i.e.*, one shilling for each right), to pay to the holder £1 for each guinea paid on such certificate upon the death of the representative life in respect of which the Tontine privileges depend, if such death happens before the 30th June, 1886, provided such Certificate shall not have been previously surrendered, or the bearer of such Certificate for the time being shall not have drawn a prize in an Art Union Distribution in respect of the right representing such guinea. Such premium will be paid out of the Tontine funds

TONTINE WILL CEASE JUNE 30, 1886. PROPERTY then to be DISTRIBUTED.

Upon the 30th June, 1886, the Tontine will absolutely cease; and as soon as may be after that date the whole of the property will be realised, and the nett proceeds will be distributed amongst the Tontineers or Certificate holders.

CONTRIBUTIONS INCUR no LIABILITY, and must BENEFIT.

Thus every subscriber of 21s. and upwards to the Tontine, or the holder for the time being of his Certificate (the same not having been previously surrendered) will, in addition to the privileges of entry to the Park and Palace as enumerated in the full Prospectus obtain the repayment, in case of the death of the representative life or lives, of 20s. in respect of every 21s. paid by such subscriber, or will have previously drawn a prize of at least £2 in the Art Union Distribution in respect of such 21s. subscription, and will, when the Tontine ceases, have, in respect of each of his rights of which the representative life shall be then in existence, the right to a share in the proceeds of the Tontine property. Looking at the rapidly increasing value of Building Land near London there can be no doubt that at the expiration of the Tontine, in 15 years, the property to be then distributed amongst the holders of Certificates entitled to participate will be of enormous value.

PROPERTY VESTED in TRUSTEES.

All the landed property to be acquired for the purposes of the Tontine will be vested in the Trustees upon trust, to permit the Management Company to manage the same; and upon the termination of the Tontine (the 30th of June, 1886), or so soon after as may be convenient, to Sell the Tontine property and distribute the proceeds.

DEEDS.

The Purchase Contract, the Trust Deed, the Insurance Contract, and the Memorandum and Articles of Association of the Management Company may be perused at the Offices of the Solicitors.

PROSPECTUSES.

Prospectuses (with an outline sketch of the Palace) and Forms of Application for Certificates may be obtained of the Secretary at the Offices of the Tontine and of the Brokers, and of the Bankers, and at the various Branches, as well as of the Solicitors.

Agencies for the receipt of Applications will shortly be advertised.

APPLICATIONS for CERTIFICATES.

Applications for Certificates must for the present be left with the Bankers at the time of the payment of the deposit; and no application will be noticed unless the sum of 21s., in respect of each single right, or the amounts specified for plural rights applied for as above stated, shall have been paid.

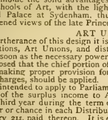
If no issue is made the subscription will be returned in full.

For full particulars see detailed Prospectuses, which, with the Forms of Application for Certificates, can be obtained of the Bankers and their Branches, the Solicitors and Brokers, and at the Offices of the Tontine, as above.

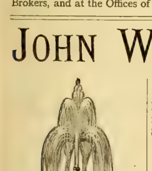
JOHN WARNER & SONS, HYDRAULIC ENGINEERS,

Bell and Brass Founders to Her Majesty, Manufacturers of Hydraulic Machinery of every description, Wind Engines, Water Wheels, Water Rams, Deep Well Pumps and Frames for Horse or Hand Power, Garden Engines, Swing Barrows, &c., &c. Branch Pipes for Rubber Hose, with Jet and Spreader, or with Haswell's Patent Director, from 3s. 6d. Syringes from 5s., or, fitted with Haswell's Director, 12s. 6d. Lists sent on application.

8, CRESCENT, CRIPPLEGATE,
LONDON, E.C.

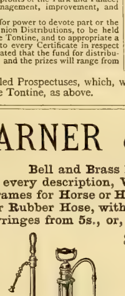


FOUNTAIN JETS,
In great variety, from 3s. 6d.



No. 547A.
GARDEN ENGINE.

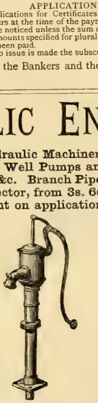
12 Gallons	£3 0 0
16 ,, ...	3 16 0
24 ,, ...	5 1 0
30 ,, ...	5 13 0



WARNERS'
AQUAJECT.
Useful for every variety of purpose—in watering or washing Flowers or Trees in Gardens, Conservatories, &c.; also for washing Carriages or Windows, laying Dust, &c.

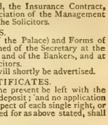
Price complete	£1 8 0
Small size for the hand, as an ordinary Syringe ..	0 15 0

THE CRYSTAL PALACE
GARDEN or FIRE ENGINE.



No. 35.
CAST-IRON PUMPS.

2½ inches ..	£1 9 0
3 ,, ...	1 18 0
3½ ,, ...	2 7 0
4 ,, ...	2 15 6



No. 42.
PORTABLE PUMP,
With improved Valves for Liquid Manure, £2 16s. 6d. Two-inch Flexible Rubber Suction Pipe, in 10, 12, and 15 feet lengths, per foot 2s. 5d.

No. 579½.—SWING
WATER BARROW.

Galls.		Galls.	
20	£2 2 0	38	£3 18 0
30	2 14 0	50	5 14 0

THOMAS THORNTON,

HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS; a large stock of Green and Variegated HOLLIES, VINES, &c.: all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS

will soon be ready, and can be had on application.

NEW CRIMSON PRIMROSE,

PRIMULA JAPONICA.

MR. WILLIAM BULL

Begs to announce that he is NOW SENDING OUT this NEW HARDY PRIMROSE. It has been recently figured in the "Florist and Pomologist," "Floral Magazine," and "Botanical Magazine," and the opinion of every one who has seen it in blossom may be expressed in the one word, "lovely!" When exhibited before the Floral Committee of the Royal Horticultural Society, it was voted a First-class Certificate by acclamation.

The "Florist" says of it,—"Hail! Queen of the Primroses! for so its introducer designates the lovely flower we now figure, which is hardy as a peasant, resplendent as a princess It is just ten years since Mr. Fortune met with it in Japan, a basketful of blooming plants having been brought to his door; they were, of course, secured, but the journey home was too much for them, and despite every care none reached England alive. Ever-since that time endeavours have been made to introduce this lovely plant, but till now without success, the seeds having been found to lose their germinating power in the course of transmission to Europe. At last, however, perseverance has been rewarded, and from seeds imported by Mr. Fortune plants have been raised in the establishment of Mr W Bull, of Chelsea Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely Primrose, one which is really valuable on account of its intrinsic beauty. Of the hardiness of the Primula japonica there can be no doubt, since plants which have been standing all the winter, fully exposed, in the trying atmosphere of London, are perfectly healthy, and came into bloom about the middle of May, some two or three weeks later than the plants which had been potted and flowered under glass."

The "Floral Magazine" remarks,—"Since the day when Lilium auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as by that which we now figure, when Mr. W. Bull exhibited it on May 3 of the present year. Its history is now well known, and of its merits too much cannot be said. To Mr. Fortune, already so successful in enriching our gardens, are we indebted for it; and Mr. Bull may well congratulate himself on being the first to introduce it into Europe. A Primula a foot and a half high, bearing four or five separate whorls of flowers, each flower an inch in diameter, and of a splendid magenta colour, and the plant moreover perfectly hardy—can anything be added to this to indicate its value? We hardly think so, and everyone who saw it will fully bear out our assertion, that a more beautiful and more useful plant has not been for many years introduced into Europe. Of its hardiness there can be no doubt, as it has stood the ordeal of the last severe winter in the neighbourhood of London."

The plants now offered are very strong and healthy, in 4-inch pots, and will be sure to bloom beautifully next spring. Early orders are respectfully solicited to insure having the strong plants, for the demand is expected to be very large. Price **10s. 6d.** each, or **£4 10s.** per dozen. Coloured Plates can be supplied at 1*s.* 6*d.* each.

Those wishing to add this splendid Primula to their gardens are recommended to procure Plants, for even if imported Seed should be offered this season, it can scarcely be expected to grow. Mr. Fortune imported Seeds many times during a period of 10 years, but they always failed to vegetate, except in one instance, when sent to this country in a special manner.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA,
LONDON, S.W.

CARTER'S

NEW ONION SEED FOR AUTUMN SOWING,

GROWN from PRIZE BULBS, as EXHIBITED, EXPRESSLY for J. CARTER AND CO.

NEW NEAPOLITAN MARZAGOLE ONION.—The earliest Onion in cultivation. If sown in the autumn, this Onion will come into use in the month of March. Price **1s.** and **2s. 6d.** per packet.

NEW GIANT ROCCA ONION of NAPLES.—Special Certificate Royal Horticultural Society, December 21, 1869. Weight of bulb exhibited, 3 lb. 9 oz. Per packet, **1s.**

NEW GIANT WHITE TRIPOLI.—Four of the heaviest bulbs together weighed 9 lb. 3 oz. Per packet, **1s.**

NEW EARLY WHITE NAPLES.—Special Certificate Royal Horticultural Society, June 8, 1870, for three specimens. Weight 3 lb. 7 oz. Per packet, **1s.**

NEW RED ITALIAN TRIPOLI.—Special Certificate Royal Horticultural Society, Dec. 21, 1869. Weight of bulb, 2 lb. 11 oz. Per packet, **1s.**

EVIDENCE OF QUALITY.

Mr. James Woodhouse, Sidley, says:—"I pulled up your Giant Tripoli Onions yesterday, and to-day I measured the circumference of the 12 largest specimens, and they measured from 16 to 18¼ inches. I believe they would have grown still larger, had I set them out further apart."—*July* 25, 1871.

JAMES CARTER AND CO.,
SEEDSMEN TO THE QUEEN AND THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

WM. PAUL'S ROSES are NOW in BLOOM, inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to Waltham Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

New Begonia.

BEGONIA CARMINATA, an elegant tuberous-rooted Hybrid of the "boliviensis" group. The leaves, which are narrowly ovate acuminated and biserrate, are stained with a coppery brown tint between the veins, while the Flowers are large, of a pretty delicate salmony hue tinged with rose, the males having four oblong segments upwards of an inch long, and the females five petals of smaller size. The Plants come into Flower while quite dwarf, and continue blooming in the most profuse manner. Good plants, now in blossom, 5*s.* each.

Apply at Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

BANBURY HORTICULTURAL SOCIETY,

Established 1847.—The SHOW will take place on TUESDAY, August 29, in the Pleasure Grounds of W. Munton, Esq.

PRIZES for Open Competition, on payment of an Entrance Fee of 2*s.* 6*d.*:—

For Stove or Greenhouse Plants, either in Flower or Ornamental, but not Fuchsias, Achimenes, Geraniums, or Annuals, 6 varieties, to be grown in not less than 8-inch pots—1st prize, £5; 2d, £2.
For the best 24 Dahlias, 24 varieties—1st, £2; 2d, £1.
For the best 24 Roses, not less than 12 varieties—1st, £1 10*s.*; 2d, 15*s.*
For the best 18 Hollyhocks, 2 blooms of each—1st, £1 10*s.*; 2d, 15*s.*
For the best 12 Verbenas, 5 trusses in a bunch—1st, £1; 2d, 10*s.*

The Judges may withhold any prize if the productions exhibited be not considered worthy. Roses may be shown singly, or with such buds and leaves as are on the same stalk. Intending Exhibitors must give notice to the Secretary on or before Saturday, August 26. The Society will, if requested, convey the productions from and to the railways. E. J. HARTLEY, Secretary.

ROYAL HORTICULTURAL SOCIETY,

SOUTH KENSINGTON, W.

SHOW of VARIEGATED PELARGONIUMS, &c., AUGUST 2.

AWARDS of the JUDGES.

Class 1.—GOLDEN VARIEGATED ZONAL (TRICOLOR) PELARGONIUMS. Group of any number not exceeding six Seedling Plants. (Open.)
1st, Messrs. Downie, Laird & Laing, Stanstead Park Nursery Forest Hill, £5 5*s.*
2d, Mr. C. Turner, Royal Nursery, Slough, £3 3*s.*

Class 2.—The best PLANT selected from the above Class.
1st, Messrs. Downie, Laird, and Laing, for Pelargonium Adonis, £2 2*s.*

In Classes 1 and 2 the Prizes are offered by W. R. Morris, Esq., F.R.H.S.

Class 3.—Collection of VARIEGATED PELARGONIUMS. (Open.
1st, Mr. C. Turner, £2.
2d, Messrs. E. G. Henderson & Son, The Wellington Nursery, St. John's Wood, £1 10*s.*
3d, Mr. T. Pestridge, The Greenway Nursery, Uxbridge, £1.
Extra, Messrs. F. & A. Smith, The Nurseries, West Dulwich, 10*s.*

Class 4.—One GOLDEN VARIEGATED ZONAL (TRICOLOR) PELARGONIUM. (Open.)
1st, Mr. C. Turner, for Pelargonium Miss Morris, 15*s.*
2d, Messrs. Jas. Carter, Dunnett & Beale, Nurserymen, &c., 237 and 238, High Holborn, for Pelargonium Prince of Wales, 10*s.*
3d, Messrs. Bell & Thorpe, The Paddock Nurseries, Stratford-on-Avon, for Pelargonium Macbeth, 5*s.*

Class 5.—One SILVER VARIEGATED ZONAL (TRICOLOR) PELARGONIUM. (Open.)
1st, Mr. C. Turner, for Pelargonium Mrs. Rousby, 15*s.*
2d, Messrs. E. G. Henderson & Son, for Pelargonium Candidate, 10*s.*

Class 6.—One GOLD and BRONZE ZONAL (BICOLOR) PELARGONIUM. (Open.)
1st, Messrs. Downie, Laird, & Laing, for Pelargonium Maréchal McMahon, 15*s.*
2d, Mr. J. Keele, Beckenham Nursery, New Beckenham, for Pelargonium Conqueror, 10*s.*

Class 7.—One GOLDEN-LEAVED (SELF) PELARGONIUM. (Open.)
1st, Messrs. E. G. Henderson & Son, for Pelargonium Golden Circle, 15*s.*
2d, Mr. C. Turner, for Pelargonium Golden Gift, 10*s.*

Class 8.—One SILVER-EDGED PELARGONIUM. (Open.)
1st, Mr. T. Pestridge, for Pelargonium Blushing Bride, 15*s.*
2d, Mr. C. Turner, for Pelargonium Miss Kingsbury, 10*s.*

Class 9.—One IVY-LEAVED PELARGONIUM, in bloom. (Open).
1st, Mr. C. Turner, for Pelargonium Willsii, 15*s.*
2d, Mr. G. Macintosh, Nurseryman, &c., Hammersmith, for Pelargonium lateripes grandiflorum, 10*s.*

Class 10.—One NOSEGAY PELARGONIUM, in bloom. (Open.)
1st, Messrs. Bell & Thorpe, for Pelargonium Charles Dickens, 15*s.*
2d, Mr. H. Cannell, Florist, &c., Woolwich, for Pelargonium Master Christine, 10*s.*

Class 11.—One ZONAL PELARGONIUM, in bloom. (Open.)
1st, Mr. J. Mann, Nurseryman, Brentwood, for Pelargonium Triumph, 15*s.*
2d, Mr. C. Turner, for Pelargonium Madame Jules Elyse, 10*s.*

Class 12.—One Double-flowered ZONAL PELARGONIUM, in bloom. (Open).
1st, Messrs. Bell & Thorpe, for Pelargonium Miss Evelyn, 15*s.*
2d, Messrs. James Carter, Dunnett, and Beale, for Pelargonium C. Glijm, 10*s.*
3d, Messrs. Downie, Laird & Laing, for Pelargonium Victor Lemoine, 5*s.*

Class 13.—Six CLEMATIS, hardy.
1st, Messrs. G. Jackman & Son, Woking Nursery, Surrey, £3.

Class 14.—Early PLUMS, single dish. (Open.)
1st, Mr. J. Douglas, Gr. to F. Whitbourn, Esq., Loxford Hall, Ilford, 15*s.*
2d, Mr. B. Porter, Gr. to Mrs. Benham, Sion Lodge, Isleworth, 10*s.*

Class 15.—Collection of GOOSEBERRIES, 12 fruit of each variety. (Open).
1st, Mr. C. Turner, £1 10*s.*
2d, Mr. J. Sharp, Gr. to W. Martin, Esq., Shermanbury, £1.
3d, Mr. J. Beach, Gr. to C. J. Herries, Esq., St. Julian's, Sevenoaks, 15*s.*

Class 16.—Six GOOSEBERRIES, the heaviest fruit.
1st, Mr. J. Sharp, 10*s.* | 2d, Mr. J. Beach, 7*s.*

MISCELLANEOUS—EXTRA PRIZES.

Messrs. F. & A. Smith, for Collection of Balsams.
Messrs. Downie, Laird & Laing, for Group of Seedling Gold and Bronze Pelargoniums
Mr. H. Hooper, Vine Nursery, Widcombe Hill, Bath, for Stands of Carnations, Picotees, Cloves, Pansies, and Roses.
Mr. C. Turner, for Carnations, Picotees, and Lilium auratum.
Messrs. Bell & Thorpe, for Boxes of cut blooms of Pelargoniums.
Mr. H. Cannell, for Stand of Zonal Pelargonium blooms.
Mr. E. Shenton, Botanic Nursery, Biggleswade, for cut blooms of Pink Flower of Eden.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A.; and E. J. LOWE, F.R.S.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

Condition of the Fruit Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 12, will contain a FULL and TABULAR STATEMENT of the CONDITION of the FRUIT CROPS throughout the United Kingdom.

May be had of all Booksellers. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, AUGUST 5, 1871.

MEETING FOR THE ENSUING WEEK.

THURSDAY, Aug. 10—Royal Botanic (Anniversary) .. .. 1 P.M.

WE have before us some elaborate statistics relating to the results of the EXAMINATIONS of YOUNG GARDENERS, held by the Royal Horticultural Society and the Society of Arts respectively, from December, 1866, to July, 1870. These statistics were compiled by one whose name appears most frequently on the honours list, and are, we have every reason to believe, substantially correct.

During the period named 54 youths were examined by the Royal Horticultural Society. Of these, two gained the associateship, the highest honour open to them, after a special examination; 11 gained double first-class honours, *i.e.*, first-class certificates in both floriculture and fruit culture. At the Society of Arts, out of 37 candidates, eight obtained double first honours, while eight were awarded first-class certificates in floriculture only, and two in fruit culture.

Seven of the young men above alluded to managed to carry off double first honours from both Societies; 18 second-class, and 12 third-class certificates, viz., Floriculture, 11 first, 7 second, 6 third; Fruit culture, 4 first, 11 second, 4 third.

Chiswick has been represented at the Royal Horticultural Society's examinations during the period in question 38 times by 19 pupils. These 19 pupils have gained in all 19 first-class, 35 second-class, and 15 third-class certificates, thus distributed:—Floriculture: 14 first, 18 second, 4 third-class; fruit culture: 5 first, 17 second, 11 third-class; showing, as will be seen, either that the young men are much less efficiently trained in fruit than in flower culture, or that the examination in fruit culture is more a tax on the memory, in supplying fruit lists and diagnoses of fruit, than it is a test of cultural knowledge. The 19 first-class certificates gained by Chiswick, were won by eight of her pupils.

Kew has been represented at the same examinations by an equal number, viz., 19. Of these 19, nine managed to carry off between them the 15 first-class certificates which fell to the lot of Kew men. At the Society of Arts, Kew men have gained 8 first, 14 second, and 1 third-class certificate; or in floriculture 5 first, 7 second; and in fruit culture 3 first, 7 second, and 1 third. At the Society of Arts examinations it appears that Chiswick has only sent out five pupils, but those five were good men, as witnesses the fact that they carried off between them 4 first and 1 second-class certificate in floriculture, and 3 first and 1 second in fruit culture. These Chiswick lads, all honour to them, managed to appropriate money prizes to the amount of £37, while six of the Kew men were lucky enough between them to win money prizes to the extent of £130—the small amount, as compared with Kew, being accounted for by the smaller number of candidates for these prizes, and the more frequently repeated trials made by the Kew men.

Besides the public establishments of Kew and Chiswick, 35 young men, from various private establishments throughout the country, have offered themselves for examination by one or both societies during the time under review. Of these 35 six had been at Kew, and two at Chiswick for a time.

At the Horticultural Society's examinations 16 of these outsiders presented themselves; of whom one gained the associateship, while to the rest were allotted 14 first-class certificates, 11 second-class, and 5 third-class; or, in floriculture, 11 first, 3 second, 2 third-class certificates; and in fruit culture, 3 first, 8 second, 3 third.

At the Society of Arts 24 outsiders gained 10 first-class certificates, 24 second, and 20 third; or in Floriculture 6, 12, 12, and in Fruit culture 4, 12, 8, respectively—showing either the same relative deficiency in a knowledge of fruits and vegetables, and their culture, that is observable in the young men sent up from public establishments, or a style of questioning not calculated to elicit what the candidates really do know. The latter have, as might have been expected, rather a preponderance of good men as represented by the numbers of honours-men as contrasted with those sent out from private establishments, where too often the instruction given is of the "happy go lucky" order. Still the "outsiders," or eight of them, have succeeded in gaining money prizes to the extent of £80.

Some few of the young men in the list have also distinguished themselves in various other examinations, including those of the Science and Art Department, in such subjects as Botany, Vegetable Physiology (though it is remarkable how few young gardeners have studied these subjects, and how deplorably ignorant the mass of them are of the very important scientific rudiments of their craft), Arithmetic, Zoology, Animal Physiology, Political Economy, Chemistry, Electricity, Book-keeping, Mensuration, Geography. This is a rather imposing list of subjects, it is true, but it is equally true that the proficients have been very few, and that, as happens in most examinations, the man most advanced in any one subject is also pretty sure to be well up in many others.

We should greatly like to trace the career of these certificated gardeners and to ascertain whether, other things being equal, they have succeeded in obtaining for themselves better terms than fall to the lot of most youngsters, who become gardeners. Our own impression, from what we know of the position of several of those who have taken honours, is, that they have commanded better positions than the undecorated youths. Six of the certificated young men at least are in India, all Kew men, holding good positions. Several others are known to us in this country holding considerably better positions than the majority of those who have not thus given a pledge of their industry and ability.

Considering the amount of forethought and intelligence required even by a second or third-rate gardener, we are grieved and surprised to see the comparatively low estimate in which the fraternity is held by the general public. We believe this arises from many causes, and foremost from the want of a proper healthy professional organisation among gardeners—an organisation which would bind the gardeners together in the same way that the several colleges and universities serve as a bond uniting their members—an organisation which should gradually establish an unwritten code regulating the duties of gardeners to their employers, to one another, and to themselves, in the manner most advantageous to all—an organisation which should lead gardeners to depend on themselves more and on the nurserymen less. We do not know how such an organisation could be more efficiently, though perhaps slowly and gradually, built up than by the creation of a healthy *esprit de corps* from the beginning, such a one as is naturally the result of the friendly competition in the class rooms and examination halls. We hope that in future the number of candidates for examination will be greatly increased, for it must be admitted that the number that have hitherto presented themselves is but small compared with the number of young gardeners dispersed throughout the kingdom. The number at the Society of Arts this year shows a considerable falling off, though one at least of the candidates has managed to gain the first prize in fruit and flower culture from the Society of Arts and the Royal Horticultural Society, and to secure an *honorarium* of £20. This should be an encouragement to others.

—— WHILE adverting to the EDUCATION QUESTION it seems *apropos* to introduce in this place some extracts from a recent discussion on the subject in the House of Commons, wherein we are told that:—

> Sir J. LUBBOCK moved, "That, in the opinion of this House, it is desirable to modify the new code of regulations issued by the Committee of the Privy Council, in such a manner as to give more encouragement to the teaching of history, geography, elementary social economy, and the other so-called extra subjects, in the elementary schools of the country." He observed that so far from these subjects interfering with reading, writing, and arithmetic, they would greatly promote them, and he quoted the evidence in support of his opinion. Elementary social economy was one of the subjects which it was of great importance to teach in our public schools, and the evidence of Professor HUXLEY was very strong upon that point, it being stated by him that a knowledge of social economy would tend in a material degree to put an end to strikes. The British Association and the Association for the Promotion of Social Science were also agreed upon the point that elementary education should be extended to a much greater degree than was proposed under the new code. The schoolmasters would naturally look to the new code as the guide they had to follow. At first sight the arrangement of the new code appeared to be perfectly fair. Fifteen shillings a head was the sum to be granted by the code, of which 6*s.* a head was to be for attendance; but he contended that the division of the money might be susceptible of great improvement. The encouragement for extra subjects under the code was really delusive. There was no encouragement offered to induce agricultural labourers to continue their children at school for a much longer period than they did. He complained of the inaccuracy of the information contained in the books used in the elementary schools, which, he said, were full of ambiguities and errors. For instance, he found it stated under the head of geography, that Ireland was in America. Under the head of botany the children were informed that sap was not black, as was generally supposed, but in the opinion of many eminent authorities of a dark blue colour. Again, under the head of vegetable physiology, it was stated that the seed of a Sweet Pea was not much larger than a pin's head, yet it contained, compactly folded up, a large branchy flowering plant. In animal physiology they were taught that fishes had no voice, except seals and whales. Insects, they were told, had their uses, and a fly keeps the warm air pure and wholesome by its constant zig-zag flight. But it was not only in matters of natural science that these books were susceptible of improvement, for some of the moral teaching they conveyed might be questioned; as, for example, the tale of the boy who, when he hesitated to rob an orchard, was induced to join in the depredation by the argument that his refusal to do so would not influence the result; and he is made to sum up the train of moral reasoning thus:—
>
> 'Since they will take them, I will go too;
> He'll lose none by me though I get a few.'
>
> He asked whether that was unobjectionable moral teaching? In another place was the story of how a boy in humble life rose to be a master manufacturer by first saving, through dint of industry and self-denial, £700, and risking it over and over again, till at length he found himself in possession of £90,000. Were the working classes to be taught that the way to get rich was by risking their savings over and over again?—Mr. W. E. FORSTER inquired what series the hon. baronet referred to.—Sir J. LUBBOCK said the series issued by the British and Foreign School Society, and that issued by the National Society, which had been adopted in the education code within the last few months. He should be glad if he could induce the Government to issue, themselves, a short series of manuals adapted for every school. In Scotland and in America the plan which he advocated was already carried out; and during the late war every German soldier carried with him a map of the roads of the country in which he was engaged. The statistics connected with the science schools showed a growing appreciation of the instruction afforded in them. In the year 1860 there were nine schools of that kind and 500 students; last year there were 810 schools and 30,000 students. Year by year there had been a gradual increase of schools and students, and also a considerable improvement in the system of instruction. Out of 60 Queen's medals allowed after the examinations in physical geography, no less than 10 were carried away by young people under 14 years of age. He wanted to introduce variety into education. In the American schools it was an axiom that the lessons ought to be short, many, and varied. He did not want to have the school hours lengthened. The fault of the existing system was that it loaded the memory instead of educating the mind. There was in fact too much instruction and too little education. They wearied children in elementary schools with the mechanical act of writing and long lists of dates, names, places, and kings, which conveyed no definite idea, and had no apparent relation to the duties and occupations in life of the children. It was more important that children should like their lessons than that they should learn them, on account of the habit of learning which liking them would tend to form. What he wanted to see taught was something about the properties of air and water, the causes of day and night, of summer and winter, and the ordinary phenomena by which they were surrounded; believing as he did that such instruction would create a desire for more information, open out sources of the purest occupation and enjoyment for leisure hours, and, in accordance with a well-known proverb, make the man the better workman and the workman the better man.—Mr. MUNDELLA believed that if some of the elements of political economy were taught, the relations between capital and labour would be much more satisfactory, and he concurred in the opinion of the late Mr. COBDEN that if agricultural labourers knew something about the colonies they would not be content to rot on 8*s.* a week. The English working man, when a thing was brought fairly before him, was a just man, but it was almost impossible for him to judge the value of money or his own interests. A great outcry had been raised in this country about the dowry of a princess. £6000 a-year and £30,000 paid down seemed an enormous sum to an English workman who was in receipt of his 30*s.* a week, but that was only because he had no capacity for making comparisons, had no idea of the vast resources of the country, and had no conception of its vast expenditure. If the great masses of the working classes were to be made loyal to the institutions under which they lived, they must give them more intelligence. They ought not to be content with English education until it was as good as that of any other country in the world. Their ideas of the education which ought to be given to the working classes were altogether too low to make them useful to themselves, or appreciative of the advantages which this country and the colonies offered to them; and he did trust that something would be done to give them a knowledge of the subjects

to which his hon. friend had directed the attention of the House.—Dr. L. PLAYFAIR supported the motion, and contended that mere elementary education was not sufficient to carry a working man through life. On the contrary, it was apt to melt away in two or three years of active occupation. The higher subjects provided for by the Revised Code existed more in name than in reality; because the maximum sum could be gained for the elementary subjects, and there was no necessity for trying the higher subjects. It was true that the talented poor were always in a very small minority; but it was of the greatest importance to the State to add to its intellectual funds. The working classes of England have far less chance of educating themselves in the higher branches of learning than the working men of any other country, though no other country spent so large a proportion of the Imperial funds on education as England did. The reason of this was that while other countries made it the duty of localities to teach the A. B. C. of education, and employed Imperial funds for the purpose of inspection and the development of education into that which would be useful to the State, we had, until the recent Act, adopted the opposite course, and four-fifths of the treasure poured out upon education was wasted, because, as it appeared from the reports of the inspectors, four-fifths of the scholars forgot soon after leaving the schools the elementary learning they had acquired. Up to eight years of age the children of the poor and of the middle classes received the same education, but that which was only the beginning with the latter was with the former the end of their education. State education must be made much more productive than it was at present, and in that view he supported the resolution.—Mr. A. HERBERT complained of the want of interest in teaching on the part of children. It was like putting a stick in the ground to grow; there was no vitality in it. If they could but teach children why tops spin, and why chimneys smoked, they would have done something useful. What was wanted was, to make the occupations of the people a means of their education. In all trades there was constant waste. If they took cabinet-making they would find a continual waste of material and time, because men did not know how to carry on their work. A want of scientific knowledge showed itself in all departments of trade.

—— The suggestion made amongst the exhibitors at Nottingham, to the effect that some mark of esteem and respect should be presented by them to Mr. GEORGE EYLES, the superintendent of the flower shows of the Royal Horticultural Society, was taken up at a meeting of some of the principal exhibitors, Mr. C. TURNER in the chair, held at South Kensington on Wednesday last, when a committee, with power to add to their number, was formed to carry out the above object. Mr. JOHN FRASER was requested to act as treasurer, and Mr. MOORE as secretary; and it was determined that subscriptions to the testimonial should be limited to one guinea.

—— In England the MAXIMUM TEMPERATURES of the air during the week ending July 29 ranged from 76°.6 at Blackheath to 67° at Newcastle-on-Tyne and Liverpool respectively, with a mean for the several towns of 70°.8. The MINIMUM TEMPERATURES ranged from 51°.9 at Blackheath to 47° at Wolverhampton, Eccles, and Hull, and the mean for the several stations was 48°.5. Rain fell more or less heavily throughout the week over the whole country; the principal falls recorded were 1.47 inch at Leicester, 1.43 inch at Manchester, 1.42 inch at Eccles, and 1.20 inch at Hull, and the mean for the several stations was 1 inch. In Scotland the MAXIMUM TEMPERATURES ranged from 73° at Perth to 64°.2 at Aberdeen, and the minimum temperatures from 48°.8 at Leith to 43° at Perth. At all the Scottish stations rain fell during the week, the greatest fall taking place at Perth, viz., 1.49 inch, and the mean for the several stations 1.26 inch. The MEAN TEMPERATURE for England for the week was 57°.2, and for Scotland 54°.4. The highest mean temperature recorded in England was 60°.4 at Blackheath, and the lowest 55°.5 at Eccles. In Scotland the highest was 56°.2 at Perth, and the lowest 53°.4 at Glasgow. (See Mr. GLAISHER'S Tables in our present issue.)

—— As regards the GALL-LIKE BODIES on RHODODENDRON FERRUGINEUM, the Rev. M. J. BERKELEY writes as follows:—"The specimens sent were not on the leaves, but on the terminal bud. I could not find any trace of larvæ, but the whole of the external surface was covered with a white bloom, which resembled to the naked eye that in the young condition of Peach blisters, and under the microscope was identical in structure. Only three specimens were sent, and as these were not in a satisfactory condition, I wrote immediately to the address which accompanied the communication (Mr. R. B. FERGUSON, Chester), but the letter was returned from the Dead Letter Office marked "not known at Chester." Should this meet the eye of Mr. FERGUSON, I should feel much obliged by the communication of additional specimens, directed to Sibbertoft Vicarage, Market Harborough. Mr. MÜLLER'S description of the Cherry-like galls does not tally with the specimens which I received. I inquired of an Indian botanist, who has seen thousands of Rhododendrons, whether he had seen such galls, but he did not recollect to have done so. Should I be so fortunate as to get a better supply of specimens, I will make a more accurate examination, but even should I find larvæ it is not impossible that Ascomyces may coexist with them. Since the above was written, Mr. BROOME has sent from Perthshire a thinner but similar substance on Vaccinium Vitis Idæa, covered with a similar bloom. There is no reason to think that this is an insect product."

—— It is stated that a jet of quartz sand blown through a pipe by steam, at 300 lb. pressure to the square inch, will make a hole in a solid block of corundum an inch and a half deep and of the same diameter, in less than 25 minutes. Corundum is little, if at all, inferior in hardness to the diamond; in the comparison, even blued steel is soft, and granite absolutely pulpy. This remarkable MECHANICAL DISCOVERY is due to Mr. B. C. TILGHMAN, an engineer of Philadelphia, who turns upon corundum a pipe which discharges sifted sand, mixed with a furious squirting of steam, and the fine shower of particles thus flung cuts a hole equal to the diameter of the jet. The same effect is produced in anything else submitted to the process. So great a force of steam is not necessary for finer work, such as grinding or engraving glass. For this purpose, a blast of air may be employed by means of a rotary fan. The tube is fed with sifted sand, which the air-blast takes up and whirls against the glass. It will thus completely demolish a surface moving past at the rate of five inches in the minute, and the spent sand and sand-dust can be perpetually returned and re-employed. Moreover, by covering parts of the glass with any semi-elastic material, such as paper, lace, caoutchouc, or oil-paint, designs of any sort may be engraved. The particles which eat off the hard glass or stone beat in vain upon the interposed medium; and so curious is this resistance that even a green Fern leaf may be used, and the sand-shower will consume all but the parts thus covered, leaving a delicate pattern of the frond. The film of bichromatised gelatine used for photographic negatives may also be thus utilised for producing an engraving on glass or steel; and by a very simple arrangement the jet can be rendered movable, and handled with an absolutely artistic freedom.

—— At a recent meeting of the French Academy of Sciences, M. ELIE DE BEAUMONT, the perpetual secretary, communicated certain observations relative to the effects of HOAR FROST about the middle of May last. The highest intensity and destructiveness was remarked on the night of the 18th of that month, at Gisors, by M. ADOLPHE BRONGNIART; at Meudon, by M. DUCHARTRE; in the woods around Versailles, by M. BOUQUET DE LA GRYE; the environs of Chatelherault (Vienne), by M. MOLL; the Haute-Marne, by M. FLAMMARION; and in various other parts of France, by M. BARRAL.

—— The following account of the medical properties of SYMPHYTUM OFFICINALE is taken from HOUTTUYN'S "Pflanzensystem:"—"The root is employed as a soothing, sanative, and astringent remedy in spitting of blood, dysentery, and ulcers in the lungs and urethra. It is also employed externally in emollient and discutient poultices. The blossoms also are used in the preparation of a ptisan for colds and coughs." In some parts of the country the blossoms are collected and dried like Cowslips for making comfrey-wine, which is supposed to have great healing powers. *M. J. B.*

New Garden Plants.

ASPLENIUM SCHIZODON, *Moore, n. sp.*

Fronds pinnate, coriaceous, glabrous, broadly oblong; pinnæ (about three pairs with a terminal one) alternate, 3 inches long and about ¾ inch broad, obtuse, unequally cuneate, often auricled at the base, narrowing into a distinct stalk, deeply toothed along the margin, especially towards the broadly rounded often truncated and dilated apex, which is deeply and unequally incised, the teeth usually bifid; sori numerous, narrow, linear, extending nearly from the costa to the margin, slightly curved following the direction of the once-forked veins, crowded, and hence occasionally diplazioid or scolopendrioid; caudex decumbent, clothed with dark-coloured acuminate scales; stipes semiterete, channeled in front. — *Hab.* New Caledonia.

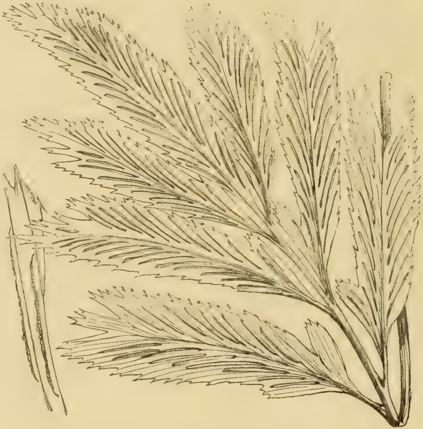


FIG. 223.—ASPLENIUM SCHIZODON.

This curious and ornamental Fern (fig. 223) has been known to us for the last three or four years in the collection of the Messrs. Veitch & Sons, of Chelsea, whence our most perfect specimens were obtained, from plants collected by the late Mr. J. G. Veitch, in New Caledonia. Recently it has been shown at South Kensington by the Messrs. E. G. Henderson & Son, of St. John's Wood, and received a First-class Certificate, the plant in this latter case having been received by way of New Zealand, but apparently from some garden source. The fronds are evergreen, of a deep dull green colour, somewhat coriaceous in texture, and growing in a crowded manner from a decumbent scaly caudex. They have a stoutish stipes of about 3 inches long, rounded, and of a blackish-purple behind, channeled in front, and supporting a lamina of about 6 inches long, which is divided in the specimens before us into about three pairs of alternate pinnæ, the terminal one being similar to the others both in size and form, except that the auricle is wanting; the pinnæ are, including the tapered stalk-like base, about 3 inches long, broad, often dilated, rounded or irregularly-truncate at the apex, and with one or more deep clefts there, dividing them unequally, while the margin is sharply toothed, and the teeth, especially those at the apex, conspicuously bifid. The posterior base of the pinnæ is cut away obliquely, while on the anterior side is sometimes an auricle, which is most strongly developed in the lower pinnæ. As an evergreen Fern it is well worth a place in the greenhouse, where its singularly toothed fronds will always give to it a considerable degree of interest. *T. M.*

APPLE TWIG PARASITES.

IT is a fault, to which too many of us must plead guilty, to accept two or three generalisations for granted, assent to them mechanically, pass on, and take no more heed of the subject. For example, we take an autumnal or spring tour round the garden, just to see how things are going on, and an old Cabbage stalk meets our gaze, blackened with sooty patches, 2 or 3 inches in length. We look at it casually, it is not soot, it is only a Fungus of some kind or other: that is our fact, hastily arrived at, and with it we are content. Off we start on our tour, the Fungus on the Cabbage stalk does not torment us for years perhaps, and perhaps never. It was a Fungus, and a black Fungus; Fungi are plants of a low organisation, still they are plants. Curious, very! Away we start upon a more familiar theme, content with what we suppose we know about the sooty Fungus on the old Cabbage stalk, and content to know no more. It was not, perhaps, the result of examination of the structure that this general notion has been gained. After all it may only have been a "happy guess." So an old Apple twig, covered with vegetation of a peculiarly characteristic kind, with a very characteristic odour, excites no particular interest. The parasitic growths are so very common, that we know them as Lichens, and have known them as such for many years. Why should we know more? why examine them more intimately to ascertain if they are indeed Lichens? Once on a time, when we were boys, it was told to us that they were Lichens, and we have gone on, and lived in the faith ever since.

This sort of superficial knowledge may, perchance, be quite enough for our everyday life. It is quite possible that more knowledge on that subject will neither add to our purse a single florin, nor aid us in growing Apples, or selling them. It might be very poetical, and very true, for Wordsworth to write—

> "The world is too much with us—
> Getting and spending we lay waste our powers;"

but, after all, is not the main object of human life the getting and spending? The unadorned and naked philosophy of most human hearts nowadays is of the Iago type, "Put money in thy purse." However much we may deny it with our lips, we confess it in our hearts, and prove it by our deeds, that those occupations please best which pay best; and the test applied even to scientific knowledge is but too often its market value.

Back again to Lichens, taking for granted that so much knowledge, no matter how obtained, is possessed by all who peruse these lines. A fragment of an Apple twig covered with Lichens. The object is a common one, for there seems to be an affinity between old Apple trees and Lichens. On the occasion when we made a garden stroll for the subject matter of this chapter, the twig collected carried upon it two distinct forms—two well marked species. One of these of a bright golden yellow or orange, the other of a sombre ashy grey; one spreading closely over the surface of its host, the other somewhat erect and bushy. The close affinity which exists between Lichens and Fungi is not so evident in either of these species as in some others. For the benefit of those who are somewhat acquainted with the subject, we might suggest the comparison of some Parmelias and Lecideas amongst Lichens, with such Fungi as Peziza rosæ and Peziza fusca, or many graphideous Lichens, with Fungi belonging to the Hysteriacei. In fact, there are points at which the two approximate so closely that it is exceedingly difficult, scarcely possible, to determine satisfactorily whether the organism should be classed with Lichens or Fungi. The proposition by Dr. Lauder Lindsay to establish a sort of intermediate order for the reception of what he terms Fungo-lichens is evidence of this close approximation.

Let us endeavour to gain some knowledge of the structure of Lichens from the orange specimen on our twig. It is common on old posts, palings, and barn-doors, and is the same that is so often found on old brick walls. Sometimes only yellowish green, but more beautiful, and more easily recognised when of the golden hue. The "common yellow wall Lichen" (fig. 224, B) is known to many by that name, who would not dare venture to call it Parmelia parietina, or whatever generic name the "latest authority" may think fit to adopt. It spreads over the surface of the twig, closely adherent to it by its under surface, and may be roughly said to resemble a patch of puckered orange paper, with a more or less regular outline, glued down to the bark. The vegetative portion of this Lichen is the flat patch, which is called the thallus, and, whatever form the vegetative portion assumes it bears this name. It is well to examine separately the vegetative and the reproductive system of these lowly organised plants, the latter usually arising from the former, although in some cases the former seems to be almost obsolete.

The surface of the thallus is irregular, dotted over with little cups, and the margin is finely lobed and lacerated. The under surface is whitish. The little cups belong to the reproductive system, and will receive attention hereafter. In order to comprehed the structure of the Lichen-thallus, a thin section should be cut with a sharp knife or razor, and examined under the microscope in a drop of water. By this means four superimposed layers may be made out, running into each other, or blended so as to form a compact thallus. The upper or cortical layer may be regarded as a sort of cuticle. It is made up of compacted cells, subglobose, elliptical, or rather irregular, by compression; in fact the whole thallus is cellular. Below the cortical layer is a series of peculiar, rounded, greenish-yellow cells, called gonidia (fig. 225, E), which are said to be peculiar to Lichens. In some species this gonidic layer is close to the surface of the thallus. These gonidia frequently break through under certain conditions, and encrust the surface, giving the Lichen a mealy appearance. The "conidia" of Fungi are very different,* in many cases spore-like, and developed in clusters, or singly, at the tips of branched flocci, possessing the character of what are popularly called "moulds." As far as we know, the functions ofthe two also seem to be equally distinct.

The term "gonidia," as applied to these thalline bodies in Lichens is certainly not a happy one, and would be much more applicable to the "conidia" of Fungi. It is questionable whether two words so similar in sound should be applied to things so distinct, associated with plants so nearly allied to each other as Lichens and Fungi. In fact, so close is the alliance in some cases, that the strongest evidence which could be offered has been that the presence of gonidia in the apothecia (no thallus being developed) established their claim to be regarded as Lichens, and not as Fungi. Gonidia are sometimes so freely developed in certain Lichens that they completely alter their appearance, so as to make them recognised with difficulty, Whole genera have been abandoned as spurious, because based on metamorphoses caused by the excessive development of gonidia.

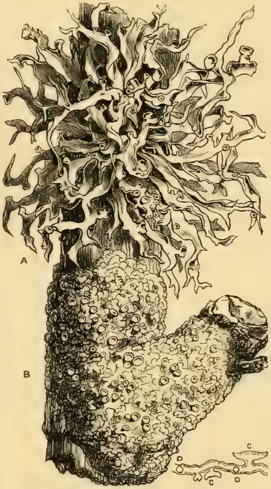


FIG. 224.—APPLE TWIG, WITH TWO LICHENS ON IT.

A, Ramalina calicaris; B, Parmelia parietina; C, Apothecium; D, Ostiolum.

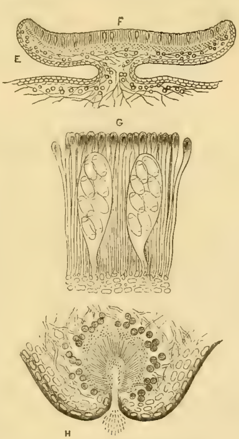


FIG. 225.—PARMELIA PARIETINA.

F, Section of apothecium magnified, showing near E the gonidia; G, Portion of the apothecium more highly magnified, showing the paraphyses and the asci with their sporidia; H, Spermogone magnified, showing the threads and spermatia.

Lichen-gonidia possess a certain amount of reproductive power, and are in a limited sense reproductive buds. Whilst the cells of the cortical layer are compact, those of the gonidic layer are lax, each cell seeming to be quite independent of its neighbour, ready to make its way to the surface whenever an opportunity presents itself.

The third layer is sometimes called the medullary layer. It is a spongy stratum of elongated filaments, branching and crossing each other in all directions, and in some Lichens this is the lowest stratum, from whence proceed the root-like fibrils which are seen on the under surface of such species as the one commonly called "ground liverwort."

Lastly, there is in our "yellow wall Lichen" a fourth layer, or thin stratum of cells similar to those of the cortical layer, and this constitutes the under surface, which is applied to the matrix on which the Lichen flourishes, be it Apple twig, barn door, stone column, or brick wall.

A very pertinent question is nearly certain to arise at this point, when we have completed our examination of the vegetative system of this Lichen, Whence does this parasite derive sustenance? Does it grow at the expense of the tree on which it flourishes? If so, to what extent are Lichens detrimental to the trees on which they grow? These are questions which Dr. Lauder Lindsay has already answered, as far as his experience and opinion goes. Of course it is very much a matter of opinion after all, as there is but little positive evidence. Lichenologists have generally been in the habit of describing Lichens as deriving their nourishment wholly from the air, and not from the trees on which they grow. Cultivators of trees and shrubs seem to be almost unanimously of opinion that Lichen growth is injurious to the trees on which they are parasitic. Dr. Lindsay is disposed to think that the latter are nearer the truth than the former, and "that Lichens must be regarded as, in some measure, at least, parasitic, drawing the constituents of their thallus from the objects on which they grow." There is, however, so great a paucity of evidence, and that so unsatisfactory, that it cannot be regarded as settled whether Lichen growth is detrimental to trees, and to what extent.

Returning to our wall Lichen, we examine the surface of the thallus, and find it studded with little cups or discs of a rather darker colour, and near the margin of the thallus minute points or dots. These are the parts concerned in the process of reproduction. First and foremost the prominent discs, attached to the thallus by a short stem: these are the apothecia (fig. 224, C, fig. 225, F). If we make a section through one of these, and the thallus supporting it, we shall observe how intimate are the relations between them. The apothecium grows from the thallus, expanding into a flattened disc with a slightly elevated margin. In order to obtain a clean section for the microscope, it is recommended that a fragment of the thallus with its apothecia be inserted in a slit made in a soft piece of cork, and then sliced with a sharp penknife or razor, through both cork and Lichen. A good section may generally be made in this way, after a few failures, and the section may be permanently mounted for future examination. The great difficulty is to cut it thin enough. If cut smartly, and with a sharp instrument, it is generally uniform in thickness.

Having obtained such a section, let us endeavour to comprehend its structure under a quarter-inch objective. The margin and under-surface of the disc partakes of the cellular character of the thallus, and gonidia are also present. The rest of the disc, except the extreme margin, is called the hymenium, and contains the fruit. At right angles from the surface a mass of parallel threads are closely packed together, and mingled with them transparent, club-shaped sacs, each enclosing eight sporidia (fig. 225, G). These organs are called by the same names as in Fungi, and the structure really reminds one very much of that of the cups of a Peziza. The parallel threads are paraphyses, slender, jointed threads, more or less expanded, and club-shaped above, containing a few granules. Some say that they are barren asci, or spore-cases; others contend that they are not. Their functions, certainly, are not very clear, but there they are, and, undoubtedly, to serve some purpose. The membranous sacs, which inclose the sporidia, are the thecæ or asci, each enclosing eight elliptic sporidia, and each of these has a lenticular yellowish spot at either extremity, and are colourless in the centre. The sporidia in other species differ considerably from these in form, colour, size, subdivision, &c., and are in themselves excellent microscopical objects. It may be stated, in passing, that diluted tincture of iodine is very useful in examining many Lichen structures with the microscope, since by imparting a blue or brownish colour, almost invisible membranes are rendered distinct.

Beside the discs and their sporidia, contained in asci, there are other bodies concerned in the reproductive process, which are indicated by the small dot-like points, already alluded to, near the margin of the thallus. These are somewhat of sunken cells, with an orifice in the thallus, called the ostiolum. The mouth or ostiolum leads into a cavity surrounded by jointed threads, which bear at their tips minute slender, colourless bodies in great profusion, called spermatia (fig. 224, D, fig. 225, H). It is supposed that these spermatia possess fecundative power, and represent the male element, as the apothecia enclose the female element, in the reproductive process. The details of the mode of action, and conditions of fecundation in Lichens, as in Fungi, are still unknown. Beside the spermogones, as the cells are termed which contain the spermatia, there are other organs found in some Lichens, called pycnides, but their functions are also very obscure.

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* We confess to an error at p. 105, in referring "conidia" as applied to Fungi, to the same etymological source as "gonidia;" but we are still disposed to maintain that the two words have been onfounded, and used interchangeably.

In this yellow wall Lichen we have a foliaceous species, with open, disc-like apothecia, and asci containing eight elliptic sporidia; these latter are supposed to be fertilised in some manner by the spermatia which are generated in the spermogonia scattered near the margin of the thallus.

Side by side with it on our Apple twig we find growing another Lichen, differing very much from it in habit, whilst agreeing in many other particulars. It is much less common in such a place than in some others, but here it is. This is a fruticulose species, having the bushy habit of a miniature shrub. The thallus is very much divided, springing from a button-like base. The genus to which it belongs is called Ramalina, probably because most of the species are found on dead twigs; and whether this is really to be regarded as a good species, under the name of Ramalina calicaris (fig. 224, A), or only a variety of another species, is of very little consequence to us. The thallus is cut into narrow, long, forked divisions, which are sometimes smooth, and at others ribbed or channelled. The apothecia are seated near the tips of these divisions or branches. These two Lichens, which we find flourishing on the same twig, may be accepted as examples of foliaceous and fruticulose species, so called from their habit, which in one instance is flat and leaf-like, and in the other erect and shrub-like. There is nothing very special to be noticed in the structure of this second species. There are spermogones, which are seated on the vein-like ribs of the branches (or laciniæ), and these contain straight, delicate spermatia. The sporidia are different from those of the yellow wall Lichen, but the manner in which they are produced in the apothecia is the same. In the present case it will be observed that the sporidia are elongate-oval, divided across the centre into two cells, so that they are described as bilocular, or two-celled, and very slightly coloured.

Other Lichens are found in similar situations, but the two already described are sufficient to give a general idea of structure. It is not uncommon to find parasites on the thallus of some Lichens, consisting of apothecia only. Some of these are more decidedly Lichens than others. A few seem to be undoubted Fungi, whilst there are others of a character so doubtful that some cryptogamists consider them Lichens, and others Fungi. Here, as in Fungi, there is still much that is obscure, and close observers, with plenty of leisure, would find a wide field for research, and opportunities for discovery. Let no one suppose that everything is known which can be known even of the reproductive process in the lower Cryptogamia. It is true that much has been discovered of late years, but the subject is not by any means exhausted. No one has worked more closely and satisfactorily in our own country than Dr. Lindsay, of Perth, and the novice who is desirous of commencing the study of these interesting forms will find his "Popular History of British Lichens" an easy and safe guide.

Finally, there is one advantage which Lichens possess over many other low forms of plant life, that they may be easily preserved for years without alteration of form or colour, and a well-stored collection seems as fresh and natural in ten years as in ten hours. Fortunately also, little insects do not show such a predilection for them as for Fungi. Will any of our readers collect and examine the common wall Lichen for themselves, and with that commence the study of these lowly organisms? All we can promise is, that if they do so "with a will" they will never repent. *M. C. C.*

THE CYPRIPEDIUM SCALE INSECT.

AMONGST the many curious forms exhibited by the different kinds of scale insects and their immediate allies, constituting together the family Coccidæ, none have surprised us more by their complete departure from the general form of the insect type than the scale insect represented in the accompanying woodcut, (fig. 226) which is parasitic upon Cypripedium niveum, and which has been kindly communicated to us by A. D. Berington, Esq., of Pant y Goitre, Abergavenny, by whom a number of the plants were imported in the summer of 1870 from the west coast of Siam. Several of these plants flowered well, and in the month of January last about two-thirds of the whole were beginning to push up their flower-stems, one plant having as many as six or eight buds. Several, however, of the plants were then found to be infested with pretty little insects lying flat upon the surface of the leaves, and which had rather the appearance of minute, radiated, semi-transparent snowflakes than real insects.

The general appearance which was borne by a portion of one of these leaves is represented in the centre figure of our woodcut; whilst the figure on the right hand represents one of the scales highly magnified. The scale consists of a very minute, central, oval, white mass, from which all round extends a most delicate, semi-transparent, waxy, flattened membrane, which is extremely brittle, and very difficult to move without breaking, and which is produced into eight conical points, which are thickened like the central mass, and beautifully white; occasionally these points are furnished on each side with a very minute branch, and there also runs, from the central mass to each of these points, a slender, thickened, white rib. These white lines are also to be seen on the borders of many of the more regularly formed species of scale insects, and seem to indicate the chief articulations of the body: thus the anterior point appears to represent the extension of the scale over the head of the insect, the three pairs of lateral points, the three pairs of legs, and the posterior point the abdomen of the insect.

The substance of the scale seems to be identical in its nature with the waxy secretion of so many Homopterous insects, and which varies from the hard waxy secretion of the lac insect and the white material of the Coccus Pe-la employed by the Chinese to make wax candles, to the white cotton-like covering of the American blight on the Apple, or the long thread-like filaments emitted from the bodies of the little jumping Psylla Buxi and other allied species; and which in the insect before us takes the shape of a flattened continuous scale, entirely covering the body of the real insect. Some of the more minute and younger scales were not so regular in their form, having nine or even ten points instead of eight.

On removing some of the largest of these scales, and turning them upside down, the under surface was found to be formed of a very delicate semi-transparent film, quite flatly applied to the surface of the leaf, of an oval form, occupying the greater part of the under portion of the scale, and extending nearly to the bases of its eight prolongations. On very carefully removing this oval covering, there was discovered, lodged in the cavity, formed between it and the upper covering, a regularly formed pupa of a male Coccus lying inactive in the cell, having the head small, furnished with two black eyes and two jointed antennæ, slender and extending beyond the base of the wing-covering; the head was followed by the semi-oval prothorax, having its pair of legs lying on its underside enveloped in their sheaths, whilst on the underside of this prothorax, near the basal part, or place of insertion of the forelegs, were two small black points, which may possibly be connected with the mouth of the pupa, and which may possibly be analogous to the curious mandibles of the pupa of certain Neuropterous insects which are found in a different state of development, both in the larva and perfect insect—(*e. g.*, as in Hemerobius and Myrmeleon) The mesothorax of the pupa of the scale insect before us is furnished with short rudimental wing covers at its sides, and the two pairs of hind legs extend in their sheaths backwards beyond the extremity of the oval abdomen of the insect, which is terminated by a small conical point, at each side of which is a minute bracticulated conical appendage.

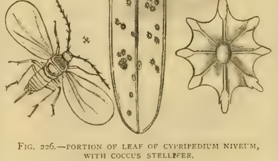

FIG. 226.—PORTION OF LEAF OF CYPRIPEDIUM NIVEUM, WITH COCCUS STELLIFER.

From beneath one of the scales I had the pleasure to extract a fully-developed male scale insect, represented in the left hand figure of the accompanying woodcut (fig. 226). It is extremely minute, the natural size being indicated by the small crossed lines near the head of the figure. The head is distinct and transverse, with moderately long 10-jointed antennæ, of which the basal joint is short and thick, and the second joint very minute, the others being long, slender, and setose, gradually shortening beyond the fourth joint, which is the longest; the mesothorax has the deep transverse impression common to the males of these insects, and the scutellum is very large and semicircular, the legs long and very thin, terminated by an exarticulate tarsus, having a single apical hook or unguis. The abdomen is terminated by a single elongated style, having a small bi (possibly tri) articulated lobe on each side of its base. The wings are large and milk-white, with one strong vein towards the anterior margin and two others on the disc.

This result of the examination of these bodies has led me to the conclusion that the star-like scales are those of the males only, and that the female scale is of an elongated oval form, one of which may be observed in the central figure of our woodcut, lying close to the right side of the midrib of the leaf. This is a scale of the more ordinary form; it is clearly that of a female insect, having distinct legs, antennæ, and eyes; and on detaching one of these oval scales from the leaf several young larvæ recently hatched were found nestled beneath the body of their parent; these are minute active creatures, with six legs, and 9-jointed antennæ, of which the three basal joints are considerably the largest, and the tarsi are terminated by three long bristles.

This species of Coccus belongs to that section of the family of which the common Coccus (Lecanium) hesperidum, or scale of the Myrtle, &c., is the type; it will probably form a distinct genus in the system of Messrs. Targioni, Tarzetti, and Signoret. I shall, however, here simply indicate it under the name of Coccus stellifer. *I. O. W.*

PEACH AND NECTARINE TREES OUT-OF-DOORS.

I WAS much amused on reading in the *Sherborne Journal* "that the Rev. W. F. Radclyffe had brought down upon his head a hornet's nest!" This was accompanied by "D., Deal's," article. I regret having given so much pain to so many worthy men. The gardeners of England are, I believe, the best in the world, and certainly the qualified gardeners are generally an underpaid class. I am always gratified and surprised by their numerous and wonderful productions; still, to every qualified gardener there are hundreds of worthy men who have not had a gardener's education, and hence have not studied the "theory of vegetation and the phenomena of plant life." Against this class I have not a word to say. They do the best they can under the circumstances, and if their knowledge of arboriculture is not great, neither is their remuneration great. Till my articles appear in print (my eyesight not being very good) I cannot see what I have said. I ought to have said "the sad condition of Peach and Nectarine trees out-of-doors is, in many instances, the result of gross ignorance and neglect." It is difficult for a tailor to make a suit of clothes to fit all his customers, and it is almost as difficult to write an article on the treatment of Peach and Nectarine trees out-of-doors to suit everybody. The difference of soils, aspects, seasons, and other circumstances cause this difficulty. What may be right treatment in one soil or one season may be wrong in another. As, however, Mr. Henry Mills wishes me to say how the trees are generally treated here, I will do so; though I would at all times rather read another's article than write one myself. From the time that the late Dr. Lindley wrote to me a complimentary letter, expressing a wish that I should write for the *Gardeners' Chronicle*, up to the present, I am not aware of ever having intentionally written an ill-natured article.

There are three things that must be especially attended to, namely, the roots, the foliage, or first lung, and the skin, which is the second lung. Of course, if the soil is swampy it must be drained. Even Willows do best in drained ground, though they like moisture. All my gardens, three in number, and lawn were tile-drained by me to the depth of 3 feet 6 inches. Before I did this, the Rose leaves turned yellow by September. Having built about 170 yards of 5, 6, and 7 feet brick wall against the cutting north wind and the violent west wind—the other points being open for miles to the south and east, the next thing to do was to buy some trees. I bought from the Blandford Nurseries some young and 21 old trees, some of which were from 10 to 16 years of age; some young trees from Mr. Rivers, and some maidens from Mr. Gray, of Brox; and so my walls were filled up. They are all healthy and vigorous trees; the aged trees are as healthy and vigorous as the young; and though some of them were naked at the base and centre, they are now nicely filled up. I pointed them out to Mr. Leach and Mr. Beck, respectively the very able gardeners of my friends Lord Portman and Mr. Sturt, a few days ago. They expressed themselves much pleased with the health, vigour, and cleanliness of all the trees, and also with the fruit, which is a good crop for such a discourteous spring. At the conclusion of this article I will give a list of the sorts used here, and I should say that not one of them is tender or difficult to manage, if properly attended to. It is fair to say that the trees are my "hobby," and that even a qualified gardener, with so much glass and such a number of things to supply in the course of the year, could not pay as much attention to them as I do. In a large garden there is usually a wide border, cropped with something or another; hence the walk is far from the trees. Here I only allow my trees an 18-inch border, and then comes the path. Hence, in walking up and down, I can see the *status* of the trees, and can easily manage them. The walls being low, there is no need of a ladder! Under the walls I keep low stools, so that I can perch under the trees and look up, and see what mischief is going on.

I carry a knife and scissors and measuring reel in one pocket, and a hammer, nails, and bast in the other, and thus I am enabled from time to time to shorten a twig or nail one in. I say from time to time, because it is not good to disturb the economy of the tree by shortening all the twigs at once. It is one of the causes of gum. I usually stop the shoots about the first week in June, a little shorter in July or August, and finally in September I stop them once more, including the terminals. I then remove all that is not wanted. Circumstances, however, may vary all this. Gardening is a matter of judgment and great experience. Instead of training in one long shoot, from 12 to 18 inches in length, I prefer three shorter shoots, from 4 to 6 inches in length, with an independent Peach or Nectarine on each twig, instead of three fruits on one shoot, from 12 to 18 inches in length. This, however, cannot always be done. Where there is a vacancy a longer shoot must be trained in for a future breeder. I like Mr. Bréhaut's alternate system, and strongly recommend his valuable work to pruners, whether they prune long, short, or alternately. I disbud less than most people, and cut to an inch, or 2 inches in length, what others usually pull out altogether, taking care not to overcrowd the wall. Hence I have more chances of fruit, and a better chance of ripening the wood.

What we want is a fruit at the base of the twig and two successional shoots, the one to be spurred and the other to be pinched at greater length. Thus the foliage being at shorter distances and near home, is the more available for the depuration of the sap in the main wood; and the base and centre of the trees, instead of being bare, are well filled up. In gardens, where long pruning, and by consequence much disbudding, are practised the trees in the course of time get "naked as lances!" unless it is done by a scientific pruner. Good foliage is a matter of the greatest consequence; because, as it is true in a spiritual sense that "the leaves of the 'tree of life' are for the healing of the nations," so in a secular sense the leaves of every tree are for the healing of the tree. Moreover, without good foliage, fruit can have no flavour. The sun, last summer, struck Alexandra Noblesse and the Princess of Wales in the crux of a wall, and their fine crops were perfectly tasteless. The ripening of moderate wood of course is the grand ward in the key of success, as regards cropping. In order to get my wood ripe, and the skins hardened before severity sets in, I cut off in September, or as soon as the crop is taken, half of every leaf, which allows the sun and air to have access to the twig. By the first or second week in October every leaf is off; and from that time till severity sets in the skin hardens, and the twig, instead of being soft and of a pale sickly green, becomes blood red or mahogany colour. This cutting off of leaves I can afford, because I disbud but little in the spring, and the trees are full foliaged. I do not advise this practice on trees that are sickly, or that have had bad foliage, or a short allowance of it.

There is one other matter of great importance in two such torrid summers as the two last, namely, supplying the trees with mulching, copious waterings, and constant syringing to cool the walls and refresh the parched skins. I believe the sufferings of last winter did not arise from severity, pure and simple, but from ill health previously contracted from other causes. I did not use my coping sheets at all till the buds and foliage showed signs of development. The winter had no effect whatever on the trees. An animal well summered is well wintered, and if people want their trees to stand such a hyperborean winter as the last, and crop, they must feed them properly, according to the requirement of each tree, stop their shoots, so as to shut back the early sap upon the cambium for the formation of fruit buds, keep their foliage clean, cool their walls in torrid summers, mulch freshly moved trees, supply abundance of water to the roots, and put on a sufficient covering early, to defend the blossoms and the starting foliage. The foliage, when it first spears out, is very tender, and will assuredly blister more or less, unless you keep it dry. It is the dew that gives the frost power to bite and disorganise the cuticle of the leaf, which, as it grows, assumes the form of a gutta-percha ball! When the leaves are fully expanded and hardened they rarely blister.

"D., Deal," says I keep many trees, and small: that is true. Some of my trees are very small, and are placed at the base between two larger trees, and others are riders—more properly, I believe, spelt ryders—a parliamentary legal term denoting an additional clause to a bill; thus, otherwise useless spaces below and above are filled up. I pursue the following plan when trees grow too robust to bear: I take them up, cut their roots hard, plant them on the hard, unbroken ground, and cover the roots with a molehill; they then form fibrous roots, and make fruit-bearing wood. In the autumn they are carefully taken up, without breaking a single root, and put in the place of some other recalcitrant tree, which undergoes the same process. I have now two Bellegardes laden with fruit that were so served. I practise this on a wall facing the east.

I conclude by recommending the following Peach and Nectarine trees in the order of fruiting. They are all hardy and robust trees, and their fruits are excellent:—

Peaches.—Early York, Dr. Hogg, Early Alfred, Early Ascot, Grosse Mignonne, Noblesse, Royal George, Violette Hâtive, Bellegarde, Barrington, Nectarine Peach, Prince of Wales, Princess of Wales, Lord Palmerston.

Nectarines. — Elruge, Violette Hâtive, Rivers' White, the Old White, Rivers' Orange, Rivers' Victoria. The two last Nectarines are the finest of all, and very valuable. I took a dish of Orange and Pine-apple Nectarines to Lord Rivers last year, and the ladies had them for luncheon, and pronounced them the most delicious fruit they had ever eaten. The largest Pine-apple measured 8½ inches, and was red as a harvest-moon. I have a capital crop of this fine Nectarine now on the trees. I have written the above just as it occurred to my mind. I hope I have expressed myself "courteously." *W. F. Radclyffe.* [Not only fair-spoken, but well-spoken. The truth is, that there are gardeners and gardeners, and the whole community too often has to suffer the reproaches which properly belong but to a section. It is a pity that public opinion cannot be brought to bear on the inefficient, the careless, or the dishonourable, without wounding the susceptibilities of those who fall under neither of these categories. Eds.]

Home Correspondence.

The Linnean Society's Journal.—In a recent number of the *Gardeners' Chronicle* (which I have only just seen), there is (p. 777) a notice of the last part (number) of the Journal of the Linnean Society, and the writer remarks that some of the papers were read as long ago as 1869, which, he adds, is not fair to the authors or to the Fellows. Allow me to retort that the above remarks are not fair. Of the nine papers contained in the part just published, two only were read as long ago as 1869. With regard to one of these, the title of which, I may remark, is mis-spelt in your columns, there were special circumstances which I need not detail which would account for the delay. The other of the two is a very short communication — little more than a note; and I am sure that neither the author nor the Fellows would make a grievance of its having been postponed in favour of papers of greater importance. *Fred. Currey, Sec. L. S.* [As our correspondent takes exception to our statement, we add the following particulars relating to the number in question, issued on May 23, 1871, and containing about one hundred 8vo pages, with one plate. The nine papers there published were read to the Society on the following dates—1, April 15, 1869; 2, June 3, 1869; 3 and 4, March 3, 1870; 5, April 7, 1870; 6, May 5, 1870; 7, June 2, 1870; 8, June 16, 1870; 9, June 16, 1870. From which it appears that in the majority of cases more than a year elapsed between the reading and the publication, and the shortest period was about 11 months. If we look further back to the zoological numbers, we find even longer intervals. We are aware that there are special circumstances which have prevented some of these papers from being issued earlier, but the general body of the Fellows, still less the outside public, know nothing of these impediments; and assuming them to be unavoidable, some explanation might well be given. The President's paper on Cassia, for instance, is looked for with impatience, but how many of the Fellows are aware of the cause of its delay? Eds.]

Dinner Table Decorations.—Some objections having been taken to the decorations which, with the assistance of several amateur friends, were arranged on the day of the Rose show at the Crystal Palace last year, I should be obliged if you could afford me space for a reply to them. The principal features were the introduction of young Palm trees, the sinking of their pots through the table, and the use of tall trumpet-shaped vases with climbing Ferns, drooping from the top, and trailing around the stem down on to the cloth. The intention was to show how such tall objects can be employed without interfering with the view, or with conversation, across the table. With respect to the use of Palm trees, it has been objected that their costliness puts them beyond the reach of any one but a millionnaire. I daresay that there may have been Palms to the value of £100 on that table, which was large enough to accommodate 30 persons. But, when it is remembered that the cost of the best dinners in London and other large places varies from 3 to 4 guineas per head, and that there are two or three London nurserymen prepared to furnish such a collection for the occasion for £5 or £6, the objector on the score of their costliness will be obliged to acknowledge that they only affect the price of such a dinner to the extent of 3*s.* or 4*s.* per head, a trifling amount in the estimation of thousands of wealthy dinner-givers in and near the metropolis. The Palms required for such a table must be moved in one of the covered waggons used by nurserymen in taking specimens to the flower shows, and when packed for travelling only occupy one-third of the waggon. In every case of my using them, the waggon has been filled up with Dracænas, Rhopalas, Dacrydiums, Ferns, or any other greenhouse foliage plants that the nursery could spare, without any extra charge. These, of course, are very useful for ornamenting side-tables, or for filling the angles of the room with pyramids of plants, and contrast well in their varied foliage with that of the Palms on the table. I have paid as much as 10 guineas for a van-load of Palms only, but the effect produced by them was not commensurate with the expense. To those who reside at too great a distance from a nursery to be able to hire Palms, and who may have been frightened at the cost of purchasing them, it may be some satisfaction to learn that young plants of many species are now to be bought on much more easy terms than formerly. The next objection to which I desire to allude is the assumed necessity for cutting holes in the tablecloth and in the mahogany, to allow of sinking the flower-pots through the table, and consequently the impossibility of doing such a thing, except in large places, where the expense of providing tables and tablecloths expressly to meet this requirement would not be a consideration. I have repeatedly heard it remarked (in a tone of voice that indicated no very great belief in the sanity of the proposer of such an idea), that no one would be likely to cut a hole in his dining-table, merely for the sake of putting a flower-pot out of sight. To such objectors I would make the following reply: When your family party at dinner is likely to be increased by the advent of a few friends, you are obliged to put in one or two extra leaves to your table. For such occasions be prepared with one or more extra leaves, which any joiner will make for you, of well-seasoned deal, at a cost of a few shillings each. In the centre of each of these deal leaves describe a circle large enough to admit through it the biggest flower-pot you are ever likely to use, and with a keyhole-saw cut out this circle on the bevel, so that the circular piece cut out may be dropped into the hole, if necessary, without falling through. So far, therefore, from this plan being only available by the privileged few, the humble possessor of a dining-table 6 feet by 4 may entertain his little party of six and have sunk in the centre of his table the choicest specimens of his amateur efforts in floriculture. Again, to the objector who sees no way of managing to lay his cloth without cutting a hole in it, I would say, use two tablecloths, folding each one into half its usual length, and put one to each end of the table, bringing the folded edges close together, and ironing them down quite flat. For fear of this line across the table being disturbed by the shifting of plates or dishes, it is desirable to prevent the edges of the two cloths from coming apart by putting in two or three pins, or tacking it here and there with white thread before ironing it; and as a still further precaution, it is advisable to lay sheets of white blotting-paper, or two small white cloths on each side of the plant under the join of the two tablecloths. Having thus replied to, and, as I hope, explained away, the assumed difficulties of this kind of dinner-table decoration, I will now only add, with reference to the tall trumpet-shaped glasses, that their height should be in proportion to the width of the table upon which they are used. For the centre line of a table 4 feet wide, such glasses may be 18 inches high. A semi-circular wire arch, connecting two of these glasses, and covered with some climbing plant, is a very pretty decoration for the centre of a small oblong table. *W. T.*

Galls on Rhododendrons.—With reference to the question relating to the existence of galls on the leaves of the Rhododendron, if it be of any interest, I may state that having been led to closely examine the various varieties of Rhododendron nilagiricum (through having taken a fancy to collect and scatter the seed of the white and pink kinds at one time), I can almost affirm that no galls are produced on this species in its natural habitat. *James MacPherson.*

Recognition of the Services of Mr. Geo. Eyles.—I prefer putting it in this way. Testimonials have become somewhat hackneyed, and besides, they mostly succeed work, and, alas! too often close it. But in this case I trust the expression of our appreciation of our friend's labours may be also accepted as a pledge of their continuance for many years to come. He is still in the prime of life, his full strength mellowed by experience, and his wise plans of serving and illustrating horticulture ripened by many years of practice in two of the best and largest schools of the country. Very few but thoughtful exhibitors really know how much horticulture owes to Mr. Eyles. For many years he has been the strong link that has bound some of the largest societies and their exhibitors together, in such a way as to keep up an unbroken succession of splendid exhibitions, of such a character as to draw the public, and to strengthen and deepen the general interest in horticulture. He has even done greater and higher work than this. At the Crystal Palace especially he displayed a tact and an energy in the furnishing and management of the Palace and grounds, which will ever make him rank high among eminent and scientific horticulturists. It would be beside my purpose to advert to other labour at Chiswick and Kensington, or to cite examples of his tact as a landscape gardener, in which profession he has made an honourable position. We are called simply to express our appreciation and esteem of the courteous and able manner in which he has always discharged his somewhat onerous duties as manager of flower-shows. Every one who knows Mr. Eyles must be anxious to do that. His quiet, most efficient mode of management is beyond all praise. I confess when first brought into closer contact with Mr. Eyles at the Royal Show at Bury, I did not quite understand him. His unmoved manner puzzled me. Was it consummate generalship, or was it happy-go-lucky-ism? — to coin a long but most expressive word, Let his brilliant victories of perfect management answer for him. I quite envy Mr. Eyles his self command, his immobility amid scenes of trial, worry, and intense excitement. Exhibitors—no, I won't paint a picture. But ever and anon George Eyles is found unmoved amid it all, pouring oil on the troubled waters of rising strife, smoothing down difficulties, unravelling the tangled skein of confusion, and bringing order, beauty, finish, out of chaos. Scarcely heard, but seen everywhere, he moves about like a fabled magician of the olden times, before him a medley of confusion, behind a garden of Eden. He has an ear for the complaints and the requests of all, a word of advice, instruction, or encouragement, and a kindly greeting for friends however hardly pressed. It does honour to the head and heart of those who conceived the happy thought of expressing esteem for Mr. George Eyles. I hasten to join in the good work, and I hope all will have a hand in it, that our gifts may be in some measure worthy of our esteem; and as we lay them at his feet our hearts would exclaim, "Thus shall it be done unto the man whom the exhibitors"—shall I not write the gardeners?—"of Britain delight to honour." *D. T. Fish.* [See p. 1004].

Bickley's Mode of Glazing.—In answer to "G. A. H.," allow me to say that I have to pay nothing extra for having glass cut perfectly true and square, and that the curvature of English glass is so slight that it leaves no opening in a 20-inch length; the same remark also applies to 21-oz. foreign 4ths, or 16-oz. 3ds. I may add that the glass may be lapped ½ inch or so, a strip of glass or felt 1 inch shorter than the width of squares used being laid horizontally on the zinc bar, under the lower edge of each raised square. For an orchard-house I should recommend good 16-oz. English sheet glass, cut true, and simply butted together at the sides; this ought to be obtained in quantity at about 2*d.* per foot for cash. The whole of the glass, 378 feet, was removed from the orchard-house which I exhibited at Nottingham, in 32 minutes, by a man and boy, and re-inserted firmly in 1 hour and 10 minutes without any breakage, or injury to the house. The advantages of this will readily be seen by those who possess orchard-houses, especially if they have to water and syringe the occupants during summer months such as we experienced the three years preceding 1871. *Thomas A. Bickley, 70, Smallbrook Street, Birmingham.*

Heilkraut.—No doubt Comfrey (Symphytum officinale) is termed Heilkraut on account of its medicinal properties. In Sussex it is cultivated in many cottage gardens, and utilised in making a cooling ointment, very much esteemed by some, and, perhaps, not to be despised by any. It is also sometimes used as a substitute for borage in making a cooling beverage called cold-tankard. *H.*

—— Your correspondent (p. 980) inquires why Comfrey (Symphytum officinale) is called healing herb in Germany? The root of this plant boiled with coarse sugar, in equal proportions, and strained through gauze, forms a gelatine, which is very healing, and much used for affections of the bronchial tubes and lungs. It is said to possess the useful property of restoring the necessary mucus for re-coating abrasions arising from internal inflammations. *C. B. S., Jersey, July* 29.

Lilium giganteum.—I believe it is not generally known that this Lilium is perfectly hardy. In the gardens at Ravensworth Castle, Durham, can now (July 20) be seen a magnificent plant in bloom, about 6 feet high, and Mr. Moult, the gardener, assured me that it had been there for the last two or three years without receiving the slightest protection. This is certainly a grand and noble acquisition to our hardy border plants. *William Burton, Victoria and Paradise Nurseries, Holloway.*

Caterpillars v. Fruit.—I can fully endorse the remarks of "G. A. H." respecting the use of Hellebore powder for the destruction of caterpillars on fruit bushes, but I should advise those that have never used it to wear a handkerchief over the nose and mouth, because the powder is apt to cause violent sneezing. I have found the middle of the day to be the best time for using it, especially if a hot sunshiny day, for the caterpillar does not appear so active then. It has often struck me as curious, that while lime and soot, mixed in equal quantities, will destroy caterpillars on the Brassica family, it has no effect on the caterpillar that attacks the Currant and Gooseberry bushes. *W. S.*

Grape-growing at Kingston Hall.—I have read with much interest and satisfaction the reports by your able correspondents on the condition of these Vines, and having seen them about the time specified, I can fully verify the high eulogium passed on their merits. At the same time I wish to correct a mis-statement that both writers have made in asserting that there were no pipes at all in the chambers under the borders; and to do this more clearly it will be necessary in the first place for me to revert to the original method adopted by Mr. Sylvester in the heating of these vineries, *i.e.*, that of placing the whole of the pipes in arches underneath. This method was a favourite one with Mr. Sylvester, and though most absurd it was carried out in all the houses then at Kingston, the vaulted passages underneath the interior of the vineries being constructed to receive the pipes, with arches between to form the beds in the interior. This was purely and simply the purpose of these vaults, and not to supply heat to the borders at all. Twelve ranges of Sylvester's winged pipes were placed along these passages, the heat from which passed to the surface by means of pigeon-holes on each side of the three paths, these apertures being so arranged as to promote the circulation of the heated air. These particulars will in a great measure enable "F." to at once comprehend the peculiar construction and complication of the arches underneath the interior. The present system of heating was executed under my directions, and I have no doubt your correspondents will be surprised to hear that each border is separately supplied with two 4-inch pipes in chambers underneath them, which are external to the houses, there being no connection whatever with the border chamber and that underneath but by means of a small door, and the Vines are planted immediately over the chamber supplying heat to the border. I may here mention that the whole of the Vines were lifted and the soil removed during the time that I was at Kingston, so that I am in a position to give a pretty accurate statement as to the formation of the borders, &c. I quite agree with "F.," and have previously stated, that the most rational method of heating is through the rubble, the bottom being made impervious to the roots. Allow me to say, in conclusion, that I write in no carping spirit, but purely to justify what I have previously stated, as well as to show the actual state of heating, believing that neither of your correspondents would knowingly make a mis-statement. *Geo. Westland.*

Japan Radish. — I bought in the spring some highly vaunted new sort of Radish seed from Japan, about 16 in a shilling packet, said to grow to a very large size, and of oval shape, of fine flavour, and very crisp. They soon came up, with large leaves, and when I thought them ready to draw, pulled up two with a long slender root as thick as a small crowquill, and as tough as a piece of stick. They soon sent up a flower stem, and have yielded, with a second parcel (18 for 1*s.*), a fine crop of seed. I bought a second lot, being told they required room to enlarge, but the second lot proved as worthless as the first, and I will thank any one who will tell me if they have grown any of this new Japan Radish worth eating, as I think them of no value. I shall make a sowing late in autumn, as many of these things are grown at high elevations where the temperature is very low in Japan. *Thomas Ingle.* [Does our correspondent mean the Madras or Rat-tailed Radish, the pods of both of which are edible? EDS.]

Ventilating Plant Structures.—The notes on the above subject in your number of the 24th ult., p. 806, seem to have attracted the attention of your correspondent, "A. W." who is desirous I should give some further details, so as to bring the plan within the comprehension of a country carpenter. Without diagrams, a plan of the structure intended to be ventilated, or any kind of data upon which I may found particulars, the proposal seems suggestive of difficulty. I will, in the absence of detail, assume that "A. W.'s" plant-house has a row of front lights, of the same dimensions between the sill and the top plate; these should be all attached together by iron plates fixed on the sides, and connected from one to the other by a circular iron bar, forming the letter H; which circular bar, connecting the two plates, is suspended on and in the upright bars, which form the framework of the front or side of the structure. To secure the perfect and regular working of the lights, these bars are encircled by an iron thimble. The screw which works the whole is fixed upon the front platform, immediately opposite the centre of one of the lights, the centre one being preferable, inasmuch as it equalises the strain upon the light, which, I venture to say, is little, if the fixings are properly made, the whole strain being on the iron work, which connects the whole, and links them very firmly together. Attached to the screw, and worked by the worm of it, is a cog-wheel, with a larger wheel and a band, or line, attached to it, which, supposing the top lights to be fixed in the same manner, move the whole together, so that they may be opened one or more inches, as circumstances indicate necessary. The plan is very simple, and easy of application, but special cases will require specific details; and, however desirous a writer might be to elucidate a case without particulars, I fear he would barely be understood. *Charles B. Saunders, Jersey, July* 24.

The Potato Disease.—In reference to the Potato murrain, recently noticed by Mr. Earley, allow me to ask, has Mr. Earley, or any other of the readers of the *Gardeners' Chronicle*, tried the following plan?—When the disease (or murrain) appears in the leaves, take the stalks in your hands, and place one foot on either side of the row, as near the stalks as possible, and pull up the stalk bodily, leaving the tubers in the ground, carefully filling up the holes made by the stalks with soil. If treated in this manner, the disease in a great measure will be prevented from doing any more harm to the tubers. By so doing the tubers will not be quite so large as they would be if the stalks were allowed to remain, but I presume it is far better to have a medium-sized Potato free from disease than to have a large one that is diseased. It has been tried in a garden here for the two last seasons, with a good result. *J. S.*

The Pot Culture of Vines.—For many years past I have occupied myself with the culture of Vines in pots, and have had great success in all its phases —with pots plunged, or placed on hot-water pipes, or on borders in a common forcing-house. My attention has been called to a passage in the "Gardener," by Mr. Wm. Thomson. He says, that when Vines are grown "too thickly in an upright position in the centre of houses devoted entirely to themselves," under such circumstances "sound and fruitful growths, though strong, cannot be produced, and we would advise growers to avoid such conditions." Now, according to my experience, this is and has long been the method of growing Vines for sale in most of our large establishments; I have, however, seen 2000 Hamburgh Vines grown on dry heat and trained close under the glass. The Vines are not quite so stout as those grown as above, but their canes and roots are hard and ripe, and the buds from 3 to 3½ inches asunder. These I saw with Mr. Rivers, who prides himself in having grown on a 4-inch hot-water pipe, in a 12-inch pot, a Vine upwards of 30 feet in length, and well ripened. When the pots are plunged in tan the Vines emit roots in it, which increase the bulk and the foliage, but not soundness. *Vitis.*

Gigantic Puff-balls. — The following dimensions of a gigantic Puff-ball found by the under-butler here on the 25th ult., may be worth recording:—Breadth, 3 feet 3 inches; height, 2 feet 9 inches; weight, 7 lb. I have just seen it, and both weighed and measured it, in the presence of the butler. I may add that I never saw one at all approaching the size of this specimen. *Charles Hubbard, Gr. to Lady Berners, Keythorpe, Leicestershire.*

—— I have gathered some very large Puff-balls here this season. The largest in diameter measured 17 inches, and was the best flavoured I ever ate. They grow in abundance on some very rotten manure, under some Elm trees in the park, which no doubt has been here some years. *James Martin, The Gardens, Osterley Park, Southall, W.*

Laxton's Alpha Pea.—Noticing the letter in your columns regarding this Pea, we beg to say that it has proved in our trial-ground to be second to none for earliness, at the same time having a decided advantage in flavour over Ringleader, Daniel O'Rourke, and others of the same class. Kentish Invicta, also, we find quite as early, of excellent flavour, and very distinct. Of the two dwarfs, Little Gem and Multum in Parvo, we find the latter is a larger cropper, of better flavour, and similarly early, therefore superior to Little Gem. *James Dickson & Sons, Newton Nurseries, Chester.*

Exchanging Seedling Ferns.—As I was looking over my old files of the *Gardeners' Chronicle*, I found, just now, in July 25, 1868 (p. 790), the proposal of Mr. C. W. Strickland, Hildenley, to exchange his seedling Ferns for those of other growers. Like him, I have multitudes which are constantly going to the dunghill, possibly some that he might be glad of. Besides, the matter may be worth re-agitating, for the reminding of other growers. *P. H. Gosse, F.R.S., Sandhurst, Torquay.*

The Thinning of Grapes by the Syringe.—If the communication under this heading, signed "A Practical Hand," July 15, is intended as an answer to my query, "At what stage of blooming should Grapes be syringed to check setting?" then "Practical Hand" has mistaken its drift altogether, as his answer refers to the idea of thinning Grapes after they have set. *A. Boyle.*

Caterpillars and the Fruit Crops.—In the last number of the "Canadian Entomologist" Mr. W. Saunders, of London, Ontario, gives an illustrated life-history of an allied species of Gooseberry saw-fly (Nematus ventricosus), a most destructive pest in North America. Mr. W. Saunders says:—"The fly deposits its white eggs in long regular rows on the under sides of the leaves, chiefly on the larger veins, where they speedily hatch, and the hundreds of voracious worms resulting are soon scattered all over the bushes. Already (May 15), the eggs are very numerous, and here and there may be found a colony of larvæ. These latter, while young, feed in company, from 20 to 40 on a leaf, which is soon riddled with the small holes they at first make, but in a few days they increase in size, and, parting company, spread in all directions. By keeping a close watch, and picking off the eaten leaves early in the season, the evil will be much lessened, but where the worms are numerous there is nothing so good as powdered Hellebore, which may be readily and economically applied by mixing an ounce (previously rubbed up with a little water to prevent its being lumpy) in a pail of water, and showering it over the bushes with a watering-pot. Many people are timid about using Hellebore, while the fruit is on, for fear of its finding lodgment there in quantities sufficient to produce unpleasant consequences when the fruit is eaten, but if applied in the way just mentioned, there need be no apprehensions on this point." Mr. Saunders, in the same interesting paper quoted above, also gives illustrated life-histories of the Plum Curculio and the Codlin moth (Carpocapsa Pomonella). Speaking of the latter insect, so destructive to Apples, Mr. Saunders informs us that "excellent traps may be made for them out of common bottles—wide-mouthed ones preferred—by partly filling them with a mixture of vinegar and water, well sweetened with sugar, and having a little rum or other strong-smelling spirit added to it. These may be fastened among the branches of the trees with cord or pieces of wire. The insects, being attracted by the smell of the compound, are lured into the bottle and drowned, and thus the mischief they were about to perpetrate is nipped in the bud. Later in the season the wormy fruit should be carefully gathered, and either dipped in boiling water to destroy the grubs, or fed to hogs." Our entomological friends across the Atlantic are doing well in giving us illustrated life-histories of all garden and farm pests, through the medium of the "Canadian Entomologist," a capital periodical, mailed free to England for the low price of 5*s*. sterling, by E. B. Reed, Esq., London, Ontario. *Henry Reeks, East Woodhay, July* 29.

Societies.

ROYAL HORTICULTURAL: *August* 12. — W. W. Saunders, Esq., F.R.S., in the chair. The usual preliminary business being concluded, the Rev. M. J. Berkeley announced the awards of the Floral Committee, and in doing so took occasion to remark, when alluding to a golden form of Juniperus chinensis shown by Mr. Maurice Young, of the Milford Nursery, Godalming, that such plants when grown in the shade usually reverted to the green state, and that they kept their golden colour only when fully exposed to the sun. Adverting next to a fine plant of Renanthera coccinea, shown by Mr. Parker, Tooting, Mr. Berkeley observed that the flowers were not so deep in colour as he had seen them before, but still the plant was interesting on account of its being but rarely seen. At the last meeting a small Iridaceous plant of considerable interest was shown by the present chairman, and was considered to be a species of Triticea, but on searching for further particulars in the Herbarium at Kew, in conjunction with Mr. Baker, they had discovered that it very much resembled Watsonia plantaginea, and they had come to the conclusion that it was a species—and a most interesting one—of that genus. On the present occasion, continued Mr. Berkeley, the chairman had brought before them several very remarkable plants, including a plant of an unnamed Dieffenbachia, which exhibited an exceedingly curious case of fusion, two leaves being joined together back to back, the result of the coalition of two petioles. Such an instance he had only seen once before, in a species of Ficus. Next to come under notice, and from the same exhibitor, was a pretty little species of Cyrtanthus, from the Cape of Good Hope, which he (Mr. Berkeley) thought was a form between C. angustifolius and C. collinus, the foliage partaking somewhat of the character of both, but which in the case of the first-named was green, and in the latter glaucous. The specimen of Calochortus flavus, said Mr. Berkeley, was perhaps the least showy of a handsome tribe of Liliaceous plants, and which he had never seen in such beauty in this country as he did in the early days of Chiswick, when a batch of tubers sent over by Douglas were planted in a peat bed under a north wall, in which position they thrived so well that they could not have appeared more beautiful in their own country. The speaker then directed attention to Lilium Leichtlinii, one of the best of the Lilies, and to a magnificent form of the old Tiger Lily—as to the name of which there was great doubt whether it was L. splendens or L. Fortunei, though Mr. Berkeley said he thought it very distinct from the type, since it grew to a great height, and on the plant shown there was a certain amount of woolliness on the stems, which he had not remarked on the older kind. Mr. Berkeley concluded by mentioning a remarkable circumstance in connection with some specimens of Messrs. Cripps & Sons' new Catalpa syringæfolia aurea that was not generally known, namely, that in the Catalpa the petioles had a solid pith, unlike all other petioles, as would be seen on comparing them with those of a near relative, the Paulownia imperialis, which has a soft pith. The latter plant flowers early, and the former late, which he considered was a sufficient reason why the Catalpa should be the more frequently grown.

The Chairman, alluding to a singularly striking new Coleus, shown by R. Tryon, Esq., Loddington Hall, Leicester, remarked that in this instance the variegation had taken an entirely new direction, as instead of being, as heretofore, distributed longitudinally, it was banded or transverse; and this would no doubt open out other forms of variegation in a similar direction. For the Cyrtanthus, the speaker said he was indebted to a gentleman at the Cape, who had paid much attention to the flora of the district, and who had informed him that plants at the Cape assumed such differences, under different conditions, that though he thought this was distinct, he would be sorry to say so definitely.

Floral Committee.—J. Fraser, Esq., in the chair. This meeting was the means of bringing out one of the most decided novelties of the season, a new hybrid Coleus, named Tryoni, in which the variegation, which has usually been distributed longitudinally, is in this instance transverse, one-half of the leaf (that near the leaf-stalk) being of a rich glowing crimson, and the other of a bright golden yellow. It was exhibited by Mr. Guildford, gr. to R. Tryon, Esq., Loddington Hall, Leicester, and received the highest award that could be given to it—a First-class Certificate. Mr. Laxton, Stamford, also contributed a most desirable acquisition to the group of double-flowered Pelargoniums in Jewel, a variety raised from Madame Rose Charmeaux, in which the foliage partakes strongly of the Tom Thumb character, the trusses of flowers being of medium size, each pip more resembling the bud of the Fairy Rose than the flowers of a Pelargonium. It is without exception the prettiest thing for button-hole bouquets that we have seen. A First-class Certificate was awarded. Mr. Maurice Young, of the Milford Nursery, near Godalming, sent several examples of Juniperus chinensis aurea, which received a similar award. With the exception of its bright golden variegation it is in character the exact prototype of the old Chinese Juniper, from which it is a sport, of some 16 years old, during which time it has never once reverted to the green form, so that it also may be considered as an acquisition to the list of beautiful variegated trees for the ornamentation of lawns and shrubberies. First-class Certificates were also voted to Messrs. Kelway & Son, Langport, for three new varieties of Gladioli, named Hogarth, blush, crimson flamed; Oberon, blush, heavily flamed with crimson, and much resembling Julie; and Pictum, a large flower, resembling Adolphe Brongniart, with the exception that this has a deep maroon centre; to Messrs. Wood & Ingram, Huntingdon, for Picotee Delicata, white, and one of the 2d class for Picotee Mrs. Ingram, white, with crimson edge; to Messrs. E. G. Henderson & Son for Begonia multiflora elegans, red, and said to be a perpetual flowerer; to Mr. Fraser, The Nurseries, Lea Bridge, for a fine new Dracæna, named Fraseri, with very distinct, robust foliage of a deep bronze colour edged with crimson; to Mr. N. Norman, Plumstead, for Picotees Miss Ingleton and Ada Ingleton, and one of the 2d class for Charles Williams, Esq.; to Mr. Green, gr. to W. W. Saunders, for a small orange-flowered species of Cyrtanthus from the Cape of Good Hope; and to Mr. J. Laurence, gr. to Bishop Sumner, Farnham Castle, for the beautiful Anæctochilus Ordianus. From Mr. Frisby, gr. to H. Chaplin, Esq., M.P., Blankney Hall, Lincoln, came a group of new Tricolor Pelargoniums, and from Mr. Parker, Tooting, a fine specimen of Renanthera coccinea. Messrs. Veitch & Sons sent a stand of 10 varieties of Phloxes, and Messrs. Cripps & Son, Tunbridge Wells, sent two new Clematis, William Cripps, deep violet-purple, and Lady Marie Meade, very large and of a bright lilac colour. Messrs. Bell & Thorpe, Stratford-on-Avon, and Messrs. Rollisson & Son, each contributed well-grown examples of Lobelias; and Mr. W. Paul and Mr. J. Mann were exhibitors of new Zonal Pelargoniums. Messrs. E. G. Henderson & Son sent a group of Lobelias, Fancy and Tricolor Pelargoniums, and Platyceriums; and Mr. Struckett, gr. to C. Hart, Esq., Newfield, Blackheath, sent a variety of Oncidium carthaginense. Messrs. Carter & Co. had a Second-class Certificate for Tricolor Pelargonium Prospero, and Mr. G. F. Wilson had a Special for a nice group of Liliums. Mr. Cannell, Woolwich, sent a stand of a dozen new Verbenas.

As on the last occasion, a small tent near the Council-room was also filled, this time principally with the various forms of Pelargoniums. The great feature of this display was the competition for prizes offered for seedling Tricolors by W. R. Morris, Esq., of Deptford. The first class was for a group of seedling plants of Golden Variegated Zonal (Tricolor) Pelargoniums, not to exceed six in number. The competitors were Messrs. Downie, Laird & Laing, Mr. Turner, Messrs. F. & A. Smith, and Mr. J. Mann, the 1st prize going to the first-named, and the 2d to Mr. Turner. In the 1st prize lot the plants were raised this year, and bore the names of Brightness, Blithe Hill, Flora MacNab, Decision, Stanstead Eclipse, and Adonis. The latter plant also took the 1st prize for the best in class 1, so that Mr. Laing is to be congratulated on his success, this being the first year in which he has attempted to raise this class of plants. The other plants were older, and did not quite meet the terms of the schedule. The best collection of variegated varieties was staged by Mr. Turner, and consisted of 33 named sorts, Messrs. E. G. Henderson being 2d with 32 varieties; Messrs. Bell & Thorpe and Messrs. F. & A. Smith also competed with large plants, mostly deficient in colour, the latter receiving an extra prize. Mr. T. Pestridge, The Nursery, Uxbridge, sent a dozen varieties neatly, shown in baskets, and came in 3d. The best single Gold and Bronze Zonal (Bicolor) was Maréchal MacMahon, in which the belt was very dark and broad, from Messrs. Downie, Laird & Laing; Mr. Keiler, New Beckenham, being 2d with Conqueror. The best golden-leaved self was Golden Circle, shown by Messrs. E. G. Henderson & Son, and the 2d best Golden Gift, staged by Mr. Turner. The last-named exhibitor had the best Golden Variegated (Tricolor), Miss Morris, Messrs. Carter & Co. being 2d with Prince of Wales, and Messrs. Bell & Thorpe 3d with Macbeth. Mr. Turner's Mrs. Rousby was also the best in the class for a Silver Variegated Zonal. Mr. T. Pestridge exhibited Blushing Bride, and Mr. Turner, Miss Kingsbury, in the class for silver-edged varieties, and the prizes were awarded in the order named. For the best double-flowered variety Messrs. Bell & Thorpe were well 1st with the beautiful Miss Evelyn, bright pink; Messrs. Carter & Co. 2d, with C. Glijm, scarlet; and Messrs. Downie, Laird & Laing 3d, with Victor Lemoine. The first-named exhibitors also took the 1st prize for the best single Nosegay variety, with large well-grown plants of Charles Dickens, salmon-red, with a singular tint of greyish-blue on the petals; Mr. Cannell being 2d with the profuse flowering Master Christine, pink. Mr. Mann's Triumph, scarlet, was the best Zonal, and Mr. Turner's Madame Jules Elyse stood next; the latter, exhibiting Pelargonium Willsii, which in the class for Ivy-leaved varieties was 1st. Amongst miscellaneous subjects were, from Messrs. F. & A. Smith, a very large and fine collection of pyramidal Balsams, of various colours, many being spotted and striped. From Mr. Turner, fine stands of Carnations and Picotees; from Mr. W. Norman, Crescent Road, Plumstead, a stand of 12 new Picotees; from Belle & Thorpe, cut blooms of Zonal double flowered and Nosegay Pelargoniums, and examples of a new Petunia, Single Beauty, deep purple with a faint lilac edge, habit very wiry, and likely to make a good bedder; from Mr. Hooper, Bath, large stands of Pansies, Carnations, Picotees, and Cloves; from E. Shenton, Botanic Nursery, Biggleswade, a large white Pink, named Flower of Eden, delicately scented; from Mr. B. Porter, gr. to Mr. Benham, Sion Lodge, Isleworth, 6 nice spikes of Gladiolus Brenchleyensis; from Mr. Cannell, two dozen trusses of Zonal and Nosegay Pelargoniums: from Mr. J. Mann, Brentwood, a similar group; from Messrs. Jackman & Son, Woking, a large collection of seedling Clematis, and 6 handsome specimen plants of Clematis in tubs, for which they received a 1st prize; from Mr. Turner, a nice group of Lilium auratum; and from Messrs. Downie, Laird & Laing, a selected group of Gold and Bronze Zonal Pelargoniums, seedlings of 1871, remarkably fine in foliage and bright in colour.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair. As the season advances, so does the number of subjects sent for adjudication by this body increase. On this occasion there was a varied and interesting display, the principal feature of which was the exhibition of wonderful Gooseberries, three prizes being offered for the best collections, 12 of a kind. Mr. Turner came in for 1st honours with a very fine lot, consisting of 70 named varieties, and including all of the best show kinds. Mr. J. Sharp, gr. to W. Martin, Esq., Shermanbury, was 2d; and Mr. Beach, gr. to C. J. Herries, Esq., St. Julian's, Sevenoaks, 3d—the last named exhibitors being also 1st and 2d in the order named for the six heaviest fruit, the former with Rubesin, very large, smooth, green, and the latter with Overall. From Mr. Knight, The Floral Nursery, Hailsham, came a dish of a new Peach, named Knight's Markley Admirable, raised by G. Darby, Esq., Markley, Sussex; it is a freestone of the Têton de Venus type, of good size, slightly oval in shape, with a prominent nipple on the apex. It was grown in a cold house, and the fruit possessed a particularly rich flavour, much superior to that of other early Peaches. A First-class Certificate was awarded. Mr. Turner sent 3 nice bunches of the Golden Champion Grape, showing too plainly the spot to which this otherwise fine variety is unfortunately subject. Mr. Laurence, gr., Farnham Castle, sent a dish of fruit of the Black Apricot of Siberia, Prunus dasycarpa; and from Mr. Tillery, of Welbeck, came a specimen of the Eastwell Seedling Melon, a nice-looking Melon, but past its best. Ingram's Scarlet Gem Melon, unripe, was shown by Mr. J. Meaks, gr. to R. Fowler, Esq., Petersham. It is a large, handsome, and beautifully netted scarlet-fleshed variety. Messrs. J. & C. Lee exhibited specimens of their Hammersmith Early Kidney Potato, grown on light and heavy land. From Mr. Gilbert, gr. to the Marquis of Exeter, Burghley, came a selected Pea from Laxton's Alpha; and Mr. Evershed, Munsted Gardens, Godalming, also sent two very promising varieties, but the committee adhered to their former resolution not to make any awards until they have been tried at Chiswick. It was reported that a trial of Peas and Potatos would be made there next year. From Mr. Rivers came a collection of ten varieties of Filberts and Nuts, grafted on Corylus arborescens, by which it would appear that this stock induced fertility, but though the little half standard specimen bore a capital crop, it must be remembered that this is an exceptionally good year for Nuts, so that further experience must be gained before the above results can be affirmed. Mr. D. Piccorilli, Wigmore Street, sent very handsome specimens of Giant Early White Tripoli, and Giant Rocca Onions. From Messrs. Bell & Thorpe came a dozen varieties of Potatos, and Mr. Porter had specimens of Rintoul's Early White Don. Prizes were offered for the best single dishes of early Plums, Mr. J. Douglas being 1st with Early Green Gage, finely ripened; and Mr. Porter was 2d with Morocco. M. Gustave Couvreaux, of Nogent, Haute-Marne, France, sent specimens of his Sécateur, which differs from the usual form, in having larger handles, made by riveting strips of wood alongside the ordinary iron form.

DITCHLING GOOSEBERRY SHOW.—I cannot refrain from sending you a notice of the Ditchling Gooseberry and Currant show, as it is the oldest established society connected with horticultural pursuits in this part of the kingdom, and, I presume, one of the oldest in England. According to the bills, the one just past was the forty-ninth annual show, but the secretary of this society informed me that it was really the fiftieth. It was originally started by a few amateur Gooseberry growers, who met together and pitted their single berries and dozens of berries against each other. This show has gradually increased, and now includes flowers and vegetables, but the main feature is still the Gooseberry, This is no doubt in great measure due to the liberality of a deceased Gooseberry grower, who has left, in perpetuity, I believe, a sum of money sufficient to induce the rival growers to meet in competition. And then some of the best prizes drawn from the annual subscriptions are given for the same class of fruit. Of course we should scarcely be able to compete with our Lancashire brethren, as we do not grow for single berries, but for dozens. The principal prizes are offered for white, green, yellow, and red Gooseberries, a dozen of each; and 15 ounces, I am informed, is the heaviest dozen ever exhibited in one colour by the same person. The weights this year were not up to the average—on the 26th ult., the day of the show, the largest berries having split in consequence of excessive moisture. The heaviest dozens shown this year were fellows, viz., 11 oz. 18 dwts. 5 grs., but the red varieties usually weigh the heaviest. The average weight of the different colours this year in the amateur class was about 11 oz. 5 dwts.; in class B, for amateurs, a little over 10 oz.; and in the cottagers' class, about 9 oz. 8 dwts. The Currants this year were not up to the usual standard, though a dozen bunches of black exceeded 3 oz. *H.*

BRITISH ASSOCIATION.—The 41st annual meeting of the Association was inaugurated on Wednesday evening last at the Music Hall, Edinburgh, by the President, Sir W. Thomson, of Atlantic Cable notoriety. Sir W. Thomson is well known not only as an experienced practitioner, but as a bold theorist. The hypothesis he proposed as to the origin of life on the globe, is a fit pendant to his idea, formerly propounded, that the heat of the sun is due to the constant friction caused by the impact of meteors falling on to it.

Our readers, who peruse the following passages, which formed the conclusion of the learned President's address, will doubtless agree with us that at present we know wonderfully little about the matter at issue. "The essence of science," said the President, towards the close of his speech, "consists in inferring antecedent conditions, and anticipating further evolutions, from phenomena which have actually come under observation." What, then, he went on to inquire, does science teach us in regard to the origin of life on the earth? Following up Professor Huxley's address last year, Sir William Thomson declared that he was prepared "to adopt it as an article of scientific faith, true through all space and through all time, that life proceeds from life and from nothing but life."

"Did grass and trees and flowers spring into existence by a fiat of Creative Power, or did vegetation, growing from seed sown, spread and multiply over the whole earth? When a volcanic island springs up from the sea, and after a few years is found clothed with vegetation, we do not hesitate to assume that seed has been wafted to it through the air, or floated to it on rafts. Is it not possible, is it not probable that the beginning of vegetable life on the earth is to be similarly explained? Every year thousands, probably millions, of fragments of solid matter fall upon the earth—whence come these fragments? What is the previous history of any one of them? Should the time when this earth comes into collision with another body, comparable in dimensions to itself, be when it is still clothed as at present with vegetation, many great and small fragments carrying seed and living plants and animals would undoubtedly be scattered through space. Hence and because we all confidently believe that there are at present, and have been from time immemorial, many worlds of life besides our own, we must regard it as probable in the highest degree that there are countless seed-bearing meteoric stones moving about through space. If at the present instant no life existed upon this earth, one such stone falling upon it might, by what we blindly call natural causes, lead to its becoming covered with vegetation. I am fully conscious of the many scientific objections which may be urged against this hypothesis, but I believe them to be all answerable. The hypothesis that life originated on this earth through Moss-grown fragments from the ruins of another world may seem wild and visionary; all I maintain is that it is not unscientific. From the earth stocked with such vegetation as it could receive meteorically, to the earth teeming with all the endless variety of plants and animals which now inhabit it, the step is prodigious; yet, according to the doctrine of continuity, most ably laid before the Association by a predecessor in this chair (Mr. Grove), all creatures now living on earth have proceeded by orderly evolution from some such origin. Sir John Herschel, in expressing a favourable judgment on the hypothesis of zoological evolution, with, however, some reservation in respect to the origin of man, objected to the doctrine of natural selection, that it was too like the Laputan method of making books, and that it did not sufficiently take into account a continually guiding and controlling intelligence. This seems to me a most valuable and instructive criticism. I feel profoundly convinced that the argument of design has been greatly too much lost sight of in recent zoological speculations. Reaction against the frivolities of teleology, such as are to be found not rarely in the notes of the learned commentators on Paley's "Natural Theology," has, I believe, had a temporary effect in turning attention from the solid and irrefragable argument so well put forward in that excellent old book. But overpoweringly strong proofs of intelligent and benevolent design lie all round us, and if ever perplexities, whether metaphysical or scientific, turn us away from them for a time, they come back upon us with irresistible force, showing to us through Nature the influence of a free will, and teaching us that all living beings depend on one ever-acting Creator and Ruler."

Notices of Books.

Artistic Cookery; *a Practical System, suited for the Use of the Nobility and Gentry, and for Public Entertainments.* With 80 engraved plates. By Urbain Dubois, Chef de Cuisine of their Majesties the King and Queen of Prussia. 4to., pp. 244. Longmans. 1870.

Cosmopolitan Cookery; *Popular Studies.* With 310 drawings. By Urbain Dubois, Author of the "Artistic Cookery." Royal 8vo, pp. 625. Longmans. 1870.

Although it is generally admitted that cooking, as a science, is better understood and practised abroad than it is in England, it is not so generally known that the literature of the subject has for many years been in a more advanced condition in France than with us. Mrs. Rundle used to be the great authority; after that, Mrs. Beeton's was, and perhaps still is, the most highly esteemed "Cookery Book" in the majority of English families. In those larger houses, where foreign styles of cooking began to be practised some 50 years ago, French men-cooks have been generally employed, until within the latter half of this period, when English men-cooks have divided the best appointments with their French brothers in this art. To these English artists it was a boon, when in 1846 Soyer, the French head-cook at the Reform Club, published in good English his work, called the "Gastronomic Regenerator," which contained "2000 practical recipes, suited to the income of all classes." The only other book in English to which we need refer, as treating of the higher branches of cookery, was that brought out by Francatelli, in 1868, called "The Modern Cook," in which will be found recipes for various dishes served by the best French, Italian, and German, as well as English cooks.

The two works which call forth the present remarks are, however, of a much more elaborate character, so much so that it is difficult to convey an idea of their contents. That called "Artistic Cookery," although describing the mode of cooking a large number of most expensive dishes, is more especially devoted to the ornamentation and decoration of these dishes, of which there are no less than 391 excellent illustrations. Kitchen-maids would probably set greater store by the "pictures" than the letterpress, and would vote it a "wonderful good book about dishing-up." The author's own opinion of it is differently expressed, for we find at the top of every page, where they can be introduced, the words "Album of Classic Cookery." When we state that three-fourths of these illustrations are devoted to cold dishes, it will at once be seen that the work will be more useful to those who indulge in grand breakfasts and state suppers than to givers of good dinners. Indeed, with all respect for so distinguished a cook as M. Dubois unquestionably is, we venture to think that his enthusiasm in the application of high art and fine art to the decoration of a hot joint before he would allow his employer to partake of it, is just so much energy misapplied. There are few hot dishes which are not liable to become less enjoyable for every minute of delay which occurs between the completion of their cooking and the time of their mastication, and consequently the elaborate decoration of any hot dish, after its cooking is finished, is, in our judgment, a grievous mistake. Turning from the hot to the cold dishes, one cannot fail to admire the great taste which appears in their ornamentation; for whether it be fish, meat, or game, pastry, fruit, or ices, everything is prettily and artistically arranged. The engravings give one the notion that Truffles and Cockscombs are in too great a preponderance in the ornamental part of his work; but possibly if they could have been coloured, the red of the Carrot and the lobster-spawn, and the green of the Pistachio-nut, would have relieved the monotony of the black and white in the illustrations referred to. There is a large collection of bills of fare given, some of which are interesting from their extent, others for their choiceness, some for the selection of wines served with the respective dishes, others for their quaintness. For example, when the Sultan entertained Prince Jerome Napoleon on July 6, 1868, he gave him amongst other things, "Beureck, Quephté, Kiaq-Lokmassy, Visnali, and Ekmek." And here we must mention the weak point in this otherwise excellent work—it has no index, no table of contents, no glossary; and hence we are unable to find out, without reading through the whole of the book, what these curiosities are, or whether they are described at all.

Turning now to the other work, it is difficult to believe at first that it can be by the same author. "Artistic Cookery" is written in good English. Here is an extract from "Cosmopolitan Cookery:"—

> "Butcher's meat, in its various extent, is, so to say, the nerve and soul of the kitchen. There is no fat dinner, no festival, where it does not make a conspicuous figure. By the distinguished taste or by the richness of its substance the varieties of butcher's meat are alike indispensable on the table, as in the kitchen. * * * The darker sorts of butcher's meat, served at a dinner, if roasted, gain exceedingly by being carved on the table, and then handed round to the guests; all roast meat, carved previously, by this proceeding loses most of its nutritive juice. Never forget this, amphitryons."

This is a portion of one of the introductions to the five parts into which this book is divided; they are Soup, Fish, Butcher's Meat, Poultry, and Entremêts. It seems probable that M. Dubois has ventured upon doing a little English for himself in these introductions. The recipes, however, are no doubt translated from the French by the same person who was employed upon the previous work, and there are in this book 1288, most of them different from those in "Artistic Cookery." From the preface we glean that "Cosmopolitan Cookery" first appeared in French in 1868, followed by a second edition in 1869, and that the author is prevented by want of funds from proceeding at present with the publication of his third work in English, to be called "School of High Culinary Art," in four 8vo volumes. The present book will be found more generally useful than "Artistic Cookery," inasmuch as it possesses an index, occupying 24 pages. One might suppose this enough for any purpose, and yet it failed us the first time of using it. Wishing to know what "*cèpes*" could be, the index proved useless; in one part of the book we stumbled across the information that they are a kind of Mushroom, known in Russia by the name of "gribouis;" but we are still in doubt whether it is an Agaricus or a Boletus that is referred to.

Nothing doubting that these two works will, ere long, find their way into the cook's room of most of the large country mansions in England, and assuming the existence of that kindly feeling and friendly co-operation between the head gardener and the head cook, which are so necessary between principal officers in such establishments, we recommend the cook to ask the gardener to take a cup of tea with him, and look over his new "picture-books," from an inspection of which they cannot fail, both of them, to obtain hints which they can conjointly use in their employer's interest, and to his increased satisfaction.

Florists' Flowers.

"How is it," said a fine old florist to me the other day, "that these beautiful SWEET WILLIAMS are not more grown?" We were looking at a bed of them in my own garden, saved from some seed sent me by the Rev. E. N. Pochin, of Sileby Vicarage, Loughborough, during the early part of last year. (Incidentally, it may be stated that Mr. Pochin grows Sweet Williams as finely, comparatively, as he does the beautiful Roses with which he wrests so many 1st prizes from many an aspiring exhibitor.) These Sweet Williams, in the size and regularity of their markings, more nearly resembled Phloxes than anything else I have yet seen. There were rich shining crimson self flowers, and there were others almost wholly white, save and except that a faint ring of pink or rose surrounded a white eye. Between these there were flowers variously and handsomely marked, some with white, some with coloured centres; some with smooth, others with fringed edges, but not one undeserving of the most tender care. Planted in rather poor stiff soil, and allowed to carry the whole of their lateral shoots, the flowers were very fine; what they would have been had they been placed in light rich soil and duly thinned, cannot be imagined.

In these days, when provincial shows as a general rule provide classes for cut blooms of Sweet Williams, and when, as a general rule, also, they are but indifferently shown, if exhibited at all, one cannot help repeating the question of my old floricultural friend. It can't be that strains of good seeds are difficult of acquirement, it must be from indifference on the part of the growers, and a lack of that competition with the flower, which invariably incites to exertions to obtain the finest strain of seed possible.

In the strain under notice, the smooth edges and coloured centres of Hunt's strain are mingled with the fringed margins and pale centres of Dean's Auricula-eyed. These characteristics undoubtedly appeared in the two strains when originally selected, but Nature is an indulgent mother, and the sportive character of the flowers soon presented a commingling of each character. What matters so long as the flowers are large, circular, stout in texture, and finely marked?

A good, light, rich soil is the one for the Sweet William. Some seed can be cast down in any spare plot in the month of March, and in October there will be an abundance of strong plants with which to form a blooming bed. The Sweet William winters best on a somewhat dry position, where the plants can be sheltered from cutting winds; excessive wet at the roots is far more injurious than hard frosts; and cutting north winds playing on the plants growing in a moist, heavy soil, will work great destruction among them. How well the Sweet William serves to decorate shrubbery borders during the summer months, needs scarcely to be stated here. In connection with the Double Rocket, Antirrhinums, Pentstemons, Salvia patens, Foxgloves, and other things, there is secured a succession of bloom affording bright and varied tints.

It may be that the cultivator desires to propagate certain finely marked varieties in his collection. To do this, the side shoots, *i. e.*, those that form the blooming wood of the succeeding season, should be pulled off, just as the plants are coming into bloom. If taken off close to the main shoots by the ground, they will often be found to have made a few short fibres, by which the work of propagation will be greatly accelerated. These, put in some fine light soil in a shady place, will soon take roots, when they can be planted out in a well prepared bed, as in the case of the seedlings.

To obtain fine trusses of bloom for exhibition purposes, a bed formed of two parts of good fibry loam and one of well-rotted manure, with the addition of some leaf-mould, should be made, and the plants placed about a foot apart. Only one head of bloom should be allowed to rise, and all the lateral blooming stems should be removed as they appear. A support should be given to each stem, as they are brittle, and will readily snap when swayed to and fro by the wind; and in order that there should be a nice even face to the show trusses, there must be some careful thinning of the pips. This done, there will be seen a stand of Sweet Williams that will almost, if not quite, rival the choicest varieties of the perennial Phloxes. *R. D.*

Garden Memoranda.

ORCHARD-HOUSE TREES AND OTHER MATTERS AT THE NURSERIES OF MR. PEARSON, CHILWELL.—A charming, though necessarily brief, report of these nurseries was given by "R. D." in your number for June 24, and you specify most of the seedling Pelargoniums that I had made a note of, in the *Gardeners' Chronicle* of July 8. I can heartily endorse all that you and your special correspondent say about this splendid strain of Zonals. They exceed anything I had before seen. The season was unfavourable for judging of their full beauty out-of-doors, but that northern house, 200 feet long, filled with seedling Zonals, was a glowing mass of rich beauty worth going 100 miles to enjoy. Should they prove good bedders—which doubtless many of them will—our gardens will be enriched with many new shades of colour, and lighted up with fine masses of beauty. But should they not prove first-class bedders, most of them will be serviceable for house work, and useful for bouquets; and these two last far exceed the first in importance. Individual excellence and fine shades of colour are lost to a great extent in a massed flower garden. But bring these qualities close to the eye in a pot plant, in conservatory or room, or in a bouquet, and it is chiefly those qualities that please. Many of the single pips of these seedling Zonals are distinguished by their great size and substance, and they are of the softest, purest, and most brilliant colours—just the thing for the floral decorator and bouquet maker to conjure with; and they will be conjured with, to the delight of many fair eyes, and the gladdening of thousands of youthful hearts of both sexes in the future. For some of these trusses are almost large enough for a lady's bouquet, if fringed with Ferns, while one just set on a tiny leaf would suffice for a perfect bouquet for a gentleman. I congratulate the *artistes* on the saving of time that will be effected by the use of these fine sorts. Many of them seem of the La Grande type.

But I must rein in my hobby-horse, and write of orchard-house trees. I have never been very enthusiastic about such trees in pots; and by some strange perversity many writers and readers infer that the term orchard-house tree means a fruit tree grown in a pot. It does nothing of the kind. In fact the term orchard takes us to the very antipodes of pots, outside the garden, to a sort of half-way house, between the garden and open park, and orchard trees were originally trees as near to their natural state as might be. But Mr. Rivers has given a new meaning to the phrase, and now it is applied to all sizes and forms of trees, and all modes of training except to such as are trained on trellises. The pyramid and the bush are the most common forms, however, of orchard-house trees; at least, so I always thought until I went to Chilwell. Of course, there are obvious objections to both forms. Suitable for and easily assumed by Apples, Pears, Cherries, Plums, or Apricots, Peaches and Nectarines, do not assume the pyramid and bush form so readily; and, when moulded into shape, they often try hard to get out of it. But there are much stronger objections to the bush and pyramid form. Placed thickly together in pots, or planted closely, the greater portion of the tree—the base—the best fruit-bearing part, is much shaded, and necessarily a long way from the glass. This tells powerfully against quality. It is a well-known axiom among Peach growers that the nearer the glass the finer flavoured and higher coloured the fruit—hence the strong attachment of practical men to Peach-houses rather than orchard-houses. In the former the trees are trained and trellised at a distance of from 9 to 18 inches off the glass; in the latter much of the fruit is placed from 3 to 6 feet off the same.

But Mr. Pearson meets and masters this objection. By adopting the standard form and working his trees at different heights, the whole of the fruit bearing wood is brought up as near the glass as the cultivator chooses, and this whether the trees are planted out or grown in pots.

The Peaches and Nectarines in the great orchard-house at Chilwell are like graduated rows of standard Roses, marshalled according to stature. This mode of training also seems well adapted to the habits of the tree. The natural disposition of a Peach or Nectarine, and indeed of most stone fruit trees on a single stem, is to throw their growth towards the top. This form meets this tendency, and turns it to account by converting that strength into fruit. There can never be any difficulty in keeping the top of a standard Peach well furnished with wood, though there is often very great difficulty in keeping the base of a pyramidal tree as well furnished or as strong as its apex.

With plenty of young wood any that is old or exhausted may be removed, and standard trees could be kept in a bearing state for years, without any great increase of size, and without exhausting. No trees could look in better health than Mr. Pearson's. Most of them were well laden with fruit, and the leaves were healthy, large, and vigorous, without spot. Then, artistically, such trees are very effective. I never have cared for fruit trees on the dinner table; but if ever admissible, a well furnished standard is assuredly the prettiest, and most tasteful form. And Cherries, glowing with vermilion, Apricots burdened with gold, Peaches and Nectarines of choicest colours and qualities, or red-cheeked Apples, might form highly effective objects in halls, or on staircases, or even in large drawing or ball-rooms. Thus horticulturally and artistically I consider the growth of standard orchard-house trees a happy thought, and though we are not wholly indebted for it to Mr. Pearson—for I have seen such trees at Sawbridgeworth years ago—yet I have never seen anything like the number of trees grown in this style, nor the perfection of form and fruiting, that I saw at Chilwell.

Grape and Grape Vine growing here have already been adverted to; the latter were especially strong and good. Mr. Pearson seems rather sceptical about all the new Grapes but the Madresfield Court; he is also a considerable experimenter in this line, having a house for proving his seedlings. I was pleased to meet with his Ferdinand de Lesseps in good style, evidently a useful though most peculiarly flavoured early White Grape. Other sorts here are very promising, but I forbear specifying them until further proved. The man who thoughtlessly writes up a new Grape without sure and certain and repeated proof of its general and special excellencies, and the soundness of its constitution, ought to be lynched. Of this I feel certain—we shall hear again of some of these. Mr. Pearson pointed out one striking case of reversed seed—one of the choicest Grapes had run clean back into something wild and worthless. I noticed also that some varieties, as far as one could judge from leaf and wood and unripe fruit, seem to come quite true from seed.

I met with several fine old herbaceous or alpine plants, among them were the following:—Crucianella stylosa, Veronica taurica, Salvia alpestris, Gypsophila prostrata, Arenaria laricifolia, Rose Campion, Sisyrinchium bermudianum, Anthericum flexifolium, Liliastrum, Liliago, &c.

It may be added that this is a mere fragmentary notice. It would well repay any of your readers to go and judge for themselves. Mr. Pearson is one of the most genial and hospitable of men, and has many things to show and to tell his visitors that space forbids me to write of. *F.*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, JULY 29, 1871.

NAMES OF STATIONS.	Temperature of the Air.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	..	..	..	..	..	..	..	1.13
Blackheath ..	76.6	51.9	24.7	71.3	53.4	17.9	60.4	0.66
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	..	..	..	..	..	..	..	..
Wolverhampton	72.0	47.0	25.0	66.2	50.3	15.9	56.4	0.88
Leicester ..	72.0	48.0	24.0	68.3	50.9	17.4	57.7	1.47
Norwich ..	71.5	49.0	22.5	68.5	50.3	18.2	57.5	1.15
Nottingham ..	73.6	47.8	25.8	70.1	50.2	19.8	58.2	0.61
Sheffield ..	70.0	48.0	22.0	66.0	51.0	15.0	56.6	0.87
Liverpool ..	67.0	48.9	18.1	64.4	51.8	12.6	56.2	0.83
Manchester ..	72.0	48.0	24.0	68.0	51.1	16.9	57.7	1.43
Salford	68.7	47.0	21.7	64.5	50.3	14.2	55.5	1.42
Bradford ..	68.8	50.5	18.3	66.4	52.7	13.7	57.6	0.75
Leeds	69.0	48.0	21.0	65.9	51.9	14.0	56.9	0.66
Hull	72.0	47.0	25.0	67.3	49.9	17.4	56.7	1.20
Newcastle ..	67.0	49.0	18.0	63.2	52.0	11.2	55.7	..
Edinburgh ..	67.7	45.0	22.7	..	..	..	53.5	1.00
Glasgow ..	66.2	44.5	21.7	..	..	..	53.4	2.00
Dundee.. ..	71.0	44.0	27.0	..	..	..	54.3	1.30
Aberdeen ..	64.2	46.6	17.6	..	..	..	54.4	1.25
Paisley	..	..	..	..	..	..	..	..
Greenock ..	66.0	48.0	18.0	..	..	..	54.5	0.98
Leith	68.6	48.8	19.8	..	..	..	54.8	0.80
Perth	73.0	43.0	30.0	..	..	..	56.2	1.49
Dublin	71.7	43.8	27.9	..	..	..	55.2	1.80

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, AUGUST 2, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
July and August.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
27. Thurs. .	29.53	64.0	56.9	51.2	63	4.2
28. Friday .	29.55	62.5	61.4	60.4	93	5.9
29. Satur. .	29.76	65.7	58.5	52.7	63	4.4
30 Sunday.	29.48	56.6	54.2	52.0	85	4.3
31 Monday	29.82	63.3	59.0	55.6	76	4.9
1. Tues. .	29.94	66.6	59.7	54.2	64	4.6
2. Wednes	29.82	68.0	59.5	52.7	59	4.4

1871. MONTH AND DAY.	Temperature of the Air.					Wind.		Rain.
July and August	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
27. Thurs. .	76.6	52.0	24.6	62.1	+ 0.1	WSW	225	0.00
28. Friday .	71.7	56.2	15.5	61.4	— 0.8	WSW	280	0.11
29. Satur. . .	71.8	52.8	19.0	60.8	— 1.5	S.S.W.	320	0.07
30. Sunday	67.3	50.0	17.3	55.2	— 7.2	S.W.	385	0.15
31. Monday	74.9	46.8	28.1	60.7	— 1.7	S.W.	190	0.00
1. Tues. . .	74.9	44.9	30.0	58.1	— 4.3	S.W	200	0.00
2. Wednes	79.1	47.5	31.6	61.5	— 0.9	variable	150	0.00

July 27.—A fine day. The amount of cloud increased towards night.
— 28.—Rain fell heavily in the early morning. A fine afternoon and evening.
— 29.—Fine in the morning. Between 4 and 7 the sky was generally overcast, and rain fell heavily. Fine at night.
— 30.—Very variable throughout. At ftequent intervals the morning rain fell in torrents. Generally fine after noon, though a few light showers fell.
— 31.—Light clouds prevalent. Very fine throughout.
August 1.—Fine. Cloudless at night.
— 2.—Very fine day.

JAMES GLAISHER.

Miscellaneous.

CRICKET.—A match was played on Saturday last between the *employés* of Messrs. James Carter, Dunnett & Beale, and those of Messrs. Waite, Burnell, Huggins & Co., on the ground of "Carter's Cricket Club," at Dulwich, which resulted in an easy victory for "Carter's."

SALE OF TIMBER.—A few of the Oak trees in Burghley Park, having shown symptoms of decay, were recently cut down, and were sold by auction. The size of the trees and the value of the timber may be inferred from the prices that were realised. One tree brought £72; a second, £61; a third, £54; and the whole, 30 in number, realised £900.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

SEEDLING plants of *Cyclamen persicum*, which were potted off a month or two since, should be kept constantly growing in an intermediate temperature. It is quite probable that at this time the young roots will be approaching the sides of the pots rather freely; so that if the latter are small in size (such as are recommended) another shift may be of much benefit to them at this time. If on the other hand they were potted off into large pots, such as the largest sized 60's, this will not altogether be advisable. In the case of these latter it will be best to apply a little weak liquid manure at alternate waterings. In potting-on Cyclamens at this season, there are certain circumstances which require consideration. For instance, as the long cold nights of autumn and early winter are approaching, it will be advisable to give small shifts only, and these again must be afforded after a careful consideration of the means at command to grow them on quickly and well. Few plants have shown a greater amount of progress in a cultural point of view, in the hands of the modern gardener, than have the Cyclamens; but it will be found that wherever the greatest amount of success has been attained there will also be found the best means for obtaining it. Perhaps it may be superfluous to mention that these "sweet and showy" plants cannot be grown to a tithe of the beauty they are capable of displaying amongst a mixed incongruous medley of plants, as they invariably are when large returns are expected from poor means. I should, however, state the fact that the Cyclamen delights in being grown near to the glass, and also that it prospers thoroughly only by the aid of a little bottom-heat. Those cheap low span-roofed houses, which are so much employed by the caterers of the plants for our great metropolitan markets, are just the things required to do this plant justice, as well as 10 out of every 15 of all other decorative subjects. Yet all our large ducal and other establishments seem to be totally without such models of convenience. I cannot help thinking that by far too much attention, on the part of those designing gardens, is given to the ornamental element, say in filling out a certain piece of ground, or in the external appearance of any given structure, than to the internal working arrangements. The former, no doubt, is very desirable in the case of conservatories and show-houses of a permanent character, but structures of a more suitable nature, for growing stuff to furnish them, should nevertheless be always provided in fitting positions. Those, then, who labour under the burden of inconveniences, and have not proper means, should keep their seedling Cyclamens in the same small pots until the early spring, and may then have some hopes of making a good advance. Pay careful attention to young seedling *Herbaceous Calceolarias*, which should now be attaining to a readily discernible size. Immediately the plants become large enough to handle well, prick them out into light, rich soil, subsequently taking care to place them in a cool, shady situation. Water them with care, so that none may be allowed to become too dry or too wet. Old plants of *Cinerarias* which have been turned out on to a cool shady border should now be taken up and divided, and the young shoots or cuttings potted off singly. Place them then into a cool frame, the bottom of which is composed of cinder ashes, under a north wall; keep them well watered and with but a moderate quantity of air for the first week or two, unless, indeed, the weather prove cool and moist, when more may be freely allowed. *Conservatories* which from any cause, such as the absence of the family, &c., may not require to be kept constantly gay, and in which large specimen plants are grown in open borders, should now have copious syringings within. This will afford very material aid to all such inmates. Those who may have turned out-of-doors any choice plants will have to calculate a little, if the moist, dripping weather present while I am writing continues, as to whether harm is not likely to accrue to them through being constantly too wet at the root.

FORCING HOUSES.

Take advantage now of the duration of sunlight, to ensure a sturdy growth to all plants in forcing-houses, bearing in mind that these advantages are exceedingly transitory, and that no time should be lost in fully availing ourselves of a favourable opportunity. Give air freely, according to the state of the outer weather, but close up early in the afternoon. Feed the roots of fruiting *Pines* freely with proper manure-water, and so encourage by every means the fullest possible development of each. In *Early Vineries*, the wood must now be induced to ripen off. It will be well, therefore, to remove every symptom of fresh growth, and, by gradually inuring the Vines to night air, to induce a perfect state of rest. To further these views, some means must be devised to throw off all moisture from superficial rains from outside Vine borders. Apply a moderate amount of artificial warmth to vineries in which the fruit is ripening, during all inclement weather. Keep Muscats ripening at any stage in a good high temperature, increasing it as they proceed with the final swelling and the ripening process. With Muscats it is only by a high temperature that good flavour is possible, hence it must be used with freedom. Be careful to keep down red spider upon *Peach* and *Nectarine trees* which have done fruiting; to accomplish which give a good syringing occasionally. Use other means to get the wood thoroughly ripened, that the lights may be removed bodily at the earliest possible time. *Melons* which are ripening their fruits must neither be watered nor shaded, and all the air possible must be afforded, in conjunction with the maintenance of a good temperature within.

HARDY FLOWER GARDEN.

Hollyhocks will now be commencing to bloom, so that, where fine blooms are required for any special purpose, the points of the shoots should be cut back, and the plants be supplied with manure-water. Thin out the shoots somewhat upon *Dahlias*, selecting those which exhibit a greater proportion of bloom-buds to remain. Fasten them firmly to the stakes, so that they may escape all danger from injury by wind-storms. Earwigs must be also entrapped by the customary means of elevating small flower-pots containing Moss upon the stakes, or by thrusting old Broad Bean stalks amongst the foliage, which latter method is, perhaps, the least unsightly. Prick out seedling Queen and Brompton *Stocks* into sheltered seed-beds, and by these means endeavour to insure stiff, sturdy stuff, the better to stand through the future winter. Prune off all young side shoots or suckers from Neapolitan or other choice *Violets*, particularly such as are being grown on for lifting in the autumn to bloom in pots. Remove the old decaying or seedy remains from off border plants, and cut-in any kind of *Hardy Shrubs* which are unduly exceeding their limits.

HARDY FRUIT GARDEN.

Too much importance cannot be attached to the fact, that the sooner all *Strawberry plants* intended for forcing fill their pots with roots the better.

KITCHEN GARDEN.

I referred some weeks back to the desirability of sowing seeds of Rosette and Little Pixie *Coleworts.* Let the plants now be planted out thickly, or not more than from 10 inches to a foot apart, and they will be found to form nice compact heads, from the early winter frosts away into the more youthful weeks of the incoming year, often proving very useful at a time when this kind of vegetable is frequently not over-abundant. Proceed with the earthing-up of the earliest rows of *Celery*, taking care to remove all old leaves and the young side shoots, which generally form freely at their base. Make yet another sowing of *Peas* by way of a chance crop. Let the variety be an early kind. I have found the not over-early Ne Plus Ultra do well during very cold nights, comparatively speaking, and with but moderately sunny days. Remove all old *Peas*, *Broad Beans*, &c., immediately they cease to afford a supply, and plant out varieties of winter vegetables in their room without delay. In light soils, *Broccoli* and all similar crops will do better following these (giving the ground a good surface hoeing only) than they will in many cases in the same kind of soils when it has been freshly dug and manured. The same cannot be said, however, of very stiff, heavy soils. *W. E.*

Notices to Correspondents.

ARISTOLOCHIAS. One of the Editors of this journal being engaged in drawing up an account of the species of Aristolochia, would feel indebted to any correspondents who will kindly furnish him with fresh flowers of any species they may have in cultivation. The flowers may be sent by post to the office of the *Gardeners' Chronicle.*

BOOKS: *W. B.* Williams' "Orchid Grower's Manual," 4th ed., will probably suit you well.

CAPER SPURGE: *Mrs. C. and others.* This is the Euphorbia Lathyris, and is of so poisonous a nature that we strongly recommend our correspondents not to try its edible qualities. We presume the name Caper has been given from a superficial resemblance of the seed-vessel to the buds of the true Caper, Capparis spinosa.

FAIRY-RING FUNGI: *A.* The only way to get rid of these is to dig out the soil impregnated with the spawn. We should be very unwilling to do so in most cases, as they produce abundant crops of Marasmius Oreades, one of the very best of our esculent Fungi. They have been peculiarly abundant this year, but, strange to say, they have yielded little or no catsup, even from a bushel and a half of the Fungi. *M. J. B.*

INSECTS: *H. G.* The Vine-leaf sent is swarming with hundreds of the just hatched young of the Vine coccus (C. vitis). Look carefully over the stems, and pick off all the swollen bodies of the females with their white cotton-like covering, and burn them. Leaves also in the state of that sent should be picked off and burnt. *I. O. W.*

NAMES OF PLANTS: *H. W. C.* Pelargonium fulgidum, the parent of P. ardens and many other varieties.—*G., Bath.* This is not Abies Hookeriana, but Abies grandis, Auct. *A. M.—J. Lad.* The Wig Plant, Rhus Cotinus.—*John L.* Amorpha fruticosa.—*D. W.* Lastrea tenericaulis, *alias* Polypodium trichodes. — *W. R., Langport.* Blechnum occidentale and Aloe prolifera.—*Rusticus.* Hypericum Androsæmum.—*A. G.* Ononis arvensis, Rest Harrow.

NEW PEAS: *W. Karle.* So numerous are the new varieties of Peas, and so slight the differences between them, that we feel some hesitation in pronouncing an opinion; nevertheless we can give an excellent character of the sample of Evershed's West Surrey Marrow, the pods of which are well filled and the Peas of excellent flavour. Evershed's Dwarf Munsted Marrow is also a fine sort, but in our opinion not equal to the other.

PEA: *C. M.* Your Pea bears a very strong resemblance to British Queen, but it is impossible to definitely name any Pea without seeing it growing, or being able to compare it with others.—*E. N.* Yours is a variety of the Sugar Pea, which, as you say, is a delicious vegetable. It is no novelty.

PELARGONIUM: *T. W.* Not equal to several already in cultivation, of which Jean Sisley and Wellington may be cited as examples.

REMOVING PLANTS: *Old Subscriber.* Strictly speaking, no, unless by special agreement, or unless you are in the trade.

COMMUNICATIONS RECEIVED: P. G.—F. W. B.—J. J. N.—J. B.—D. T. F.—R. F.—W. A. M.—J. W. & Co. (next week). A. M.—T. D.—J. H.—J. S. (next week).—H. M.

Markets.

COVENT GARDEN.—Aug. 4.

The markets have been generally well attended during the past week, and supplies have been fairly kept up, prices remaining nearly stationary. Another large cargo of West India Pines has passed under the hammer this week, realising rather more money. The Potato trade is very heavy, and likely to be so for the next month, the disease having shown itself in Lincolnshire as well as in the west of England.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve	..	to 3 0	Oranges, per 100 ..	8 0	to 12 0
Grapes, per lb. ..	1 6	— 6 0	Peaches, per doz. ..	8 0	—20 0
Lemons, per 100 ..	8 0	—12 0	Pine-apples, per lb.	2 6	— 5 0
Nectarines, per doz.	4 0	—10 0	Strawberries, p. lb.	0 6	— 1 6

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d*
Asparagus, p. bundle	4 0	— 6 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz. ..	2 0	— 3 0	Lettuces, per score..	0 9	— 1 6
Cabbages, p. doz. ..	1 0	— 1 6	— FrenchCos, each	0 9	— ..
Carrots, p. bunch ..	0 8	— 1 0	Mushrooms, p. pott.	2 0	— 3 0
— French, per bundle	1 0	— 1 6	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	0 4	— 0 6
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, round, per bunch ..	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Rhubarb, p. bundle	0 3	— 0 6
French Beans, p. lb.	1 0	— 1 6	Shallots, per lb. ..	0 8	— ..
Gooseberries, per quart	0 4	— 0 6	Spinach, perbushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch..	0 4	— 0 9

Potatos (good samples), New Round, 6*s.* to 10*s.*; Kidneys, 8*s.* to 10*s.* per cwt.

THE ACME GARDEN FRAME and GROUND VINERY.
The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston on-Thames.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO, who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.
JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

One Penny per Square Yard.
TANNED GARDEN NETTING, for Garden purposes, such as Protecting Fruit from Birds, Blossom from light Frosts, &c. Widths, 1, 2, 3, and 4 yards. The Trade also supplied.
HOOPER AND CO., Covent Garden, London, W.C.

NEW TWINE NETTING, 2 yards wide, 4*d.* per yard; ¾ mesh, 2 yards wide, 8*d.* per yard. HEXAGON NETTING, 76 mesh to square inch, 4½*d* per square yard. Repaired TANNED NETTING, 1½*d* per yard, 2 yards wide. RABBIT NETS, FISHING NETS, BIRD NETS. See List, post free.
W. CULLINGFORD, Forest Gate, London, E.

Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.
S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, E.C.

BICKLEY'S PATENT HORIZONTAL SASH-BARS require neither Paint nor Putty; an orchard-house or greenhouse, &c., may be easily, cheaply, and quickly made with them by an amateur. Four hundred feet can be firmly glazed or unglazed in one hour. Drawings, &c., for 1 stamp, of the Inventor and Patentee,
THOMAS A. BICKLEY, 70, Smallbrook Street, Birmingham.
Proceedings in Chancery will be taken against any person infringing this patent.

SPAN-ROOF GREENHOUSE for SALE, 13 feet by 8 feet, strong framework, best glass, and finished within a year. Cost £25, and is offered for £15.
Apply, by letter only, to R. S., *Gardeners' Chronicle* Office, W.C.; or 21, Verulam Terrace, Hammersmith, W.

SEWAGE CART and IRON FENCING for SALE, equal to new.—The Cart is iron, with a Pump and Hose, by which Cesspools are emptied. The Fencing, 340 yards, is continuous; five bars, and three feet six inches high. Apply to
The GARDENER, The Grange, Sutton, Surrey.

WANTED, a Practical WORKING FOREMAN (Single), where Vines are grown extensively both in Borders and in Pots for Sale; must have a thorough knowledge of Forcing, Thinning Grapes, and Stopping the Shoots of Vines; also must understand, and have had considerable experience of, the Value and Sale of Plants, as well as being a thorough good Propagator of Roses, Camellias, Azaleas, Heaths, and particularly choice Stove and general Plant Stock for Sale to the Trade. To live on the premises.—Address in own handwriting, stating wages required and references, to J. MEREDITH, The Vineyard, Garston, near Liverpool.

WANTED, a Gentleman, as MANAGER of the Pine-apple Nursery and Seed Business, St. John's Wood, London, W. A liberal salary will be given to an energetic man, who thoroughly understands the business. Good references required.—Apply first to Mr. JONES at the Nursery.

WANTED, a steady, active young single Man, as FOREMAN, in a small Market Garden. He must be able to take the Management of Early Vineries, and have some Knowledge of the Management of Pines.—H. H., Post Office, Twickenham.

To Gardeners and Others.
WANTED, by the ROMFORD BURIAL BOARD, a respectable MAN, married, without children.—The Man and his Wife must be able to read and write. The Man will be required to keep the grounds in order, and devote his whole time to the service of the Board. The Woman will have to wash the surplices and keep the chapels clean, and to do any additional work which may be required. Salary 18*s* per week, with the occupation of the Lodge.—Applications, in the handwriting of the candidates, stating qualifications, ages, &c., accompanied by testimonials, to be sent to me, at my office, at Romford, on or before MONDAY, August 14 inst.
A. H. HUNT, Clerk to the said Burial Board.

WANTED, as FARM SERVANT, an active, intelligent Man, to Superintend, and Assist in Working, a Gentleman's Small Farm, mostly grass land. He must have had considerable experience in a similar situation, and be willing to make himself generally useful, and able to Keep Accounts. A married Man, with not more than one or two children, preferred, as he would have to live in the Lodge (unfurnished). Wages 24*s*. Apply by letter, in own hand-writing, stating full particulars of situations held during the last 10 years, age, &c., to R. B., Lamorbey Park, Bexley, Kent.

WANTED, TWO YOUNG MEN as IMPROVERS.—Lodgings in the Nursery. Liberal wages given.—Apply to A. HENDERSON, Sion Nursery, Thornton Heath, Surrey.

NURSERY CLERK.—JAMES DICKSON & SONS REQUIRE, for their Nurseries, a thoroughly respectable and competent CLERK, accustomed to Correspond, and who has filled a similar situation in a large general Nursery. State age, and all particulars as to experience, salary expected, &c.—"Newton" Nurseries, Chester.

Cowman, &c.
WANTED, for a Gentleman's place, a MAN and his WIFE.—The Man to Milk, attend to the Cows and Pigs, &c., and his Wife to be able to assist in the Laundry; both must be thoroughly qualified for the work, and have the highest recommendations.—Mr. THOMAS LAUDER, Appleby Hall, near Brigg, Lincolnshire.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

Gardeners in Want of Places.
JOHN HARRISON has several clever experienced MEN on his Books, whose characters and abilities are of the highest order.—North of England Nursery, Darlington.

WILLIAM STOCKWELL, age 32, married, with four children, REQUIRES a good situation as HEAD GARDENER.—For particulars, apply to JABEZ J. CHATER, Gonville Nurseries, Cambridge.

GARDENER (HEAD).—Age 36, married, no family; thoroughly practical in all branches of the profession, capable of making Improvements or Relaying-out. Excellent references from present employer.—A. B., Post Office, Ramsbury, Wilts.

GARDENER (HEAD).—Age 30; understands every branch of work; fourteen years' experience. Four years' character from last situation.—J. P., R. J. Clark's Libraries, High Street, Dorking, Surrey.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a well qualified Gardener.—Age 46, one boy, age 12; a trustworthy Man, of many years experience; good Plantsman. Five years in last situation, with good character. Please state terms.—C. B., Mr. Pollard, Caterham Valley, Surrey.

GARDENER (HEAD).—Age 30, married, no family; thoroughly understands the profession in all branches; good Plant Grower, and Practical Man in the Kitchen Garden; also good Fruit Grower. Good reference.—G. R., 2, Brunswick Road, Upper Holloway, London, N.

GARDENER (HEAD).—Married, no family; understands Early and Late Forcing, and Flower and Kitchen Gardening. Wife small Dairy if required. Leaving through change of Establishment. Excellent character.—F. TESTER, Hurlingham Lane, Fulham, S.W.

GARDENER (HEAD).—Age 28; has had 14 years' practical experience in first-class establishments. Thoroughly understands the Cultivation of Vines, Pines, Mushrooms, Cucumbers, Melons, Stove and Greenhouse Plants, also Orchids and Orchard-houses, and Flower and Kitchen Gardening. Can be highly recommended.—A. Y., Post Office, Tewkesbury.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Has had great experience in the Cultivation of Stove and Greenhouse Plants, well understands Forcing all kinds of Fruits, Flowers, and Vegetables Kitchen and Flower Gardening, also Dinner-table Decorations, &c.—Can be highly recommended. Nine years' character.—W. G., 54, North Street, Edgware Road, London, W.

To Noblemen and Gentlemen.
GARDENER (HEAD). — First-class character and abilities. Eight years' experience in good establishments in England, the last four as General Foreman in present situation, where Gardening is carried on extensively; and is noted for the excellent Cultivation of Fruits, especially Grapes. Advertiser is practically acquainted with every branch of Gardening.—W. MINDENHALL, The Gardens, Charleville Forest, Tullamore, King's County, Ireland.

GARDENER (HEAD).—The Advertiser, a young Man, single, possessed of a good education, wishes for an engagement in the above capacity. He has had a thorough experience, in first-class establishments, in the Culture of Grapes, Pines, Peaches, Melons, Cucumbers, &c.; is well versed in the Nomenclature and Culture of Stove and Greenhouse Plants; in the Management of the Flower Garden for early Spring, Summer, and Autumn effects; and in Dinner table Decorations and other Indoor Floral Displays. Unexceptionable references as to character and ability can be produced.—ALPHA, Ashburnham Park Nursery, King's Road, Chelsea, S.W.

GARDENER (HEAD), where not less than four are kept.—Age 30, married, no incumbrance. An experienced Man. Good recommendations.—T. MASLIN, 28, Newton Street, St. John's Road, N.

GARDENER (HEAD, WORKING).—Age 38, married, one child; thoroughly experienced and energetic. Good references.—R. S., Post Office, Crawley Down, Crawley, Sussex.

GARDENER (HEAD, OR SINGLE-HANDED).—Thoroughly understands Early and Late Forcing of Vines, Peaches, Melons, Cucumbers, Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Unexceptionable character from last situation.—J. S., 19, Hill Street, Leamington Spa.

GARDENER (UNDER) in a Nobleman's or Gentleman's Family.—A steady, intelligent young Man, who has had some years' experience.—H., Mr Atkinson, Nurseryman, Winterton, near Brigg, Lincolnshire.

To Nurserymen and Others.
PROPAGATOR (HARD and SOFT-WOODED).—Age 28; has had good experience in Grafting Roses, Rhododendrons, &c. Good references.—W. H., 22, Cyril Street, Northampton.

BAILIFF (WORKING).—Respectable, middle-aged, married, no family; Wife can take charge of Poultry or Dairy. Good references.—A. B., Post Office, Crowmarsh, near Wallingford.

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

Prize Berkshire Pigs.

MR. GRIGGS, the Winner at the Essex Agricultural Show at Romford (June 15 and 16, 1871) of Four First Prizes, Four Second Prizes, and Four Commendations, has some of the PRIZE PIGS, and some first-rate BOARS and SOWS, for SALE.

Oaklands, Romford.

TO BE LET, GARDENS, PINERIES, VINERIES, and PEACH HOUSES, well stocked, and fitted up with the latest improvements, extending over one Cheshire acre of land, of which one-fourth is covered with Glass.

E. LEIGH WRIGHT, Esq., Wigan.

TO BE LET, ELM COTTAGE, Taunton.—The Garden attached to this complete Residence is full of choice Plants, Shrubs, and Ferns, collected by the late Mr. John Young. A Tenant who would preserve the collection would be preferred. A good Kitchen Garden, Coach-house, and Stable attached.

Apply to W. YOUNG, at the above address.

To Seedsmen and Nurserymen.

A GENTLEMAN has a FREEHOLD ARABLE FIELD of THREE ACRES, adjoining his property, which he does not require, and is prepared to LET it for the above purposes, and to Build a Cottage Residence on the ground—granting a sufficiently long Lease to make it worth the tenant's while to put up Glass. It is situated seven miles N E. from town and five minutes' walk from a railway station.—B., Mr, G. Street, 30, Cornhill, E.C.

Dagenham and Barking.

TO BE LET, at Michaelmas next (with Possession immediately on the present Crops being cleared), all that valuable MARKET GARDEN FARM, containing about 303 Acres of exceedingly fine Early Garden Ground, Arable and Pasture Land, known as VALLANCE, GALLANCE, and WARREN HOUSE FARMS, together with the Manor House, Bailiff's House, Cottages, and Farm Buildings, situate within 2 miles of the Market Town of Romford, and about 9 miles from London. For terms and particulars apply to Messrs. CLUTTON, 9, Whitehall Place, S.W.

To the Seed Trade.

SEED BUSINESS, in one of the best districts in the South of Scotland, for SALE, with or without a small Nursery It has been long established, has a good connection, and may be greatly extended. Goodwill and in-going easy. Satisfactory reasons will be given for relinquishing the business. The Premises are new and commodious, and the situation is good. To an energetic Person with a small Capital, this is altogether an excellent opening.

For particulars apply to SEEDSMAN, Mr. Thomson's, 19, Yardley Street, Exmouth Street, Clerkenwell.

To Gardeners and Others.

TO BE SOLD, or LEASED for a term of Years, on advantageous terms, the OSBORNE PARK NURSERIES, close to Potter's Bar Station, Great Northern Railway, where Coals are delivered direct from the North, and easy of access to Covent Garden Market. The Nursery occupies about 2 acres of ground, on the high road, and contains a Dwelling House, Foreman's Cottage, Stable, Sheds, and 15 Glass Houses, fitted up with Hot-water Boilers and Pipes complete. Any one with a moderate capital about to commence trade, or to work it in connection with an established business, will find this a favourable opportunity.

For further particulars apply by letter in the first instance to L. W., Mrs. Huxtable, 2, Carthusian Street, London, E.C.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

SALES BY AUCTION.

In Bankruptcy.

TO BE SOLD, by PUBLIC AUCTION, at the Establishment of M. Emile Vincke-Haybreese, Nurseryman, of Scheepsdale-lez-Bruges, Belgium, on MONDAY, August 7, and following days, at 10 o'Clock, under the direction of M. Philippe de Groot, Nurseryman, Steenbrugge, and of the Clerk of the Registrar of the Tribunal of Commerce, Bruges, a large quantity of ORNAMENTAL and other PLANTS, consisting of about 32,000 Palms, 4000 Dracænas, 100 Cycas revoluta, 22,000 Camellias (single), 5000 Camellias (double), 5000 Laurels, 3000 Laurustinus, 12 Phormium tenax (variegated), 300 Araucaria excelsa in varieties; a fine collection of Agaves, Bonaparteas, Pandanads, Yuccas, hardy Conifers, &c. Conditions—cash payment.

Catalogues may be had on application to M. DE GROOT, Nurseryman, Steenbrugge, or from the Office of the Tribunal of Commerce, Bruges.

Bosworth House, Hinckley.

SALE of VALUABLE STOVE and GREENHOUSE PLANTS.

MESSRS. THOMAS AND GEORGE HARROLD are instructed by the Executor of the late T. Goadby, Esq., to SELL by AUCTION, without reserve, on TUESDAY, August 8, at 11 for 12 o'Clock precisely, the whole of the choice COLLECTION of STOVE PLANTS, comprising Begonias, Eucharis, Franciscea, Ixoras, Poinsettias, Rivinas; FOLIAGE PLANTS—Alocasias, Anthurium, Caladiums, Crotons, Dracænas, Marantas, Pandanus, Fittonias, and numerous others; also some choice EXOTIC FERNS, among which will be found a fine plant of Lomaria gibba, Gymnogrammas, and a few ORCHIDS; FRUITING and SUCCESSION PINES, together with a small quantity of FIG TREES and ROSES in pots; CAMELLIAS, and a large quantity of GREENHOUSE and BEDDING PLANTS in pots.

On view four days prior to Sale, from 11 to 4 each day, by Catalogue only, to be had (6*d*. each) of Mr. BURNETT, Gardener, Bosworth House; or the Auctioneers, Castle Street, Hinckley.

Highly Important Sale

Of the CELEBRATED COLLECTION of ORCHIDS formed by S. RUCKER, Esq., at WANDSWORTH.

MR. J. C. STEVENS has received instructions from Messrs. Veitch & Sons, who have purchased the entire COLLECTION, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, August 8 and 9, at half-past 12 o'Clock precisely each day, the first portion of the above magnificent lot of Plants, amongst which will be found—

Saccolabium guttatum, Mr. R.'s No. 3 variety
Odontoglossum triumphans
„ Marshallianum
Cattleya Ruckeri
„ labiata
„ Devoniensis
„ exoniensis
„ Schilleriana
Colax jugosus
Oncidium Barkeri
Dendrobium Wardi
„ nobile pendulum
Epidendrum nemorale
Vanda insignis (true)
Lælia anceps Dawsoni
Oncidium Rogersii
„ Marshalli
Dendrobium thyrsiflorum
Masdevallias, splendid plants of all the best kinds, many in bud
Odontoglossum Alexandræ, magnificent varieties
Cymbidium eburneum, splendid specimens
Vanda Lowii, probably the largest plant known
„ Dennisoniana
„ cœrulea, in fine health
Phalænopsis amabilis, Schilleriana, and grandiflora, very strong plants
Pleione humile, Wallichiana, and Lagenaria, in fine masses
Lælia elegans, the best varieties, &c.

All the Plants are in fine condition, and many are in bud, or blooming.

On view the mornings of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, August 15, at half-past 12 o'Clock precisely, several importations of ORCHIDS, just arrived, and a collection of Established Plants, including many choice and rare varieties.

On view the morning of Sale, and Catalogues had.

Important Shorthorn Sales.

MR. JOHN THORNTON will SELL by AUCTION the following HERDS of PURE-BRED SHORTHORNS, several of which are of a very first-class character:—

WEDNESDAY, August 23.—The celebrated and first-class HERD bred by the late Thos. Barnes, Esq., at WESTLAND, Kells, Co. Meath, Ireland. The small select HERD, the property of R. W. Reynell, Esq., will be SOLD at the same time and place.

FRIDAY, August 25.—The entire and first-class HERD bred by J. G. Grove, Esq., at CASTLE GROVE, Letterkenny, Ireland.

TUESDAY, September 12.—At BROCKTON HOUSE, Eccleshall, Staffordshire, Mr. Thomas Bell's entire HERD.

THURSDAY, September 14.—Messrs. Dudding's entire HERD, at PANTON HOUSE, Wragby, Lincolnshire, of about 100 head.

TUESDAY, September 19.—The late Sir John Rolt's entire HERD, FLOCK of COTSWOLD SHEEP, HORSES, &c., at OZLEWORTH PARK, Wotton-under-Edge, Gloucestershire.

FRIDAY, September 22.—The first-class herd at CHAPEL BRAMPTON, Northampton, the property of J. N. Beasley, Esq.

TUESDAY, September 26.—About FORTY HEAD, belonging to W. Ashburner, Esq, at NETHERHOUSES, Ulverstone.

JOHN THORNTON, 15, Langham Place, Regent Street, W.—July 1.

Holker Hall, Lancashire.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has the honour to announce for SALE by AUCTION, without reserve, on WEDNESDAY, September 6 next, a very choice Selection from the renowned Holker Herd, belonging to His Grace the Duke of Devonshire, which will consist of about FORTY HEAD of BULLS, COWS, and HEIFERS. Amongst them will be found some Oxfords, Wild Eyes, Blanche, Cleopatra, Asia, and other famed Kirklevington tribes. The young stock are chiefly by Grand Duke 10th (21,848), and Grand Duke 17th (24,064). Baron Oxford 4th (25,580), of the same line of blood, is now in service, and the whole will be found well worthy the attention of purchasers of first-class Shorthorns.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London, N.W.; or, of Mr. DREWRY, Holker House, Grange-in Cartmel, Lancashire.

Beaumont Grange, Lancaster.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions to announce for SALE by AUCTION, without reserve, at Beaumont Grange, near Lancaster, on THURSDAY, September 7 next (the day following the Sale at Holker Hall), a choice selection of BULLS, COWS, and HEIFERS, from Mr. W. W. Slye's Herd, principally of Kirklevington and Fawsley descent.

Catalogues, with Pedigrees, will shortly appear, and may be had of Mr. SLYE, Beaumont Grange, Lancaster; or, of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Killhow, near Wigton, Cumberland.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to intimate that he is instructed to announce for SALE by AUCTION, without reserve, on FRIDAY, September 8 next, at Killhow, about FIFTY HEAD of very superior SHORTHORNS, belonging to J. P. Foster, Esq., that have been selected and bred with the greatest care from some of the most fashionable and pure strains of blood, to which have been used Bulls of the first class. 17th Duke of Oxford (25,994), from the famed Holker Herd, is now in service, and the young stock are chiefly by him.

Catalogues, with Pedigrees, will shortly be issued, and may be had on application to Mr. TURNER, Killhow, near Wigton, Cumberland; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

WIRRAL AGRICULTURAL SOCIETY.—The ANNUAL SHOW of HORSES, HORNED STOCK, SHEEP, PIGS, POULTRY, DOGS, IMPLEMENTS, &c., will be held at Birkenhead, on AUGUST 30. ENTRIES CLOSE AUG. 8.

Further particulars, Schedules, &c., on application to the Secretary, WM. HENDERSON, Jun., 2, Market Cross, Birkenhead.

Condition of the Fruit Crops, 1871.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for SATURDAY, August 12, will contain a FULL and TABULAR STATEMENT of the CONDITION of the FRUIT CROPS throughout the UNITED KINGDOM.

May be had of all Booksellers. Price 5*d*.; post free, 5½*d*.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Agricultural Gazette.

SATURDAY, AUGUST 5, 1871.

AN inferior crop of Wheat, a very good crop of Barley, an average crop of Oats, and crops of Beans and Peas which never promised better, but which, in the case of the former already, and in that of the latter will most probably before harvest, have disappointed expectation:—This is the report (upon the whole) of our correspondents, whose returns we publish in the following pages. Comparing them by the mere classification and addition of their returns, we have the following result:—

CROP RETURNS—HARVEST, 1871.

	Wheat.	Barley.	Oats.	Beans.	Peas.
Over-average ..	8	80	43	12	59
Average	96	136	128	92	95
Under average ..	121	12	62	52	10
Total	225	228	233	156	164

Comparing the above with the returns for 1870, which was not a good year, though it turned out better than was expected, we come to the conclusion that this year's produce is upon the whole inferior.

The following were the figures for last year:—

CROP RETURNS—HARVEST, 1870.

	Wheat.	Barley.	Oats.	Beans.	Peas.
Over average ..	16	12	6	4	7
Average	67	55	21	25	62
Under average ..	40	57	93	72	16
Total	123	124	120	101	85

Owing to the varying number of our correspondents in 1870 and 1871, respectively, these figures cannot be compared at a glance. We therefore reduce them to their percentage values in another Table:—

CROP RETURNS—HARVESTS 1870 AND 1871.

	Wheat.	Barley.	Oats.	Beans.	Peas.
1870.					
Over average ..	13	10	5	4	8
Average	54	44	18	25	73
Under average ..	33	46	77	71	19
1871.					
Over average ..	3	35	18	7	36
Average	43	60	55	59	58
Under average ..	54	5	27	34	6

It will be seen from these figures that the Wheat crop of the current year is decidedly inferior to that of 1870, and whereas that turned out better than was expected, this, in all probability, will not turn out so well as its present appearance leads us to expect. A wet summer—cold wet summer as we may call that of 1871—is certain to disappoint expectations of seed produce; and that will be our lot this year.

Cattle food of all kinds promises to be abundant. Mangels, indeed, do not prosper in such weather as we have had, but Turnips of all kinds were never better, and grass is plentiful, though hay has been badly made. The wet season is producing its usual effect in an early development of the Potato disease.

IT would be matter of surprise if, in this cold and wet season, there were not indications of disease in some of our cereals. At present, as far as we have observed, the Wheat is free from mildew, though there are indications on the stem which threaten an attack should mild and wet weather succeed to the present climatic conditions. We have, however, received from two sources ears of Barley attacked by a disease, which, according to the accompanying reports, seems, unless limited to a small area, likely to be very disastrous. In the first case the inside of the grain is mottled and tinged with pink, a colour which extends to the glumes, on which it is far more permanent than in the seed. This tint is not uncommon in diseased cereals; it is often very conspicuous in Indian Corn, and is, we believe, a purely chemical change, consequent on disease from various causes. In the other case, which was forwarded to us from Northamptonshire, where the peculiar condition is said to prevail largely in certain districts, the stem is often streaked with dark lines, not caused by Fungi, as might at first be suspected, but where the component cells are gorged with brown inspissated matter—as is so frequently the case in many instances of vegetable pathology—the knots are all more or less diseased, and in consequence the supply of nutriment has been cut off, and the grain in various stages of development has perished. These knots, as far as we have seen, are not attacked by Septoria nodosum, which is sometimes destructive to Wheat. At least, if such is the case, the Fungus is not sufficiently developed to show any traces under the microscope. The glumes are brown, also the grain itself, especially where it was in an early stage of growth discoloured, and covered with a thin coating of mould, the threads in part being brown and belonging to some species of Macrosporium, while in part they are white, anastomosing very freely, and apparently referable to some species of Fusisporium, for we have seen scarcely any fructification. The grains appear in every case to have been impregnated, and there are abundant remains of pollen grains on the still adhering stigmas. It is quite clear, however, that these Fungi have had nothing to do with the death of the plant, but are mere aftergrowth, as is also the case with what appears on the leaves under a peculiar form of the common Cladosporium herbarum, which appears in every part of the world where it is possible for a Fungus to grow. The stems, it should be observed, are quite free from any form of rust, and we can only attribute the malady to the peculiar state of the weather. We ought not to omit that the larva of Cecidomya is found within many of the glumes, but though these might impede the development of the grain, they would not cause the death of the plant. In every grain which we examined, except one, the young embryo was dead, even where it was considerably advanced, and the albumen was mottled as in the case first mentioned.

We have received from Mr. ODAMS a liberal supply of specimens of diseased Wheat ears from the neighbourhood of Plymouth, entirely deformed by the attack of a very curious Fungus, referred by DESMAZIÈRES to his genus Dilophosporium,[*] the cylindrical spores being furnished at either extremity with a little crest consisting of a few colourless short threads. In this case the destruction is complete, as the whole part of the ear affected is changed into a fungoid mass. It has occurred before in this country, but is very rare, and it is devoutly to be wished that it may continue to be so.

The Peronospora to which the Potato murrain is due is unusually prevalent and early, and other species of the genus are committing ravages, especially one amongst Onions. *M. J. B.*

SOME very important questions have lately arisen, respecting the influence of artificial food upon the health of stock. In our report of the last meeting of the Council of the Royal Agricultural Society, reference was made to the losses which have recently occurred among animals which were fed upon a "patent cake," supplied by a well-known maker, whose name we refrain from publishing for two reasons—first, because it is of no consequence to the question which is before us; and, secondly, because under the comprehensive clauses of the law of libel, journalists may be subjected to much undeserved annoyance, and entirely unproductive expenditure of time and money, in order to prove that no intentional injury was inflicted upon an individual whose personality was in all probability quite unknown to them.

The cake which has, or which is alleged to have, caused the death of many animals—cattle, sheep, and pigs—and which certainly did destroy the animal that was fed upon it at the Royal Veterinary College, has not up to the present time been proved to contain any deleterious ingredient, and we are aware of its having been used by stockowners for some time, without any ill-effects upon the health of their animals. There is, therefore, positive practical evidence—and, inasmuch as nothing of a poisonous nature has yet been detected, there is also negative chemical evidence—in favour of the food. Against it there is now only the fact that animals fed on it have died with unmistakable symptoms of blood poisoning.

Certain cattle belonging to the Marquis of EXETER died after having eaten the cake for some time: but pigs, which partook of it, died in a few hours. A heifer which was fed on the cake almost exclusively, the ration commencing at 2 lb. daily, and gradually increasing to 8 lb., died suddenly after eating the food for three or four weeks, apparently without suffering any inconvenience until the day before her death. Similar instances of death occurring among stock in different parts of the country are considered to be due to the use of the same kind of cake; no doubt, therefore, can exist of the absolute necessity for a complete inquiry—botanical, chemical, and experimental—for the purpose of deciding whether the constituents of the compound or any of them are essentially injurious, or become indirectly deleterious to the organism during the process of digestion.

The Royal Agricultural Society has undertaken the investigation, and with the means at its command it ought to be carried out exhaustively, not only in reference to the one variety of food which is presumed to have done the mischief, but other kinds which are presumed to be harmless. It is at present an open question how far concentrated food—such as linseed-cake of the best quality, for example—may be given without injury to the animal organism. That there is a point beyond which nutriment, in a condensed form, cannot be forced into the system without danger, experience has clearly proved, and it would be well worth while to ascertain what are the principles which should guide the stock feeder in his proceedings.

The subject of inquiry is not so simple in its nature as it may at first appear to be. The old maxim which defines an ox or sheep as a table on which fat and flesh may be deposited *ad libitum*, is no longer orthodox. Under the high-farming system of the day, animals are looked upon as manure-making machines rather than as a means of supplying meat. The question often is, not how much cake can the animal body appropriate to the formation of fat and flesh, but what quantity can be passed through the alimentary canal for the improvement of the land. The problem is—given a piece of land that is capable of feeding one sheep to the acre, what is required to make it carry 10? The answer is universally—oilcake will do it; and both science and practice have sanctioned the assertion, and stamped it as true.

Meanwhile animals get fat, and as the pastures on which they are kept become more and more luxuriant, the whole system seems to be a great success; but by way of compensation the losses by sudden death among fattening animals are getting more serious year after year—splenic apoplexy, black leg, and all the forms of "blood poisoning" occur more frequently than formerly, and every now and then a piece of pasture that was once healthy land is found to be so destructive to animals fed upon it, that nothing short of the plough will suffice to restore the ground to its natural condition.

All these statements are mere truisms, and it will probably occur to each one of our readers that he knows already what we have endeavoured to prove; however this may be, there is no disposition to accept the conclusions which follow; any important change in the received methods of feeding stock are usually deprecated, nevertheless, if it be ascertained what proportion of concentrated food the organism can assimilate, it will be possible to devise some method of enriching the land without poisoning the animals which are pastured on it. There is no question of the absolute necessity for the employment of concentrated food, but the wasteful abuse of these compounds is not therefore admitted; the vague impression which is generally current, that the excess of aliment goes to enrich the manure, is not entirely true: an unknown quantity remains behind to undergo some changes which are not included in the process of nutrition, and the final result of which is poisoning of the blood.

The whole question resolves itself in one of quantity or quality. It is admitted that certain kinds of cake contain ingredients which are deleterious—other kinds are only highly nutritive—both are capable of producing equally fatal effects; it should be the province of science to indicate to the practical agriculturist what to take and what to avoid, and even to point out the limits beyond which the best kind of concentrated food becomes dangerous.

—— A SHORT supply of English Wheat at Mark Lane on Monday sold at a 1*s.* advance on the previous Monday's rates, but on Wednesday some difficulty was experienced in maintaining the rise.——At the Metropolitan Cattle Market on Monday only choicest beasts brought previous prices, and on Thursday still further reductions had to be submitted to.

—— The Show of the ROYAL AGRICULTURAL SOCIETY of IRELAND, under the Presidency of H. R. H. the PRINCE of WALES, opened under very favourable auspices on Tuesday last. The ground selected for the exhibition is at Ball's Bridge, about two miles from the centre of the city. The arrangements of the shedding for the different classes are on the whole good, and, considering the many difficulties which the executive committee have had to labour under, the exhibition may be considered a success. The attendance on the first day was very numerous. The show of Shorthorns was not very extensive, and, although there were some animals of great merit, the average of the animals shown was rather below par. In the class for aged bulls, Mr. Chaloner's roan SOVEREIGN, hitherto unbeaten in Ireland, was placed 2d to an English-bred bull belonging to Mr. Cooke, of Ballyneal House, New Ross, County Wexford. The highly commended card is attached to a half-brother of SOVEREIGN, who is shown by Mr. E. J. Smith, Planmore, Croom, County Cork. This bull was placed 2d to SOVEREIGN at the last spring show of the Royal Dublin Society. There was an exceedingly good class of 2-year-old bulls shown, and the judges had considerable difficulty in adjudicating in this class. Mr. Moutray, of Aughnacloy, took 1st prize with a massive bull; Mr. Meadows, of Wexford, coming 2d with a beautiful, even, lengthy, active animal; Mr. Gumbleton, of Cork, 3d, with a half-brother of the 1st prize animal of this class. The yearlings were more numerous, but the quality of most of the animals was not very good. Mr. Maxwell, of Belfast, takes 1st prize; Mr. Chaloner, of Kells, 2d; Mr. Bland, of Abbeyleix, being commended. The class of bull calves was not well filled, Mr. Downing, of Fermoy, County Cork, takes 1st and 2d prizes. There were a few very good female Shorthorns shown amongst the young animals. Mr. Moutray, of Aughnacloy, takes 1st place, Earl Fitzwilliam, County Wicklow, 2d. Mr. Moutray is successful again in 3-year-olds and 2-year-olds. The show of Herefords, Devons, Polled Angus, and Ayrshires is exceedingly poor, some of the classes being without an entry. There is a good display of beautiful Kerrys; a native breed which is well worthy of cultivation. A very large show of sheep and some animals of rare merit are exhibited. The class of Leicesters is well-filled, a good many English-bred rams being shown. A class for Border Leicesters brings together a splendid collection. Mr. Turner, of Uppingham, takes 1st prize in aged Leicester rams, and 2d with a good shearling. Mr. Seymour Mowbray, of Mountrath, takes 1st prize in shearling Leicester rams. Mr. Thomas Robertson, of Athy, is placed 1st in Border Leicesters. The class for the Roscommon breed was well filled with some very splendid sheep. This is a variety which seems deserving of care and cultivation. A type seems to have been set in the breed, and though coarse-looking to those accustomed to the finer Leicester, they seem to be a variety well suited to a damp, cold climate. The Lincolns were a poor show; the chief entries were made by Mr. Caleb Going, of Tipperary. The class "Shropshire and other Downs" struck us as well calculated to bring an incongruous assembly together. The time for better classification seems to have come, as there is character in most of the dark faces to entitle them to class for each variety. In rams, Mr. Chas. Wm. Hamilton is successful, and H.R.H. the Prince of Wales, who sends some very excellent Southdowns, takes a 1st prize with a magnificent pen of 5 shearling ewes. There is a very fair show of pigs, Lord Clermont being eminently successful in Berkshires. The Horse Show, which is notably the feature of the autumn exhibition, contains 600 entries, some of the animals being very good. It is expected that a large sale of horses will be made during the show. The jumping will be an attractive affair, and very good arrangements have been made for this. The classes of horses for hunting, hack, and harness purposes, are very much in excess of agricultural horses. A good expositionof agricultural implements is made, and visitors to the show seem to pay marked attention to this department. A full report, with prize list, shall appear in our next.

—— The annual show of the YORKSHIRE AGRICULTURAL SOCIETY commenced on Wednesday, on a portion of Bootham Stray, near the city of York. Admirable arrangements have been made within an extensive enclosure for the accommodation and display of implements and machinery, and for the exhibition of live stock. A junction siding has also been made from the York and Scarborough Railway, at which trains set down passengers close to the entrance. The central situation of York, where the meeting of this Society is held every five years, renders the show at that place unusually interesting; being equally convenient for the three Ridings the competition is also generally large and always good. On the present occasion an unusually liberal prize list has resulted in a most numerous entry. Thus of cattle we have 124, sheep 113, pigs 107, horses 409, and wool 7, amongst which £1525 is divided in prizes and plate. From the cursory view which we have been enabled to take, we have no hesitation in characterising the present as one of the best of a long series of Yorkshire shows which we have attended. As, however, the open judging of stock in the ring—a feature adopted by the Royal from the practice of the Yorkshire—was not completed when our parcel was despatched, we are compelled to delay, till next week, the publication of the full list of awards, and till that time we must also defer our report of the show in detail. We report, however, the following awards at once:—In the first class of Shorthorn bulls, GRINDELWALD, the property of Mr. Thomas Stamper, of Oswaldkirk, took the 1st prize, the Marquis of Exeter's TELEMACHUS the 2d, and PRINCE LEOPOLD, belonging to Mr. Knowles, of Wetherby, the 3d. In the next class of bulls, above two and not exceeding three years old, Mr. William Linton's LORD IRWIN, the Royal Agricultural Society's prize winner, came in 1st, Mr. John Outhwaite's ROYAL WINDSOR 2d, and Lady Pigot's BYTHIS the 3d. The bulls not exceeding two years old were placed as follows:—1st, Sir G. Wombwell's NEWBROUGH 3D; GRANDEE, the property of Lieutenant-Colonel Reeve, Grantham, the 2d; and RORY OF THE HILLS, exhibited by Mr. G. Mann, of Doncaster, the 3d. For bull calves, BRITISH FLAG, belonging to Messrs. Dudding, of Wragby, won the 1st prize; Mr. Linton's LEEMAN the 2d; and Major Stapylton's SUNDOWN the 3d. *Windsor's Butterfly*, the property of Mr. James How, of Broughton, Huntingdon, carried off the prize for cows of any age, the next two places being taken by Mr. Outhwaite's *Vivandière* and Mr. Emmerson's *Janey*. The prizes for 3-year-old heifers were taken by Mr. Foljambe's *Concert*, Mr. Tennant's *Daisy*, and Mr. Howe's *Vesper Queen* respectively; the 1st, 2d, and 3d prizes for 2-year-old heifers being awarded in the following order—viz., *Flora*, belonging to Mr. J. R. Singleton, of Great Givendale; *Fleur-de-lis*, the property of Mr. Foljambe, M.P.; and Mr. Howe's *Verona*. Mr. J. Borton, of Barton House, Malton, won five prizes in the shearling and aged Leicester ram classes, the sixth being taken by Mr. E. Riley, of Kipling Cotes, Beverley. For Lincoln sheep the prize-takers were Mr. T. Cartwright, of Dunstan Pillar, Lincoln; Mr. R. Wright, of Norton, Lincoln; Messrs. Dudding, Wragby; Mr. J. Pears, Mere, Lincoln; and Mr. C. Clarke, of Ashby-de-la-Launde, Sleaford. For Shropshire Down sheep Lord Wenlock won the 1st prize and cup, and Lord Wenlock and Lord Chesham took all the other prizes in all the classes for Shropshire Downs. The principal winners for pigs were Mr. P. Eden, of Salford, and Messrs. R. E. Duckering & Son, of Northorpe, Kirton Lindsey. Speaking generally, so far as a first day can indicate, the meeting promises to be a brilliant one. In the class of horses we have the winners from many prize-rings, Wolverhampton, Lincoln, Driffield, Burlington, all sending their "chiefs." In the racing world, no one knows the horse of the year till after the Leger; and, similarly, until the Yorkshire show is over, it would be premature to say where the best horse, hack or hunter, or the best Shorthorn, is to be found. The only thing doubtful connected with the show has been the weather. After a month of showers, confidence has not certainly been felt on this point. In spite, however, of all fears the weather, so far, has been brilliantly fine, and the attendance great and fashionable. The receipts for the first day are £315—2529 persons having paid an admission fee of 2*s.* 6*d.* each on the first day. The fact that the Royal Irish Agricultural Society's show is being held at the same time is perhaps not of much importance as far as the show itself is concerned, still there are exhibitors who would have shown at both places, and there are many agriculturists who would have liked to have seen both exhibitions. If such are inclined to scold, we beg to observe that no blame should fall upon the Yorkshire Society. From its first meeting to the present one, it has always held its show on the same day—the first Wednesday in August; yet our friends over the Channel have managed to blunder upon it on this occasion. *H.*

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[*] It was by a slip of the tongue that it was said on a former occasion to belong to the genus Dinemasporium.

—— A recent visit to Fenn's Moss, near Whitchurch, Salop, deserves record here for the illustration which was witnessed there of the possibility of the profitable RECLAMATION of a GENUINE PEAT-BOG. Mr. FARDON, who has till lately been on the staff of Messrs. BAILEY DENTON, SON & NORTH, has taken 100 acres here of Sir J. HANMER, Bart., and is hopefully engaged in investing money in its cultivation. Draining it by open ditches, gradually dug, and thereafter by drainpipes—levelling it as it gradually dried and became firm, and carrying sand and gravel on it by light tramways from the edge of the bog—burning a good deal of the surface, liming, digging it over, and sowing hay seeds on it—he has obtained a rough thin pasture, consisting chiefly of Hop-grass, and therefore very poor and worthless. This, however, is ploughed under, and he gets a crop of Rye; or it receives a dressing of town manure from Chester, brought thither by canal, and this being ploughed under he gets a good crop of Potatos. Some 30 acres which have been reclaimed are thus in grass, and Rye, and Potatos. The grass is poor; the Rye would be good were it not for the way in which it has been eaten down and cut to pieces by the hares; the Potatos are capital. It is by this crop, with the aid of the Chester canal barges full of town manure, that Mr. FARDON will recover his large outlay. In ordinary seasons there seems no reason to doubt that he can obtain heavy crops of Potatos in this way, after three or four years of preliminary preparation of the original bog. Fenn's Moss is a specimen of as true a peat-bog as Chat Moss or any Irish bog that can be named, and Mr. FARDON'S experience ought to excite the interest, not only of the proprietors of land, but of the authorities of towns in such neighbourhoods. We look forward, for example, to the time when the immense fertilising power of Manchester, now wasted in the pollution of the Irwell, will be brought to bear upon the bog land between it and Liverpool, and when Mr. FARDON'S judgment and experience, acquired on Fenn's Moss, will be sought for and engaged in the draining, levelling, and preparation needed, before the sewage is poured on it. The land now yielding Potatos in as friable and soil-like a mould as one could wish, was, only three years ago, a tough peat, just such as is being cut for fuel close by. It is impossible to doubt that such a soil, watered with the Manchester sewage, would yield the very best of market garden produce. We have seen such peat-earth, watered with the drainage of the convict gaol at Woking, produce the largest and most vigorously grown Cabbages. We strongly recommend the Manchester people to look into the possibility of utilising their town sewage on Chat Moss, and thus convert that which is a source of nuisance and offence into a source of wholesome food and profit.

—— The Council of the SOCIÉTÉ DES AGRICULTEURS DE FRANCE, at their first meeting since the commencement of the Franco-German war, on the 22d ult., expressed their recognition of the assistance which has been rendered by the agriculturists of the United Kingdom to their unfortunate brethren in France by unanimously electing Lord VERNON, chairman of the French Peasant-Farmers' Seed Fund, an honorary member of that Society. This is the highest mark of distinction which the Society can confer.

—— Some experiments have lately been conducted in India in the IMPROVEMENT of WHEAT by SELECTION. In one experiment the ears that were selected measured from 3½ to 4¼ inches long, but it has not transpired what variety was chosen. The seeds were purposely sown in quite a medium soil, with little manure, the object being to obtain a variety which should owe its increased length to Nature only, and not to high culture. They were sown with a spade, and, unfortunately, in consequence, sown too deeply, by which a great deal of the plant was lost, but of those plants which came up, none of the ears were shorter than those of the parent, but some measured 4¾ inches in length, being half an inch longer than the selected ears. Similar experiments were conducted with several varieties of Wheat, the result in each case being satisfactory; one of the most promising varieties, however, seems to be that known as Polish Wheat, which in some districts is so highly prized that great demands prevail for it. A kind of Pedigree Wheat, cultivated in Lahore, is said to be so fine that a European cultivator, writing on the subject, says, "Nothing in England could beat the Wheat here this year, length and weight of ear combined with long straw. I am going to test a great number of fields this year, by weighing the contents of the imperial bushel, and, if I mistake not, we shall find it fully up to a European standard." A more serviceable test in the interest of the cultivator would be the determination of the produce per acre.

THE PRESENT APPEARANCE OF THE CROPS.

[FROM OUR OWN CORRESPONDENTS, JULY 25.]

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	ROOT CROPS.	HAY.	DATE OF HARVEST.	NAME AND ADDRESS.
SCOTLAND.									
ROSS ………………	Long straw, good ear; under average	Full average	Short and under average	Rank	….	Potatos fine; Swedes good	Under average; bad state	End of August	G. Adam, Humberston, Dingwall
BANFF ……………	Excellent appearance	Very good	Very unequal	Very good	….	Potato good; Turnips many re-sown.	Very light	Last week of August	William Joss, Blairshinnoch
	Under average	Average	Under average	….	….	Promise well	Very light	First week of August	John Barclay, Braes of Enzie
ABERDEEN ……….	Little grown in my district	Nearly an average	In some parts good, in others light	….	….	Turnips backward, but great improvement lately	Greatly under an average	Six weeks hence	Wm. M'Combie, M.P., Tillyfour
	About average crop	Average	Under average	….	….	Generally looking well	Very light	First week in September	A. Cruickshank, Sittyton
MORAY ……………	Thin, and rather late	Full crop	An average	….	….	Very fine	Nearly an average	End of August	Geo. Brown, Westertown, Fochabers
	Under average; thin on the ground	Average	Under average	Average	….	Very promising	Under average	August 12 to 20	J. Hamilton, Forres
	Thin, and under average	Average	Average	….	….	Vigorous	Unequal	August 20	John Grigor, Nurseries, Forres
FORFAR……………	Under average, and late	Average	Under average	Great bulk, late	….	Good, unless on clays	Light	First week in September	Wm. Smith, West Drums
PERTH ……………	Under average; diseased by fly	Early-sown, light; late, good	Under average	Good	….	Turnips promising; Potatos unequal	Good crop	Last week of August	David Edie, Elliothead, Bridge of Earn
FIFE………………	Under average	Average	Under average	Average	….	Potatos under average; Turnips average	Under average	September 1	John Morton, Lambieletham, St. Andrews
	Very much under average	Average	Average	….	….	Promising well	Fully average	First week of September	John Pitcairn, Kinnaird, Newburgh
	Under average	Average	Average	Promising	….	Turnip, good plant	Average	End of August	R. Russell, Pilmuir
	Thin in places	Fair average	Fair average	Good	Good	Look well	Good	Ten days later than 1870.	H. Cleghorn, Stravithy, St. Andrews
STIRLING…………	Full average	Full average	Average	Above average	….	Promising, but late	Rather light, and somewhat stained	About last week of August	Alex. Buchanan, Whitehouse Farm
	On the whole not average	Full average	Under average	Promising	….	Late, but promising	Various; injured	Fortnight late	W. Drummond & Son
RENFREW ………	Thin, under average	Average	Average	Average	….	Potatos healthy; Turnips under average	Light crop	End of August	George Boyd, Renfrew
LANARK …………	Good crop	….	A little under average	Very good crops	….	Potatos very good; Turnips under average	Very light crop	Second or third week of September	——
MID LOTHIAN ……	Barely an average; much thinned by the Wheat maggot	Full average; rather more	Decidedly deficient; much tulip rooted	Fair average	….	Potatos good; Turnips late, now looking well	Two-thirds of an average crop.	About September 1	George Glendinning, Hatton Mains, Ratho
	Present appearances are against a good crop	Our best crop; if we get sunshine the quality will be good	Poor crop; too close set upon the ground; has been over seeded	A good crop; few sown in this county.	….	Potatos good; Turnips very late and patchy	A light crop; much damaged	Cannot be general before the last week of September	James Steedman, Boghall, Roslin
	Under average; much unsound	Over average; laid	One-quarter under average	Over average	….	Very promising	One-quarter under average	End of August	——, Dalkeith
HADDINGTON ……	Much under average	Very full average	Under average	Above average	Above average	Above average	Average	About the end of August	Robert Binnie, Seton Mains
	Full average bulk, but damaged by Wheat midge from 5 to 10 per cent.	Very bulky crop	Light and thin on ground	Fine; straw tall, and well podded	….	Very promising	Average	From August 15 to 20	George Hope, Fenton Barns, Drem
	Under average	Above average	Under average	Above average	….	Average	Above average	August 21	Patrick Shirreff, Haddington

THE PRESENT APPEARANCE OF THE CROPS—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	ROOT CROPS.	HAY.	DATE OF HARVEST.	NAME AND ADDRESS.
SCOTLAND.									
EDINBURGH .... * For western district of Mid Lothian	Thin and under average*	About average	Average, but short in straw	Short	....	Potatos good; Turnips uncertain	Greatly under average	September 1	James Hislop, Mid Calder
SELKIRK	Little or none grown in this neighbourhood	A full crop	Much improved of late, but below average	....	....	Turnips good everywhere; Potatos good	Rather below an average	First week of September	William Scott, Howford, Ettrick
PEEBLES	Above average, but little grown	Full average	About an average	Good crop; few grown	....	Potatos late, but promising; Turnips late	Scarcely an average	First week of September	James Lyle, Innerleithen
ROXBURGH..........	Good	Bulky, and much lodged	Very light	Good; few grown	....	Very promising	Good	September 1	Thomas Hood, Jun., Haymount, Kelso
	Where thick enough planted, bulky, but a large proportion thin, and likely to be coarse	Bulky; a good deal lodged, with risk of quality being inferior	Thin; under an average	Bulky	Bulky	Turnips promising well; Potatos late	Average bulk, but damaged in making	About the end of August	Geo. Ballingall, Clarilaw, St. Boswell
	Average	Above Average	Below average	Above Average	Average	Looking well	Average	August 25	Will. Scott, Spylaw, Kelso
AYR	Thin; under average	Average	Thick; full average	Good	....	Late, and patchy	Light	August 20	Andrew Ralston, Lagg
	Average	Average	Full average	Good	....	Potatos average; Turnips late	Light	September 1	William Orr, Beith
BERWICKSHIRE	....	Good, and not so late as Oats	Potato Oats much grubbed; on newly reclaimed land, strong, but late	....	Few grown, but good	Never a better promise of Turnips; Potatos not so good	Clover hay a good crop; difficult harvest	Middle of September	John S. Bertram, Cranshaws, by Dunse
	Part thin and poor, some good	Above average	Under average	Above average	Good	Unusually good	Average weight; not well saved	August 25	J. Wilson, Edington Main, Chirnside
WIGTON	Good, if we have now dry weather	Good	Good on deep, thin on light land	....	....	Turnips various; some resown	Average	End of Aug., or beginning Sept.	A. H. McClean, Auchneal, Stranraer
ENGLAND.									
NORTHUMBERLAND	Autumn-sown very irregular; spring good	Good	Good on light soil	Good	Very few sown	Very good	Average	Three weeks later than 1870.	——
	Below average; many inferior heads	Good	Various; about an average	Bulky in straw	Too much straw	Very good	Mostly light	September and October	John Angus, Whitefield, Morpeth
	Various; on good deep soils, winter-sown, a good crop	Over average	Under average	Very good indeed	Few grown	Looking splendid	Short crop generally; bad weather for it	About Sept. 1	George Laing, Wark, near Coldstream
	Average	Over average	Much under average	Few grown	Average	Above average	Seeds under average; meadows over average	Last week of August	Thomas P. Dods, Anick Grainge, Hexham
	Winter Wheat below average: spring Wheat fully an average	A full crop	An average crop	A very large crop	....	The best prospect for many years	Clover light; meadow a good crop	End of August	Jacob Wilson, Woodhorn Manor, Morpeth
CUMBERLAND	Under average	Average	Under average	Over average	Average	Late, and under average	Under average, and much spoilt	First week in September	Thomas Gibbons, Burnfoot, Esk-Longtown
	Good	Good	Under average	....	....	Very good	Above average	First week in September	Richard Harrison, Newbiggen, Penrith
WESTMORELAND ..	Average	Average	Average	....	....	Over average	Under average	First week in September	Jonathan Robinson, Warcop, Penrith
	Very deficient; thin crop	Light	Good crop	Middling	....	Turnips good, Potatos good, Mangel good	Heavy crop; much spoilt	First week in September	John Scott, Dick Fell Hill, Milnthorpe
	None grown	Average	Good	....	....	Average	Light; under average	September 1	George Browne, Troutbeck, Windermere
DURHAM	Thin	Under average	Under average	Good	Good	Poor	Under average	August 24	Robert Bland Dixon, Darlington
	Average	Very good	Below average	Good	Good	Very promising	Average	About September 1	R. Bell, Layton Fields, Caldwell, Darlington
	Thin	Good	Bad	Good	Good	Turnips good; Potatos faulty	Good	First week in September	Geo. Crofton, Kimblesworth
YORKSHIRE	Average	Full average	Much below average	Average	Above average	Average	Above average; late harvest	Middle of September	John Outhwaite, Bainesse, Catterick
	Wheat good, and looks like a yielding crop	Good; the best crop growing	Moderate and short of straw	A large quantity of straw, but the flowers drop off	Too much straw, and too succulent from the wet weather	Potatos partially good: Turnips, Mangels, very good	A large crop, and full of Clover	The last week in August	John Percy Clark, North Teinby, Brough
	Below the average	Average	A light crop	Good	Good	A good average	A good crop	First week in September	Robert Frank, Stearsby
	Nearly average	Average	One-third deficient	Full average	Good	Fair; a white maggot at Swedes	Heavy crop: much unsecured	August 26	Peter Stevenson, Rainton, Thirsk
	Thin plant; improved lately, but can hardly reach an average	The most promising cereal	Generally deficient	Plenty of straw, and spring varieties very promising	Good	Promising	Very heavy, but difficult to secure	End of August	John Coleman, Escrick
	An average on good land, hardly so on poor land	Average	Average	Average	Average	Very promising	Average	Last week in August	H. J. Turner, Richmond
	In bulk about an average; now in bloom; yield uncertain	Promises to be a full average crop	Much affected with grub, and likely to be under an average	Average	Average	Likely to exceed an average crop	Above an average, but little hay secured	First week of September	W. J. Moscrop, Olliver, Richmond
	Light	Light	Average	Good	Light	Good	Good	Late	J. Wilkinson, 4, Sandgate, Whitby
	Seed land good; fallow plot a failure	Good	Failure	Good	Good	Very good	Average crop; badly got	Last of August	Brady Nicholson, Garforth, Leeds
	Good	Good	Very good	None, or very few grown	None, or very few grown	Splendid	Splendid, but poor hay weather	In a month	William Irvine, Halifax
	Much improved the last three weeks; average crop in bulk	Generally an average crop	Early-sown good late-sown bad.	Average crop.	A great quantity of straw; above an average.	Look remarkably well.	Above average.	About August 21	Edmond Riley, Kipling Cotes Farm, Beverley
	An average quantity of straw; unequal; some crops much lodged.	Large quantity of straw; some lodged much.	Generally short of straw; under average	Much straw; badly filled	Much straw; not average	Swedes and Turnips good; Potatos showing disease	None can be got unspoilt	End of August	Robert Fisher, Leconfield, Beverley
LANCASHIRE........	....	....	....	....	....	....	Very full crop; harvest protracted fully 14 days by weather: some little has been secured	....	George Storey, Burnshawe House, Burnley
	Under average	Over average	Under average	....	....	Potatos average; Mangels over average, Turnips under	Average	....	John Croudson, Urswick, Ulverston
	Under average	Good	Under average	....	....	Good	Good, but very little saved	Very late	Geo. Drury, Holker
	Scarcely average	Heavy in straw	Irregular; below average	Heavy in straw	Good average	Very promising	Heavy; much spoilt	The end of August	Robert Willacy, Penwortham Priory
CHESHIRE	Generally thin on the ground	Little grown	Fine	Large crop, but blighted	None	Good	Good crop; badly got	August 7 and 18	W. B. Burnham, The Cottage, Spital, Birkenhead
	Suffered much in Feb. from frost, cannot be over two-thirds crop	Promising to be a fair crop	Same as Barley	Were looking well, but now taken with black fly	....	Very promising	A good cut, but much injured	Late	G. Jackson, Tattenhall Hall, Chester

THE PRESENT APPEARANCE OF THE CROPS--(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	ROOT CROPS.	HAY.	DATE OF HARVEST.	NAME AND ADDRESS.
ENGLAND.									
CHESHIRE	Much improved, but under average	....	Good	Good	....	Turnips good; Mangels bad	Very heavy; badly got	End of August	D. Reynolds Davies, High Legh Hall, Knutsford
DERBYSHIRE *......	Average	Average	Average	Not sufficient grown to justify opinion	Not sufficient grown to justify opinion	Looking well	Great crop; not secured	Uncertain	John Parkin, Idridgehay
* Grass in Edale and other fertile dales of the Peak district almost unprecedented; very little cut—daily showers. Good year for hill pasturage. Patches of corn good.—H. Evershed, Castleton.	Thin on ground, and not a good crop	Looks well	Not good; too much wet	Very good	Very good	Swedes good Mangels fair; Cabbage good	Very heavy crop; not half cut yet	Very late	John Coleman, Park Nook, Quarndon
	Very little grown	....	Very good; over average	....	....	Not good; suffering from continual rain	Abundant crop; unsaved	End of August	Benj. Swaffield, Hartington
NOTTS	An average crop, but unless warm dry weather comes very soon, the yield will be bad	An average crop; in want of warm dry weather	Very few grown	A great crop, and very long in the straw; the smother-fly just begun to attack	Early good; later sown much perished	Good	A great crop; much spoilt	About the middle of August	Geo. H. Sanday, Holme Pierrepont
	Average	Average	Average	Over average	Over average	Good	Over average; not well got	About middle of August	C. Doncaster, Pidding's Hill
LINCOLNSHIRE	Under average	Good	Bad	Bulky; ill corned	Too much straw	Very good	Very good	End of August	Isaac Sharpley, Boswell House, near Louth
	Average crop; laid, and liable to mildew	Average	Over average	Great crop; attacked with fly	Good	Good	Abundant, and partly got	August 21	W. Fancourt, Aslackby
	Full crop; much laid	None grown	Very heavy crop	Full straw, little corn	A good crop	Mangel not average; Rabi and Cabbages good; Potatos diseased	Full average	Oats, August 10; Wheat, August 18	Thomas Aitken, Decoy Farm, Spalding
	An average	An average	Good	Good	Middling	Good prospect	Good crop; ill got	Uncertain	H. Dudding, Panton House
	Average	Good	Fair	Good	....	Good prospect	Good crop	A month from this time	Thos. Marris, The Chase, Ulceby
	Good average; requires sun	Good average; requires sun	Good average; requires sun	Very good	Very good	Very good	Much fairly got	About August 14	G. Bland, Coleby Hall
	Average	Over average	Rather light	Robust; corned badly	Good	Average	Over average	August 20	W. F. Marshall, Branston Villa
	Good average plant, grain better set than expected	Heavy crops of straw, much broken down	Heavy crops of straw, much broken down	Great bulk of haulm, fairly podded	Good crops, well podded	Unusually good, especially Mangel	Very heavy, but much injured	August 12 and 18	John Clarke, Long Sutton
WORCESTERSHIRE	The thinnest crop I have ever known	Average	Average	Spring very badly blighted	Average	Average	Fair crop, but difficult to harvest	Middle of August	John Rawlings, Stoke Farm, Tenbury
SHROPSHIRE........ Too early to judge.	*	*	*	*	*	Good	Much damaged	....	G. Mansell, Ercall Park Wellington
	Winter Wheat thin of plant; spring Wheat very good	Very good	Very good	Few grown, what there are good	Very good	Very promising	An average crop	End of August	William Brewster, Balderton Hall
	Very poor crop, about one-third resown	Very good	Good	Fair crop	Good	Good	Average crop, a deal spoilt	....	John Clay, Kinsale
	Thin, but improving	Good	Good	Blighted	Good	Promising	Heavy crop; uncut	Two or three weeks later than usual	W. D. Green, Market Drayton
	Under average, very thick in some places	Average	Very good, full crop	Very bad, destroyed by frost	A very full crop	Very promising	Good crop; badly harvested	Will be late	Richard Shirley, Bawcott Munslow, Church Stretton
STAFFORDSHIRE ..	Under average, spring sown good	Full crop, good deal laid	Good	Winter thin, well podded; spring too much straw	Full crop	Very good	Bulky, good deal spoilt	About middle of August	G. A. May, Elford Park, Tamworth
	Under average	Under average	Average	Great bulk, but little corn	Average	Very promising	Fair crop, much damaged	August 20	Thomas Byrd, Milton Manor, Penkridge
	Thin, under an average	Good on dry land, suffering on cold land	Over an average on dry land, short on wet land	Over an average crop	Over an average crop	Good, except Mangels and Potatos	Very good crops, badly got	....	Matthew Walker, Stockley Park, Burton-on-Trent
	Thin, with good head; crop good on well cultivated land; hardly an average	Fair crop; an average	Good on best cultivated land	Plenty of them; full of smother-fly	A good crop where land is well farmed	Prospect good; want fine weather	Good, but very late	August and September	T. Winterton, Alrewas Hays, Lichfield
	Thin on light soils; an average on strong soils	Good; above an average	Good	Long in the straw, pods thin	Good; require dry weather	Good; require warm weather	Good, but gathered in bad condition	August 20 to 25	John Coxon, Freeford, Lichfield
LEICESTERSHIRE .	Doubtful at present, as dry weather is much wanted	Partly good	Some good crops	Good	Good	Promising, with warm, dry weather	Above an average crop	End of August	R. H. Chapman, Upton, Nuneaton
	A heavy crop, but much laid and beaten down	Average on Barley lands	Fair; rather thin	Heavy, but blighted	Good	Swedes good, Mangels thin	A good crop	The end of August	George Turner, jun., Alexton Hall.
	Good on the best land, but suffering from wet	Good average crop	Good	Very much injured by the smother-fly	Large crop of straw; will rot by the wet	In a very precarious state, owing to the wet	Good; much damaged	Not for six weeks.	——
	Great length of straw; danger of mildew	Great length of straw; partially laid	Great length of straw	Great length of straw; badly podded	Full of bloom, too much straw	Very promising	None good yet	Perfectly green yet	R. W. Creswell, Ravenstone
RUTLAND............	Under average	Average	Under average	Partially blighted	Heavy; partially blighted	Good	Good crop, much injured	August	E. W.
HEREFORDSHIRE ..	Generally a light crop, but looks healthy	Good	Good	Good, spring sown	Very good	Growing fast; promising	Very heavy; weather fickle	Second week in August	Philip Turner, The Leen, Pembridge
	Thin, much improved; under average	Average crop	Average	Winter's nearly all perished; spring good	Good; still grow and blooming	Never better	Good crop; nearly all secured	....	——, Blakemere
	Looks pretty well; will not be an average crop	About average	Few grown; inferior	Straw long, and well podded	Above average	Mangels, Swedes, &c., very good; Potatos, quantity, earlies much diseased	Crop partial	Middle of August	Thos. Farmer, Frome Bishop, Bromyard
	Not nearly average	Average	Winter's bad, spring average	Winter's failure, spring good	Very good	Very promising	Fair crop, but damaged	Middle of August	Dearman Edwards, Brinsop Court
	Much below an average	Above an average	Good average	Average	Best crop ever known	Extremely promising	Below average; much damaged	Middle of August	T. Duckham, Baysham Court, Ross
	Under average	Above average	Average	Much below average	Over average	Above average	Good; badly secured	Latter part of August	Henry Pride, The Cwm, near Monmouth
WORCESTERSHIRE	Average	Heavy crop	Good	Blighted	Good	Very promising	A large crop, much injured by wet	August 15 to 20	Henry Hudson, Wick, near Pershore
	With dry weather may be an average crop; with a continuance of wet, a bad one	Probably average	Very few grown	Much below an average crop	Average	Likely to be very good	About half damaged—the other half in the fields	Probably about August 20	C. Randell, Chadbury, Evesham
	Under average	Above average	Average	Winter Beans bad; spring Beans about average	Above average	Average	Fair crop, but injured by rain	About third week in August	Stiles Rich, Fearnall Heath
	Improved, and with good summer weather would be average	Good; but very much laid	Few grown; good	Good, if free from the collier	Good	Very good	Grass good; very much damaged	In about three weeks	Joseph Matthews, Great Malvern

THE PRESENT APPEARANCE OF THE CROPS—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	ROOT CROPS.	HAY.	DATE OF HARVEST.	NAME AND ADDRESS.
ENGLAND.									
WARWICK	Below average through the district: the wet season has made the straw grow long	Above average	Average	Above average	Above average; early small Peas are ripening; the late large Peas are rotting	Very promising	Full crop, but much damaged in making	Barley and Oats long before Wheat	Charles M. Caldecott, Holbrook Grange, Rugby
	Not an average	Good average	Few grown	Blighted; winter's the best corned	Injured by the wet weather	Good	Good crop, but much damaged	About a month	Joseph Smith, Henley-in-Arden
	Large crops of straw, but a bad colour, filling badly; spring Wheat looks very black, and much down	Very large bulk of straw; sunshine much wanted to ripen	Great bulk: not many grown in this locality	Many winter ones destroyed by frost; spring very large crop: some blight	Very heavy crop, but injured by rain	Mangel promising; Swedes a good plant	Large crops, injured to some extent	Three weeks hence	John Baldwin, Luddington, Stratford-on-Avon
	Best crops much injured; weaker crops improved	Best crops twisted and tangled	Heavy crops, injured	Very badly blighted	Not good	Turnips good, but want sun	Plenty, but damaged	Middle of August	J. H. Burberry, The Chase, Kenilworth
	Average crop, much damaged by excessive wet	Heavy crop	Very good	Nearly destroyed by blight	Seriously injured by blight	Very good	Very much spoiled by continued rains	About August 16	John Ford, Portland Lawn, Leamington
NORTHAMPTON-SHIRE	An average crop	An average crop	A good crop	A great quantity of straw: some crops very much blighted	Great crop; large breadth sown	Promise well	Uplands generally good	Will be a fortnight later than was expected	Thos. Robinson, Castle Ashby
	Under average	Over average	Average	Average	Average	Very good	Bulky; injured	Middle of August	J. Borlase Tibbits, Barton Seagrave, Kettering
HUNTS	Very good; but late	An average	Good	Winter very good; spring infested with fly	Very good	Very good	An average; indifferently secured	August	John Wallis, Park Farm, Kimbolton
CAMBRIDGESHIRE .	Very thin plant: 4 coombs less than last year per acre	Good; quite an average	Good	Good	Good	Very good	Very bad; spoilt	August 15	S. Wallis, Grantchester
	To be an average crop it requires to ripen to the highest perfection	Good	Good	Heavy crop of straw; not free from fly	Good, unless hurt by fly	Good	Fair crop; a good deal spoilt	Middle of August	Alfred S. Ruston, Aylesby House, Chatteris
NORFOLK	Promises an average on good Wheat land well farmed	Fair average crop	Promises well	Slightly attacked in some fields by fly; straw, 5 to 6 feet; 40 to 50 pods on stem	Good crop	Roots good in general; growing very fast	Large crop; slightly injured by rain	August 18 to 21	W. H. Taylor, Bank House, Wymondham
	Full average; much straw; going down from the storms	Average quality; will be injured by weather	Good	Much blighted	Average	Promising	Various; injured by weather	August 21	W. Cubitt, Bacton Abbey
	Good	Good	Good	....	Good	Very good	Average crop	August 14	Jno. Moore Hudson, Castle Acre
	Under average	Fair average	Under average	Fine prospect of a crop; a few lice appeared	Fair crop	Good prospect of a crop	Clover light; grass good.	August	Thos. Brown, Manor House, Southery, Downham Market
	A good crop; above an average	Heavy crop	Good average crop	Above average	Very good	Well planted and very promising	Average crop; but some damaged	August	Hugh Aylmer, West Dereham Abbey
	Generally good	Variable, but generally good	Good	....	Very good	Good	Good average	In three weeks	Henry Woods, Merton
SUFFOLK	Good	Good	....	Good	Good	Good	Good	August 18	Geo. Edwards, Framlingham
	Much improved of late; about an average	Light: under average	....	Very thick, and much straw; a good crop	Our best crop: much above average	Promise well	Much injured; heavy crop	August 16	Herman Biddell, Playford, near Ipswich
	About average; somewhat laid; straw abundant	Above average; much straw	Not much grown; average yield	Not much grown; average; much straw	Average	Promising, and growing fast	Heavy crop of meadow hay; injured by wet	Middle of August	W. R., Hengrave, Bury District
	Fine prospect up to the present	Above average	....	Long straw, and good pods	Good crop	Best ever seen	An abundance; badly gathered	August 21	Samuel G. Stearn, Brandeston, Wickham Market
	Average	Heavy; partially laid	Very few grown: good	Tall; fair	Heavy crop	Potatos very fine; Turnips fine plant	Heavy; a great deal still to cut	In a fortnight	D. T. Fish, Hardwicke, Bury St. Edmund's
	Above an average	Very good	Average	Average	Very good	Plant well, and grows fast	Great quantity; badly secured	August 12	Frederick Nunn, Rougham
	Plenty of straw, but can say nothing about yield	Plenty of straw, but can say nothing about yield	Plenty of straw, but can say nothing about yield	Good; straw abundant	Good; straw abundant	Very good	A fine crop; got tolerably	August 15	G. D. Badham, The Lawn, Bulmer, Sudbury
	Nearly an average	Full average	....	Bare average	Good average	Good	Large crop; damaged	August 14	H. Edwards, Woodbridge
ESSEX	Average	Over average	Average	Over average	Very abundant	Good	Good; some damaged	August 15	J. J. Mechi, Tiptree Hall
	Average, and, I think, over	Full average	Full average	Not average, from blight	Great crop	Very promising	A full crop; various	From August 10 to 12	Henry Dixon, Dorward's Hall, Witham
	An average crop	Above an average	Good	A large crop	Very good	Promising	A large crop; injured	About the middle of August	A. Barfield, Dunmow
	Over average	Good	Under average	Injured by fly	Very good	Very good	Good, but injured by wet	August 7	P. Mitchell, Rainham
* Full average of straw. Harvest will be later than usual, and more than an average of sun-heat is needed the next 10 days, to develope a good crop.	In general a full average, or more	Very good	Very good	Never so much straw	A large yield, and good	Good, except Potatos	Average, some hurt	....	George Wilkins, Wix Vicarage, Manningtree
	Average	Average	Under average	Good	Good	Very good	Abundant	About August 10	Collinson Hall, Romford
	Good, but a good deal laid by the storms	Not much grown	Not very good	Plenty of straw, and a fair crop	Good	Good, but not much grown	A large crop, but good deal hurt from rain	About August 8	Chas. C. Harvey, Foulness, Wakering
	*	*	*	*	*	Full average	Full average	August 7	S. W. Squier, Horndon-on-the-Hill
HERTS	Varies a good deal; some very good, but lost plant will reduce the yield to a bare average	About an average	A full average	Very few grown	A good crop; over an average	Generally very promising	About an average: much damaged	About August 15	George Webb, Beaumont Hall, Redbourn
	Below average: thin plant	Average	Over average	Above average	....	Full plant, many of the seedlings being mixed	Full crop; much injured by wet	Second week in August	J. B. Lawes, Rothamsted
BEDFORDSHIRE	Average	Average	Average	Average	Good	Good	Heavy crop; full average	....	James Ross, The Hoo Park Farm, Luton
	An average crop, but partially beaten down	Good average	Average	Winter, good; spring, blighted	Good crop, but damaged	Good	Good crop; some secured indifferently	August 18	Henry A. Bottle, Patenhall
	Plenty of straw; a good deal laid; with fine weather may have a fair crop	Same as Wheat	Very promising, but little sown	Generally very promising; fly in places	Few sown	A good plant; want fine weather	Crops heavy; condition not good	Three weeks later than usual	Henry Trethewy, Silsoe
	Very much improved; will be a good crop if it ripens kindly	Too much straw to produce good quality	....	Very promising, but for the fly	An abundant crop	Universally good	Great crop; got badly	Not before August 16 to 20	T. E. Pawlett, Beeston Sandy
	Average	Average	Average	Blighted	Good	Good	Heavy; some damaged	Middle of August	William Lavender, Biddenham
	Generally heavy, the straw being long; but the wet season will spoil the yield	As a rule good, with well-formed ears	Not many grown	Very heavy indeed, but suffering from the fly	Promise abundantly	A strong healthy appearance	A good weight; much damaged	Middle of August	Walter J. Henman, Britannia Farm
BUCKS	Where a full plant, bulky and laid; a deal had to be replanted; strawlong; ear big	A full crop; much blighted; straw long	Mostly a fine crop; long of straw, and look like yielding	The finest crop we have had for years, but badly flied	A large crop, both in corn, straw, and acres; needs dry weather much	Look very promising	Light on uplands; much spoilt	Three weeks from this time	Joseph Robinson, Clifton Pastures

THE PRESENT APPEARANCE OF THE CROPS—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	ROOT CROPS.	HAY.	DATE OF HARVEST.	NAME AND ADDRESS.
ENGLAND.									
BUCKS	Average crop, but a few pieces very thin on the ground	Very much lodged; large crop	Good	Large crop of straw, but getting full of fly	Some very good; others very bad	A full plant; Mangels have not grown well	An average crop; badly got	About August 20	John Treadwell, Winchendon
	Below average; thin plant	Above average	Above average	Above average; some blighted	Above average	Good; rather backward	Abundant; not well got	About August 24	W. G. Duncan, Bradwell
	Very thin, but well headed	Fair	Spring, good; winter, very bad	Good	Good	Excellent	Heavy crop; variously harvested	About August 15	E. Evans, Boveney Court, Windsor
	Under average	Over average	Average	Average	Average	Good plant	Under average	August 14	W. Smith, Woolston
	Much improved, but still below average	Very good	Below average	Large crop; much attacked with fly	Good	Excellent	Very heavy crops	Very late indeed	John K. Fowler, Prebendal Farms, Aylesbury
OXFORD	Average	Average	Very good	Too much straw and blighted	Very good	Fair	Average; half spoilt	Second week in August	Samuel Druce, Eynsham
	Average	Over average	Over average	Over average but blighted	Over average	Very promising	English hay over average	August 10 or 14	George Wallis, Old Shefford, Bampton
	Much improved of late, but most fields show great deficiency in the ear	Promising to be a good average crop	About up to general average	Plenty of straw: mostly blighted	Some few pieces blighted, others a good crop	A good plant; requiring dry weather	Much spoilt	Middle of August	Geo. Garne, Churchill Heath
	Thin plant; much improved; average: fine weather required	Great crop; above an average	Average	Great crop of straw: some blight	Various	Full plants	Average crop; badly secured	August 14	Matt. Savidge, Sarsden Lodge Farm, Chipping Norton
	Looking well; wants sun	Good	Very good	A little blighted	Very good	Good plant, and looks well	Seed hay light; crop damaged; grass fair	August 12	——, Kirtlington
	Average crop	Full average	Good average crop	Very large crop of straw	Good average	Very good	About average	About August 20	John Bryan, South Leigh, Witney
	Thin plant; ears look good but are not filling well; under average	An average crop, if not above	Good	Too much straw, and infested with aphis; under average	Good; perhaps over an average	Good plants; want warm weather	Under average; badly harvested	August 14	R. J. Newton, Campsfield Farm, Woodstock
MONMOUTHSHIRE	Thin; long straw; nearly an average	Good crop; average	Average	Winter sown, light; spring, blighted; under average	Heavy crop: over average	All good	Heavy; much soiled by water	August 21	J. Lynch Fletcher, Chepstow
GLOUCESTER	Under average	Good average	Good average	Various; going blighted	Average	Good	Seed very light; grass good	Middle of August	Giles Edmonds, Eastleach, Turville
	Average straw; not kind in the head	Never had a better prospect	A good average crop	....	Good	Very promising	An average crop; badly gotten	In three weeks	Robert Garne, Aldsworth
	Average	Good	....	Nearly spoilt by the fly	Average	Good	Average; but not well secured	Middle of August	T. Morris, Maisemore Court
	Thin; scarcely an average plant	Little under cultivation; good	Good	Exceptionally good	Exceptionally good	Promising well	Crop heavy, but so far badly saved	Must be very late	John Shiles, Newnham
	Average	Over an average	Improved; will be average	Spring Beans are good	Good crop	Promising very well	Good, but injured	End of August	Francis Burnett, Kingscote, Wotton-under-Edge
	Altogether about an average	Good	Good	Average	Good	Mangel medium; Turnips and Swedes good	Fair crop; harvested badly	August 17, with fair weather	Russell Swanwick, Royal Agricultural College Farm
	Scarcely an average	Over an average	Over an average	....	....	Promising; full plant	Average; much damaged	End of August	Edw. Handy, Sierford, near Cheltenham
	One-third under average	Average	Over average	Half average	Average	Very good	Good crop	About August 12	H. Scott Hayward, Frocester Court, Stonehouse
	From very good to very thin	Good average	Average	Spring, good; winter, a failure	Good	Very promising	Good crop; much damaged by wet	Beginning of August	John Cobban, Whitfield, Falfield.
	Average	Above an average	Above an average	Good crop, but blighted in some instances	Above an average	Very promising	Above an average, but much damaged	Middle of August	——, Badminton
WILTS	Thin, and not an average crop	Good	Not very good	Spring, good; winter, failure	Indifferent; not well kidded	Very promising	Very much injured by the rains	Probably August 14	Thos. Pope, Horningsham, Warminster
	Much improved, but under average on light soils	Full of straw, and probably over average	Full of straw, and probably over average	Very strong, but we fear blight	....	Very flourishing, except Mangels	Light, and badly got	Third week in August	W. Chandler, Aldbourne, Hungerford
	Under average; blighted	Average	Above average	Bad	Over average	Good plant; foul	Bad	August 12	J. Rawlence, Bulbridge, Wilton
	Below average	Over average	Average	Under average	Over average	Uncommonly good	Under average	Middle of August	Cyrus Combes, Tisbury
	One-third deficient in plant, in too many instances	Very good	Very good	A great crop, doubtful as to podding; winter a failure	Very good	Never more promising	Meadow good, but not put together well	August 14	Geo. Brown, Avebury, Calne
	Very good on the whole, a few thin pieces, but well filling	A very good crop; some few pieces down	A very good crop, on the whole, well jagged	....	A large crop of haulm, but the kids small	Good, where hoed out, but damaged this wet season	A very light crop, nearly all spoilt by wet	End of August	J. A Williams, Baydon
	Various; scarcely an average	Over an average	Various, good to bad	Spring, over; winter, under	Good	Promising	Clover much spoilt; meadow good, but damaged	Middle of August	Thos. Arkell, Pen Hill, Swindon
	Twenty per cent. under average	Above average	Average; some bad, gouty at root	Good average	Average	Good average	Average, half spoilt making	August 15	Edmund Ruck, Castle Hill, Cricklade
BERKS	Heavier than last year, but much laid	Generally good	Variable; some very full of weeds	Good crop; much blighted	A large quantity, and a good crop	All good, except Mangel	Sainfoin and meadow good, but much damaged by rain	Early in August	Jas. Hulbert, Streatley
	Much improved, particularly the late sown: promises an average	Very good; over an average	About an average	Not many planted; average crop	Large breadth planted; over an average	All roots very promising	Upland grass never worse, except Sainfoin	August 12 to 18	Thos. Owen, Clapton, Hungerford
	Rather under average	Average	Average	May be average	Good average	Good	Very deficient	About August 7	William Dewe, Southridge, Streatley, Reading
	Average	Over average	Good	Good; a little blight	Good	Very good	Full average	August 14 to September 8	E. W. Moore, Coleshill
	Rather below average	Average	Rather above average	Average	Heavy crop	Very good	Average crop, badly harvested	August 7	Martin Hope Sutton, Reading
	Bulky crop, but blighted	Good	Good	Very good	Very good indeed	Promise well	Average, but much soiled	August 8	W. Bulstrode, Cookham Dean, Maidenhead
	Nearly an average	Above an average	Above an average	Average	Above average	Good	Much damaged	Middle of August	John Adnams, Thatcham
	Good	Above an average	Very good	Average	Good	Very promising	Two-thirds of crop	August 10	James Williams, Shippon, Abingdon
	Mostly thin, otherwise average, but blight increasing	Good	Good	Good	Good	Good	No Clover; meadow average, but spoilt	Middle of August	F. Sherborn, Bedfont, Hounslow.
MIDDLESEX	Much improved, but under average	With fine weather will be over average	An average	Too much haulm; an average	Very fine; over average	All good	Moderate crop; injured	August 14	Thos. Hewett, Cranford Park Farm
	Good average; heavy straw	Average	Over average; heavy straw	Average	Average; not much grown	Good	Good where late	Second week in August	James Brebner, Norfolk Farm, Staines
SURREY	Very precarious; much already blighted	Average	Average	....	Average	Promises to be over an average	Average, but in great quantity spoilt	Second week in August	William Willis, West Moulsey
	Much below average; ears not well filled; much root-fallen	A full average crop	Nearly an average; injured by wireworm, but rapidly improving	....	A very good crop; much above the average	Potatos much blighted; Mangels and Turnips very promising	Abundance of grass; injured in harvesting	About August 14	Charles Gay Roberts, Haslemere, Guildford

THE PRESENT APPEARANCE OF THE CROPS—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	ROOT CROPS.	HAY.	DATE OF HARVEST.	NAME AND ADDRESS.
ENGLAND.									
SURREY	Long in straw, well headed; much lodged, requires sun; good crop	Heavy crop, and considerably lodged	Patchy and very irregular; poor crop	Very full; plant leafy; about an average	Remarkably good	Promise to be very fine	Early crop quite spoiled, but late a heavy crop, and much well secured	August 7 to 14	Edward Hilder, Woking
KENT	4½ qr.	6 qr.	6 qr.	2½ qr.	4 qr.	Mangel good	The late laid in is good	August 7	—, Sittingbourne
	Considerably injured; not over an average	An average crop	Good	Scarcely any grown	Have been looking well, now blighted	Very good	Late crops good	Third week in August	Mark Sandford, Martins, near Dover
	Too early to form a correct opinion as to the crop	A great breadth; above an average	Very bad	May be half an average crop	Great crop	Very good	A good crop	August 14 to 21	Robert Matson, Wingham
	Autumn-sown very good; that sown in February not so good	Excellent	An average	Not so promising as ten days ago	Never better	Promising	Sainfoin injured; grass good	August 10 to 15	William Manser, St. Peter's, Margate
SUSSEX	Various; may be an average, with good weather	Good; much laid with rain	Average	Good; sadly blighted	Good	Good; want fine weather	One-third spoilt, one-third good, one-third damaged	In from 10 to 14 days	James Eames, Linch Midhurst
	About an average	Below average	Average	....	Average	Very good	Above an average	About August 12	John Brotherston, Brightling
	Not quite average; much laid	Average; a little laid	Good	Good	Very good	Mangels late; Swedes and Turnips promising	Average crop; much spoilt	August 14	George Singer, Oakwood, Chichester
	Thin plant, and not well filled in the ear	Not much grown, and not promising	Fair average	....	Plenty of haulm; about average	Good	Clover bad; meadow good	Late	James Singer Turner, Chingston Farm, Seaford
	Much laid; an average crop	Good	Very good	Plenty of haulm, but foul	Very good; over an average	Very promising	A fair crop; spoilt	August 6	J. E. Heasman, Angmering
	A good bulk; much laid; yield doubtful	Heavy crop; will yield well, if not too laid	Good	....	Good	Very good	A fair crop; much spoilt	August 8	William Rigden, Hove, Brighton
HAMPSHIRE	Rather under average	Over average	Average	Much blighted	Over average	Swedes and Turnips good	Clovers short crop; much injured	August 10	W. C. Spooner, Eling Downs, Southampton
	Below an average	Considerably above an average	Above an average	Spring good, but blighted	Above average	Very good	A good crop, damaged	August 7	William Spearing, Winchester
	Thin plant; under average	Bulky crop; quality doubtful	Good	Good	Good	Very promising	Much damaged	Middle of August	Hugh S. Raynbird, Basingstoke
	Under average	Over average	Over average	Over average	Over average	Over average	Under average; damaged	August 7	Joseph Blundell, Southampton
WILTS	Good, where there is sufficient plant	Good	Good	Winter thin, but well kidded; spring bulky, but blighted	Good	Good	Good	End of August	Richard Stratton, Burderop, Swindon
DORSET	Below an average	A good average crop	An average crop	Above an average	Above an average	As good as ever known	Average; damaged	Second week in August	James Buckman, Bradford Abbas
	Thin on ground; fair head, but blighted a little	Looks level and well	Not a heavy crop, but much improved	Half crop; destroyed by black aphis	Good	Good	Light crop; much damaged	August 6	J. T. Homer, Hemsworth
	Under average	Over average	Average	....	Average	Excellent	Good; some spoilt	Middle of August	W. J. Voss, West Bucknowle, Corfe Castle
	Improved, but thin; will be under an average	Very good; an average	Very good; an average	Very few in this locality	Have heard complaints	Very promising	Rye-grass and Clovers, thin	August 10	Henry Fookes, Whitechurch, Blandford
	Under average, but too early	Over average	Average	Blighted	Blighted; may be average	Very good	Average crop	August 15	R. Damen, Dorchester
	Under average	Over average	Over average; very promising	Partially blighted	Early Peas, good	Very good	Good; not well secured	In a fortnight	John Pope, Symondsbury
	Average	Average	Over average	Over average	Over average	Promising	Sainfoin and meadow, average	August 7	John Ford, Rushton, Blandford
	Very variable; not two-thirds of a crop	Good average, but full of rust	Full average	Much blighted	Average	Never better	Average	....	T. H. Saunders, Watercombe Farm, Dorchester
SOMERSET	Under average; half a crop	Average	Average	....	....	Good plant	Average; not half harvested	End of August	John B. Collyns, Dulverton
	Average	Over average	Average	Winter, failure; spring, nearly average	Good	Good	Good; badly made	About August 10	Walter Farthing, Stowey Court, Bridgwater
	Full average crop, if not over; rust appears in spots	Improved; over an average, but deficient in quality	The few grown are good	A deficient crop, and small breadth	Full average	Generally bids fair for a good crop; Mangels good	A fair crop, but seriously damaged	In about 10 days	Richard Corner, Torweston, Wellington
DEVON	Under average	Average	Average	....	....	Very good	Good, but badly saved	Second week in August	R. W. Pollard, Blagden
	Scarcely average crop; depends on the weather	Fair average	Spring-sown below an average	....	Few grown, those good	Full crop	Meadow middling; saved badly	Middle of August	Samuel P. Newbury, 4, Boringdon Villas, Plympton St. Mary's
	Under average	Over average	Average	....	....	Very promising	Average	August 15	P. Cowan, Barnstaple
	Below an average	Average	Above average	....	....	Very fine	Light crop; badly saved	About middle of August	Samuel Cornish, Stancombe, near Kingsbridge
	Under average	Under average	Under average	....	....	Good	Small crop and damaged	August 14	R. H. Watson, Dorsely, Totnes
	Thin most places	Pretty good	Good	Good	Good	Very good	Half crop	August and September	Lamoureux & Co., Plymouth
CORNWALL	Thin	Average; greatly recovered	Average crop	....	....	About average	Barely average; badly saved	Early in August	Magor, Davey & Co., Brewery, Redruth
	Average, but damaged by rust	Under average; very thin	Average	....	....	Looking well	Various	Beginning of August	T. D. Simmons, Killiganoon
	About average	Average	Over average	....	....	Very good	Not quite average; badly saved	In a fortnight	W. M. Ware, Newham House, Helstone
	Below average	Full average	Average	....	....	Very promising	Light, and badly got	August 10	John Wills, Southpetherwyn, Launceston
WALES.									
CARMARTHEN	Not average	Good	Average	....	....	Not good	Average; not half cut	Depends on the weather	John Burnell, Penyfair, Llanelly
GLAMORGAN	Very much below the average	Very good	Average crop	....	....	Looking well	Average crop	....	Thomas Thomas, St. Hilary, Cowbridge
IRELAND.									
LONDONDERRY	Average crop	Scarcely any sown	Short; not average	....	....	Promising	Bad	About Sept. 25	Charles Pollock, Farmhill, Magherafelt
QUEEN'S COUNTY	Scarcely any sown	A fair crop; a good deal laid	Promise a good crop	....	....	Fair crop	Much damaged	End of August	Charles H. Franks, Westfield, Mountrath
ANTRIM	Average	....	Average	Very good	....	Average	Average	August 14	J. Batherick, Carrickfergus
MEATH	Very little sown here; what is sown is good	....	A great quantity, and very good	Look well	....	Turnips (late) good; Potatos good and plentiful—disease appearing	Second crop good, weather bad	End of August	John M'Cullough, Chenymount, Kells
	Good	Average	Heavy	....	Very good; not much sown	Mangels fine	Abundant	September 10	John Anderson, Land Steward, Mountainstown, Navan
	Winter Wheat very good, spring ditto fair	Rather light	Very good about here	Fair	Good	Uneven, but good	Light, badly saved	Middle of August	W. A. Barnes, Westland. Moynalty
KILKENNY	Not good	Average	Good	Good	. ..	Late, but good	Very bad	August 20	D. C. Milward, Tullogher
	Good, but too soon to judge	Good	Good	....	....	Fair crop	Light	August 20	Patrick Grace, Trestford.
	Good	Good	Good	....	....	Good	Constant rain	August 20	John O. Sullivan, P.P. and V.G., Kenmare, Kerry
CORK	Average; much injured by continued rain	Good; little grown	Average; damaged with smut	....	....	Potatos showing disease	Under average	End of August	F. A. Twiname, Bally Philip, Kanturk
	Promising, but blight is feared	Good	Under average	....	....	Under average	Average; badly saved	August 20	J. Byrne, Wallstown Castle, Mallow

OUR LIVE STOCK.

ON Tuesday Mr. Strafford sold the whole of the well-known herd of Shorthorns at Farnley Hall Farm, near Otley, the property of the trustees of the late Mr. Fawkes. There was a large attendance of breeders from the home counties and from America and Australia. The bulls averaged £55 each, and the cows and heifers £46 each; the total amount being £1680, giving a general average of £48 per head. The highest price given was 150 gs., for NINTH LORD, a yearling bull by LORD DARLINGTON.

—— The Highland and Agricultural Show presents many points of interest to those who are occupied with live stock. It brings before us several breeds, of both cattle and sheep, which the English farmer but rarely sees in perfection.

In the cattle classes, Ayrshire cattle occupy an important position. These cattle are rather small in size, vary in colour from white with a little red, to red with a little white, and again from a fawn colour broken with white, to almost black and white. The typical Ayrshire cow is formed for milk. Her long, firm head, and rather upturned horns, are succeeded by a thin neck, no great depth of hosom, shoulder tops and crops narrow, well sprung ribs, and great breadth over the hooks. Again, looking at the broadside of the animal, the depth should gradually increase backwards towards the flanks, giving what is termed a wedge-form. This is much insisted on by all the Ayrshire admirers, and it signifies the gradual thickening of the cow from the set-on of the head when the neck is light, to the base of the neck, the breast, the girth, and the still greater depth at the flank. This gradual deepening contrasts with the heavy fore-end and cylindrical form of the Shorthorn, and indicates milking rather than feeding properties. We took the measurements of the 1st prize Ayrshire bull and cow, and also of the 1st prize Angus bull and cow, to which we shall again refer. The Ayrshire measurements were as follows:—

Measurements of a prize Ayrshire bull, the property of Mr. James Wilson, Boghall, Houston; brown and white; 4 years. Bred by Robert Wilson, Forehouse, Kilbarchan.

Girth	7 ft.	4 in.
Length from shoulder (last cervical vertebra) to rumps	5	5
Total length from poll to rumps	7	3
Height at shoulder	4	8¾
Width across hooks	1	9
From shoulder-point to hook	4	4
From ground to dewlap	1	4

The Ayrshire cow measured as follows:—

Measurement of prize Ayrshire cow, the property of Mr. John Stewart, Burnside Cottage, Strathaven; 5 years 3 months. Bred by Mr. David Osborne, Harelaw, Neilston.

Girth	6 ft.	0 in.
Length from shoulder (last cervical vertebra) to rumps	5	0
Total length from poll to rumps	6	5
Width across hooks	1	7½
Length from hook to rumps	1	7
From ground to dewlap	1	6
From shoulder-point to hook	3	7

Angus polled cattle are characterised by their black colour, occasionally broken near the udder with a little white. They are hornless, are characterised by great length, by a great width across the shoulder-tops, continued by well sprung ribs and good loins, without prominent hook-bones. The hair is short and glossy, and the skin thick and soft. We append a few important measurements of the best examples of the breed we could meet with.

Measurements of prize Angus bull, JURYMAN, the property of Sir George Macpherson Grant, of Ballindalloch; 3 years, 4 months, 14 days. Bred by exhibitor.

Girth	7 ft.	10 in.
Length from shoulder to rumps	5	1
Total length	7	0
Height at shoulder	4	9½
Width across hooks	1	10
Width across shoulders	1	0
Width across crops	1	4
From hook to shoulders	4	1
Girth of leg below knee	0	8¾

Measurements of a commended Angus bull, the property of Mr. Alexander, Mains of Kelly; 2 years 5 months. Bred by exhibitor.

Girth	7 ft.	4 in.
Length from shoulder to rumps	5	0
Width over hooks	1	7
Width over shoulders	0	10½
Girth of leg below knee	0	8

Measurements of a prize Angus cow, *Elisa*; the property of, and bred by Sir George Macpherson Grant; 4 years 6 months.

Girth	7 ft.	1 in.
Length from shoulder to rumps	5	0
Total length from poll to rumps	6	11
Height at shoulder	4	2½
Width across hooks	1	9½
Width across shoulders	1	2
Length from hooks to rumps	1	9
Shoulder-point to hook	4	0
Girth of leg below knee	0	7

Passing from cattle to sheep, the Blackfaced heath breed first claim our attention, a breed adapted for the higher situation of hill farms—wherever heather predominates. The head must be black and white, the colours being distinct and unmixed; the horns should slope back in the same line as the forehead; the back of the neck is free from wool, but is covered with goat-like hair; the wool should come up well at the cheeks; the fleece must be long, curly, fine, and free from grey hair or kemps; grey, however, is apt to appear in old sheep.

Border Leicesters differ from English Leicesters principally in character of head, which is thickly covered with white hairs, giving a dead white appearance, while the true Leicester head has a blue "tinge" on the face. Where the skin is visible at the nose near the eyes, it is black, and a pink tinge indicates delicacy. There is no wool on the forehead, but the fleece comes up well to the cheeks and back of the head. The fleece ought to be thickly set on the skin, and the curl should be bold and open. The body is long, of great thickness through the heart and ribs, and tapering towards the rumps. The back is well covered with flesh, and the scragg, or neck, is well developed.

Such are a few points which may be noted upon examining good specimens of animals of the above breeds.

THE HIGHLAND AND AGRICULTURAL SOCIETY AT PERTH.

THE opening day of the Highland and Agricultural Society's show was discouraging enough. The weather, however, cleared up towards evening, and the following day (Thursday) was all that could be desired. The Scottish show is essentially a business proceeding. But few ladies visit the ground, and the streets are unadorned with flags, arches, or any of the accompaniments of bells ringing, and holiday appearance, which characterise our English show-times. The proximity of the Highlands, and the picturesque appearance of those who affect the national costume, be they English or Scotch, the tones of the bagpipes, and the spectacle of Highland sports, in immediate contact with the show; the characteristic Blackfaced sheep, which are said, like their masters, to thrive where pampered Saxon breeds would starve—these, and the Ayrshire cows, and black polled cattle, all help to compensate for the missing features above alluded to, and to give a picturesque freshness to the scene. The show itself at once strikes the casual observer as greatly inferior in size to the gigantic English meeting, but closer inspection reveals a greater variety, and equal excellence in most of the live stock classes. Implements are of course present in considerable variety, but we miss the revelation of steam in its application to agriculture yearly brought before us nearer home. Twenty acres of ground are occupied by the Highland Show, and in this very considerable space there is, we confess, much more of interest than we have had opportunity to examine. We shall now attempt to convey an idea of the "stock" show.

CATTLE.

Shorthorns.—There was a good show of Shorthorns, and it must be gratifying to the promoters of this breed that it appears to be rapidly extending in Scotland as well as in England. Taking the catalogue as our guide, we find in the first place a class of old bulls of great merit. It is the custom of the Highland and Agricultural Society to award a gold medal to animals which have taken 1st prizes in their previous shows, and this excellent arrangement enabled us to once more obtain a view of that grand bull, HEIR OF ENGLISHMAN (24,122), bred by Mr. Barclay, and now owned by Mr. W. S. Marr—a bull of great substance, on short legs, and worthy of notice. EDGAR, the well-known "Royal" prize-taker, ought to have been present, but was for some reason prevented from putting in an appearance.—The aged bull class comprised 15 entries, many of which were very excellent. The 1st prize was awarded to Mr. Robert Arklay's ANNAN WATER, bred by Mr. Johnstone, of Halleaths, Lochmaben, a bull with grand quarters, a good girth, and fine shoulders. The 2d place was awarded to Mr. James Fletcher's MICHIGAN 2D, also a good bull, with good quarters and loins, and a fair "touch." The 3d prize was taken by Mr. James Cochrane's BARONET (25,564), an animal which, although good in most points, is certainly weak about the shoulder tops and crops, and has not the "touch" of his successful rivals; he is, however, a useful beast, and, on the whole, deserves his place.—The 2-year-old bulls formed a class of 19, many of which were very excellent. The 1st place was awarded to a bull possessing plenty of fine hair, and of fair quality. When we mention that his crops were a trifle weak we record the only fault noticeable to us. He is the property of Mr. Balfour, of Balbirnie, was bred by Sir William Stirling Maxwell, and is named KEIR BUTTERFLY 7TH. The 2d place was accorded to Sir David Baird's BARON LAURIE 3D, bred by Mr. Barclay, of Keavil, a red bull, of considerable merit, although a little plain about the head, and not quite heavy enough fleshed at the buttocks. So far so good; but we cannot concur with the judges in the case of the 3d award. This was given to Mr. Walter Scott's BARON STAPLETON, bred by Mr. Thomas Lawson, of Stapleton Grange, Darlington. We should be sorry to say a word against any good animal, and are ready to acknowledge the BARON to be such. Nevertheless he has faults which, in our estimation, should have weighed with the judges. Take, for instance, Mr. Bell's DUKE OF NORFOLK, a red and white bull, noticed by many as possessing good shoulders, crops, and buttocks, and compare him, unnoticed as he is, with BARON STAPLETON. Such a comparison will reveal that the last-named bull is deficient in all the above points, and is also not so good a "toucher." With these facts it is difficult to see the reason of the award, and this difficulty was expressed by many very competent persons. Lastly, we may mention a very neat red bull, RED ROVER, the property of Mr. Robert Moubray, of Cambus, which received a high commendation. The yearling bulls comprise 12 entries, of which Sir W. S. Maxwell's RED DUKE was declared to be the best. This decision was, so far as we could learn, unchallenged, and with the exception of too much loose fat about the rumps, he is a very straight, good bull, and not made up for show in any extreme manner. Mr. James Beattie's BARON TORR, the 2d prize animal in this class, is white in colour, has horns not very nicely put on, and is a little low in the chine. Here, again, was dissent somewhat loudly expressed, many preferring other unplaced animals in the class. The 3d prize was awarded to Mr. Bruce, of Newton of Struthers, for a gay, nice looking bull, BARON CECIL. Mr. John Lamb, of Burrell Green, Penrith, again exhibited IGNORAMUS, the 3d prize bull at Wolverhampton, a grand "toucher," and altogether a gay and truly good animal, which, however, could only get a commendation. Mr. Cruikshanks, of Sittyton, exhibited a very good red bull, unfortunately lame; and there were other excellent young bulls in this class qualified to take honours at high-class shows.

The cow class was better than at Wolverhampton, and we were especially struck with the exceedingly level cow exhibited by Sir W. S. Maxwell. From her loins forward she is perfect, and in other respects it is difficult to find fault; still, her quality, as revealed by touch, is scarcely in her favour, but taking her altogether we have seldom seen her equal. The Duke of Buccleuch took the 2d place with his *Young Cherry*, a very good cow, and Mr. Robert Arklay was 3d, with *Flecky Wear* by REPRESENTATIVE (20,666). Mr. James Beattie showed two remarkably good cows, which, although unplaced, had many admirers. The "Royal" 1st prize cow, *Warrior's Plume*, was also present, enjoying her honours with the fresh decoration of a gold medal awarded to her as the 1st prize cow last year at Dumfries. Plain at the rump, as the old cow unquestionably is, breeding and character are strongly evidenced in her beautiful head. In the class for heifers calved after January, 1869, Mr. Robert Bruce, of Newton of Struthers, was placed 1st with *Raspberry*, and Lord Kinnaird took off both 2d and 3d prizes. There was a large entry of yearling heifers, in which the Duke of Buccleuch carried off both 1st and 2d prizes, and Lord Kinnaird secured the 3d place.

Polled Angus or Aberdeen.—Still following the order of the catalogue, we next find the characteristic black polled cattle of Aberdeen forming a magnificent show. To see such a grand collection of these noble animals is a novel and interesting sight to an Englishman. So, at least, we found it, and spent a considerable time among them. Three veteran prize-takers, now retired on their well-won gold medals, formed the commencement of a very good class of aged bulls, among which Sir George Macpherson Grant's JURYMAN ranked 1st. He is perfectly black, has a remarkably good soft skin, and is exceedingly level. Mr. William Dingwall Fordyce showed the 2d prize bull, M'COMBIE, which may be spoken of as scarcely equal to the last animal in hair and quality, but as very perfect in form. He was 1st at the Aberdeen show in 1868. The 3d prize was awarded to Mr. Robert Walker's DERBY, a grand beast, with a considerable amount of white on his belly.

There was a good entry of bulls, calved since 1869. The prizes were awarded as follows:—Mr. George Brown, of Westertown, 1st; Sir Thomas Gladstone, of Fasque, 2d; and Mr. Robert Clark, of Taybank, 3d. There was also a very good bull exhibited by Mr. Alexander Bowie, Mains of Kelly, which was commended, and whose dimensions we found to be as follows:—Girth, 7 feet 4 inches; length, 5 feet; length from shoulder point to centre of hook, 4 feet; width over shoulder blades just about 11 inches; over hook, 1 foot 7 inches, and girth of bone below knee, 8 inches. We cannot speak more at length upon the awards in this and other of the Aberdeen classes, but refer our readers to the prize list. We may, however, mention that the general impression was, that it was a grand show, especially of heifers. The breed is considered to be more hardy than Shorthorns, and has the following characteristic points:—Colour perfectly black, no horns, not even a "scar;" skin soft, and covered with fine short hair; carcase very long, and especially well rounded over the shoulders and crops, very level from rump to hook, and from hook along the top of the ribs to the shoulder; shoulder fine, neck heavy, and head massive, and characteristic. In walking through the Aberbeen classes we observed many animals coming up to the standard.

Passing over the Galloways we arrive at the important classes of *Ayrshire cattle.* In general, with reference to these cattle, we note that the colour is exceedingly various, passing from almost white to red and white, brown and white to almost black and white, and again to red and dark brown. Sometimes the colour might be that of a Shorthorn, and at other times it was similar to an Alderney or Guernsey. The cows are small in size compared with our large breeds, and are formed for milking. The head is free from flesh and long; the horns, of late years especially, point upwards and outwards; the neck is light; the shoulders close at the top, giving a narrow shoulder-top and crop; the carcase gradually increases backwards till we find wide loins, prominent "hooks," and wide rumps. Looking at the broad side, the light neck, shallow breast, narrow girth, and gradually increasing depth, as the eye passes backwards, gives a wedge-like form to the animal which contrasts with the full fore-quarters of the Shorthorn race. Sir Michael R. Shaw Stewart, of Greenock, showed a typical bull, the winner of the 1st prize at Edinburgh, in 1869. We may also mention Mr. James Wilson's excellent 1st prize bull, whose girth is 7 feet 4 inches, and length 5 feet 5 inches from before shoulder to rump. Sir Michael Stewart also showed a remarkably good bull, which obtained a 2d place, and Mr. John Fleming was awarded a 3d prize. In the yearling bull class Mr. Carmichael's Lord Lorne, an almost white bull, was much admired, and secured the 1st place, and other very good specimens were to be seen among the young bulls. There was a remarkably good show of cows and heifers, a large majority of which were of the true milking type. We took accurate measurements of the 1st prize cow *Rosie*, exhibited by Mr. John Stewart, and since sold, we understand, for £100. Her girth is 6 feet, length 5 feet, and total length, from poll to rump, 6 feet 5 inches. Another feature of the show was the Highland cattle formed to withstand the boisterous and severe winters of the Highlands. There was a fair show of these, but our time was unfortunately too much occupied to do them justice. Information as to the prizes will be found in the published list. Lastly, there was a section for fat animals, in which some 30 very good cattle were exhibited.

SHEEP.

Blackfaced.—There was a very excellent show of Blackfaced sheep. In this breed, the face should be black and white, the colours, in the best examples, being clearly defined, and not at all mixed. This is what the Highlander calls good "paintings." A Roman nose is in favour, and horns sloping back in the same line as the general slope of the forehead. There is no wool between the ears, or on the back of the head and neck close to the head, but thick, goat-like hair. The wool should come up to the cheeks, and the fleece must be fine, curly, and free from hair. As ewes become old, they are liable to grow grey, or blue, hairs along the back. The 1st prize in the tup class was awarded to a sheep bred and exhibited by Mr. James Greenshields. The black and white face markings were distinct and characteristic, and the fleece was of particularly good quality. This sheep was got by a ram of Mr. Archibald's, of Overshields. The 2d prize was awarded to Mr. Archibald for the 1st prize sheep last year at Dumfries, an excellent animal, and sold on the ground at Perth for £40 to Fleming of Keel. The 3d prize was taken by Mr. Greenshields, and Mr. Aitken, of Listonshiels, was commended for a good sheep, not quite distinct enough in the colours of his face, but with good fleece and horns. Another of Mr. Archibald's (No. 558) also struck us as a stylish sheep, with good quarters and head, but with rather straight wool.

In the class for Dinmont or shearling tups Mr. Archibald took the 1st place with a good-headed sheep, having a capital carcase and fleece, a son of the 1st prize sheep at Edinburgh in 1869. Mr. Aitken also showed a good tup with a very black face, only slightly broken with white, and Mr. Archibald took the 3d prize with a very good animal. This class may be spoken of as good, but we noticed in some cases straight, goat-like wool, and faces in which the black and white were badly defined and mixed.

Passing on to the ewes above 1-shear, with lambs, we found the 1st prize awarded to Mr. Tweedie, of Castle Crawford, for some very good ewes, in which the wool was a little too fine, and the "paintings" not quite perfect. Mr. Archibald was placed 2d for ewes and 1st for lambs; Mr. John Malcolm, of Poltalloch, was 2d, and Mr. Pagan, of Innergeldie, was commended. There was a good class of shearling ewes, in which Mr. Archibald took 1st and 3d prizes for two good pens, in which the 1st prize seemed to have been secured by better character of head, but both were excellent pens. The 2d prize sheep in this class were bred and exhibited by Mr. A. C. Pagan; and, although good sheep, they were a little-inclined to a hairy style of wool, and lacked character.

Cheviots.—There was a grand show of Cheviots; and, although Dinmonts had been seen better, gimmers were first-rate. The names of Archibald, of Glengelt, Elliot, of Hindhope, and Brydon, again appear in force, and divide many of the prizes. Among the best sheep shown in these classes we may specially notice Mr. Thomas Welsh's most excellent shearling tup as an animal of good style and quality. The 2d prize sheep, the property of Sir G. Graham Montgomery, was also a fine sheep, although a little slack in the back; and the 3d prize sheep, exhibited by Mr. James Johnstone, of Capplegill, was also handsome and well-wooled, thus attesting the general excellence of his class. The commended sheep, belonging to the same breeder as the last, were also very good, although smaller than those already noticed, and the whole class was considered a most excellent one.

The class for ewes and lambs, although not well filled, yet contained some remarkably good pens, in which Messrs. Brydon, Archibald, and Elliot, divided the honours. Mr. Elliot's sheep, although only placed 3d, were very excellent, and almost equal to the 1st. Young ewes were also remarkably well represented, the class being both large and good. Border Leicesters are a great feature at the Highland and Agricultural Show. This sub-breed is a favourite in Scotland, and is considered to excel its south country progenitor in size and hardihood. The head is white and well covered with hair, and the nose and skin surrounding and under the eye, black. Where a pink colour appears at these points it is considered to indicate delicacy. The "blue" colour of the English Leicester is not considered characteristic in the Border Leicester, but it is said to be appearing too much in some flocks. There were complaints with regard to the shearing in some of the classes, and we have no hesitation in saying that the so-called "shearlings" had in some cases been very gently dealt with at shearing time, whenever that might have been. The Leicester show was undoubtedly good, and the shearling rams may be mentioned as especially excellent. Taking the classes in their catalogue order, we find, first, the old tup, forming a large and good show, in which Mr. George Hope, of Fenton Barns, took the 1st prize, with a very grand, long, well-covered sheep, with a thick good neck, and great width of carcase. The fleece, too, was quite fashionable, and may be described as consisting of a bold, rather large, and open curl. Mr. Thomas Ferguson, of Kinnochtry, Coupar Angus, also showed a good typical sheep, which won the 2d place; and Mr. Adam Smith's 3d prize may be spoken of as a good sheep with a characteristic head.

Dinmont or shearling tups were a very first-rate class, numbering 56 in all, and headed by Mr. James Clark, of Oldhamstocks', very good and well-woolled sheep, an excellent animal, with but little wool on the cod. Lord Southesk was placed 2d, with a well-woolled and otherwise good sheep; and Mr. Simson, of Blainslie, made a good 3d.

Old ewes were represented by 10 entries, in which Mr. George Laing took the 1st place, with five very well formed ewes, and, with one exception, well woolled. The 2d prize was awarded to Mr. Hope, of Fenton Barns, for five large and good carcased sheep, two of which carried fairly good fleeces. The 3d prize sheep, the property of Mr. Thomas Ferguson, of Kinnochtry, were, with one exception, very good sheep.

In the class for shearling ewes or gimmers, Mr. John Lees, of Warrington, Haddington, took the 1st place with some well woolled sheep, and Mr. Jenner Clark, of Oldhamstocks, was placed 3d with some sheep carrying splendid fleeces.

Besides the important breeds already noticed, there were a few specimens of Cotswolds and Southdowns. Shropshire sheep also appeared in considerable force, from the flocks of the Earl of Strathmore, Mr. Hood, of Linross; Mr. John Gibson, of Woolmet; Mr. Crawford, of Pitlowrie; and Mr. Arnot, of Glamis Mains.

PIGS.

Swine were fairly represented, especially the white breed. It is scarcely, however, in Scotland, that we look for black pigs, and we were not surprised to notice a poor show of Berkshire, some of which did not much resemble the best types of the breed.

HORSES.

There was a remarkably good show of Clydesdale horses, especially of mares and fillies; thorough-breds and hacks were by no means so well represented. There also appeared to be a considerable number of empty stalls in the horse classes, in which the words "not forward" were conspicuous.

The following is the list of the awards in the various classes of stock:—

Class I.—CATTLE.

Shorthorn.

1st Prize Bull at former Shows (exhibited Aberdeen, 1868).—William S. Marr, Heir of Englishman.

1. Best Bull calved before January 1, 1869.—1st, Robert Arklay, Dundee; 2d, James Fletcher, Rosehaugh; 3d, James Cochrane, Aberdeen.

2. Best Bull calved after January 1, 1869.—1st, John Balfour, Balbirnie; 2d, Sir David Baird, of Newbyth, Bart.; 3d, Walter Scott, Huntly.

3. Best Bull calved after January 1, 1870.—1st, Sir W. Stirling Maxwell, Bart.; 2d, James Beattie, Annan.

1st Prize Cows at former Shows (Medium Gold Medal): Dumfries, 1870.—James Beattie, Annan.

4. Best cow of any age.—1st, Sir William Stirling Maxwell, Bart.; 2d, the Duke of Buccleuch; 3d, Robert Arklay, Dundee.

5. Best Heifer calved after January 1, 1869.—1st, Robert Bruce, Forres; 2d, Lord Kinnaird; 3d, ditto.

6. Best Heifer calved after January 1, 1870.—1st, the Duke of Buccleuch; 2d, ditto; 3d, Lord Kinnaird.

Polled Angus or Aberdeen.

1st Prize Bulls at former Shows (Medium Gold Medal): Aberdeen, 1868.—1st, Alexander Morison, Turriff; 2d, James Skinner, Drumin, Ballindalloch.

7. Best Bull calved before January 1, 1869.—1st, Sir George Macpherson Grant, Bart.; 2d, W. D. Fordyce, M.P.; 3d, Robert Walker, Aberdeen.

8. Best Bull calved after January 1, 1869.—1st, George Brown, Fochabers; 2d, Sir Thomas Gladstone, Bart.; 3d, Robert Clark, Errol.

9 Best Bull calved after January 1, 1870.—1st, William M'Combie, of Easter Skene; 2d, W. J. Taylor; 3d, James Leslie, Blairgowrie.

1st Prize Cows at former Shows.—George Brown, Fochabers.

10. Best Cow of any age.—1st, Sir George Macpherson Grant; 2d, ditto.

11. Best Heifer calved after January 1, 1869.—1st, Sir George Macpherson Grant; 2d, Alexander Bowie, Mains of Kelly; 3d, George Brown, Fochabers.

12. Best Heifer calved after January 1, 1870.—1st, W. J. Taylor, Huntly; 2d, George Brown, Fochabers; 3d, ditto.

Galloway.

1st Prize Bulls at former Shows.—John Fisher, Knells, Carlisle.

13. Best Bull calved before January 1, 1869.—1st, James Graham, Carlisle; 2d, James Cunningham, Tarbreoch; 3d, Peter Morton, Longtown.

14. Best Bull calved after January 1, 1869.—1st, James Cunningham, Dalbeattie; 2d, T. Biggar, Dalbeattie.

15. Best Bull calved after January 1, 1870.—1st, Mrs. James Graham, Newcastleton; 2d, Joseph Kerr, Dumfries.

1st Prize Cows at former Shows.—James Cunningham, Tarbreoch.

16. Best Cow of any age.—1st, James Cunningham, Dalbeattie; 2d, Thomas Biggar, Dalbeattie; 3d, James Cunningham, Dalbeattie.

17. Best Heifer calved after January 1, 1869.—1st, Thomas Biggar, Dalbeattie; 2d, James Cunninghnm.

18. Best Heifer calved after January 1, 1870.—1st, Duke of Buccleuch; 2d, James Cunningham; 3d, ditto.

Ayrshire.

1st Prize Bulls at former Shows, exhibited for Medium Gold Medal.—Sir Michael R. Shaw Stewart.

19. Best Bull calved before January 1, 1869,—1st, James Wilson, Houston; 2d, Sir Michael R. Shaw Stewart, Bart.; 3d, John Fleming.

20. Best Bull calved after January 1, 1869.—1st, Robert Kelso, Greenock; 2d, the Hon. G. R. Vernon; 3d, John Fleming, Strathaven.

21. Best Bull calved after January 1, 1870.—1st, William Carmichael, Carnwath; 2d, John Fleming, Strathaven; 3d, Duncan Campbell Willison, Douglas.

1st Prize Cows at former Shows.—John Fleming, Strathaven.

22. Best Cow, in milk, of any age.—1st, Gabriel Dunlop, Stewarton; 2d, John M. Martin, Cardross; 3d, John M'Callum, Crieff.

23. Best Cow, in calf, of any age.—1st, John Stewart, Strathaven; 2d, John Fleming, Strathaven; 3d, Gabriel Dunlop, Stewarton.

24. Best Heifer calved after January 1, 1869.—1st, G. Pender, Kilsyth; 2d, Gabriel Dunlop, Stewarton; 3d, G. Pander. The whole of section 24 were very highly commended.

25. Best Heifer calved after January 1, 1870.—1st, John Fleming, Meadowbank Cottage, Strathaven; 2, George Pender; 3d, John Fleming.

Highland.

1st Prize Bulls at former Shows.—The Earl of Seafield.

26. Best Bull calved before January 1, 1868.—1st, John Stewart, Portree; 2d, Duke of Athole; 3d, John Grant, Carr Bridge.

27. Best Bull calved after January 1, 1868.—1st, David Carnegie, of Stronvar; 2d, T. Leslie Melville Cartwright, Ladybank.

28. Best Bull calved after January 1, 1869.—1st, John Malcolm, of Poltalloch; 2d, the Duke of Athole; 3d, John Malcolm.

1st Prize Cows at former Show.—1st, John Stewart; 2d, John Malcolm, of Poltalloch.

29 Best Cow of any age.—1st, the Duke of Athole; 2d, Donald M'Laren, Callander; 3d, John Malcolm, of Poltalloch.

30. Best Heifer, calved after January 1, 1868.—1st, John Malcolm; 2d, Duke of Athole; 3d, John Stewart, Callander.

31. Best Heifer calved after January 1, 1869.—1st, John Malcolm; 2d, John Stewart; 3d, John Malcolm.

Class II.—HORSES.

For Agricultural Purposes.

1st Prize Stallions at former Shows.—Merdo Bethune, Beauly; Peter Crawford, Strathblane.

1. Best Stallion foaled before January, 1868.—1st, Peter M'Robbie, Aberdeen; 2d, William Wylie, Whitburn; 3d, William Moffat, Kirkintilloch.

2. Best Entire Colt foaled after January 1, 1898.—1st, Robert Brewster, Barnbeth; 2d, Abram Kerr, Durrisdeer; 3d, P. M'Robbie, Sunnyside.

3. Best Entire Colt foaled after January 1, 1869.—1st, Sir Wm. Stirling Maxwell; 2d, Archd. Johnston, Maryhill; 3, Peter Crawford, Strathblane.

4. Best Entire Colt foaled after January 1, 1860.—1st, A. Weir, Newhouse Mill; 2d, Jas. Love, Greenock; 3d, James Nichol Fleming, of Knockdown, Maybole.

1st Prize Mares at former Shows.—Sir William Stirling Maxwell of Keir, Bart.

5. Best Mare (with Foal at foot) foaled before January 1, 1868.—1st, Wm. Moffat, Kirkintilloch; 2d, Sir Wm. Stirling, Bart.; 3d, M. Bethune, Beauly.

6. Best Mare in Foal) foaled before January 1, 1868.—1st, Col. Findlay, Boutrich Castle; 2d, L. Drew, Merrytown; 3d, A. Buchanan, Garscadden Mains.

7. Best Filly foaled after January 1, 1868.—1st, J. N. Fleming, of Knockdon; 2d, Lawrence Drew, Merryton; 3d, Robert Pollock, Mearns.

8. Best Filly foaled after January 1, 1869.—1st, George Knox; 2d, L. Drew, Merryton; 3d, R. Walker, Banff.

9. Best Filly foaled after January 1, 1870.—1st, J. N. Fleming, of Knockdon; 2d, ditto; 3d, Sir William Stirling Maxwell, Bart.

10. Best Draught Gelding, foaled after January 1, 1868.—1st, A. Weir.

11. Best Draught Gelding, foaled after January 1, 1869.—1st, George Morgan, Crieff; 2d, George Todd, of East Brackley; 3d, Thomas Landale, Rhynd.

Class III.—SHEEP.

Blackfaced.

1. Best Tup, above 1-shear.—1st, James Greenshields, Lesmahagow; 2d, John Archibald, Stow; 3d, James Greenshields.

2. Best Dinmont or Shearling Tup.—1st, John Archibald, Stow; 2d, Thomas Aitken, Balerno; 3d, John Archibald.

3. Best Ewes, above 1-shear, with Lambs.—1st, David Tweedie, Abbington; 2d, John Archibald, Overshields; 3d, John Malcolm, Lochgilphead.

4. Best 5 Shearling Ewes or Gimmers.—1st, John Archibald; 2d, Allan C. Pagan, Innergeldie; 3d, John Archibald.

Cheviot.

5. Best Tup, above 1-shear.—1st, Thomas Elliot, Hindhope, Jedburgh; 2d, Herbert Brydon, Selkirk; 3d, John A. Johnstone, Archbank, Moffat.

6. Best Dinmont or Shearling Tup.—1st, Thomas Welsh, Moffat; 2d, Sir G. Graham Montgomery, Bart., M.P.; 3d, James Johnstone, Moffat.

Border Leicester.

7. Best 5 Ewes above 1-shear.—1st, James Brydon, Moffat; 2d, James Archibald, Lauder; 3d, Thomas Elliot, Hindhope.

8. Best 5 Shearling Ewes or Gimmers.—1st, James Archibald, Lauder; 2d, James Brydon, Kinnelhead; 3d, John M'Gregor, Dumfries.

9. Best Tup above 1-shear.—1st, George Hope, Fenton Barns, Drem; 2d, Thomas Ferguson, Kinnochtry, Coupar Angus; 3d, Adam Smith, Stevenson Mains, Haddington.

10 Best Dinmont or Shearling Tup.—1st, James Clarke, Cockburnspath; 2d, the Earl of Southesk, K.T.; 3d, Thomas Simson, Lauder.

11 Best 5 Ewes above 1-shear.—1st, George Laing, Coldstream; 2d, George Hope, Fenton Barns; 3d, Thomas Ferguson.

12. Best 5 Shearling Ewes or Gimmers.—1st, John Lees, Haddington; 2d, Charles Lyall, Old Montrose; 3d, James Clark, Oldhamstocks.

Long-woolled other than Border Leicester.

13. Best Tup of any age.—1st, Thomas Wilkin, Dumfries (Lincoln); 2d, W. Norman, Aspatria (Lincoln); 3d, W. Norman (Lincoln).

14. Best 5 Ewes of any age, or Gimmers,—1, Thomas Wilkins, Dumfries (Lincoln); 2d, William Norman (Lincoln): 3d, W. Norman (Lincoln).

Southdown.

15. Best Tup of any age.—1st, Robert Scot Skirving, Camptoun, Drem; 2d, ditto; 3d, John Gordon, Aberdeen.

16. Best 5 Ewes of any age, or Gimmers.—1st, Robert Scot Skirving; 2d, ditto.

Shropshire.

17. Best Tup of any age.—1st, the Earl of Strathmore; 2d, Andrew Crawford, Perth; 3d, the Earl of Strathmore.

18. Best 5 Ewes of any age, or Gimmers.—1st, 2d, and 3d, the Earl of Strathmore.

Short-woolled other than Southdown and Shropshire.

19. Best Tup of any age.—1st and 2d, John P. M'Pherson, Forres (Oxford Down), shearling tups.

Class IV.—SWINE.

1. Best Boar, large breed.—1st, R. E. Duckering & Son, Northorpe; 2d, ditto; 3d, George Mangles, Ripon.

2. Best Boar, small breed.—1st, R. E. Duckering & Son, Northorpe; 2d, Charles A. Murray, Stanley; 3d, George Mangles.

3. Best Boar, Berkshire breed.—1st, R. E. Duckering & Son, Northorpe; 2d, Robert Lyall, Brechin; 3d, Sir David Baird, Bart.

4. Best Sow, large breed.—1st, R. E. Duckering & Son; 2d, ditto; 3d, George Mangles.

5. Best Sow, small breed.—1st, R. E. Duckering & Son; 2d, Alex. Stewart, Bridge of Earn; 3d, John L. Gow, Raith.

6. Best Sow, Berkshire breed.—1st, Sir David Baird, Bart.; 2d, Alexander Stewart; 3d, Lord Kinnaird, K.T.

7. Best Pen of 3 Pigs, not above 8 months old, large breed.—1st, R. E. Duckering & Son; 2d, George Mangles; 3d, ditto.

8. Best Pen of 3 Pigs, not above 8 months old, small breed.—1st, R. E. Duckering & Son; 2d, John L. Gow, Raith; 3d, Robert Philip, Bridge of Allan.

9. Best Pen of 3 Pigs, not above 8 months old, Berkshire breed.—1st, William Harris, Aberfeldy; 2d, Sir David Baird, Bart.

LABOURERS' COTTAGES.

We offer the accompanying illustrations of a block of three cottages (figs. 227, 228, 229), as an example of an arrangement affording extended accommodation, at once convenient and economical,—remembering that while the farmer seeks to have as many labourers as possible near his homestead, the landlord is desirous of providing them with homes at as cheap a rate as possible.

This latter object is best attained by combining several dwellings under one roof, since by such means much external walling, and a very appreciable amount of roofing are saved.

In the example before us the main object has been to place all the front doorways facing the street, and at the same time to secure porches for each at little cost with a pleasing appearance. This is well effected by the arched openings shown in the elevation, which give a distinctive character to the buildings. They are also manifestly convenient when the cottages are placed as lodges at the entrance road to the homestead.

Another point to be observed is, that whereas the two outside cottages have three bed-rooms each, the centre dwelling has only two bed-rooms, thus affording accommodation for a small family, while the end cottages serve for larger ones.

The cubical space provided within the cottages is as follows:—The two outside cottages contain, in the living-rooms 1100 feet each, in the sculleries 704 feet, in the pantries 256 feet, in the fuel stores 256 each, in the porches 128 feet, in the stairs and landings 341 feet, in the parents' bedrooms 720 feet, in the second bed-rooms 701 feet, and in the third bed-rooms 492 feet cube each.

The centre or two-bed-roomed cottage contains, in the living-room 1012 feet, in the scullery 596 feet, in the pantry 224 feet, in the fuel store 208 feet, in the porch 112 feet, in the stairs and landing 308 feet, in the first bed-room 967, and in the second bed-room 780 feet cube. These figures together make a total of 13,603 feet cube for the entire block.

The cottages, without the outbuildings, have on an average cost the sum of £125 each, or £375 the block. They are from the designs of Mr. Bailey Denton, Jun., of the firm of Messrs. Bailey Denton, Son & North, by whom they have been erected in different parts of England, among which we may cite the Livermere Park Estate in Suffolk, and the Henlow Grange Estate in Bedfordshire.

We may add here that the whole series, we believe, of Mr. Denton's farm cottage designs are to be seen at Henlow, where an estate formerly in very dilapidated plight has been most admirably equipped under the public-spirited direction of the Rev. H. Addington.

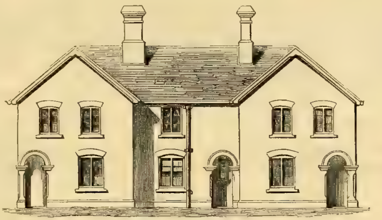


Fig. 227.—elevation.

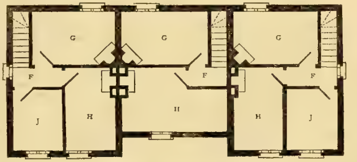


Fig. 228.—chamber plan.

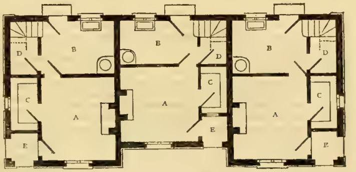


Fig. 229.—ground plan.

a, Living rooms; b, Sculleries; c, Pantries; d, Fuel stores; e, Porches; f, Stairs and landings; g, Parents' bedrooms; h and j, Children's bedrooms.

Home Correspondence.

Are we again to have Cesspools?—Your German correspondent is mistaken. I continue my irrigation. On the sewaged Italian Rye-grass (14 acres) I have kept 200 sheep and lambs from April, seven horses for seven weeks, and yet a nice little haystack. I only regret that I have not a town sewer to supply my suction-pipe, for I cannot get manure enough in the ordinary way without investing a large additional capital in live stock, which I cannot afford, having to limit my general tenant or farm capital to £16 per acre. It ought to be £25 per acre, and then I should make a larger percentage of profit. My live-stock capital is usually £6 per acre. Could I afford it I would make it £12 or more per acre, and then I should consume all my straw (treading none under-foot), and keep all my cattle and pigs on sparred floors. I have not near manure enough, for it is quite clear that, in the case of root crops especially (as I have proved by comparative trials), we could double our acreable produce by means of extra manure and deeper cultivation, without increasing the fixed charges of rent, tithes, rates, taxes, &c. Besides, when we have provided, by very deep cultivation and a greatly increased quantity of manure, a surplus supply of food for our Mangel crop, the corn crops following will be ample, and very different from what we find them at present. Our German friend will fail to bring back Englishmen to the old cesspool system, and if he will but inspect the sewage farms at Hornchurch and Barking, he will no longer doubt the propriety of dissolving ordure in water and thus cheaply conveying it to the soil. My nasal midnight remembrances of the (good?) old cesspool times cause me to wonder at your correspondent's letter. Besides, manure is useless without water. The manurial power of Britain is about that of two sheep per acre, and this is mixed with a rainfall of 26 inches, or 2600 tons of water per acre per annum. Mr. Hope not only uses all the town sewage, but uses it again and again during dry weather in the shape of filtered water. While by steam-power we can raise 1000 tons of sewage 300 feet high for 13*s.* to 14*s.*, it will never pay to use horse-power and manual labour in the conveyance of town sewage. *J. J. Mechi, August* 1.

Record of Improvements and Cultivation of Estates in Ireland.—Some months ago you were good enough to inquire for me, what forms were used on carefully managed estates in England for recording the cultivation and improvements made yearly on each farm and each field. One of your correspondents referred me to the Duke of Cleveland's estate, and, through the kindness of the agent, an excellent form was sent me. Another correspondent referred me to Mr. Jemmett, Murrill Hill Farm, Binfield, Berks, the author of a very useful farmers' pocket-book. Mr. Jemmett has furnished me with what he calls an estate record, on the same principle as that used on the Duke of Cleveland's estate, but of more convenient size for use, and I think even better arranged. It is the size of a large pocket-book. Each farm occupies four pages, the two first pages, open together, are for cultivation, with enough columns for six years; and a first column, in which the number of each field on the map, or a description of the field, is entered. The other two pages are, one for improvements of any sort done on the farm, the other for bought manures brought on the farm, and for hay, straw, roots, &c., sold off. Everything is thus quite distinct and clear. Once a year, when the farm is visited by the landlord or his representative—as it is certain, since the Land Act, must be done with great care if the estate is not to be subjected to every sort of exaggerated and even fraudulent claim for improvements and unexhausted tillages and manures, in the event of the tenant failing, or even voluntarily leaving his farm—entries of the facts will be made on the spot, and should be communicated to the tenant. If the entries are made by a man of character and credit, they will, after a few years, practically become better evidence of the facts than any mere recollection, or pretended recollection, can be. Without such a record, the landowner will be really at the mercy of whatever charges a tenant, with the help of a lively imagination and heated feelings, will swear to or get sworn to. Any one, who has seen some of the enormously exaggerated claims made already in land cases that have come before the courts, will know the importance of having clear proof of the facts. The subject is of the greatest importance in reference to the future "management of estates in Ireland;" only the strictest and most business-like care will enable very heavy charges to be avoided, for which no value, or a very inadequate value is left. It is this great importance of Mr. Jemmett's Estate Record to so many, that makes me anxious to inform others of it. *An Irish Landowner.*

Cabbage as a Snatch Crop.—At p. 981 you advise Cabbage as a snatch crop, but it seems to me you overlook one very important point, that Cabbage will not stand a hard winter. If you plant out Cabbages in November, the chances are that you lose three out of four; and if you only put them in in spring, they will not be ready until the end of July, and then what sort of Turnip crop will you get afterwards? The best snatch crop, it seems to me, is Rye, or Rye and winter Vetches mixed. If the stubbles which are intended for roots are ploughed up immediately, and sown with Rye and winter Vetches, they will have a capital crop of green food on them by May 1, or the end of May, according to climate, and that can either be eaten off with sheep, or cut and carried to the cattle, and the land immediately ploughed up again for Turnips. One-half of the division intended for roots might easily be so treated, but not the whole; but the use of such a snatch crop is to give food for the stock in May and June, when usually food is very scarce. I generally grow a few patches of Mustard sown in April and May, which come in during May and June; and, after they are eaten off, the land is ploughed up again, and sown with yellow or white Turnips, according to the season. *G. A. H.*

Drained and Undrained.—The effects of non-drainage is, this wet season, very striking. The unequal ripening of the cereals is perceptible from the flying train. The furrows green, the ridges yellow, when the crops ripen evenly and the heads of corn are on a level and of equal size, there is at once evidence of proper drainage, natural or artificial, and also of a proper quantity of seed, for where seed is too thickly sown the plants remind one of a mixture of grenadiers and little riflemen. This is also a season for weeds, the absence of the hand and horse hoe inflicts this year a severe pecuniary punishment. There will be some too warm cornstacks as well as haystacks. Strange that one sees so few of Garrett's farmers' 38*s.* rick ventilators : I feel independent of hot stacks with this—a farmer's invention. In a wet season like this, the difference in the time of ripening between drained and undrained land is considerable and important. Some 29 years ago, when I first began to drain this land, a field of Oats on the drained land was in stack before the undrained was harvested, although the undrained was much the earlier sown. *J. J. Mechi, July* 27.

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL : *Wednesday, August* 2.—Present : Sir Watkin W. Wynn, Bart., M.P., President, in the chair ; Viscount Bridport, Lord Kesteven, Lord Vernon, the Hon. H. G. Liddell, M.P. ; Mr. Barnett, Mr. Cantrell, Colonel Challoner, Mr. Edmonds, Mr. Brandreth Gibbs, Mr. Holland, Mr. Hornsby, Mr. Hoskyns, M.P. ; Colonel Kingscote, M.P. ; Mr. Leeds, Mr. Milward, Mr. Ransome, Mr. Shuttleworth, Mr. Stone, Mr. Torr, Mr. Jabez Turner, Mr. Wakefield, Mr. Welby, M.P. ; Mr. Wells, M.P. ; Mr. Whitehead, Colonel Wilson, Professor Simonds, and Dr. Voelcker.

The following new members were elected :—

Anderson, William, Lesney House, Erith, Kent.
Barton, Tom, The Crescent, Carlisle.
Beach, John, Standeford Cottage, Wolverhampton.
Blundell, Arthur, Chediston Hall, Halesworth.
Booth, Thomas, Tamborne Park, Lichfield.
Bowen, James, Troedyraur, Newcastle Emlyn.
De Pass, Daniel, 9, Delamere Street, Westbourne Square, W.
Easton, James, Hothe Court, Blean, Canterbury.
Farwell, Frederick G., Wolverhampton.
Faulconbridge, W. F., Bestwood Park, Bulwell, Nottingham.
Gough, Ralph D., Willenhall, Staffordshire.
Gouldburn, John, Broomhall, Nantwich.
Gurteen, Daniel, Haverhill, Suffolk.
Ingram, George, Chetwynd Park, Newport, Salop.
Knight, Richard, Bobbing Court, Sittingbourne.
Lea, Henry, 316, Bristol Road, Birmingham.
Lewisham, Viscount, Patshull, Wolverhampton.
Low, George, Burghtown, Athy, Kildare.
Morgan, Richard, Newtown, Montgomeryshire.
Parson, Edgcombe, Coates, Cirencester.
Phipps, Pukering, Collingtree Grange, Northampton.
Polding, J. Bede, Burnley, Lancashire.
Price, William, New House, Caerleon.
Reynolds, Osborne, Owen's College, Manchester.
Richardson, John, The Oaks, Dalston, Carlisle.
Roberts, Oscar Wilson, Fisherwick Park, Lichfield.
Sedgwick, Alfred O., Watford, Herts.
Thomas, J. Howell, Starling Park, Carmarthen.
Ward, William, Penybort Hall, Oswestry.
Whitworth, James R., Weston Underwood, Newport Pagnell.

FINANCE.—Viscount Bridport presented the report, from which it appeared that the Secretary's receipts during the past month had been examined by the committee, and by Messrs. Quilter, Ball & Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on July 31 was £9441 18*s.* 7*d.*, the sum of £2000 remaining on deposit. Cheques to the amount of £9977 5*s.* 9*d.* were ordered to he drawn. The committee recommend that the Secretary be authorised to transfer the £2000 on deposit to the current account. The committee have to report that, chiefly owing to the great expense attending the trials of steam cultivating machinery and traction engines at Wolverhampton, the expenditure will exceed the receipts, although the attendance was as numerous as was expected, especially when the unfavourable state of the weather on some days is considered. This report having been adopted, a conversation arose in reference to the question of the expense incurred by the Society in connection with the country meetings. Colonel Wilson and Mr. Torr expressed their opinion that some reduction in the expenditure could be made, while Mr. Ransome maintained that the money spent was carefully and judiciously disbursed, and that retrenchment could only be effected at the cost of efficiency—a result which he hoped the Council would not sanction. Finally, Lord Vernon gave notice that at the November meeting of the Council he would draw attention to the financial results of the shows held at Oxford and Wolverhampton, and move the appointment of a committee to consider the expenditure at the annual shows, and the possibility of securing equal results at less cost.

IMPLEMENTS.—Colonel Challoner (chairman) reported that the implement prize sheet for the Cardiff meeting had been revised by the committee, the proposed prize for self-moving engines having been struck out, and that the committee recommended the amended prize-sheet for adoption by the Council.—This report was adopted after some additional amendments had been made to the proposed prize-sheet.

GENERAL, WOLVERHAMPTON.—Lord Kesteven reported that the accounts due in connection with this meeting had been duly certified and recommended for payment, with certain exceptions. It was also reported that an error had been made by the judges in Class 92 (Shropshire rams above one year old), the numbers given in by them not agreeing with those to which they had affixed the cards ; but as the error was merely clerical, they recommended that the cheque for the prize-money be drawn in favour of Mr. T. Mansell, who was awarded the 1st prize in that class.—This report was adopted.

GENERAL, CARDIFF.—Lord Kesteven reported the recommendation of the committee that the Cardiff meeting shall commence on Monday, July 15, and continue until the following Friday inclusive, and that the trials commence on Monday, July 8. The committee also recommended that Mr. Corbett, the agent of the Marquis of Bute, be invited to act as steward of forage at the Cardiff meeting, and, in the event of his being unable to act, to recommend some other competent person.—This report was adopted.

VETERINARY.—Mr. B. T. Brandreth Gibbs presented the following report :—An *ad interim* report from Professor Simonds was laid before the committee on the experiments he has made at the Royal Veterinary College in reference to feeding cattle on a patent cake. So far as the experiments had proceeded, up to July 31, no symptoms of injurious action had appeared. The same result had been obtained on feeding pigs up to the same date. Professor Simonds will forward a further report on the completion of the investigation. It was also reported that the Secretary had laid before the committee the correspondence between himself and the Veterinary Department of the Privy Council, together with a *précis* of the various acts and orders in Council relating to the importation of foreign animals. As this had been drawn up for the special use of the Society, the committee recommended that it and the correspondence relating thereto be published in the forthcoming number of the Journal.—This report was adopted.

SHOWYARD CONTRACTS.—Mr. Torr reported that the Committee had examined and certified certain accounts relating to showyard works, which they recommended should be paid, with the exception of one, which they recommended should be deferred for inquiry until November.—This report was adopted.

The death was reported of Sir Thomas Dyke Acland, Bart., a trustee of the Society.

Mr. Holland having moved the renewal of the education grant for 1872, it was seconded by Lord Vernon, and carried unanimously, after a few words from Mr. Wells, M.P., who stated that unless the number of candidates increased he could not continue to support the grant year after year. On this point Mr. Holland observed that the number of candidates could be increased if the standard of examination were lowered ; but the committee were of opinion that it would be better to raise the level of the candidates, if possible, than to lower the standard of the examinations.

The Secretary was authorised to sign and seal the agreement with the authorities at Cardiff.

A letter was read from Mr. B. T. Brandreth Gibbs in acknowledgment of his election as a Vice-President.

An application for the loan of the Society's plough-dynamometer was granted on the usual conditions.

It was announced that a silver cup, value £100, will be offered by Sir W. W. Wynn, President, for the best managed farm in South Wales and Monmouthshire which shall conform to the following conditions :—1. That it is not less than 100 acres in extent ; 2. That not less than one-fourth of the land (not sheep-walk) is under tillage ; 3. That it is held (*a*) by a tenant-farmer paying a *bonâ fide* rent for not less than three-fourths of the land in his occupation, or (*b*) by a landowner occupying his own farm, the total extent of whose property in agricultural land (exclusive of sheep-walk) does not exceed 200 acres, and whose sole business is farming. The Council then adjourned over the autumn recess until Wednesday, November 1, the usual holiday having been first granted to the Secretary and clerks.

BATH AND WEST OF ENGLAND ASSOCIATION.

AT the Council meeting, July 25, a letter was read from his Grace the Duke of Marlborough, accepting the office of President, but regretting his unavoidable absence on the present occasion.

The finance committee brought up their statement of accounts, from which it appeared that although the Guildford Show was not so successful in a financial point of view as several of its immediate predecessors, yet after the payment of all expenses a balance of £27 10*s.* remained in favour of the Society.

The committees, stewards, and officers for the ensuing year were appointed. Captain J. Tanner Davy, editor of the "Devon Herd Book," succeeds Mr. J. S. Turner as one of the Stewards of Stock ; Mr. R. Neville, of Butleigh Court, is appointed a Steward of Arrangements and of Yard Implements, as also a member of the Implement Regulations Committee. Mr. T. Duckham, of Baysham Court, is added to the list of Field Implement Stewards ; Mr. Troyte, of Huntsham Court (grandson of the late lamented Sir T. D. Acland, Bart.), is added to the Arts and Implements Regulations Committees ; the Right Hon. the Earl of Cork and Mr. Meade King to the Railway Arrangements Committee ; and Mr. Moore-Stevens to the Judges Election Committee. Captain Best, R.N., succeeds to the office of Steward of Arts, vacated by Mr. J. C. Ramsden, who, however, retains office as a member of the Finance Committee.

The stewards of stock having had their attention drawn to certain alleged irregularities committed at the Guildford meeting, reported to the Council that they acquitted Messrs. Duckering & Son of any intentional irregularity, and saw no reason to reverse or disturb the awards of the judges.

A memorial from the Right Hon. the Earl of Portsmouth and seven other breeders of pigs in favour of pigs of the small black breed being kept distinct from white ones in the Society's prize list, was referred to the Stock Prize Sheet Committee.

A letter from Mr. A. Benjafield of The Poplars, Stalbridge, recommending the offer of prizes for cheese, was ordered to be referred to the Dorchester local committee.

As a preparatory step to the meeting of the several committees the Council resolved that the amount offered in prizes for stock at Dorchester be limited to £1500, as against £1400 last year ; poultry, £200, as against £180 ; and horticulture, £130. The musical arrangements were left to the discretion of Mr. Jonathan Gray.

Eleven new members were elected.

Notices of Books.

The Book of the Farm : *including the Labours of the Farmer, Farm Steward, Ploughman, Shepherd, Hedger, Farm Labourer, Field-worker, and Cattleman.* By Henry Stephens, F.R.S.E., &c., &c. Third Edition. W. Blackwood & Sons.

[First Notice.]

This is the first of a series of somewhat exhaustive works on agriculture, which were published 20 years ago or more, to re-appear in the new and remodelled state in which their common subject now stands after a quarter of a century's growth. Mr. Stephens' work more than any of its compeers justified the special title which he had adopted. It gave a detailed account of the labours of every one employed upon the farm, from the farmer himself to the humblest of his workmen.

These characteristic labours remain very much what they were, and there is necessarily much in 1871 which offers the same material for the work of description and discussion as it presented 20 or 30 years ago. The "Book," therefore, though rewritten altogether and recast, is a new edition, not an altogether new book. There are, however, some subjects which have been re-modelled and recent—the farming of arable land since Mr. Stephens began to write. Steam cultivation and artificial manuring, and horse-drawn harvesting machines has made the work of the ploughman and field-worker very different from what it was. The use of liquid manure from town drainage is likely to be another source of agricultural growth and progress, which will produce a great change over considerable districts in the next quarter of a century. Some of these subjects are fully discussed in the new volume by the author of the "Book of the Farm ;" but we think that the reader will greatly be disappointed that his attention is not more fully directed to them. In this, however, perhaps he is unreasonable. It is not Mr. Stephens' plan to "discuss" so much as simply to describe. He relates with carefulness and precision all that is included within the labour of the farm, and the agricultural student will find in his pages the whole detail of farm work, with not more of explanation and justification than just suffices for his intelligent guidance.

On one or two points we think that this plan has been prosecuted with greater severity than was advisable. One would like to hear more of the advantages of steam-culture and of the possibilities of fertility due to sewage irrigation, and of the practice of the most liberal farmers in respect of manuring, than these pages give ; nevertheless they are full of most useful and trustworthy matter, and of the style in which they are illustrated we give specimens on the opposite page, the publisher having kindly lent us two of his blocks illustrative (fig. 230) of the former and (fig. 231) the present mode of reaping corn.

Farm Memoranda.

DELARRAN LODGE, NEAR GALLOWAY. — The agricultural prospects of this district are at the present moment encouraging, and should the weather be favourable during the ensuing month, a good harvest may be fairly anticipated. In consequence, however, of the severe spring, both cereal and green crops are not so forward as usual, and the fields will not be cleared of the grain crops until ten days or a fortnight later than last year.

The yield of Oats will probably be fully up to the average, and although early-sown Turnips suffered severely from the ravages of the fly, yet those which were put in later have entirely escaped, and are now looking vigorous, and only require some warm weather in order to yield a good return to the farmer. As compared with last year the Rye-grass hay is very deficient, both as regards weight per acre and quality. Last autumn large quantities of hay were exported to England, and high as was the price during last year in London and the southern counties of England, it was probably to a considerable degree kept down by the importations from Scotland. But unless the hay crop is much better in other districts of this country than it is here, there will be no hay to export during the approaching winter at remunerative prices. *R. C. C. G., July* 31.

KENT (*East*).—My opinion of the crops in this district is easily given, for I believe on the whole things were never better, and should the present fine weather continue there is a prospect of an abundant crop. Wheat is very good, and at present stands well; it will not be fit to cut before the middle of August. Barley is as good as can be on all well farmed land, and most of it will be fit to cut before the Wheat. Oats are not generally as good as Wheat and Barley. Beans are promising, and Peas of all sorts exceedingly good. Potatos look well at present, but I hear of some disease among the early sorts. The hay crop is heavy, and is now being secured under favourable circumstances; but our Sainfoin was generally injured by the rain. Mangel, Swedes, and Turnips, plant well and look promising. All feed is plentiful; cattle and sheep are doing well. *W. M.*

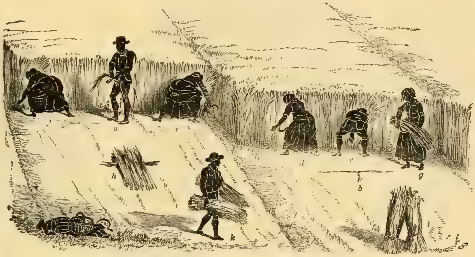


FIG. 230.—REAPERS IN A BANDWIN.

f, a, e, First ridge in bandwin; *d, c, g,* Second ridge in bandwin; *a,* Making a band; *b,* Band laid down; *c,* Man reaping; *d,* Leading reaper on second ridge; *e,* Reaper clearing the furrow of corn, leaning on the right leg; *f,* Leading reaper on first ridge, leaning on the left leg; *g,* Reaper going to lay sheaf on band; *h,* Sheaf ready for binding; *i,* First two sheaves of stook; *k,* Bandster and stooker carrying sheaves to stook; *l,* Provisions.

NORTH BEDFORDSHIRE: *July* 28.—When any attempt is made to form an opinion as to the probable produce of the corn crops (Wheat more especially), two things quite distinct must be taken into consideration, viz., the appearance of the crops and the character of the season, ; and the latter is, at this distance from harvest, a far safer criterion than the former. There must be a dry and hot season for a good yield of Wheat. This is an infallible rule. In this neighbourhood, last year, comparatively light crops of Wheat produced in some cases from 5 to 6 qr. per acre. The previous year heavy crops produced in some instances not more than from 3 to 4 qr. The spring and summer of 1869 were very wet until about midsummer, brilliant weather then setin; and thought his saved the quality of the Wheat, the yield was bad. This year the spring and summer have been wet and cold to the present time, with the one redeeming feature of a dry May, and about 10 days of June. It will be a matter of some interest to note what effect the dry May has upon the Wheat crop this year, as with this exception the season would lead us to expect a very poor produce in proportion to bulk and appearance.

A small portion of the Wheat is thin upon the ground, otherwise the crop is good, but somewhat broken down by the continuance of wet and windy weather.

Barley promises well, and will probably be the best crop of the season, being less affected by wet and cold weather than Wheat.

Beans and Peas are a bulky and rather rough crop, but will be good with the exception of the spring Beans, which are much blighted.

Green crops of all kinds, as well as grass and hay, are very abundant. The Mangels do not promise to be very large.

Much now depends upon the weather; the barometer is still low, and the continued sunshine we are so much in need of seems as far off as ever. *Henry A. Bottle, Patenhall.*

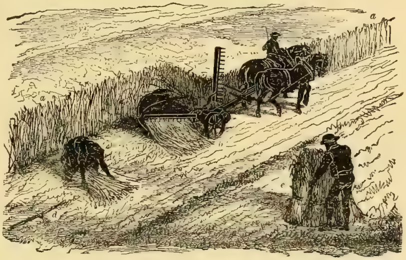


FIG. 231.—BRIGHAM & BICKERTON'S SHEAF-DELIVERY REAPER AT WORK.

a, a, Standing corn; *b,* Reaper at work; *c,* Sheaf of corn as delivered by the reaper being taken up by a field-worker; *d,* Band for receiving the cut sheaf; *e,* Bandster making a stook.

TIPTREE HALL, NEAR KELVEDON, ESSEX.—Wheat very good on drained and well farmed lands, but thin of plant on undrained and weedy farms. Barley, generally a very excellent crop; a good deal laid where too thickly sown on high farmed land. Young Clover a full and vigorous plant, quite a contrast with last year's. Oats, very much improved lately, and corny, but not much straw. Beans, a more than average crop, and promising abundantly. Peas, much above average—very heavy crop. Winter Tares very good. Trifolium, a good crop. Red Clover, patchy; some good pieces where there was a full plant, promises a good second growth. Pasture, much better than was expected a month ago: a fair crop, very good in places. Much Trifolium, Clover, and grass hay has been damaged by frequent heavy rains. The getting has been costly, anxious, and tedious. Half mine (45 acres) was well gotten, and the rest not much injured, but we had frequently to uncock and re-cock it. Potatos and all garden vegetables a very full crop, of good quality. No disease in this immediate neighbourhood at present, but I have heard some complaints from a few miles distant. Field Cabbage, Mangel, Kohl Rabi, and Turnips very promising. On the whole, I consider that there will be more food for man and beast this year than last, taking into account meat, milk, butter, cheese, and vegetables. The heavy rains have in this neighbourhood done much more good than harm on well-farmed arable lands. Harvest will probably commence here about August 15, or three weeks later than last year—perhaps earlier, should we have hot and dry weather. *J. J. Mechi.*

Obituary.

WE have to record the death of one of the oldest and most respected gentlemen connected with the agricultural interest of the county of Cornwall. Mr. HENRY TRETHEWY, of Grampound, has long been one of the pioneers of agriculture in this county—almost foremost in introducing approved implements, the best breeds of cattle and sheep, or in effecting improvements in the land. His superior skill and judgment in all matters connected with the land and with agriculture were universally acknowledged; and perhaps more than any other man of his time was he called in to arbitrate upon such questions. Mr. Trethewy has been more especially known in the county as the steward of the Trewithen property, having first become connected therewith in the year 1810. This property is a very extensive one, consisting of much fertile land, as well as a great deal of waste land, mining property, and clay works, extending over the central and western districts of the county, more especially in Probus, Helston, the Lizard, Penzance, St. Erth, and Roseland districts, with extensive properties in the parish of St. Stephen, including clay works and the harbour of Pentewan.. Mr. H. T. Hawkins, the present owner of the property, and his father, the late Mr. John Heywood Hawkins, continued to repose the same confidence in Mr. Trethewy as had been shown by the late Sir C. Hawkins.

As a proof of the esteem in which Mr. Trethewy was held, we may mention that a few years ago his friends presented him, in the Council Chamber at Truro, with a handsome portrait of himself, which had been executed by Mr. J. P. Knight, R.A., accompanied with a service of plate, consisting of six massive silver salvers, and a tea and coffee service, also of solid silver, the whole weighing 350 oz.; the subscriptions, which were contributed by persons of every class, amounted to £400. At the ceremony of the presentation in September, 1865, the chairman, Mr. P. P. Smith, bore testimony to the fact that "of all the eminent agriculturists in Cornwall, and there were many of them, he (Mr. Trethewy) had by universal consent been considered to be the greatest living benefactor to the interests of agriculture in his native county; and his reputation was not confined to the county of Cornwall, for it extended to every portion of the kingdom in which agriculture was cultivated as a science."

Mr. Trethewy may be looked upon as almost the father or originator of the Royal Cornwall Agricultural Society, and he has always been one of its most active supporters; and up to a very recent date he was to be seen at the annual exhibitions riding about the grounds as the steward of the show field, and conducting that office with the greatest tact and discretion. His death took place at his residence at Grampound on Tuesday of last week, at the advanced age of 85 years.

Two of Mr. Trethewy's sons have attained high positions as managers of landed property, owing largely, no doubt, to the experience their father had been able to impart to them. The eldest son, Mr. Henry Trethewy, has had for many years past the management of some of the most important properties in the country, belonging to the Countess Cowper, the Earl Cowper, and other gentlemen; while the youngest son, Mr. Alfred Trethewy, is now managing a large and important property in North Wales. *Abridged from the "West Briton."*

The Week's Work.

AUGUST 5.—Clear away arrears of work before corn harvest commences.

Hedges.—Finish the summer cutting. The ground under the hedge should be kept clean by hoeing with the small hedge spade, pulling out every weed with the hand. The prize farm at Sherlowe, Shropshire, this year, doubtless owes its success in some measure to the remarkable neatness and cleanness of its hedges, obtained in this way. This is the time for clearing out and paring all watercourses, field ponds, and ditches.

Repairing and Making New Roads should be done before the corn harvest commences.

Carting stones and bricks for building purposes, and draining-tiles for draining after harvest, may supply work to the teams, and thus lessen the pressure upon them after harvest. At this season such carting does comparatively no harm to farm roads and the land; whereas in the winter time it cuts up both, the teams at the same time hauling barely half the loads they now do.

Cottages and Farm Buildings should be put in repair. Tillage implements require painting, reaping-machines and harvest carts to be put in order, thatch provided, and the stackyard got ready for the stacks. The steam-engine, threshing, dressing and weighing machines, require overhauling, so as to have them in proper working order.

Live Stock soiled at the homestead, or in hovels and yards in the field, require to be carefully attended to, so that all may have pure air, clean water, proper temperature, and an equal share of suitable foods. When doors and windows are left open, or openings purposely made to effect ventilation, the excessive heat of the sun gives rise to chilling currents, very injurious to live stock—more especially the teams when they return from work in a state of profuse perspiration. All through currents and down draughts should be obviated.

Weaned Lambs should be put upon the best pasture—the ewes upon the worst, and let the distance between them be as far as possible. Ewes that are good nurses, and in full milk, may require milking for a short time, but bad milkers run dry without experiencing harm.

Scab, Lice and Ticks in Sheep obviously indicate a filthy state of the skin and wool which ought not to exist, consequently cleanliness is the proper rule for getting rid of such parasites.

The Fly, as the temperature increases, becomes more and more annoying to sheep. They should be examined every day, especially those that are kept in inclosures in a woodland country. When fly-struck, a mercury stone rubbed into the place will destroy maggots before much harm is done.

Corn Harvest is generally in progress in early August in our southern counties, though this year later than usual.

Chalk, Marl, and Lime Composts, when required for immediate application after harvest, should now be got in readiness. In the olden time, when naked fallowing was common, they were frequently applied to the land prior to the seed-furrow. They may also be carted on to hay and Pea stubbles, and also burnt-up pastures. When the clay from pits contains no lime—chalk, shell, or gravelly marl, or lime from the kiln may be mixed with it in a compost heap, and afterwards be applied to the land should clay and lime both be required.

Winter Peas and Beans harvesting, prosecute as the weather and state of the crops permit. Carry as soon as ready, and never allow the stacking to fall behind. Thatch immediately.

Winter Rye comes in early for the reaping-machine and stackyard. The crop grows more freely on poor sandy and porous soils than any of the other cereals, and the farmers of the Continent study their interest in this respect better than we do; although it grows longer in the straw than Wheat, it is more wiry, and stands better up to the weather and the reaping-machine. The sheaves also stand well in the stook, and the straw makes the best of thatch and litter.

Notices to Correspondents.

Ditch Water: *Young Hand.* Your liquid manure will probably disappoint you. You can get a good liquid manure cart of Mr. Isaac, implement maker, Cheltenham.

Markets.

METROPOLITAN CATTLE MARKET.

Monday, July 31.

The supply of English Beasts is very short, but of foreign unusually large. Trade is hardly so good for all kinds, yet there is not much reduction in price of choicest English; it is difficult to effect a clearance of foreign. There are a few more Sheep than last week; there is, however, a fair demand, and prices are not much lower. Choice Lambs are as dear as lately, but middling ones are lower. Calves are lower. Our foreign supply consists of 2700 Beasts, 12,350 Sheep, 490 Calves, and 40 Pigs; from Scotland there are 13 Beasts; from Ireland, 120; from Norfolk and Suffolk, 180; and 800 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 10to6 2	Best Long-wools	.. to ..
Best Shorthorns ..	5 6—5 10	Do. Shorn ..	6 2—6 6
2d quality Beasts	3 8—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do. Shorn ..	5 4—5 8
		Lambs	6 8—7 10
		Calves	3 8—5 8
Do. Shorn ..	6 6—6 10	Pigs	3 4—4 8

Beasts, 3905; Sheep and Lambs, 22,890; Calves, 507; Pigs, 215.

Thursday, Aug. 3.

Although the number of Beasts is much smaller than on Thursday last, the demand has so much decreased that the prices of that day cannot at all be realised. The average quality of the supply is very middling, and only a few reach our top quotation. The number of Sheep is about the same as last week; trade is very much worse, and a clearance cannot be effected. Trade is not brisk for Lambs, but prices are not much altered. Calves are lower. Our foreign supply consists of 370 Beasts, 6700 Sheep, 656 Calves, and 15 Pigs.

	s. d. s. d.		s. d. s. d
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	.. — ..
Best Shorthorns ..	5 4—5 8	Do. Shorn ..	6 0—6 4
2d quality Beasts	3 8—4 8	Ewes & 2d quality	.. — ..
Best Downs and		Do Shorn ..	5 2—5 6
Half-breds ..	.. — ..	Lambs	6 8—7 8
		Calves	3 6—5 6
Do. Shorn ..	6 4—6 8	Pigs	3 4—4 8

Beasts, 847; Sheep and Lambs, 15,590; Calves, 808; Pigs, 60.

METROPOLITAN MEAT MARKET, Aug. 3.

Best Fresh Butter	16*s.* per dozen lb.
Second do. do.	14*s.* „

Small Pork, 4*s.* 4*d.* to 4*s.* 8*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 2*d.* per 8 lb.

ENGLISH WOOL.

The upward tendency still continues, and, according to all appearance, is likely to do so. Prices are now 4*d.* to 5*d.* and more over this time last year.

HAY.—Per Load of 36 Trusses.

Smithfield, Thursday, Aug. 3.

Prime Meadow Hay,	140*s.* to	155*s.*	Clover, old ..	..170*s.*	175*s.*
Inferior do. ..	..100	108	Inferior do. ..	..120	126
New Hay ..	.. 95	112	Prime new do.	..100	115
Inferior do. ..	.. 50	70	Inferior do. ..	.. 60	75
Straw	.. 50	56			

Cumberland Market, Thursday, Aug. 3.

Sup. Meadow Hay	160*s.* to	170*s.*	Inferior Clover	..147*s.* to	155*s.*
Inferior do. ..	..120	147	Prime 2d cut do. ..	—	—
New do.	.. 84	120	New do. ..	.. 90	130
Inferior do. ..	.. —	—	Straw	.. 52	58
Superior Clover	..168	175			

Joshua Baker.

MARK LANE.

Monday, July 31.

The very short supply of English Wheat at this morning's market was sold at an advance of 1*s.* per qr. upon the prices of this day se'nnight. The attendance was good, and for Russian and American there was a good demand at the same improvement. Barley was rather more inquired for. Beans, and Peas were unchanged in value. The Oat trade was firm, at last week's rates. In the value of Flour there was no alteration.

Price per imperial Quarter.	s. s.		s. s.
Wheat, Essex, Kent, Suffolk .. White	47—60	Red......	55—60
— fine selected runs ....do.	57—63	Red......	56—62
— Talavera	60—66		
— Norfolk	—	Red......	—
— Foreign	50—68		
Barley, grind. & dist., 30s to 34s .. Chev.	43—46	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
Oats, Essex and Suffolk	26—28		
— Scotch and Lincolnshire .. Potato	28—30	Feed	—
— Irish ....Potato	27—29	Feed	25—28
— Foreign ......Poland and Brew	23—26	Feed	20—23
Rye	34—36	Foreign ..	33—36
Rye-meal, Foreign...............			
Beans, Mazagan.... 37*s.* to 47*s.* .. Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.* .. Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian .	33—34
Peas, White, Essex, and Kent .. Boilers	38—40	Suffolk ..	40—42
— Maple, 40*s.* to 44*s.* ....Grey	36—40	Foreign ..	36—40
Maize	—	Foreign ..	33—36
Flour, best marks, delivered .. per sack	42—50		
— 2d ditto ....ditto	36—42	Country ..	36—42
— Foreign ....per barrel	25—29	Per sack ..	38—60

Wednesday, Aug. 2.

Influenced by the more favourable weather, the grain trade to-day here ruled quiet, and difficulty was experienced in realising Monday's currencies. The supplies of English Wheat were short, but the arrivals from abroad were on a liberal scale. In all qualities sales were effected quietly, at about previous prices. Barley, Beans, and Peas were in limited request on former terms. The show of Oats on the stands was good. The demand was inactive, and in some instances favoured buyers. Flour was dull, and prices had a downward tendency.

Arrivals of Grain, &c., into London by Water Carriage.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch ..	320	—	—	—
Irish ..	—	—	—	—
Foreign ..	10,580	—	21,440	1300 6130 brls.
	10,900	—	21,440	

Liverpool, Aug. 1.—There was a fair retail demand from millers for Wheat, at the improvement of Friday's 1*d.* per cental over the rates of this day week. Flour is taken slowly at previous prices. Beans were in good demand, at some improvement on Friday's rates. Oats and Oatmeal are quiet and unchanged. Indian Corn met with few buyers, and prices are unaltered.

Averages.

	Wheat.	Barley.	Oats.
June 24	59*s* 11*d*	36*s* 10*d*	27*s* 8*d*
July 1	59 1	36 10	27 5
— 8	59 0	34 10	27 1
— 15	58 6	34 7	27 10
— 22	58 10	35 11	27 2
— 29	58 0	34 3	28 3
Average ..	58 8	35 7	27 6

SEED MARKET.

During the past week we have had an improvement in the weather, which may now be regarded as favourable to the maturity of the growing seeds. The stock of red and white Clover remaining on hand is small; values have consequently advanced some 2*s.* to 3*s.* per cwt. Of new Trefoil seed a few samples have been shown in our market, but the quality was indifferent; fine old seed is 3*s.* to 4*s.* per cwt. dearer. Trifolium is in abundant supply, with great variations in quality: the lateness of the harvest delays the English demand, prices have in consequence given way 4*s.* to 5*s.* per cwt. The new Rape which has come to hand is very fine; it realises fully £1 per qr. less than the old was sold at. Canary must be quoted 3*s.* to 4*s.* per qr. higher. In other articles there is no alteration.

John Shaw & Sons, Seed Merchants,
16, Water Lane, London, E.C.

HOPS.

Borough Market, Aug. 2.

Messrs. Pattenden & Smith report the market in a less active state, although prices rule the same. It is thought the favourable change in the weather may improve the plantations to a slight extent if it should continue.

COALS.—Aug. 2.

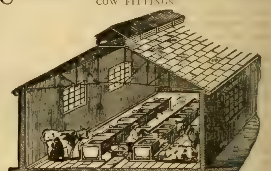
West Hartley, 18*s.* 3*d.*; Walls End Harton, 16*s.* 3*d.*; Walls End Braddyll's Hetton, 17*s.* 3*d.*; Walls End Hetton, 18*s.* 6*d.*; Walls End South Hetton, 18*s.* 3*d.*; Walls End Tees, 18*s.* 3*d.*—Ships at market, 19; sold, 14; unsold, 5; at sea, 15.

Cottam's Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

Illustrated Price Lists on application to COTTAM and CO., Iron Works, 2, Winsley Street, Oxford Street, London, W.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



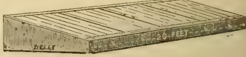
Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

Prospectuses free of COTTAM and CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

W. S. BOULTON and CO., Norwich, Horticultural Builders and Hot-water Apparatus Manufacturers.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

Prices.—Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

8 feet long by 6 feet wide .. £2 15 | 16 feet long by 6 feet wide .. £5 0
12 feet long by 6 feet wide .. £3 17 | 24 feet long by 6 feet wide .. £7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10½ feet long by 6 feet wide .. £3 0 | 24½ feet long by 6 feet wide .. £7 0
17½ feet long by 6 feet wide .. £5 0 | 31½ feet long by 6 feet wide .. £9 0

Other sizes at prices in proportion.

PLANT PRESERVERS.

Illustrated Catalogues free on application.
Rose Lane Works, Norwich.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100*s.*; Petersburg, 60*s* and 80*s*; superior close Mat, 45*s.*, 50*s.*, and 55*s*; packing Mats, 20*s*, 30*s.*, and 35*s.* per 100; and every other description of Mats at equally low prices, at

J. BLACKBURN and SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from 2*d.* to 5*d.* per yard, advancing ¼*d.*
54-inch Hessian and Scrim, 3*d.*, 3½*d.*, 4*d.*, 4½*d.* and 5½*d.*
72 „ „ „ 4½*d.*, 5½*d.*, 6*d.*, 6½*d.*, and upwards

J. BLACKBURN and SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at 1*d.* per square yard, or in quantities of 250, 500, or 1000 yards, carriage free.

EDGINGTON'S RICK CLOTHS for 66 years have maintained their celebrity as the best.

EDGINGTON'S MARQUEES for Hire, are the most elegant and capacious.

EDGINGTON'S CRICKET and GARDEN TENTS are the prettiest.

SHAW'S and WALLER'S NETTINGS, samples of material free on application. Be particular—FREDERICK EDGINGTON and CO., 52, Old Kent Road, London, S.E.

A quantity of good Second-hand Government TENTS from Abyssinia, for Sale, cheap. A Liberal Discount to the Trade.

International Exhibition, 1862. Class XIX. Honourable Mention.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST FROST.
WOOL NETTING, 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."

Two yards wide .. .. 1*s.* 9*d.* per yard.
Three yards wide .. .. 2*s.* 8*d.* per yard.
Four yards wide .. .. 3*s.* 6*d.* per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard. HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.

NOTICE.—Removed from 7, Great Trinity Lane.

No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE and SON.

No. 1.—54 inches wide .. .. at 8½*d.* per yard run.
No. 2.—54 inches wide .. .. at 7*d.* per yard run.
No. 3.—54 inches wide .. .. at 5½*d.* per yard run.
No. 4.—54 inches wide .. .. at 4*d.* per yard run.
No. 5.—54 inches wide .. .. at 5½*d.* per yard run.

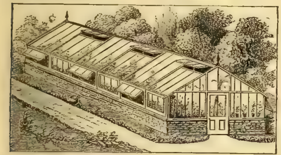
In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included :—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

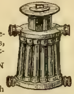
3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in. thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

Estimates given for Conservatories or Greenhouses to any Design.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.



GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

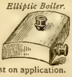
CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.

Portable Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

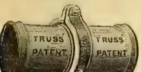
Elliptic Boiler.



Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
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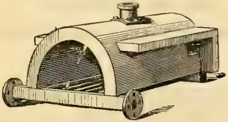

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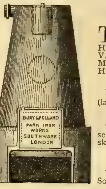

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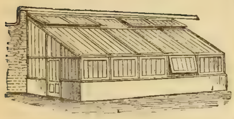

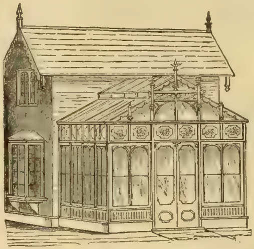

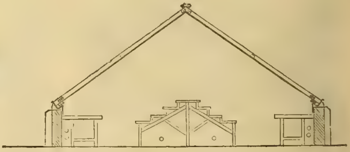

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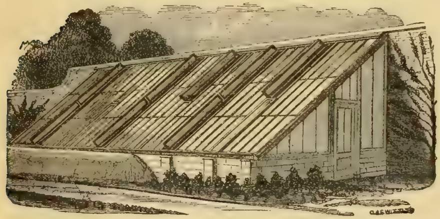

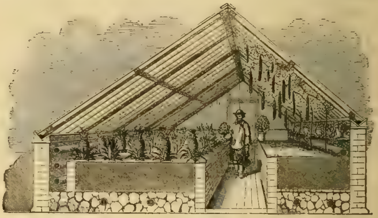

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 32.—1871.] SATURDAY, AUGUST 12. Registered at the General Post Office as a Newspaper. Price 5d. Post Free, 5½d.

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NOTICE.—FLOWER SHOW, FRUIT and FLORAL COMMITTEE MEETING, on WEDNESDAY NEXT, August 16, at 11 o'Clock. GENERAL MEETING at 3. Band of the Royal Horse Guards from 4. Admission 2s. 6d.

Worcestershire Agricultural Society.

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For List of Prizes and Rules, &c., apply to Mr. J. S. HAYWOOD, 26, Broad Street, Worcester, Hon. Secretary to Horticultural Show, or to ALBERT BUCK, Secretary, Worcester.

READING HORTICULTURAL SOCIETY.—The AUTUMN SHOW will be held on THURSDAY, August 24 (by permission of the Mayor), in the Abbey Ruins, Reading. A Band will attend, as usual. The Show will be open to the holders of Subscribers' Tickets at 1 o'clock, and to the Public at 3 o'clock, on payment of 1s.

ENTRIES must be made to the Hon. Secretary on or before THURSDAY, August 17.

Tickets and Schedules may be obtained of CHARLES COLLINS, Hon. Sec., 34, Chain Street, Reading.

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For the best 12 Verbenas, 5 trusses in a bunch—1st, £1; 2d, 10s.

The Judges may withhold any prize if the productions exhibited be not considered worthy. Roses may be shown singly, or with such buds and leaves as are on the same stalk. Intending Exhibitors must give notice to the Secretary on or before Saturday, August 26. The Society will, if requested, convey the productions from and to the railways.
E. J. HARTLEY, Secretary.

BISHOP AUCKLAND FLOWER SHOW.—FRIDAY, September 1, 1871. SCHEDULES of PRIZES REVISED. ENTRIES can be made AT ONCE. Application for Trucks to be made to the Secretary,
Mr. J. C. HARDY,
Bishop Auckland.

WELCHPOOL HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will take place on THURSDAY, September 7, 1871, when SPECIAL PRIZES, open to all England, will be offered. ENTRIES to CLOSE on SEPTEMBER 2. LIST of PRIZES and ENTRY FORMS may be obtained on sending stamp to
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ROBERT PARKER has great pleasure in offering this beautiful and distinct variety; habit vigorous and compact, with fine foliage; flowers deep orange-salmon, trusses very large, borne in the greatest profusion—young plants in 4-inch pots yielding two and three large trusses of flowers: very desirable for decorative and exhibition purposes. First-class Certificates have been awarded by Royal Horticultural and Royal Botanic Societies. Strong, healthy plants, 21s., 42s., and 63s. each.
Exotic Nursery, Tooting, Surrey, S.W.

Cinerarias, from one of the very finest Strains of TRICOLORS in ENGLAND.

JOHN STANDISH AND CO. are now able to offer fine strong healthy plants of the above, to flower early in the winter, at 1s. each, 9s. per dozen, £3 per 100; also seed of the same at 2s. 6d. and 5s. per packet.
Royal Nurseries, Ascot, Berks.

THOMSON'S SUPERB HERBACEOUS CALCEOLARIA.—Seed of the above, as grown by the Subscriber for many years at Dalkeith Park, is now being sent out in sealed packets at 2s. 6d. and 1s. 6d. The Trade supplied on liberal terms. Post Office orders payable on Galashiels.
WM. THOMSON, Tweed Vineyard, Galashiels.

Hunt's Superb Sweet William.

JAMES HOLDER can supply SEED of the above, in 24 choice varieties, at 2s. 6d. and 5s. per packet; also PLANTS, 24 sorts, distinct, for 5s., 50 plants for 8s., or 100 for 15s., basket included. Crown Nursery, Reading.

White Dogstooth Violets.

W. HOPWOOD AND SON can supply strong roots of above, in quantity; also a limited quantity of very CHOICE NEW PRIMULA SEED, by the ¼ oz. or ½ oz. Prices on application.
Jersey Gardens, Cheltenham.

New Catalogue.

JOHN H. LEY, Exotic Nursery, Croydon, S.E., will be happy to forward, post free on application, his NEW CATALOGUE (price very low) of PALMS, FERNS, STOVE PLANTS, &c.

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.
Floral Nurseries, Hailsham, Sussex.

Roses.

H. LANE AND SON'S magnificent COLLECTION, upwards of 100,000, is NOW in FULL BLOOM.

Patrons and Friends are respectfully invited to pay an early visit.

The Nurseries, Great Berkhamstead, Herts, 28 miles distant from London (Euston Station).

NEW H. P. ROSE, LOUIS VAN HOUTTE (LACHARME), not to be confounded with H. P. Rose, Louis Van Houtte (Granger). Bushy, own root, strong, 2s. 6d. In autumn.

N.B.—L. V. H.'s BULB CATALOGUE, No. 139 O, is ready for delivery, containing also PALMS, CALADIUMS, &c.

No. 140 P, including the PERENNIALS, TREES and SHRUBS, ROSES AZALEAS, CAMELLIAS, RHODODENDRONS, FRUIT TREES, &c., is in preparation.
LOUIS VAN HOUTTE, Royal Nursery, Ghent, Belgium.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Strawberries.

CHARLES TURNER'S descriptive CATALOGUE of the above is now ready, which contains several new kinds, as well as the finest established varieties.

C. TURNER'S Plants are now ready. Early planting is recommended to insure a good crop of fruit the first season.
The Royal Nurseries, Slough.

Strawberries.

WILLIAM GLOEDE (having succeeded to the well-known Business of his Father—resigned to him), begs to announce that he is ready to execute orders for the above plants, both English and Continental varieties, true to name, and in good condition. The splendid variety JAMES VEITCH, and other fine Novelties, in large quantities. Prices on application. Price LISTS free by post on application. All communications to be addressed,
WILLIAM GLOEDE, Nurseryman, Rue de l'Hôtel Dieu, Beauvais, Oise.

New Strawberry, Royalty.

AWARDED a FIRST-CLASS CERTIFICATE by the FRUIT COMMITTEE of the ROYAL HORTICULTURAL SOCIETY, JUNE 29, 1870

J. TROTMAN has much pleasure in offering the above STRAWBERRY to the Public, in the fullest confidence that its exceeding richness of flavour cannot be surpassed, while in constitution, habit, and growth, it is most hardy, vigorous, and free. Orders now received will shortly be executed. Price 21s. per 100; 4s. per dozen. Spring Grove Nursery, Isleworth, W.

New Strawberry, The Amateur.

SAMUEL BRADLEY, the raiser of OSCAR, SIR J. PAXTON and DR. HOGG STRAWBERRIES, begs respectfully to intimate that he is now booking orders for Plants of his fine New Seedling, THE AMATEUR, to be sent out this autumn.

It was awarded a First-class Certificate of Merit on June 29, 1870, at a Meeting of the Nottingham Horticultural Society, and also a First-class Certificate at a Meeting of the Fruit Committee of the Royal Horticultural Society, July 19, 1871, at South Kensington.

Descriptive CIRCULARS, with prices, post free to all applicants.
SAMUEL BRADLEY, Littledale, Halam, near Southwell, Notts.

WANTED, stout CUTTINGS of MRS. POLLOCK and CRYSTAL PALACE GEM GERANIUMS.—State price per 100, for cash, to
FRANCIS R. KINGHORN, Sheen Nursery, Richmond, Surrey.

WANTED, SPECIMEN PLANTS of the following, to complete a Collection :—

AGAVE
ALOE
CEREUS
ECHINOCACTUS
ECHINOPSIS
EUPHORBIA
GASTERIA
OPUNTIA
PHYLLOCACTUS, and
MAMMILLARIA generally.

Apply by letter to J. CROUCHER, Gr. to Mr. J. T. Peacock, Sudbury House, Hammersmith, W.

Amateur growers and lovers of this neglected, interesting, but beautiful tribe, may obtain information of their culture, &c., and an order to view the collection of 6000 Plants, by letter to J. CROUCHER, Gr., late of Kew Gardens, as above.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen by Special Appointment to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

CABBAGE PLANTS.—Enfield Market, Battersea, and Drumhead Cabbage; ditto SAVOYS, at 3s. per 1000. Packing included.
W. VIRGO AND SON, Wonersh Nursery, near Guildford.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

Seeds for 1871.

WM. CUTBUSH AND SON'S Descriptive Priced CATALOGUE contains every requisite for the Garden. Post free on application.
Highgate Nurseries, London, N.

The Royal Norfolk Nurseries, Norwich.

EWING AND CO. respectfully invite inspection of their extensive NURSERY STOCK. Fifty acres of FRUIT TREES, ROSES, CONIFERS, ORNAMENTAL TREES, &c.

N.B. The ROSES, including the new varieties of 1870, are NOW in FULL BLOOM, and would well repay a visit.

B. S. WILLIAMS' SPRING CATALOGUE of NEW and RARE PLANTS is now ready, in which will be found a selection from all the best Plants of recent introduction; and in addition, descriptions of some very fine Plants, which B. S. W. now offers for the first time. Post free to all applicants.
Victoria and Paradise Nurseries, Upper Holloway, N.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALADIUM; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1s. 6d., 2s. 6d., 3s. 6d., and 5s. per packet, post free.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

Climbing Ferns.

LYGODIUM SCANDENS, the most beautiful of all Climbers. Can be supplied by the dozen at 6s. to 9s.; 40s. to 60s. per 100, all nice plants. Package gratis for cash.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

To the Trade.

STOVE PLANTS, in 50 or more choice and new varieties, at 9s. to 12s. per dozen; 50s. to 75s. per 100. Package gratis for cash. Names on application for CATALOGUE.
JOHN H. LEY, Exotic Nursery, Croydon, S.E.

ASPLENIUM GERMANICUM.—Very nice plants of this scarce Fern, in 60-pots, for 6s. per dozen.
JOHN H. LEY, Lansdowne Road, Croydon, S.E.

AQUILEGIA GLANDULOSA, the true variety. Seed, 6d. and 1s. per packet.

Seeds of choicest FLORIST FLOWERS. A LIST on application.
STEPHEN BROWN, Seedsman and Florist, Weston-super-Mare.

SOME CHOICE ALPINE and other HERBACEOUS PLANTS, for EXCHANGE, or SALE, carriage paid.
D. D., Post Office, Bitterne, near Southampton.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s. 6d. per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

To the Wholesale Seed Trade.

J. SCOTT, The Seed Stores, Yeovil, has just harvested about 1½ oz. of his ex. ex. choice CALCEOLARIA SEED; an offer for the whole or part is solicited.

All letters about Seeds to be addressed to J. SCOTT, The Seed Stores, Yeovil, and to no one else; and all communications relating to Fruit Trees and Nursery Stock to be addressed to the Nurseries, Merriott, Somerset.

The STRAWBERRY CATALOGUE, eight pages, is now ready, and contains a description of all the best.

Orchids.

JAMES BROOKE AND CO. beg to offer the following choice collection for 25 guineas:—Dendrobium Devonianum, chrysotis, Falconeri, heterocarpum, transparens, Cambridgeanum; Cattleya Warneri, Mossiæ, Trianæ, citrina, amethystina, Leopoldi; Odontoglossum Alexandræ (Bluntii), Pescatorei, citrosmum, grande, Insleayi, Schleipperianum, Bictonense; Oncidium Lanceanum, O. papilio, O. Krameri; Lælia purpurata, Vanda cœrulea, Pleione Wallichii, Cypripedium hirsutissimum, Cymbidium Mastersii, Phaius albus, Trichopilia suavis, Barkeria spectabilis, B. Skinneri, Calanthe vestita, C. Veitchii, Cœlogyne cristata, Aerides Warneri.

CATALOGUES, with full Descriptions, Remarks on Culture, prices, &c., on application.

18, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

Seed Warehouse: 44, English St., & Blackfriars St.

NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE.

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs. LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.

LITTLE AND BALLANTYNE
WM. BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

ORCHIDS.—Visitors to Manchester during the season would do well to VISIT our NURSERIES at FAIRFIELD, and examine for themselves our plan of GROWING ORCHIDS in PINE STOVES; also the New House we have put up, embodying this plan of supplying moisture by continual precipitation, without any disadvantage as regards neatness in the appearance of the house. Descriptive CATALOGUES on application.

JAMES BROOKE AND CO., 16, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

CARTERS'

NEW ONION SEED
for Autumn Sowing,

Grown from Prize Bulbs, as exhibited expressly for J CARTER & Co

NEW NEAPOLITAN "MARZAGOLE" ONION.—The earliest Onion in cultivation. If sown in the autumn, this Onion will come into use in the month of March Price 1s and 2s 6d per pkt

NEW GIANT ROCCA OF NAPLES.—Special Certificate Royal Horticultural Society, December 21, 1869. Weight of bulb exhibited, 3 lb. 9 oz Per packet, 1s.

NEW GIANT WHITE TRIPOLI.—Four of the heaviest bulbs together weighed 9 lb. 3 oz. Per packet, 1s.

NEW EARLY WHITE NAPLES.—Special Certificate Royal Horticultural Society, June 8, 1870, for three specimens. Weight 3 lb. 7 oz. Per packet, 1s.

NEW RED ITALIAN TRIPOLI.—Special Certificate Royal Horticultural Society, December 21, 1869. Weight of bulb, 2 lb. 11 oz. Per packet, 1s.

EVIDENCE OF QUALITY.

Mr. JAS. WOODHOUSE, Sidley, says:—"I pulled up your Giant Tripoli Onions yesterday, and to-day I measured the circumference of the 12 largest specimens, they measured from 16 to 18¼ inches. I believe they would have grown still larger had I set them out farther apart."—July 25, 1871.

JAMES CARTER AND CO., Seedsmen to the Queen, and the Prince of Wales, 237 and 238, High Holborn, London, W C.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES

JAMES CARTER AND CO.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

INTERNATIONAL PRIZE CALCEOLARIA.

	Per packet —s.	d.
CALCEOLARIA (International Prize).—The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d.; smaller packets ..	1	6
" finest Spotted, 2s. 6d.; smaller packets ..	1	6
Saved with the greatest care, and from one of the largest collections in the kingdom.		
CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2	6
PRIMULA, choicest Fringed varieties.—The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.		
PRIMULA, choicest Mixed Fringed, 2s. 6d.; smaller packets..	1	6
" dark Carmine	2	6
" new Scarlet	2	6
" Rose Fringed	2	6
" choicest White Fringed	2	6
" choicest Fern-leaved Carmine	2	6
" choicest Fern-leaved White	2	6

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free.

JAMES CARTER AND CO., The Royal Seedsmen, 237 and 238, High Holborn, London, W.C.

FRETTINGHAM'S LIQUID COMPOUND, for the DESTRUCTION of INSECTS of all kinds, and MILDEW INFESTING PLANTS, has been proved to be the most effectual application for destroying Aphis of all kinds, Thrip, Mealy Bug, American Blight, Green and Brown Fly, Red Spider, Wasps, Ants, &c., hitherto offered to the Public. It will be found invaluable for Vines, Peaches, and Fruit Trees of all kinds, as in most cases one dressing will keep off the ravages of Insects for a whole season.

The Liquid Compound will not injure the most tender foliage of Stove or Greenhouse Plants; and, if mixed occasionally with the water ordinarily used for syringing, will, if applied before the appearance of insects, prove a certain preventive. Broccoli and other Greens may be thoroughly cleansed from insects and filth of all kinds by sponging, or using the Liquid Compound by means of the "Horticultural Vaporiser."

We select two voluntary Testimonials from a great number we have recently received:—

"Elvaston Nurseries, Borrowash, June 28, 1871.

"DEAR SIR,—We beg to bear testimony to the efficacy of your Liquid Compound, which we have used in our Nursery, both out-of-doors and under glass, with perfect success. We consider it the best preparation we have tried. It thoroughly clears the plant without injuring the foliage.—We remain, dear Sir, yours faithfully,

"Mr H. C. Frettingham. "WILLIAM BARRON & SON."

"Upton Nurseries, Chester, July 11, 1871.

"DEAR SIR,—We have very carefully tested your Liquid Compound for destroying insect life. We have tried it upon most of the pests which prey upon vegetable life, and find it very effective in cleansing all kinds of plants from scale, mealy bug, aphides, thrip, red spider—in fact all kinds of insect life seem to succumb to its power most effectually and rapidly, and that without injuring the tenderest foliage, as far as we can observe. We consider the Compound most valuable to all growers of plants.

"FRANCIS & ARTHUR DICKSON & SONS."

Voluntary Testimonials have also been received from the following:—
R. G. Backstone, Esq., The Ash Hall.
Mr. G. Westland, Gr. to Earl Dudley, Witley Court.
Mr. Wm. Jackson, Gr. to Lord Scarsdale, Kedleston Hall.
Mr. H. Gadd, Gr. to Lord Middleton, Wollaton Hall.
Mr. Speed, Gr. to the Duke of Devonshire, Chatsworth.
Mr. Wm. Parker, Gr. to the Misses Strutt, Derwent Bank, Derby.
Mr. F. Harrison, Gr. to F. Wright, Esq., Osmaston Manor, Ashbourn.
Mr. W. S. Milford, Gr. to T. W. Evans, Esq., M.P., Allestree Hall.
W. P. Ayres, C.M.R.H.S., Consulting Landscape Gardener, Nottingham.
Mr. W. Thompson, Gr. to Sir Seymour Blane, Bart.
Thos. Crump, Esq., Quarndon, near Derby
Fitzherbert Wright, Esq., The Hayes, Swanwick.
Mr. James Tegg, Gr to the Duke of Newcastle, Clumber Gardens.
Messrs G & W Yates, Market Place, Manchester.
Mr. H. Ellis, The Gardens, Alfreton Park.
Messrs. Cole & Son, Manchester

PRICE LIST.—One gallon bottles, 5s. 6d; half-gallon bottles, 3s; pints, 1s. each, bottles included. In Casks:—10 or 12 gallons, 4s 6d. per gallon; 20 gallons and upwards, 4s. per gallon, casks returnable. Carriage paid on all orders to the amount of 20s and upwards.

May be obtained of the principal Seedsmen and Nurserymen throughout the country

Manufacturers, PARR AND ATHERTON, Long Row, Nottingham.

For Present Sowing.

SUTTONS'

ONION SEED.
For Sowing during August.

NEW GIANT ROCCA, the largest variety, 1s. 6d. per oz.

LARGE WHITE ITALIAN TRIPOLI, early or late, 1s. 6d. per oz.

LARGE RED ITALIAN TRIPOLI, early or late, 1s 6d. per oz.

NEAPOLITAN MARZAGOLI, extra fine, 1s. and 2s. 6d. per packet.

Further particulars of choice GARDEN and FLOWER SEEDS for AUTUMN SOWING may be had on application.

SUTTON AND SONS, Seedsmen by special Appointment to the Queen and H.R.H. the Prince of Wales, Reading, Berks.

Cabbage Seed, for present Sowing.

For the GARDEN, for SOWING at ONCE, to come in next Spring and Summer.

SUTTONS' IMPERIAL, the finest in cultivation, and earliest for Spring use, 8d. per ounce.

LONDON MARKET,	4d. per oz.
ENFIELD MARKET	"
EARLY DWARF YORK,	"
NONPARIEL,	"

For the FARM.

	Per lb.—s.	d.
SUTTONS' IMPROVED DRUMHEAD, the largest in cultivation: should be sown in July and August ..	2	6
ROBINSON'S CHAMPION DRUMHEAD	2	6
COMMON DRUMHEAD, or FLAT DUTCH	2	0

Also GRASS SEEDS, TURNIP SEEDS, MUSTARD, RAPE, &c., for Autumn Sowing, particulars of which may be had on application

SUTTON AND SONS, Seedsmen by Special Appointment to H.M. the Queen, and H R.H. the Prince of Wales, Reading, Berks.

WASPS, WASPS, WASPS.—The only effectual method of destroying these garden pests is by applying SCOTT'S WASP DESTROYER. Sold in Bottles at 1s. 6d. and 2s. 6d. each, with full directions for use.

JNO. SCOTT, The Seed Stores, Yeovil.

Established 1793.

JOHN K. KING, SEED GROWER, Coggeshall, Essex, will be happy to supply his unrivalled Hardy Prize Stocks of MANGEL WURZEL, SWEDES, and other TURNIP SEEDS (carefully selected from large roots), at moderate prices.

Large purchasers supplied at special moderate prices.

FARM SEED LISTS post free.

Carriage free on orders of 20s. and upwards.

BEDFORDSHIRE SILVER SAND and PEAT, sold only by J. ARNOLD, 29, Clarendon Square, N.W. Acknowledged by the largest and most extensive Growers and Nurserymen to be the best Sand obtainable for growing Plants, &c., in the United Kingdom. Strongly recommended by all who have used it.

Maiden Lane, and Kingsland Goods Depôt, N. L. Railway. By the truck-load to all parts; at the Wharf, 14s. per ton. Terms nett cash. All orders to be addressed,

J. ARNOLD, 29, Clarendon Square, N.W.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Scott's Wasp Destroyer.

J. SCOTT, The Seed Stores, Yeovil, Somerset, offers his well-known preparation to Fruit Growers, at 1s. 6d. and 2s. 6d. per bottle. All letters to be addressed to J. S., and no one else. No one who has Fruit to preserve should be without it.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

DUTCH FLOWER ROOTS.

B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HIS

DESCRIPTIVE CATALOGUE of HYACINTHS, TULIPS, CROCUS, NARCISSUS, &c., for 1871,

Is now ready, Post Free on application.

VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

THOMAS THORNTON,

HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS; a large stock of Green and Variegated HOLLIES, VINES, &c.: all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS

will soon be ready, and can be had on application.

THE CELEBRATED COLLECTION OF ORCHIDS,

FORMED BY

S. RUCKER, ESQ., OF WANDSWORTH.

MESSRS. JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE PURCHASED THE ABOVE

MAGNIFICENT COLLECTION OF ORCHIDS

In its entirety, Mr. Rucker having decided on relinquishing their Culture.

This Collection is, without doubt, the richest as regards variety and rarity which has ever been formed; Mr. Rucker having during the last thirty years purchased, regardless of expense, both in England and on the Continent, every fine and distinct kind he could meet with.

The Plants are in the finest possible health, and the SECOND PORTION will be offered for SALE at Mr. STEVENS' AUCTION ROOMS, Covent Garden, on AUGUST 22d and 23d, details of which will appear in Mr. Stevens' Advertisements. The dates of future Sales will be duly announced hereafter.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

WHEELERS'
COCOA-NUT CABBAGE

WHEELERS' COCOA-NUT CABBAGE.

Wheelers' Cocoa-Nut Cabbage, per pkt., 1s.
" " small packet, 6d.
Wheelers' Imperial Cabbage, per oz., 8d.
Wheelers' Tom Thumb Lettuce, p. pkt., 1s.
" " small packet, 6d.

N.B.—Wherever this charming little Lettuce is grown it is a remarkable favourite. It may be obtained *true* from either Gloucester, or Mark Lane, London. We recommend everybody to try it who have not already done so.

All the above Post Free.

WHEELERS'
BROCKWORTH PARK PEAR,
10s. 6d. each.

This magnificent Pear is a cross between Williams' Bon Chrétien, and Louise Bonne of Jersey. It considerably surpasses both its parents in SIZE, fine QUALITY, BEAUTY, and FLAVOUR, ripening about the same time, viz., September and October; grown against a wall, the fruit is remarkably large and handsome, the Pears weighing about 12 oz. (¾ of a lb. each). On the dinner-table well-ripened specimens are remarkably conspicuous for their size and beauty, and their flavour and juiciness are fully equal to their appearance.

A First-class Certificate was awarded to this handsome variety last autumn by the Royal Horticultural Society, and Trees were ordered by the principal Nurserymen in the kingdom; but the demand was so great that we were Sold out of all our Saleable Plants immediately they were offered. Coloured Plates, taken from Nature, may be had at 6*d.* each.

We are now Booking Orders to be executed in November next; all Orders will be executed in exact rotation as received, as far as the Plants will go; but we expect to be Sold out long before the season is over.

The price of young PYRAMIDS is 10*s.* 6*d.* each. We have a few Plants trained for walls at 15*s.* The Pyramids will furnish plenty of buds next summer for budding Trees of other varieties established against walls. This fine variety is well worthy of a wall, and of a good aspect.

☞ **Orders are now being Booked.**

J. C. WHEELER & SON,
NURSERYMEN,
GLOUCESTER; and
59, MARK LANE, LONDON, E.C.

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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A.; and E. J. LOWE, F.R.S.
Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

The Gardeners' Chronicle

SATURDAY, AUGUST 12, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Aug. 16 { Royal Horticultural (Fruit and Floral Committees), at S. Kensington .. 11 A.M.
Ditto (General Meeting) .. .. 3 P.M. }

WE are indebted once more to the courtesy of our correspondents for the means of presenting a general review of the FRUIT CROP for the present season. Our reports embrace so wide an area, and are contributed by so many observers, that the general average may be assumed to be fairly correct, although it must not be overlooked that local circumstances and local conditions very materially affect the result in certain cases. Were it possible to state accurately the exposure, nature of the soil, and general climatal conditions of each separate garden, our records would be even more valuable. One thing is clearly elicited by a study of our report, and that is, that the gardener is not responsible for climate, and that he is, as a rule, quite exonerated from the too sweeping charges brought against him in the matter of out-door fruit culture. In some cases gardeners, — real gardeners we mean — announce their intention to give up the culture of Peaches and Nectarines on walls, so manifold are the chances against them. In other cases we are told that in spite of constant attention, Peaches and Nectarines on east walls have scarcely a healthy leaf, while on the south or west walls not a leaf is curled.

The May frosts (12° below freezing point on May 17 is mentioned in more than one place), indeed blighted our hopes, and with their *sequelæ* constituted the main reason for the general deficiency. The drought of last season, in the opinion of some of our correspondents, also had a deteriorating influence, as well as the abundant crops of last year. For our own part we are not disposed to attribute any great effect to the former cause.

Summarising the general results given in our Tables, we may state that fruit crops are not only scanty, but are from three to four weeks later than ordinary, but that, with the exception of Scotland, the returns are, on the whole, more favourable than we could have expected after the very trying season we have experienced. In the returns from Scotland the crops are most often described as moderate, though in several instances total failures are reported. Correspondents state that trees looked healthy and promising, till the fruit succumbed to late spring frosts.

In the northern counties of England the crops are reported under the average, with the exception of Nuts and Apricots, which are abundant. All crops are two or three weeks later than usual.

The remaining returns, which read much alike, may be summarised as follows:—

Apricots seem to have been most abundant everywhere. The fruit is reported for the most part as having been small and late.

Apples are a very partial crop, being reported as plentiful in some places, and thin in others (generally orchards), while in some places they are a total failure. Fruit small, and trees suffering from curl, aphis, &c.

Pears are also a variable crop, being generally very fair on walls, but thin on standards. Under the average.

Plums appear to be a thin crop, the best being against walls; the trees are very much blighted.

Strawberries, where not cut off by late frosts, were an abundant crop, but much damaged by excessive wet, and deficient in flavour. The best reports of this crop come from Kent.

Dessert Cherries were scarce, but Morellos are most abundant nearly everywhere.

Peaches and Nectarines are, for the most part, described as plentiful. The trees seem to have been much injured in spring, through the cold weather, but they are now recovering. In some gardens the trees on east walls are much blistered, whilst those on west walls are clean and healthy.

Small fruits have been generally abundant, but red and black Currants appear to have suffered fearfully from blight, many bushes being reported as killed outright.

Filberts and Cob nuts have produced an extraordinary crop. Walnuts are scarce.

Incidentally we learn that the growth of shrubs, &c., has been rapid during the summer, as might have been expected in cases where they did not start into growth till after the rigours of May. Less satisfactory is it to hear of the outbreak of the Potato disease, which, we fear, threatens speedily to become general.

—— WE have received the following communication relating to a proposed TRIAL of HOTWATER BOILERS, from Messrs. WEEKS & Co.:—

"It is not a little amusing for old practitioners to note the exploded theories recently advanced, ideas which have been experimentalised upon years ago and abandoned. But we have no desire to provoke a paper war; such combats rarely terminate satisfactorily. 'Less talk and more work' is far more likely to develope sound practical information than a host of mere opinions committed to paper, and for this reason we urge that the once talked of public trial of hotwater boilers be forthwith put in operation. The subject is ripe for test, and should be taken in hand. For our own part we shall be pleased to join in the contest with our tubular boiler, also to render any assistance that lies in our power to work out the competition, and in the absence of any more convenient and suitable site being found available, we willingly offer the free use of our spacious foundry premises at Chelsea for the occasion.

"But perhaps there are those who, knowing the varied experiments made at our late show establishment (now Mr. BULL'S), by comparing the working capabilities of many descriptions of boilers, may submit that we, being in possession of certain ascertained results, should first make them public; but those experiments were costly and carried out at our own expense, and therefore we feel justified in not publishing them. Another and not less important reason is, that any results we might publish would naturally be received with some doubt lest prejudices in favour of our own invention should have crept in; therefore we say it will be better for all to start afresh.

"Respecting the uniform capacity of boilers, we presume that the size of each would be determined by its water contents, upon the same principle as that applied to any ordinary vessel, quite irrespective of its shape or form. Allowing such to be the case, we suggest the following:—

"1. Each competitor shall be allowed to construct a vessel of any shape or form he pleases, limited in size to a given content, or, in other words, a stated quantity of water shall be allowed to each competitor for distribution in, around, or about the fire as best he pleases, in a vessel or heating agent of any form—the same to be designated a boiler.

"2. Each boiler to be worked for a given perlod, say, for example, 12 days and 12 nights—being an average of four days and four nights consecutively to each of the three subjoined systems.

"*System A.*—Each boiler to be fixed in a stokehole of its required depth, or the apparatus to be elevated to such an equivalent, so as to establish the system most commonly adopted in heating by hot water.

"*System B.*—Each boiler to be placed above its work, that is to say, to have no stokehole, merely an ashpit, so that the flow-pipe shall at starting descend to the apparatus, say for a distance of 3 feet 6 inches to 4 feet, th position of the apparatus to remain unchanged.

"*System C.*—The apparatus to be so adjusted, and the boiler attached, as to convert the pipe usually the return into the flow-pipe, and the flow into the return-pipe, or, in a word, to reverse the system standing first, and marked A, in order to prove whether any, and what, advancement has been made during the 20 years this system has been more or less in operation.

"Further and more detailed regulations will of course govern the trial, such as a sealed specification by each competitor, describing mode of connection, the classification of boiler, description of fuel, test of temperature of water, test of rapidity of circulation, arrangement for defraying expenses, &c., all of which require consideration and determination by practical men.

"Should, however, these suggestions share the fate of others which have preceded them, we beg simply to add that, *for power*, we are prepared to challenge any boiler not made in imitation of our tubular, to produce equal results with the same amount of fuel and labour; and for *durability*, we are prepared to guarantee, by insurance, every Duplex Upright Tubular Boiler made and fixed by us, for 15 years. A public test, based upon the foregoing conditions, would, we venture to state, be productive of much practical good, and go far towards setting at rest this long-discussed boiler controversy."

—— London botanists will be interested in the FLORA of HYDE PARK and KENSINGTON GARDENS, which the Hon. J. L. WARREN publishes in this month's "Journal of Botany." About 190 species are included in the list, which extends over several pages, and gives full details of localities. One or two of the plants—such as Trifolium glomeratum—are far from common, and likely enough to attract London botanists. We hope that none of them may be extirpated by collectors.

—— Dr. ASA GRAY publishes, in the "American Naturalist," a figure and description of a new species of ERYTHRONIUM, which he names E. propullans. The most singular peculiarity of the plant is found in the way in which the bulb propagates. An offshoot springs from the ascending slender stem, or subterranean sheathed portion of the scape (which is commonly 5 or 6 inches long), remote from the parent bulb, usually about midway between it and the bases, or apparent insertion of the pairs of leaves; this lateral offshoot grows downward, sometimes lengthening as in E. americanum, sometimes remaining short, and its apex dilates into the new bulb. The flower is bright pink, and much smaller than that of any other known species, being barely half an inch long. It was discovered at Faribault, Minnesota.

—— The MAXIMUM TEMPERATURES of the AIR during the week ending August 5 ranged from 80°.5 at Blackheath to 64° at Greenock, with a mean for all English stations of 75°.5, and for all Scottish of 68°.9. In Scotland only two stations recorded values above 70°, while all the English stations were in excess of 70°, with the exception of Newcastle. The MINIMUM TEMPERATURES were, as a rule, higher in Scotland than in England, the mean for the former being 47° and for the latter 46°.3. They ranged from 52°.2 at Liverpool to 44° at Perth and Edinburgh. The highest mean temperature was 60°.3 at Blackheath, and the lowest 55°.4 at Edinburgh and Glasgow. The mean for England was 58°.1, and for Scotland 56°.6. RAIN fell lightly over England, there being only one station (Newcastle-on-Tyne) where none fell, but in Scotland the amounts recorded were larger. The greatest fall in England was 0.41 inch at Birmingham, and in Scotland 1.55 inch at Greenock. The mean fall for England was 0.16 inch, and for Scotland 0.68 inch.

—— A few days since we saw in the nursery of Mr. NOBLE, at Sunningdale, a well-marked illustration of the INFLUENCE of SCION upon STOCK in INDUCING VARIEGATION, different from any that we remember to have seen recorded. The subject was the Golden-variegated Weeping Mountain Ash, worked on the common Mountain Ash (Pyrus Aucuparia). The trees had been grafted two years, and were worked standard high, the heads being rather spare than full. In four separate cases the stock had thrown out variegated shoots—one from the very base close to the ground, and the others about half-way up, about 3 or 4 feet from the base. The variegation, which was whiter than that of the graft, perhaps owing to the shade, the trees standing in a nursery quarter, seemed to be first developed along the midrib of the leaflets, some leaves being only affected in this way, while others had the colour also developed along the course of the main veins. These are cases quite analogous to those of Mr. LAING'S Abutilons and the Breadalbane Ash, which have occurred within the knowledge of living witnesses, and sufficiently so to that of the Chelsea Jasmine of an earlier date, in which, however, it was only a shield of bark which united with the stock. We shall be glad if Mr. NOBLE would report further on the behaviour of these Mountain Ash trees, at a later date, before the leaves fall.

—— The generally received opinion among those best qualified to judge is that NITROGEN cannot be or is not absorbed by plants directly from the atmosphere, in spite of the very large proportion of that gas in atmospheric air. There seems, indeed, to be an almost unanimous consensus of opinion that *free* nitrogen is not absorbed by plants from the air. But this suggests the inquiry whether there is any really *free* nitrogen in the air? Leaving this on one side, we may call attention to the fact that the "generally received opinion" above alluded to, as happens generally in such cases, has some few opponents. Among them was PRIESTLEY, whom SAUSSURE contradicted, and more lately the French chemist VILLE arrived at the opinion that plants do obtain their nitrogen from the atmosphere, a conclusion absolutely opposed by BOUSSINGAULT, as well as by our own experimenters, LAWES and GILBERT. Lately Mr. PEACH, well known as an ardent horticulturist, has advanced the same opinion, and has even gone further by depreciating the value of ammoniacal manures, or rather by attributing any value they may possess to other substances than the nitrogen. Mr. PEACH calls attention to the circumstance that starch, sugar, gum, and other substances abundantly developed in the plant contain no nitrogen, which is true, but then it is equally true that not a single living active cell in the plant is destitute of nitrogen. It is conceivable that the proteinaceous matters in the case of a very fat man might exist in a relatively very small proportion as compared with the hydrocarbons. But that circumstance would surely not lessen the value of the protein compounds. Mr. PEACH'S theory that plants are capable of absorbing atmospheric nitrogen has, however, lately received support from Mr. GEO. DAVIS, an analytical chemist, who, with the co-operation of Mr. NEWLYN, of the Royal Nurseries, Slough, has instituted some experiments relating to this subject. The details of these experiments are contained in a recent number of the *English Mechanic*, from which we extract the subjoined particulars. We demur, however, to the conclusion that plants were capable of existing without nitrogen, because in both sets of experiments the plants of necessity contained that ingredient to start with.

"The plants experimented upon were dwarf Beans, sown in ordinary soil, and when fit for transplanting they were washed, and placed into well-washed and dried silver sand. Two were placed in a large pot, covered with the largest bell-glass I could obtain, glass tubes arranged so that they could be watered without removing the bell, and an aspirator arranged so that a current of air could be sent through the apparatus, and above this all the air which was passed into the bell was passed through dilute sulphuric acid.

"Two other Beans were placed in well washed and dried silver sand, and remained uncovered in the house, beside the two under the bell-glass.

"It will thus be seen that both sets of Beans were exposed to the same temperature, one set being exposed to an ammoniacal atmosphere, whilst the other set under the bell-glass was kept as free from ammonia as possible.

"The Beans being unable to obtain any nutriment from the sand alone, they were fed with organic and inorganic food, those under the bell-glass being fed by the pre-arranged glass tubes, to prevent access of ammonia contaminated air.

"The only difference in the feeding of the two sets of Beans was in the administration of ammoniacal food to those which were freely exposed to the air.

"The foods were made thus:—(A) Mineral food—calcium sulphate, 20 grains; magnesium sulphate, 10 grains; calcium chloride, 2 grains; distilled water, 8 ounces. (B) mineral food—potassium carbonate, 50 grains; sodium phosphate, 20 grains; potassium chloride and sulphate, of each, 20 grains; water, 10 ounces. (C) Ammoniacal food—ammonium carbonate, 40 grains; liquor ammoniæ fortis, ½ drachm; water, 10 ounces. (D) Organic food. This was prepared by boiling sugar, 4 ounces (large pure crystals), with 16 ounces of water, and 1 ounce of sulphuric acid, for many hours, replacing the water as it boiled away, allowing to cool, neutralising the greater part of the free acid with chalk, and finishing with sodium carbonate (washing soda).

"The plants under the bell-glass were fed with A, B, and D, at the rate of 1 drachm of each per day; they were diluted with water before being applied, and a current of air previously passed through dilute sulphuric acid drawn through the apparatus.

"Soon after the apparatus was in good working order, one of the plants died; the other continued healthy, and bore fruit.

"Those exposed to the air were fed with A, B, C, D, and fared much worse than those from which ammonia was withheld. One died shortly after the experiment began, whilst the other was attacked with green-fly; it had no blossom, and consequently bore no fruit. From the above experiments it would seem that plants were capable of existing without nitrogen, if it cannot be absorbed direct from the atmosphere; but although the air supplied to the bell was passed through dilute sulphuric acid, it may have been robbed of its ammonia, but I feel certain that much albumenoid nitrogen must have passed in and been assimilated; still I cannot think that all the nitrogen came from that source. Some I think must have been absorbed from the atmosphere which immediately entered into the economy of the plant."

—— In the number of the "Journal of Botany" for the present month, the Rev. J. E. LEEFE has an article on HYBRIDITY in WILLOWS. It is well-known that many intermediate forms exist in this intricate genus, and that many of them have been assumed to be of hybrid origin. Mr. LEEFE, however, draws attention to the circumstance that Willows do not readily spring from seed, and as his observations are invested with special importance, we reproduce a portion of his remarks:—

"Wishing to ascertain the opinions of competent persons, I have consulted some of my friends, who have bestowed much attention upon this tribe. The Rev. L. DARWALL, who has long cultivated Willows, observes, 'Amongst seedlings I have never found any but S. caprea and S. aquatica (including, perhaps, S. cinerea, and S. oleifolia), though I have both sexes of many other species.' With this the opinion of my friend, Mr. JAMES WARD, who has specially studied the Willows for a long series of years, substantially coincides. Prof. BALFOUR tells me that they have tried, without success, to raise Willows from seed in the Edinburgh Botanic Garden. To come now to my own experience: excepting S. caprea, I do not ever remember to have met with a Willow where it looked like a seedling, and this was in the shrubbery at Audley End, Essex, where the plant might have been inserted as a cutting by some one of the gardeners. I have myself cultivated the Willows somewhat extensively since the year 1838. First in the nursery garden at Audley End for about five years; then in the rectory gardens at Bishopwearmouth, in the county of Durham, for say about four years, and for a year more in a garden in the neighbourhood of the town of Sunderland; lastly, for fully 21 years at Cresswell. For the last 21 years the plants, some of them now trees, have been growing under my own eyes, great care being taken to keep them properly labelled, which is no easy matter. In all that time I have never seen a single seedling, though my collection comprises fully 100 forms. It is, I admit, barely possible that seedlings may have sprung up, and been destroyed in keeping down weeds, but if so, I cannot account for their not occurring in undisturbed parts of the garden and grounds, amongst shrubs and trees where seedling Sycamores are frequent, and plants of the Leycesteria formosa have several times sprung up. A few years ago I collected and sowed some seed in pots in my greenhouse, and kept them carefully watered and looked after, but the seed did not vegetate. Last year (1870) I made a more systematic attempt, both to produce hybrids and raise Willows from seed. On the 11th of last August I sowed in three boxes filled with good compost, seeds of the following kinds:—S. Forsteriana, from Borrer; S. Andersoniana, Borrer; S. Doniana, Borrer; S. Smithiana, E. Bot., S. Smithiana growing in the middle of a large bush of a monandrous Willow, allied to S. Lambertiana, Sm. I also carefully tied a bunch of the male catkins of S. daphnoides, Vill., to a branch of a female of S. pomeranica, W., dusting the stigmas at the same time with the pollen. In a similar manner I endeavoured to fertilise the female of S. stipularis, Sm., with the pollen of the male of S. rugosa, Borrer; also the female of S. Pontederana, Sch., with the catkins of a beautiful Willow gathered near Rothbury in Northumberland, which I take to be the male of that species. The third box was filled with seed of different forms of S. repens, L., including, probably, S. ambigua, Ehrh., sent to me by a friend from Horncastle in Lincolnshire. On all those branches, the catkins of which I endeavoured to fertilise artificially seed was produced in abundance. The boxes were carefully watered all through the summer, and in winter were placed in a cold frame. I have examined them constantly up to the present time, and at first thought that some of the seeds springing up in them would prove to be Willows, but in this hope I have been disappointed, and now fear that the experiment has again been a failure. Last year the seed of the Willows was more copiously produced than usual, and became rather an annoyance in the beds and walks, but I have not seen a seedling anywhere. Although, then, I dare not say that Willows are never produced from seed, I think it is clear that this happens less frequently than is commonly supposed. My garden is about a mile and a half from the sea, and rather exposed to the north and north-west; but the soil is good (old grass land), and most of the Willows grow freely in it. I have lost far more kinds from crowding than from climate.

"Having thus failed myself, I would invite the remarks and co-operation of others who, in more favourable and southern situations, may be more successful than I have been in raising Willows from seed."

—— There is a French proverb to the effect that "As many days as the white Lily flowers before St. John's Day, so many days before the 1st of August will harvest commence." The "Revue Horticole" states that about Paris the LILIUM CANDIDUM commenced to blossom on June 16, and that therefore harvest ought to have begun about July 22. About London, the white Lily was in bloom about June 26.

—— Mr. T. FOWELL BUXTON, of Stanstead Abbott, Ware, has recently stated in the *Field* that the ALTHÆA HIRSUTA, one of our rarer British plants, hitherto only known to grow in this country at Cobham, in Kent, has been found in a disused brickfield at Ware, very far from any house or cottage, and where it cannot possibly be an escaped garden flower.

—— The EDINBURGH MEETING of the BRITISH ASSOCIATION seems on the whole to have passed off well in spite of the absence of local enthusiasm, or of any very striking paper communicated to the sections. The most remarkable feature of the Presidential address was the learned President's hypothesis of the origin of existing vegetation from the Moss-grown fragments of another world, as already mentioned in our former issue (see p. 1009). Professor ALLAN THOMSON'S address was much more to the purpose, at least from a naturalist's point of view, and from this address we shall in our next issue make certain extracts, and further allude to some of the papers read in section D, one of which, that of Professor DYER, is given in another column.

—— We have just received specimens of a small FUNGUS which is causing considerable annoyance AMONGST FERNS. It occurs both on the upper and under side of the fronds, and at first looks like thin spots of white paint which has dried rapidly, so as to leave little pits on the surface. When examined with a common lens, the appearance is very puzzling, as it looks so very much like one of those thin, pale calcareous Algæ (Melobesiæ) which are so common upon some of our sea-weeds. A closer examination shows, however, that it belongs to the same group of Fungi as the yellow, at first gelatinous, then dusty pest belonging to the genus Æthalium, which is the abomination of all Pine-growers; another species of the same group, belonging to the genus Reticularia, sometimes destroying in a single night a whole frame of Melons or Cucumbers. We have never before seen so small a species causing real annoyance. One curious matter is that we have never before met with the species, which undoubtedly is closely allied to Physarum album, but is distinguished by its much more luxuriant growth, and the abundance of the flocci. It may be possible to get rid of it, when in its gelatinous stage, by dusting with quick-lime. It is, however, a question whether this may not prove injurious to the tender fronds. *M. J. B.*

—— The following circular has been issued by the Trustees of the Lindley Library, which was purchased, it may be remembered, with funds forming part of the surplus from the International Horticultural Exhibition of 1866, and to which considerable additions have been made from the munificence of donors, including, amongst others, Her Majesty the Queen:—

"The Lindley Library, which by agreement is deposited in the rooms of the Royal Horticultural Society at South Kensington, is open for the use of the public, under the following regulations:—1. The library is open for consultation on all week days from 10 A.M. to 4 P.M.; except on the meeting and exhibition days of the Royal Horticultural Society. — 2. The trustees reserve the right of closing the library for purposes of re-arrangement, cleansing, &c., when such may be required.—3. The fellows and officers of the Royal Horticultural Society shall have access to the library at all times, when it is open, on application to the assistant-secretary, Royal Horticultural Society. — 4. Gardeners and others, not Fellows or officers of the Society, must make application to one or other of the trustees, or to the assistant-secretary of the Royal Horticultural Society, for permission to use the library, and shall sign their names and addresses in a book provided for that purpose.—5. Persons requiring the loan of books to be taken from the library must make written application to the trustees addressed to the librarian for the time being, at the offices of the Royal Horticultural Society, South Kensington, who are prepared to accord this privilege on the following conditions, viz.:—(*a.*) That the borrower be personally known to one or more of the trustees or officers of the Society, or at least shall produce satisfactory references. (*b.*) That the borrower sign a receipt for the volumes, before removing them from the premises, in a book provided for that purpose; undertake to restore the books in good condition, and generally to comply with the regulations laid down by the trustees. (*c.*) That not more than three volumes be lent to one person at the same time.—6. The trustees will exercise their discretion as to what books shall be lent out, but as a rule unbound periodicals, expensively illustrated works, and works of common reference, such as are likely to be in frequent use within the library itself, must not be removed from the premises.—7. All books borrowed shall be returned to the library within one calendar month from the date of issue, but an extension of time may be granted on application to the trustees.—8. The assistant-secretary or acting librarian is empowered to demand of the borrowers such books as are detained beyond the prescribed time, and to take such steps as may be necessary to secure the prompt return of the same.—9. The loss of any book, or any injury sustained, shall be made good by the person who has lost or injured the same.—10. The trustees reserve the right of repealing or altering these regulations from time to time as may be required.—By order of the trustees, James Richards, Acting Librarian."

We may add, that the books are now arranged, according to their respective sizes, as far as possible, in alphabetical order, and that a complete catalogue has been prepared. It is greatly to be desired that the many imperfect sets of periodicals, &c., should be made complete up to the present time, and that they should be henceforth regularly incorporated as they are issued. Fort his purpose, however, the funds at the disposal of the trustees are quite inadequate.

JAMES McNAB.

Great botanists and great gardeners would seem to have some special faculty of transmitting to their posterity the qualities which render themselves distinguished. Two Linnés, three De Jussieus, three De Candolles, two Hookers, two Agardhs, two Morrens, exemplify this among the botanists, while amongst the gardeners the cases are even more frequent, and among them may be cited the subject of our present notice.

In 1810, as we learn, the father of the present James McNab was appointed, at the instance of Sir Joseph Banks, to fill the office of curator of the Botanic Garden, Edinburgh, and not only so, but in the same year he made provision for his successor in the person of his son, to whom he subsequently imparted the rudiments of horticultural and botanical lore. For five years previous to 1834, the younger McNab acted either as clerk or assistant-secretary to the Caledonian Horticultural Society, and in the year just mentioned he started for a lengthened botanical trip through Canada and the United States. In this journey Mr. McNab was accompanied by his friend the late Mr. Robert Brown, nurseryman of Perth. The travellers collected together a large herbarium, as well as numerous living plants, seeds, sections of wood, &c. The records of the more interesting plants obtained in this journey, are to be found in a series of papers published in the "Edinburgh Philosophical Journal" for 1835, and in the earlier numbers of the Transactions of the Edinburgh Botanical Society.

JAMES McNAB.

Shortly after his return from America, in 1835, Mr. McNab was appointed curator of the Caledonian Horticultural Society's Garden at Inverleith, which garden was almost entirely remodelled under his superintendence, while a large horticultural hall and extensive winter garden, as well as other plant-houses were erected, with funds collected for the purpose, mainly through the personal efforts of the curator. In what light these services were viewed by the members of the Society is shown by the fact that on his retirement Mr. McNab was made an honorary member of the Society, and presented with a handsome piece of plate. On the death, in 1849, of Mr. William McNab, who had held the office of curator to the Royal Botanic Garden, Edinburgh, for no shorter period than 39 years, it was felt that no more appropriate successor to the father could be found than the son. At that time the garden consisted of 14 acres, but subsequent additions have been made, including the garden of the Caledonian Horticultural Society, which thus once more comes under Mr. McNab's management. A Palm-house and Museum of Economic and Structural Botany, admirably adapted for the purposes of that eminently successful teacher, Professor Balfour, have also been erected.

The taste and judgment which have been exercised in these alterations, can be readily perceived at a glance, and we are sure that the numerous visitors who have probably wended their way to the garden during the present session of the British Association, will bear us out that, all things considered, no more tasteful or better arranged public garden is to be found in the kingdom, and no more complete establishment for the teaching of botany than that over which Professor Balfour so worthily presides. But Mr. McNab's claims on the esteem of his compeers do not rest solely on what he has done, but also on the help and inducements he has given others by his pen.

We have already referred to his papers descriptive of his American researches, but more numerous and more widely known are his communications in various journals on subjects connected with landscape gardening, the transplantation, culture and management of ornamental trees, the decoration and utilisation of waste places, railway embankments, town squares, and the like. Mr. McNab is a great advocate for the "stem-pruning" of certain Conifers such as the Deodar; and when the pruner is as judicious and intelligent as Mr. McNab, we have nothing to say against the practice, which, however, is one that assuredly should not be left to injudicious or careless hands, and one, indeed, that is only to be advised under certain circumstances. We have said enough to show that the Edinburgh Botanic Garden is fortunate in its curator, while the horticultural fraternity may well be proud of such a representative.

Great taste and skill have been shown by Mr. McNab in blending the old garden of the Caledonian Horticultural Society with the Royal Botanic Garden, as well as in working in, with a view both to effect and useful scientific grouping, the fine collection of Conifers of which these gardens were possessed.

Reverting to the law of inheritance, with an allusion to which we commenced this notice, let us in conclusion advert to the circumstance that the son of Mr. McNab, Dr. W. R. McNab, occupies at present the post of Professor of Botany at the Royal Agricultural College, Cirencester, and is looked to with well-grounded hope to advance the progress of physiological botany in this country.

A NEW SYNOPSIS OF ALL THE KNOWN LILIES.—VI.

Subgenus 2. Lilium Proper.—Bulbs squamose; stigma a thick head to the style, with three blunt lobes—(*Continued*).

Group 3: Isolirion (Erect-flowered Lilies).—Perianth broadly bell-shaped, quite erect, its divisions oblong-lanceolate, broadest about the middle, spreading in the upper half, or third, when fully expanded. Stamens diverging on all sides from the axis of the flower.

Key to the Species.

Leaves usually in regular whorls.
Perianth 2—3 inches deep, the divisions with a very distinct claw, an inch long. } 12. PHILADELPHICUM.

Perianth 14—16 lines deep, the divisions without a distinct claw.	13. MEDEOLOIDES.
Leaves never arranged in regular whorls.	
Perianth red-yellow, 2—4 inches deep, the divisions distinctly unguiculate. Style much exceeding the ovary.	
Stem glabrous. Claw very narrow. Axils of leaves not bulbiferous.	14. CATESBÆI.
Stem cottony. Claw broader, ¼—½ inch long. Axils of leaves often bulbiferous.	15. BULBIFERUM.
Perianth red-yellow, 1—2 inches deep, the divisions not unguiculate. Style much shorter than the ovary.	
Leaves linear glabrous, 1½—2 lines broad.	16. PULCHELLUM.
Leaves lanceolate pubescent, 4—6 lines broad.	17. CONCOLOR.
Perianth white, not more than half an inch deep.	18. LANCIFOLIUM.

12. *L. philadelphicum*, Linn. Sp. Plant., p. 435; Ait. Hort. Kew. i., p. 431; Bot. Mag. t. 519; Redouté, Lil. t. 104; Lodd. Bot. Cab. t. 976; Bot. Reg. t. 594; Kunth, Enum. iv., p. 263; Spae, Mon. p. 25; *L. andinum*, Nuttall, Gen. i., p. 221; *L. umbellatum*, Pursh, Flor. Amer. i. 229; Schultes, Syst. Veg. vii., p. 411.—Bulb ovoid, an inch thick (according to Drummond eaten by the Indians) the very fleshy scales half an inch long. Stem 1—3 feet high, rigid, comparatively slender, quite glabrous, the lowest third naked. Leaves typically in 4—5 regular whorls of six to eight each, 2 to 4 inches apart, spreading, narrowly oblanceolate, 2 to 4 inches long, three-eighths to half an inch broad about the middle, narrowed gradually to a narrow base and an acute point, thinner in texture than the average of the genus, indistinctly 3—5 nerved beneath, quite glabrous, not bulbiferous in the axils, the whorls often more or less, sometimes completely, broken up. Flowers 1—6 in wild specimens, when more than one invariably umbellate, not corymbose, bracteated with a whorl of ordinary leaves. Peduncles ascending, arcuate, or straight, 1-3 inches long, naked or with a single linear bracteole. Perianth 2—3 inches deep, under 2 inches across at the mouth when expanded, the divisions falcate only at the very tip, bright orange-red, usually spotted with purple in the lower half, not papillose, 6—10 lines broad halfway down, narrowed suddenly 9—12 lines above the base into a narrow claw with involute borders, which is glabrous down its face. Filaments 1½—2 inches long; anthers 5—6 lines long; pollen red; ovary about an inch long; style 15—18 lines.

Common in open copses through Canada and the Northern United States, stretching westward to the Rocky Mountains, and southward along the Alleghanies to North Carolina; and of course quite hardy in English gardens. It was sent by Bartram, in 1754, to Philip Miller, who figured it at t. 165 of his "Illustrations." The *L. umbellatum* of Pursh, and *andinum* of Nuttall, are simply luxuriant conditions of the plant, such as is figured in the "Botanical Register." It stretches north-westward to the Red River and Saskatchewan territory, and occurs sparingly on the west side of the Rocky Mountains; but all the western specimens I have seen, though even when single-flowered retaining the whorl of bracts, have all the leaves indiscriminately scattered along the stem, as in *bulbiferum*, and the leaves also are narrower (linear not oblanceolate) and firmer in texture than in the whorled typical Canadian and New England form. Geographically, *philadelphicum* quite represents *bulbiferum* in the New World, and when the whorls of the leaves are thus broken up they come very near to one another, though distinct enough in the extreme states. But *philadelphicum* has always a more distinct claw than any variety of *bulbiferum*, and wants the cottony pubescence that occurs upon the stem and outside of the perianth of all the forms of the latter.

13. *L. medeoloides*, A. Gray, Mem. Amer. Acad. vol. vi. p. 415; Miquel, Ann. Mus. Lugd. Bat. iii. 156.—Stem 1—2 feet high, slender, terete, flexuose, glabrous. Leaves in the four specimens I have seen either confined to a single whorl at the middle of the stem, of from 7—14 leaves (the latter number probably abnormal, the product of two whorls congested into one), or a few scattered, principally between this and the flowers, oblanceolate, similar to those of *L. Martagon* in shape and texture, 4—6 inches long, 9—15 lines broad two-thirds of the way up, acute, narrowed gradually to a narrow base, faintly 3—5 nerved beneath, quite glabrous. Flowers 1—3, in the latter case umbellate, the slender peduncles ½—1½ inch long, naked, or bracteolate. Perianth 14—16 lines deep, much more open than in the last, but the divisions falcate only near the tip, oblanceolate, not narrowed into a distinct claw, ¼—⅜ inch broad at the middle, reddish-yellow, with a few purple spots, not papillose on the face or pubescent down the groove. Filaments 9—10 lines long. Anthers 3—4 lines. Ovary clavate 3—4 lines deep. Style 4—5 lines.

An exceedingly distinct species, discovered near Hakodadi in Japan, in the United States' North Pacific Exploring Expedition, under Captains Ringgold and Rogers, in 1853-6, and since gathered by Oldham in Herschel Island, one of the members of the Korean group. It has never been figured, and is not yet introduced into cultivation. The general habit and foliage is most like that of *L. Martagon*, but in the shape of the flower and its divisions, it resembles *L. concolor* and *pulchellum*.

14. *L. Catesbæi*, Walt. Fl. Carol. p. 123; Bot. Mag. t. 259; Lodd. Bot. Cab. t. 807; Sweet, Brit. Flow. Gard., series 2, t. 185; Kunth, Enum. iv., p. 263; Spae, Mon. p. 25; *L. spectabile*, Salisb. Stirp. Rar. t. 5, not Link; *L. carolinianum*, Catesby, Carol. ii. t. 58; Lam. Encyc. iii., p. 535.—Bulb roundish, "larger than a Walnut." Stem 1—2 feet high, slender, erect, straight, quite glabrous, naked at the flowering time in the lower third. Leaves never whorled, 20—30, ascending, moderately firm in texture, sessile, without bulblets in the axils, not distinctly nerved beneath, the lower ones lanceolate, 2—3 inches long, ¼—½ inch broad, narrowed gradually to an acute point, the upper ones growing gradually smaller and narrower, and ceasing 1—2 inches below the flower. Flower always solitary in the specimens I have seen. Perianth 3—4 inches deep, the divisions varying in breadth in different specimens from 4—12 lines, their margin much undulated, narrowed upwards into a long point, and suddenly downwards a full inch from the base into a very narrow claw with reflexed edges, bright orange-red copiously spotted with purple, the face not papillose, the claw glabrous down the face. Filaments 2½—3 inches long; anthers 3—4 lines; pollen reddish; ovary 9—12 lines long; style 1¾—2 inches.

Confined to the United States, but much more southern in its range than *philadelphicum* and *canadense*, reaching down into Florida and northward to Kentucky, and, according to Kunth, to Pennsylvania. It is well marked from its nearest allies, *philadelphicum* and *bulbiferum*, by the very peculiar shape which the long very slender claw and lengthened out point give to its perianth-segments. It was introduced into Europe in 1787, but is quite rare in collections and not perfectly hardy. It must not be confused with *L. spectabile* of Link, which is a subspecies of *bulbiferum*.

15. *L. bulbiferum*, Linn. Sp. Plant. p. 433.

Of this there are at least four forms which appear sufficiently diverse and constant in their characters to claim the rank of subspecies; and there are, besides these, such a number of varieties of lesser moment that it is extremely difficult to give a satisfactory account of the plants that range here. I know far too little of these subordinate varieties, of which there are perhaps not less than twenty in circulation in our gardens and trade catalogues at the present time with quasi-specific Latin names, to be able to explain how they differ from one another, and should like to hear evidence on this subject from any of your readers who has watched them carefully in their various stages of growth whilst living. I will therefore confine my remarks now to the four subspecies which are known clearly as wild plants, and mention the names only of what I presume to be mere subordinate varieties without tangible characters appreciable from a botanical point of view.

Subspecies 1, *bulbiferum proper* = *L. bulbiferum*, Jacq. Fl. Austr. t. 226, Bot. Mag., t. 36; Kunth, Enum. iv., pp. 264 and 674; Fisch. et Meyer, Index Seminum, 1839, p. 54; Spae, Mon. p. 16.—Bulb ovoid, the outer scales an inch deep. Stem 1—3 feet high, rigid, erect, conspicuously sulcate, clothed, especially in the upper part, with irregularly scattered cottony pubescence. Leaves irregularly scattered, 50—60 to a stem at the flowering time, linear, erecto-patent, the lower ones 2—3 inches long, ¼—½ inch broad at the middle in the wild plant, the texture firm and thick, the upper surface bright green, the lower paler, prominently 5—7 nerved, nearly or quite glabrous, all sessile, the upper ones bearing clustered or solitary stalked or sessile chestnut-brown bulblets in their axils. Flowers usually 1—4 in the wild plant, but up to 12—18 in cultivation, properly racemose, but the raceme sometimes congested into an umbel, the arcuate ascending very cottony peduncles 1—2 inches long, naked, or the lower ones bracteolate at the middle. Perianth 2—2½ inches deep, permanently erect, a more decided red than in croceum, slightly cottony on the outside, the outer divisions 8—9 lines, and the inner about an inch broad at the middle in the wild plant, narrowed into a comparatively broad claw in the lower quarter, more or less spotted with black on the face, and papillose in its lower half, the basal groove with decidedly hairy borders. Filaments 18—21 lines long; anthers 3—4 lines; pollen red; ovary 7—8 lines long; style 14—15 lines, so that the stigma falls very little short of the top of the segments in the expanded flower. Capsule turbinate, 15—18 lines deep, bluntly angled, deeply umbilicate at the apex; seed deltoid, with a very narrow wing.

A native of various provinces of Austria, which was widely spread in cultivation in the days of Lobel, Parkinson, Clusius, and Dodonæus, before the Japanese or even the American species were introduced. It is enumerated in Gerarde's list of the plants cultivated by him in 1596. Whether this subspecies has a wider geographical range than this, I cannot say positively at present. All the specimens called *bulbiferum* from France, Italy, or Switzerland, which I have seen, belong to *croceum*. *L. bulbiferum* is also reported from Spain, but most likely that is *croceum* also, and there is a Scandinavian form, which I have not seen. *L. latifolium*, Link, Enum. i. 321, and *L. bulbiferum β umbellatum*, Bot. Mag. t. 1018, appear to be this subspecies after a period of cultivation in rich soil, and the latter is the form alluded to above with congested pseudo-umbellate inflorescence.

Subspecies 2, *croceum* = *L. croceum*, Chaix, in Vill. Delph. i. 322; Kunth, Enum. iv., p. 265 and 675; Fisch. et Mey. Index Sem. vi. 56; Spae, Mon. p. 17; Gren. Fl. Franc. iii. 182; *L. bulbiferum*, D.C., Fl. Franc. iii. 202; and of various other authors of floras of Western Europe.—Differs from the last subspecies by, 1, its upper leaves being always without bulblets in their axils; 2, the perianth being more orange in colour, never a full scarlet or crimson, the divisions more decidedly and more spathulately narrowed three-quarters of the way down, and the claw more distinct; 3, the capsule said to be more acutely angled, and, 4, the seeds said to have a broader wing. Stem, leaves, general shape of the perianth, ovary, style, and stamens just as in *bulbiferum proper*. Flowers often solitary in wild specimens, but up to 12—18 in cultivation.

A native of France, Switzerland, and the North of Italy certainly, and perhaps also of Spain, as just noted; and like the last, of very old date under cultivation, I take this to be the parent of *L. pubescens*, of Bernh. in Horn. Hort. Hafn. ii. 962, Kunth, Enum. iv. 264. At any rate a plant grown under this name at Kew was nothing more than long-cultivated *croceum*, but I dare say the name may be applied to forms of the last also.

Subspecies 3, *davuricum* = *L. davuricum*, Gawl. Bot. Mag. sub t. 1210; Kunth, Enum. iv. 264; Spae, Mon. p. 18; *L. pennsylvanicum*, Gawl. Bot. Mag. t. 872; *L. spectabile*, Link, Enum. i. 321; Reich. Icon. Exot. i., p. 21, t. 30; Fisch. et Meyer, Ind. Sem. vi. 58; Kunth, Enum. iv. 676; *L. Buschianum*, Lodd. Bot. Cab. t. 1628.—Stem more slender than in *bulbiferum proper*, hardly if at all cottony. Leaves more distant, longer, narrower, 5—6 inches long by 3—4 lines broad in the middle, without bulblets in their axils. Flowers mostly solitary in wild specimens, running up to 8—9 under cultivation, the divisions a little longer than those of *bulbiferum proper*, but not broader, narrowed at the base in the same way and similar in colour; and the capsule also bluntly lobed.

Ranges through Siberia, from the Altai to Kamschatka and Amurland, where the bulb is eaten by the natives. It was originally figured in the "Botanical Magazine," under the name of *pennsylvanicum*, under the supposition that it came from America; but the mistake was corrected in the volume for 1809, and the plant re-named *davuricum*, after the region of Siberia, in which it is most abundant. This name, *davuricum*, has priority over *spectabile*, which only dates from 1821.

Subspecies 4, *Thunbergianum* = *L. Thunbergianum*, Schult. Syst. Veg. vii. 415; Lindl. Bot. Reg. 1839, t. 38; Maund. Botanist, t. 158; Kunth, Enum. iv. p. 265; Spae, Mon. p. 20; *L. bulbiferum*, Thunb. Linn. Trans. ii. 333; *L. aurantiacum*, Paxt. Mag. v., p. 12, with a plate.—Stem 1—2 headed. Leaves broader than in the other forms, lanceolate, sometimes an inch wide, without bulblets in their axils. Perianth divisions spreading nearly from the base when fully expanded, 3—3½ inches long, the outer 12—15 lines, the inner 15—18 lines broad, the expanded flower 5—6 inches across, pale scarlet-red and scarcely if at all spotted.

A native of Japan, introduced to this country about 30 years ago. The above description applies to the extreme Japanese form, as figured by the three authors quoted, but the wild Japanese *bulbiferum* Lily, as represented in our herbaria, is considerably nearer the European type, and has neither the leaves appreciably broader nor the flower larger or more spreading, and can consequently scarcely be distinguished from *bulbiferum proper*, except by the absence of bulblets in the axils of the leaves.

Of other named forms known in cultivation, *L. hæmatochroum*, Lemaire, Ill. Hort. t. 503, differs from Lindley's plant only the in colour of its flower, which is a very deep claret-red; *L. venustum*, Kunth, Enum. iv. 265, figured in Van Houtte's "Flore des Serres," t. 657; and *L. sanguineum*, Lindl. Bot. Reg. xxxii. t. 50, are forms with narrower leaves and a more campanulate flower, substantially the same as the wild Japanese bulbiferum just mentioned. *L. fulgens*, Morren, Spae, Mon. p. 29, as figured by Lemaire in "Illustration Horticole," t. 422, comes midway between these last and Lindley's plant. Of other names in gardens, *formosum*, *staminosum* (monstrosity with petaloid filaments), *maculatum*, *vitellinum*, *citrinum*, *atromaculatum*, *atrosanguineum*, and many others, range here.

16. *L. pulchellum*, Hort. Berol. 1834; Fisch. et Meyer, Index Sem. Hort. Petrop. 1839, p. 56; Kunth, Enum. iv., p. 266 and 676; Spae, Mon. p. 22; Regel, Gartenfl. 1860, p. 81, t. 284, fig. 2; Ill. Hort. 1862, p. 131, cum icone.—Bulb ovoid, about the size of a Hazel-nut, the scales few, fleshy, ovate, snow-white. Stems slender, 6—12 inches high, slightly sulcate, quite glabrous. Leaves 20—30 at the flowering-time, scattered irregularly, without bulblets, erecto-patent, linear, firm in texture, glabrous on both sides, distinctly 3-nerved beneath, the edge obscurely toothed, the largest 1½—2 inches long, 1½—2 lines broad at the middle. Flowers always solitary in wild specimens, seen up to half a dozen under cultivation. Perianth erect, 12—14 lines deep, bright scarlet, with a few faint spots of black, the divisions opening widely when fully expanded, about half an inch broad at the middle, not distinctly spathulate at the base, slightly arachnoid on the outside, usually slightly papillose on the face in the lower half, the borders of the grove smooth. Filaments not more than 5—6 lines long; anthers 3—4 lines; pollen saffron-coloured. Ovary 3—4 lines long; style considerably shorter. Capsule obovoid, oblong, an inch long; seeds brownish, with a narrow border.

Confined to the eastern half of Siberia (Davuria and Amurland), whence it was introduced into cultivation in 1834 by Raddi, and more recently by Maximowicz. A beautiful and very distinct little species, much the smallest of the group, except *lancifolium*, resembling in size and general habit *tenuifolium* and *callosum* amongst the *Eulirions*, but in the position and shape of the flower, and in the shortness of its filaments and style, approaching no other species but *concolor*. It is not the same, as conjectured by Kunth and Spae, as *Buschianum*, which is a variety of *bulbiferum*.

17. *L. concolor*, Salisb. Parad. t. 47; Bot. Mag. t. 1165; Ait. Hort. Kew, edit. 2, vol. ii., p. 241; Kunth, Enum. iv., p. 259 and 673; Fisch. et Meyer, Index Semin. 1839, p. 55; *L. sinicum*, Lindl. in Paxt. Flow. Garden, vol. ii., Misc. p. 115, t. 193; Lemaire, Ill. Hort. t. 100; Van Houtte, Flore des Serres, t. 1206.—Bulb ovoid, about an inch deep. Stem 1—3 feet high, erect, subterete, obscurely pubescent. Leaves 20 to 30 at the flowering

time, scattered irregularly, without any bulblets in their axils, spreading, lanceolate, the lower ones 3—4 inches long, half an inch broad at the middle, narrowed to both ends, obscurely toothed at the edge, faintly downy below. Flowers up to 5—6 under cultivation, corymbose, mostly solitary in wild specimens, the erecto-patent peduncles 1½—2 inches long. Perianth 1½—2 inches deep, a bright uniform scarlet, or at most only very indistinctly spotted on the face, spreading widely when expanded, the outer 5—6 lines, the inner 6—8 lines broad, at the middle, scarcely spathulate at the base, not at all papillose on the face, the groove slightly pubescent. Filaments 12—15 lines long, anthers 3—4 lines; pollen red; ovary 8—9 lines long; style about half the ovary; capsule obovoid-oblong, about an inch long; seeds very narrowly winged.

Var. 1, *coridion* = *Lilium coridion*, Siebold et De Vriese Tuinbow Flora, vol. ii., p. 341, with a figure; Miquel Ann. Mus. Lug. Bat., vol. iii., p. 156.—Flower only seen solitary, 18—21 lines deep, bright yellow, scattered over principally on the lower half of the face with distinct reddish-brown spots, the inner divisions 5—6 lines, the outer 4—5 lines broad.

Var. 2, *partheneion* = *Lilium partheneion*, Siebold et De Vriese, Tuinbow Flora, vol. ii., p. 341, with a figure; Miquel, Ann. Mus. Lug. Bat., vol. iii., p. 156.—Flower only seen solitary, 12—14 lines deep, bright red-yellow, faintly spotted on the face, the divisions 4—5 lines broad at the middle; filaments 9—10 lines long.

The typical form was introduced from China in 1806 by the Hon. C. Greville, and was figured and described at the time by Salisbury. *L. sinicum*, which was placed in circulation from Fortune's specimens in 1850, does not seem to be distinct from concolor as a variety. *L. coridion* and *partheneion* are Japanese Lilies of Siebold's, which I know only from the somewhat incomplete figures in the Tuinbow Flora, but judging from these they quite agree with the type except in coloration and size of the flower. None of the collectors seem to have gathered them wild in Japan, so that very likely they are only products of the horticultural skill of the natives. They are both included in M. Leichtlin's list, and I shall be very glad to learn what is his view respecting them. The species is so distinct that it runs no risk of being confused with any other. "Scentless," as Salisbury said, "but very ornamental," and it is one that I should be very glad to see much more widely spread than it is at present. Will not some one try it for a bedding effect, by way of a change for the perpetual iteration of Tulips?

18. *L. lancifolium*, Thunb. Linn. Trans. ii. 333; Kunth, Enum. iv., p. 266; *L. bulbiferum*, Thunb. Fl. Jap., p. 134, not of Linnæus.—Stem more than a foot high, stout, erect, pubescent. Leaves scattered irregularly, moderately close, ascending, the lower ones linear, 3—4 inches long, half an inch broad three-quarters of the way down, narrowed gradually to a long point, the upper ones much shorter (under an inch long), lanceolate, with bulblets in the axils. Flowers two in the single specimen known, erect, the very short peduncles bracteated at the base by two much shortened ovate leaves. Perianth white, half an inch deep, narrowly campanulate.

A native of Japan, known only from the single dried specimen preserved in Thunberg's herbarium at Upsala, a drawing of which Professor Areschoug has been kind enough to send me. The general habit of the plant is completely that of *L. tigrinum*, but the flower seems very different from that of any other species. Till re-discovered, it must rank amongst the "species dubiæ," but, so far as I can judge from the drawing, this is its position. Of course it is a great mistake to confuse it with *L. speciosum*. *J. G. Baker.*

REPORT ON THE CONDITION OF THE FRUIT CROPS.

[FROM OUR OWN CORRESPONDENTS, AUGUST, 1871.]

COUNTY.	APRICOTS.	APPLES.	PEARS.	PLUMS.	STRAWBERRIES.	CHERRIES.	PEACHES AND NECTARINES.	FIGS.	SMALL FRUITS.	NUTS.	NAME AND ADDRESS.
SCOTLAND.											
ABERDEENSHIRE	Poor	Poor	Poor	Poor, except Victoria	Abundant	Poor, except Morello	....	....	Raspberries abundant; others poor	....	George Donaldson, Keith Hall
AYRSHIRE	Very few	A few on late transplanted trees; on others none	A few on walls; none on standards	Very few on walls; standards total failure	An average of first-rate fruits from second bloom	Almost a total failure	Very few out-of-doors; excellent crop indoors	Very fine indoors	Raspberry buds injured by frost, but now showing well; others variable	...	R. G. Rae, The Gardens, Eglinton Castle, Irvine
BANFFSHIRE..	Not half a crop, through late spring frosts	Average crop	Good crop	Poor crop	Abundant	Average	Very good	Few	Very abundant and fine	Failure	George Milne, Cullen House Gardens
BERWICKSHIRE	Very heavy crop, but late	Medium crop	Medium crop	Heavy crop, but very late	Early sorts medium; late sorts good	A failure; bloom destroyed by frost in May	None out-of-doors; medium indoors	None grown out-of-doors	Abundant, and of fine quality	Very scarce	Peter Loney, Marchmont House, Dunse
DUMFRIESSHIRE	A few	....	Next to none	....	Moderate	....	Fair crop, where covered in spring	....	Very scarce	....	D. Thomson, Drumlanrig Gardens
HADDINGTON	Average	Small crop	Large crop	Moderate	Large crop	Moderate	....	....	Abundant	....	Alex. Shearer, Yester Gardens
KIRKCUDBRIGHTSHIRE	Failure	Failure	A fair crop on walls	Very few	Very good crop	Failure	Very few	....	Abundant, except Black Currants	Very few	James Johnston, Terregles
LANARKSHIRE	Few in the district	Almost a total failure	Very few; less than for years	Short crop; in many places nil	A good crop of late sorts	Middling	Good in some districts, fair in others	....	Less than we have had for years	....	James Anderson, Meadow Bank
PERTHSHIRE	Heavy crop here	Very thin crop generally	Thin generally: good on our walls	Thin generally; moderate here	Good, but much destroyed with rains	Very moderate crop	Moderate crop	Good under glass	Good	Thin	Henry Rintoul, Dupplin Castle Gardens
ROXBURGHSHIRE	First-rate on both south and west walls.	A complete failure	Good in many cases	Second-rate crop	Good	Very few of Morellos; scarcely any of others	....	....	Fair crops	Very few	H. Knight, Floors Castle Gardens
STIRLINGSHIRE........	Scarcely one-fourth the usual crop on outside walls	Total failure; said to be general throughout the Carse	None on standards; very few on walls	None on standards; very few on walls	Not so good an average as in former years	Very few	About an eighth of the average on outside walls	....	Not more than a good half of the usual crops	....	M. Fitzgerald, Dunmore Gardens
WIGTONSHIRE	Thin crop where grown	About half a crop	Moderate crop	Nearly a failure	Average crop	Half a crop	Thin crop where grown	Average	Abundant	....	A. Fowler, Castle Kennedy
NORTHERN COUNTIES.											
NORTHUMBERLAND....	Good crop; trees very healthy	Almost a complete failure	Where protected when in bloom, a good crop; otherwise thin and small	On walls an average crop, but much infested with insects	Very great crop, thanks to a plentiful supply of water	An average crop on all but Morellos	None outdoors	Not grown outside; plentiful in houses	Gooseberries and Raspberries plentiful; Currants not so good; much injured by insects	Not many	Robert Bowie, Chillingham Castle Gardens
	Below the average; fruit suffered on trees that were spur-pruned	On most of the trees none, and on the rest very few	Will not average more than six on a tree in this locality	Very few on walls; on standards an average crop; trees much blighted	Both early and late kinds abundant; fruit large	Dessert kinds almost a failure; Morellos below the average	Where protected a fair average crop; trees healthy	None grown out-of-doors	Very abundant, and Black Currants were very large	Scarce in the woods; no Filberts are grown	Anthony Hedley, Wallington Gardens
CUMBERLAND.	Under average	Under average generally	Under average here	Under average	An average crop in some places	Under average	Under average	Very few grown	Under average; very good here	But few grown	J. Williamson, The Castle Gardens, Whitehaven
YORKSHIRE ..	An abundant crop everywhere	A light crop in most places	In general rather below an average	A light crop in general	In general a very light crop	Much below an average crop everywhere	A good crop in many places, but not general	Good; late in ripening, but promise to be fine	Good in many places, but not general	Most abundant crop everywhere	Michael Saul, Stourton, near Knaresborough
	Very abundant; trees making good growth	Scarcely any on walls, none in orchards	A fair crop	Good on walls, none in orchards	An average crop on two-year-old plants	An average crop	Very good crops, and trees healthy	....	Red Currants and Raspberries abundant; others below the average	Filberts plentiful; Walnuts scarcely any	Wm. Denning, Grimston Park, Tadcaster
	Abundant; required much thinning	In some orchards none, others very few	....	Very few	Plenty, but flavourless	Early kinds, poor crop; Morellos, fair	Fair crop; trees making good wood	Average crop	Abundant; never saw Black Currants so fine	Filberts and Cobs a poor crop; Walnuts very few	Jos. E. Nicholson, Mount St. John, Thirsk
	Under average; suffered when in bloom from frost	Under average; trees unhealthy, through excessive rain and low temperature	In some localities an average; trees healthier than Apples	A variable crop; trees healthy, and free from aphis	A good crop, but half was destroyed through continued rain	Under the average, and bad in flavour	Under the average in some localities; leaves much blistered	An average crop; trees healthy	Plentiful, and fine in size	Average crop of Filberts and Walnuts	R. C. Kingston, Brantingham Thorpe, Brough
	Plentiful, but late	Poor; blossom injured by east winds	Poor; injured by east winds	Middling crop	Heavy crop	Good crop	None outdoors	....	Middling crops	....	J. Simpson, Wortley Hall
LANCASHIRE..	Below the average	Much below the average	Very few, especially of the tender sorts	Below the average	Plentiful	Below the average	Very scarce	....	Gooseberries and Currants plentiful	....	Edward Green, Bank Hall, Warrington
	....	Medium	Very poor	Very poor	Good	Morellos good, others very poor	None grown outside	None outside	All crops good	Good	J. R. Petch, Manley Hall, Manchester
	Very good	Few	Few	Good	Few	Good	Excellent	....	All good	....	James Freeman, Knowsley, Prescot

CONDITION OF THE FRUIT CROPS—(*Continued*).

COUNTY.	APRICOTS.	APPLES.	PEARS.	PLUMS.	STRAWBERRIES.	CHERRIES.	PEACHES AND NECTARINES.	FIGS.	SMALL FRUITS.	NUTS.	NAME AND ADDRESS.
NORTHERN COUNTIES.											
CHESHIRE	Very heavy crops; the trees look very healthy	On the whole, scarcely an average	Not plentiful, generally; a good crop on walls	Large quantities on walls; Damsons fine; trees healthy	Promise well; but the continued wet spoilt a great deal	A good crop, generally	Below the average on walls; very good in orchard-house	....	All kinds of small fruits very plentiful	The best crop I have seen for many years	William Whitaker, Crewe Hall, Crewe
	Good crop	Small crop	Small crop	Small crop	Very short crop	Good crop; Morellos only	Very scarce	....	Average crop	Good average crop	W. Muir, Oulton Park
SHROPSHIRE..	Average crop, but late	Good, in many places	Partial; good crop in places	Damsons partial; Plums generally partial	Abundant here; very poor in places	Good	None in this neighbourhood	....	Abundant, but very much blighted	Pretty good	Daniel Judd, Hawkstone
	Good crop, generally	Not good; have had a check in swelling	The same as Apples	No Damsons; Plums on the walls small	Good crop, generally	Good crop, generally	Good crop, but late and small	Good crops	Good crops	Walnuts fair; Filberts good crop	Charles Galloway, Halston Hall
	Abundant, but late and small	Thin in gardens; in the orchards poor	On the walls good; the standards poor	Good, generally; Damsons thin	Indifferent; rotted before they were ripe	It is rare to see a good crop	Abundant, but late, though against flued walls	Good, but fear they will drop off	Good, but dirty	Abundant	John Pearson, Kinlet, Bewdley
MIDLAND COUNTIES.											
STAFFORDSHIRE	Abundant	Average crop; some orchards heavily laden, others bare	Abundant on walls and espaliers, partial on standards	Wall trees heavily laden, standards very thin	A very light crop; some places none	Very abundant on wall trees, partial on standards	A full crop	None grown out-of-doors, plentiful in-doors	Abundant	Very abundant; Walnuts scarce	Edward Bennett, Enville Hall Gardens
	Very abundant	Light crops	Good	Abundant	Heavy crops	Plentiful	Inside only; cold houses fine crops	....	Generally good	....	Z. Stevens, Trentham Gardens
	Very good	Much below average	Not an average; fruit small	Fair crop, some places very good	Good crop, but did not ripen well	Morellos good, not so sweet sorts	Fair crop, but small at present	....	Very plentiful	Very great crops of nuts; Walnuts scarce	Edwin Simpson, Wrottesley, near Wolverhampton
NOTTINGHAMSHIRE	Extra crop	In old orchards very thin; on young trees a fair sprinkling	A fair crop on some standards; others none	A fair crop; west aspect badly blighted; east aspect extra clean	Light crop; British Queen and Marguerite the best	Thin; clean trees	Thin in many places; with me a good crop	A light crop here; in some places better	Scarce in some places; with me about half a crop	Plentiful	John Miller, Worksop Manor Gardens
	Heavy crop; old trees nearly killed by frost	Average crop; late varieties very good	A heavy crop set; one half lost through a small grub	A very fair crop; trees are dirty from fly	Very good on young plants, old ones barren	Morellos very poor; early varieties were good	Not an average crop; trees in splendid health	....	Of Gooseberries not an average; of all others first-rate	Nearly as many Filberts and Cobs as leaves	James Hamilton, Berry Hill, Mansfield
	Average crop	Very poor crop	Very scarce	Poor crop; Damsons average	A failure; Keens' Seedling the worst	Very few	A small crop. trees making but little growth	A small crop, but will not ripen	Average; bushes have been blighted all the season	Heavy crop; Walnuts scarce	Wm. Cruickshanks, Kingston, Derby
LEICESTERSHIRE	A very large crop; require much thinning	Good here; but very few in the district	Of most sorts a fair crop, some very large	About half a crop	A very poor crop, some sorts a complete failure	Poor crop; except of Morellos, which are plentiful	A good crop; trees a good deal blighted	Very thin; not half a crop	A large crop of Currants; others variable	Walnuts very scarce; Filberts a heavy crop	Montgomery Henderson, Cole Orton Hall
	Abundant; fruit large, but will be late	Very thin crop in both orchard and kitchen garden	Variable	Moderate crops; trees much blighted	Fair crops of some kinds, others blank	Moderate crop of May Duke; abundant show of Morellos	Blighted and greatly injured by severe winter; crop thin	In favourable situations showing well	Gooseberries thin, much injured by caterpillars; Raspberries very abundant	Fair promise	William Ingram, Belvoir Castle Gardens, Grantham
	Plentiful	Very scarce	Scarce; medium on walls	Scarce	Scarce	Very scarce	A few	Not many	Plentiful	Walnuts few; others scarce	W. Burns, Whatton House, Loughboro'
NORTHAMPTONSHIRE	A first-class crop	On small bushes full; standards thin	Fair on west walls; standards thin	Half crop	Full crop	Very thin	Full crop	Half crop	Full crop, but discoloured through wet	Full crop	R. Gilbert, Burghley
RUTLANDSHIRE	A splendid crop; later than last year	Moderate crop	Very scarce	Thin crop; trees very much blighted	A grand crop; President and Lucas the best	Morello fine; dessert kinds indifferent crop	On young trees a fine crop, and trees healthy	Moderate	Abundant; bushes very much blighted	An immense crop	J. Smith, Exton Park Gardens, Oakham
OXFORDSHIRE	Very great crop and fine, some few blighted	Very few; much damaged by blight early in the season	Under average; trees badly blighted, but making second growth and flowering	Fair crop; very fine on walls; standards much blighted	Good, and fruit very fine	Early sorts under average; an abundant crop of Morellos	Good; the trees outdoors now clean; in houses very good and fine	Plenty of fruit, which I fear will be of no use	Abundant; Red Currants badly blighted; Gooseberries very fine	Great crop	W. Lee, Blenheim Gardens, Woodstock
	Heavy crop; trees clean and healthy	Very thin crop indeed	Full average	Very heavy crop	Abundant	Below average, and fruit inferior	Good average	A very heavy crop, but late	Black Currants excellent, others very thin; Gooseberries average	Trees literally covered with nuts; Walnuts plentiful	Isaac Watson, Nuneham Park Gardens
WARWICKSHIRE	Very good	Thin generally	Thin generally	Thin generally	Very fine, but soon over	Very good, but thin	Very good	Promising well	Very fine where clean	Enormous, except of Walnuts	Wm. Miller, Combe Abbey Gardens
EASTERN COUNTIES.											
LINCOLNSHIRE	Very heavy crop, and in fine health	Not half a crop	Average crop, and fruit clean	Good crop on walls; standards late	Good crop of fine fruit	Heavy crop on walls	Very heavy crop; the trees healthy	Average	Currants and Raspberries, average; Gooseberries, light	Filberts and Cobs, average; Walnuts, light crop	George B. Tillyard, Brocklesby Park
	Abundant where protected	Nearly a failure	Nearly a failure	On walls, fair; standards a failure	An extra crop of most sorts	Under average	A very poor crop	A poor crop	Gooseberries, half a crop; Currants, a fair one	Walnuts, a failure; Filberts, a good crop	David Lumsden, Bloxholm Hall, Sleaford
NORFOLK......	A fair average	An average crop	Under the average	An average crop	Plentiful and large	Abundant	Above the average	....	Plentiful, except Gooseberries	A fair crop	William Carmichael, Sandringham
	A good crop set, but almost all dropped off while stoning	Very few; almost a failure	About one-third of a crop; fruit small and late	Good on wall-trees; very few on standards	Good crop; fruit fine, but deficient in flavour	Very bad crop; Morello good and fine	Only half a crop; the fruit very late and small	Quite a failure in many places	Currants abundant; Gooseberries and Raspberries, good	Most abundant, except Walnuts, but very late	William Smythe, The Gardens, Elmham Hall
ESSEX.........	Abundant	Very scarce	Not half a crop, and very backward	Moderate; sadly infested with insects	Fair crop, but of poor flavour	Good crop	Medium	Good crop	Abundant	Moderate crop	William Earley, Valentines
	A very good crop	A very short crop; trees very much blighted	Quarter of a crop, and small	A fair crop; trees very much blighted	A very fair crop	Morellos a very good crop	A fair crop; trees much hurt in spring, now recovering	Rather thin on walls	Currants nearly all destroyed with blight, many bushes being dead	Most abundant crop	Geo. Young, Audley End Gardens, Saffron Walden
	Very good crop	About half a crop	Very good; best on walls	Very bad	Very good	Very fine; Morellos the best	About half a crop	Very good	Plenty of all sorts	About half a crop	P. Stoddart, Wivenhoe Park, Colchester
SUFFOLK	Abundant; fruit larger than usual	Partial; some trees without fruit	Crop rather thin; fruit a good size	A light crop; Golden Drop and Jefferson plentiful	Plentiful and fine	Scarce, and black fly very troublesome	About half a crop; trees suffered from severe winter and spring	Plentiful	A middling crop; Currants much blighted	Walnuts thin; Filberts abundant	Thomas Blair, Shrubland Park, Needham Market
	Very heavy crop; trees healthy	Mostly a failure; much injured by hail	One-third crop; many failures	Good crop generally; much attacked by black fly	Very partial, except on those that escaped the effects of frost	Partial; a fine crop here	Mostly a failure; trees terribly cut to pieces by the frost	Heavy crop	Partial; white Currants much blighted	On Filberts and nuts an extraordinary crop	D. T. Fish, Hardwicke House
	Thin; trees suffered from the low temperature in June	Very thin; leaves curled, and damaged by hail	Thin on walls; fair crop on pyramids	Very thin; fly most troublesome	Heavy crop on young plantations	Medium crop; trees look well	Thin crop; trees suffered from the late frosts	Showed a very heavy crop, but half have fallen	Abundant; Currants badly infested with green fly	Good crop	Jas. Sheppard, Woolverstone Park

CONDITION OF THE FRUIT CROPS—(*Continued*).

COUNTY.	APRICOTS.	APPLES.	PEARS.	PLUMS.	STRAWBERRIES.	CHERRIES.	PEACHES AND NECTARINES.	FIGS.	SMALL FRUITS.	NUTS.	NAME AND ADDRESS.
EASTERN COUNTIES.											
SUFFOLK	Abundant and fine; some of the fruit inclined to crack	A few on the hardier culinary sorts; many trees without a fruit	Half a crop on walls, none on standards	Half a crop on walls; on standards hardly any	Abundant, and of excellent quality	Morellos only grown out-of-doors, and they are plentiful	About half a crop, and fruits do not look promising	Showing plenty of fruit, but will be late	Moderate crop; inferior in quality, and trees much blighted	No Walnuts; Filberts and Cobs plentiful and fine	P. Grieve, Culford, Bury St. Edmund's
SOUTHERN COUNTIES.											
BEDFORDSHIRE	Average; fruit large and fine	Scarce; trees much blighted	Average crop	Scarce; trees much affected with green fly	Plentiful, but did not ripen well	Partial crop	Plentiful; trees have suffered from a lack of warmth	Good crop; only wants sun to ripen them	Currants plentiful, but much blighted; Raspberries almost a failure	Abundant, but very late	A. McKay, Woburn Abbey
	An average crop, but dropping off	Not half a crop; trees blighted	Fair here, not many in district	Scarcely any; trees fearfully blighted	Very good crop of later sorts	Fair on walls; standards scarce	Fair crop: difficult to keep fly off	Abundant in some places	Plentiful; Red Currants fearfully blighted	Excellent crop in some places	John Cadger, Luton Hoo Gardens
HERTFORDSHIRE	Very thin, and unusually late	Very poor crop	Very much below the average	Below the average	Heavy crop; fruit large	Good, Morellos excellent	Good, on old trees, foliage healthy	....	Very plentiful; Currants much blighted	Walnuts scarce; Filberts plentiful	D. Cunningham, Moor Park Gardens
	Abundant; fruit small	Very thin; trees much injured by grub	A partial crop	An average crop	Abundant; fruit fine, but poor in flavour	Average crop, Morellos rather thin	Plentiful, but late	An average crop	Gooseberries thin; Raspberries and Currants abundant	Filberts and Walnuts plentiful	Richard Ruffett, Panshanger Gardens
	Very abundant	Partial crop	Very abundant	Fair crop	Very abundant, poor in flavour	Medium crop	Very abundant	....	Plentiful but blighted	Very abundant	William Paul, Waltham Cross, N.
BUCKINGHAMSHIRE	A large crop; trees much mildewed, and fruit falling off	Very few; trees look bad	Half a crop	On walls but few; on standards a good crop	A good crop	Half a crop	Very indifferent, trees very much blighted	A fine crop	Currants nearly leafless; Gooseberries and Raspberries a good crop	Abundant	Thos. Bailey, Shardiloes Gardens, Amersham
	A very good crop	In most places a failure	Thin crop in most places	In some places abundant	Heavy crop, of superior quality	Thin crop, and very inferior	Fair crop, but very late	All fell off before half grown	Very good, in some places	Very plentiful	Philip Frost, Dropmore, Maidenhead
MIDDLESEX ..	Plentiful	A fair crop, but small	Fine on standards; scarce on walls	Scarcely any, and black with blight	Below the average	A very poor crop	Much blighted, good in places	....	Gooseberries plentiful; Currants much blighted	An immense crop	Richd. D. Blackmore, Gower House, Teddington
	Very abundant	A moderate crop	Very moderate	Moderate	Plentiful, but much spoiled through wet	Plentiful	Plentiful, but late	....	Plentiful, but much blighted	Very abundant	A. F. Barron, Royal Horticultural Society, Chiswick
	Very good	Thin	Thin	Good	Crop heavy	Very poor	Good	Moderate	Under average	Good	Thos. Baines, Southgate
	A good crop	Fair average	Average crop	....	Very good, and large	Very good	Fine crop	Very few	A good average	....	Robt. Henderson, Fulham Palace
BERKSHIRE ..	Generally a heavy crop; fruit small	A light crop, with a few exceptions	A good average, and promises to be fine in quality	Plentiful, but inferior in quality; trees suffered from blight	Generally a light crop	A thin crop, with the exception of Morello	A good crop where the trees are clean	....	Generally a light crop; Currants injured in places by fly	Filberts plentiful, but a light crop of Walnuts	H. Rose, Royal Gardens, Windsor
	Average crop	Very partial; Northern Greenings plentiful	Very few; blossom destroyed by frost on April 8	Under average; trees a good deal blighted	Under average	May Dukes a full crop; of other sorts not half	A fair average crop on most trees	Fruit turning yellow, and dropping off	An average; Currant bushes much blighted	Light crop of Walnuts; no others grown	Charles Ross, Welford Park, Newbury
SURREY	A partial crop; trees sadly mildewed	Partial, young trees sadly blighted	Partial on walls; on standards good	Very light; under glass excellent	A good crop of excellent quality	Under the average, except Morello	Excellent crops	Good	Middling; trees much blighted	Very plentiful	James Drewett, The Denbies, Dorking
	A fair average, but late	Under the average	Under the average	Above the average	Heavy crop, and very fine	Under the average; much damaged by rain	A full average; trees much infested with aphis	Average; under glass very good	Plentiful and good	Very thin in places	William Kemp, Albury Park Gardens, Guildford
	Above the average, but late	Failure	Failure	An average; trees affected with blight	Below the average	Average crop; Morellos excellent	Average crop	Average crop	Gooseberries a good crop; Currants a failure	Extraordinary crop	James Woodward, Garbrand Hall Gardens, Ewell
	Good	Not good	Not good	Below average	Abundant	Plentiful; quality not good	Average	....	Gooseberries plentiful; Currants poor	Very abundant	C. Green, Hillfield, Reigate
KENT	Very abundant and fine	The lightest crop for many years; trees and fruit much blighted	Very short crop indeed; far below even a moderate average	About an average crop	Abundant and fine on high ground; much injured by spring frosts	Very good crop indeed, on both pyramids and walls	About a fair average crop	Very few; nearly all the trees killed down	Very good; but very much infested with aphis, &c.	Very abundant; above the average	John Cox, Redleaf, Penshurst
	Full crop	Scarcely any	A few on walls	Very heavy crop, especially on walls	Very heavy crop for miles round	Morellos full crop; only half of others	Full crops of both	Very heavy crop	Full crop; Currants blighted and useless	Filberts heavy; Walnuts not half a crop	W. P. Roberts, Holwood Park, Beckenham
	An average crop	Much blighted	Much blighted	Much blighted	A very good crop	Under the average	Variable; some much blighted	Good	Abundant; Currants much blighted	An enormous crop	Thomas Woodford, Eastwell Park, Ashford
	Very good	Some orchards very good; others entirely destroyed by aphis	Good	Very heavy crop	Very heavy crop	Very slight crop	Moderate; trees much injured by aphis	....	Very small crop; trees much injured by aphis	Very good indeed	J. C., Bidling
	Average; rather small	Under average; abundant here	Not half a crop, small	Very few on standards; fair crop on walls	Strawberries abundant, and very good	Very fair, especially of Morellos	Average crop, but small and late	Scarce and small	Gooseberries and Raspberries abundant; Currants scarce	Abundant everywhere	G. C., Lillesden, Hawkhurst
SUSSEX	Average, but small	Much blighted	Under average	Much blighted	Abundant	Under average	Good	Average	Currants and Gooseberries blighted; Raspberries good	Over average	Thomas Jack, Battle Abbey
	A most abundant crop; fruit rather small	Moderate crop, fruit small	Fair on walls, but thin on standards	Very good in places	Abundant, and fruit fine	Average crop	Good average crop	Good, but late	Good crops	Plentiful	John Wilson, Arundel Castle
	Good crop throughout the district; trees very clean and healthy	No crop; the trees in bad state through black fly	A very light crop; trees clean and healthy	A light crop; fruit set well, but was overtaken by fly	Large crop; fruit fine, especially Sir C. Napier	Early kinds an average crop; of white and late sorts none	Very light crop; leaves blistered, and attacked by black fly	Very good on walls and standards	Large crop and fine; trees clean, except Red Currants	Good crop; much blue fly on the trees	S. Ford, Leonardslee, Horsham
HAMPSHIRE ..	Abundant and very fine; trees were protected	Good here, but thin generally in this district	Very good on walls; standards poor	Average crops	Enormous crops, very large and good	Abundant and fine, especially Morellos	Good average crops; trees protected	Good	Heavy crops, but Red Currants have suffered much from blight	Extraordinary crops, and promise to be fine	William Wildsmith, Heckfield Gardens, Winchfield
WILTSHIRE ..	Abundant	Under average	Not an average	All destroyed by spring frosts	Moderate; poor in flavour	Morellos plentiful, others scarce	Very few; trees suffered from spring frost	....	Very abundant, but suffered much from aphis	Plentiful	A. Johnson, Savernake Forest
	Plentiful, but indifferent in quality	Not half a crop	Not an average crop	Good	Plentiful	Good on walls	Good where trees received a little protection	Very good crop	Abundant	Very plentiful	William Scammell, Bowood, Calne
DORSETSHIRE	....	Very bad	Bad	Bad	Splendid	Some trees very good	Good for the year	....	Splendid crop	....	W. F. Radclyffe, Okeford Fitzpaine
	Irregular; orchard-house, fair crop	Table and cider fruit very short crop	Below average and very irregular	Very bad; trees severely blighted	Generally deficient; with us abundant and good	Below average	Outdoor crops bad; in orchard-houses abundant	Very few grown here	Abundant, except Red Currants	Walnuts below average; hedge nuts abundant	Henry Munro, Clevelands Gardens, Lyme Regis

CONDITION OF THE FRUIT CROPS—(*Continued*).

COUNTY.	APRICOTS.	APPLES.	PEARS.	PLUMS.	STRAWBERRIES.	CHERRIES.	PEACHES AND NECTARINES.	FIGS.	SMALL FRUITS.	NUTS.	NAME AND ADDRESS.
WESTERN COUNTIES.											
WORCESTERSHIRE	Great crop and fine	Not more than one-tenth of a crop	Standards very light; good on walls	Same as Pears	A light crop through excessive drought of last year	Moderate crop; trees much injured by blight	A good crop; trees clean, fruit fine, but late	Light crop	Good, but much injured by blight in many gardens	Good crop of Filberts; of Walnuts none	William Cox, Madresfield Court, Great Malvern
	Full average	Very light; suffered from blight	A very light crop	For the most part a failure	A full average; much destroyed by wet	Half a crop	Very light	Moderate	Gooseberries and Raspberries excellent; others moderate	Filberts abundant; Walnuts very thin	George Westland, Witley Court
	Very good	Fair crop	Fair crop	Abundant crop	Very fine	Not so good as last year	Very good	....	Good crop	Trees loaded	David Mackie, Hagley Hall Gardens
	Good crop, but trees nearly leafless	In many orchards not an Apple, and others plenty	Very light; trees weak from heavy crops of last year	Moderate crop, but I fear very partial	Very light; plants appeared to have suffered from the last summer	A fair crop	Light crop; fruit very small	....	Currants abundant; Gooseberries very light	Abundant crop	John Wyke, Kyre House, Tenbury
HEREFORDSHIRE	Very good; never more abundant	None; in orchards very few	Fair crop	On east wall not a full crop, on west walls very good	Poor; many blind	Good	Abundant, but the foliage is not sufficient to mature the crop	Trees killed nearly to the ground	Good; much blighted	Filberts remarkable crop, Walnuts thin	Samuel Wells, Holme Lacy
	Heavy crop, excellent	Half a crop; blossom destroyed by blight	Half a crop; blossom destroyed by late frosts	Good crop	Good crop	Good	Heavy crop on early varieties, late varieties thin	....	Gooseberries half a crop; destroyed by frost, others abundant	Heavy crop	A. Bye, Hampton Court Gardens, Leominster
	Abundant; required much thinning	Scarce; trees badly blighted	Thin on walls, standards a failure	Much blighted; a thin crop	Moderate crop; injured by rain	A good crop, but injured by wet	Abundant, but late; trees remarkably healthy	....	Gooseberries thin; Currants much injured by blight	Filberts abundant, Walnuts scarce	Welliam Coleman, Eastnor Castle, Ledbury
GLOUCESTERSHIRE	Heavy crop; small-sized, and at least a fortnight late	Not a fourth of a crop; trees have suffered from aphis, but recovering	A failure; moderate crops on early varieties	On standard and wall about half a crop, of full size, but late	Abundant and large, but deficient in flavour	On standards none, wall-trained trees less than a fourth	So abundant that nearly half had to be removed	Scarce, except some of the free-fruiting varieties	Abundant, but half the crop was destroyed by honey-dew	Very productive	Alexander Cramb, Tortworth Court, Falfield
SOMERSET ..	Good crop, but small	Much below the average, and small	A partial crop; bloom cut off by late frosts	Fair crop, but small	Good crop, but deficient in flavour	Morellos plentiful, choicer sorts below the average	Good under glass, a fair crop on walls	On old trees good	Abundant; saved the red Currants by syringing early with soft-soap water	....	William Dodds, the Gardens, Ashton Court
	Plentiful, but very small, and not yet ripe	Not good in gardens, and scarce in orchards	Not very plentiful	Under an average crop	A good crop	Morellos, a good crop; other sorts, small	Very small, and late; good in orchard-houses	Scarcely any, on account of the severe frost	Gooseberries good; Currants much injured by blight	A fair crop	William Hallett, Cossington, Bridgwater
	A fair crop	Scarce	Below the average	Plentiful	Good crops, suffered from wet	Morellos fine; other sorts thin	Very good	Medium	Very plentiful	Filberts plentiful; Walnuts a failure	Thomas Bray, Nynehead Court, Wellington
DEVONSHIRE .	Abundant	Under average; a poor crop of cider Apples	Average; fruit now swelling fast	Under average in most cases, Green Gages good	Fine crops of full-sized fruit	Above the average; fruit large and good	Full crops; trees much blighted, and fruit small	Good crops on standards	Large crops of all kinds	Heavy crops of Walnuts and Filberts	Robert Begbie, Bicton Gardens
	A very abundant crop	Very thin; suffered from late frosts	Generally poor, some few sorts plentiful	Under average	Keens' Seedling fair; others a failure	A fair average crop	Abundant crop	An average crop	Abundant and good of all kinds	Filberts and Cob nuts a good crop	Alexander Ayson, Oxton House Gardens
	Good crop	About an average	Light crop	A partial crop	Very heavy crop	Much below average	Very abundant	Very few	Average	Good crop	George Erskine, Lupton
CORNWALL ..	Very few grown in this county out-of-doors	A poor crop; the tree severely blighted at setting time	Considerably under the average; good crops of Chaumontel	Average crop; some of the better kinds required thinning	Abundant crop	Very good	On healthy trees abundant, but will be late in ripening	Abundant crop of brown Turkey in favourable spots	Plentiful; the Currants more than usually affected by Fungi and blister	Average crop	Henry Mills, Enys, Penryn
	....	Half crop	Plentiful	Half crop	Good and plentiful	Scarce	Plentiful	Plentiful	Abundant	Very plentiful	Richard Lynch, Port Eliot
WALES.											
MONTGOMERYSHIRE	Abundant; required much thinning; trees protected by netting	Heavy crop in gardens, but partial in orchards	Plentiful on walls, partial on orchard trees	Most abundant, and fine in appearance	Very good and fine, especially the true Elton	Very good	Most abundant, but will be unusually late	Under average; not extensively grown here	Gooseberries remarkably fine, also Currants in variety	Not many grown here; under an average	George Brown, Powis Castle Gardens, Welshpool
ANGLESEY	....	Below an average	Light crop	Very few	Good crop, but injured by rain	Moderate crop, fruit fine	....	....	Abundant and good	....	J. Ellam, Bodorgan
DENBIGHSHIRE	An excellent crop	A very fair crop	A partial crop	On walls about half a crop	Good, and large	Very good	Peaches half a crop, Nectarines very few	Good under glass	Gooseberries very fair, Currants good, but blighted	Filberts and nuts an extraordinary crop; Walnuts half a crop	Geo. Browne, Chirk Castle, Chirk
	Trees literally loaded, required much thinning	Very fair, except where overcropped last year	A fair sprinkling; Quinces middling	Excellent crops; Damsons very heavy	Average crop, except of Keens' Seedling	Good; Morellos very good	Plentiful	Good crop	Abundance, except Black Currants; Mulberries good	Walnuts very fair; Cobs and Filberts loaded	Peter Middleton, Wynnstay Gardens, Rhuabon
CARMARTHENSHIRE	Very few grown	Half a crop	Good on walls, none on standards	Good on walls, none on standards	Heavy crop, especially of the late ones	Morellos heavy crop	Very heavy crops	Very few	Heavy crops; Gooseberries and Currants much blighted	Light crop	James Ticehurst, Dynevor Castle, Llandilo
PEMBROKE	....	Very thin, on half the trees none	But few, many affected with spot	Abundant on walls	Moderate crop on the late sorts	Plentiful and good	Abundant where protected with a 14-inch coping	None, trees much injured by the spring frosts	Gooseberries, Currants, and Raspberries moderate	Abundant	W. Hutchison, Castle Malgwyn, Llandyssil, S. Wales
IRELAND.											
ARMAGH	....	Very scarce	Very scarce	Very scarce	A fair crop	....	....	A few	Fair crop	Three-quarters of a crop	David McClelland, Churchill
CORK	A fair crop	A good average	Heavy crop	Good	Very superior crop	Very bad	Average	Good	Very fine crop	Better than last season	J. Fraser, Gardens, Bessborough
DOWN	....	Very good	Very fair	Almost none	Very fine	Good	Almost none	....	Very fine	Fair average	John Fisher, Stormont Castle, Dundonald
DUBLIN........	Good, and promise well	Middling	Average	Abundant and good	Under average	Fair	Good	Abundant	Plentiful	Average	D. Pressly, Knockmaroon Lodge
KERRY	None grown in this district out-of doors	Good crops on pyramids and fruit trees	Very thin; on the west walls they are the best	Abundant here, only partial in exposed situations	Heavy crops on some sorts, the first and best blooms did not set	Heavy crop on walls, standard and orchard trees very thin	Fine crop here, in other garden not so good, trees unhealthy	Good crops but very backward; wet and cold for the past month	Abundant crop, fine fruit	Filberts not good; wood nuts plentiful in some places	George Breese, Killarney House Gardens
MEATH	A fair average crop, but small	Plentiful on dwarf trees; on old trees none	A fine crop on trees protected from frost in spring	None on standards; very thin on walls, owing to spring frosts	A heavy crop, but one-half were lost through wet weather	A very poor crop	Plentiful, but they are very small	Very scarce	A very thin crop, deficient in flavour	Walnuts thin; Filberts and Cobs plentiful	Robert Moulton, Somerville, Navan
WATERFORD ..	Above average	Half crop of Keswick Codlin, &c, others almost a failure	Good crop on walls, very few on standards and pyramids	Fair crop on walls, none on standards	Fair crop of Black Prince, other kinds very bad	A few on walls, none on standards	A fine abundant crop, but very late	A good crop, but dropping before ripe	Abundance of all kinds; Raspberries without flavour	All kinds plentiful	J. A., Curraghmore, Portlaw
GUERNSEY AND JERSEY.	Moderate	Average	Rather below average	Not a good crop	Moderate crop	Not good	Below average	Average	....	....	Thos. C. Bréhaut, Richmond House, Guernsey

REMARKS ON THE FRUIT CROPS OF 1871.

[In addition to the foregoing tabular reports, the following statements are extracted from our correspondents' returns.]

We never had a better crop of Apricots. We protected them simply with herring-net, two and three ply, and kept them out from the trees about a foot or 9 inches by means of forked sticks. Our south and west walls of Pears were protected in the same manner, and many of the trees are laden, and, in fact, all the blossom that opened kindly set well by this means. I am confident had we protected our Cherries with the same covering we should have had crops of fruit, for the trees were covered with blossom. Our great loss, the Apple crop, is serious. We have not one Apple for every bushel we had last year. The cold, dry, easterly winds in May were the most harsh I ever felt; and scarce a day had we during the whole flowering period that could be called, in common phraseology, a nice day. Old trees on the sites of two old gardens in different parts of the park, that seldom or never failed before, are fruitless; they are that old, valuable, jelly-making variety, Keswick Codlin, and their loss is deplored in the still-room in consequence. *H. Knight, Floors Castle Gardens, Kelso.*

—— With the exception of Apples, the fruit crops here are good this year, which I attribute in some measure to the soil and situation. I believe this is the driest locality in Yorkshire, and the subsoil is of a sandy, porous nature. The fruit trees in general only make moderate growths, which in ordinary seasons get well ripened. Peaches and Nectarines are a heavy crop; they set very thick, and I have had to thin them several times. In general, Peaches are not an abundant crop in this neighbourhood. Trees that bore heavy crops last year have in many places light crops this; and trees that had light crops last year, have average ones this. Apricots are in general a good crop; fully an average one. All trees that were not overladen last year have abundant crops this season; indeed, they are much better than could reasonably be expected after the heavy crops of last year. Pears are here a good crop, both on the wall trees and on the standards. A few of the trees have light crops, but the greater number have very good crops. The fruit is clean and healthy, and promises to be fine. Plums, as was to be expected after the extraordinarily heavy crop of last year, are in general light here—Victoria, Kirk's, Jefferson, Mitchelson, and some others which were not overladen last year, have good crops. Cherries are not a heavy crop. Strawberries have in general been a light crop in this part of the country. In the neighbourhood of Knaresborough, where large quantities are grown for Harrogate, Leeds, and other markets, the crop has been the lightest they have had for some years. In general the old plants have had very little fruit; what fruit there was has been borne by the two-year-old plants. The drought of last year told on the old plants, and the rains came too late for the plants to perfect their growth and form crowns here. Sir Harry, Sir Joseph Paxton, President, British Queen, Carolina Superb, Empress Eugénie, and some others, have been abundant and fine; but Keens' Seedling was a complete failure. Had it only been the old plants I should not be surprised, as they did not make any growth last year until it was too late to form perfect crowns; but a large breadth of two-year-old plants, which stood the drought and looked well last summer, were quite as great a failure as the old plants. I cannot account for it, as the runners came from a most prolific stock. The two-year-old Eltons have good crops, but the older plants have very little fruit —I grow a good deal of this for late use. I like Eleanor, but it does not bear freely on our dry soil. On the heavy clay soils around Knaresborough, it bears enormously, and being a fine, showy fruit and late, is very valuable. Fruit of all kind is very late in ripening this year, owing to the dull cold weather. *M. Saul, Stourton, Yorkshire.*

—— Apples generally in this district are not an average crop, except in sheltered situations. Our garden walls being high, and the trees young, we have a fine crop. The hardier sorts of Pears are a fair crop, but such tender varieties as Marie Louise are a complete failure. We never use any protection here except the wall coping, which projects 3 inches, and we have generally an abundant crop of Peaches. The great point seems to be to keep the trees free from insects, for which two parts of sulphur and one of snuff dusted over the trees in a dry state will be found an effectual remedy. *W. Carmichael, Sandringham.*

—— Pyramidal Peach and Nectarine trees, planted in an unheated orchard-house, bear a very light crop this season, and during the early part of which the trees were very much blighted; while in a house of similar dimensions, where the trees are trained cordon fashion, at a distance of 18 inches from the glass, and which has the advantage of hot-water pipes, by which frost was merely excluded, fruit is in great abundance, and promises to be fine. Bush and pyramidal-trained Gooseberry trees in the open quarters have not a tithe of a crop: while similar sorts trained to a north wall are bearing a most abundant crop, and the fruit is clean and very fine. *P. G., Culford.*

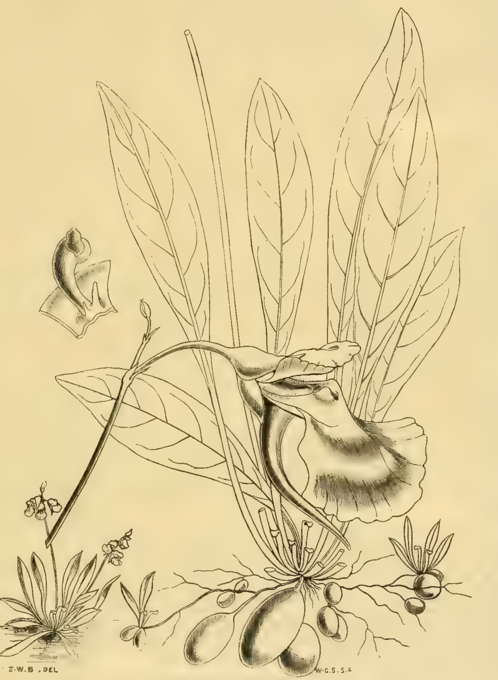

Fig. 233.—Utricularia montana.

—— The Potato crop is very fine with me this season; I have not yet seen a diseased tuber, which I am much surprised at from the great quantity of rain we have had in this neighbourhood. *George B. Tillyard, Brocklesby Park.*

—— We have had 2.79 inches of rain in June and 3.73 inches in July. The Potato disease is spreading fast in this district, other vegetable crops are all looking well; Peas are most abundant. We had 9° of frost on the 7th and 11° on April 8. Peaches, Nectarines, and Pears were then in full bloom, the two former have set a fair crop, but we have scarcely any Pears on most of the sorts. We have most on the Beurré Rance, but the trees of that sort look more unhealthy than any of the others. *Charles Ross, Welford Park, Newbury.*

—— This season has been the worst I ever knew for blight of all kinds, especially green and black fly. At one time I quite despaired of saving the Peach and Nectarine crop owing to this pest, but by continued applications of tobacco-water, and copious washings with clear water, I have now a good prospect of being paid for my labour with good crops of fruit. I am sorry to report that the Potato murrain is spreading in this district, which is the more to be regretted as the crops are more than usually fine. Other vegetables have been, and are very fine. *W. Wildsmith, Gr. to Lord Eversley, Heckfield Place, Hants.*

—— We have had scarcely two days following each other without rain these last two months, consequently the prospects have greatly changed since May, when appearances led us to expect a dry summer, and which in some instances led to a preparation for it. Cornwall and rain, however, are so proverbially connected that you will not be surprised. Most of the county is naturally so well drained that a "six-hours'" shower would be acceptable twice a week all through the summer. The early Potatos were good, but a terrible change has come over the late ones: in some cases the haulm has literally vanished, and report says the tubers are very badly affected everywhere. Garden vegetables are in good supply, Peas without mildew, and Carrots without worm. The "bedding out" stuff is not so good as in some seasons. The soil was cold all through May; June began with cold rains, and since then the soil has been so saturated that no warmth seemed to get at the roots of the plants; they have, therefore, made but little growth. Gardeners and farmers alike are now hoping for a few weeks of fine weather in August. *Henry Mills.*

—— Cider fruits generally are much below the average, and the leaves much curled and blighted. Plum trees suffered severely from attacks of aphides, which have been very prevalent. Bush fruit has generally suffered a similar fate, many of the Currant bushes being quite destitute of foliage. Outdoor Peach and Nectarine trees have suffered from cold and wet, whilst those grown under glass are healthy, with abundance of fruit, thus again pointing to the necessity in our variable climate of covering Peach walls with glass. The Potato disease is unusually prevalent in this neighbourhood, early and late varieties alike suffering from its virulence. Parasitic Fungi—*i.e.*, moulds, brands, and cluster cups—are unusually abundant this season, vegetation suffering from their attacks, especially Roses, &c., from Coleosporium, Lecythea, and Aregma mucronatum; whilst Peas and the like are suffering from mould, &c.; and, lastly, the destructive and most dreaded Peronospora infestans on the Potato. *Henry Munro, Clevelands, Lyme Regis, Dorset.*

UTRICULARIA MONTANA.

It is about a year ago since I first became acquainted with living specimens of this curious, and at the same time highly beautiful Lentibulariaceous plant (fig. 233). When first received it was in a dried state, having been but recently imported from New Grenada; but from what locality or altitude, unfortunately, I cannot ascertain. It came to us from Stevens' Rooms with the following description:—

"Utricularia, very fine new species, never before imported into this country alive, resembles a terrestrial Orchid. From a bundle of transparent tubers the flower-stems rise to a foot in height, and bear three to five flowers of an inch in diameter. Flowers and bracts of a pure white [? pale primrose]. Having been sent in their native mould they are in excellent condition."

Professor Oliver, of the Royal Herbarium, Kew, who has specially studied this curious family, has kindly referred this plant to Utricularia montana, or

U. alpina, as it is sometimes called, and from these specific names I infer that it comes from some considerable elevation above the sea level.

When I first obtained the tubers we placed them in a shallow propagating pan "in their native mould," using a little sand and peat for filling in amongst the transparent tubers, which latter were somewhat shrivelled. After a good watering they were placed in a moderately warm and airy Cattleya-house, and in less than six weeks the delicate green foliage commenced to push through, and the roots also began to ramify in all directions through the light compost. Knowing that Utricularias were aquatic plants, we obtained a larger-sized pan, and filled it with water, into which was placed the base of the pan before alluded to. This kept the roots in a state of constant moisture, and the plants grew vigorously. They were removed to the Indian-house—or a mean temperature of about 65°—for the winter, where they still continued growing, and have just now finished blooming, having borne about a dozen spikes of their lovely flowers. It is a very pretty little plant, and worthy of careful treatment on the part of those who possess it. Ten lots of this were sold at one of Stevens' sales in June, 1870, so that we may probably hear of its blooming elsewhere during the present year.

I have to thank C. Stead, Esq., The Knoll, Baildon, Leeds, for a flower of this charming novelty, the plant here alluded to having recently flowered in his rich collection of exotics—for the first time, we believe, in this country. *F. W. B.* [The plant occurs in the West Indies and in Peru and New Grenada. It has flowered recently at Kew. EDS.]

Home Correspondence.

Hellebore Powder.—Kindly allow me to confirm the letter of "G. A. H." in the *Gardeners' Chronicle* of the 29th ult. I have used Hellebore powder for some years to destroy the Gooseberry caterpillar, and I have always found it an effectual remedy. I prefer the white Hellebore powder, and to have it fresh ground if possible. The method I have generally adopted is this: As soon as the caterpillars appear, and have commenced their havoc, I get an old flour dredger or a tin pepper-box, and fill with the powder. If the leaves of the bushes are not damp enough in the evening or morning, then I sprinkle the bushes affected with the syringe, in order that the powder may adhere. With the dusting box in one hand and the shoot of the bush affected in the other, you can get at the upper and under sides of the leaves effectually. I think the use of the pepper-box preferable to throwing it out of the hand; there is then no waste of the Hellebore. The powder should be kept perfectly dry; if the least damp, it gets clammy. Sometimes there are two or three broods of the caterpillars during the season, and the eye of the diligent gardener must be constantly on the alert to detect these destructive marauders. If the berries are ready for tarts, or are required for bottling, &c., they should be washed or wiped clean of any powder adhering to them, as it imparts a disagreeable taste to the skin of the berry. Of course, also, Hellebore is a strong poison, so that on this account the berries should be thoroughly cleansed before using. *Thomas Campbell, Chorlton Road, Manchester.*

New Pears.—At the risk of being tedious, may I ask a "wee" corner to enable me to say to "Pari Passu" that he is right in supposing that I meant Early Beurré d'Aremberg. It is a pity that this name should have been adopted; the fruit has no resemblance to any of the B. d'Arembergs, but it has to B. d'Hardenpont d'Automne. A great deal of confusion exists about the B. d'Aremberg, *i. e.*, Glou Morceau, or, more correctly, B. d'Hardenpont d'Hiver. The Abbé Hardenpont, of Mons, was the raiser, and it was named, very justly, after him. The reason it was called B. d'Aremberg was just this: that Noisette, of Paris, having visited the Duc d'Aremberg's gardens, procured grafts of the sort without a name, and on arriving at Paris named it B. d'Aremberg. Glou Morceau is Walloon for a delicious mouthful, or something like it, and as the Pear merits the appellation we have adopted it in England; so here we have Beurré d'Hardenpont d'Hiver in Belgium, B. d'Aremberg in France, and Glou Morceau in England—three names for the same Pear. There is nevertheless another Beurré d'Aremberg of the Belgians, with many synonyms. This is the true B. d'A., and is perhaps best known as Orphéline d'Enghien; the fruit of the two sorts resemble each other a good deal, the trees not at all. There is again our other friend, a claimant of the house of Aremberg, but he has no right to the title, only he comes into the Hardenpont family as a first cousin of B. d'H. d'Automne; in fact, the two may be, or are, nearly the same, though there seems a difference in the trees. *Pomaque degenerant:* Prince Albert Pear never, since it came into this country, was anything else. If Democritus had been a modern nurseryman he would have found his head crammed enough if he had tried to keep our new railroad pace. The old gentleman lived in times when he could at least keep up at a steady pace with his compeers. As to the Autumn Bergamot, I attach the following:—

"Bergamot, Autumn (English Bergamot, York Bergamot, Bergamot Commune, Bergamot Recour, Bergamot Lisse, Bergamot de la Hilière, Bergamot Rouwa, Grosse Ambrette, Bergamot Melon, Vermilion Supreme): 2 size, 1 qual., October to December. Roundish, slightly flattened; skin yellowish green, spotted and striped with red, with patches of dark fawn colour; eye small, open, often wanting, and slightly sunk; stalk, short, thin, and slightly bent, set in a wide round hollow; flesh white, melting, and juicy; juice abundant, acidulated, sweet, and perfumed. This fine old Pear is said to have come originally from Asia, and has obtained its name from a town called Bergamo or Pergame. It is supposed to have been brought into this country by the Romans, and has been cultivated in England about 300 years."

By which "Pari Passu" will see that it is not even European or American, and may get a hint as to the origin of the word Bergamot. I must now crave a little space to reply to "Bon Chrétien," p. 175. I have read of Mahomet's Bridge, a single hair, to get to Paradise on. The Christian road is equally narrow and straight. I would modestly recommend "Bon Chrétien" to leave out the "Bon" and put in "Mauvais,"—but as he likes; he may be leal at heart and a good fellow, and as such I will accept him—of course I have no notion of his *status*, and cannot know, excepting from his own mouth, that all he advances is good ballast to get along the hair with. I lay myself open by name and invitation to be corrected, and am glad when any of your correspondents try to put me right. Error is not a desirable friend, and we ought to be thankful to all who try to improve us; even when they do not hit the mark, there is generally something to be gained, even then an error may be discovered and rectified. Such, for instance, as correcting a typographical one, as in the spelling of Napoléon Savinieu, which should be Savinien, the surname of Nicolas Savinien, *curé* of Liernu. The Pear, not the *curé*, I have fully described at p. 974. I am afraid that I may not be judge enough of what a good Pear is. "Bon Chrétien's" taste may be more refined and more exacting than mine; hence we differ in these matters. I do not exactly like his sweeping denunciation of American Pears. I know many that can vie with any yet produced in Britain. I need not give a list, as no doubt many of your readers are acquainted with them. As to the correctness of fruit tree nursery collections in England, "B. C." and I are not at one in that matter. "B. C." says he is amused on looking over my list of 120 sorts, and at the end of his letter he further adds that he fears that I have not got a long experience. Well, after 50 years of close application, I do feel I require a great deal more than I am ever likely to get; and although it may be presumptuous in me to attempt to correct "B. C.," I am nevertheless constrained to say that I think he is wrong about King Edward's, or Jackman's Melting. I have never heard that it was claimed by any other country. Downing disowns it as an American, and Leroy won't take it in as a Continental sort; so I suppose his big majesty must remain with us. As to Uvedale's I have stated all I know about it at p. 974. For Tillington and its history I refer your learned correspondent to vol. iv. of the Horticultural Society's Transactions, p. 521. In conclusion, I may say that any useful information I can give will be always cheerfully at the command of any of your correspondents. Nevertheless, I do think gentlemen critics should make themselves a little better acquainted with the history of fruits before coming down so heavily upon a poor fellow. *J. Scott, Merriott.*

Cypripediums.—I am a great lover of these plants, and am always glad to obtain any information I can respecting them; but I am also of opinion that those who volunteer to give information concerning them should understand the subject upon which they speak or write. What can we think of a writer upon Orchids in one of the magazines for this month, who, when describing C. niveum, tells us that it "bears a very close analogy, in the appearance of the *pseudobulbs*," to C. concolor. Do Cypripediums have pseudobulbs? If so, where am I to look for them?—perhaps some Orchidologist will kindly answer. *Juvenis.*

Table Decorations.—It requires some courage or brass to break a lance with your correspondent "W. T." on table decorations, but as I praised, in no stinted terms, his arrangement at the Palace last year as applicable to a large public dinner, but at the same time questioned its applicability for private use, I will now venture to re-assert my views, and at the same time to give my notions on the subject. We are a people of extremes; we see it in fashions. When crinolines reached us from Paris, our fair countrywomen soon eclipsed, in the amplitude of their folds, the Parisian ladies; when trains came in, English ladies had theirs far longer and wider than the French. French gentlemen had their hair closely cut—our swells look as if they had just come out of Millbank or Holloway, so completely cropped are they. And so in this matter of table decoration. The Russian dinner was a vast improvement—no dishes on the table, and a few flowers amidst the dessert, and now forsooth we must set people down in a flower garden or a shrubbery, until at last it seems as if the invitation should run:—"Mr. and Mrs. —— request the pleasure of ——'s company, to see their table decorated; dinner provided at seven o'clock." I think this is altogether wrong. At a public dinner, provided for a large number of people, you do not care much about seeing your *vis-à-vis*, and therefore your having a Gooseberry bush between him and you does not much matter. In a private dinner party, I consider, the first thing is the comfort and enjoyment of your guests; the second, that of your own household. There is always enough to do, and more than enough, on such occasions; and if this is to be supplemented by a decoration that will require some two or three hours' work from three or four people, it will be the feather to break the camel's back; and it is for this reason, and because it takes up so much of the gardener's time, that in our best circles now the thing has been shorn of its monstrous overgrowth. By all means let us have flowers, nay, plants, if desired, but let nothing be higher than a foot and a half, which I believe is now considered about the correct thing; and let the other decorations of the table be such that it may not seem as if the host and hostess had invited their guests to see their floral resources and not to have their company. Has the style which "W. T." recommends, and which, as I have said, answers admirably for a large and very wide table, been adopted at the West End. Can he tell us where we can see it? In saying this, I am not, I hope, guilty of snobbishness, but I do maintain, that in all matters of taste and refinement, we shall find that the true standard is to be found amongst our aristocracy. Compare, for example, the style of dress at Kensington, or the Regent's Park shows, with that at the Crystal Palace; in the one you have the result of refinement, the other that of unlimited command of cash without it. I have said nothing about the expense, because, as I am aware, people think but little of this when they give a grand dinner now and then; but when, as I believe is the correct thing, frequent *réunions* of ten or twelve take place, it becomes an intolerable bore to have these extensive and expensive decorations. Will Mr. Standish tell us something of his knowledge and experience? I believe he has as much to do in this way as most people, and perhaps he would enlighten us as to what is most in vogue amongst his clients. I am sorry to differ from my excellent friend "W. T.," for his taste is of that order that if one does differ you may question whether you are right, still I believe I am, and shall be glad to see others take up this matter. *D., Deal.*

Grape Growing at Kingston Hall.—In reply to Mr. Westland's remarks on the heating of the Vine borders here (see p. 1008), I beg leave to state that your two correspondents have given the true version of it as it now stands. How Mr. Westland can labour under such an hallucination, I am at a loss to conceive. The pipes are in exactly the same position as he left them, and they are not under the border, but under the front path, or nearly a yard inside the houses, where neither roots nor border are to be found. Moreover, I am quite sure Mr. Westland could never have heated the pipes to any extent, as the so-called bottom-heat pipes were wrong, both practically and theoretically. They had one good property, and it was that no one could use them to excess. If Mr. Westland had spoken out on the subject when going through the vineries on his last visit, I could easily have pointed out the weak points in his arrangement of hot-water pipes, which I am thankful to say are the weakest now in our vineries. Further, I very much question if the present system of heating is as good as the one before the alteration took place. One thing is quite certain, that Mr. Westland's predecessor, the late much respected Mr. Mackie, managed to produce better crops of Grapes (and for years) with the old plan than either Mr. Westland or myself have yet got by the new. *Wm. Cruickshank, The Gardens, Kingston, Derby, Aug* 9.

The Potato Disease.—I thank "J. S." for his timely suggestion. I have not tried the palliative remedy suggested by him, but I have had resort to the less radical measure of cutting away the haulm at the ground line, when the malady was unfortunately but too plainly apparent. I have information, however, that this plan has already been tested in this neighbourhood in previous seasons with but questionable success. I also hear that a large breadth of Potatos has been so treated this season, the soil being subsequently ploughed up over the rows, the results of which I hope to be able to report hereafter. It is quite certain that, notwithstanding every kind of preventive considered possible may have been tried, we should not lightly treat any that may yet be made, as the injury which this dire pest causes to our country's wealth cannot be easily estimated, especially in a season of such hope in regard to the Potato as the present. *William Earley.*

Flavour in Fruit.—I agree with your reviewer of the Rev. J. Fountaine's pamplet (p. 977) in doubting that it is "the radiation at night that enhances the flavour of the fruit" in the system of cultivation spoken of, and believe with him that it is "the exposure to the cool night air" that is beneficial. The alternations of heat and moist cold appear to be as powerful in hastening and perfecting the ripening process of fruit, as they are in promoting decay in vegetable substances. It is well known that when the latter—wood, for instance—is made alternately dry and moist, it decays much more rapidly than when kept continuously in either state; and it is quite in accordance with this, that outdoor fruit of all kinds ripens more rapidly after a day's rain than if the weather continued always dry and warm, a fact which I have repeatedly observed. Grapes that are grown by me with the same ventilation night and day surpass in flavour all those managed on the orthodox but unnatural system of syringing, "and shutting up with an hour's sunshine on the glass;" and I have heard of the same being the case with another person. *A. Boyle, Whitland, Carmarthenshire.*

Notes on Gladioli.—I was much interested by the report of your correspondent "F. W." on Mr. Kelway's flowers. We all know how magnificent they are when exhibited as he alone seems to know how to do them; but I want to correct one error. It was not the war that prevented any Gladioli being sent over from France last year; long before it broke out it was known none would be sent, for this reason: M. Souchet is really the only grower in France, and he is in too weak a state of health to leave home, even for one night, and no one else could compete. One is delighted to hear that Mr. Kelway will not send out any but first-rate seedlings, for as yet that term can hardly be applied to any of his flowers that I have seen. *Glaïeul.*

China Winter Radish.—Last autumn I sent a Radish to your office, which was described as the China Winter Radish. I think it is the best Winter Radish grown, for it will keep good all the winter. It is in size and shape like an Early Horn Carrot, of fine flavour, and very crisp. In colour it varies from a beautiful pink to a dark red. I sow the seed in August and September. *W. H. Port, Kingsbridge, Devon.*

Drosera.—One often hears complaints of the difficulty of making that pretty little native plant, Drosera rotundifolia, grow. At Mr. Morse's nursery at Epsom they succeed perfectly. They place a small quantity of peat at the bottom of the pan, and then arrange their plants in Sphagnum, placed above the peat. The pan is then stood in a saucer of water. Nothing can be simpler, and few objects possess more interest. *John E. Daniel, The Terrace, Epsom.*

Potatos.—My "taters" are but little affected by disease. It is very bad in the parish. I planted January 7, with no manure at planting. I manured high for preceding crops. The frosts did not hurt my Potatos in the ground, but frosted a bushel and a half in the houses, though they were thickly covered with straw. Unless air is thoroughly excluded, Potatos will be frosted in severe winters. *W. F. Radclyffe.*

Varieties of Pelargoniums.—I have heard a wish expressed that the scarlet Pelargoniums were not so numerous as they are. Would it not be possible for growers to fix upon a certain number, and in the main stick to this? Say, three dozen of the Zonals of every shade of colour, half-a-dozen of the Bronzes, and half-a-dozen of the Tricolors, both gold and silver, making it a determined object to obtain and retain the best; and, as those become beaten, to take in the better kinds till they are beaten too. No sort need be cast away entirely; one plant may be kept for a year or two. Let me give an illustration of what I mean. Lord Palmerston is of the same colour as the Duchess of Sutherland, and the Duchess is decidedly the better of the two. Now, the Duchess might be grown largely, and one plant of his lordship. Again, Dr. Lindley beats all his predecessors, and it is only reasonable to suppose the doctor will be beaten in his turn. Well, good as he is, let the best flower win. It is only fair it should do so. I have only tried to point to a principle. No doubt we shall have a flood of seedlings now; and, as far as my own feelings go, I should be sorry to see a seed lost that offered a chance of improvement. But what I think necessary is, that the best, and the best only, should be picked out of the thousands that will be raised. It will soon be no easy matter to stand, even in a respectable position, among the raisers of seedling Pelargoniums. Chance may give the palm to a very unexpected competitor. *R. F.* [This is in reality the main object of the Chiswick trials, which we hope will be carried out in future with spirit. But it must always be borne in mind that particular sorts are better in some places than in others, so that it is not practicable to arrive at a positive decision on their merits. EDS.]

Acer Pseudo-Platanus rubro-purpureum.—Allow me to introduce to your notice a new variety of Sycamore, Acer Pseudo-Platanus var. rubro-purpureum, found growing in a hedgerow of one of my nurseries. It differs from the original purple variety by the boldness and vigour of its growth, and also in the rich red-purple tint of the foliage. Budded on the common Acer Pseudo-Platanus, it throws shoots 6 to 7 feet long in a season, and from the rich colour of its leaves is a truly beautiful tree, fit to rank with the best of its compeers for varying the tints in ornamental plantations. *C. B. Saunders, Jersey.* [The sample sent had the under side of the leaf reddish-purple, decidedly brighter in tint than the ordinary Purple Sycamore, and hence if it shows the ordinary character of the leaf, we shall gain here a handsome ornamental tree. EDS.]

Water Weeds.—The inclosed are two specimens of water weeds [Myriophyllum and Chara], which abound to an enormous extent in the lake here, forming a mass almost entirely throughout the lake. Will some of your correspondents, who have experience of water weeds, give me information as to the best means of keeping them down, or destroying them? At present they are being mown off, the water being previously lowered to enable the men to wade through and mow with the scythe, but it is laborious work, the lake being extensive, and the weed very thick. *W. E.*

Bluegown Cucumber and Veitch's Giant Cauliflower.—Seeing in the *Gardeners' Chronicle* very flattering accounts of the Bluegown Cucumber, I purchased a packet of seed from one of the most respectable houses in the country, thinking that if it was not much better than many puffed-up kinds, it could not be much worse. Well, I planted in March two plants of Bluegown along with Telegraph. What has been the result? From the plants of Telegraph I have cut plenty of good Cucumbers, considering the season; but from Bluegown, after four months' care and attention, I have managed to cut two fruits, and such Cucumbers I never saw grown in a frame before. In fact, some of the ridge varieties are far in advance of Bluegown. It is the coarsest, most ill-formed, and bad-flavoured Cucumber I ever met with. Several gardeners in this neighbourhood purchased a packet of it from different firms, and they one and all condemn it. There is another new vegetable I wish to say a few words about, viz., "Veitch's Giant Cauliflower." I got a packet of this at the same time as the above, and put in a pinch of seed in March into a frame with a little bottom-heat. I planted out about five dozen plants, of which one-half, or nearly so, have proved worthless; perhaps it may be owing to having been sown in heat; but the other half produced such Cauliflowers as I never saw before. I cut one today 2 feet 3 inches in circumference, as firm as a rock, and as white as anything could possibly be in the way of a vegetable. It is a splendid thing for an exhibition table, and the flavour is pronounced by *connoisseurs* to be everything desirable. *J. C. N., Mount St. John.* [Both have been shown good. EDS.]

Lily of the Valley.—Having noticed that some Lilies of the Valley were exhibited at Kensington a short time back, and that hints were thrown out that it might be a late variety, permit me to observe that it is nothing new to have those beautiful flowers late in the season. It can be done any time by exposing the roots and letting them get well dried before planting. I saw an instance this spring of a clump that was potted in the autumn of 1869, which refused to vegetate in 1870, and was placed aside, but this year it came finely in flower last June, the leaves being nearly round, and of a much deeper green than is usual. I am of opinion that the plants which flowered late this season, if let alone, will come at their usual time another year. *Ebor.* [We have other evidence tending in this direction. EDS.]

Roses.—It may be of advantage to persons not conversant with Roses to know the names of the best Roses that have come out since 1859. I shall mention those only that have good attributes. Some beautiful Roses I must omit, for the want of good attributes. *H. P. Roses:* Sénateur Vaisse, Madame Boll, Madame C. Crapelet, Victor Verdier, Duc de Cazes, Prince Camille de Rohan, Charles Lefebvre, Francis Lacharme, Madame Charles Wood, Madame Charles Verdier, Madame Boutin, Madame Julie Daran, Madame Clémence Joigneaux, Maurice Bernardin, Mdlle. Marie Rady, Maréchal Vaillant, John Hopper, Baron Adolphe de Rothschild, Princess Mary of Cambridge, Lord Clyde, John Keynes, Gloire de Ducher, Lord Macaulay, Léopold Premier, Madame Emile Boyau, Lady Suffield, Madame Victor Verdier, Dr. Andry, Pierre Notting, Marguèrite de St. Amand, Duchesse de Caylus, Achille Gounod, Fisher Holmes, Abel Grand, Madame Fillion, Alfred Colomb, Antoine Ducher, Prince de Portia, Black Prince, Felix Genero, Elie Morel, Souvenir de Dr. Jamin, Monsieur Noman, Madame la Baronne de Rothschild, Duke of Edinburgh, Madame Jacquier, Eliza Boelle, Madame Chirard, Perfection de Lyons, Comtesse d'Oxford, Edward Morren, Marquise de Castellane, and Baron Chaurand. The last is a distinct and beautiful Rose; the six Roses preceding it are first-rate. I do not yet know the full attributes of the last eight Roses, as I have only seem them bloom once. *Bourbon Perpetuals:* Baron Gonella, Marguerite Bonnet, and Baronne de Maynard. *Tea Noisette:* Rève d'Or. *Tea Roses:* Adriénne Christophle, Maréchal Niel, Madame Margottin, and Madame Trifle. You cannot burn your fingers by selecting from the above Roses on the Manetti stock. It is of no use buying bad growers. Many are marked "vig.," which are not so. "Mod." in a nurseryman's garden means "dwf." in yours, which is a synonym for "death." Maréchal Niel does well here on its own roots, on the Briar and on the Manetti; my three best plants are on Manetti. *W. F. Radclyffe.*

New Annuals: Godetia Whitneyi and Phlox Heynholdii.—The first-named of these newly-introduced annual flowers having been figured, and very highly spoken of in more than one horticultural periodical during the past spring, I was consequently induced to use it rather freely, and I confess was beginning to entertain doubts as to its realising the good opinion I had been led to form of its merits, as it did not begin to flower until the first week of July. But I am now glad to be able to say that it has fully realised all my expectations. It is without doubt one of the most showy and attractive annuals that has ever been introduced, but to do it full justice it ought to be grown *en masse* in a bed of considerable dimensions, or to form a line in a ribbon border of considerable length. It is then in appearance really magnificent, resembling, at a distance, a line of the finest dwarf Rhododendrons in full flower, or of some fine variety of Hibiscus. It grows from a foot to 15 inches high, and is exceedingly floriferous, each bloom being quite 3 inches in diameter, colour rosy-pink, with a crimson spot in the centre of each of the four petals; this spot, however, is more clearly defined in some plants than in others, and on this account care ought to be taken in selecting seeds from the best coloured plants. Should this plant prove to be continuous in blooming, as it has at present the appearance of being, it will certainly prove very useful, even as a bedding plant. I sowed the seeds about the middle of March in pans in a gentle heat, pricked out into pans or boxes when large enough, and finally planted out about the middle of May. Phlox Heynholdii is also an annual of recent introduction, which I think only requires to be better known to insure its being more extensively used. It belongs to the Drummondii section, but is more dwarf in growth, seldom exceeding 6 or 8 inches in height, and producing an abundance of rich flame scarlet-coloured flowers. It has also the property (not always possessed by the finest annuals) of producing itself quite true—that is, without any variation either in the colour of the flower or in the habit of the plant, and continues to flower until late in the season. *P. Grieve, Culford, August* 1.

Foreign Correspondence.

THE ISLAND OF SAN DOMINGO.—The following notes on the botanical features, economic vegetable products, and agricultural capacities of this island, are gathered from a report drawn up by Dr. Paüy, the botanist attached to the San Domingo Commission.

Apart from the general facts of the geographical position of San Domingo within the tropics, its insular character and exposure to the regular trade winds of the North Atlantic Ocean, necessarily involving a warm and moist climate, productive soil, and favourable commercial facilities, the principal distinguishing feature of this island is presented in the large extent of its elevated mountain ranges. This plainly marked physical feature, which everywhere meets the eye, serves not only to give a pleasing variety to the landscape, but also to supply the conditions of a much wider range of agricultural production than would be possible otherwise. The highest mountain ranges, attaining elevations of from 5000 to 8000 feet above the sea, are clothed to their summits with a dense growth of native forests, and their crests and slopes are seen frequently enveloped by clouds or fog, indicating a moist, cool atmosphere. Hence, botanically and agriculturally, the country is naturally divided into distinct districts, viz.:—

1. An irregular coast line, frequently presenting abrupt rock-bound shores, or extending in the form of gradually elevated plains to the interior mountain ridges.

2. Wide, open valleys and interior basin plains, bounded on either hand by elevated mountains.

3. The mountain slopes and ridges, rising to elevations of from 3000 to 5000 feet above the sea.

1. The coast line, or maritime belt, includes some of the least productive and most forbidding portions of the island. It embraces, along the northern and southern coasts, arid, sandy, and rocky tracts, which, being shut out from the influence of moist winds, present desert features in the growth of Cactuses, dwarfed thorny trees, with scant foliage, and an intricate maze of shrubbery next to impassable for man or beast. The moist, sandy lagoons, forming at the mouth of rivers, are occupied by dense Mangrove thickets, and in more favourable locations stretches of smooth, sandy beaches are agreeably set off with groves of Cocoa-nut, or other graceful Palms. Again, at other points, as in Samana Bay, the wooded slopes drop down abruptly to the water's edge.

In the vicinity of San Domingo city the broad ocean swell dashes against perpendicular, rocky walls, which are fantastically washed out and fissured by the waves, at only a few points presenting narrow patches of sandy beach. It is on these less productive, and even desert tracts, that some of the most valuable native vegetable products are to be found, including especially the durable Lignum-vitæ, the commercial logwood, and Fustic. In similar districts we meet with valuable leaf-fibre plants, including the Paboulla, Maguey, Bromelia, &c., all of which are in common use in the manufacture of cordage, and the dressed fibre derived from these different plants will eventually form a very important article of export.

The more extended plains stretching inland to the interior mountain ranges exhibit certain varieties of soil, in connection with the chemical composition of the underlying rock, or superficial deposits, being either sandy, gravelly, or argillaceous, and thus adapted to the different varieties of tropical food plants. Here also the vast number of tropical fruit trees can be cultivated to an unlimited extent; and with more attention given to improved varieties, the fruit product may be made to form a remunerative branch of commercial industry. In other districts, appropriately termed "savannas," stock raising is carried on to advantage, and several shrubs adapted for browsing still further extend the stock-supporting capacities of a large scope of country.

2. The large alluvial valleys and basin plains of the interior are especially adapted to the growth of Sugar-cane, which here grows with a luxuriance unknown in less favoured localities. The scope of country adapted to this staple can be much extended by a proper system of irrigation, by which the higher fertile grounds adjoining the river bottoms may be supplied with that degree of moisture necessary to perfect this class of cultivated plants. Cotton and Tobacco will also here find at different points a congenial soil for the production of their peculiar staples. These extensive valleys, as yet unexhausted by cultivation, will naturally concentrate the great bulk of the agricultural population, where large estates and populous cities, made accessible by railways to the commercial seaports, will in due course of civilised development present a marked contrast to their present sparsely-peopled wastes.

3. The mountain slopes, now in great measure clothed with luxuriant native forests, will constitute the first and most direct source of wealth to an enterprising and industrious population. Owing to the difficulties of transportation over the rude country roads, only passable for pack animals, much of the valuable timber growth, including Mahogany, and a great variety of cabinet woods and ship timber, is still growing in its native forests, while that adjoining the coast has been shipped to supply the commercial demands. When once made accessible by suitable waggon roads or railways, all this source of wealth will be laid open to enterprise; and in the process of clearing, the most suitable ground will be made available for the growth of coffee and other analogous agricultural products.

One peculiarity of tropical forests consists in the number of different species in the same locality; thus, no large bodies of a single species of tree are met with, as in northern woods, but a great profusion of different forms promiscuously scattered. These include, in the West Indies, over 200 different species. This fact, however, is less conspicuous at the higher elevations, where Pine groves and analogous northern forms make their appearance. At an elevation of from 5000 to 6000 feet above the sea, we meet with the atmospheric conditions favourable to the growth of Cinchona, yielding the medicinal quinine. The result of numerous experiments having now fully established the conditions necessary to the successful culture of the Cinchona, the colonial Government of Jamaica, in the West Indies, has recently established a Cinchona plantation in the Blue Mountain range in that island. Having had an opportunity to visit this location during the explorations in connection with the San Domingo Commission, and to ascertain the views of the intelligent botanist in charge (Mr. R. Thompson), the conclusion is safely reached that a larger scope of country in the mountainous districts of San Domingo is adapted to this important class of cultivated plants than any other insular locations in the Western Hemisphere. In this same connection may be noticed the great advantage which these elevated districts offer, not only for sanitary retreats, where those enervated by long exposure to tropical heats can find relief in a cool atmosphere, only a short distance from their ordinary lowland residences, but also in the capacity for raising the ordinary northern fruits and vegetables, so much prized by those who have been always accustomed to their use.

The facility with which all tropical plants and trees can be transferred from one region to another within the tropics is evidenced by the great number of East India species now naturalised throughout the West Indies, including by far the majority of ordinary tropical fruits and vegetables, as well as common weeds. Thus, from other remote sources may reasonably be expected hereafter large additions to the agricultural wealth of San Domingo, on whose inviting soil may be introduced the Eastern dyes, spices, vegetable oils, gums, and drugs of commerce. The following may be summed up as comprising the prominent features which characterise San Domingo as a desirable agricultural region.

1. An insular position, exposed to the equalising influences of the surrounding sea, insuring abundant moisture for the fullest growth of all tropicals, and affording the largest commercial facilities for export to adjoining northern countries.

2. A natural division of closely-adjoining districts, including arid tracts on the coast, adapted to the growth of valuable fibres, woods, dyes, &c.; a region of plains and large interior valleys, varying in soil and exposure from comparatively barren to exuberantly fertile, adapted to a variety of agricultural products.

3. A large extent of mountain slopes densely wooded, including some of the most valuable timber products, which, when cleared of their native forests, afford the most desirable locations for the cultivation of Coffee and other tropical staples; a still more elevated district, suited to the cultivation of Cinchona, as well as the usual varieties of northern fruits and vegetables, and affording sanitary retreats to those living in the adjoining low lands, exposed to continuous tropical heats. And

4. An extensive field for the introduction of new varieties of plants and useful tropical products of other lands, on soils unexhausted by culture, and capable of supporting a vast population.

Societies.

CRYSTAL PALACE: *August* 5.—The supplementary Rose Show held here on Saturday last proved very successful in every respect. The Roses, it is true, were not quite so numerous, but they were immeasurably superior to those shown on the last occasion, both in size and brilliancy of colour, and great was the surprise in store for those who thought the date was too late to attain much success. The latter class of reasoners seem to have forgotten the fact, that where a few classes only are made, and the prizes offered are liberal, plenty of Roses there surely will be, even though the season be a bad one. This may also be said to apply with equal force to most other subjects for which there is a call at our flower shows, and there is no one who better understands this part of the business than the Crystal Palace Company's General Manager, Mr. Wilkinson, whose schedules are always models of liberality and conciseness of detail. There was another prominent feature besides the Roses in the show of Saturday last that it would be well to reproduce at future exhibitions, and this was the plan adopted on this occasion for relieving the flatness and monotony of the tables, of massing alternately large and small groups of fine foliage and flowering plants at regular intervals down the centre of the stages, and between the latter where they are divided into sections. This was admirably done, and the effect was most pleasing to eyes that heretofore have rested on nothing but bright colours and the everlasting green baize. We must not forget to mention that to this unique arrangement an additional charm was lent by Messrs. Downie, Laird & Laing, who contributed at each end of the central transept such splendid groups of Phloxes in pots as have never before been seen in this country. They were truly the admiration of everybody, and attracted as great a crowd of worshippers as ever the Rose did at Sydenham, and that is saying a great deal, for nowhere else does the queen of flowers draw half the crowds that she does here.

The first of the nurserymen's classes for Roses was for 60 distinct varieties, one truss of each, and for the four prizes offered there were six competitors, whose productions came to the mark in capital style. Here again we have to record the fact that Messrs. Paul & Son (who seem to be well nigh invincible in the champion classes) were again placed 1st with as good a lot of blooms as they have shown anywhere this season. Next to these came Mr. Cant, of Colchester, and then the veteran Mr. Keynes, of Salisbury; the other competitors being Mr. Cranston, Hereford; Mr. J. Harrison, Darlington; and Mr. J. Durbin, Englishcoombe, Bath. It is not our intention on this occasion to say which varieties were the best shown in each collection, suffice it to say that after mentioning the names of the principal winners, we will give a list of those Roses which proved themselves stout and true, by appearing most often in good form. In the second class, then, for 48 varieties, three trusses of each, Messrs. Paul & Son were again 1st, Mr. Keynes coming in a good 2d.

The amateurs came out even stronger than their professional brethren, and their flowers in every way did them great credit. The best 48 single trusses were exhibited by Mr. T. Draycott, gr. to T. T. Paxett, Esq., Leicestershire; the next best coming from Mr. C. J. Perry, West Bromwich. The same exhibitors also competed in class 6 for 36 varieties, the same order of merit being observed. The best 24 came from Mr. J. Moore, gr. to T. Lloyd, Esq., Warwick; and Mr. May, Stileter, near Braintree, had the best 12. In the nurserymen's class for 12 Tea-scented, or Noisette Roses, single trusses, the 1st prize was carried off by Mr. Cant, and in the corresponding class for amateurs by Mr. Stoddart, Wivenhoe Park, Colchester. Of yellow Roses about two dozen boxes were shown, the best coming from Messrs. Paul & Son and Mr. Keynes.

Looking over the various stands of excellent blooms we selected the following, specimens of which were shown well in most of the collections:—Charles Lefebvre, wonderfully rich in colour all through; Lælia, very large and bright; Madame Victor Verdier, a pretty rose, and nicely shown; Marie Baumann, always good; Dr. Andry, Emilie Hausburg, very fine; Maréchal Vaillant, fine in shape, and exquisite in colour; Duc de Rohan, Sénateur Vaisse, Alfred Colomb, grand in shape, and a beautiful colour; Baronne Hausmann, Baroness Rothschild, La France, better in every respect than we had seen it before this season; and Madame Jacquin. Strange to say, there were not half a dozen first-rate blooms of Maréchal Niel at either this or the last show.

Amongst miscellaneous productions were the splendid Phloxes above named (and of which we hope shortly to have more to say), and a large collection of Golden and Bronze Pelargoniums from Messrs. Downie, Laird & Laing; a nice group of Scarlet and other Pelargoniums from Mr. J. Mann; collections of Roses from Messrs. Paul & Son, and Mr. Cranston; a dozen nicely grown Fuchsias from Mr. Bristow, gr. to R. P. Harding, Esq., Dulwich; half a dozen fine Grosse Mignonne Peaches from Mr. W. Donovan, gr. to R. Hibberd, Esq., Upper Norwood; a dozen very nice cut spikes of Gladioli, from the Rev. H. H. Dombrain; a capital collection of Picotees and Carnations from Mr. Hooper, Bath; and a stand of new Verbenas from Mr. C. J. Perry, to one of which, named Emma Weaver, large, pink, crimson eye, a First-class Certificate was awarded. The same distinction was also awarded to Messrs. Downie, Laird & Laing, for Bronze Zonal Pelargonium, Maréchal MacMahon; and to Mr. Maurice Young, Milford, for Juniperus chinensis aurea.

At these shows the competition for prizes for table decorations is now made a prominent feature, and that it is a most attractive one is evidenced by the fact that an immense amount of interest is created therein, especially amongst the fair sex, who, for the most part, indulge in unsparing criticism, and more so on Saturday last than on any previous occasion. We take it for granted that the object of the promoters of such displays—of course, putting monetary considerations on one side—is to encourage taste in that particular feature which they bring before the public, but if the examples which commanded the first prizes on this occasion are to be cited as good ones for that purpose, we can only assert that in our opinion the results will fall far short of the mark. For instance, who would ever dream of loading their tables with such an *embarras d-richesse* as was exhibited on that which was awarded the 1st prize amongst professional decorators? It should be an indispensable condition that whatever form of decoration be adopted, ample space should be provided for the usual dinner service. In this instance the useful space was limited to about 6 inches around the edge of the table, and beyond that a wine glass could hardly be inserted without disturbing the floral arrangements. What with pot plants and wet sand to insert the cut flowers in, the table may fairly be said to have groaned beneath its weight of superfluous ornament. In our judgment, of all the groups exhibited on this occasion, the most effective and serviceable for ordinary use and ordinary means, though not the most novel, was that shown by Miss A. Hassard, St. Ronan's Church Road, Norwood, in the amateurs' class, and to which an equal 2d prize was awarded. It consisted simply of three gracefully filled epergnes, placed at equal distances down the centre of the table, with a small, neatly-grown Maidenhair Fern on either side of the centre one. This arrangement was simple and graceful, could be reproduced in a comparatively short space of time, and that without exhausting the resources of small gardens to supply the cut flowers. The 1st prize was given to an arrangement in which there was some novelty, as well as some bad faults. The novelty consisted in the exclusive employment of cut flowers of hardy perennials, which Mr. Ware, of Tottenham, kindly supplied for the experiment, in place of the stereotyped exotics. These made a very agreeable change, though the selection of the flowers was by no means so good as it might have been. Down the centre of this table (8 feet long) were three plants, with their pots placed on a level with the top, an arrangement against which we have not a word to say, on the contrary, when the plants are of a suitable nature, and correspond in size with the surroundings, there is nothing more graceful, and where employed on a large scale the effect, without doubt, is very striking. The plants in this particular case were not well suited for the purpose, and this, coupled with the comparatively poor selection of flowers, and the by no means elegant nature of the whole, should, we think, have prevented this example from being held up as a guide.

BRITISH ASSOCIATION, EDINBURGH: Section D.—Prof. Dyer, B.A., B.Sc., read a paper "On the So-called 'Mimicry' in Plants." He said:—In all large natural families of plants there is a more or less distinctly observable general habit or *facies*, recognisable by the practised botanist, but not always as easily to be expressed in words. The existence of such a general habit in Leguminous and Composite plants is familiar to every one. What have been hitherto spoken of as mimetic plants are simply cases where a plant belonging to one family puts on the habit characteristic of another. This is entirely different from mimicry among animals, inasmuch as the resembling plants are hardly ever found with those they resemble, but more usually in widely different regions. Mutisia speciosa, from Western South America, a Composite, has a scandent Leguminous habit, closely agreeing with that of Lathyrus maritimus of the European shores. In the same way three different genera of Ferns have species (found in distant parts of the world) indistinguishable in a barren state. The term Mimicry seems objectionable in these cases, and I propose Pseudomorphism as a substitute. As to the cause of the phenomenon, I can only suggest that the influence of similar external circumstances moulds plants into the similar form most advantageous to them. An illustration is afforded by the closely resembling bud scales which are found in widely separated natural orders of deciduous trees as modifications of stipules. I do not, however, think that the moulding influence need always be the same. I believe that different external conditions may produce the same result; in this respect they may be called analogous. Several identical plants are found on the sea-shore, and also on mountains. The reason is, I believe that they are equally able to tolerate the effect of soda salts and also of mountain climate; the tolerance of either unfavourable condition gives them the advantage over less elastically constituted plants, and the two are therefore analogous in their effects.

Notices of Books.

Handbook of British Fungi. By M. C. Cooke, M.A. London: Macmillan & Co. 1871. 8vo, pp. 982, tab. 7, fig. 408.

Mr. Cooke's work on microscopic Fungi, as well as his plain and easy account of British Fungi, have been so generally appreciated, that the present valuable treatise would commend itself to general notice without any review. We have already called attention to the portion which was published in the early part of the present year, but it would seem scarcely to be justice if we passed over without some especial indication, now that it is so happily completed, the results of a long series of very ardent labours. Mr. Berkeley's outlines comprised merely a list of those Fungi which required close microscopic investigation, and the student had to wade through the volumes of the "Annals of Natural History," the Linnean Transactions, &c., for an acquaintance with the specific characters of a great portion, many species belonging to our flora not being comprised in any Continental manual; but Mr. Cooke has gone carefully through the whole range of British mycology so far as its members were ascertained up to the time of consigning his manuscript to the printer,—a labour which can be best appreciated by those who have been the most diligent students of a very difficult branch of botany. The volume comprises characters of 369 genera, added to numerous subgenera, while the species, of which specific phrases are given, are above 2800. Mr. Cooke's studies, it should be observed, have by no means been confined to British authorities, but all the best Continental works have been thoroughly analysed wherever information could be found bearing on the subject, while each species has been most scrupulously studied with the help, where possible, of authentic specimens. Large as the number of species is, which are enumerated, doubtless much remains to be done in a very wide field. Mr. Broome still continues his labour, and Mr. W. G. Smith takes every opportunity of illustrating the nobler species; and should the work reach a second edition, which is very much to be desired, we shall be able to boast of a more complete mycology than almost any Continental country, except Sweden, which is unusually rich in species. Should the demand, however, not be sufficient to justify the undertaking of a second edition, Mr. Cooke proposes, from time to time, to give a supplemental volume, so as to keep the British student completely *au courant*. We conclude this short notice by cordially recommending the Manual to all our botanical friends, whether fungologists or not, as it is highly desirable that works like the present should meet with such success as may ensure further exertions.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, AUGUST 5, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	..	..	..	..	..	..	..	0.21
Blackheath ..	80.5	46.8	33.7	74.6	48.8	25.8	60.3	0.23
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	73.8	47.0	26.8	69.5	49.8	19.7	57.8	0.41
Wolverhampton	75.4	44.9	30.9	69.6	48.4	21.2	57.2	0.08
Leicester ..	80.2	46.0	34.2	72.3	48.5	23.8	58.6	0.35
Norwich ..	79.0	46.0	33.0	73.2	49.8	23.4	59.7	0.04
Nottingham ..	77.4	45.5	31.9	71.1	49.1	22.0	58.3	0.11
Sheffield ..	76.0	45.0	31.0	70.6	50.1	20.5	58.6	0.01
Liverpool ..	72.7	52.2	20.5	67.3	53.3	14.0	58.5	0.10
Manchester ..	..	..	..	..	..	..	..	..
Salford	75.5	43.3	32.2	68.4	48.2	20.2	56.5	0.10
Bradford ..	73.0	46.8	26.2	68.8	52.1	16.7	58.6	0.03
Leeds	74.0	46.0	28.0	66.9	50.4	16.5	56.6	0.15
Hull	75.0	45.0	30.0	70.0	49.3	20.7	57.8	0.38
Newcastle ..	69.0	47.0	22.0	65.5	51.7	13.6	56.7	0.00
Edinburgh ..	69.0	44.0	25.0	..	..	..	55.4	0.10
Glasgow ..	68.5	46.5	22.0	..	..	..	55.4	0.82
Dundee.. ..	68.0	48.0	20.0	..	..	..	56.8	0.45
Aberdeen ..	72.1	49.1	23.0	..	..	..	57.0	0.62
Paisley	..	..	..	..	..	..	..	..
Greenock ..	64.0	50.0	14.0	..	..	..	56.0	1.55
Leith	69.8	47.5	22.3	..	..	..	57.1	0.51
Perth	71.0	44.0	27.0	..	..	..	58.6	0.72
Dublin	73.4	41.8	31.6	..	..	..	58.6	0.13

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, AUGUST 9, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition		
August.	Barometer reduced to 32° Fáhr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
3. Thurs. .	29.61	71.9	60.7	51.7	50	4.3
4. Friday .	29.55	61.0	58.2	55.7	83	5.0
5. Satur. .	29.95	63.1	55.6	48.8	61	3.9
6 Sunday.	30.08	70.2	65.2	61.2	73	5.9
7. Monday	30.07	64.7	62.7	61.1	89	5.9
8. Tues. .	29.96	71.3	64.0	58.2	64	5.4
9. Wednes	29.98	71.2	65.8	61.5	71	6.0

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
August.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles.	
3. Thurs. .	80.5	49.7	30.8	65.2	+ 2.8	variable	155	0.00
4. Friday .	71.0	50.7	20.3	57.6	— 4.7	WSW	290	0.08
5. Satur. ..	74.3	46.9	27.4	59.6	— 2.6	S.W	260	0.00
6. Sunday	81.0	59.2	21.8	68.3	+ 6.5	WSW	170	0.00
7. Monday	79.1	54.0	25.1	64.8	+ 2.9	NE. E	170	0.00
8. Tues. ..	78.2	61.5	16.7	68.1	+ 6.4	ENE : E.	160	0.00
9. Wednes	82.0	51.9	30.1	65.2	+ 3.1	NE : E	120	0.00

August 3.—Comparatively cloudless throughout. Very fine.
— 4.—Rain fell about 5 A.M., and again heavily between 3 and 4 P.M. Overcast till 10 A.M. Variable afterwards.
— 5.—Cloudy between noon and 7 P.M. Nearly cloudless at other times. Generally fine.
— 6.—Generally cloudy till noon. Cloudless and very fine afterwards.
— 7.—Very foggy in the early morning. Small amounts of clouds prevalent during the day. Cloudless at night. Fine.
— 8.—Light clouds. A brilliantly fine day. Meteors at night.
— 9.—Generally cloudless. Extremely fine throughout.

JAMES GLAISHER.

Miscellaneous.

WOOD-PIGEONS.—Gamekeepers and naturalists are agreed that the wood-pigeon is, after all, the worst of the farmer's foes. It his hitherto enjoyed a sort of indirect protection, inasmuch as its natural enemies—the kite and hawk—have been well-nigh exterminated, and the gun-tax effectually discourages the efforts to destroy it which were once made by the ordinary rustic. As the season is now commencing when the bird begins to be injurious, it may be as well to offer some inducements for its pursuit. Of course, every one knows that the wood-pigeon is good eating; indeed, a "quist with a red herring in it" is regarded by west country folk as the greatest of table delicacies. But every one does not know what Mr. Walters has learned in China, namely, that its flesh composes the mind of him who partakes of it, and enables him to do with little sleep. Moreover, "its foot and leg bones have the very delightful quality of exciting affection between husband and wife. If on the fifth day of the fifth moon the husband takes one of these bones and the wife takes one, each putting the bone in a basin of water, one from the left and the other from the right side, the two bones will come together and float together, thus indicating a long and happy union to the parties trying the experiment." *Land and Water.*

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THOSE indispensable winter-flowering plants, *Chrysanthemums*, should not by any means be stopped or pinched back after this date; in fact, as I suggested some weeks since, late stopping is not at all commendable, if fine blooms are a desideratum. Manure water, properly prepared, should be given freely now to such plants as have pretty well filled their pots with roots. It should always be borne in mind in connection with this plant that to permit any to suffer from the want of water will assuredly be the cause of their losing many of their leaves, which, in an ornamental point of view so much enhance the beauty of the plants when they are in flower. No small amount of attention should be given to them in regard to earwigs and other pests, which if not destroyed eat away the young growing hearts of the shoots, and so destroy the embryo blooms. *Primulas*, *Cinerarias*, and *Herbaceous Calceolarias* should now, as thrifty young stuff, be kept well in hand. The earliest batch of the former will soon be showing the first signs of forming flower-spikes, and may therefore be treated to a more liberal sunshine, *Cinerarias* must be potted on successionally as frequently as the young roots feel the sides of such pots as they may already be in. No time must be lost in regard to them, as the moment they become in the least pot-bound their further progress is endangered, by the fact that flower-spikes may be thrown up, the necessary conditions having been assured. Where, however, a few are required in bloom very early, this will be the best means to insure such a result at no very distant date. Be particular, as I have before suggested, not to leave any kind of greenhouse plants out-of-doors too long, in case we have either too much rain or a continuous moist, cold period. Where the more delicate kinds of *Erica* or *New Holland plants* are kept in cold frames, as an additional protection, let the lights be taken off bodily as frequently as possible. Under any circumstances give air freely by night, as at all other times, even if the only means to do so be the usual tilting of the lights sideways. *Bouvardias*, and especially the very beautiful winter-blooming variety, *B. longifolia*, should now be turned out-of-doors in all instances where the plants were not planted out into open borders earlier, which is a good and convenient method. Some greenhouse plants, such as *Acacias*, *Clianthus*, *Brugmansias*, and, indeed, *Fuchsias*, where these are growing in the open borders, must now be periodically syringed to ward off red spider, which invariably attack them at this season of the year or during the next month or two. Be careful not to pinch back such plants as *Pimeleas* after this date, as to do so is to endanger the display of bloom next season. Those who keep the scarlet-berried *Solanums* in pots, and who have not planted them out, as was suggested in these columns at the proper time, should occasionally water them with liquid manure, as well to increase the growth of the plants as the size of such berries as are already "set," and swelling in some stage or other. As the season is on the wane, and the growth of most plants completed, it will now be advisable, should no very hot, scorching weather ensue, to permit the sun's rays to act rather freely on most hard-wooded subjects, and especially such as the beautiful *Luculias*, *Pleroma elegans*, *Boronias*, *Leschenaultias* (why is not L. biloba, with its charming blue flowers, more generally grown?), *Darwinias*, &c., which bloom so freely and so much better when the young wood is properly ripened. Sow another batch of *Schizanthus*, they make such very showy stuff for general decoration in spring.

FORCING HOUSES.

Permit no further delay in the matter of getting forward successional *Pines* into their fruiting pots where this is not already done. Those next in order of forwardness and intended for fruiting next year, should also now be finally potted for the season. Choose for them in the main 24-sized pots, and put them into the best possible material at command that is of an open, porous nature. Attend well to the tan-beds at the same time, and prepare them by forking the old tan well up and by adding more new material where it is necessary, to plunge the pots. Except in the case of very late *Vineries*, these departments will not require much more than the regular attention of air-giving, &c. Particularly see that plenty of fresh air is allowed. Not only will this conduce to the good of the existing crops, but tend very greatly, by aiding the wood to ripen better, to benefit that of the ensuing year. During cold nights a little fire should be started in connection with all houses, the crop in which is not fairly finished off; and where either mildew or red spider are discernible, or are anticipated, it would be as well to fresh paint the pipes with a little sulphur. Where the lights have been taken off *Peach* or *Nectarine houses*, it will do the trees much good, should any hot, dry weather ensue, to give them a thorough good washing with a garden-engine. This will tend to cleanse and to freshen them in a manner that even superficial showers cannot equal. Finally, for this season I would suggest that all repairs, glazing, painting, &c., be at once entered on in regard to such structures as are at liberty for that purpose. These things must be attended to, upon the principle of "making hay whilst the sun shines," if we intend doing all the good possible in relation thereto.

HARDY FRUIT GARDEN.

As the weather has been so dull, gloomy, and sunless, it will be advisable now to remove the denser leaves which shade too greatly any fruit upon *Peach*, *Nectarine*, or *Apricot trees*. This will aid them in their ripening process, and tend to increase their flavour. I fear in a very general way the young wood of the current season's formation upon Peach and Nectarine trees will not be over well developed. It is more than ever necessary, therefore, to thin out the young shoots well, that those only are chosen to remain which are the least gross in their growth, and which may be afforded every chance to ripen without being in anywise overshadowed through the too dense crowding of branches. Nail each young shoot against the wall in such a manner as to ensure these necessary conditions. It is a plan well worthy to follow, especially after such a summer as we have so far experienced, to cut in two diagonally across the middle all large gross leaves. This, as some of our physiologists inform us, tends to change the bud at the base of very strong leaves from being a gross wood-bud into a bloom-bud, or, to say the least, into wood and bloom buds in companionship. Remove without any further delay the old fruiting canes from *Raspberry* plantations, and so increase the means of circulating more light and air, to insure the young canes being more favourably ripened.

HARDY FLOWER GARDEN.

The past cool, moist period has in nowise tended to keep that most useful and showy of all modern introductions—the Golden Feverfew (*Pyrethrum*)—from attempts at blooming. It is desirable, therefore, to pinch back all the points which exhibit this tendency at the earliest moment when discernible. Make sowings now of *Myosotis* (the M. dissitiflora, so highly prized by Mr. Fish, should not be omitted from any garden), *Silenes*, *Saponarias*, *Nemophilas*, and all suchlike plants intended for early spring decorative purposes. Still continue to peg-out, weed, "prick over," and keep tidy all flower-beds, and so afford as much display as the system will admit of.

KITCHEN GARDEN.

The winter crop of *Spinach* should be sown between the 10th and 15th of the current month. As, however, this is a crop the importance of which cannot well be over-estimated, I advise that two or more sowings be made, say, the first upon the 10th and a second one about the 15th of the month. It is always best to sow the crop in drills across any chosen quarter, as the plants can be thinned out more evenly, and the soil can be stirred amongst them with far less inconvenience than when sown broadcast. Make now a sowing of *Parsley* upon a sunny aspect; and with a view of keeping on the right side of the *chef de cuisine*, when midwinter arrives, let a good piece of the same be now transplanted on to a south border in such a manner that one or more cold frames can be placed over it when the weather becomes at all sharp. Cut off plants which are just commencing to bloom of *Sweet Basil*, and dry it quickly for future winter use. Make yet another sowing of *Cabbage plants*. Sow also *Lettuces* in quantity for the winter's supply. The old *Brown Cos* cannot be surpassed for this purpose, when the stock is select and true. Sow also *Onion* seeds to stand through the winter, for early spring transplanting. I should not omit to add a reminder, that *Red Dutch Cabbage* should also be sown for future pickling purposes. It is needless to add more in the matter of routine; the subject of hoeing, manure, watering, &c., having been suggestively touched upon in the later Calendars. *W. E.*

Notices to Correspondents.

BOOKS: *Rusticus.* Hooker's "Student's Manual" (Macmillan & Co.)—*C. J.* The nearest to your description is Hooker and Baker's "Synopsis Filicum."—*J. W.* No recent supplement has been published to Loudon's

"Encyclopædia of Plants." The latest catalogue of garden plants is the second edition of Paxton's "Botanical Dictionary."

Cone Prolonged into Branch. *G., Bath.* This is common in the Larch, but we never saw it before in Abies Tsuga.

Diseased Pears: *D. D.* Your Pear and Cherry leaves are attacked by the larvæ of a species of saw-fly. The mode you have adopted of dusting with quick-lime is the surest way of getting rid of a very unpleasant plague. *M. J. B.*

Fruit *v.* Bluebottle Flies: *C. J.*, who suffered last year from a plague of bluebottle flies, which committed great havoc amongst his Peaches and Nectarines, and could not be lured away by the usual devices of sugared water or treacle, would be glad to hear of a more efficient remedy. Can any one help him? Perhaps the hand-glass trap, baited with over-ripe fruits, might be effective. We can speak favourably of the French fly-trap figured at p. 461, 1870.

Fungi: *W. P., Shrewsbury.* Hydnum zonatum is correctly named, but the plant referred by you to Clavaria aurea is a common form of C. stricta; and the Lactarius cannot be L. plumbeus, for it differs in many respects, and is not acrid. Its mild taste and watery, insipid milk, prove it to be a mere dark variety of L. serifluus. *W. G. S.*

Fungus on Rose: *P. H.* It is impossible to say whether the Aregma may or may not come on your Roses next year. These parasitic Fungi depend so much on peculiar climatic conditions, that your Roses may be quite safe next year. The species is, however, very common, so that you cannot guard against it. Were you to destroy all the infected leaves, it may visit you from the next garden. *M. J. B.*

Grapes: *T. T. T.* Your Grapes have apparently been scorched. This results from the temperature of the house being rapidly changed from damp cold to excessive heat, a not uncommon case during the past spring.

Names of Fruit: *H. Mobbs. Grapes:* To have named them with certainty you should have sent leaves of each, and some notes as to how they were grown. No. 1 cannot be determined — it resembles Black Prince; No. 2, White Tokay; No. 3, Royal Muscadine.—*S. T.* Both are good. Rivers' Early Orange bears a high character.

Names of Fungi: *J. J. N.* The specimen does not belong to the genus Cantharellus, but is an unusually developed specimen of Agaricus amethystinus, which is a variety of A. laccatus. *M. J. B.*

Names of Plants: *T. D.* 1, Allium vineale, the Crow Garlic; 2, Senecio Jacobæa, common Ragwort; 3, Pimpinella magna, Greater Burnet-Saxifrage.—*J. H.* 1, Abutilon Sonneratianum, a common Mallow-wort at the Cape; 2, no doubt a variety of Gladiolus blandus. of which a great number of differently-coloured forms are known; 3, Allium carinatum.—*Rusticus.* The Tall St. John's Wort, Hypericum elatum; not admitted as a true native of England, but well naturalised in many localities, usually having escaped out of gardens. —*W. R.* Blechnum cognatum.—*Constant Subscriber.* 1 and 2, Lastrea Filixmas cristata; 3, Lastrea elongata, apparently; but the tips of large fronds are very unsatisfactory specimens.—*C. J.* 1, Adiantum hispidulum; 2, Adiantum assimile, probably, but very poor; 3, Cyrtomium caryotideum; 4, Doodia media; narrower than usual; 5, young of Platyloma cordatum.—*E. G.* We cannot undertake to name plants from their leaves only.—*S. T.* We cannot name such shrivelled scraps. —*Marchant.* Senecio Jacobæa.

Truffles: *A. B., Bally Giblin.* There is nothing unusual in the size of your Truffles, as they have been known to weigh between 3 and 4 lb. each, and to measure a foot round. Truffles have several times been exhibited at South Kensington, but if you could tell us anything new about their mode of growth, *habitat*, or how found, we would print it. You might also send a dish to the next meeting of the Fruit Committee, as you have them so fine.

Vine Disease: *James Bahnsen.* Your Vine leaves are not attacked by the Phylloxera. The spots are merely the common hypertrophy of the cellular tissue of the lower surface of the leaves, which is quite harmless. They have, however, been much injured by thrips, of which several specimens were inclosed in the envelope. *M. J. B.*

Erratum.—Rev. W. F. Radclyffe desires us to state that he omitted to mention, at p. 1007, Rivers' Pine-apple Nectarine as being, with Rivers' Victoria, the best of all Nectarines, in his experience.

Communications Received. — A. B. — T. Lang & Son, Ballarat.—Prestbury.—W. Taylor.—G. H.—W. H. A.—Don Juan.—H. M.—E. F. W.—D. T. F.—W. B.—J. F.—A. F.—A. McN.—W. E. and J. R. (too late).—M. C. C. (too late for this week).

DIED.—At the Nurseries, Hemel Hempstead, on August 5, Mr. Wm. Brownlees, aged 85, highly respected and deeply regretted.

Markets.

COVENT GARDEN.—Aug. 11.

The supply of bush fruit has not been so large this week, and Currants and Gooseberries are nearly over. Hothouse Grapes and Pines still continue steady at former prices. Peaches and Nectarines are a trifle cheaper. The general tone of the market is very steady. The Potato trade is very heavy, and prices are lower by 2*s.* to 3*s.* per cwt.

Fruit.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½ sieve ..		to 3 0	Oranges, per 100 ..	8 0	to 12 0
Grapes, per lb. ..	1 6	— 6 0	Peaches, per doz. ..	8 0	— 20 0
Lemons, per 100 ..	8 0	— 12 0	Pine-apples, per lb.	2 6	— 5 0
Nectarines, per doz.	4 0	— 10 0	Strawberries, p. lb.	0 6	— 1 6

Vegetables.

	s. d.	s. d.		s. d.	s. d.
Beet, per doz. ..	2 0	— 3 0	Horse Radish, p. bun.	3 0	to 5 0
Cabbages, p. doz. ..	1 0	— 1 6	Lettuces, per score ..	0 9	— 1 6
Carrots, p. bunch ..	0 8	— 1 0	Mushrooms, p. pott.	2 0	— 3 0
Cauliflowers, p. doz.	2 0	— 6 0	Onions, per bunch ..	0 4	— 0 9
Celery, red, p. bun.	1 6	— 2 0	Parsley, p. bunch ..	0 4	— 0 6
— white, do. ..	1 0	— 1 6	Peas, per quart ..	10	— 1 0
Cucumbers, each ..	0 9	— 1 0	Radishes, round, per bunch	0 2	— ..
French Beans, p. lb.	0 6	— 0 8	Shallots, per lb. ..	0 8	— ..
Gooseberries, per quart	0 4	— 0 6	Spinach, perbushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch ..	0 4	— 0 9

Potatos (good samples, New Round, 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

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Four yards wide	3*s.* 6*d.* per yard.

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No. 2.—54 inches wide	at 7*d.* per yard run.
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WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (Head).—Age 30, married; 14 years in first-class places; can be highly recommended.—J. M., Mr. Wm. King's, High Street Nurseries, Lincoln.

GARDENER (Head).—Age 30, married; thoroughly practical; has lived in first-class establishments. Terms £65 per annum, with house.—Y. Z., 32, New Street, St. John's Wood, N.W.

GARDENER (Head).—Age 36, married, no family; thoroughly practical in all branches of the profession. Capable of making Improvements or Relaying out. Excellent reference from present employer.—A. B., Post Office, Ramsbury, Wilts.

GARDENER (Head).—Age 47, married; thoroughly understands both the Early and Late Forcing of Vines, Peaches, Melons, and Cucumbers, the Culture of Stove and Greenhouse Plants, also the Management of Flower and Kitchen Gardens. Unexceptionable character.—J J., Mr. Morse, Nurseryman, Epsom.

GARDENER (Head), to any Lady or Gentleman requiring the services of a Man thoroughly practical in all the various branches of the profession. No objection to Land or Stock. Good references to character and ability.—A. B., Post Office, Redbridge, near Southampton.

GARDENER (Head), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Has had great experience in the Cultivation of Stove and Greenhouse Plants, well understands Forcing all kinds of Fruits, Flowers, and Vegetables Kitchen and Flower Gardening, also Dinner-table Decorations, &c.—Can be highly recommended. Nine years' character. — W. G., 54, North Street, Edgware Road, London, W

GARDENER (Head).—Has a thorough practical knowledge of the profession, including the Culture of Pines Grapes, Peaches, and Orchids, Stove and Greenhouse Plants; has been employed in various departments of the Gardens of Sion House, Eridge Castle, and other first-class Establishments. Can produce unexceptionable testimonials as to personal character and professional skill.—E. W., Ashburnham Park Nursery, King's Road, Chelsea, S.W.

GARDENER.—Practically acquainted with all the branches of Gardening, and the Growing of all kinds of Hothouse and Greenhouse Plants, Melons, Cucumbers, and Orchids. Good character.—W. C., Post Office, Chudleigh, Devon.

GARDENER.—Age 35, single; scientific and practical, has a good knowledge of the Culture and Propagation of Stove and Greenhouse Plants of every description; also of Botany and the Seed Trade. Can speak and Correspond in English, French, and German. A situation Abroad or as Collector preferred. — G. E., Kew Post Office.

GARDENER (Under).—Age 18; three years' experience in Forcing Houses. Good character.—A. V., 31, Lower William Street, St. John's Wood, N.W.

GARDENER (Under).—Age 22; four years' experience in a Nobleman's Garden. Can be highly recommended.—G. H., Ashburnham Park Nursery, King's Road, Chelsea, S.W.

GARDENER (Under) in a Nobleman's or Gentleman's Family.—A steady, intelligent young Man, who has had some years' experience.—H., Mr. Atkinson, Nurseryman, Winterton, near Brigg, Lincolnshire.

GARDENER (Under), wishes to improve.—Age 24, respectable; has been in a Garden two years. Good character from last employer.—Full particulars to W. S., Mr. Starnes, Grocer, Sipson, near Slough, Middlesex.

GARDENER (Second, or Improver), in the Houses, or partly so, preferred.—Age 20; first-class reference.—H., Mr. Child's, Blenheim Nursery, Rye Lane, Peckham, S.E.

FOREMAN, in a Nobleman's or Gentleman's Establishment —Age 26 Good character as Foreman from last situation —C M, 13, Munden Street, Hammersmith, W.

FOREMAN.—Has had the best of practice for upwards of 10 years in all departments of Gardening; lived last at one of the largest and best kept Noblemen's seats in the kingdom. First-class testimonials for the above period.—J. B., 22, Peploe Street, Bishop's Fields, Chester.

FOREMAN (or Second), in a Gentleman's Establishment.—Age 22, single; understands Forcing, Stove and Greenhouse, and Flower and Kitchen Gardening. Good character.—W. M., Post Office, Blue Pits, near Manchester.

PROPAGATOR, or PROPAGATOR and FOREMAN.—Long practice in Soft and Hard-wooded Propagating, Grafting, and Plant Growing.—Apply, for terms, &c., to L. C., 24, Brewer Street, Pimlico, London, S W.

PROPAGATOR and PLANT GROWER, either in a Nursery or in a Gentleman's Garden.—A young Man; has a very good practical knowledge of all the best Plants now cultivated, especially Orchids, and Show Plants of all kinds. — HORTUS, 11, Barbara Street, Barnsbury, London, N.

IMPROVER.—Wants a better knowledge of Gardening. No objection to small place or Premium.—A., 8, Brown Street, Bryanstone Square, W.

IMPROVER, in a Gentleman's Garden.—Age 21, a Protestant. Can be recommended. Please state terms.—E. R., Waringstown, Lurgan, County Down, Ireland.

IMPROVER, where he will have an opportunity of improving himself.—Age 20; six years' character from present employer.—State wages to C. D., 23, Brighton Terrace, Brixton Road, S.W.

To Nurserymen.

IMPROVER.—Age 17, active and intelligent; has had three years' practice in the Houses.—C. G., The Gardens, Cholderton House, Salisbury.

WANTED, by TWO YOUNG MEN, a SITUATION in a NURSERY or Gentleman's GARDEN.—Five years' good character. Age 19.—H. R. B., 6, High Street, Portland Town, London, N.W.

FARM BAILIFF.—Has had great experience in the Breeding and Rearing of Stock, and the Management of large Farms First-class References —A. H., J. Carter and Co., 237 and 238, High Holborn London, W C

FARM BAILIFF, at Michaelmas next. — Age 44, married; thoroughly understands the Management of Light, Heavy, and Mixed Soils, also Breeding, Rearing, and Feeding all kinds of Stock, Land and Timber Measuring, Building, Draining, &c., and is a good Accountant. Twenty years' practical experience in the most approved system of Norfolk Farming. Wife can Manage a Dairy and Poultry if required Excellent character.—A. B C, 279, Caledonian Road, Islington, London, N.

For Sowing on the Stubbles.

NEW SEEDS at MODERATE PRICES.

SUTTONS' IMPROVED ITALIAN RYE-GRASS,
TRIFOLIUM INCARNATUM,
MUSTARD, | RAPE, | BROMUS SCHRŒDERII,
SUTTONS' SHORT-TOP SIX-WEEKS TURNIP,
HARDY GREEN ROUND TURNIP.

Lowest price per bushel, cwt., and quarter (including Free Delivery to the purchaser's Railway Station), may be had on application.

SUTTON AND SONS, Seedsmen by Special Appointment to H.M. the Queen, and H.R.H. the Prince of Wales, Royal Berkshire Seed Establishment, Reading, Berks.

CARTERS'
PRIZE MEDAL GRASS SEEDS,
for PRESENT SOWING.

As supplied to H.M. THE QUEEN, H.R.H. THE PRINCE of WALES, the IMPERIAL COMMISSIONERS for the PRESENT EXHIBITION, the PARIS EXHIBITION, &c.

For PERMANENT PASTURES,
Carefully arranged to suit the various conditions of soils.
For LIGHT SOILS
For MEDIUM SOILS } 27*s.* to 31*s.* 6*d.* per acre.
For HEAVY SOILS
Second quality, 20*s.* to 26*s.* per acre.

CARTER'S RENOVATING MIXTURE for RENEWING and IMPROVING OLD GRASS LANDS (to be sown after the Hay crop is removed). Per cwt., 80*s.*; lb., 9*d.*; per acre, 4*s.* to 8*s.* 6*d.*

TRIFOLIUM INCARNATUM.. } For present sowing.
MUSTARD .. } Lowest price
RAPE .. .. } on application.

All Seeds Carriage Free; 5 per cent. discount allowed for cash.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

LOAM.—Loam, unequalled for Fruit and Plant Culture. See Report of New Vineries, Gunnersbury. For price, &c., apply to
Mr. R. TANTON, F.R.H.S., The Nurseries, Epsom.

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

WANTED, to PURCHASE, a FREEHOLD ESTATE, to comprise from 400 to 700 Acres of Land and a Mansion of the first class, with suitable Offices, Stabling, &c., within 40 miles of the Metropolis. Kent, Sussex, Surrey, Hants, Berks, or Bucks, preferred. Particulars may be sent to
Messrs. VIGERS, Frederick's Place, Old Jewry, London, E.C.

TO BE LET, in a fashionable London Suburb, a NURSERY, remarkably well placed for business: 7000 feet of glass. Mr. FIELD, 1, Elder Road, Lower Norwood.

TO BE SOLD, on advantageous terms, the BUSINESS of a SEEDSMAN and FLORIST, with Jobbing Business, in a first-rate position, and good Trade. This is an excellent opportunity for any person in want of the above.
E. C., 133, Shepherdess Walk, Islington, N.

Dagenham and Barking.

TO BE LET, at Michaelmas next (with Possession immediately on the present Crops being cleared), all that valuable MARKET GARDEN FARM, containing about 303 Acres of exceedingly fine Early Garden Ground, Arable and Pasture Land, known as VALLANCE, GALLANCE, and WARREN HOUSE FARMS, together with the Manor House, Bailiff's House, Cottages, and Farm Buildings, situate within 2 miles of the Market Town of Romford, and about 9 miles from London. For terms and particulars apply to Messrs. CLUTTON, 9, Whitehall Place, S.W.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

To Gardeners and Others.

TO BE SOLD, or LEASED for a term of Years, on advantageous terms, the OSBORNE PARK NURSERIES, close to Potter's Bar Station, Great Northern Railway, where Coals are delivered direct from the North, and easy of access to Covent Garden Market. The Nursery occupies about 2 acres of ground, on the high road, and contains a Dwelling House, Foreman's Cottage, Stable, Sheds, and 15 Glass Houses, fitted up with Hot-water Boilers and Pipes complete. Any one with a moderate capital about to commence trade, or to work it in connection with an established business, will find this a favourable opportunity.

For further particulars apply by letter in the first instance to L. W., Mrs. Huxtable, 2, Carthusian Street, London, E.C.

SALES BY AUCTION.

Important Sale of Corn Crops.

BLOUNT'S AND SWEET DEWS FARMS, SAWBRIDGEWORTH, HERTS.

G. E. SWORDER has been favoured with instructions from John Prout, Esq., the Proprietor, to SELL by AUCTION, on the premises, on TUESDAY, August 15, at 11 o'Clock, the excellent GROWING CROPS of CORN upon 340 Acres, with the whole of the Straw, comprising 153 Acres of Wheat, 98 Acres of Barley, 54 Acres of Winter Beans, and 36 Acres of Beans and Oats. The abundant second cut of Clover and Sainfoin upon 88 Acres; also 5 Stacks of capital SAINFOIN and CLOVER HAY, containing about 220 loads, and about 250 qr. of OLD RED WHEAT.

The Crops may be viewed at any time previous to the Sale.

The company is requested to meet at Blount's Farmhouse where Luncheon will be provided at 10 o'Clock.

Catalogues may be had of the Auctioneer, Bishop Stortford.

SALE THIS DAY, AT HALF-PAST TWELVE O'CLOCK.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, August 12, at half-past 12 o'clock precisely, 700 Lots of First-class HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and SNOWDROPS, from several well-known Bulb Farms in Holland. Lotted to suit the Trade.

On view the morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, August 15, at half-past 12 o'Clock precisely, nearly 200 imported plants of PHALÆNOPSIS GRANDIFLORA, many of them superb plants, with leaves 3 to 4 inches broad, and a foot to 18 inches long; also of CATTLEYA DOWIANA, VANDA LOWII (in good condition), and the extremely rare and handsome ANSELLIA PLANTII; some of the finest masses ever imported of EPIDENDRUM BICORNUTUM, and other imported ORCHIDS.

On view the morning of Sale, and Catalogues had.

Highly Important Sale

Of the CELEBRATED COLLECTION of ORCHIDS formed by S. RUCKER, Esq., at WANDSWORTH.

MR. J. C. STEVENS has received instructions from Messrs. Veitch & Sons, who have purchased the entire COLLECTION, to offer for SALE by AUCTION, at his Great Rooms, 38 King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, August 22 and 23, at half-past 12 o'Clock precisely each day, the second portion of the above magnificent lot of Plants, amongst which will be found—

Cymbidium eburneum, true, best variety
Odontoglossum Alexandræ, fine varieties
Odontoglossum pulchellum mujus
Colax jugosa, very rare
Lycaste Skinneri alba, true
Masdevallias, of sorts
Sophronites grandiflora, fine varieties
Pleione lagenaria, and maculata, good masses
Ærides Lobbii, fine plant
,, Fieldingii, magnificent variety, from Borneo
Dendrobium Wardi
,, nodatum, finest plant in the country
Epidendrum myrianthum, fine plant
Phalænopsis amabilis, and Schilleriana
Dendrochilum filiforme
Saccolabium guttatum, narrow leaf variety, extra fine
Saccolabium guttatum Holfordi
Vanda Dennisoniana
Dendrobium Devonianum
,, Falconeri
,, bigibbum
Cattleya exoniensis
,, Dowiana
,, Warneri
,, labiata
,, Mossiæ
Lælia anceps Dawsoni
,, purpurata
Epidendrum nemorale, rare
Cypripedium Veitchii, and other sorts, &c.

All the Plants are in fine condition, and many are in bud, or blooming.

On view the mornings of Sale, and Catalogues had.

Sale of the late Mr. Barnes' Herd.

AT WESTLAND, COUNTY MEATH, IRELAND.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on WEDNESDAY, August 23, at 1 o'Clock, at Westland, near Kells, Ireland, the old-established and very celebrated HERD of SHORTHORNS bred by the late Thos. Barnes, Esq., whose well-known judgment has brought the Stock to very great perfection It was founded nearly 30 years ago with two Cows of the Mantalini tribe, bought from Mr. J. Booth, of Killerby. To these were added Bright Eyes, descended, through Mr. Lawson's Herd, from Mr. Mason's stock; and Sweetbrier, of Mr. R. Booth's famous Isabella tribe. Bulls were, from the first, hired from Mr. John and Mr. R. Booth's Herds at Killerby and Warlaby. The Herd, consequently, is not only very deeply in-bred to the best of Booth blood, but is very select, and the animals will be found of very great merit and exceedingly uniform

Catalogues, with Pedigrees, may be had of Mr. W. BARNES, Westland, Kells, Ireland; or of JOHN THORNTON, 15, Langham Place, Regent Street, London, W.

Westland, near Kells, County Meath, Ireland.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, on WEDNESDAY, August 23 (immediately after the Sale of the late Mr Barnes' Herd), the small, select HERD of PURE-BRED SHORTHORNS, bred by and the property of R. W. Reynell, Esq., of Killynon, Killucan, County Westmeath. It numbers about Thirty Head, bred from two tribes—the Fairy Queen, descended from Stock bought by Mr. Holmes of Mr. Brown, at Chilton, in 1829 (whence the Oxford tribe came), and the Pauline family, purchased by the late Mr. Barnes from Mr. Whitaker, of Burley. The Bulls used have been of the best blood at Westland, Duke of Leinster (17,724), Royal Prince (27,384), and Lord Spencer (26,738) being the latest sires.

Catalogues, with Pedigrees, may be had of Mr. REYNELL, Killynon, Killucan; or of JOHN THORNTON, 15, Langham Place, London, W.

Castle Grove, Letterkenny, Ireland.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, on FRIDAY, August 25, at Castle Grove, Letterkenny, Ireland, the ENTIRE and VALUABLE HERD of FIRST-CLASS SHORTHORNS, the property of J. G. Grove, Esq. It numbers about 50 head of Bulls, Cows, and Heifers, many of which are of the celebrated Fame by Raspberry tribe, bred by the late Mr. Richard Booth. The others comprise several old Shorthorn families, which have been crossed with Mr. Booth's bulls for a great number of years, no less than 11 first-class animals from Warlaby having been in service at Castle Grove.

Mr. Grove's long experience and repute as a breeder of Shorthorns (since the death of Mr Barnes, perhaps now the oldest breeder in Ireland), and the splendid animals he has from time to time exhibited are the best proofs of the high standing and excellence of the stock

Catalogues, with Pedigrees, may be had of Mr. GROVE, Castle Grove, Letterkenny; or of JOHN THORNTON, 15, Langham Place, London, W.

Buckland, near Faringdon.

IMPORTANT SALE of SOUTHDOWNS.

MR. STRAFFORD has received instructions to announce that the ANNUAL SALE by AUCTION of PURE-BRED SOUTHDOWN SHEEP, belonging to Sir William Throckmorton, Bart., will take place at Buckland, near Faringdon, on FRIDAY, August 25 next, when 80 full-mouthed Ewes and 30 Theaves will be offered, as well as 30 Rams, a few of which will be let for the season; amongst them will be found the splendid Prize Rams at the Royal Show at Wolverhampton.

Catalogues, with particulars, may be had on application to Mr. GEO. T WILLIAMS, at Buckland, near Faringdon; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Brailes House, Shipston-on-Stour.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to announce that he has received instructious from Henry J. Sheldon, Esq., of Brailes House, Warwickshire, to fix the FOURTH BIENNIAL SALE of PURE-BRED SHORTHORNS for THURSDAY, September 21, which will consist of about 45 Bulls, Cows, and Heifers, chiefly of Kirklevington and Fawsley blood. The Sire now in service is the 18th Duke of Oxford (25,995), bred at Holker from this justly renowned tribe of Shorthorns.

Catalogues, with Pedigrees and other particulars, will shortly be issued, and announced in future advertisements.

Ellington, near Kimbolton, Hunts.

VERY IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to announce for SALE by AUCTION, without reserve, on THURSDAY, September 28 next, the extensive and valuable HERD of PURE SHORTHORNS, bred by and the property of Mr. Ladds, of Ellington, which numbers about 100 Head of Bulls, Cows, and Heifers; prominent amongst them will be found several fine specimens from Red Duchess and Princess, bred by Mr Chrisp; Jacintha, by Mr. Beasley; Farewell and Verbena, by Mr. Booth, as well as other old and favourite tribes of the Marquis of Exeter, Mr. Robinson, and other eminent breeders. First-class Bulls have been used for many years from Farnley Hall, Cobham Park, Revesby Abbey, and latterly, Cambridge Barrington 1st (14,223), bred by the Duke of Devonshire, Wellesley (25,421), from Lord Penrhyn's, and 2d Earl of Barrington, bred by Mr. Sheldon from the same famed line of blood: the two latter are now in service

Catalogues, with Pedigrees, will be issued in due time, and further particulars given in future advertisements.

London: 13, Euston Square, August 8, 1871.

THE LANDS IMPROVEMENT COMPANY.
(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT.)
DRAINAGE, RECLAMATION, FARM BUILDINGS, LABOURERS' COTTAGES, TRAMWAYS, RAILWAYS, &c.
DIRECTORS.

John Clutton, Esq.
Frederick L. Dashwood, Esq.
Henry Farquhar, Esq.
Lord Garlies, M.P.
John Horatio Lloyd, Esq.
Granville R. Ryder, Esq.
Granville R. H. Somerset, Esq., Q.C.
Henry W. West, Esq., M.P.
Charles Watkin Williams Wynn, Esq., M.P. (Chairman).

The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

UTILISATION of SEWAGE.—The Company also advances money for the purpose of Works of Sewage Irrigation.

The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

No investigation of title is required.

For Forms and further information, apply to GRANVILLE R. RYDER, Esq., Managing Director, No, 1, Great George Street, Storey's Gate, Westminster, S. W

Agricultural Land Improvements.

DRAINAGE, SEWAGE IRRIGATION, FARM BUILDINGS, LABOURERS' COTTAGES, &c.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY.
(Incorporated by Act of Parliament in 1849.)
DIRECTORS.

T. Chapman, Esq., F.R.S.
George Thomas Clark, Esq.
John C. Cobbold, Esq.
Henry William Currie, Esq.
The Right Hon. Viscount Combermere.
Edward John Hutchins, Esq.
Sir William Tite, M.P., C.B.

Principal Engineer, Mr. J. BAILEY DENTON.

Agricultural Improvements of every kind are executed by the Company, or the outlay thereon repaid to Landowners who prefer carrying out the works by their own agents.

Tenant Farmers may also, by agreement with their Landlords, procure the execution of such Improvements.

The outlay, with all official expenses, may be charged upon the Estate, and paid off by a Rent-charge of about 6 per cent., in 31 years, or at the option of the Landowners in a shorter term.

No investigation of title necessary, and no legal expenses incurred.

UTILISATION of SEWAGE.

Special arrangements will be made with Boards of Health, Sewer Authorities, and others, for undertaking Works of Sewage Irrigation, together with all Works incidental thereto. The outlay in respect thereof may be repaid either by a sum in gross, or by a terminable yearly payment, discharging in a fixed period the principal amount with interest thereon.

Application to be made to ARTHUR MILMAN, Esq., the Secretary, at the Offices of the Company, 22, Whitehall Place, S.W.

CENTRAL ARGENTINE LAND COMPANY,
LIMITED.
Chairman—JOHN HEGAN, Esq.
Agent in the Republic—E. HARRY WOODS, Esq., C.E., Buenos Ayres.
Superintendent—WILLIAM PERKINS, Esq., Rosario de Santa Fè.

The Directors offer, on advantageous terms to Settlers, either as Tenants or Purchasers, PLOTS, varying from 80 to 400 ACRES each, of the COMPANY'S LAND, situate on each side of the Central Argentine Railway, from the Port of Rosario to the City of Cordova, the entire length being 246 miles. Towns and Villages are being laid out at various points on the Line, where smaller Plots may be secured for Building purposes.

To secure the best class of Agricultural Settlers and facilitate the Emigration of Families, the Directors are prepared to treat for the Colonisation of Lands within easy reach of the Stations on the Central Argentine Railway, and adapted for immediate cultivation.

Further particulars may be obtained at the Offices of the Company:
London—85, Palmerston Buildings, Bishopsgate Street, E.C.;
Buenos Ayres—87, Calle de la Reconquista;
Rosario—Terminus of the Central Argentine Railway;
Where the Surveys of the Land (about 1,000,000 Acres), together with the Plans of the Colonies already established, can be inspected.
GEORGE WOOLCOTT, Secretary.
85, Palmerston Buildings, Bishopsgate Street, London, E.C.

ROYAL AGRICULTURAL COLLEGE,
CIRENCESTER.

SIX SCHOLARSHIPS, each of the annual value of £40, are Open to Competition to all Students having a First-class Certificate in the Oxford or Cambridge Middle Class Examinations.

For particulars, apply to the PRINCIPAL.
RESIDENCE COMMENCES on TUESDAY, August 15.

BIRMINGHAM HORSE SHOW, 1871.—The SIXTH GREAT ANNUAL EXHIBITION will be held in Bingley Hall, Broad Street, Birmingham, on TUESDAY, WEDNESDAY, THURSDAY and FRIDAY, August 15, 16, 17, and 18, when PRIZES to the amount of SIX HUNDRED and FIFTY-FIVE POUNDS will be awarded. Three Hundred Horses are entered.

Admission: On Tuesday, 5*s.*; Wednesday, 2*s.* 6*d.*; Thursday and Friday, 1*s.*

For Excursion and Special Trains see the Time Tables and Bills of the various Companies.

WIRRAL AGRICULTURAL SOCIETY.—The ANNUAL SHOW of HORSES, HORNED STOCK, SHEEP, PIGS, POULTRY, DOGS, IMPLEMENTS, &c., will be held at Birkenhead, on AUGUST 30. ENTRIES CLOSE AUG. 8.

Further particulars, Schedules, &c., on application to the Secretary, WM. HENDERSON, Jun., 2, Market Cross, Birkenhead.

The Agricultural Gazette.

SATURDAY, AUGUST 12, 1871.

HOW is the farmer of 300 acres of land to participate in the advantages of steam cultivation? The large number of farms of such a size, and less, renders this one of the most momentous questions of the day. No one now denies the complete success of the application of steam to the cultivation of extensive farms, but when we consider the case of small occupations, the amount of capital required to purchase the most effective and economic apparatus is quite disproportioned to the farmer's means. The *direct* system of working cultivating implements by means of engines on both headlands, is undoubtedly the cheapest method per acre, when there is sufficient work to be done. This is, however, precisely the difficulty which meets the occupier of 300 acres, or less. He is, therefore, driven to relinquish the advantages of steam cultivation, or to one of the following alternatives — he may hire, or he must purchase. Mr. BULSTRODE, near Maidenhead, has recently discussed this difficult question in a letter to a contemporary, in which the subject is handled with clearness and strong sense. "If," says Mr. Bulstrode, the small farmer "is willing to risk the chances of hiring, he will probably see at once that the powerful double-engine tackle will satisfy his requirements, but if he realises and appreciates the danger, the difficulty and the costliness of this course, and the great importance of having a set of machinery constantly at his command, he will also see that this grand apparatus is totally unsuited to his *purse*."

We cannot consider the question of *Hiring versus Purchasing* to be so summarily settled; and, in fact, the only real annoyance in the former method consists in having to wait the conveniences of the contractor. Thus there is constant risk of losing the great advantage of having the land worked at the right season, a risk which is magnified by the simultaneous requirements of every farm in the neighbourhood. This is the great difficulty to be met by those who are interested in steam cultivating companies, although it is one which may in a great measure be overcome by a sufficient "rolling stock," and by the encouragement of an accommodating spirit among those who employ the apparatus. "First come first served," is a fair maxim, but, on the other hand, a company would be wise to remember that a customer, who has suffered from delay at one period of the year, should be promptly attended to on a future occasion.

The farmer of some 300 acres of land, who has resolved to purchase rather than to hire, will have to consider what is the most suitable apparatus for his purpose. He will probably conclude that the double-engine system, involving an outlay of something like £1500, is beyond his reach, and he will turn his attention to some one of the single-engine systems now before the public. The *engine* being in such cases always a most considerable part of the purchase, he will soon find that one of the principal questions is, whether he should invest in a complete set of tackle, including an engine specially fitted up with self-propelling gear, "and carrying with it many cumbersome appendages" necessary for the *direct* system of steam-cultivation; or, whether he should adopt the roundabout system with a common 10-horse power farm engine.

> "This," says Mr. Bulstrode, "brings the question within very narrow limits: the decision lies between the roundabout system with separate windlass and (say) a 10-horse power engine, and the direct system with 8, 10, and 12-horse power engine, double drum, and disc anchor.
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> "I fully allow the advantages of the direct system, in its economy of power and labour, and therefore of time and money, under favourable circumstances; but we must not forget that it has also many disadvantages. The water-cart must follow the engine to all parts of the headland, however distant or difficult of access. The engine must of necessity be self-propelling, and also carry with it many cumbersome appendages, even when employed at other ordinary work, such as threshing, &c.; nor is its disadvantage in first cost likely to be forgotten by the 300-acre tenant-farmer. Contrast this with the roundabout system, in which the common farm-engine is available at all times for threshing, chaff-cutting, root-cutting, grinding, &c., without any extra weight or complex appendages, in which the water has only to be carted to some conveniently-selected spot, or may sometimes be pumped from an adjoining ditch or tank to which the rope can be laid to suit any irregularities of surface or boundary, and in which the first cost is at all events no small point in its favour.
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> "There is in this, as in most matters of dispute, much to be said on both sides; but the two systems are quite distinct. We cannot choose any golden mean, but must either choose one or other, or reject both; and therefore can come but to this conclusion, that the results of the great trials of 1871 have fully confirmed the opinion that although for very large farms the double-engine direct system is unrivalled, it is also true that for the ordinary English farmer, holding some 300 acres, the roundabout system is the simplest, the most economical and the best."

We have pleasure in giving prominence to Mr. Bulstrode's very practical remarks, and although we consider the time has not arrived for dogmatic teaching as to the best method of applying steam to the cultivation of land, we are sure that the above opinions are applicable to a very considerable number of cases.

—— The Mark Lane markets were closed on Monday. On Wednesday there was a small show of English Wheat, transactions in all descriptions were restricted, and prices easier in some instances. —— Trade at the Metropolitan Cattle Market on Monday was not so good as in the previous week, but prices were not much reduced; on Thursday there was an active demand, at fully Monday's quotations.

—— The autumn session of the Royal Agricultural College will commence on Monday. We are glad to hear of the continued prosperity of this institution, the importance of which can scarcely be over-rated, if its governors continue to act up to the sound principle of Science with Practice. It is no small proof of the energy and liberality of the College Council that they have advertised in the *Times*, and other leading newspapers, six scholarships, each of the annual value of £40, open to competition to all students having a first-class certificate in the Oxford or Cambridge middle-class examinations. Such prizes, offered by an institution but recently emerged from pecuniary and other difficulties attendant on its establishment, plainly indicate the intention of the authorities there, to give back to the public those advantages which public support have conferred upon them. Let the Public support the Agricultural College, and we plainly see that the College will not forget its duties as a centre of educational light, and a nursing mother of industry and worth.

—— We have received from "F. P." a further communication on the subject of the Romford Sewage, in which exception is taken to the "brandy-and-water" simile employed by Mr. Hope at p. 988:—

> "It must be obvious that there is no similarity of position between the consumer of brandy and the consumer of sewage, for whilst one has the power of mixing water to any degree or of taking the spirit in its raw state, the other is quite unable to 'eliminate' from the sewage the water which he may consider to be superfluous, excepting through the lands and the crops. The man who takes sufficient brandy, with either very little water, or with no water at all, will become intoxicated; but he who greatly dilutes the same quantity of spirit will suffer no inconvenience because of the prolongation of the time in which he consumes the liquor."

"F. P." questions also whether the price of brandy would be what it is if it were diluted by 30 or 40 times its own bulk of water, so that a man need drink 40 gall. of liquid to secure the benefit due to 1 gall. of spirit. But the discussion has, it appears to us, been already excessively prolonged.

—— The following important letter upon the Water Supply of London, signed "Lechlade," and therefore probably from a resident in the locality of which he treats, appeared in the *Times* of the 4th inst.:—

> "Water supply to our towns is a subject which, before long, will force itself upon the attention of the people of England; and the question which it involves will be best solved by dividing the country into water districts, and distributing to each the share which fairly belongs to it, without trenching upon the property of its neighbours. Scotland draws her supply from the lochs. The 600 square miles of hills facing the Atlantic are ample for the wants of our manufacturing districts. The valley of the Thames can be shown to possess an abundance of water to meet the demands of its occupants. What concerns us is the supply for London; and it is extraordinary that its inhabitants should submit to a monopoly which limits the amount and raises the price of an article which ought to be brought almost free of charge to their doors. If the subject is viewed in detail, all difficulties will vanish; the question lies in a nutshell. I confine my remarks to the upper portion of the Thames above Oxford, because from the character of its soil, the heaviest clay we know of, it appears as if intended by Nature as a reservoir for the supply of its lower and more populous districts. The watershed of the Thames above Oxford is 875 square miles, the recipient of 12 streams; its rainfall may be taken at 28 inches, allowing for losses, natural and artificial, leaving available 9 inches. Its area to the west is 74 square miles, to the north is 678, to the south is 123; the watershed of 290 square miles, at 9 inches of rainfall, will supply 30 gallons per head to 3,250,000 persons. The other 300 square miles are more than sufficient for that purpose; the remaining 260 square miles nearly so. The flow of water through Lechlade Bridge is from 200,000,000 to 300,000,000 gallons in 24 hours, more than twice the amount required for the consumption of London; to this must be added what is drawn by steam pumps from fuller's earth, an amount perfectly incalculable; one alone at Thames Head yields 3,000,000 gallons every 24 hours. In the driest summer known it was impossible to pump the well dry or to reduce the water in it to a less depth than 9 feet. If only three of these streams—the Colne, the Amnoy, and the Churn—were directed to a reservoir of 400 acres, 9 feet deep, it would supply 1,000,000 persons, at 30 gallons per head, for one month. Additional storage is a mere matter of expense. The overflow of the Thames can always be utilised to meet the increasing demands of the population. Probably a number of small reservoirs would be best adapted to the public convenience. The question of cost has been solved by a very spirited agriculturist in the neighbourhood of Farringdon, who, for the improvement of his estate, constructed a reservoir containing 8,000,000 gallons at a charge of £8000—that is, £1000 for the storage of 1,000,000 gallons—no heavy outlay to insure a constant supply, which could be flushed down the river by opening the locks of a reservoir, to be refilled by the influx of the next flood. There is no expense of pumping required, no machinery; the mere force of gravitation will send the water down stream; but, unfortunately, it is stopped in its flow to London by the monopoly of the water companies; a constant supply, which ought to be delivered at an almost nominal charge to our urban districts, is taxed for the benefit of shareholders. Neither ought we to lose sight of the fact that storage of water in agricultural districts is preferable to that in the vicinity of large towns, with all the unwholesome exhalations which taint their atmosphere.
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> "It is curious to observe the change which has occurred in our rivers with the improvements in agriculture. Under the effect of steam ploughing water will sink through the heavy clay lands into 4-feet drains in seven minutes; formerly it was retained as in a sponge, gradually forced its way into a ditch, or yielded to the slower process of evaporation. It now rushes to the river, and is lost in floods which ought to be economised for the benefit of London. But however advantageous the process may be to agriculture, it is disastrous to the river. The floods carry with them large quantities of mud, to be arrested by the weeds which flourish in the absence of navigation; in time those weeds die and sink, causing a silting of its bed, which checks and diverts the course of the stream. That is of small interest to all but riparian proprietors, but in a sanitary point of view it is all-important to the population of our towns.
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> "Nature's best purifier is the shingle at the bottom of a river, witness clear mountain streams; the accumulation of mud prevents the contact of water with the gravel, the bed constantly rises, the hard subsoil upon which its waters ought to flow becomes a coating of deleterious matter affecting its quality as a pure and wholesome beverage. No water is better than the Thames when filtered of its impurities, none better adapted to domestic uses when it regains its natural colour; but the neglect of the stream destroys its quantity and detracts from its quality.
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> "The remedy is so obvious, and so cheap, that it is marvellous the inhabitants of London should remain contented with nothing more than an occasional murmur. It can only be accounted for by the fact that public opinion is slow to act against powerful and long-standing abuses.
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> "The case resolves into this—the formation of reservoirs in the upper districts of the Thames Valley, at a cost of £1000 for every 1,000,000 gallons—that is the fixed charge; water bailiffs to regulate the supply, and a few steamers to prevent the accumulation of mud. Probably, after the original outlay for storage, £2000 per annum would cover every expense, and insure to the inhabitants of London an incalculable supply of pure water at an infinitesimal price.

—— The managers of the Lodge Farm, Barking, love to have their work scrutinised. In another portion of the *Agricultural Gazette* will be found a report by an eye-witness of the present state of this farm, a report which must assist the public in coming to a conclusion as to the varied uses to which sewage may be applied. A number of gentlemen, principally from Essex, have been round the sewaged farm, have looked over the hedge, and seen the benefit to a neighbour who has taken advantage of the fertilising flood; and arrived at the conclusion that where there was no sewage—where, from unskilled manipulation, it had missed, there was a corresponding failure in corn or grass. Having established the great fact that sewage is beneficially applied to our ordinary crops, the managers of the Barking farm are endeavouring to unravel questions of detail—as to whether, for instance, narrow or broad beds are the best; that is, whether beds 16 yards or 50 yards across are the best. The result of the above examination was so favourable to wide beds, that even Mr. Mechi was convinced—much modified his opinions—and the company pronounced in favour of a considerable distance between "carriers," and beds 50 yards wide. No statement of the commercial prosperity of the farm is made, but this is, from a national point of view at least, of secondary importance. If whilst improving our rivers, and rendering our population healthy, getting rid of disease, in fact, we can also increase our food supply, the work should go on. And if there is not sufficient profit in sewage farming to encourage individual risk of capital in it, the work should be done at the public expense.

—— The Wigton Farmers' Club submit the papers which are read before them to a rough-and-ready criticism, which, whatever may be its effect on those who may be labouring for future meetings, has at any rate the effect of giving some amusement to readers. At the last meeting which we have seen reported, Mr. Grainger read a paper, advocating, among other things, practical as well as theoretical education. He thought that young men should be taught to do, as well as to know when a thing was done. It was an easy thing to take a farm and put it into good condition, if a man had plenty of money in in his pocket, but this was quite a different thing from making it pay. He thought every farmer ought to learn to plough, sow, and reap well, but some mental calculation was required also, in order that a system of farming might not be followed which did not pay. After referring to the probability of the establishment of an agricultural college for the North of England, he turned from the question of education to that of taxation. He thought it as much the duty of farmers to look after their pockets and interests in that line as many others spoken of. Thereupon ensued a discussion:—Mr. Wright thought the paper was very difficult to understand.—Mr. Hetherington agreed with what was said about having to serve an apprenticeship to farming.—Mr. Wright said it was not necessary to be able to plough or work; they could get men to do that. What a farmer wanted was a good head-piece.—Mr. McMechan would suggest to the Chairman and the meeting whether farmers were not the "best abused" set of men going. Almost every lecturer and speaker had a fling at them, and they were spoken of as if they were half a century behind any other trade or profession, whereas he believed the opposite was the case.—Mr. Ross said, when a lecturer treated upon so many subjects, it was difficult to carry them all in one's head, so as to reply to them. Farmers had certainly to direct their attention to all kinds of things, vegetables, animals. They had to acquire experience, so that if they looked at a plant or field which was not doing well they would know what was wanted; a man of letters would not know this. He thought the paper was very good, but it embraced too many subjects. —The Chairman much approved of that part of the paper which spoke of an agricultural college. If such a thing were established he should send a son, and he thought they ought to take some action on that question.—Mr. Wright, after some further discussion, said he should propose that the Club offer £5 for the best plan of destroying the wireworm.—Mr. Ross said he could tell him for 5*d*. It could be kept down by frequent ploughing.—Mr. Norman doubted this. Farmers called almost everything which destroyed the roots of plants wireworms, whereas there were about 60 different kinds of worms of this destructive sort, many of which might be killed by the soil being frequently disturbed and turned over. He thought the best plan was to roll the land very hard with a Cambridge roller.—The next meeting will take place on October 17.

—— The following particulars are taken from the columns of the *Sydney Herald*, as an illustration of the loss incurred in that colony by Pleuro-pneumonia. The extent of loss due to the disease may be seen by comparing the numbers of cattle in the following years: —1862, 2,620,383; 1863, 2,032,522; 1864, 1,294,119. So that in two years when this fatal disease was prevalent the deaths, and sales to escape death, brought down the stock to less than one-half. In the following year the numbers rallied to 1,961,805, but have since fallen again, and now stand at 1,795,874: being little more than three-fifths of the stock of nine years ago.

—— It is worth while placing on record a recent decision in a court of equity as to the right to Street Soil and Waste in Towns, when it is not reserved, seeing that the subject has some bearing on a scavenging question in which suburban agriculture is interested. The case is thus reported in the *Times*:—

"Beckett, Bart., *v.* Borough of Leeds.

"The question in this case was whether the lords of the manor of Leeds are entitled to the soil of the streets within the township or the owners of the adjacent houses. The case was heard some days ago. Sir Richard Baggallay, Q.C., and Mr. North appeared for the plaintiffs; Mr. Bagshawe and Mr. Graham Hastings for the defendant. The Master of the Rolls said that, as a general rule, the owner of a house in a street was entitled to the soil *usque ad medium filum viæ* until the contrary were shown. There was no evidence of any reservation to the lords of the manor in the various grants of sites for houses, and in the absence of any evidence to the contrary he should hold that the soil of the streets was vested in the owners of the adjacent houses."

—— In the neighbourhood of Maritzburgh, South Africa, we learn that the farmers have suffered and are still suffering great losses by the increased virulence of the Lung Sickness among the cattle, and to add to the severity of the infliction, another fatal disease, known to the Dutch as *melt-richte*, has made its appearance, and in several instances caused great loss. This last disease proves rapidly fatal; the beast appears dull, and refuses to eat; if watched closely his urine will be found bloody, and death generally ensues within 12 hours after the first symptoms have made their appearance. An examination of the carcase will show that the fat of the heart and kidneys has disappeared, and that death has been caused by violent inflammation of the intestines. In cases where a beast recovers, large patches of the hide fall off, and the poor brute presents a deplorable appearance. The Dutch attribute the disease to extreme heat.

—— It may be well to place on record the sensible opinion of a member of the Council of the Royal Agricultural Society of England. At the Perth show, last week, replying to a toast in honour of that Society, Mr. Jacob Wilson is reported to have said, regarding the Wolverhampton Meeting:—

"Although they had 16,000 or 20,000 in their show at one time, they lost money by it; but he did not think that national associations, like the Royal Agricultural or the Highland Society of Scotland, should mind a little loss; they should rather consider the progress and improvement of the agriculture of their respective countries. He had no patience with economy in these annual showyard arrangements, and he asked, when you have from £20,000 to £40,000 invested in funds, what are you doing for the agriculture of your generation by investing that money? They were living in a time when agricultural progress was advancing with more rapid strides than had been known in times past, and he thought they could not spend their money better than by encouraging the improvements in mechanics as applied to agriculture at the present day. He instanced the case of steam cultivation, and strongly urged that its merits should be thoroughly tested regardless of expense, and instanced the example of the Royal Agricultural Society, which did not spare money in this matter. He was himself in favour of Fowler's machine, but he was not prejudiced; if he could see a better to-morrow, he would buy it. As regards steam cultivation he was glad to find that they had men of intelligence determined to keep up with the progress of the day, and that a society had been started for steam cultivating the whole of Scotland. Hints had been thrown out that this society was for the purpose of pushing forward a certain engine, but this he hoped was not the case. He had been a steam cultivator for many years, and there was a steam cultivating company which only the other year had got from 20,000 to 30,000 acres to cultivate. Their prices were moderate; they could earn a fair percentage for their money; and, what was far more important, it was a source of profit and accommodation to the tenant-farmers of their district."

—— The following recommendation of English Ploughs for more general use in India, reaches us from the Punjaub. The writer says:—

"To show the effects of deep ploughing, I would mention that last September I sowed a piece of land with Carrot (country) using only half the amount of seed the zemindars do. The land had only been ploughed once with Statkartt's plough, and side by side with the land I farmed was another field of Carrots, sown on the same day as mine, but ploughed eight times with an ordinary native plough. My Carrots were ready for consumption a full month before the zemindar's; his were 2 inches across at the head by 6 inches long, mine averaged 8 to 10 inches, and many were 12 and even 14 inches across and a foot long. A European who rents lands in these parts has literally no reason to use manure if he will employ an English plough, as at 10 inches deep he turns up maiden soil: you have only to change your land every year."

—— The extract given in another page from Dr. Spencer Cobbold's Lecture will be read with curiosity, disgust, or horror, according to the varying feelings of different people. The whole lecture will be found in the Journal of the Society of Arts for July 21. It is impossible to doubt that the risk exists to which Dr. Cobbold directs attention. It is, however, we think, remarkable that amid all the instances of parasitism in connection with sewage irrigation which he has quoted from the Punjaub and other distant points, no mention should have been made of the fact that sewage irrigation has existed in this country for many generations of men without the consequence which he anticipates. The Rivers Pollution Commission, when inquiring into the relation of the sewage meadows near Edinburgh to the health of that city, elicited from Dr. Littlejohn, the medical officer of health at Edinburgh, that there was no such thing as a prevalence of tapeworm there, nor any other disease traceable to the neighbourhood of the Craigentinny meadows; that there was an active medical school, which would certainly have detected and carefully traced any such diseases, had they existed; that the Craigentinny meadows had been an institution for 150 years, and that during all that time Edinburgh had been fed on beef fattened after being fed on sewaged grass. This is called a "new danger" by the *Food Journal*. On the contrary, whatever may be the amount of the danger, it is at least 150 years old, and nothing has yet come of it.

OUR LIVE STOCK.

CATTLE.

Last week we published the general result of the Farnley Hall sale, which was, on the whole, successful. We append a complete list of the prices and purchasers:—

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Blue Belle	1861	41	Mr. G. Wentworth.
La Belle	1862	43	Mr. Hargreaves.
Isabella	1863	56	Mr. Wentworth.
Lady Valentine	1865	85	Mr. Wentworth.
Lady Maggie	1865	51	Mr. Metcalf.
Lady Fairy	1865	50	Mr. W. Thomson.
Lady Beatrice	1866	65	Mr. W. Thomson.
Revival	1866	41	Major Greenwood.
La Brillante	1867	34	Mr. Stanton (Canada).
Lady Beaujolais	1867	60	Capt. R. E. Oliver.
Flitch of Bacon	1868	40	Mr. Wilcock.
Her Lassie	1869	39	Mr. R. England.
Thorndale's Balm	1869	50	Captain Oliver.
Vervain	1869	41	Mr. G. Wentworth.
Betty Bacon	1869	42	Mr. Stanton (Canada).
First Duchess .. -	1869	65	Mr. G. Wentworth.
Lady Isabella	1869	47	Mr. G. Wentworth.
Second Duchess	1869	51	Mr. Stanton (Canada).
First Lady	1869	36	Mr. Clarke.
Second Lady	Feb., 1870	41	Mr. Stanton.
Third Lady	Feb., 1870	36	Mr. G. Hatfield.
Fourth Lady	Feb., 1870	25	Mr. Wentworth.
Fifth Lady	Aug., 1870	20	Mr. Wentworth.
Lady of Lorne	June, 1870	40	Mr. T. Barber.
Lady Belle	June, 1870	36	Mr. Hargreaves.
Third Duchess	Aug., 1870	35	Mr. Wentworth.
Sixth Lady	Nov., 1870	42	Mr. Wentworth.
Seventh Lady	Jan., 1871	21	Mr. Ellis.
Bulls.			
Lord Darlington ..	1867	46	Mr. Bates (butcher).
Seventh Lord	Jan., 1870	..	Not offered.
Eighth Lord	Feb., 1870	23	Mr. Wentworth.
Ninth Lord	Feb., 1870	150	Mr. Barnes (Australia)
Tenth Lord	April, 1870	41	Major Greenwood.
Eleventh Lord	Jan., 1871	55	Mr. Ripley.
Third Duke	Jan., 1871	26	Mr. J. Shuth.
Fourth Duke	Mar., 1871	25	Mr. Wentworth.

Summary:—

				=			
28 cows and heifers at	£46	4	9	=	£1294	13	0
7 bulls at	54	18	0	=	384	6	0
35 head at ..	£47	19	5	=	£1678	19	0

—— On Thursday, the 3d inst., Mr. Thornton disposed of a selection of pure-bred Shorthorns, bred and owned by the Rev. J. D. Jefferson, of Thicket Priory, near York. The cattle were in low condition, and the sale was successful. Business proceedings commenced with the offer of *Julia*, a very good 8-year-old cow, by 7th Duke of York, and of the "J" tribe, which was sold to Mr. Angerstein for 65 gs. *Jessica* and *Jessy*, both by Duke of Waterloo (21,616), and daughters of *Julia*, were both bought by Sir W. C. Trevelyan for 33 and 34 gs. respectively. *Duchess of Waterloo*, by Earl of Jersey (23,838), and of the Bates "Waterloo" tribe, was bought by Mr. T. Wilson for 160 gs.; and *Viscomtesse Jersey*, by Duke of Waterloo, above mentioned, and another member of the "J" tribe, was purchased at 77 gs. by Mr. W. Angerstein. In the bull sale, Earl of the Valley was sold, for 35 gs., to Mr. Danby; and Count Jersey, by Duke of Waterloo (21,616), was secured by Mr. Craig, for Australia, at 57 gs. The general result of the sale was as follows:—

				=			
25 cows and heifers at	£35	5	2	=	£881	9	6
11 bulls at	26	5	11½	=	289	5	6
36 head at	£32	10	5	=	£1170	15	0

—— The subject of internal parasites must always be important to flockmasters and graziers so long as liver fluke, "gidd," "measles," and other well-known forms of disease resulting from these mysterious creatures, exist. It was with some misgivings, therefore, that the friends of sewage irrigation heard that Dr. Cobbold, the great authority in this country on entozoa, should have expressed a fear lest the application of human excreta on land should be followed by the dissemination of germs of disease in the form of "eggs" of tapeworms and other low forms of life. It is with some relief that we find at least one well-substantiated reassuring case communicated to the Romford sewage meeting, by Mr. Hope. Mr. Hope fed an ox for 22 months on sewage produce—grass, Mangel Wurzel, Cabbage-leaves, and very often the rakings of grass, and the ox was slaughtered, quite recently "in the presence of Dr. Cobbold and other scientific men, and after it had been minutely dissected and examined, the united talent of these gentlemen entirely failed to detect any trace of disease whatever, and Mr. Hope was glad to say Dr. Cobbold was entirely converted to sewage irrigation." We cannot forbear congratulating the promoters of sewage irrigation upon the easy method they have discovered of "converting" scientific men.

HORSES.

The entries for the Birmingham horse show closed on Saturday last; we give the following satisfactory result:—

	1870.	1871.
Hunters	99	110
Hacks, Roadsters, and Cobs	65	61
Harness Horses	21	21
Ponies	63	69
Tandems and pairs	15	14
Agricultural Stallions	6	8
Other Agricultural Horses, &c.	13	None.
	282	283

It will be seen from the above that the number of horses is fully up to the mark, notwithstanding the striking out of two or three classes of agricultural horses, there being a considerable increase in the classes for hunters.

POULTRY.

How to Move a Sitting Hen.—I have moved over 20 of my sitting hens this season; four of them I brought three-fourths of a mile in baskets, at the same time, and not one of them but what took kindly to the nest prepared for them. First of all, I never attempt to make a change except in the night, when all is quiet—generally between 8 and 9 o'clock. After preparing the nest and placing the eggs in it, I go for my hen, being careful to leave all gates and doors open after me, that my passage to the nest may be uninterrupted. On reaching my hen, I place my right hand under her breast and my left on her back, to steady her, and raise her gently from where she is sitting; and as I generally have a coat on at that time, I place her head under it, that she may see nothing to startle her, for I find that once she becomes aroused and begins the struggle, the game is all up for that time. On reaching the nest, I place her on the eggs, withdraw my hands from back and breast, and spread her legs so that they come on the outside of the eggs. When they feel the eggs under them, they almost always settle themselves with a satisfied cluck, and I have no further trouble with them. Should they show a little uneasiness, I would place something either in front of or over the nest, and let it be so all the next day, when they will have settled quietly to their work, and at night the things can be removed. Should the hen in being moved become restless and frightened, and on being placed on the nest show evidences that she had concluded to sit standing up, I would return her immediately to her old sitting place, and wait until the next night before repeating the experiment. I find that once a hen becomes aroused, it is no use to try and make her sit by fastening her on the nest. You will not only break her from sitting entirely, but will be very apt to lose some of the eggs by her tramping around; and it may prove a costly experiment. I find that patience and gentleness are great requisites while among my feathered friends, and especially with sitting hens. *American Paper.*

RAM SALES.

MESSRS. LYTHALL & CLARKE held an important Shropshire sheep sale on Thursday, the 27th ult., when 122 rams and above 400 ewes were offered. The ram sale commenced with Mr. Lythall's (Radford Hall) shearlings, which realised an average of £8 11*s.* each, while prices varied from 5½ to 11 gs., one sheep letting for 8 gs. These sheep were principally by "Standard Bearer," winner of the 1st prize at Oxford, and by "Southport," bred by Mr. H. Smith. Mr. Yates' 16 sheep averaged £11 4*s.*, and prices ranged from 5½ to 13 gs. Mr. Nock, of Sutton Maddock, sold 14 sheep as follows:—A 2-shear prize sheep by "Mr. Crane's ram" was bought by Mr. Gaven for £22 1*s.*; a 2-shear, by Mr. Pryce Bowen's 3d prize Manchester sheep, was sold for £22 1*s.*, to Earl Ducie; a 2-shear for 15 gs., to Mr. Stokes; a 2-shear for 18 gs., to Mr. Gaven; a shearling by "Patentee" by "Conservative," for 11 gs., to Mr. R. Milward; a shearling by Mr. Byrd's "Lord Paramount," 16 gs., Mr. Milward; and the remainder for from 6 to 10 gs. Lord Willoughby de Broke's rams made from 6 to 11 gs., a head; Mrs. Beach, The Hattons, sold a shearling for £21 to Mr. J. Evans; a shearling for £43 to Mr. Nock; a shearling for £32 to Captain Oliver; and a shearling for £23 2*s.* to Mr. Gaven. Twelve shearlings in all, at an average of £17 14*s.* each. Mr. S. C. Pilgrim, Hinckley, sold a sheep for 10 gs. to Mr. Gaven. Mr. H. J. Sheldon sold the sheep at from 6½ to 8½ gs. each. The Marquis of Exeter sold a few at £4 to £5 each. Mr. John Stubbs disposed of one ram to Mr. Yates for 43 gs., and other breeders, among whom we may mention Mr. Z. Walker, Mr. Lort, Mr. Cotteridge, and Mr. William Picken, sold their sheep at from 5 to as much as 8 gs. a-head.

In the ewe sale Mr. Yates, of Grindle, Shiffnal, sold yearlings at from 50*s.* to 55*s.* per head; Mr. Pilgrim sold a pen of theaves, by Mrs. Beach's "Cardinal," for 6 gs. a-head; Mr. Nock sold at from 63*s.* to 66*s.* a-head; Mrs. Beach at from 90*s.* to 147*s.* each; Mr. W. Lort at from 58*s.* to 70*s.*; Mr. G. Lythall at from 55*s.* to 74*s.*; Lord Willoughby de Broke at from 92*s.* 6*d.* to 100*s.*; Mr. J. H. Lees at from 53*s.* to 56*s.*; Mr. James Dugdale, Wroxhall Abbey, at from 44*s.* to 58*s.*; Mr. Thomas Walker at from 74*s.* to 75*s.*; Mr. Tolifree at from 54*s.* to 58*s.*; Mr. Isaac Downing at from 47*s.* to 49*s.*; Mr. Z. Walker at from 49*s.* to 56*s.*; and Mr. Wilday at 50*s.* per head.

On the Cotswold Hills some excellent averages have been obtained for rams. Messrs. Acock & Hawks, in selling the shearlings of three well known flocks last month, obtained the following results:—July 20, Mr. W. Lane's, Broadfield, 54 sheep at £18 2*s.* 6*d.*; July 21, Mr. R. Garne's, Aldsworth, 54 sheep at £19 1*s.* 1*d.*; July 25, Mr. Jas. Walker's, Northleach, 38 sheep at £17 13*s.* 2*d.*

On the 28th ult. Mr. Villar sold Mr. E. Handy's rams at Sierford, when 50 sheep made an average of £12, which contrasts favourably with the average of £10 8*s.* 8*d.* of last season. At Middle Aston sale, held at Hopcrafts Holt, on Tuesday, the 1st inst., 58 shearlings and 9 old sheep brought an average of £10 11*s.*, and the highest price, 33 gs., was given by Mr. Lane, of Broadfield. At Coates, Cirencester, on Friday, the 4th inst., Mr. Howell's 41 rams were sold by Messrs. Moore & Hill for an average of £9 12*s.* 7*d.* Last year's average was £10 11*s.* for 27 sheep.

Hampshire Sheep.—At Down Farm, near Little Durnford, Salisbury, Mr. Charles Waters' rams were disposed of at satisfactory prices. Ram lambs brought 16½ gs., 13½, 12½, 12, 10, 9, 8, and down to 3 gs. each. Mr. John Waters officiated as auctioneer, and the sale took place on the 1st inst.

The Bulbridge ram lambs, bred by Mr. Rawlence, were sold or let by Messrs. Ewer & Winstanley on Wednesday, 2d inst. 16 ram lambs let at an average of £22 per head, and 81 lambs were sold at an average of £10 6*s.* per head. Six lots of 2-teeth rams were let at £13 16*s.* 6*d.* per head, and seven 2-teeth rams were sold, one of which made 17 gs. and the other 15½ gs. The total sum realised was £1600. The sale was considered satisfactory.

Oxford Downs.—The Upper Winchendon sale, in which 58 shearlings, bred by and the property of Mr. Treadwell, were disposed of, came off on Wednesday, August 2. 58 shearlings made an average of £14 6*s.* 9*d.*, and the highest price, 33 gs., was given by Mr. John Bryant, of Southleigh, Oxon. The sale was very successful, and realised about double that of last year.

Mr. Charles Howard's sale took place at Biddenham, Bedford, on Thursday, when Mr. H. Strafford submitted to auction about 50 shearling rams and a pen of older sheep. Mr. Stilgoe took the first shearling put up, at 30 gs., and Mr. Treadwell the first 2-shear at 26 gs. Every sheep was sold, the average being £13. Amongst the other buyers were Mr. Ensor, from Essex; Mr. Waters, of Royston; Mr. Hicken, of Warwickshire; Mr. Ryland, Mr. Druce, and a number of other Oxford Down flockmasters. There was a large attendance, upwards of 200 agriculturists being on the ground; and Mr. Arkwright, the master of the Oakley, presided at the luncheon.

Southdowns.—Mr. J. Bushby's sale took place at Angmering on Tuesday, the 1st inst. Several shearling rams brought from 11 to 17 gs., while others were sold at 5 to 10 gs. each. Twenty-two ram lambs averaged £8 0*s.* 8¾*d.*, and ranged as high as £13 2*s.* 6*d.* Fifty ewe lambs were disposed of at from 41*s.* to 53*s.* 6*d.* per head.

Longwools.—Mr. T. Allen's sale of long-woolled rams was held on Friday, at Markshall, near Norwich. The ram lambs offered made from £3 to £3 12*s.* each, the shearlings from £5 to £14 5*s.*, and the 2-shear sheep from £5 5*s.* to £6 each. The averages were—ram lambs, £3 5*s.* 5*d.* each; shearlings, £7 15*s.* 9*d.* each; and 2-shears, £5 12*s.* 6*d.* each.

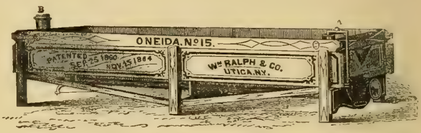


FIG. 235.—FACTORY MILK-VAT WITH HEATER BENEATH.

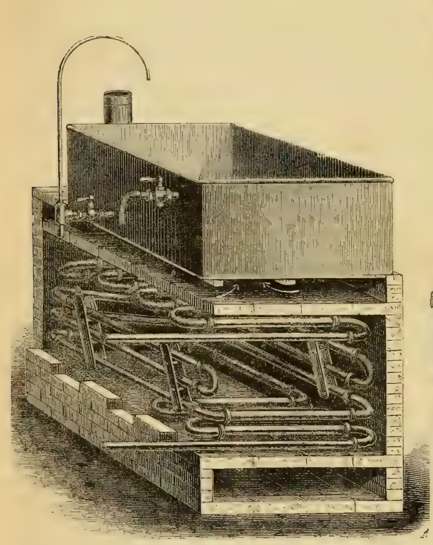


FIG. 234.—VIEW OF HEATER—FRONT AND SIDE OF BRICKWORK REMOVED.

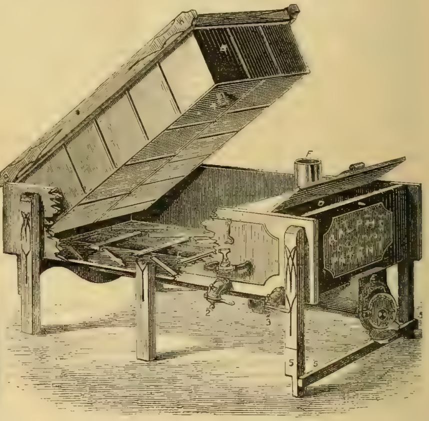


FIG. 236.—INTERIOR OF MILK-VAT, WITH HEATER BENEATH.

SKIM CHEESE MANUFACTURE.

[The following is an extract from a paper on Butter Factories in the States, vol. vii., English Agricultural Society's Journal.]

WE have referred to the manufacture of "skim cheese" as a part of the butter-factory system. We have said that the cream is dipped from the milk while it is sweet, and that the latter then goes into the milk-vats for making "skim cheese."

It should be remarked that at the butter factories the quantity of milk to be manipulated is usually much smaller than at the cheese factories. In making a fancy product it is found advisable that the delivery of milk be kept within moderate bounds, say from 300 to 400 cows. The factory milk-vats are all essentially alike in form and size. They hold from 500 to 600 gallons.

There is a great variety of heating apparatus, boilers, steamers, tanks for hot water, and what is termed "self-heaters," that is, with fire-box attached to, and immediately below, the milk-vat. This kind of heater is very popular at the butter factories, as it consumes but little fuel, is easily managed, and does as good work as the best.

The ordinary heater is constructed separately from the vat, and consists of wrought-iron pipes, screwed together in such a manner as to form a fire-chamber, and present a large amount of heated surface (figs. 234 and 239).

Where a boiler and engine are used, power is afforded for driving the churns, and in this respect this system must prove most convenient. Still, as the expense is considerably more than for the self-heater, both in the first cost and for fuel, many prefer the latter. We give figures of two kinds of heaters that are very largely in use (figs. 234, 236).

The factory vat (fig. 235) is constructed on the same principle as that for farm dairies (fig. 236). The fire-box underneath (fig. 235) runs from end to end. It is simply a copper cylinder with a jacket 2 inches or more from cylinder on lower side, so that water surrounds the cylinder or fire-box. This vat requires but very little fuel. I have one of the farm vats upon my farm, and my farmer, in summer, has done all the work in making cheese from my dairy of 30 cows, using only "a pan of chips," say 10 to 12 quarts. The pipe at A hanging over the vat is a movable syphon for drawing off whey. It is represented with one end inserted in the tin strainer, which is also movable, or so as to be detached ; B is the smoke pipe.

The engraving fig. 236 represents the tin or inner vat raised, and the sides of the outer vat broken out to show the heater, and the supports of the inner vat.

The outer vat is lined with galvanised sheet-iron ; B is the inner tin vat ; C the copper vat heater, extending the entire length of the vat, and surrounded by water in a semi-cylindrical jacket open at the top, which water also fills the space between the vats ; D is the tank or reservoir for hot water, separate from that between the vats, and E the copper heater for tank or reservoir ; F smoke-pipe for both vat and tank heaters. The numbers indicate the following parts :—1, faucet connecting water-space between the vats with tank ; 2, water-gate in outside vat ; 3, water-gate in tank ; 4, tube through which the whey is drawn from the strainer inside the inner vat. The strainer and whey faucet are not shown in the engraving.

The above milk-vat is for farm dairies. There is another door or fire-box at the back, similar to that at E, where fire is made to heat the water under the vat (B), when in place.

In making skim cheese the milk is set at 82°, and sufficient rennet added to coagulate it in from 40 to 60 minutes. It is then cut in cheeks with a gang of steel knives, the blades set ¼ inch apart.

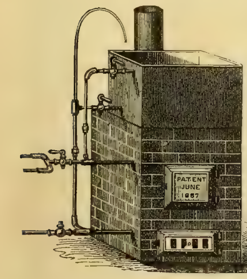


FIG. 239.—MILLAR'S CIRCULATING COIL-HEATER FOR FACTORY MILK-VAT

(Consisting of coil of gas-pipe enclosed in brick).

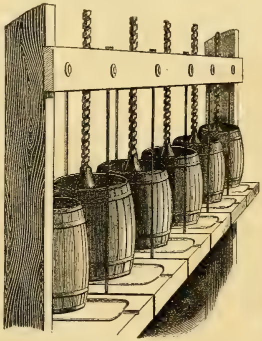


FIG. 240.—AMERICAN FACTORY CHEESE-PRESSES.

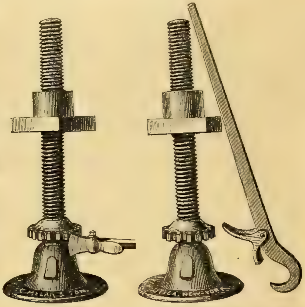


FIG. 241.—PATENT RATCHET CHEESE-PRESS SCREW.

It is now left at rest for a short time for the curd to subside, when it is further divided, the gang of blades being set at an angle of 45° with the bottom of the vat. It is now gently lifted with the hands, and the process of breaking or subdivision completed Then a slow heat is begun to be applied to the mass ; the curd, meanwhile, being stirred to keep it from packing, until a temperature of 96° is reached. This is the highest heat to which the curds are subjected.

When the curds have acquired a sufficiently firm consistency, the whey is drawn, and the curds thrown upon a sink to drain and cool, after which they may be run through a curd mill and salted, and then put to press.

The manufacture of skimmed cheese is very similar the American process of manufacturing whole-milk cheese, except that a lower heat is employed in "scalding," and less salt is used ; the proportion of salt being at the rate of $2\frac{4}{10}$ to 2½ lb. for 1000 lb. of milk.

The cheeses are made thin like the single Gloucester, about 4 inches thick, and pressed in hoops 14 to 15 inches in diameter. The style of cheese, however, varies at different factories, some making a small-sized fancy shape, 8 to 10 inches in diameter, and about the same height. [Direct reference to some of the illustrations is not made in the text ; but the descriptions attached to them renders that almost superfluous.]

(*To be Continued.*)

VISIT TO THE SEWAGE FARM AT BARKING.

BY invitation of the managers of the Lodge Farm at Barking, a large portion of which is irrigated, as is well known, by metropolitan sewage, a number of country gentlemen and well-known agriculturists recently paid a visit to it for the purpose of observing the application of the sewage, and of witnessing for themselves its effects upon the crops. The company was composed of the following gentlemen, viz., Mr. J. Oxley Parker, Mr. Edgar Disney, Major Bringhurst, the Hon. A. Petre, Mr. Julian Goldsmid, M.P. for Rochester, Sir George Denys, Mr. E. L. Denys, Mr. W. J. Beadel, the Rev. R. A. Westhorpe (Willingale), Mr. J. J. Mechi, Mr. C. P. Wood, Mr. James Pertwee (Boreham), Mr. Edward Catchpoole (Feering Bury), and Mr. Robert Page (Bradwell).

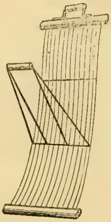


FIG. 237.—CURD AGITATOR.

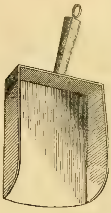


FIG. 238.—CURD SCOOP.

The Lodge Farm contains about 218 acres, and was obtained by the Metropolis Sewage and Essex Reclamation Company, in the spring of 1866. At first one quarter of its area was laid out for sewage cultivation. This portion has been enlarged from time to time since, and there are now 162 acres under sewage, about 62 of these acres having been brought under this system of cultivation during the past year. The Lodge Farm differs from most farms of the kind in that not only root and green crops, but grain crops also are produced upon it in considerable quantities. At present, the land to which sewage is applied is growing the undermentioned crops :—Wheat, 24 acres ; Onions, 24 acres ; Oats, 10 acres ; Mangel, 22 acres ; Sugar-Beet, 4 acres ; Parsnips, 7 acres ; Carrots, 2 acres ; Rye-grass, 7 acres ; Potatos, 16 acres ; Cabbage, 25 acres ; Beans, 5 acres ; Strawberries, 5 acres ; fallow, from 15 to 20 acres. The farm was thoroughly examined—scrutinised, perhaps, would be a better word—in every part, and the impression produced upon all the visitors was, as they openly professed, extremely favourable.

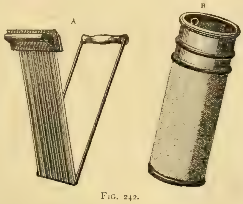


FIG. 242.

A, Gang Curd-knives ; B, Strainer used when the Whey is drawn, to prevent loss of Curd.

The crops, all round, bore the examination to which they were subjected—an examination which lasted nearly four hours—remarkably well, for they were found to be in nearly all cases good, and in some cases remarkable, alike in point of size and colour. Prior to speaking of any part of them in detail, we will dispose of two little matters that arose, and that were discussed with some interest, during the inspection. The company were shown a piece of land occupied by a gentleman adjoining the sewage farm. Naturally, it is of a very hot and stony character, and, under ordinary circumstances, could probably not produce, as one of the visitors put it, food enough for a goose per acre. This year the managers of the Lodge Farm prevailed upon Mr. Coppin to irrigate it with sewage, and he has done so upon the catch-water system, that being, said Mr. Morgan, the only sytem which could be applied to the field on account of its pecular formation. As a consequence, it is now growing Rye-grass very fairly. But what struck most observers was that, here and there, there were large patches almost entirely bare. This was explained by the fact that the sewage had been applied by a labourer not skilled in the art, and it had been unevenly distributed. Where the sewage had touched, there the grass was strong and green ; where it had not touched, it was weak and yellow. This seemed to be regarded as a pretty conclusive proof of the efficiency of sewage when applied, at all events, to this particular sort of soil. So much for the first preliminary point. The next point to which we refer is the question of small *versus* large beds on sewage farms. On this matter Mr. Morgan, the present manager, would seem to differ somewhat from his predecessor. Mr. Petre, in his report upon the farm for the season of 1869, says : "My present experience inclines me to use wide beds for grass, corn, and such crops as grow thick on the ground, and narrow beds for Cabbage, Mangel, and such as require space between the plants." Mr. Morgan would have large beds for all kinds of crops. His argument is that a large bed absorbs the good parts of the sewage best, since it is a longer time in passing over. This argument was put to a very practical test. Beds of both sorts were examined one after the other. Some were only 16 yards wide, while others—notably a bed of Mangel—were as much as 50 yards. If the visitors had been polled, they would have polled almost unanimously in favour of large beds. On these the crops were very even—as good at the remotest point from the sewage carrier as close to it. Mr. Mechi, who has hitherto, it seems, been in favour of small beds, confessed at a luncheon which ensued, that his opinions upon the point were considerably modified. Having disposed of these matters, we turn our attention to the appearance of particular portions of the crops, and first, we will speak of the grain crops, for those are supposed to be most difficult to produce on a sewage farm. First we viewed a crop of Talavera Wheat, growing after Mangel, the Mangel having had the sewage and the Wheat none in itself. Its condition was thought very fair for the season, and the produce was estimated at from 6 to 7 qr. per acre. Next, we saw a larger crop of ordinary Wheat, after grass, on a very gravelly soil, which has had three dressings of sewage this year, or about 1300 tons per acre. It looked very well, and it was estimated that it would produce from 4½ to 5 qr. per acre Last year it yielded from 5½ to 6 qr., with 3 loads of straw to the acre. One portion of the plot we are now speaking of has grown five crops of Wheat in succession; in other words, it has grown Wheat since the sewage operations began, and this portion was thought to be doing best. The Oats, of which there were 10 acres, also looked well. Of Onions there were magnificent crops. Last year, when Onions on ordinary farms were scorched up, there was a considerable yield there, and they sold, on the ground, for £50 per acre. This year, owing to the great plentitude of this production, they are not expected to sell for more than £30 per acre in the market. Some of the Onions last year were 17 inches round. The Rye-grass, as usual under sewage, had a splendid appearance. To this crop 12,000 tons of sewage per acre has been applied this year, and four crops, amounting to 30 tons per acre, have already been cut. Two more, equal in quantity, are expected. The Potatos were fair, but touched, as they are almost everywhere, with the prevailing disease. The Mangels, both yellow globe and long red, were much praised. Mr. Mechi expressed the opinion that one field of yellow globe passed through would produce as much as 50 tons to the acre. The Turnips were equally good, and there was hardly a crop on the whole farm to which exception was taken.

After the inspection, the company were entertained to an excellent luncheon in one of the farm buildings. One or two toasts were proposed, and the farm and its management were spoken of in the most complimentary terms. Many gentlemen also wrote high opinions of what has been accomplished in the visitors' book, which bears the names of persons from almost all parts of the world.

SEWAGE AND THE TAPEWORM.

[We take the following from the pages of the Journal of the Society of Arts. It is an extract from a lecture delivered by Dr. T. Spencer Cobbold, F.R.S., &c., on May 1, before the members of the Society, being the second lecture of a series "On the Bovine Ruminants and the Parasites which reside in them."]

To return to the consideration of the Cysticercus bovis. You will remember that I told you of an experiment which, in conjunction with Professor Simonds of the Veterinary College, I had performed on a calf; and I told you the kind of effects produced by this experiment up to a certain point. We ascertained that the migration of the larvæ, or the six-hooked embryos, which escaped from the eggs, produced symptoms in the animal on the 15th, 16th, and 17th days after the administration of the eggs. You will remember also that we fed the animal with the joints of a particular parasite, or tapeworm, known as Tænia mediocanellata. The calf having recovered, we caused it to be slaughtered at the expiration of 14 weeks, and the result of our examination of the flesh after death was such as to give us very characteristic specimens of measled meat. In this jar on the table I have portions of muscles of the calf, and also portions of measled beef from a subsequent experiment. In either case the larvæ are well displayed. Here is a small egg of a tapeworm, say 1-800th of an inch in diameter, containing the six-hooked larval parasite. When the egg has been introduced into the alimentary system of the ox, the gastric juice dissolves the coat or shell, and the hitherto contained embryo makes its escape. The embryo then bores its way through the walls of the canal, and passes into the blood-vessels; and thence, by the medium of the circulation, towards the muscles. Having by further boring gained access to the muscular tissue, it comes to a state of rest. During the resting stage it parts with the six hooks (which are no longer wanted for the purpose of tearing and boring), and undergoes a series of changes of too complicated a character for me to detail to you, but which are, nevertheless, represented in the diagram. By these changes it is converted into a Cysticercus, that is to say, into a higher larval condition, characterised by the presence of a head, with or without hooks, according to the species; in this case without any hooks, but with four suckers, as in the adult animal, a neck, and a large bladder-like tail. Now, when it has arrived in the muscles—precisely as obtains in the case of the Trichina—it waits to be eaten. If it is not eaten it will die. It is a point, therefore, of some importance to determine how long it will live in this situation before finally perishing. In the case of the Trichina, the larval life is longer than that of the parasites I am now describing. In the second experiment, which I performed in conjunction with Professor Simonds, the heifer was not slaughtered until the expiration of more than a year, thus affording the very kind of information I was anxious to obtain. We had thus given the Cysticerci time to live as long as they could, and I found that all the little cysts, without exception, had undergone a process of degeneration. Thus, therefore, a natural process of cure by means of calcareous degeneration was demonstrated to have taken place. This is practically very interesting, because even if you had an animal whose flesh happened to be crowded with these minute organisms, there would be, you perceive, after a short time, a perfect destruction of the parasitic inhabitants of the bearer. The meat could be eaten with impunity, nor would there be any injury to the flesh, rendering it in any other sense unfit for human food. . . .

The practical question before us is this—How do the measles obtain admission to the human territory under ordinary as well as under unusual circumstances. When the flesh of any animal is eaten by us, if the flesh be not properly cooked, Cysticerci will become transferred to our alimentary system, and they will undergo changes quite as remarkable as those which obtain in the trichinous larvæ, as already explained. Thus, if we swallow a portion of this calf, each one of the little cysts would be liable to undergo changes which would result in the formation of a creature from 10 to 15 feet in length. As soon as the larva is transferred to the vital organs of man, the cyst in which it is enclosed is readily digested, and the little Cysticercus makes its escape, after the fashion of the six-hooked embryo when the egg was previously swallowed by the intermediary bearer. Curiously enough, the gastric juice dissolves away all the bladder-like tail portion of the animal, but the head and neck retain sufficient vitality to enable the animal to fasten itself on the wall of the alimentary canal; and, immediately thereafter, by a process of budding, little joints begin to form below; so the process goes on, week after week, until 11, 12, or 13 weeks, and at the end of that time you have a completely developed Tænia from each larvæ.

Now, how do we know that is the case? The evidence on this point is perfectly distinct and conclusive. [Then follows the history of a conclusive experiment in proof of the assertion.]

All these experiments, made on animals and man, have led to the inevitable conclusion that certain larval parasites, when swallowed, will bring about the development of well-known adult forms of Tænia. There is no escape from this. But some say, we are not satisfied that such things do really take place in the ordinary course of Nature? Has any one ever seen such a thing as a beef measle in any animal killed for food? Have you any proof that these developments take place naturally? To all of these, and many other kindred questions, I am in a position to give entirely satisfactory and affirmative answers. You must understand that, for the detection of parasites of this kind, people must be educated properly. A meat inspector may be a very honest and able man in many respects, but if he never saw these things, of what use is it to ask him to look for that which he does not recognise even when he sees it?

But, touching the question as to whether the Cysticercus bovis has ever been seen in a state of nature, I happen to have in my mind the most satisfactory evidence. This *brochure* is the Bombay medical officer's report for the last quarter of 1870. It forms a most satisfactory contribution to our knowledge of the facts as they occur in Nature. Dr. Hewlett, the writer, has not only made himself acquainted with this parasite, but has given a most admirable representation of the creature, quite as good, if not better, than any which Leuckart, myself, and others have published as the result of our experimental researches. Dr. Hewlett says:—"During the quarter, the carcases of 13 full-grown cows and one bullock had been destroyed by my orders, on account of the flesh of these animals having been found to be infected with what is popularly called tapeworm or measle." Let me tell you that these records from India give us the first indication of a true knowledge of this subject abroad; and this knowledge of what may be found in the flesh of cattle has been derived entirely from the researches of Professor Leuckart and myself in this connection. We had experimented in this way, and had published the result of our experiments, and told people to open their eyes and they would find these things in Nature; and, though they have not been found in our own country, in India, as you see, they have observed the indications we pointed out, and our predictions have been verified to the very letter. This shows that science does really originate sometimes the most interesting practical discoveries. Dr. Hewlett also gives another figure of a small portion of the meat (which is exactly a representation of what might have been taken from our experimental calf), showing the parasite of its natural size. I will not detain you by reading any lengthened extracts from his valuable report; but in his advice as to burning, Dr. Hewlett has gone farther than I should now be prepared to go; and he has quoted a statement of mine, made some ten years ago, which I could now repeat only in a qualified sense. After considering the number of these and other parasites existing in cattle, he says, he "thoroughly endorses Dr. Cobbold's *dictum*, that all entozoa which are not preserved for scientific investigation and experiments should be thoroughly destroyed by fire, and under no circumstances should they be thrown away as harmless refuse." Herein lies an important practical matter. Under ordinary circumstances, tens and hundreds of thousands, nay, millions of eggs of tapeworms are daily discharged into our sewers. I suspect that at least 4000 of the inhabitants of this metropolis have the honour, if you may so call it, of playing the part of host to these singular creatures, and every day one or two of the individual segments of each living tapeworm will pass to the outer world, causing 40,000 eggs to escape along with each of them. These go down the sewers, and if that sewage be collected and utilised over our fields, it follows that these hundreds of thousands of eggs will be also distributed. The thing is clear to demonstration. And what happens? The eggs, furnished with a covering which it has been stated will resist any amount of atmospheric changes, are swallowed by the cattle feeding on the grass.

When an ox swallows an egg, or a hundred eggs, each egg is liable to become transformed into a Cysticercus. At the present time it is certain that only a comparatively small number of cattle obtain the eggs in this way. It must inevitably follow, however, that if you distribute artificially these ova, without stint or limit, the cattle will have much greater opportunities so to speak, of getting the eggs, and therefore, of having the larvæ developed in their interior. In like manner we shall, in our turn, have greater opportunities of eating these Cysticerci in the meat; and therefore, if we do not take the very simple precaution of having our meat sufficiently cooked, more of us will play the part of host to these creatures than is now the case.

But some person will come and say "I like meat underdone; it loses all its goodness if it is over-cooked." There is abundant truth in that remark, for the meat is injured by excessive cooking. Another says, "I have eaten underdone meat ever since I was a child, and never suffered any ill consequences; therefore your statements cannot be true." The reply is this—You fortunately live in a country where the distribution of sewage, in a fresh state, has not been carried on to any great extent, and where, moreover, the general habits of the people are more cleanly than obtains amongst the uncivilised occupants of other lands. Hereafter you may not be in such a proud position as regards freedom from parasites; and that will depend upon the steps taken to ensure the destruction of the parasites, in some one or other of the stages of development through which all of them must inevitably pass. Chemical changes in the sewage itself may cause the destruction of many parasites; but, not being a chemist, I have no original researches on this head to lay before you. As to the evidence of the prevalence of these things in a state of nature, nothing can be stronger.

Home Correspondence.

Labourers' Cottages.—Your correspondent, Mr. Strickland, has expressed a wish that I should point out some of the differences between the plans lately represented in your pages and that of Messrs. Richardson & Ross, and I have much pleasure in doing so. In the first place, it will be observed that the two ground-plans are dissimilar; since in the amended design the pantry is rectangular, and a commodious fuel store is provided, which does not appear in the Leeds design. Then the staircase in each case is different, as in one case it starts from the middle of the house, and in the other from behind the front door, and is open from the top to the bottom, thereby affording ventilation to the dwelling. Upon the bedroom floors the arrangement of the rooms is somewhat different, and the existence of an open landing gives a slight advantage to the amended plan. More height has also been given to the bedrooms, which were previously found to be too low. But perhaps the most important alteration is a structural one. It consists in bringing the chimney-stack out in the centre of the span of the main roof, instead of through the flat gutter, which has been alluded to by Mr. Strickland, and which will be found to be shorter in the amended than in the Leeds plan. Thus, a serious objection to the double gable system of roofing is to a great extent avoided. It is hoped that this explanation will not be for an instant regarded as an attempt to detract in any way from the merits of Messrs. Richardson & Ross's very excellent plan, but rather as an act of courtesy towards inquirers like Mr. Strickland; and if he, or any one else interested in the subject, would like to see the working drawings of the amended plan, and compare them with their prototype, which was fully illustrated in the "Farm Homesteads of England," p. 112, I need not say that we shall be glad to show them to him, and give him any other information in our power. I hope Mr. Strickland will forward you for publication the design for cottages of which he thinks so highly, and which he says can be carried out so much cheaper than those that are now in question. *A. Bailey Denton* (*Jun.*), 22, *Whitehall Place*, *London*.

Tiptree, August 9.—Glorious harvest weather! Commenced cutting on the 7th, crops promising, and not being too thickly sown are but partially laid, some very little so, although tall and thick. There is a great advantage this year in drained over undrained lands, not only in earlier harvesting but in quantity and quality of crop. Draining would have paid this year, in many cases, a profit of 30 or 40 per cent. on its cost. It is a conjoint and important question for landowner and tenant. Our drainage companies will find the necessary capital, and surely it can be only considered as an honourable and profitable action to allow them to do so, where it is inconvenient for the landowner, however wealthy in land, to find the ready cash. Our harvest wages are as follows:—Each man takes 10 acres to cut, stook, cart, and stack at 11*s.* per acre; when we lend them the reaping machine (Samuelson's side-delivery), they are charged 3*s.* per acre, and they find the driver. We find them in small-beer and ale, at a cost of at least 2*s.* 6*d.* per acre. The letting consists of Wheat, 49 acres; Barley, 6 acres; Oats, 6 acres; strong winter Beans, 9 acres; total, 70 acres. The spring Beans are generally cut by women. The Wheat crop will average, I think, quite 5½ qr. per acre. When we harvest the Pea haulm of green Peas picked for market, we remove the haulm to a grass field, and at once cart off the weeds after scarifying, and sow over Turnips. This saves a week's time at an important period. This is also a good way to do with the regular Pea crop. *J. J. Mechi.*

Local Taxation.—At p. 989 Mr. Magniac says, "Mr. Harvey had referred to local taxation, but he had heard men who were competent to reason that question out say that it depended on the rent, and that it was as broad as it was long." I take this to mean that the landlords pay all the local taxes indirectly through the tenant. That reasoning will not hold good, be Mr. Magniac's competent men who they may, for I am quite certain that a very heavy percentage of local taxes are paid by the tenant, not as a part of rent, but absolutely paid from what ought to be part of a tenant's living. When tenants take farms they look to the poor and road rate as well as other local taxes, and they take them into calculation as they stand at the time of taking a farm as a part and parcel of the rent, but they do not take into account sums that have never appeared as local taxes, yet do afterwards appear, and they are made to pay them. We will take a clear case in point. We have now the school matters before us. The present tenants when they took their lands did not bargain to buy land and build schools, yet there is a law passed that will compel them to do so; the payments for which are to be drawn from the tenant upon the slow-bleeding principle (borrowing money) in a way that they cannot be recovered from the landlord, and are, in fact, a rise of rent inflicted by law. A parish of 1100 acres near here is about borrowing £500 for that purpose, because it shall come out of the tenants' pockets, yet lands in that parish are now let very dearly; then the payment of this £500 off in 20 years, with the interest, must be a rise of rent that the tenants never bargained for yet is forced upon them. That same slow-bleeding principle was brought to bear upon the tenants when our workhouses were built, and our roads throughout the country have been made with tenants' money by the arbitrary enforcement of the General Highway Act of 1835. Our large landlords knew the value of good roads by way of an improvement to their estates, so they let their lands, and then got lackeys who drove or rode over the roads in the various districts to goad the ratepayers, and thus force them to improve the roads. In that way the roads throughout the country have been made with tenants' money, and the landlords have picked up the golden egg by a general rise of rent, the result from improved roads. I am writing all this from my own knowledge, therefore I know what I am writing about. The "reasoning" of Mr. Magniac's "competent men" is rotten at the core. If not, why is it that landlords do not get a law passed to make them pay all the local taxes themselves direct from their own pockets, and thus make it clear to the world that they do pay all the local taxes, instead of belying their own consciences by trying to make the world believe that they do, when they know full well that they have forced upon the tenants a large percentage of them. Mr. C. S. Read, M.P., says that "local taxation was not a question between landlord and tenant." It may not be the great question as to whether all the wealth of the nation should relieve its poor, make its roads, punish crime, &c.; but it is a question that wants deeply looking into, for if the law heretofore had made the landlords pay the local taxes direct from their pocket, they would have looked to wealth long ago, instead of being lax about tenants' payments. They pretend to represent tenants in Parliament, yet they fix loads upon tenants that they ought to fix upon themselves; and, "competent men," by the aid of an underhand craft, they would make the world believe that these loads are borne by themselves, whereas they have been greatly borne by the tenant. *William Smith, Woolston, Bletchley Station, Bucks, July* 31.

Thin-skinned Land.—What is the real meaning of this? I am so frequently told, "I have no depth of soil, mine is thin-skinned land," that I naturally ask whether there is hard rock immediately under this thin skin of 5 inches of ploughed land, and then I find that there is under it, probably, 150 feet deep of good honest land, but that it has only been skinned, the body remaining untouched. Now there is nothing, really, more easy and simple than deepening this thin staple to any reasonable required extent. Keep the top soil where it is, but break up the hitherto undisturbed subsoil, so that air and water can have free access into and through it, and so that the top soil and manure may rest upon broken ground and gradually mix with it. This has been my practice for the last 28 years, and, as a natural consequence, I get these large crops, which are the surprise of many who once knew the poverty of the soil. I effect this object by following in the track of the first plough with another plough, minus the breast, drawn by four or six horses, the first plough turning the top-soil on to the broken under-soil. The effects are prompt and obvious; rain-water sinks rapidly through the top-soil into the broken under-soil, and thus facilitates its passage to the drains. The top soil is thus left dry, and fit to receive the full benefit of warmth and changes of temperature, the subsoil partaking also in degree of the like advantages. As a rule, the subsoil having remained unbroken for ages, is panned down so tight, as to become almost impervious, and certainly, in a great degree, debarred from atmospheric influences. All this becomes gradually changed by subsoiling or under-ploughing, called trench-ploughing. See what takes place on our heath. The upper soil has often been taken away, the exposed subsoil, for a time, remains barren, but, after a certain period, it becomes improved by the action of air and water, and is again well coated with vegetation, and is again robbed, or stripped, as I have frequently witnessed during 30 years. Elements of fertility exist in our subsoil abundantly, but are in an unavailable or passive condition. They are raw, and want cooking by atmospheric exposure and influence. How well the late Rev. Samuel Smith, of Lois Weedon, understood this. He not only exposed the subsoil to atmospheric action, by ploughing his top soil together, and leaving the intermediate space of raw subsoil uncovered, but greatly hastened the cooking process by intermixing with the bared subsoil plenty of manure, so that it became very quickly good feeding ground for the roots of plants. The adjoining root crops (Swedes) soon found this out, and occupied the hitherto barren soil with their fibres. The evidences of the value of deep cultivation are plainly shown wherever a ditch has been filled up, or where the drains have been deeply placed. There the crops show a visible advantage for much more than 20 years. Some fancy that it is because the land is there better drained, but the true reason is the deep loosening and disturbance of the soil. Deep and good cultivation and manuring remain visible for nearly a century or more. Walking with a friend on his fields, I asked what was the cause of one portion of the crop looking so much better than the rest. "Oh!" he said, "that was once a cottage garden—a long while ago. I have known the field 50 years, and it must have been some time before that." I have a proof of this on my own farm. In 1846 I exchanged 2 acres of land with a neighbour. These 2 acres (in common with the rest of my land) had been drained and deeply subsoiled about four years previously. Twenty-five years have since elapsed, and during the whole of that period the crops on these 2 acres have shown a marked superiority over the rest of my neighbour's field. As a basis and permanent improvement, I look upon deep cultivation as equal in importance with manure. The two, combined with drainage, give the key to profit. It is very much to the credit and profit of Mr. Smith, of Woolston, that he concentrates the power of his engine on a single subsoil tine passing deeply into the furrows between the ridges. The disturbance of the subsoil can never be too deep, provided the surface soil is allowed to remain uppermost, or gradually intermixed with the subsoil. Every impediment to the fibres of plants is a loss to the farmer, causing delay in development; we all know that the compression of heavy land by carting or treading renders it comparatively barren—witness a cart track. The elements of fertility are there, but are not available. The roots of plants descend many feet in a friable subsoil, naturally or artificially drained. The old story conveys a sound agricultural moral. The old man, on his death bed, told his sons that somewhere in his field he had buried some money. The earth was deeply and carefully searched; the money was not found, but a treasure arose in the greatly increased produce, resulting from deep and perfect cultivation. Most of the great old Docks, Thistles, and other weeds, that I see as I pass by rail standing high above the laid corn crops, have a safe and lasting anchorage in the undisturbed subsoil. My agricultural friends, like myself, are, I know, fond of profit. Let me assure them that one of the most ready ways to get it is by deeper cultivation. Every farmer covets deep, friable soil: as it is so scarce, let us make some; we can do so profitably if we choose to use the means. *J. J. Mechi, July* 31.

Societies.

ROYAL AGRICULTURAL OF IRELAND.

THE exhibition held in Dublin last week may be pronounced eminently successful. The attendance was much greater than what was expected, and both visitors, exhibitors, and those who managed the show, seemed satisfied with themselves and with each other. The presence of Royalty, favoured by fine weather, attracted thousands of spectators to the showyard on Tuesday and Wednesday, and excursion trains brought the country folk for Thursday and Friday's show in numbers truly astonishing.

As mentioned last week, the horse show seemed to be the chief attraction. The number of entries were within one of 600, and the excitement promised in the jumping of the hunters was irresistible, and consequently the tickets for the stands at 5*s.* and 10*s.* each were bought up with avidity, and before noon on Wednesday not a ticket could be had for payment.

CATTLE.

Shorthorns.—In point of number of entries this department was not so successful as might have been desired, and we missed many old exhibitors from this side the Channel. There were, however, many very excellent animals shown, some being veterans of showyards. The position given to Mr. Challoner's celebrated SOVEREIGN was disappointing to many, and there were those who regretted that this splendid bull had not been allowed to rest satisfied with the honours already accorded to him. Considerable doubt as to the propriety of the decision was expressed, but an impartial examination of both animals will prove satisfactory. SOVEREIGN, possessing true Booth blood, is by ROYAL SOVEREIGN (22,802) dam *Village Rose* by BLOOD ROYAL, going back through g.g.g.dam to PILGRIM (4701), He is a bull of immense substance, with an apparently grand constitution, capable of taking any amount of forcing. He is now five years old and fairly active. His showyard career may, however, be now said to be at an end, as his aldermanic fare seems to have produced an increase of girth in the position where even bulls cannot appear gross and look well. SOVEREIGN is not such an even bull as the 1st prize animal. He is, too, a little flat-ribbed, and not sufficiently full "through the heart;" he is, however, a very excellent animal, and his being placed 2d to Mr. Cooke's ST. RINGAN (27,417) does not detract from his great merit. ST. RINGAN was bred by the Hon. G. Lascelles, Moon Hill, Leeds. He was got by GOOD FITZROY (21,844), dam by GAY MONK (19,831); he is only nine months younger than SOVEREIGN, and now, at four and a-half years old, he is as even all over as a yearling. He is a beautiful roan, with a touch like moleskin—a splendid breast, without coarseness, grand loin, rib, and hip; his one fault, a little plainness at the tail, may well be passed over. He wins for this year the cup presented by the proprietors of the *Farmers' Gazette*, the "Purdon Challenge Cup." Mr. Smith, of Croom, shows another son of *Village Rose*, THE EARL (27,623), by RAVENSPUR. He is two years younger than SOVEREIGN, and is a really beautiful bull. He possesses in a compact frame on short legs very great evenness and quality. He is a bull fit for any company.

In the class for 2-year-olds there were some first-class animals. Mr. W. Moutray, of Aughnacloy, takes 1st prize with LORD WODEHOUSE, a roan bull of great merit. It is just possible, however, that this animal has seen his best days. He now has great substance, but his hollow back, large belly, and drooping at the tail, which are evidently growing upon him, may prevent his coming creditably forward at future shows. LORD WODEHOUSE is by DUKE OF MARLBOROUGH (23,768), out of a daughter of one of the first high-priced bulls that were imported to the county Wexford, GREY GAUNTLET (19,908), bred by Mr. Torr, and bought in partnership by Messrs. Meadows, Bolton, and Armstrong, at one of the spring shows of the Royal Dublin Society some years ago. GREY GAUNTLET was a very good animal, and did good service in his Irish home. Second to LORD WODEHOUSE comes PRINCE MASON, bred by and the property of Mr. Meadows, of Wexford. PRINCE MASON is a half-brother of the deceased celebrated BOLIVAR, and if he only had the "coat" of BOLIVAR he might to-day occupy a position very much higher than what he does. He is a very attractive animal, white with a little roan about the head. As he trotted with old Quinn into the ring, there were those who would back him to beat everything; but a lack of hair turned the scale, and the judge's hands were obliged to set aside what might have been the verdict of their eyes—the old story, quality before appearance. A near relative of LORD WODEHOUSE, shown by Mr. Gumbleton, county Cork, is highly commended. Of the yearlings, Mr. Maxwell, of Belfast, with his HALF SOVEREIGN, takes 1st place. This animal is full of Booth blood; he is by SOVEREIGN, the bull already noted as 2d in the aged section; he is out of *Rose of Castille* by BRITISH FLAG, and contains the blood of BLOOD ROYAL and CROWN PRINCE. He is a bull of considerable merit, of great substance and good quality, even, and evidently possessed of a good constitution. The 2d prize is awarded to a nice even yearling of Mr. Challoner's, of almost purely Booth extraction. Mr. L. H. Bland, of Abbeyleix, showed a red bull of the "Gwynne" blood, and descended from the late celebrated herd of Lord Viscount Monck. A class for calves finished the male sections, and there were many at the show who thought this class might well be excluded. There must always be considerable difficulty in adjudicating the merits of calves; a calf alters wonderfully between the ages of four and twelve months. There really cannot be much practical utility in bringing together such an assembly of young calves as was shown in Dublin last week. The 1st and 2d prizes were awarded to Mr. Downing, of Fermoy, for two nice calves of Booth blood.

There were only 32 female Shorthorns entered for competition. Amongst these, Mr. Smith's yearling heifers, *Repose* and *Truelove 5th*, carried off the Purdon Challenge Cup, as well as 1st and 2d prizes in their class. The aged cows were few. The 1st prize animal, with Booth and Towneley blood, is a good even 7-year-old. Her head detracts from her general merit; it is coarse. Lord Fitzwilliam's highly-bred *Adelina* is patchy, and very much inferior to the 1st prize cow.

There were only two 3-year-old heifers shown, and these were not of much merit.

Mr. Moutray took 1st prize with a very good 2-year-old, bred by Mr. Meadows. This animal is well made up for show. Her points are almost perfect, if we except a little plainness of head. The 2d prize pattern, shown by Mr. P. J. Kearney, is a very good Booth heifer. The yearlings were good, but not numerous. Heifer calves of 1871 were shown, but the remarks as to bull calves will apply here.

From the foregoing it will appear that Booth blood enters largely into the prize animals. It does not follow that it takes a place higher than Bates; the fact is, there is very little of Bates blood in the animals shown. And in Ireland, it would appear, that animals of Booth extraction have raken a more extended hold than any other. The great breeders of the county Meath rely almost entirely upon Booth.

The classes for Herefords, Devons, Polled Angus, West Highlands, and Ayrshire were very badly filled, some of these sections not having an entry. The animals shown were scarcely above mediocrity, and the competition was confined to a few amateurs. These breeds do not make progress in Ireland, the chief reason being that the Irish farmers find that the Shorthorn crosses are better adapted to the dairy farming of the country; and also the young stock of this cross are better suited, through early maturity and fattening, to the requirements of grazing at home and for export. A native breed, the Kerry, is exhibited in large numbers, and for the mountainous regions there cannot be a breed better suited; they are hardy animals, good milkers on short keep, and fairly profitable as graziers. They cross well with the Shorthorns, and in the grassy dells and valleys of their native mountainous country they yield a large quantity of rich milk. Mr. Brady, of Raheny, whose name in connection with Kerries is famous, takes the 1st prize with his RORY OF THE HILLS. Captain Bailey, of the county Dublin, and the Knight of Kerry, are the other chief prize-takers in this class.

SHEEP.

Leicesters.—A very good show of sheep was brought forward, the two classes, English and Border Leicesters, being well filled with animals of very good quality. The Cork Challenge Cup, value £50, was awarded to a Border Leicester tup of Mr. Robertson, Athy. The bringing English Leicesters and Border Leicesters into competition for this prize is not quite consistent with the Society's keeping the breeds separate for the other prizes. In discriminating the merits of animals of different variety a great deal depends upon the views of the judges and their tastes as to variety; and as the points of these two are widely different, it would seem proper that the prize should be limited to competition in one of the classes. The Border Leicester tup of Mr. Robertson is a very excellent animal; good size and quality, well up in the neck, and full of vigour; but he has the fault of the breed—a want of wool on the belly, and bareness of head.

The English Leicesters of Mr. Seymour Mowbray, of Mountrath, who took 1st prize in shearlings, are good representatives of the class of sheep that have been taking prizes at the English shows latterly. They seem to have a large amount of Inge blood. Mr. Geo. Turner, of Uppingham, showed a good many rams, and took a 2d prize with his shearling. Mr. Turner's sheep are now pretty well known as prize-takers. Mr. Marris, of Ulceby, took 3d prize; his sheep are a trifle larger than Mowbray's or Turner's. Mr. Owen, of Blessington, co. Wicklow, who at one time seemed invincible in sheep-showing, was not placed.

There was a very large show of Border Leicesters, and the prizes were divided between Mr. Thos. Robertson, of Athy, and Mr. Bland, of Abbeyleix. The ewe classes were not well filled, and the sheep shown here did not possess any distinctive merit. There was a very good variety shown—the native Roscommon sheep; they are large in frame, well covered with good wool, of early maturity, and evidently a paying breed. The Royal Agricultural Society has shown much wisdom in encouraging the improvement of this breed. They resemble the Lincolns in many respects; the chief points of difference are the smaller head of the Roscommon sheep and the wool not being of the lustrous quality of the Lincoln. This breed furnishes the splendid wethers shown by thousands at the Ballinasloe, Strokestown, and other great sheep fairs of the west of Ireland.

The *Lincolns* were a poor show, and since the days when Mr. Page so energetically worked for their introduction into Ireland they do not seem to have made much advance. It is said they have been fairly and well tried in Ireland, and that they are not likely to make further progress. The probability is that English and Border Leicesters with Shropshire Downs are likely to make their way more readily.

"*Shropshire* and other Downs" was the heading under which were classed in this case two varieties now very dissimilar, and into this class might be brought animals whose respective and distinctive qualities entitle them fully to separate classes. H.R.H. the Prince of Wales showed a very excellent Southdown ram, and if the judges had been men of Southdown proclivities, the probability of this tup taking a prize would have been very great. Mr. Charles William Hamilton, of Hamwood, Clonee, took the 1st prize with a very beautiful sheep, of first-rate wool, and general good quality. With a good neck, loins, rib, and breast, well-filled twist, he seemed a sheep fit to be seen in any company. Mr. Hamilton was one of the first to introduce Shropshires into Ireland; he has worked long and industriously for their propagation there. Mr. Naper, of Loughcrew, and Mr. L. H. Bland, of Abbeyleix, took 2d and 3d prizes respectively with very neat animals. The show of Shropshire rams was, on the whole, very good. A great uniformity in the quality of the animals was observable.

In Down ewes H.R.H. the Prince of Wales took 1st prize with a pen of splendid Southdowns, this being the only pen of that variety shown.

SWINE.

The exhibition of pigs was not as large as has been seen at former shows held in Dublin, but the quality of the animals was generally good. Amongst Berkshires Lord Clermont and Lieut.-Colonel Chichester were the largest exhibitors. There is a striking difference in the appearance of the Berkshires of these two breeders, whilst Colonel Chichester's pigs are large framed, on long bony legs, Lord Clermont's are short-legged, fine boned, thick bodied, wide backed, and well covered with hair. Lord Clermont's boar, "Prime Minister," is a very useful animal; he is full of flesh, on neat, short legs; he is, too, of good size. Mr. J. Molloy, of Mountjoy Street, Dublin, took 1st prize in aged sows with a very good Berkshire; her chief defect is want of size. The sow of Mr. Cooper, of Limerick, which took 1st prize in the young sow class is a very heavy fleshed pig, on short legs.

As a class the white breeds are inferior to the Berkshires, and we found large and small varieties competing against one another in a curious sort of way. Here the individual tastes of judges might not be approved of by all; some favour the large breed of pigs, whilst others are strong in the conviction that nothing can compare with the small breed. It would be more satisfactory to have classes for each variety.

HORSES.

As already mentioned, this department of the show seemed to be the great feature; there were 599 entries, divided as follows:—

Thorough-bred sires	25
Hunters, roadsters, cobs, ponies, and young horses of these sorts	501
Brood mares	33
Agricultural horses	40
	599

The jumping prizes were competed for on Wednesday, Thursday, and Friday, and on each day the numbers of people on the stands and around the ring evidenced the popularity of this *fête*. It was computed that not less than 15,000 people were spectators of the jumping on Wednesday; this, coupled with the fact that an almost fabulous sum was received for stand tickets, does not sustain the idea that jumping horses at exhibitions will ever be altogether excluded. The arrangements for the trial of hunters were certainly arranged on a faultless system. Within an arena of considerable size were placed hurdles, bank, wall, and bank and water jumps, which, whilst sufficient to test the powers of the various competitors, were so constructed as to prevent the possibility of accident to man or horse.

The riding of the horses may be pronounced generally bad, the few brilliant exceptions being thus brought more prominently forward. Mr. Flynn, of Talsk, county Roscommon, who is well known as a judicious rider, and Mr. Bernard Sweeny, of Castlerea, were adjudged by *vox populi* as having acquitted themselves most creditably last week. Whether it is that animal magnetism is transmitted from rider to horse, it was perfectly clear that the nervous, hasty 'gent' in the pigskin generally bungled at the jumps, and if the horse got over at all, it did so in such a discreditable manner, as to merit the jeering which accompanied the unseemly performance. On Wednesday, the prizes for jumping the wall were awarded, 1st, to Mr. Flynn's "Harry Hardy;" 2d, Mr. Taafe's brown gelding "Playboy." The performance of these two animals was really excellent. A substantial wall, nearly 5 feet high, is not a trifle to contend with. The ease and precision with which these two horses cleared the obstacle were creditable alike to the horses and riders. The jumping of "Jack Spring," a grey gelding of Mr. George Low, of Athy, although done in a clumsy manner, was safe.

For the bank and water prize, Mr. Bernard Sweeny, with a well-named horse, "Safety," took 1st place. A good many other horses competed, many getting through their work in a creditable manner.

Thursday's trials were most exciting; a large number of horses were entered for the jumping prizes. The jumps were made more difficult, and altogether the spectacle, from its greater danger, seemed to be more attractive. The wall was raised to above 5 feet, and promised to prove a regular rasper, which it did in reality to some of the horses' noses and legs. Mr. Wm. Sneyd, with his grey mare "Maria," took 1st prize; Mr. Low, with "Jack Spring," 2d.

It is supposed that a large number of horses changed owners. Amongst the sales were those of—Mr. William Alexander, Knockmullin, Colloney, sold his chestnut gelding, "Charmer," by Coningsby, dam by Woodpecker, to Mr. Chaine, for a long figure; Mr. John Trimble, of Drumconrath, county Meath, sold his bay gelding "Flash," by Lightning, to Mr. James Daly, at 120 gs.; Mr. R. Flynn sold "Emerald Wreath," at 300 gs., to Mr. Darby, who also bought "Maria," by Harkaway, who, as will be seen, gained the 1st prize for jumping on Thursday. He also purchased a perfect hunter, up to 14 stones, from Mr. E. Flynn, of Rathmines, at 200 gs.; and also bay mare "Puss," from the Hon. E. Preston, at 220 gs.

The following is the list of Awards:—

CATTLE.

Shorthorns.

Purdon Challenge Cup, value 60 gs., for the two best Shorthorn Heifers calved in 1870. — 1st and 2d, E. J. Smith, Islanmore.

1. Best Bull, calved on or after January 1, 1866, and previous to January 1, 1869.—1st, and Purdon Challenge Cup, J. Cooke, New Ross; 2d, R. Chaloner, Moynalty.

2. Best Bull calved in 1869.—1st, W. Moutray, Aughnacloy; 2d, J. Meadows, Wexford.

3. Best Bull calved in 1870.—1st, P. Maxwell, Belfast; 2d, R. Chaloner, Moynalty.

4. Best Bull calved in 1871. —1st and 2d, J. Downing, Fermoy,

5. Best Cow, in calf or in milk, calved previous to January 1, 1868.—1st, W. Moutray, Aughnacloy; 2d, Earl Fitzwilliam, Carnew.

6. Best Heifer, in calf or in milk, calved in 1868.—1st, Wm. Moutray, Aughnacloy; 2d, Samuel Talbot, Durrow.

7. Best Heifer, in calf or milk, calved in 1869.—1st, Wm. Moutray, Aughnacloy; 2d, P. J. Kearney, Clonmellon.

8. Best Heifer, calved in 1870.—1st and 2d, E. J. Smith, Croom.

9. Best Heifer Calf, calved in 1871.—1st and 2d, H. Lyons, Croom, Limerick.

Herefords.

10. Best Bull, calved on or after January 1, 1866. —1st, S. Gilliland, Londonderry; 2d, P. J. Kearney, Clonmellon.

11. Best Cow, in calf or in milk, calved previous to January 1, 1868.—1st, P. J. Kearney, Clonmellon; 2d, S. Gilliland.

12. Best Hereford Heifer, in calf or in milk, calved in 1868.—1st, S. Gilliland, Londonderry.

13. Best Hereford Heifer, calved in 1869.—1st, P. K. Kearney.

Devons.

14. Best Devon Bull, calved on or after January 1, 1866.—1st, John Peake, Monaghan.

15. Best Devon Cow, in calf or in milk, calved previous to January 1, 1868.—John Peake.

16. Best Devon Heifer, in calf or in milk, calved in 1868.—J. Peake.

17. Best Devon Heifer, calved in 1869 or 1870.—J. Peake, Monaghan.

Polled Angus.

18. Best polled Angus or Galloway Bull, calved on or after January 1, 1866.—1st, W. Owen, Blessington, 2d, A. Tiernan, jun., Slane.

19. Best polled Angus or Galloway Cow, in calf or in milk, calved previous to January, 1868.—No award.

20. Best polled Angus or Galloway Heifer, in calf or in milk, calved in 1868.—1st, A. Tiernan, jun., Slane.

21. Best polled Angus or Galloway Heifer, calved in 1869 or 1870.—W. Owen.

West Highland.

22. Best West Highland Bull, calved on or after January 1, 1866—T. Butler, Priestown.

23. Best West Highland Cow, in calf or in milk, calved previous to January 1, 1868.—T. Butler.

Ayrshire.

26. Best Ayrshire Bull, calved on or after January 1, 1866—1st, Lord Clermont, Newry; 2d, David Patton, Monaghan.

27. Best Ayrshire Cow, in calf or in milk, calved previous to January 1, 1868.—1st, D. Patton, Monaghan; 2d, G. A. Stephens, Dublin.

28. Best Ayrshire Heifer, in calf or in milk, calved in 1868.—1st, D. Patton, Monaghan; 2d, G. A. Stephens, Dublin.

29. Best Ayrshire Heifer, calved in 1869 or 1870.—D. Patton.

Kerry.

30. Best Kerry Bull, calved on or after January 1, 1866.—1st, J. Brady, Raheny.

31. Best Kerry Cow, in calf or in milk, calved previous to January 1, 1868.—1st, B. Marley, Mullingar.

32. Best Kerry Heifer, in calf or in milk, calved 1868.—Highly Commended: Capt. D. Bayley, Dublin.

33. Best Kerry Heifer, calved in 1869 or 1870.—1st, W. R. Stephens, Dublin.

Channel Island.

34. Best Channel Island Bull, calved since January 1, 1866.—1st, G. Low, Athy; 2d, M. Neill, Clonskea.

35. Best Channel Island Cow or Heifer, in calf or in milk.—1st, D. H. Plunket, Johnston; 2d, J. Smith, Carlow.

Brittany.

36. Best Brittany Bull, not exceeding three years old.—No entry.

37. Best Brittany Cow or Heifer in calf or in milk.—J. P. Redmond, Dublin.

38. (Open for competition to tenant-farmers whose Poor-law valuation is over £100 per annum.)—Best Cow for dairy purposes.—1st and 2d, J. Butler, Little Moyle.

39. (Open for competition to tenant-farmers whose Poor-law valuation is under £100 per annum.)—Best Cow in calf or in milk.—1st, P. Quinn, Priestown; 2d, D. Patton, Monaghan.

40. Best Heifer calved in 1868.—1st, D. Patton; 2d, P. Quinn.

41. Best Heifer calved in 1869 or 1870.—1st and 2d, P. Quinn.

SHEEP.

The Cork Challenge Cup, value 50 sovs., for the best Shearling Ram in classes 42, 46, 50, and 54.—Mr. T. Robertson, Athy (Border Leicester).

Leicesters.

42. Best Shearling Ram.—1st, Seymour Mowbray, Mountrath; 2d, G. Turner, jun., Uppingham; 3d, T. Marris, Ulceby.

43. Best Ram of any other age.—1st, G. Turner, jun., Uppingham; 2d, T. Marris; 3d, G. Turner, jun.

44. Best pen of 5 Shearling Ewes.—1st, S. Mowbray, Mountrath; 2d, Sir A. Walsh, Bart., Stradbally.

45. Best pen of 5 Lambs.—1st, Sir A. Walsh, Bart.

Border Leicesters.

46. Best Shearling Ram.—1st, no award; 2d, G. Laing, Coldstream, 3d, L. H. Bland, Q.C., Abbeyleix.

47. Best Ram of any age.—1st and 2d, L. H. Bland, Q.C.

48. Best Pen of 5 Shearling Ewes.—1st, A. H. S. Barry, M.P., Tipperary; 2d, L. H. Bland, Q.C.; 3d, R. G. Cosby, Stradbally Hall, Queen's Co.

49. Best Pen of 5 Ewe Lambs.—1st, A. H. S. Barry, M.P.

Roscommon Sheep.

50. Best Shearling Ram.—1st and 2d, J. B. Smyth, Limerick; 3d, W. Cotton, Castlerea.

51. Best Ram of any other age.—1st and 2d, T. Roberts, Strokestown; 3d, W. Cotton, Castlerea.

52. Best Pen of 5 Shearling Ewes.—1st, J. B. Smyth, Limerick; 2d, R. Coffey; 3d, W. Cotton, Castlerea.

53. Best pen of 5 Ewe Lambs.—1st, R. Coffey, Killucan.

54. Best Shearling Ram.—1st, W. F. Marshall, Branston; 2d, C. Going, Nenagh; 3d, W. F. Marshall.

55. Best Ram of any other age.—1st, 2d, and 3d, C. Going.

Shropshire and other Downs.

58. Best Shearling Ram.—1st, C. W. Hamilton, Clonee; 2d, J. L. Naper; 3d, C. W. Hamilton.

59. Best Ram of any other age.—1st, C. W. Hamilton; 2d, T. Marris, Ulceby; 3d, C. W. Hamilton.

60. Best pen of 5 Shearling Ewes.—1st, H.R.H. the Prince of Wales; 2d, J. Peake, Monaghan.

61. Best pen of 5 Ewe Lambs.—1st. Sir A. Walsh, Bart, Stradbally.

62. (Open for competition to tenant-farmers whose Poor-law valuation is over £50 and under £100 per annum).—Best pen of 5 Ewes which have reared lambs in 1871.—1st, W. Esker, Timahoe; 2d, P. Quinn, Priestown.

63. Best pen of 5 Hogget Ewes.—1st, P. Marnane, Tipperary; 2d, J. W. Esker, Timahoe.

64. (Open for competition to tenant-farmers whose Poor-law valuation is under £50.)—Best pen of 5 Ewes, having reared lambs in 1871. —1st, M. Marnane, West Tipperary; 2d, J. Sweeny, Priestown.

SWINE.

Coloured Breed.

65. Best Boar under 18 months old. —1st, Lord Clermont, Newry; 2d, C. H. Peacock, Wexford.

66. Best Boar over 18 and under 36 months old.—T. Butler, Priestown.

67. Best Breeding Sow under 18 months old.—1st, J. C. Cooper, Limerick; 2d, Lord Clermont.

68. Best Breeding Sow over 18 months old.—1st, J. Molloy, Dublin; 2d, R. W. Reynell, Killucan.

69. Best Berkshire Sow and litter of not less than six Pigs.—R. G. Cosby, Queen's County.

70. Best lot of three Breeding Pigs of the same litter, above four and not exceeding eight months old.—1st, W. L. Joynt, Dublin; 2d, J. Molloy, Dublin.

White Breed.

71. Best Boar under 18 months old.—1st, J. L. Naper, Oldcastle; 2d, J. C. Cooper, Limerick.

73. Best Breeding Sow under 18 months old.—1st, J. Molloy, Dublin; 2d, R. W. Boyle, Milltown.

74. Best Breeding Sow over 18 months old.—1st, S. W. Perry, Ballymena; 2d, J. L. Naper, Oldcastle.

77. (Open for competition to tenant-farmers whose Poor-law valuation is over £50 and under £100 per annum) — Best Breeding Sow over 6 and under 18 months old.—1st and 2d, M. Marnane, Tipperary.

(Open for competition to tenant-farmers whose Poor-law valuation is under £50 per annum.)—Best Breeding Sow.—1st, M. Marnane, Tipperary.

HORSES.

Thorough-bred Stallions.

160. Thorough-bred Sire in the stud book, which, in the opinion of the judges, is best calculated to improve and perpetuate the breed of sound and stout thorough-bred horses, weight-carrying hunters, and horses for general stud purposes.—1st, His Excellency Earl Spencer; 2d, H. Power, Mallow.

164. Thorough-bred Sires, calculated to get carriage, troop horses, or roadsters.—1st, G. Mansergh, Tipperary; 2d, S. Dickson, county Down.

For Young Horses suitable for Hunters.

165. Best 4-year-old Colt, able to carry 13 stones 7 lb. and upwards.—1st, R. Galwey, Nenagh, 2d, Lee Brothers, Swords; 3d, T. Y. Benson, Dublin.

166. The best 4-year-old Filly, able to carry 13 stones 7 lb. and upwards.—1st, Rev. F. Briscoe, county Meath; 2d, P. Quinlan, Clonmel; 3d, J. Morrin, Johnstown.

167. Best 4-year-old Colt, able to carry from 11 stones to 13 stones 7 lb. — 1st, Major-Gen. W. Irwin, Glendalough; 3d, B. Sweeny, Cahir.

168. Four-year-old Fillies, able to carry from 11 stones to 13 stones 7 lb.—1st, M. Seery, Delvin; 2d, J. Trimble, county Meath.

169. Three-year-old Colts—1st, J. Connolly, Garradice; 2d, Mrs. Davis, Courtown; 3d, A. Pollok, Ballinasloe.

170. Three-year-old Fillies.—1st, J. Tisdale, Kells; 2d, E. Morrison, Esq., Mountrath; 3d, J. J. Jones, Dublin.

171. Two-year-old Colts and Fillies.—1st, Lord Clanmorris, Creg Clare; 2d, T. Scott, Ballina,; 3d, A. Pollok, Ballinasloe; 4th, J. P. Redmond, Dublin.

172. One-year-old Colts and Fillies.—1st, Lieut.-Col. J. Lloyd, Monaghan; 2d, C. W. Wise, Esq., Cahir; 3d, Dr. Sheil, Ballyshannon; 4th, M Archdall, M.P., Irvinstown.

173. Ladies' Mares and Geldings.—1st, E. Kingley, Dublin; 2d, P. Georges, Clontarf.

Weight-carrying Cobs and Roadsters.

174. Cobs or Roadsters not exceeding 15-1 hands, calculated to carry 15 stones and upwards.—1st, C. W. Wise, Cahir; 2d, T. Beggs; 3d, R. F. Stack, Omagh.

175. Cobs or Roadsters, from 14 to 15 hands, calculated to carry from 13 to 15 stones.—1st, D. Rogerson, Roundtown; 2d, Hon. E. Preston, Balbriggan; 3d, J. Costello, Dublin.

(Local Committee's Prizes.)

Hunters.

162. Best Weight-carrier not less than 5 years old, equal to 11 stones and upwards.—1st, R. Walsh, Saggard; 2d, Lieut.-Colonel J. Lloyd, Monaghan; 4th, D. Cummins, Carrick-on-Suir.

176. Cobs or Roadsters under 15 hands; calculated to carry over 13 stones.—1st, D. Rutledge, Tuam; 2d, J. French, Esq., Dublin; 3d, Col. L. White, Clonsilla.

177. Ponies from 12 to 14 hands.—1st, Wm. D'Arcy, Bray; 2d, G. O. Springfield, Bray; 3d, L. Cust, Tipperary.

178. Ponies under 12 hands.—1st, Capt. W. R. Brereton, Kilcullen; 2d, J. Freeman, jun., Clontarf; 3d and Silver Medal for the best pony exhibited: R. Purdon, Delvin.

Brood Mares.

179. Thorough-bred Mares, in foal, or having had foals in 1870 or 1871.—1st, C. L. Ellison, Castlerea; 2d, E. J. Smith, Croom; 3d, C. L. Ellison, Castlerea.

180. Mares calculated to produce weight-carrying Hunters, in foal, or having produced foals in 1870 or 1871.—1st, P. Fitzpatrick, Naas; 2d, J. Morrin, Johnstown; 3d, J. S. Winter, Agher; 4th, L. Cornwall, Navan.

(Open to Competition to Tenant-Farmers whose Poor-law Valuation is under £100.)

181. Best Brood Mare.—1st and 2d, P. Quinn, Priestown.

182. Best agricultural Brood Mare, in foal, or having produced a foal in 1870 or 1871.—1st, S. Rait Kerr, Rathmoyle; 2d, Messrs. Mooney, Crumlin; 3d, J. Dennis, Finglas.

183. Best Gelding for agricultural purposes, over two and not exceeding four years old.—1st, J. Rooney, Clonsilla; 2d, R. Patterson, Dundalk.

184. Best Filly for agricultural purposes, not exceeding five years old. — 1st, L. Joynt, Raheny; 2d, Messrs. Mooney, Crumlin.

Agricultural Stallions.

185. Agricultural Stallions of the Clydesdale or Suffolk breed. —1st, P. O'Malley, Santry; 2d, S. R. Kerr, Rathmoyle; 3d, T. Butler.

186. Best Agricultural Stallion of any other breed.—3d, L. M'Court, Dublin. No merit for others.

Judges.—Horses: B. Persse, R. Watson, H. Thurwell, Captain Bernard, Hon. W. F. Arbuthnott, F. Barlow, H. A. Corbett, H. Briscoe, A. Darker, N. M. Archdall. Shorthorns: Mr. Crisp, Mr. Unthank. Herefords and Devons: H. Heywood. Polled Angus: George Gibbons, A. Borthwick. Kerries: George Hewson. Roscommon sheep: Samuel Garnet, Major D'Arcy. Lincolns: W. C. Grave, A. Borthwick, W. Clay. Leicesters: L. Bonnard, J. Harris, T. Potter. Shropshire: Thomas Horley, T. Coxon. Swine: H. M'Clintock, A. Warburton. Special prizes: Mr. Wade, Mr. Boyce.

YORKSHIRE AGRICULTURAL.

The fine weather with which this meeting opened on Wednesday last continued during the two following days, and on Friday one of the most successful meetings which this great Society has had was brought to a close. In connection therewith the following statistics of entries, prizes, and receipts will prove of interest:—

Comparative Amount of Prizes offered by the Society during the last three Years.

	1869.	1870.	1871.
Cattle	£287	£371	£365
Sheep and pigs	344	352	325
Horses	793	791	825
Wool	10	10	10
	£1434	£1524	£1525

Entries during the last five Years.

	1867	1868	1869	1870	1871
Cattle	—	84	76	102	124
Sheep and pigs	228	253	217	246	220
Horses	363	330	443	308	407
Wool	15	13	8	9	7
Implements	1038	1260	1406	1564	1393
Foxhounds	82	60	83	59	90
	1736	2000	2233	2288	2241

Receipts for Admission of the Public at the present Show.

Wednesday, at 2*s.* 6*d.* each	=	2,529	=	£315	0	0
Thursday, at 1*s.* each ..	=	20,250	=	1012	10	0
Friday, at 1*s.* each ..	=	10,108	=	505	8	0
				£1832	18	0

Preliminary to our observations on the several classes of stock exhibited, we may remark as a special characteristic of this show, that the term "country meeting" applies to it merely as regards the locality in which its shows are held; as the large amount of prize money awarded in the classes of horses, Shorthorns, Leicesters, and pigs, makes the competition really a national one. Moreover, it is in this county that these animals are a staple product, and consequently local animals which have not been on the grand tour of the Royal and other shows, often come out and run away with the laurels. Indeed, until the horse or Shorthorn wearing Royal honours passes "final" examination at the Yorkshire, he is not secure in his position. And, on this occasion, it will be found that several important judgments have been made contrary to previous decisions.

Taking the live stock in the order of the cataloge, we come first to

SHORTHORNS.

This class at the Yorkshire is always a meeting of notabilities, with some new faces dangerous to look upon. On this occasion Sir George Wombwell, Mr. Singleton, and Mr. Knowles come out with animals that step over the Wolverhampton winners. Of these, however, we will speak when we come at them. The number of animals shown at this meeting was larger than usual. The aged bulls are seldom numerous. In the 11 entries there were a fair share of superior animals. Mr. Stamper's Grindelwald took the 1st prize, beating the Marquis of Exeter's 2d prize at Wolverhampton, Telemachus, Lady Pigot's Charles le Beau, Mr. Willis' Windsor Fitz-Windsor, and other good animals—the first bull of great size and symmetry, but has not quality equal to the second. Telemachus is a compact clever Shorthorn, has fine fore-quarters and loins, and capital handling. He might be an inch or two longer. The next bull belongs to Mr. Knowles, Wetherby. He was bred by Mr. Cattley, and also is unknown to the Royal showyard. The 2-year-old bulls were a splendid class. Out of 16 animals, 9 had run over the Wolverhampton course. The winners came here in their places exactly as at the Royal—Lord Irwin, Windsor Fitz-Windsor, and Bythis, being 1st, 2d, and 3d here, and 1st, 2d, and 3d at Wolverhampton. Mr. Linton must be satisfied with the admirable manner in which Lord Irwin has gone on since last year; he must have capital stamina to go from place to place and improve in his looks, as he does. Mr. Outhwaite's 2d prize bull is a thick good specimen of the Booth family. When two tenant-farmers can produce two animals like these—victors over all comers, both at the national and the country meeting—is a proud thing for Yorkshire, and shows that success is as attainable in this walk by the tenant as the owner. Anyhow, it is clear that in Shorthorns you have Yorkshire to conquer after you have won at the Royal. Bythis, the 3d prize, has fallen from his high estate. The 1-year-old bulls were a small class of seven, but the winner was an unknown animal again; and the 2d and 3d both commended at the Royal. Sir George Wombwell's Newbro' 3d, the 1st prize, is a beautiful calf, much younger than the 2d and 3d animals. The bull calves were 11—a fair entry in number, in quality very good. Messrs. Dudding's British Flag was 1st here, as at the Royal; and, similarly Mr. Linton's Leeman was 2d at both places, and Major Stapylton obtained 3d with a nice calf allied to Gunter blood.

In cows of any age, the 3d Royal prize cow, *Windsor Butterfly*, takes 1st here in a class not quite as good as the Royal. This cow, however, should have been higher placed at Wolverhampton. Of her we then wrote as follows:—"The 2d prize is a strong cow, with gaudy hind quarters; she is certainly wrong placed. The 3d cow, Mr. How's *Windsor Butterfly*, is to our mind a better animal." Results justify this. She is here 1st prize, and Mr. Outhwaite's Brigg prize cow, *Vivandière*, wins 2d cleverly. The 3d prize, Mr. Emmerson's cow, is of the old style, and not at all to our mind. She is deep, but not cylindrical, and is flat on her fore-ribs and crop. The 3-year-old heifers were only nine, but of rare merit. The decisions in favour of Mr. Foljambe's *Concert*, 1st; Mr. Tenant's, *Daisy* 2d, and Mr. How's *Vesper Queen* 3d, left out the Royal 1st prize, Lady Pigot's *Dame Swift*. At Wolverhampton *Vesper Queen* was 2d and *Concert* 3d, here *Concert* is 1st and *Dame Swift* out altogether. The Dame is pulled out of shape by being in calf, but still is worth more than neglect. Her quality is not equalled by *Vesper Queen* and *Daisy; Concert* is a magnificent heifer, of wonderful size and touch, but she has not the tip-top touch. In this class many men have many minds, but still *Dame Swift* for a place say we. That she was not entitled to a commendation is absurd. Two-year-old heifers were a grand class of 20; in this class at the Royal, Mr. Outhwaite's *Lady Brough* stood 1st; she has gone abroad, and Mr. Foljambe's *Fleur-de-Lis*, which took the 2d to her, is 2d at York. The 3d prize, Mr. Howe's *Verona*, cuts out Colonel Towneley's *Baron Oxford's Duchess*, the 3d prize at Wolverhampton. *Verona* is a plump good heifer, full of flesh, and good handling. *Oxford's Duchess* is a loose, long heifer; but the 1st prize is an animal that has never been shown before. Again a Yorkshire farmer bowls out the leading men in the Shorthorn game; Mr. Singleton has sold some Waterloos for long figures, but in his *Flora 15th*, who runs away with this prize in a canter, is a combination of Waterloo and Grand Duke blood. For quality, touch, and hair, it is impossible to get beyond her. She is pure white, of fine bone, sweet looks, and true cylindrical make.

The Champion Cup, value 50 sovs., for the best Shorthorn exhibited, Lord Irwin had no difficulty in winning. No other animal approached him—*longo intervallo*. Mr. Singleton's heifer, and Mr. Foljambe's 3-year-old heifer, were the only animals, if we except Sir G. Wombwell's young bull, worthy to compete with him.

A capital dairy cow, *Primrose*, belonging to Mr. Briggs, Selby, beat Mr. Statter's Royal prize cow, *Beauty*. *Duchess of Lancaster*, Colonel Towneley's Shorthorn, the winner in the dairy class at Wakefield in 1870, was worthy of distictinction in this class.

HORSES.

The entry of horses must be considered a large one. Of the 407 horses entered, 203 are hunters. The 1st prize stallion for hunters, "Stampedo" is a well-bred animal. His hocks, however, are far from satisfactory. Indeed, the win is quite a fluke, and the decision one of those "accidents" that will happen in the best regulated showyards. At the Royal show, where the hunter decisions were most satisfactory, he could not chalk a commendation. The 2d prize horse here, "Sincerity," is a good strong thoroughbred, well made, and every inch a hunter. He took 1st at Wolverhampton, where he beat "Blinkhoolie," "Laughing Stock," "Tim Whiffler," &c. "Suffolk," the 3d prize at Wolverhampton, was not noticed here, the 3d prize going to "Theobald," a son of "Stockwell."

The coach-horses were, as usual in Yorkshire, such as we cannot find elsewhere. In roadsters "Lord Derby," the 1st prize, is a stylish chestnut, clever, but slightly short of bone. "Atlas," the 2d prize, is a short-legged animal of rare quality and action. Mr. Hart, Dunnington, showed the rare old wearer "All-fours." There were two or three lumbering animals in this class.

The agricultural stallions were a dozen, and contained no extraordinary animals. The 1st prize is a capital thick horse, and the 2d prize, "Le Bon," was the 3d winner at Wolverhampton; he is only three years old, has capital legs and short back, but his back rib is not quite the thing. Dray horse stallions were a small class, of no particular merit. In hunter brood mares with a foal, Mr. Darrell's "Songstress" was 1st, and Mr. Robinson's old celebrity, "Go-ahead," the 2d, in a good class. Coaching mares were numerous and excellent, as were roadsters. The winners of the agricultural brood mares were beyond criticism—three better animals we never saw together than Mr. Bromley's "Damsel," Mr. Banks' "Trip," and Mr. Statter's "Highland Lassie." The young agricultural geldings and fillies were a fine show. Upwards of 20 4-year-olds came to the post; they were the best lot we ever saw together. Mr. E. Crowe, of Downham Market, took 1st, with "Smart;" Mr. Brierly, Manchester, 2d and 3d, with "Warwick" and "Sensation." In the Royal and other showyards "Sensation" has always been our *beau ideal* of a farm animal, yet here she is placed 3d.

Passing over several useful classes of young coach-horses, we come to roadsters, hackneys, and ponies. In the hackneys, to carry 15 stones, Mr. Bailiffe's "Polly" is a clever animal, and won the 1st in a strong class of 12. The 2d prize, Mr. Clarkson's "Flora," is a sweet goer. The 12-stone hackneys brought out Mr. Lovell's neat "Woodbine" and 14 others, including a good 2d, the property of Mr. Bowman, Ripon. Of the 22 ponies, 12½ hands, 12 were capital fellows. Mr. Stephenson's "Harlequin," a roan, the 1st prize, can carry any weight. The 2d, a stylish chestnut, from Kirton Lindsey, is by an Arabian. Some commendations were due in this class. In the children's ponies the prize, "Tommy," is a miniature horse, perfect in form and pace.

The 2-year-old hunters were 14. Mr. Myas' 1st prize, "Coastguard," and Mr. Mason's 2d prize, are promising geldings. The 25 3-year-old hunters brought out Mr. Armstrong's "Banker," Mr. Barkworth's "Portland," and Sir G. Cholmley's "King." "Banker" was the Wolverhampton horse, and rolls as he moves; still he is a grand horse. "Portland" was 1st 2-year-old at Wakefield, and commended at Driffield. He is stylish, and will go on improving. The "King," the winner at Driffield, is not quite hunting-like, and his action is only moderate. The hunting fillies, 3-year-old, were very few, but the 4-year-old hunters made a grand parade of 32. At Wolverhampton there were only 16 in this class. Mr. Nessfield's "Mischief" won, and cleverly. He is the best goer in the field, and A 1 as a horse, according to our measure. The 2d, Mr. Brunton's "Joe Bennett," is a magnificent animal, and he stands next to "Nobility," whom, though he did not get a place here, we have marked as the finest galloper in the class. He was 2d at Brigg. The 3d horse, Mr. Hornby's "Spellahoe," does not stand well, but goes, and was good enough to take a 1st at Driffield. "Dandy," Sir G. Cholmley's 3-year-old winner last year, did not this year come to the mark; and "Tancredi," a winner at Brigg, is a showy horse, with fine flat legs, and moves well.

The Bramham Moor Cup, of 50 gs., £20 second, £10 third, for 5-year-old and upwards geldings, went to Mr. Bayley's "Banner Bearer (Mr. Booth's Wolverhampton winner), Mr. Barkworth taking 2d with "Pelham," a rather common-necked horse, but a mover; Mr. Jewetson's "Sproxton" coming 3d. "Pelham" was a Driffield's prize-taker, and could also "go." There were 28 in this class.

For the York and Ainsty Cup, value 50 gs., 35 animals contended, and the contest was between Mr. Bayley's "Borderer" (Mr. Booth's Oxford prize horse last year) and Mr. Welfitt's "Loiterer," so celebrated now in showing history. "Loiterer" won the cup at Wakefield in 1870, and was beat at Wolverhampton by the Earl of Coventry's "Bird on the Wing." "Loiterer" is nine years old, and now beats "Borderer," 2d; Mr. Hornby's lively "Lioness," 3d; also "Marmalade," "Lothair," "Gamester," as well as "Sam Weller," the Driffield cup horse for light weights. "Loiterer's" head and neck are not put on properly, and he has no behaviour in hand; still he has rare legs and substance. He could not get through dirt at Wolverhampton, but here he did better, and beats "Borderer." His luck is in Yorkshire. He is the great enigma of the year certainly. "Borderer" did not seem drawn out fine enough, to our eye, on this occasion.

In the class of hunters (tenant-farmers), for £60, £30, £20, and £10 prizes, 54 entries were made, and nearly all appeared. Horses entered in other classes were allowed here, and Mr. Brunton and Mr. Hornby, the winners of the 2d and 3d in the 4-year-old hunters, were selected for 1st and 2d prizes—Mr. Letts' 1st prize 4-year-old, "Nelly," taking 3d prize, and Mr. G. Ringrove's 5-year-old, "Willerby," the 4th prize. To criticise this exhibition in detail is impossible: it is sufficient to say, that in this and the two previous classes upwards of 100 of the best hunters in the kingdom were brought into the ring. This one feature made the York show something to see and to remember.

SHEEP.

The show of sheep comprised 113 entries, of which 55 were Leicesters. The improved Leicester is a specialty of Yorkshire, and the defeat of the Yorkshire sheep at Wolverhampton has put the "edge on" the breeders: and we had here 11 competitors with 33 entries, in the shearling ram class, against five exhibitors at Wolverhampton. We never saw so uniformly good a lot. Every sheep was a specimen of a family, and noticeable as representing a distinguished flock. The well known names of Borton, Kendall, Simpson, Tindall, Riley, Jordan, Hutchinson, and Brown, completed a strong team for Yorkshire. Against these were pitted Mr. Cresswell, of Ravenstone, and Mr. Turner, of Uppingham. Mr. Borton took 1st and 2d in the class, and Mr. Turner's Royal prize shearling did not attain a commendation. As no other sheep did, we presume the merit was generally so great that it was unwise to make any distinction amongst the unsuccessful. Capital animals were shown in this class by Mr. Hutchinson and Mr. Jordan. Mr. Jordan's 2d prize Bridlington sheep was very good. Mr. Turner's Royal prize sheep, though defeated, was not disgraced; he is the style of sheep many admire. Mr. Riley's 2d prize Easingwold and Driffield sheep are useful animals. Mr. Hutchinson's Thirsk prize sheep beat Mr. Borton there and Mr. Riley at Easingwold, and was greatly fancied here by a numerous party. Mr. Simpson's Bridlington shearling was a fine upstanding sheep.

The aged rams were also a good class of 16. Here, again, Mr. Borton took double honours, beating Messrs. Turner, Cresswell, Hutchinson, and Riley. After the judgment in favour of Mr. Borton in the previous class, this award was a necessity; the 1st and 2d are, however, grand sheep. So are Mr. Turner's and Mr. Hutchinson's, after their kind, for they are distinct types. Mr. Turner's sheep have true Leicester form, Mr. Borton's excel in quality and style, and Mr. Hutchinson's have substance and wealth. Mr. Riley's 2d prize Easingwold and Driffield sheep, and Mr. Hutchinson's Easingwold 1st, are very good animals, but they succumbed to Mr. Borton's Bridlington and Driffield prize sheep.

The *Leicester Shearling Gimmers* were a small class of fine pens. Competitors: Hutchinson, Riley, Tindall, Knowles, and Borton. Again Mr. Borton's star was in the ascendant, and he took 1st place, and Mr. Hutchinson's Royal 1st prize was placed 3d, and a pen of Mr. Tindall's, Malton, 2d. Here, again, Wolverhampton ruling was turned over, and something more. After the ram awards, it was, however, consistent, as far as Mr. Borton's pen was concerned; but few would have placed Mr. Tindall before Mr. Hutchinson. Mr. T.'s gimmers may be types of pure Leicesters, *i.e.*, pure, free from mixture; but they are also pure in the sense of being equally free from every improvement that usually attaches to the modern Leicester. They go back to what Leicesters were 40 years ago, and are deficient in bone, wool, and lean mutton. They have *petite* heads and *petite* frames, and to make them prize specimens of the Leicester is certainly moving crab-like—backwards. Mr. Borton's gimmers are as fine-drawn as they need be; a shade more would bring them into the category of the ornamental rather than the useful.

In the *Lincoln Classes*, 19 shearling and 10 aged rams appeared. Mr. Cartwright showed three grand shearlings, and he scored 1st prize with his Wolverhampton 2d prize; Mr. Wright coming 2d, with a sheep that took 2d prize at Brigg, but was not shown at the Royal. Mr. Dudding obtained 3d prize, with a sheep that secured the same place at Wolverhampton; while Mr. Marshall's 1st prize Wolverhampton sheep was here unnoticed, even by a commendation. So much for the uncertainties of the show ring! A 1st prize Royal winner unworthy of notice altogether is an anomaly.

In the aged rams, Wr. Wright took 1st, and Messrs. Dudding 2d. At the Royal (in Mr. Wright's absence), Mr. Dudding took 1st, with this sheep. Mr. Wright won also at Brigg a few days ago.

The *Lincoln Gimmers*, strange to say, were a stronger class than the Leicesters—there being nine pens. The 1st prize gimmers belonging to Mr. Pears, were 3d at the Royal, where they were beat by Mr. Gunnell, who did not show here; and by Mr. Cartwright, who was 2d there, and in no place here—another contrary judgment! Moreover, the 2d pen here, Mr. Clarke's, beat the present 1st prize pen at Brigg.

The *Shropshire Downs* are little known in Yorkshire, and competition was small, and merit not excessive. In shearling rams Lords Wenlock and Chesham took 1st and 2d prizes respectively, with sheep that were unnoticed at Wolverhampton. In aged rams the same noblemen took like honours; and for gimmers Lord Chesham took the 1st prize, and Lord Wenlock the 2d in a class of three competitors. In the mountain sheep the competition was not worthy of notice.

PIGS.

The pig competition at the Yorkshire is always close and exciting, even if not numerous. On this occasion, however, every class was well represented. The total entries were 107. Mr. Peter Eden, of Salford, and Messrs. Duckering, of Kirton Lindsey, are the giants of these days in the pig breeding and showing department. In boars of the large breed, we have, on this occasion, Mr. P. Eden 1st, and Messrs. Duckering 2d; in sows of large breed, Messrs. Duckering come 1st, and Mr. Peter Eden 2d. Finer animals than all these cannot be found, and it is not surprising that they vary in position at different meetings.

In boars of small breed and sows of any breed, Mr. Eden carried away the 1st honours, while in sows of small breed and sows of black breed, Messrs. Duckering took 1sts, and 2d for sows of any breed, leaving only the 2d prize for small whitesows and 2d for black sows to Mr. Beswicke-Royds; the prizes for black boars to the West Riding Asylum and Mr. Crossley, Halifax; and 1st and 2d for boars not qualified for other classes to Mr. Ambler, Halifax, and Mr. John Umpleby, Leeds.

While the large boar of Mr. Eden is possibly unequalled, his boar of the small breed, and Messrs. Duckering's sow of the small breed, are, in our eyes, the gems of the yard. In section 8, for pigs not exceeding 12 months, there was good competition in all the seven classes. Young animals it would be superfluous to criticise in detail, as mother's milk and management are the great agents in getting up piglings. The systematic methods of Messrs. Eden and Duckering, under which every artificial aid is brought to bear in protecting and feeding the infant animals, and by which they are enabled to raise large litters without losing a tail, much less, as is usual on the farm, half the litter by accident or hunger — gives them great advantage. Thus out of 14 awards they take seven in section 8. In young boars of large breed Mr. Rudsdale, Yarm, took 1st and 2d, and also 1st for young sows of large breed. In the other young classes Mr. Beswicke-Royds got 2d for small white sows; Mr. Hutchinson, York, 2d for small black sows, for a very neat one; Mr. Walton, Halifax, 1st in the same class, and Mr. Knowles 2d for a capital young black boar. Of the other prizes two 1sts and two 2ds went to Mr. P. Eden, and two 1sts and one 2d to Messrs. Duckering. In the fine class of three store pigs under nine months old, Messrs. Duckering had two strings to their bow, and they secured the 1st prize over their great rival, Mr. P. Eden, who had only one entry, and achieved the 2d place. On the whole the pig contests have been most interesting.

The classes were not laden with rubbish; as in sheep the exhibits generally were from well-known stocks, and the competition was very close, as is always the case in a select field.

The *Wool* prizes went to the districts of Wetherby and Thirsk, Mr. Matthew Tomlinson, Cowthorpe, taking 1st, and Mr. Barrowby, Thirsk, 2d and 3d. Mr. Barrowby is an old winner. They were fine specimens of the lustrous fibre. This show explains why the best hog wool has been sold at 28*s.* per stone at Wetherby and Ripon during the present season.

The following is the list of awards in the several classes:—

CATTLE.

Shorthorns.

1. Bulls any age above three years old — 1st, T. Stamper, Oswaldkirk; 2d, Marquis of Exeter, Stamford; 3d, J. Knowles, Wetherby.

2. Bulls above two and not exceeding three years old.—1st, W. Linton, Sheriff Hutton; 2d, J. Outhwaite, Catterick; 3d, Lady Pigot, Branches Park.

3. Bulls above one and not exceeding two years old.—1st, Sir G. O. Wombwell, Bart.; 2d, Lieut.-Col. J. Reeve, Grantham; 3d, G. Mann, Doncaster.

4. Bull calves, above five and not exceeding twelve months old.—1st, Messrs. Dudding, Wragby; 2d, W. Linton, York; 3d, Major Stapylton, Helperby.

5. Cows of any age above three years old, in calf or milk.—1st, J. How, Huntingdon; 2d, John Outhwaite, Catterick; 3d, R. Emerson, jun., Darlington.

6. Heifers, not exceeding three years old, in calf or in milk.—1st, F. J. S. Foljambe, M.P., Worksop; 2d, R. Tennant, Leeds; 3d, J. How. Huntingdon.

7. Heifers not exceeding two years old.—1st. J. R. Singleton, Great Givendale; 2d, F. J. S. Foljambe, M.P.; 3d, J. How.

8. Heifer Calves, above five and not exceeding twevle months old.—1st, R. Stratton, Swindon; 2d, Lady Pigot; 3d, W. R. Bromet.

Silver Cup to the best Shorthorn in any of the foregoing classes. -W. Linton, Sheriff Hutton.

Dairy Cattle.

9 Cow for dairy purposes.—1st, W. Briggs, Selby; 2d, T. Statter, jun, Stand Hall.

10. Alderney, Jersey, or Guernsey, Cow or Heifer, in calf or milk.—1st and 2d, C. Marsdin, Doncaster.

SHEEP.

Leicester.

11. Shearling Rams.—1st, 2d, and 3d, J. Borton, Malton.

12. Rams of any other age.—1st and 2d, J. Borton; 3d, E. Riley, Beverley.

13. Pens of 5 Shearling Gimmers.—1st, J. Borton; 2d, T. H. Hutchinson, Catterick; 3d, J. & E. Tindall, Rillington, York.

Lincoln.

14. Shearling Rams.—1st, T. Cartwright, Dunstan Pillar, Lincoln: 2d, R. Wright, Nocton, Lincoln; 3d, Messrs. Dudding, Wragby.

15. Rams of any other age.—1st, R. Wright, Nocton; 2d, Messrs. Dudding.

16. Pens of 5 Shearling Gimmers.—1st, J. Pears, Mere, Lincoln; 2d, C. Clarke, Sleaford.

Shropshire Down.

17. Shearling Rams.—1st, Lord Wenlock, Escrick Park, York; 2d and 3d, Lord Chesham, Latimer, Chesham.

18. Rams of any other age.—1st, Lord Wenlock; 2d, Lord Chesham.

19. Pens of 5 Shearling Gimmers.—1st, Lord Chesham; 2d, Lord Wenlock.

Silver Goblet for the best Ram exhibited in Classes 17 and 18; Lord Wenlock.

Mountain.

20. Rams of any age, of the Lonk breed.—B. Dobson, Ilkley.

21. Rams of any other Mountain breed.—W. Rudsdale, Yarm.

PIGS.

Twelve Months Old and Upwards.

22. Boars, large breed.—1st, P. Eden, Salford; 2d, R. E. Duckering & Son, Northorpe.

23. Sows, large breed, in pig or milk.—1st, R. E. Duckering & Son; 2d, P. Eden.

24. Boars, small breed.—1st, P. Eden; 2d, C. R. N. Beswicke-Royds, Littleboro'.

25. Sows, small breed, in pig or milk.—1st, R. E. Duckering & Son; 2d, C. R. N. Beswicke-Royds.

26. Boars, black or Berkshire breed.—1st, West Riding Asylum, Wakefield; 2d, H. Crossley, Halifax.

27. Sows, black or Berkshire breed, in pig or milk.—1st, R. E. Duckering & Son; 2d, C. R. N. Beswicke-Royds.

28. Boars of any breed, not qualified to compete in Classes 22, 24, and 26.—1st, F. Ambler, Halifax; 2d, J. Umpleby, Leeds.

29. Sows of any breed, in pig or milk, not qualified to compete in Classes 23, 25, and 27.—1st, P. Eden; 2d, R. E. Duckering & Son.

Not Exceeding Twelve Months Old.

30. Boars of large breed.—1st and 2d, W. Rudsdale, Yarm.

31. Sows of large breed.—1st, Wm. Rudsdale, Yarm; 2d, R. E. Duckering & Son.

32. Boars of small breed.—1st and 2d, P. Eden.

33. Sows of small breed.—1st, P. Eden; 2d, C. R. N. Beswicke-Royds.

34. Boars, black or Berkshire breed.—1st, R. E. Duckering & Son; 3d, J. Knowles, Wetherby.

35. Sows, black or Berkshire breed.—1st, F. Walton, Halifax; 2d, G. Hutchinson, York.

36. Pens of 3 Store Pigs from any breed, from 4 to 9 months old.—1st, R. E. Duckering & Son; 2d, P. Eden.

HORSES.

For Breeding.

37. Stallions, thorough-bred, for getting weight-carrying

Hunters.—1st, A. Beaumont, Huddersfield; 2d, J. Casson, Burgh-by-Sands, Carlisle; 3d, H. S. Constable, Hull.

38. Stallions for getting Coach Horses.—1st, H. Laverack, Brough; 2d, J. Ward, York.

39. Stallions for getting Roadsters.—1st, J. Leake, Drewton; 2d, J. Crompton, Burton Agnes.

40. Stallions for getting Agricultural Horses.—1st, J. Forshaw, Leeds; 2d, C. Sharpley, Louth; 3d, S. Barker, Doncaster.

41. Stallions for getting Dray Horses.—1st, R. Marshall, Hull; 2d, W. Stones, Snaith.

42. Brood Mares for Breeding Hunters, with Foals sucking.—1st, B. Spraggon, Nafferton; 2d, T. H. Miller, Singleton; 3d, H. S. Constable, Hull.

43. Mares for breeding Hunters, without a Foal, but stinted to a thorough-bred horse.—1st, J. S. Dayrell, West Ayton; 2d, J. T. Robinson, Thirsk.

44. Brood Mares for breeding Coach Horses, with foals sucking.—1st, J. Reader, York; 2d, W. L. Robinson, Thormanby; 3d, M. Robinson, Bedale.

45. Brood Mares for breeding Roadsters, with foals sucking.—1st, R. Williamson, Ripon; 2d, Mrs. A. Cook, Pocklington.

46. Brood Mares for breeding Agricultural Horses, with foals sucking.—1st, W. Bramley, Amcotts; 2d, W. Banks, Howden; 3d, T. Statter, jun., Whitfield.

FOR AGRICULTURAL PURPOSES.

47. Two-year-old Agricultural Geldings or Fillies.—1st, G. Robson, Easingwold; 2d, W. Walker, Scarborough.

48. Three-year-old Agricultural Geldings or Fillies.—1st, Ann Heddon, Thirsk; T. Statter, jun., Whitfield.

49. Four-year-old and upwards Agricultural Geldings or Fillies.—1st, E. Crowe, Downham Market; 2d and 3d, C. W. Brierley, Manchester.

COACH HORSES.

50. Two-year-old Geldings or Fillies.—1st, G. F. Wormald, Kirby Moorside; 2d, H. Pettinger, Easingwold; 3d, John Stephenson, Hull.

51. Three-year-old Geldings or Fillies.—1st and 2d, T. Darrell, West Ayton, York; 3d, J. Johnson, Driffield.

ROADSTERS, HACKNEYS, AND PONIES.

52. Hackney or Roadster, any age or sex, equal to carry 15 stones.—1st, R. Swann, York; 2d, T. Clarkson, Leeds; 3d, J. Bailiffe, Leeds.

53. Hackney or Roadster, any age or sex, equal to carry 12 stones.—1st, W. Lovell, Malton; 2d, R. M. Bowman, Ripon.

54. Ponies, any age or sex, not less than 12½ and not exceeding 14½ hands high.—1st, W. Stephenson, Hull; 2d, W. Little, Kirton Lindsey; 3d, E. Dixon, York.

55. Ponies, any age or sex, not exceeding 12½ hands high, suitable for children, to be ridden in the ring by boys under 15 years of age.—1st, T. Howdle, Hull; 2d, J. Roecliffe, York; 3d, W. Routledge, York.

HUNTERS.

56. Two-year-old Geldings or Fillies.—1st, W. Myas, Hull; 2d, J. Mason, Thirsk; 3d, Sir G. Cholmley, York.

57. Three-year-old Geldings.—1st, W. Armstrong, Kendal; 2d, J. B. Barkworth, Brough; 3d, Sir G. Cholmley, Bart.

58. Three-year-old Fillies.—1st, J. B. Booth, Catterick; 2d, Wm. Green, York.

59. Four-year-old Geldings.—1st, E. Nessfield, Scarborough; 2d, R. Brunton, Middlesborough; 3d, B. Hornby, Ganton.

60. Four-year-old Fillies.—1st, J. Lett, York; 2d, C. Rose, Malton; 3d, D. M. Inge, Pocklington.

61. Geldings or Mares, five years old and upwards, and qualified to carry at least 15 stones, with hounds, the Bramham Moor Hunt Cup.—1st, T. H. D. Bayly, Ollerton; 2d, J. B. Barkworth, Raywell, Brough; 3d, H. Jewison, York.

62. Geldings or Mares, five years old and upwards, and qualified to carry not less than 12 stones with hounds, the York and Ainsty Hunt Cup.—1st, T. H. D. Bayly, Ollerton; 2d, S. J. Welfitt, Louth; 3d, E. Hornby, Ganton.

63. Hunters, Geldings, or Mares, any age from three years old off to five years old off, *bonâ fide* the property of tenant-farmers in the county of York, who are not licensed horse dealers.—1st and 2d, R. Brunton, Marton; 3d, J. Lett, York; 4th, G. Ringrose, Ganton.

JUDGES.—Cattle: H. Aylmer, Stoke Ferry; J. Douglas, Drem; M. Savidge, Chipping Norton.—Long-woolled Sheep: S. Jefferson, Whitehaven; W. Bartholomew, Lincoln; J. Turner, Ulceby.—Short-woolled Sheep, and Pigs: S. Bruce, Eynsham; T. Atherton, Liverpool; C. Stephenson, Woburn.—Horses (Hunters and Roadsters): N. Milne, Melrose, N.B.; H. D. Boulton, Bedford; E. Paddison, Lincoln. Coaching and Agricultural: J. Furneis, Durham; S. Robson, Louth; W. W. Hawdon, Durham.

Farm Memoranda.

SPALDING.—In this neighbourhood we noticed Peas being carted, Oats being cut, and in two cases Wheat being mown, on Tuesday, the 8th inst. The present hot weather will speedily make harvest general. ED.

ISLE OF ELY. — We have had a long continuance of cheerless, rainy weather, and it is hard to realise the fact that August is here, for we cannot conceive that summer is rapidly passing away, and with scarcely any real summer weather. Rain and cold have prevailed for many weeks, and have occasioned considerable anxiety as to their effect upon the harvest. Already the fields are whitening to the harvest, and the present week will scarcely close without some early Oats being cut. But it must be the end of another week, if not later, ere the Wheats will be ready for the sickle. The Wheat crops are not generally satisfactory. Upon the gravelly soils, where the bulk is not too great, there is a brightness and kindness in their appearance, which we think indicates both an average yield and quality, but on some of the black and deeper soiled lands, where the crop is heavy especially, there are signs of blight and mildew to a fearful extent, and there must in many instances be a deficient yield, and an inferior quality. Weather and warmth, similar to what has been experienced during the last three days, will do much to preserve the crops from further ruin. A return to showery weather may be disastrous. Oats and Barley are heavy crops, and appear likely to produce largely. Beans are bulky, but infested with fly, but to what extent they may be injured it is difficult at present to determine. Potatos were largely planted in the spring, but the continued rains have encouraged disease. We fear the crop must be seriously injured. There is no trade for them at present, buyers being afraid to speculate. Grass keeping is plentiful, and the prospect of the root crops highly encouraging. Sheep and cattle both fat and lean, sell at extravagant prices, much to the chagrin of the consumers. The corn trade is ruled by the barometer; as the one rises the other falls. *Your Fen Reporter, Aug.* 2.

Miscellaneous.

BUTTER FROM MILK.—With the view of learning the amount of butter to be obtained from a given quantity of milk, I have recently tried the following experiment at my creamery, in Onondago County, N.Y., where I receive milk from 300 cows. The milk delivered at the factory on Saturday evening, July 30, and Sunday morning, July 31, amounting to 5729 lb., as soon as received was run into deep cooler pails, and these were set into the tank of spring water. The temperature of this water is maintained uniform, at about 53°, by the introduction of an inch stream of water from the spring. In this vat the pails remained for about 30 hours, when they were removed, in order that by a free exposure to the atmosphere the milk might be soured. It might have produced a better result if the pails had been allowed to remain immersed in the water until the milk became loppered; but we feared that so long an exposure of the milk and cream to such a degree of cold would cause a bitterness of flavour to the cream and the butter made therefrom. When about 48 hours old, the milk having soured and thickened, the cream was removed and kept until the next day. On Wednesday churning was done, in large dash churns, operated by steam-power. From this 5729 lb. of milk there was produced 232 lb. of butter. This shows an average of 24.69 lb. of milk as being required for a pound of butter, very closely meeting the opinion generally held, that two-and-a-half times as much milk is used in making a pound of butter as in producing a pound of cheese. At the season of the year above named a yield of 1 lb. of cured cheese from 10 lb. of milk is very satisfactory. This would have produced 573 lb. of cured cheese from the milk used in this experiment, which gave me 232 lb. of butter. Cheese at that time was worth 14 cents a pound. Butter, to pay as well as cheese at this price, would need to sell at fully 35 cents a pound, allowing that the material used in making and packing butter cost one-half cent per pound more than those required for cheese. From this loppered milk, which in my case went to the pigs, there is sometimes made a kind of cheese, used mainly by the German Jews. The curd is heated to a high temperature, is not salted, but is placed in small bags holding about half a pound, and subjected to moderate and long-continued pressure. When removed from this pressure the cheese is cone-shaped, two sides being flattened; salt is rubbed upon the outside, and the curing is made in a cool damp place, as is the case with Limburg cheese. There is small demand for this kind of chese, and if there was a large demand, the prejudice of the Jews will allow them to eat only that which Jewish hands have made. *American Paper.*

The Week's Work.

AUGUST 12.—*Autumn Turnip Sowing.*—As the work of corn harvest advances, the land may be ploughed close up to the stooks, and, as the stooks are ready for the stackyard, the narrow strips on which they stood are next ploughed, and the sowing of the autumn crop proceeds. In front may be seen the reaping-machine, with the stooks rising up close to each other, but as wide between the rows as can be, for the greater breadth of tillage. No sooner are the stooks up than the whole force of tillage implements now in use is started. The greater breadth is now grown with artificial manure, from 3 cwt. to 5 cwt. of superphosphate, or Turnip manure being drilled in along with about 4 lb. of Turnip seed per acre, and as the land is generally clean, the work, although heavy and expeditious is simple. But to this there are here and there exceptions, where the old practice of gathering and burning weeds, and the carting out of farmyard manure, gives variety to the practice. In dry weather the liquid-manure drill should invariably be used with a plentiful supply of water, and if the seed is got in with a sufficiency of sap it brairds rapidly, and soon gets into rough leaf from the high temperature of the land in our southern counties. Much of the success of growing autumn Turnips depends upon this high temperature of the land, and the getting in the seed with plenty of sap.

The expedients possible in a wet harvest appear from the following note by Mr. Hallett, of Brighton, written 11 years ago:—

"On the three days, August 30, 31, and September 1, expecting the wet weather to continue, I had 30 acres of Wheat reaped and placed under cover in barns, hovels, cattle and implement sheds, &c.,—in fact, in everything that had a roof to it,—setting each sheaf upright on the ground, thus exposing the whole of it to the action of the air. Each acre of sheaves occupied an area of 400 superficial feet. The Wheat was cut when dry and carried immediately; it is now in excellent order, and my people commence threshing it to-morrow. Had the wet weather continued, the whole might have been removed in a few days, and stacked either out-of-doors or under the same roofs, making room in the former case for 30 acres, and in the latter case for at least 20 acres more. To show that in the extreme case of the weather not permitting the Wheat to be cut dry it might still be saved, I may mention that two waggon-loads of sheaves standing in the field throughout the wet week ending August 25 were carried on that day in the pouring rain and placed under cover. They were then soaked throughout, and are now, Sepember 10, fit to thresh. I had one field of 10 acres dried in the straw on three kilns in a malt-house, each of which was 25 feet square, and contained upwards of an acre of sheaves."

Wheat Harvest progresses. Happily the force of reaping-machines now in the field enables farmers to cut down their crops in time. Where the crop has ripened uniformly, there has been, and will be, no difficulty in determining when to start the reaping-machine, but where ripe and green ears are growing together it will be otherwise. The old rule says, "split the difference."

Notices to Correspondents.

RYE: *L. A. N.* Rye-corn contains in its natural state as to dryness about 11 per cent. of gluten, 51 per cent. of starch, 9 per cent. of sugar and gum, 10 per cent. of husk, 13 per cent. of water. Wheat will contain 16 to 20 per cent. of gluten, 46 to 50 per cent. of starch, 12 per cent. of husk, and 12 to 14 per cent. of water.

STEPHENS' BOOK OF THE FARM: *Erratum.* We find it unfortunately necessary to reprint the following sentences from a notice of this work on p. 1024, in order that their meaning may be understood:—"The 'Book,' therefore, though rewritten, remodelled, and recast, is a new edition, not an altogether new book. There are, however, some subjects which have been remodelled and recast in the farming of arable land since Mr. Stephens began to write. Steam cultivation and artificial manuring, and horse-drawn harvesting machines, have made the work of the ploughman and field-worker very different from what it was. The use of liquid manure from town drainage is likely to be another source of agricultural growth and progress, which will produce a great change over considerable districts in the next quarter of a century. Some of these subjects are fully discussed in the new volume by the author of the 'Book of the Farm;' but we think that the reader will generally be disappointed that his attention is not more fully directed to them. In this, however, perhaps he is unreasonable. It is not Mr. Stephens' plan to 'discuss' so much as simply to describe."

Markets.

METROPOLITAN CATTLE MARKET.

MONDAY, Aug. 7.

The supply of English Beasts is larger, but smaller of foreign, the total number being only a few more than on last Monday. Choice qualities are not plentiful, and consequently not much lower; inferior are a slow trade. There are a few more foreign Sheep, and English about the same as last week. Trade on the whole is not quite so good; however, a fair clearance is effected, and prices are not much reduced. Choice Lambs are saleable, at late rates. Calf trade very dull. Our foreign supply consists of 2400 Beasts, 14,200 Sheep, 445 Calves, and 75 Pigs; from Scotland there are 10 Beasts; from Norfolk and Suffolk, 170; and 1339 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c.	5 8 to 6 0	Best Long-wools	.. to ..
		Do. Shorn	6 0—6 4
Best Shorthorns	5 4—5 8	Ewes & 2d quality	.. — ..
2d quality Beasts	3 8—4 8	Do. Shorn	5 0—5 4
Best Downs and Half-breds	.. — ..	Lambs	6 8—7 8
		Calves	3 6—5 6
Do. Shorn	6 4—6 6	Pigs	3 4—4 8

Beasts, 3919; Sheep and Lambs, 24,900; Calves, 483; Pigs, 165.

THURSDAY, Aug. 10.

The number of both English and foreign Beasts is smaller then on Thursday last; the demand is active, and a clearance is effected at fully Monday's quatations. The total number of Sheep is smaller; some choicest qualities made rather higher prices; trade closes dull. Good English Lambs are scarce, and make rather more money, There is a slight improvement also in the Calf trade. Our foreign supply consists of 235 Beasts, 5700 Sheep, 500 Calves, and 5 Pigs.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c.	5 8 to 6 0	Best Long-wools	.. — ..
		Do. Shorn	6 0—6 4
Best Shorthorns	5 4—5 8	Ewes & 2d quality	.. — ..
2d quality Beasts	3 8—4 8	Do Shorn	5 0—5 6
Best Downs and Half-breds	.. — ..	Lambs	7 0—8 0
		Calves	3 8—5 8
Do. Shorn	6 4—6 8	Pigs	3 4—4 8

Beasts, 665; Sheep and Lambs, 12,450; Calves, 629; Pigs, 40.

METROPOLITAN MEAT MARKET, Aug. 10.

Best Fresh Butter	15*s.* per dozen lb.
Second do. do.	13*s.* ,,

Small Pork, 4*s.* 6*d.* to 4*s.* 10*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

Wool continues to advance in value, and 1*s.* 10*d.* to 1*s.* 10½*d.* is now the price for good Kent fleeces, whilst for good west country Downs 1*s.* 9½*d.* has been refused; it is generally believed that 2*s.* will be reached before the close of the year.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Aug. 10.

Prime Meadow Hay	140*s.* to 145*s.*		Clover, old	160*s.*	170*s.*
Inferior do.	90	108	Inferior do.	110	120
New Hay	95	110	Prime new do.	120	140
Inferior do.	50	70	Inferior do.	60	80
Straw	45	50			

CUMBERLAND MARKET, Thursday, Aug. 10.

Sup. Meadow Hay	150*s.* to 160*s.*		Inferior Clover	140*s.* to 150*s.*	
Inferior do.	120	135	Prime 2d cut do.	—	—
New do.	70	120	New do.	70	130
Inferior do.	—	—	Straw	50	56
Superior Clover	160	175			

JOSHUA BAKER.

MARK LANE.

WEDNESDAY, Aug. 9.

The Corn Exchange to-day opened and closed quietly. The show of English Wheat was small, but from abroad the arrivals were good. Transactions in all descriptions were restricted, and prices in some instances were easier. Barley was in limited request, on former terms. Malt was dull, but prices were unchanged. There were large supplies of Oats on offer. Trade was inactive, and prices favoured buyers. Beans and Peas were quiet, and prices were with difficulty sustained. Flour experienced a slow sale, at drooping prices.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk..White	47—60	Red......	55—60
— fine selected runs ....do.	57—63	Red......	56—62
— Talavera	60—66		
— Norfolk	—	Red......	—
— Foreign	50—68		
BARLEY, grind. & dist., 30*s* to 34*s*..Chev.	43—46	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
OATS, Essex and Suffolk	26—28		
— Scotch and Lincolnshire..Potato	28—30	Feed	—
— Irish ....Potato	27—29	Feed	25—28
— Foreign ......Poland and Brew	23—26	Feed	20—23
RYE	34—36	Foreign ..	33—36
RYE-MEAL, Foreign................			
BEANS, Mazagan.... 37*s.* to 47*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*...Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	38—40	Suffolk ..	40—42
— Maple, 40*s.* to 44*s.* ....Grey	36—40	Foreign ..	36—40
MAIZE	—	Foreign ..	33—36
FLOUR, best marks, delivered..per sack	42—50		
— 2d ditto ....ditto	36—42	Country ..	36—42
— Foreign ....per barrel	25—29	Per sack..	38—60

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	290	—	—	—
Irish ..	—	—	—	—
Foreign ..	36,070	19,910	62,890	600 — brls.
	36,360	19,910	62,890	

LIVERPOOL, Aug. 8.—The market was thinly attended. White Wheat brings the full prices of Friday last, but red must be called 1*d.* lower, with a small business. Flour dull, and 6*d.* lower. Beans dull, and in favour of purchasers. Oats and Oatmeal quiet, at late rates. Indian Corn in moderate request, at former prices; mixed, 30*s.* 9*d.* to 31*s.*

AVERAGES.

	Wheat.	Barley.	Oats.
July 1	59*s* 1*d*	36*s* 10*d*	27*s* 5*d*
— 8	59 0	34 10	27 1
— 15	58 6	34 7	27 10
— 22	58 10	35 11	27 2
— 29	58 0	34 3	28 3
Aug. 5	58 0	36 7	27 4
Average ..	58 7	35 6	27 6

SEED MARKET.

The Mark Lane markets were closed on Monday last, in accordance with the provisions of the Banks' Holidays Act. Our seed trade continues in pretty much the position described in our last. Trefoil seed is creeping up in price. For Trifolium there is as yet very little home demand; values must be quoted 2*s.* to 3*s.* per cwt. lower. Samples of new Peas, and also of new winter Oats and Rye, are now coming to hand. Fine Rape seed is, in certain districts, rather scarce; it now meets with a somewhat improved demand. Offers and samples of new French Italian have reached us, but currencies are not yet fixed. Hemp seed is dull. Canary very firm. Other articles are without alteration.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

HOPS.

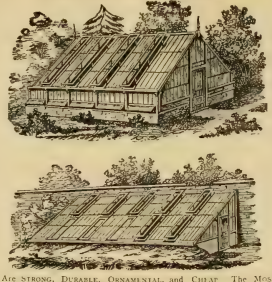
BOROUGH MARKET, Aug. 9.

Messrs. Pattenden & Smith report the market firm and healthy, with a very limited supply of good Hops on offer. Prices unchanged. The latest telegrams from the Continent, as well as from America, are of a very unfavourable character as regards the prospects of the new crop, and prices are daily advancing on the other side in consequence.

COALS.—Aug. 9.

West Hartley, 18*s.* 6*d.*; East Wylam, 17*s.* 6*d.*; Walls End Harton, 16*s.* 3*d.*; Walls End Thrislington, 17*s.*; Eden Main, 16*s.* 6*d.*; Walls End Hawthorn, 16*s.*; Walls End Seaton, 15*s.* 3*d.*; Walls End South Hetton, 18*s.* 3*d.*; Walls End Hartlepool, 17*s.* 3*d.*; Walls End Heugh Hall, 17*s.* 3*d.*; Walls End Kelloe, 17*s.*; Walls End East Hartlepool, 17*s.* 9*d.*; Walls End Original Hartlepool, 18*s.* 6*d.*; Walls End South Kelloe, 17*s.* 3*d.* —Ships at market, 62; sold, 60; unsold, 2; at sea, 5.

RICHARDSON'S
PATENT HORTICULTURAL BUILDINGS



Are STRONG, DURABLE, ORNAMENTAL, and CHEAP. The MOST PERFECT SYSTEM OF VENTILATION, combined with COMPLETE PROTECTION FROM THE WEATHER. A free and copious circulation of air in any length of range obtainable instantaneously through every part, or at the top alone, by a single handle.

These Houses are PORTABLE, and most easily fixed, without the disturbing of any glass, the use of nails, or a screw-driver.

Improved Portable and other kinds of GREENHOUSES, CONSERVATORIES, &c., of the best construction, designed and supplied, carriage paid, to any part of the country.

Illustrated Price Lists free on application to the Makers, enclosing a stamp for postage.

Apply to W. RICHARDSON AND CO., Horticultural Builders, Darlington.

For Reaping Machines,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

THE ACME GARDEN FRAME and GROUND VINERY.
The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

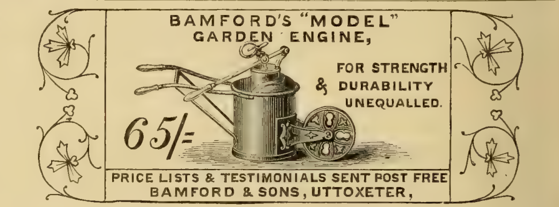
J. TYLOR AND SONS'
FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

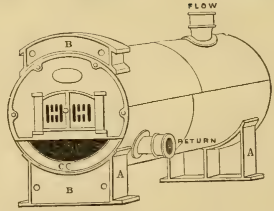
Illustrated Catalogues on application.

THE HYDRONETTE
(ROBIN'S PATENT).
For Gardens, Greenhouses, Conservatories, Hotbeds, Washing Windows, Carriages, &c.
Unrivalled ease of action, simplicity, convenience, and force.
The HYDRONETTE is a more useful, easy-working, reliable, and convenient water-throwing machine than any other in use. In five sizes, viz.: — No. 1, with 4 feet of Suction Hose, Strainer, Jet and Rose, 12*s.* 6*d.*; No. 2, 15*s.* 6*d.*; No. 3, £1 1*s.*; No. 4, £1 5*s*; No. 5, £1 10*s.* Extra Hose and Union Joints to order.

PATENT WATER BRINGER.
HAYNES AND SONS' PATENT WATER BRINGER, price 21*s.*—This simple Machine will draw water from a pond or well 10 feet below the level of garden, and 100 feet over the surface, with the Hydronette or any other Garden Engine.
HAYNES AND SONS, 227, 229, and 231, Edgware Road, W.
CAUTION.—None are genuine unless labelled "HAYNES & SONS, Proprietors, London."



STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,
"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.
"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE."

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED,
FENTON, STOKE-ON-TRENT.
LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.
From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

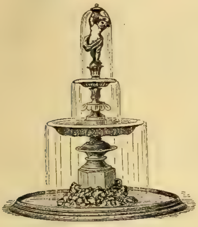
Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.



VASES AND FOUNTAINS
FOR THE
GARDEN AND CONSERVATORY.

ILLUSTRATED CATALOGUE, containing Prices and full information concerning FOUNTAINS and VASES, and with 30 large pages of beautifully Lithographed Designs, Post Free for 12 stamps, which will be allowed if an order is given.

ANDREW HANDYSIDE AND CO.,
Britannia Works, Derby;
LONDON OFFICE:—32, WALBROOK.

THE STEAM-ENGINE TRIALS
OF THE
ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz.:—
First Prize for Horizontal Fixed Engine of 10 H.P.; First Prize for Steam Engine, with Boiler combined.

At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N.B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.

GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN;
78, LOMBARD STREET, LONDON, E.C.; and TARLETON STREET, LIVERPOOL.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15*s.* 0*d.*	19*s.* 6*d.*
Third quality	16*s.* 0*d.*	22*s.* 6*d.*
Seconds	18*s.* 6*d.*	26*s.* 0*d.*
English	20*s.* 0*d.*	27*s.* 0*d.*

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.
Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths. *s.* *d.*	3rds. *s.* *d.*	2nds. *s.* *d.*
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12	16 to 17 oz. to the foot.		
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4 6½ by 4½ 7 by 5 7½ by 5½ } .. 12*s.* 6*d.*
by 6 8½ by 6⅜ 9 by 7 9½ by 7½ }
10 by 8 10½ by 8½ .. 13*s.* 6*d.*

Boxes 2*s.* each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without, E.C.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.

CONSERVATORY and ORCHARD-HOUSE GLASS.

Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

JOHN WARNER & SONS, HYDRAULIC ENGINEERS,

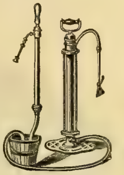
Bell and Brass Founders to Her Majesty, Manufacturers of Hydraulic Machinery of every description, Wind Engines, Water Wheels, Water Rams, Deep Well Pumps and Frames for Horse or Hand Power, Garden Engines, Swing Barrows, &c., &c. Branch Pipes for Rubber Hose, with Jet and Spreader, or with Haswell's Patent Director, from 3s. 6d. Syringes from 5s., or, fitted with Haswell's Director, 12s. 6d. Lists sent on application.

8, CRESCENT, CRIPPLEGATE,
LONDON, E.C.

FOUNTAIN JETS,
In great variety, from 3*s.* 6*d.*

No. 547A.
GARDEN ENGINE.

12	Gallons	£3	0	0
16	,,	3	16	0
24	,,	5	1	0
30	,,	5	13	0



WARNERS'
AQUAJECT.

Useful for every variety of purpose—in watering or washing Flowers or Trees in Gardens, Conservatories, &c.; also for washing Carriages or Windows, laying Dust, &c.

Price complete	£1	8	0
Small size for the hand, as an ordinary Syringe	0	15	0

THE CRYSTAL PALACE
GARDEN or FIRE ENGINE.

No. 35.
CAST-IRON PUMPS.

2½ inches	£1	9	0
3 ,,	1	18	0
3½ ,,	2	7	0
4 ,,	2	15	6

No. 42.
PORTABLE PUMP,
With improved Valves for Liquid Manure, £2 16*s.* 6*d.* Two-inch Flexible Rubber Suction Pipe, in 10, 12, and 15 feet lengths, per foot 2*s.* 5*d.*

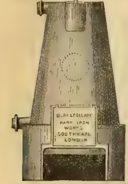
No. 579½.—SWING
WATER BARROW.

Galls.				Galls.			
20	£2	2	0	38	£3	18	0
30	2	14	0	50	5	14	0

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

6, Bankside, Southwark, London, S E.



Latest Improvements
IN
HEATING by HOT WATER.

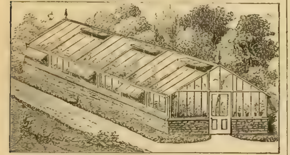
THE IMPROVED CONICAL BOILERS, for HEATING PINERIES, CONSERVATORIES, GREENHOUSES, MANSIONS, HALLS, WAREHOUSES, &c.,

Solely Manufactured by
POLLARD, JEPHSON, AND CO.
(late Bury & Pollard, Successors to John R. Peill, late Stephenson & Peill).

These BOILERS are adapted for setting in Brickwork, or as shown in sketch they require NO BRICKWORK.

Price Lists free by post.

Bear Garden, New Park Street, Southwark, London, S.E



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included :—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
,, ,, glazed, 16-oz good sheet glass	6s. ,,
6 ft. ,, ,, 2 in thick, unglazed	5s. ,,
,, ,, glazed, 16 oz good sheet glass ..	11s. ,,
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. ,,
Portable box containing two ditto, 6 ft. by 8 ft.	55s. ,,

Estimates given for Conservatories or Greenhouses to any Design.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s. 6d. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60s. each.

Portable Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

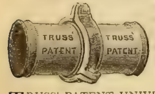
INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN

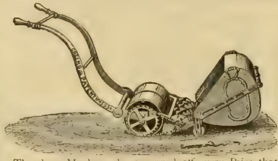
T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

Great Reduction in Prices for 1871,
OF
GREEN'S
PATENT SILENS MESSORS
OR
NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices :—

To cut	8 inches	.. Price	£2	10	0	Can be worked by one person.
,,	10 ,,	.. ..	3	0	0	
,,	12 ,,	.. ..	4	0	0	
,,	14 ,,	.. ..	5	0	0	
,,	16 ,,	.. ..	6	0	0	This can be worked by one person on an even Lawn
,,	18 ,,	.. ..	7	0	0	By Man and Boy.
,,	20 ,,	.. ..	7	10	0	,,
,,	22 ,,	.. ..	8	0	0	,,
,,	24 ,,	.. ..	8	10	0	,,

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED
PATENT ROLLER,
FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	7	10	0	20 in.	22 in.	3	10	0
24 in.	26 in.	4	10	0	16 in.	17 in.	2	15	0

PRICES of ROLLERS, fitted with Shafts,
Suitable for Pony or Horse-power.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	10	0	0	30 in.	60 in.	15	10	0
30 in.	36 in.	10	15	0	30 in.	72 in.	17	10	0
30 in.	42 in.	11	15	0	30 in.	84 in.	19	10	0
30 in.	48 in.	13	10	0					

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

24 inches by 26 inches	£4	0	0
20 ,, 22 ,, ...	3	2	6
16 ,, 17 ,, ...	2	10	0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

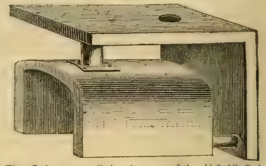
THE PATENT IMPERISHABLE HOTHOUSE.
AYRES' PATENT
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the

IMPERISHABLE HOTHOUSE COMPANY,
Newark-upon-Trent, Notts.
MANAGER—Mr P AYRES, C M R.H.S,
Forest Road West, Nottingham.

Plans, Specifications and Estimates supplied upon the shortest notice.

JONES'S PATENT "DOUBLE L" SADDLE BOILER



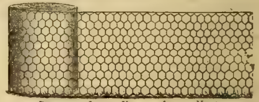
These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz, the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 ,,	18 ,,	24 ,,	450	6	0	0
20 ,,	18 ,,	30 ,,	600	7	0	0
24 ,,	24 ,,	24 ,,	700	8	0	0
24 ,,	24 ,,	30 ,,	850	10	0	0
24 ,,	24 ,,	36 ,,	1,000	12	0	0
24 ,,	24 ,,	48 ,,	1,400	15	0	0
28 ,,	28 ,,	60 ,,	1,800	20	0	0
30 ,,	30 ,,	72 ,,	2,600	30	0	0
36 ,,	36 ,,	96 ,,	4,500	50	0	0
48 ,,	48 ,,	108 ,,	7,000	75	0	0
48 ,,	48 ,,	144 ,,	10,000	100	0	0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO., who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

GALVANISED WIRE NETTING. — First-class Certificate Royal Horticultural Society, and "Mention Extraordinaire" Amsterdam Exhibition, 1869.

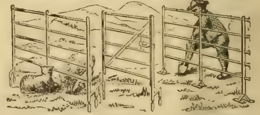


PRICES PER LINEAL YARD, 24 INCHES HIGH.

Mesh.	Mostly used for	No. 19.	No. 18.	No. 17.	No. 16.
2 inch	Dogs or Poultry	3¼d.	4½d.	5¾d.	7d.
1⅝ ,,	Small Rabbits, &c. ..	4¼d.	5¼d.	6¼d.	8d.
1½ ,,	Smallest Rabbits ..	5¼d.	6¼d.	8d.	10d.
	Pheasantries, &c. ..	10d.	1s. ½d.	1s. 4d.	1s. 10d.

J. B. BROWN AND CO., 90, Cannon Street, London, E C.

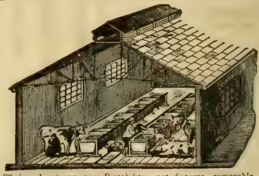
Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

Illustrated Price Lists on application to COTTAM AND CO., Iron Works, 2, Winsley Street, Oxford Street, London, W.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

LONDON AND COUNTY BANKING COMPANY.

ESTABLISHED 1836.

Subscribed Capital, £2,500,000, in 50,000 Shares of £50 each.

Paid-up Capital, £1,000,000. Reserve Fund, £500,000.

Directors.

Nathaniel Alexander, Esq.
Thos. Tyringham Bernard, Esq.
Philip Patton Blyth, Esq.
Thomas Stock Cowie, Esq.
Frederick Francis, Esq.
Frederick Harrison, Esq.
Lord Alfred Hervey.
William Champion Jones, Esq.
Edwd. Harbord Lushington, Esq.
James Morley, Esq.
William Nicol, Esq.
Frederick Youle, Esq.

General Manager—William McKewan, Esq.
Chief Inspector—W. J. Norfolk, Esq.
Inspectors of Branches—H. J. Lemon, Esq., and C. Sherring, Esq.
Chief Accountant—James Gray, Esq.
Secretary—F. Clappison, Esq.
Head Office—21, Lombard Street.
Manager—Whitbread Tomson, Esq.
Assistant Manager—William Howard, Esq.

At the Half-yearly General Meeting of the Proprietors, held on Thursday, August 3, 1871, at the City Terminus Hotel, Cannon Street Station, the following Report for the year ending June 30, 1871, was read by the Secretary,—William Champion Jones, Esq., in the Chair:—

The Directors, in presenting to the Proprietors the Balance-sheet of the Bank for the half-year ending June 30 last, have the satisfaction to report that, after paying interest to customers, and all charges, allowing for rebate, and making provision for bad and doubtful debts, the nett profits amount to £90,100 16*s.* 8*d.* This sum, added to £4,349 0*s* 8*d.*, brought forward from the last account, produces a total of £94,449 17*s.* 4*d.*

They have declared the usual dividend of 6 per cent., with a bonus of 3 per cent., for the half-year free of Income-tax, being at the rate of 18 per cent. per annum, which will absorb £90,000, and leave £4,449 17*s.* 4*d.* to be carried forward to profit and loss new account.

They have to announce the retirement of their esteemed colleague, John William Burmester, Esq., from the direction, on account of advanced age, and the election of Frederick Youle, Esq., in his stead.

The dividend and bonus (together £1 16*s.* per share), free of Income-tax, will be payable at the Head Office, or at any of the branches, on or after Monday, the 14th inst.

Balance-Sheet of the London and County Banking Company, June 30, 1871.

Dr.		
To Capital paid up		£1,000,000 0 0
To Reserve Fund		500,000 0 0
To amount due by the Bank for customers' balances, &c.	£14,505,287 15 2	
To liabilities, on acceptances, covered by securities	2,640,138 5 9	17,145,426 0 11
To profit and loss balance brought from last account	4,349 0 8	
To gross profit for the half-year, after making provision for bad and doubtful debts, viz.	251,931 6 2	256,280 6 10
		£18,901,706 7 9
Cr.		
By cash in hand at Head Office and branches, and with Bank of England	£2,130,797 4 3	
By cash placed at call and at notice, covered by securities	2,131,464 11 0	£4,262,261 15 3
Investments, viz.:—		
By Government and guaranteed stocks	1,400,764 15 9	
By other stocks and securities ..	145,102 7 6	1,545,867 3 3
By discounted bills and advances to customers, in town and country	10,061,582 2 2	
By liabilities of customers for drafts accepted by the Bank, as per contra	2,640,138 5 9	12,701,720 7 11
By freehold premises in Lombard Street and Nicholas Lane, freehold and leasehold property at the branches, with fixtures and fittings		245,735 9 10
By interest paid to customers		38,220 6 3
By salaries and all other expenses at Head Office and branches, including Income-tax on profits and salaries		107,901 5 3
		£18,901,706 7 9

Dr. Profit and Loss Account.	
To interest paid to customers, as above	£38,220 6 3
To expenses, as above	107,901 5 3
To rebate on bills not due, carried to new account ..	15,708 18 0
To dividend of 6 per cent. for half-year	60,000 0 0
To bonus of 3 per cent.	30,000 0 0
To balance carried forward	4,449 17 4
	£256,280 6 10
Cr.	
By balance brought forward from last account ..	£4,349 0 8
By gross profit for the half-year, after making provision for bad and doubtful debts	251,931 6 2
	£256,280 6 10

We, the undersigned, have examined the foregoing balance-sheet, and have found the same to be correct.

(Signed) WILLIAM JARDINE,
WILLIAM NORMAN,
RICHARD H. SWAINE, } Auditors.

London and County Bank, July 27, 1871.

The foregoing report having been read by the Secretary, the following resolutions were proposed, and unanimously adopted:—

1. That the Report be received and adopted, and printed for the use of the Shareholders.

2. That the thanks of this meeting be given to the Board of Directors for the able manner in which they have conducted the affairs of the Company.

(Signed) W. CHAMPION JONES, Chairman.

The Chairman having quitted the chair, it was resolved and carried unanimously:—

3. That the cordial thanks of this meeting be presented to William Champion Jones, Esq., for his able and courteous conduct in the Chair. (Signed) P. P. BLYTH, Deputy Chairman.

Extracted from the minutes.

(Signed) F. CLAPPISON, Secretary.

LONDON and COUNTY BANKING COMPANY.—Notice is Hereby Given that a DIVIDEND on the Capital of the Company, at the rate of 6 per cent. for the half-year ending June 30, 1871, with a BONUS of 3 per cent., will be PAID to the Proprietors, either at the Head Office, 21, Lombard Street, or at any of the Company's Branch Banks, on or after MONDAY, the 14th instant. By order of the Board,

W. McKEWAN, General Manager.

21, Lombard Street, August 4, 1871.

ALEXANDRA PALACE and MUSWELL HILL ESTATE TONTINE.

ALEXANDRA PALACE.—Notice to the Public. Intending Subscribers can obtain Free Passes admitting to the Palace and Grounds on application to the Secretary, stating name and address.

ALEXANDRA PALACE.—Arrangements will be made for an early opening of the Palace and Grounds to the Public, for completing the Railway into the Palace, as well as other Railway communication.

ALEXANDRA PALACE.—The advantages to Subscribers of One Guinea and upwards, are fully detailed in the Prospectus, and Subscribers incur no liability, and must benefit.

ALEXANDRA PALACE.—The inhabitants of the Metropolis, and of the North of London, should obtain the full Prospectus, which states the many advantages to Subscribers.

ALEXANDRA PALACE.—Art Union—£500 for a Guinea.

ALEXANDRA PALACE.—Musical Festivals, Concerts, &c

ALEXANDRA PALACE.—This will be a Grand Institution of healthful recreation and elevating instruction, combining the solid advantages of the South Kensington Museum with the lighter pleasures and pastimes of the Crystal Palace, at Sydenham

---

ALEXANDRA PALACE and MUSWELL HILL ESTATE TONTINE.

Offices—5 and 6, Great Winchester Street Buildings, London, E.C.

THE ALEXANDRA PALACE and MUSWELL HILL ESTATE TONTINE.

To terminate on June 30, 1886.

Trustees— John Clutton, Esq., Whitehall Place.
John Hackblock, Esq., Bolton Gardens.
John Horatio Lloyd, Esq., Inner Temple.

The main features of this scheme may be said to be as follows:—

The holder of a Tontine Certificate for One Guinea or upwards will become entitled to—

Free admissions to the Park on certain occasions.

A share in the Art Unions, to be held once in every three years when arranged.

To be reimbursed 20*s.* for each guinea subscribed, in the event of the life nominated dying before 1886;

Or a share in the realisation of the estate in 1886, which it is expected will very largely exceed the amount paid in;

Or, say these privileges may at any time be commuted for admissions to the Palace and Grounds. (An E Certificate includes all privileges.)

It being a "Trust," Subscribers incur NO LIABILITY, and must benefit.

If no issue is made, the Subscriptions will be returned in full.

For further particulars, see Detailed Prospectus.

Admissions to view the Palace can be obtained at the Offices of the Company, 5 and 6, Great Winchester Street Buildings, E.C.

THOS. DIXON, Secretary.

New and Enlarged Edition.

This day is published, price Five Shillings,

A PRACTICAL TREATISE on the CULTIVATION of the GRAPE VINE, by William Thomson, of Tweed Vineyard, Galashiels, lately Gardener to his Grace the Duke of Buccleuch, K.G., at Dalkeith Park. The Seventh Edition, enlarged.

WILLIAM BLACKWOOD and SONS, Edinburgh and London.

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THE BOILER PROBLEM SOLVED.

April 14, 1871.

MANLEY HALL, Manchester.

Gentlemen,—In reply to your letter, I have pleasure in stating that the works executed by your Firm, extending over the last nine years, have proved in all respects satisfactory. During the late severe winter the Boilers have acted efficiently and to my entire satisfaction.

I am, Gentlemen, yours faithfully, SAM MENDEL.

ZOOLOGICAL SOCIETY'S GARDENS,

April 12, 1871. Regent's Park, London, N.W.

Gentlemen,—I have much pleasure in adding my testimony in favour of Weeks's Patent Duplex Boiler. It does its work well and satisfactorily, being both economical in fuel and labour, and, in my opinion, cannot be surpassed in heating power, the late severe season having fully tested its capabilities. I may add that the amount of 4-inch piping heated by this one boiler is about 4600 feet.

WM. PASFIELD, Clerk of Works.

April 4, 1871.

GOODWOOD, Chichester, Sussex.

Gentlemen,—My opinion of your Upright Tubular Boiler remains unaltered, as I have never seen anything to equal it during my experience in gardening. Our new works have given the greatest satisfaction.

I remain, Gentlemen, faithfully yours, GEO. CAMERON,
Gardener to His Grace the Duke of Richmond.

April 6, 1871.

CASTLE GARDENS, Cardiff.

Gentlemen,—I have much pleasure in stating that the Upright Tubular Boiler and Heating Apparatus supplied by you here has in every respect perfectly answered my expectations. Respectfully yours,
EDWARD N. COX, Gardener to the Marquis of Bute.

May 9, 1871.

KITCHEN GARDENS, Burghley.

The Upright Tubular Boilers set here two years back continue to meet my entire approval. One Boiler is doing the work which usually took *ten*. I have worked these Boilers *sixteen years* in many parts of England, always finding them there when wanted. I may add, if honours and medals were given to Hot-Water Apparatus manufacturers, John Weeks's breast would be covered with distinction. R. GILBERT,
Head Gardener to the Most Noble the Marquis Exeter, of Burghley.

April 12, 1871.

THE GARDENS, Wilton House.

Gentlemen,—It is now ten years since your Upright Tubular Boiler was fixed here, and it gives me great pleasure to be able to say that during that time it has not cost a farthing in alterations or repairs. We have 5000 feet of piping attached to it, which heats 15 early forcing-houses and plant stoves. I find no difficulty in burning any kind of fuel in it, having used nothing but small cinders for some weeks past, with an occasional lump of coke when the weather is severe. During my experience I have proved nearly every kind of boiler, and can with confidence assert that yours is the most powerful and economical, and requires less attention, than any I have tried.

I am, Gentlemen, yours respectfully, THOMAS CHALLIS,
Gardener to the Earl of Pembroke.

April 10, 1871.

THE GARDENS, Severn Stoke.

Gentlemen,—In reply to your note, I am glad to say that the whole apparatus is in perfect working order, and gives every satisfaction. I have, during the last 10 years, worked a variety of boilers, but for power and economy I have not found one to equal your Upright Tubular; and to surpass it, I am convinced, is an utter impossibility. Therefore, I have much pleasure in adding my testimony to its very superior merit.

I am, truly yours, H. ROWBREE,
Gardener to the Right Hon. the Earl of Coventry.

April 14, 1871.

THE GRANGE, Alresford, Hants.

Gentlemen,—I find your Upright Duplex Tubular Boiler more economical in the consumption of fuel than the old Saddle, and does not require so much labour in stoking. During this last severe winter we were able to bank our fires up at half-past ten, and find the temperature all right in the morning.

I remain, Gentlemen, your obedient servant, ROBERT BAKER,
Gardener to Lord Ashburton.

April 8, 1871.

RUXLEY LODGE.

Gentlemen,—The Upright Tubular Boiler which you fixed here, gives entire satisfaction. From my own experience in working your boilers, I have no hesitation in saying that I believe them to be the best boilers in use.

I am, Gentlemen, yours, &c., J. HOWIE,
Gardener to the Right Hon. Lady Foley.

April 11, 1871.

ASHTON COURT, Bristol.

Gentlemen,—I am happy to state that the Horticultural Buildings erected by you here, during the past nine years, continue to give Sir Greville Smyth and myself every satisfaction. As for the Heating Apparatus, nothing could be more satisfactory, the two boilers at the Court Gardens, fixed in 1862, not having cost one shilling for repairs, and, so far as one can judge, are as sound as when originally fixed. I may further observe that during 40 years' experience as head gardener almost every description of boiler has fallen under my supervision, and without the least hesitation I impartially state that none have equalled Week's Upright Tubular. I prefer them with a safety expansion pipe, filled with rainwater, kept clean, and in constant operation. By attention to these rules, I believe they will last for 20 years.

I am, Gentlemen, yours obediently, WILLIAM DODDS,
Gardener to Sir Greville Smyth, Bart.

April 6, 1871.

LEYBOURNE GRANGE, West Malling.

Gentlemen,—It gives me much pleasure to inform you of the great satisfaction I have received from your New Tubular Duplex Boiler that you sent me last season. Of all boilers at present in use for heating horticultural structures there is nothing to equal the above for heating power. A boiler of such great power as the Duplex I should think offers great advantages to the successful heating of large public buildings of every description, where a certain amount of heat is often wanted within a very limited space of time. Your Duplex is the key to success.—I remain, Gentlemen, yours truly,
WILLIAM BOWMAN, Gardener to Sir Joseph Hawley, Bart.

April 8, 1871.

THE GARDENS, Drayton Manor.

Dear Sirs,—Your Upright Tubular Boiler has successfully and economically worked our Forcing department (2540 feet of piping) for upwards of seventeen years, without a single mishap of any kind, and when examined with the view of testing its soundness, about four years ago, it was found thoroughly sound, and to all appearance equal to the like term of years again. During the late severe winter I found no difficulty in maintaining the desired temperatures, and that by banking up the fires at 10.30, as in ordinary seasons. OWEN THOMAS,
Gardener to the Right Hon. Sir Robert Peel, Bart., G.C.B., M.P.

THE GARDENS, Beddington House.

Gentlemen,—You are at liberty to make use of my name in any way you think proper respecting your Upright Tubular Boiler, as it has given the greatest satisfaction here. I remain, Gentlemen, your obedient servant, THOMAS PENFOLD,
Gardener to the Rev. A. H. Bridges.

April 15, 1871.

STANSTED PARK, Emsworth, Hants.

Gentlemen, —I have much pleasure, now that we may consider the winter past, to let you know that your Upright Tubular Boilers have done their work to my entire satisfaction; and if it were necessary for me to make a change, it would only be to substitute the Duplex Compensating for the old Upright Tubular, for I believe the Patent Duplex Compensating Arrangements have made the Upright Tubular Boiler as near to perfection as it is possible to be.

I remain, Gentlemen, yours respectfully, GEORGE THOMPSON,
Gardener to Mrs. Dixon, Stansted Park, Emsworth, Hants.

April 8, 1871.

THE GARDENS, Hooley Hall.

Sirs,—Having had your New Duplex Patent Boiler in constant work for the last six months, I have much pleasure in bearing testimony to its great superiority over any other boiler that I am acquainted with. I have found it to be most powerful, quick in its action, very moderate in fuel, and so constructed that it requires very little attention.

I am, Sirs, yours truly, JOHN JACQUES,
Gardener to J. C. P. Cunliffe, Esq.

April 18, 1871.

WIDMORE LODGE, Bromley, Kent.

Gentlemen,—It is rather out of my line of things to recommend *anything*, but in reference to your inquiry about the Upright Tubular form of Boiler, I may say I am quite satisfied with it. Giving all other inventors and manufacturers of hot-water boilers due praise for trying to meet the growing wants of horticulturists, yet, to Mr. Weeks alone, we, as *gardeners*, have to date the first steps in alleviating the midnight ordeal of young gardeners. The Upright Tubular Boiler has stood the test for years, and even now, as far as my experience goes, there is no other form of boiler equally powerful and so easily stoked.

I remain, Gentlemen, yours respectfully, PETER M'PHAIL,
Gardener to C. Telford, Esq.

April 24, 1871.

THE MOUNT, Bishopstoke, Hants.

Gentlemen,—I have much pleasure in reporting upon the working of your new Duplex Upright Tubular Boiler, and feel that I cannot do better than give a correct statement of its operations. Previous to the removal of the old boilers, our average consumption of fuel was, during winter, about 10 tons per month, and with the new boiler it averages from $5\frac{1}{2}$ to $5\frac{3}{4}$ tons, thus saving a little more than 4 tons per month. The quantity of piping heated is about 2300 feet. I may also add that we have a much stronger command of heat in every house and pit than we ever had with the two old boilers, which were of a large size. The whole apparatus now acts most satisfactorily, and further, I, having had upwards of 40 years' experience with almost every description of boiler, pronounce most impartially for the new Upright Tubular.

I am, Gentlemen, your obedient servant, THOS. LOWE.

April 10, 1871.

THE GARDENS, Hanbury Hall.

Dear Sirs,—I am much pleased to to be able to say that the Duplex Boilers you fixed here some time ago do their work well, and need as little care and attention as it is possible for boilers, doing the work they are doing, to need. We have never worked, but for trial, more than one, and that has needed nothing more than to be cleaned once a year. We have power enough to work double, or even treble, the houses we have here at present. I am, Sirs, yours truly, WILLIAM BISHOP.

April 14, 1871.

NORMANHURST COURT, Battle.

Messrs. Weeks & Co.: Gentlemen,—We have one of your No. 5 Upright Tubular Boilers here, heating about 3400 feet 4-in. piping, with little trouble and great satisfaction. I am, Gentlemen, your humble servant, GEO. SMITH.

April 11, 1871.

IWERNE HOUSE, Blandford.

Gentlemen,—After twelve months' trial of your Patent Duplex Boilers, I feel perfectly satisfied with them in every way, and believe them capable of doing any amount of work you may require of them; they are very simple, and easy to manage, and a great improvement on your other boilers where only one boiler is required.

I remain, yours most obediently, E. JAMES,
Gardener to Thos. Bowyer Bower, Esq.

April 14, 1871.

HALL PLACE, Leigh, Kent.

Dear Sirs,—I give you the liberty of using my name in any way you please that will add weight to your testimonials. Nothing can answer better than your Duplex Upright Tubular Boilers, and I am very pleased with their operations; they act admirably. I could expatiate at some length upon the merits of your old pattern boilers, having worked them for a number of years, but have no doubt that the Duplex arrangement is a valuable improvement. I am, dear Sirs, yours truly,
JAMES KETTLE, Gardener to Samuel Morley, Esq., M.P.

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THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 33.—1871.] SATURDAY, AUGUST 19. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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CRYSTAL PALACE.—The AUTUMN FLOWER SHOW in connection with the Metropolitan Floral Society's Exhibition, will take place on WEDNESDAY and THURSDAY, August 30 and 31. SCHEDULES and FORMS of ENTRY may be had at the Crystal Palace, or of the Honorary Secretary, Rev. H. H. DOMBRAIN, Westwell Vicarage, Ashford, Kent.

READING HORTICULTURAL SOCIETY.—The AUTUMN SHOW will be held on THURSDAY, August 24 (by permission of the Mayor), in the Abbey Ruins, Reading. A Band will attend, as usual. The Show will be open to the holders of Subscribers' Tickets at 1 o'clock, and to the Public at 3 o'clock, on payment of 1s.

ENTRIES must be made to the Hon. Secretary on or before THURSDAY, August 17.

Tickets and Schedules may be obtained of CHARLES COLLINS, Hon. Sec., 34, Chain Street, Reading.

BRACEBRIDGE and BOULTHAM HORTICULTURAL SOCIETY'S SHOW, AUGUST 30.

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For 6 Stove, or Stove and Greenhouse Plants:—1st, £5 5s.; 2d, £3 3s; 3d, £2 2s.

For 6 Begonias in 8-inch pots:—1st, £1; 2d, 10s.

For 4 distinct kinds of Fruit, grown and exhibited by a Gentleman. A Valuable Ornamental Prize. No Entrance Fees.

Seven days' notice to B. J. WILSON, Hon. Sec., Bracebridge, Lincoln.

BISHOP AUCKLAND FLOWER SHOW.—FRIDAY, September 1, 1871. SCHEDULES of PRIZES REVISED. ENTRIES can be made AT ONCE. Application for Trucks to be made to the Secretary, Mr. J. C. HARDY, Bishop Auckland.

WELCHPOOL HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will take place on THURSDAY, September 7, 1871, when SPECIAL PRIZES, open to all England, will be offered. ENTRIES to CLOSE on SEPTEMBER 2. LIST of PRIZES and ENTRY FORMS may be obtained on sending stamp to D. P. OWEN, Hon. Sec.

A GRAND FLORAL FETE at YORK will be held in the picturesque Grounds of the Yorkshire Museum, on WEDNESDAY, September 6

President.—The LORD ARCHBISHOP of YORK.

Patrons.—The EARL of ZETLAND, Hon. PAYAN DAWNAY, the LORD MAYOR, J. LOWTHER, Esq., M.P., &c.

Liberal Prizes are offered for Plants, Fruits, and Vegetables. Talented Bands will attend. The Museums of Natural History and Antiquities, and the Ruins of St. Mary's Abbey, St. Leonard's Hospital, Multangular Tower, &c., will be open to visitors. Special Excursion Trains will run. For Prize Lists, &c., apply to Mr. J. H. CARR, Colliergate, York, Hon. Secretary.

To the Wholesale Seed Trade.

J. SCOTT, The Seed Stores, Yeovil, has just harvested about 1½ oz. of his ex. ex. choice CALCEOLARIA SEED; an offer for the whole or part is solicited.

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JAMES WATT, } Partners.
July 1, 1871.

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B. R. DAVIS, The Seed Warehouse, Yeovil, Somerset.

Verbenas, Verbenas, Verbenas.

PHILIP LADDS is now sending out—

	Per dozen.—s.	d.
50 new varieties of VERBENAS, 1871, at	3	0
12 new CHILIAN MIMULUS, 1871, at	3	0
14 new CHINESE CHRYSANTHEMUMS, 1871, at..	4	0
7 new JAPANESE CHRYSANTHEMUMS, 1871, at	4	0
8 new TROPÆOLUMS, 1871, at	3	0
10 new PENTSTEMONS, 1871, at	4	0
9 new ANTIRRHINUMS, 1871, at	3	0
2 new dwarf AGERATUMS, 1871, at	3	0

Nursery, Bexley Heath, Kent.

AQUILEGIA GLANDULOSA, the true variety. Seed, 6d. and 1s. per packet.

Seeds of choicest FLORIST FLOWERS. A LIST on application.

STEPHEN BROWN, Seedsman and Florist, Weston-super-Mare.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

Ferns.—To the Trade.

ADIANTUM SCUTUM, A. LUNULATUM, A. TINCTUM, CHEILANTHES ELEGANS, PTERIS TRICOLOR, ASPLENIUM BIFIDUM.

JOHN NELSON has a large quantity of the above to offer, in the finest possible condition, 9s. per doz., £3 3s. per 100. Cash or satisfactory reference from unknown correspondents.

St. Michael's Hill Nursery, Bristol.

ORCHIDS.—Visitors to Manchester during the season would do well to VISIT our NURSERIES at FAIRFIELD, and examine for themselves our plan of GROWING ORCHIDS in PINE STOVES; also the New House we have put up, embodying this plan of supplying moisture by continual precipitation, without any disadvantage as regards neatness in the appearance of the house. Descriptive CATALOGUES on application.

JAMES BROOKE AND CO., 16, Victoria Street, Manchester: Nurseries, Fairfield, near Manchester.

Cinerarias, from one of the very finest Strains of TRICOLORS in ENGLAND.

JOHN STANDISH AND CO. are now able to offer fine strong healthy plants of the above, to flower early in the winter, at 1s. each, 9s. per dozen, £3 per 100; also seed of the same at 2s. 6d. and 5s. per packet.

Royal Nurseries, Ascot, Berks.

Strawberries.

CHARLES TURNER'S descriptive CATALOGUE of the above is now ready, which contains several new kinds, as well as the finest established varieties.

C. TURNER'S Plants are now ready. Early planting is recommended to insure a good crop of fruit the first season.

The Royal Nurseries, Slough.

New Strawberry, Royalty.

AWARDED a FIRST-CLASS CERTIFICATE by the FRUIT COMMITTEE of the ROYAL HORTICULTURAL SOCIETY, JUNE 29, 1870

J. TROTMAN has much pleasure in offering the above STRAWBERRY to the Public, in the fullest confidence that its exceeding richness of flavour cannot be surpassed, while in constitution, habit, and growth, it is most hardy, vigorous, and free. Orders now received will shortly be executed. Price 21s. per 100; 4s. per dozen.

Spring Grove Nursery, Isleworth, W.

New Strawberry, The Amateur.

SAMUEL BRADLEY, the raiser of OSCAR, SIR J. PAXTON and DR. HOGG STRAWBERRIES, begs respectfully to intimate that he is now booking orders for Plants of his fine New Seedling, THE AMATEUR, to be sent out this autumn.

It was awarded a First-class Certificate of Merit on June 29, 1870, at a Meeting of the Nottingham Horticultural Society, and also a First-class Certificate at a Meeting of the Fruit Committee of the Royal Horticultural Society, July 19, 1871, at South Kensington.

Descriptive CIRCULARS, with prices, post free to all applicants.

SAMUEL BRADLEY, Littledale, Halam, near Southwell, Notts.

WANTED, SPECIMEN PLANTS of the following, to complete a Collection:—

AGAVE
ALOE
CEREUS
ECHINOCACTUS
ECHINOPSIS
EUPHORBIA
GASTERIA
OPUNTIA
PHYLLOCACTUS, and
MAMMILLARIA generally.

Apply by letter to J. CROUCHER, Gr. to Mr. J. T. Peacock, Sudbury House, Hammersmith, W.

Amateur growers and lovers of this neglected, interesting, but beautiful tribe, may obtain information of their culture, &c., and an order to view the collection of 6000 Plants, by letter to J. CROUCHER, GR., late of Kew Gardens, as above.

EVERY GARDEN REQUISITE KEPT in STOCK at CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

New Catalogue.

JOHN H. LEY, Exotic Nursery, Croydon, S.E., will be happy to forward, post free on application, his NEW CATALOGUE (price very low) of PALMS, FERNS, STOVE PLANTS, &c.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.

Forwarders to all parts of the World.

To the Trade.—Cyclamen persicum Seed.

R. CLARKE, MARKET GARDENER, Twickenham, begs to offer the above, saved from the most distinct and vigorous plants, same as exhibited at South Kensington, November and December last, and awarded Special Certificate at each meeting. Price on application.

The Royal Norfolk Nurseries, Norwich.

EWING AND CO. respectfully invite inspection of their extensive NURSERY STOCK. Fifty acres of FRUIT TREES, ROSES, CONIFERS, ORNAMENTAL TREES, &c.

N.B. The ROSES, including the new varieties of 1870, are NOW in FULL BLOOM, and would well repay a visit.

Roses.

H. LANE AND SON'S magnificent COLLECTION, upwards of 100,000, is NOW in FULL BLOOM.

Patrons and Friends are respectfully invited to pay an early visit.

The Nurseries, Great Berkhamstead, Herts, 28 miles distant from London (Euston Station)

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.

Nurseries, King's Acre, near Hereford

New Roses, 1871.

WILLIAM KNIGHT offers a selection of TWELVE NEW ROSES, the finest of this season's plants, now ready. Also an immense stock of extra strong Plants, in pots, for Bedding, &c., of the finest varieties only of previous years. Priced CATALOGUE free.

Floral Nurseries, Hailsham, Sussex.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in Pots. Descriptive Priced LIST on application to

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

WM. THOMSON'S Descriptive CATALOGUE of VINES and PINES is now ready, and may be had on application.

Tweed Vineyard, by Galashiels.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s. 6d. per pkt. Instructions for raising and growing sent if required.

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALCEOLARIA; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1s. 6d., 2s. 6d., 3s. 6d., and 5s. per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Ixora amabilis.

ROBERT PARKER has great pleasure in offering this beautiful and distinct variety; habit vigorous and compact, with fine foliage; flowers deep orange-salmon, trusses very large, borne in the greatest profusion—young plants in 4-inch pots yielding two and three large trusses of flowers: very desirable for decorative and exhibition purposes. First-class Certificates have been awarded by Royal Horticultural and Royal Botanic Societies. Strong, healthy plants, 21s, 42s., and 63s. each.

Exotic Nursery, Tooting, Surrey, S.W.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited), CORN, SEED, MANURE, and OILCAKE MERCHANTS.

Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

New Late Red Trifolium.

NEW LATE WHITE TRIFOLIUM.

SUTTON AND SONS can supply NEW SEED of the above excellent succession varieties, which come in a fortnight or three weeks later than the ordinary variety. Lowest price per cwt. may be had on application.

Royal Berks Seed Establishment, Reading.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.

Bardney Manor, Lincoln.—July 6.

ROBINSON'S CHAMPION OX CABBAGE PLANTS.—It being the time of year to sow this fine class of Ox Cabbage, and also putting out plants on stubbles for sheep and lamb food for spring use, S. ROBINSON begs to inform his Customers and others that he has a good stock of strong, late autumn-sown and spring-grown Plants; also a small quantity of SEED, from the same stock, to offer retail, at 3s. per lb. A good dressing of Soot and Salt would answer well on stubbles intended for late Cattle Cabbage planting. Sample, and price of plants, on application to

S. ROBINSON, Shaw House, Melbourne, Derbyshire.

LOAM.—Loam, unequalled for Fruit and Plant Culture. See Report of New Vineries, Gunnersbury. For price, &c., apply to

Mr. R. TANTON, F.R.H.S., The Nurseries, Epsom.

For Present Sowing.

SUTTONS' GRASS SEEDS
FOR ALL SOILS,
Carriage free.

AS SUPPLIED TO H. M. THE QUEEN AND H.R.H. THE PRINCE OF WALES.

(As also sown at the Eastern Annexe and French Court of the London International Exhibition.)

SUTTONS' PERMANENT PASTURE MIXTURES, for any description of Soil.—Best quality, 28*s*. to 32*s*. per acre; cheaper do., 20*s*. to 26*s*. per acre. Carriage free, and 5 per cent. off for cash payment.

SUTTONS' RENOVATING MIXTURE of FINE GRASSES and CLOVERS, for Improving Pastures, should be sown at once, and will effect a great improvement in the quality and quantity of the succeeding Hay Crops. Sow from 8 to 12 lb. per acre. Price 9*d*. per lb.; much cheaper by the cwt.

EARLY SHEEP FEED, by sowing SUTTONS' IMPROVED ITALIAN RYE-GRASS, the best and most productive in cultivation, as supplied to the principal Sewage Farms.

Three bushels per acre, if sown alone; or, with Trifolium incarnatum, 2 bushels per acre. Lowest price per quarter on application.

TRIFOLIUM INCARNATUM (ITALIAN CRIMSON CLOVER), the best Clover to produce an abundant supply of green food in the spring. Sow 28 lb. per acre alone, or 16 lb. per acre with Italian Rye-grass. Lowest price per cwt. on application.

SUTTONS' MIXTURE of RAPID-GROWING GRASSES and CLOVERS, for feeding next November, and producing a heavy crop for mowing and feeding in May and June. Sow 2 bushels per acre. Lowest price per bushel or quarter on application. All goods carriage free by rail.

Five per cent. off for cash payment.

SUTTON AND SONS, Seedsman to the Queen and H.R.H. the Prince of Wales, Reading, Berks.

For Present Sowing.

SUTTONS' ONION SEED.
For Sowing during August.

NEW GIANT ROCCO, the largest variety, 1*s*. 6*d*. per oz.

LARGE WHITE ITALIAN TRIPOLI, early or late, 1*s*. 6*d*. per oz.

LARGE RED ITALIAN TRIPOLI, early or late, 1*s*. 6*d*. per oz.

NEAPOLITAN MARZAGOLI, extra fine, 1*s*. and 2*s*. 6*d*. per packet.

Further particulars of choice GARDEN and FLOWER SEEDS for AUTUMN SOWING may be had on application.

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading, Berks.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

SPECIAL OFFER of PEAS
to the SEED TRADE.

PEAS.	s.	d.	
DILLISTONE'S EARLY PROLIFIC ..	9	0	per bushel
SANGSTER'S No 1	8	6	„
EARLY EMPEROR	7	0	„
BECK'S GEM or TOM THUMB ..	9	0	„
McLEAN'S LITTLE GEM	15	0	„
DICKSON'S FAVOURITE	8	0	„
HARRISON'S GLORY	8	0	„
FAIRBEARD'S SURPRISE	8	0	„
PARADISE MARROW	8	0	„
PRIZETAKER	8	0	„
McLEAN'S PRINCESS ROYAL.. ..	8	0	„
BEDMAN'S IMPERIAL	8	0	„
BLUE SCIMITAR	8	0	„
WOODFORD GREEN MARROW ..	8	0	„
WATERLOO or VICTORIA	8	0	„
BURBIDGE'S ECLIPSE	9	0	„
FAIRBEARD'S FORTYFOLD	10	0	„
BRITISH QUEEN	10	0	„
NE PLUS ULTRA	10	0	„
CHAMPION of ENGLAND	9	0	„
HAIRS' DWARF MAMMOTH	10	0	„
YORKSHIRE HERO	10	0	„
COMPETITOR..	10	0	„
ALLIANCE or EUGENIE..	10	0	„
CLIMAX or NAPOLEON	9	6	„
VEITCH'S PERFECTION..	9	0	„
McLEAN'S ADVANCER	9	6	„
„ PRINCE of WALES ..	10	0	„
„ WONDERFUL	10	0	„
„ PRINCESS of WALES ..	9	6	„

ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., begs to offer the above to the Seed Trade. All are of Crop 1871. Deliveries can be made of all before Christmas, all of which shall be well hand-picked samples, and all are true to name. Early orders solicited.

Strawberries.

JAMES CARTER AND CO. having this season potted several hundred thousands of the finest varieties of STRAWBERRIES, which are now well established, and if planted early will produce a good crop next season, beg to inform their Patrons that a Descriptive LIST will be published in their BULB CATALOGUE, now in Press, a Copy of which will be posted as usual.

Runners, in pots, our selection,	25 of a sort	.. 10*s*. 6d.	per 100.
„ „ „	100 „	.. 7*s*. 6*d*	„
Runners, out of pots, our selection,	25 of a sort.	5*s*. 0*d*.	„
„ „ „	100 „	7*s*. 6*d*.	„

Black Prince
British Queen
Carolina Superba
Comte de Paris
General Havelock
Goliath
Keens' Seedling
Prince Arthur
Prince of Wales
Princess Alice Maude
Princess Royal
The Lady
Victoria
Wizard of the North
Wonderful

Runners, out of pots, per 100, 3*s*. 6*d*.; Runners, in pots, per 100, 10*s*. 6*d*.

Dr. Hogg
Duc de Malakoff
Premier
President
Rifleman
Sir Harry
Vicomtesse Hericart de Thury.

Runners, out of pots, per 100, 5*s*.; Runners, in pots, per 100, 12*s*. 6*d*.

New kinds at a slight advance in price according to our stock. Newest sorts, such as The Amateur, Royalty, Brown's Wonder, and several French varieties of the late Dr. Nicaise's raising, at same prices as advertised by the firms distributing them.

JAMES CARTER AND CO., 237, High Holborn, W.C.; and Crystal Palace Nurseries, Forest Hill, S.E.

DUTCH FLOWER ROOTS.

B. S. WILLIAMS

BEGS TO ANNOUNCE THAT HIS

ANNUAL CATALOGUE OF DUTCH FLOWER ROOTS,

Containing all the best varieties of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, &c.; also,

A SELECT LIST of FRUIT TREES, ROSES, &c., for AUTUMN PLANTING,

Is now ready, Post Free on application.

VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERIES, KING'S ROAD, CHELSEA, S.W.,

BEG TO ANNOUNCE THAT THEIR

ANNUAL CATALOGUE OF DUTCH FLOWER ROOTS,

Containing Descriptive LISTS of all the finest kinds of HYACINTHS, TULIPS, CROCUSES, LILIUMS, GLADIOLI, &c., and also including

A SELECT LIST of VEGETABLE and FLOWER SEEDS for AUTUMN SOWING,

Is now ready, and will be forwarded Post Free on application.

THOMAS THORNTON,

HEATHERSIDE NURSERIES, BAGSHOT, SURREY,

Invites from the Country Trade a visit to the extensive Nurseries here, the most convenient Station to which is Farnborough, on the London and South-Western Railway, where Conveyances will be sent to meet Visitors on receipt of an intimation of their intended arrival.

The stock is in very fine condition, and includes large quantities of LARCH, SCOTCH, SPRUCE, AUSTRIAN, LARICIO, and other PINES; CONIFERÆ of every description, FOREST TREES in great quantities, ORNAMENTAL TREES and SHRUBS, RHODODENDRONS in great quantity, ROSES, FRUIT TREES, LAURELS, PORTUGAL LAURELS, and other EVERGREENS; a large stock of Green and Variegated HOLLIES, VINES, &c.: all at moderate prices, and everything has been well transplanted and is well rooted.

A SPECIAL OFFER to the TRADE of MANY THINGS

will soon be ready, and can be had on application.

CARTER'S PRIZE MEDAL GRASS SEEDS,
for PRESENT SOWING.

As supplied to H. M. THE QUEEN, H.R.H. THE PRINCE of WALES, the IMPERIAL COMMISSIONERS for the PRESENT EXHIBITION, the PARIS EXHIBITION, &c.

For PERMANENT PASTURES,

Carefully arranged to suit the various conditions of soils.

For LIGHT SOILS
For MEDIUM SOILS } 27*s*. to 31*s*. 6*d*. per acre.
For HEAVY SOILS

Second quality, 20*s*. to 26*s*. per acre.

CARTER'S RENOVATING MIXTURE for RENEWING and IMPROVING OLD GRASS LANDS (to be sown after the Hay crop is removed). Per cwt., 80*s*.; lb., 9*d*.; per acre, 4*s*. to 8*s*. 6*d*.

TRIFOLIUM INCARNATUM.. } For present sowing.
MUSTARD .. } Lowest price
RAPE .. .. } on application.

All Seeds Carriage Free; 5 per cent. discount allowed for cash.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

CARTER'S NEW ONION SEED
FOR AUTUMN SOWING.

Grown from Prize Bulbs expressly for J. CARTER AND CO.

NEW NEAPOLITAN "MARZAGOLE" ONION.—By far the earliest Onion in cultivation. If sown in the autumn, this Onion will come into use in the month of March. Price 1*s*. and 2*s*. 6*d*. per packet.

NEW GIANT ROCCO ONION OF NAPLES.—Special Certificate Royal Horticultural Society, December 21, 1869. Weight of bulb exhibited, 3 lb. 9 oz. Per packet, 1*s*.

LARGE ITALIAN RED TRIPOLI ONION.—Special Certificate, Royal Horticultural Society, December 21, 1869. Weight of bulbs exhibited, 2 lb. 11 oz., and 2 lb. 6 oz. Price 1*s*. per packet.

GIANT WHITE TRIPOLI ONION.—Specimens of this magnificent Onion were exhibited by us at the Royal Agricultural Society's Show at Oxford. Four of the heaviest roots turned the scale at 9 lb. 3 oz. Price 1*s*. per packet.

EARLY WHITE NAPLES ONION.—Special Certificate Royal Horticultural Society, June 8, 1870, for three specimens. Weight 3 lb. 7 oz. Price 1*s*. per packet.

Ordinary quality of the last four varieties, 1*s*. per oz.

All Seeds carriage free.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

WASPS, WASPS, WASPS.—The only effectual method of destroying these garden pests is by applying SCOTT'S WASP DESTROYER. Sold in Bottles at 1*s*. 6*d*. and 2*s*. 6*d*. each, with full directions for use.

JNO. SCOTT, The Seed Stores, Yeovil.

Wasps.—Wasp Destroyer.

B. R. DAVIS, SEEDSMAN, &c., Yeovil (Manager for the last 11 years of Mr. Scott's Seed Business), having been the Maker of the above celebrated article, which has gained such a wide-spread and well-deserved reputation, has carefully tested it, by repeated experiments, since it was first introduced, the result being the production of an article very different from the original, and decidedly more effectual, as it will not only prove certain destruction to Wasps, but also to Crickets, Cockroaches, and other Garden Pests, as well as Rats and Mice. It has been used with success for the destruction of Ants. Price 1*s*. 6*d*. and 2*s*. 6*d*. per bottle, with directions for use. A great saving is effected by taking the larger size.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s*., 3*s*., and 10*s*. 6*d*.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

THE "HORTICULTURAL VAPORISER," for the Application of Frettingham's Liquid Compound, or other Preparations, for the Destruction of Insects on Plants.

By means of this Apparatus, liquids may be diffused over Plants in a state of minute division, or fine spray, in sufficient quantity to thoroughly moisten them, without ruffling or disturbing the most delicate flower or foliage.

Besides these advantages, great saving of the liquid is effected. A tablespoonful applied by the Vaporiser is equal to a pint applied by means of a sponge, or the ordinary methods in use.

As a Disinfectant Distributor, for Sick Rooms, it is invaluable. The minuteness of the spray preventing a single particle of the liquid calling to the ground, thus the whole of the Disinfecting Liquid used comes into active operation at once, without fear of damaging the carpets or furniture. Price 3*s*. 6*d*. each.

May be obtained direct from PARR AND ATHERTON, Nottingham; or of their Agents throughout the country.

The Apparatus will be forwarded to any address in England on receipt of 4*s*. in stamps.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO., who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

New Seeds.

F. AND A. SMITH are now sending out new SEEDS of the undermentioned :—

ANTIRRHINUM, very choice	1s. and	0	6
AQUILEGIA, single, in 12 colours, separate		2	6
,, ,, mixed		1	0
,, double, 12 colours		2	6
,, ,, mixed		1	6
CALCEOLARIA, of the finest strain	2s. 6d. and	1	0
CINERARIA, of the finest strain	2s. 6d. and	1	0
CYCLAMEN, choice selection	2s. 6d. and	1	0
DELPHINIUM, from a fine collection, in 12 sorts		2	6
,, ,, mixed		1	0
HOLLYHOCK, finest mixed	2s. 6d. and	1	0
PANSY, fine show varieties	2s. 6d. and	1	0
,, Belgian or fancy	2s. 6d. and	1	0
PRIMULA, finest Red and White	2s. 6d. and	1	0
PETUNIA, from hybridised sorts	2s. 6d. and	1	0
POLYANTHUS, from selected strains	2s. 6d. and	1	0
STOCK, Intermediate, Purple, Scarlet, and White	1s. and	0	6
,, East Lothian, Purple, Scarlet, and White	1s. and	0	6
SWEET WILLIAM, extra Auricula-eyed	1s. and	0	6
WALLFLOWER, dwarf, blood-red, fine		0	6

The Nurseries, West Dulwich, S.E.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

JAMES CARTER AND CO.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

INTERNATIONAL PRIZE CALCEOLARIA.

	Per packet.—s.	d.
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d. ; smaller packets	1	6
,, finest Spotted, 2s. 6d. ; smaller packets	1	6
Saved with the greatest care, and from one of the largest collections in the kingdom.		
CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2	6
PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.		
PRIMULA, choicest Mixed Fringed, 2s. 6d. ; smaller packets	1	6
,, dark Carmine	2	6
,, new Scarlet	2	6
,, Rose Fringed	2	6
,, choicest White Fringed	2	6
,, choicest Fern-leaved Carmine	2	6
,, choicest Fern-leaved White	2	6

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free.

JAMES CARTER AND CO., The Royal Seedsmen, 237 and 238, High Holborn, London, W.C.

Suttons' Superb Hybridised Florist Flower Seeds.

SUTTONS' SUPERB CALCEOLARIA.

MESSRS. SUTTON AND SONS have received NEW SEED of their superb varieties of FLORISTS' FLOWERS, HYBRIDISED, and saved from the Finest Strains in Cultivation.

SUTTONS' Superb CALCEOLARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb CINERARIA, per packet, 2s. 6d., post free.
SUTTONS' Superb PRIMULA, per packet, 2s. 6d., post free.
Ordinary Varieties, per packet, 1s. 6d., post free.

From Mr. GEO. BOND, *Gr. to the* Earl of Powis, *Walcot Gardens.* May 23, 1871.—"The flowers of the Calceolaria and Cineraria seed I had of you are splendid."

From Mr. CHAS. WARCROFT, *Gr. to* A. R. Hudson, Esq., *Pershore.* April 19, 1871.—"My Cinerarias from your last year's seed are very good, nearly two feet across."

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

DOUBLE SCARLET GERANIUM VICTOR LEMOINE, the finest double grown for Bedding or Winter Flowering. 4s., 8s., and 12s. per dozen.

SURPLUS STOCK of SPRING FLOWERING and HERBACEOUS PLANTS.

		Per doz.—s.	d.
ANEMONE HONORINE JOBERT, fine white		3	0
ARTEMISIA STELLERIANA, white edging plant, hardy		3	0
AUBRIETIA PURPUREA VARIEGATA, good plants		3	0
,, GRANDIFLORA		3	0
CHEIRANTHUS ALPINA		3	0
DAISIES, in four varieties	per 100	10	0
DIANTHUS HIGH CLERE, finest of all		3	0
GEUM COCCINEA GRANDIFLORA		3	0
HESPERIS MATRONALIS ALBA FLORA PLENA, Double Rocket		3	0
Ditto, RUBRA PLENA, ditto		3	0
LATHYRUS GRANDIFLORUS		3	0
MYOSOTIS DISSITIFLORA, true	per 100	10	0
PHLOX FRONDOSA		3	0
VIOLA CLOTH of GOLD, finest yellow grown		4	0
,, IMPERIAL BLUE		6	0
,, CLIVEDEN, in four colours	per 100	16	0
,, THE CZAR, fine, sweet	per 100	12	0

The above are all good, strong planted. Price to Trade, per 100, on application.

E. AND J. PERKINS, Nurserymen, Leamington.

WHEELERS'

COCOA-NUT CABBAGE

WHEELERS' COCOA-NUT CABBAGE.

Wheelers' Cocoa-Nut Cabbage, per pkt., 1s.
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Wheelers' Imperial Cabbage, per oz., 8d.
Wheelers' Tom Thumb Lettuce, p. pkt., 1s.
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N.B.—Wherever this charming little Lettuce is grown it is a remarkable favourite. It may be obtained *true* from either Gloucester, or Mark Lane, London. We recommend everybody to try it who have not already done so.

All the above Post Free.

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BROCKWORTH PARK PEAR,

10s. 6d. each.

This magnificent Pear is a cross between Williams' Bon Chrétien, and Louise Bonne of Jersey. It considerably surpasses both its parents in SIZE, fine QUALITY, BEAUTY, and FLAVOUR, ripening about the same time, viz., September and October; grown against a wall, the fruit is remarkably large and handsome, the Pears weighing about 12 oz. (¾ of a lb. each). On the dinner-table well-ripened specimens are remarkably conspicuous for their size and beauty, and their flavour and juiciness are fully equal to their appearance.

A First-class Certificate was awarded to this handsome variety last autumn by the Royal Horticultural Society, and Trees were ordered by the principal Nurserymen in the kingdom; but the demand was so great that we were Sold out of all our Saleable Plants immediately they were offered. Coloured Plates, taken from Nature, may be had at *6d.* each.

We are now Booking Orders to be executed in November next; all Orders will be executed in exact rotation as received, as far as the Plants will go; but we expect to be Sold out long before the season is over.

The price of young PYRAMIDS is 10s. 6d. each. We have a few Plants trained for walls at 15s. The Pyramids will furnish plenty of buds next summer for budding Trees of other varieties established against walls. This fine variety is well worthy of a wall, and of a good aspect.

☞ **Orders are now being Booked.**

J. C. WHEELER & SON,
NURSERYMEN,
GLOUCESTER; and
59, MARK LANE, LONDON, E.C.

ORCHIDS.—Having recently received several large importations, we can offer Odontoglossum Alexandræ (Bluntii) at 21s. each; O. Pescatorei, 21s., or 12 plants, consisting of one or both varieties, for 10 guineas; Dendrobium Devonianum, 5s. to 21s. each; D. Falconeri, 21s. to 63s.; D. Wardianum, 63s. to 105s.; D. chrysotis, 21s. to 63s.; D. McCarthiæ, 42s. to 63s.; D. Cambridgeanum, 5s. to 21s.; D. heterocarpum, 5s. to 21s.; D. transparens, 5s. to 21s.; Pleione Wallichii, 3s. 6d. each, 30s. per dozen; Vanda cœrulea, 10s. 6d. to 42s.; Cypripedium hirsutissimum, 10s. 6d. to 42s.; Calanthe Veitchii, 10s. 6d. to 42s.; Cattleya Warneri, 21s.; Trichopilia suavis, 10s. 6d. to 21s.; Odontoglossum Insleayi, 10s. 6d. to 21s.; O. luteo-purpureum, 25s.; O. gloriosum, 25s.; O. grande, 10s. 6d.; O. citrosmum, 10s. 6d.

CATALOGUES on application.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester; Nurseries, Fairfield, Manchester.

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MR. WILLIAM BULL'S BULB CATALOGUE is now ready, and can be had on application. Everything priced.

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WM. PAUL'S ROSES are NOW in BLOOM, inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

ROYAL HORTICULTURAL SOCIETY,
SOUTH KENSINGTON, W.

SHOW of GLADIOLI, HOLLYHOCKS, &c., AUGUST 16.

AWARDS of the JUDGES.

CLASS 1.—24 GLADIOLI, cut spikes, distinct. (Open.)
(Prizes offered by His Grace the Duke of Buccleuch.)
1st, Messrs. Kelway & Son, The Nurseries, Langport, Somerset, £5.
2d, Mr. J. Douglas, Gr. to F. Whitbourne, Esq., Loxford Hall, Ilford, £3.
3d, Mr. G. Wheeler, Warminster Nurseries, Wilts, £2.
Extra, Rev. H. H. Dombrain, Westwell Vicarage, Ashford, Kent.

CLASS 2.—12 GLADIOLI, cut spikes, distinct. (Amateurs.)
1st, Mr. J. Douglas, £3.
2d, Mr. J. W. Welch, Gr. to J. Marshall, Esq., Belmont Park, Taunton, Somerset, £2.
3d, Rev. H. H. Dombrain, £1 10s.

CLASS 3.—6 GLADIOLI, cut spikes, distinct. (Amateurs.)
1st, Mr. J. Douglas, £1.
2d, Rev. H. H. Dombrain, 15s.
3d, Mr. F. Warren, Wellesley Road, Croydon, 10s.
Equal, J. W. Welch, 10s.

CLASS 4.—6 HOLLYHOCKS, cut spikes, distinct. (Open.)
1st, Mr. W. Chater, The Nurseries, Saffron Walden, Essex, £1.

CLASS 5.—24 HOLLYHOCKS, cut blooms, distinct. (Nurserymen.
1st, Mr. W. Chater, 15s.
2d, Messrs. Paul & Son, Old Nurseries, Cheshunt, Herts, 10s.
3d, Mr. G. Wheeler, 5s.

CLASS 6.—12 HOLLYHOCKS, cut blooms, distinct. (Amateurs.)
1st, Mr. R. Porter, Gr. to Mrs. Benham, Sion Lodge, Isleworth, 10s.

CLASS 7.—12 PHLOXES, cut, distinct. (Open.)
1st, Messrs. Downie, Laird & Laing, Stanstead Park Nursery, Forest Hill, £1.
2d, Messrs. Paul & Son, 15s.

CLASS 8.—APRICOTS, single dish. (Open.)
1st, Mr. G. Craddock, Gr. to Lord Willoughby de Broke, Compton Verney, Warwick, £1.
2d, Mr. J. Smith, Gr. to the Earl of Gainsborough, Exton Park, Oakham, Rutland, 15s.

PRIZES OFFERED by MESSRS. JAMES CARTER AND CO.
CLASS 9.—COLLECTION of VEGETABLES, to include Carter's Champion Runners, and three dishes of Peas (including Carter's Imperial Wonder, and Carter's Wonder of the World).

MISCELLANEOUS—EXTRA PRIZES.
Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith, W., for Branches of Trees and Shrubs.
Messrs. Kelway & Son, for Collection of Gladioli.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A.; E. J. LOWE, F.R.S.; and JAMES MCNAB, of Edinburgh.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden

The Gardeners' Chronicle

SATURDAY, AUGUST 19, 1871.

MEETING FOR THE ENSUING WEEK.

THURSDAY, August 24 { Royal Horticultural of Ireland (Autumn Exhibition).

◆

NO persons know better than gardeners how complex and puzzling are the EFFECTS of FROST on VEGETATION. Gardeners see and experience to their cost the most varied effects arising from apparently similar causes. It is in reference to this point that we have pointed out from time to time that the data afforded us by the meteorologist are not sufficient for the purposes of the practical cultivator. A thermometer freely exposed to nocturnal radiation is one thing, a living plant of complex organisation, and placed under similar circumstances, is another. The so-called laws influencing the one are not indeed inoperative in the case of the other, but they are so much modified by other circumstances which the meteorologist, *pur et simple*, can hardly be expected to unravel, that they have only a limited application to the facts of vegetable life. To thoroughly comprehend the injuries inflicted by low temperatures on plants, we require first of all to know what is the nature of the injury, and then how those injurious effects are modified in certain cases and from what causes. It used formerly to be supposed that the mischief was done by the freezing of the juices of the plant and the tearing asunder of the tissues consequent on the expansion of the watery contents of the tissues as they froze. Recent more exact observations of PRILLIEUX and MER have, however, shown that there is very rarely any rupture of tissue; that ice is comparatively seldom formed in the cells, but rather between them; and that, when any rupture does occur, it takes place in these intercellular spaces, while the cells themselves are intact. Moreover, in most cases the young tissues are destroyed from the operation of the cold, without the formation of any ice at all in the tissues of the plant. To what, then, are we to attribute the injuries we meet with?

The answer which M. MER gives to this question is—drought; that is to say, loss of water and consequent drying of the tissues. The cold contracts the cells, the contraction, which is manifest even to the naked eye, squeezes the liquid contents through the cell-walls into the intercellular passages, there perchance (though rarely) to freeze. Now, then, for the modifying circumstances. In the first line we must put nocturnal radiation. If this go on freely, as it will do if protection be not afforded artificially or naturally, we know to our cost what the consequences will be upon tender stuff: the plant loses its heat, loses its water, shrivels, dies. The duration of the cold must also be taken into consideration. If it last but a short time, comparatively little effect will be produced, and on the resumption of more favourable conditions the plant may recover itself. Another important circumstance, modifying injuriously the action of low temperatures on plants, is the presence of a thin layer of water or dew on the surface of the leaves. When this happens cold acts much more injuriously than when the leaves are dry on the surface. Thus may be explained the greater injuries received by plants in valleys and wet places as contrasted with those on the hill-sides. This also may serve, in part, to explain the greater severity of the action of the frost near the ground than at some few feet above it, in cases where the branches are not protected in some way or another. The air near the soil in valleys is laden with moist vapour which condenses in the form of dew on the plants, and loses much of its heat in the process. Plants in such a situation, then, are covered during the night with drops of water; they are environed by a cold stagnant atmosphere, and they are at the same time exposed for a longer period to nightly cooling by radiation than their fellows on the hill tops. Still another and most potent factor in the injuries experienced by plants in consequence of low temperatures, is the exposure to the sun. We have had this spring but too many examples of the effect of a hot sun following on a cold night. Actual frost is not necessary to produce these results. It has been found by experiment that plants placed in a cool atmosphere some degrees above freezing, and then exposed to bright sunlight, perished as if frost-bitten. Clearly, ice in the tissues could not here have been the cause of the injury. Equally obvious is it that such exposure to heat must favour that rapid desiccation on which the ill effects of low temperatures are shown to depend. In connection with this point we may allude to a circumstance mentioned by M. MER, and to which, no doubt, many of our readers could furnish a parallel. In May, 1869, after a hot day, a nursery quarter, stocked with Oaks and Chestnuts, was injured in the course of the night by frost, except on the north-east and south-east aspects. As the nursery was sheltered on all sides by a wood, the exemption of the two portions in question could only be accounted for by the circumstance that the portions in question were not exposed to the sun till after the middle of the morning, so that the water squeezed out by the cold had time to be reabsorbed before the sun's power was felt, and in consequence no desiccation took place. Other causes, which co-operate with, and modify the effects of cold on plants, are the nature of the soil in which they grow, and the consequent variations in humidity, rapidity of heating, slowness of cooling, and the like.

These are some of the circumstances which render the data as furnished us by the meteorologist less directly serviceable than might at first be supposed would be the case.

A CURE for the POTATO DISEASE seems hopeless. Our correspondent "A. D." wishes to relegate the matter once more to scientific authorities. There can be no objection to this, but we fear the results will be one more discomfiture to science. Such maladies seem to elude the grasp of the nicest investigations. The nature of the disease is patent enough, but its cause is still shrouded in mystery or hidden in a maze of speculation. For years science has puzzled over it and practice has striven to explain and vanquish it, and the result is that we seem as helpless and ignorant as ever. No one can certainly say whence it comes, nor whither it goes. Does it fall down a crushing blight from Heaven, or is the Potato shocked, wounded, or bruised by the discharge of an electric battery from the lower regions of the earth. It seems to us as if the tops were hit first, but no sooner does the well-known mark appear on leaf and stem than the seed of the disease seems sown in the tubers as well; and, singularly enough, the result on each is more like a bruise than aught else, as if some force had violently hit or crushed a portion of it, and left the virus of the bruise to spread death and decomposition through the whole of the plant and its produce.

Doubtless if the British Association, the Royal Society, or the Royal Horticultural and Agricultural Societies, or any of the scientific committees and men of science throughout the world, were to set to work to discover the cause and cure of the Potato disease, it would be an object well worthy of their best energies, and if success rewarded their efforts it would be the means of immensely raising the character and the estimate formed of the value of science to the everyday affairs of life. And while it might be worth the while of any and all such institutions to re-investigate the matter, we are of opinion that such cultivators as "A. D.," Mr. FENN, and others would render higher service to Potato culture by directing their energies to the organisation and multiplication of good-keeping early varieties. What are most needed are hardy sorts, that will endure the cold of spring, tuber and grow rapidly, and keep well after they are lifted and stored. It is seldom that the Potato disease appears till July; and it surely might be possible to select and raise races of Potatos that could be harvested before the end of that month, and that would keep good for seven or eight months afterwards.

Thus might the main Potato crops be lifted out of danger before the disease appeared. Probably by the adoption of this course the disease might die out, and we might again recur to later sorts if necessary. But if early varieties could be kept almost as well as later sorts, there would be no advantage, but the reverse, in growing the latter.

It would be an immense gain to the country could the Potato grounds be cleared in July or early in August, since the whole of it could be stocked with winter greens, Turnips, Cabbages, Leeks, spring Onions, Broccoli, Lettuces, Endive, Spinach, &c. Two perfect crops would be grown instead of one, or at least a sort of one and a half, which is about all that the most expert croppers can get off the late Potato grounds.

But, of course, the greatest gain would be the salvation of the Potato crop. None but the poor know what the partial and entire loss of this crop is—what pinching hunger, what suffering and want to women and children, it brings into tens of thousands of households. To such, an early crop would bring double food—the Potato safe, and sauce grown in plenty on the same grounds to eat with it. Let all early varieties be instantly harvested, and kept in narrow pits in the earth. Lest the disease should be in the air, pit them; that is, cover with earth, basketful by basketful, as they are taken up. Experience seems to prove that, if not diseased when harvested, they do not contract it afterwards; but upon this point, as also concerning the best keeping early varieties, we invite the opinions of our correspondents. The matter is one of the greatest moment, the object being to remove a most important article of food out of the way of this most virulent disease, by having it safely stored before it arrives. Such a mode of prevention would be better than cure; and, besides, the cure really seems hopeless, while this appears quite possible.

—— UNDER the name of ÆCHMEA MARIÆ REGINA, has appeared at our flower shows during the present summer one of the most beautiful Bromeliaceous plants ever introduced to our gardens. It was first exhibited at the Regent's Park early in July, by its introducer, Mr. WENDLAND, Inspector of the Royal Gardens, Hanover, and received a First-class Certificate, and it was again exhibited a few days later at the Royal Horticultural Society's show at South Kensington, where it also received a First-class Certificate, and, in addition, a silver Medal for its superior excellence and extreme beauty. We are informed that the flowering specimen may still be seen in full beauty at the establishment of Mr. B. S. WILLIAMS, at Holloway, who has arranged with Mr. WENDLAND to receive the entire stock. This handsome plant is of somewhat robust habit. The leaves are 18 inches in length, arranged so as to form a beautiful vase-like plant. The flower-spike rises from the centre, and attains a height of about 2 feet; half the length is clothed with large boat-shaped bracts, some 4 inches long, of an intensely rich rose-pink; the flowers, which are tipped with blue and change to salmon-colour with age, are arranged compactly upon the upper portion of the spike, and materially add to the beauty of this extremely grand plant. The bracts are very persistent, retaining their rich colour in full perfection for several months. This superb plant, when known, cannot but become a universal favourite, and no doubt Mr. WILLIAMS will soon be able to distribute this treasure to the lovers of rich and rare plants, in whose gardens it is sure to find a welcome.

—— We are informed that a meeting of the FLORAL and FRUIT COMMITTEES of the Royal Horticultural Society will be held on Tuesday next at CHISWICK, for the purpose of judging the florists' flowers grown in that establishment for trial, and to inspect the recent alterations in the garden. The Council has, we also learn, invited the exhibitors at the Society's shows to visit the garden on the same day.

—— It is often a matter of surprise, and we may say disgust, to see the wretched ACCOMMODATION provided for the GARDENER and other retainers in some of the establishments of this country. We see a comfortable, often splendid, mansion for the proprietor, while his servants are lodged in places not so good as the stables, while the "young men" are often lodged in bothies, worse by far than some pigstyes. There has been a manifest improvement in this matter of late years, and it may be some consolation to those who are still miserably housed to know that in certain Government establishments matters are no better. The last paragraph of the annual report of the Calcutta Botanic Garden says: "The Curator of the garden is still condemned to live in the house, which has been officially reported unfit for human habitation."

—— A fresh supply of the APPLE-LIKE BODIES on RHODODENDRON FERRUGINEUM has been received from Mr. FERGUSON, and also from Sir W. C. TREVELYAN, who, like ourselves, can find no trace of insect larvæ. It is quite certain that they are not galls, but whether aphides have anything to do with these productions we have no evidence to show. From both quarters we have them now both on the leaves and terminal buds, and in every case we find the surface covered with a white bloom, which either consists of short asci containing sporidia, or delicate short threads, with oblong conidia. We have, therefore, no hesitation in adhering to our first opinion, that they belong to the same category as the Peach blister. We have had no opportunity of examining perfectly fresh specimens; such delicate moulds do not bear carriage well, besides being liable to alteration from being confined for one or two days in a closed box. Every one of Mr. FERGUSON'S specimens was examined, and the result was as indicated above. *M. J. B.*

—— From the annual report of the Royal Society of Arts and Sciences of Mauritius for 1870, we learn that the fishermen of that island occasionally suffer severely from the wounds inflicted by a fish locally known as the Laffe, the Synanchia verrucosa of naturalists. It appears that at the base of the dorsal fin is a reservoir of whitish liquid, which is expelled with force when the fish is irritated by contact or pressure, and which, entering the wound caused by the fin, gives rise to excruciating pain, which is relieved by the application of the pounded (leaves?) of a Composite plant, Microrhynchus sarmentosus.

—— Acting on the principle that we derive consolation in our own troubles from the misfortunes of other people, we may call attention to the remarkable letter of M. NAUDIN in another column, and in which he refers to the extreme FLUCTUATIONS in TEMPERATURE at Collioure, in the Eastern Pyrenees. We may infer from this that our own climate is not so much worse than that of other people, and that, as we have often pointed out, the thermometer *per se* is not a fair index of the effect of low temperature on plants. We may incidentally mention that M. NAUDIN has established an experimental garden at Collioure, and those who have it in their power to send seeds for experiment as to acclimatation, or economic uses, cannot do better than send some to this accomplished botanist and conscientious observer.

—— At the request of Mr. BARR the following varieties of ONION were TRIED at SIBBERTOFT, which is 600 feet above the level of the sea, as winter sown, transplanted, and spring sown. The soil is the stiff clay of the upper lias:—

1. *Late White Italian Tripoli Onion.*—It wintered badly, but enough plants were left both to transplant and stand. The transplanted individuals produced some very large Onions, of which specimens were taken to South

Kensington on Wednesday last; those which were not removed stood well, producing some good bulbs, but not so fine as the transplanted ones.

2. *Early White Italian Tripoli.*—Wintered badly, but afterwards stood well. The transplanted individuals bulbed well, were decidedly much earlier, but did not produce such large bulbs as No. 1.

3. *Red Italian Tripoli.*—Wintered badly, but afterwards stood well, and when transplanted produced good fair-sized bulbs.

4. *Giant Globe Madeira.*—Wintered well, and produced good bulbs, whether standing or transplanted.

5. *Red Sallon.*—Wintered admirably, and stood well, producing, whether transplanted or otherwise, good bulbs.

6. *Madeira Santa Anna.*—Wintered well, and produced good bulbs, whether transplanted or otherwise.

7. *Giant Rocco.*—Wintered well, and produced good sound bulbs, but did not succeed when transplanted.

Though the bulbs were in general good, they would doubtless have been much larger had not the plants been attacked at a critical moment by Peronospora destructor, a mould belonging to the same genus with the Potato mould. The result of spring sowing has not been satisfactory, the weather having been unpropitious. Nos. 1 and 2 did not stand the early frosts well, but the latter is decidedly earlier in every case than No. 1, a circumstance about which some doubt was expressed last year at South Kensington *M. J. B.*

—— Referring, in the House of Commons on Thursday, the 10th inst., to the NEW POSTAL TARIFF, Mr. MONSELL explained, in reply to Mr. GRAVES, that the delay in bringing the new postal tariff into effect was owing to the magnitude of the alterations required. The large additional work thrown on the Post Office by the proposed changes had rendered necessary an alteration within the Post Office itself, which was being made by the Office of Works with great diligence, but it could not be completed till the second week of September. No less than a thousand officers of the Post Office would have their duties altered by the introduction of the new system, and the apertures of the various letter-boxes in the Post Offices would have to be enlarged. October 5 had been fixed for the commencement of the new system, but it was not without misgivings that so early a date had been named. Of course we shall wait with becoming patience, and the more readily as the Postmaster-General has shown himself by no means averse to make certain necessary changes. The restrictions as to the sample post have frequently been productive of some injustice, and much inconvenience and annoyance to ourselves in the conduct of this journal.

—— The MAXIMUM TEMPERATURES of the AIR in England during the week ending August 12, ranged from 88°.7 at Leicester, to 80° at Newcastle-on-Tyne, with a mean for all stations of 84°.9. The MINIMUM TEMPERATURES in the same country ranged from 54° at Newcastle-on-Tyne to 47° at Hull, with a mean for all of 51°.3. The highest mean temperature was 68°.3 at Blackheath, and the lowest 64°.3 at Hull. The mean for the whole country was 66°.4. At one station only in England rain fell during the week, viz., Birmingham, and the amount recorded there was but 0.01 inch, thus being in striking contrast to the previous wet period. In Scotland the maximum temperatures ranged from 80° at Leith and Perth to 71°.5 at Greenock, with a mean for all of 76°.6. The minimum temperatures ranged from 57° at Greenock to 49° at Edinburgh, the mean for all stations being 52°.3. The highest mean temperature in Scotland was 65°.6 at Perth, and the lowest 62°.2 at Greenock. RAIN fell at Aberdeen and Greenock only, the amount recorded at those places being 0.10 inch and 0.12 inch respectively. (See Mr. GLAISHER'S Tables, p. 1075.)

—— A fact worthy of notice, relating to the FERTILISATION of FLOWERS, is recorded in the current number of the "Botanical Magazine." A very pretty new Abutilon, raised by Mr. DARWIN, from Brazilian seeds, is figured in the periodical in question, under the name of Abutilon Darwinii; and it is stated that, during the early part of the flowering season, it is absolutely sterile with its own pollen, but fertile with the pollen of any other individual of the same species, while later in the season it is capable of self-fertilisation.

—— The history of a species of Vicia, published by Mr. WATSON in the "Natural History of the Azores," under the name of VICIA DENNISIANA, is both interesting and remarkable. "Chance only appears to have saved it from becoming an extinct species almost immediately after it became known at all." It was found by Mr. T. C. HUNT on the mountains at the east end of the island of San Miguel, growing on damp, earthy precipices; but in one spot only, from which it has since disappeared through a landslip. Mr. HUNT unsuccessfully sought for the plant elsewhere in the same neighbourhood, and no other collector has found it in any of the isles. Mr. WATSON preserves the plant in his garden, where it flowers occasionally; but severity of weather and late frosts have once or twice proved nearly fatal to the small stock in hand. As far as we know, therefore, the species, but for human intervention, would have become extinct.

—— With reference to the CULTURE of COTTON in INDIA, the Acting Superintendent of the Botanic Garden, Calcutta, thus writes in his annual report for 1870-71:—

"It is plain that the results are discouraging, and very different from the expectations formed, and the hopes held out last year. It must be understood that no difficulties were met with in growing fine plants of Cotton. The point where the experiments failed was in the securing the crop. Just as the plants were coming into fine bearing, a rain would come, split all the ripening bolls, and throw the plants anew into vigorous vegetative growth. By the time these were again covered with young bolls, another fall of rain would occur. This is the more disheartening, because during last season the hot weather was more free from showers than is usually the case at Calcutta. The inference would appear to be that the climate of Calcutta is too moist for these perennial Cottons, and that the only chance of securing a crop is with the more rapidly-maturing annual Indian varieties. Perhaps a climate and elevation somewhere about Chota Nagpore remain to be discovered, intermediate between the dry tableland of Berar and the moist delta, which may prove a locality where these high-class exotic Cottons can be cultivated at an economic profit. The experience of this year, moreover, has been very unfavourable to the beautiful hybrid seedling Cottons of Major TREVOR CLARK. These hybrids do not appear to maintain their characters under cultivation. I suggested formerly that this might be due to their being cross-fertilised in our mixed beds; but Mr. SCOTT is of opinion, from his observation of these hybrids, that with no degree of care in their culture can they be preserved as distinct varieties."

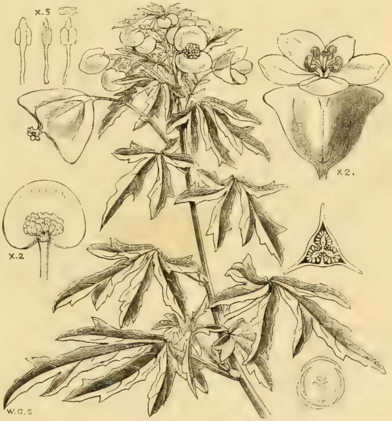

FIG. 243.—BEGONIA RICHARDSIANA.

—— In a pamphlet written by Mr. W. H. TREEN, and forwarded us from Melbourne, we find it asserted that the MAJETIN APPLE is not subject to the attacks of the AMERICAN BLIGHT, on which account it is recommended as a stock for grafting. It is not pretended that the stock confers on the scion any power of resisting the attack of this pest, but simply that the "roots of Apple trees grafted on the Majetin stock will always be entirely free from blight; in fact, all below the graft will be clean." The fact was first noticed in GEORGE LINDLEY'S "Guide to the Orchard," but so far as we know, Messrs. LANG & CO., nurserymen, of Melbourne and Ballarat, were the first to turn the fact to good account. These gentlemen appear to have been experimenting on the subject for some years, and in the pamphlet before us they give the following list of Apples nearly blight-proof:—Cardinal, Constantinople, Cornish Gilliflower, Devonshire Quarrenden, Duchess of Oldenburg, Grand Duke Constantine, Gravenstein, Hawley, Irish Peach, London Pippin, Maiden's Blush, Northern Spy, Triomphe de Luxemburg. Other lists are given of Apples only slightly affected, and of others severely infested by the aphis. The result of all these trials is that the Winter Majetin, and perhaps the Northern Spy, are reported on as blight-proof. Assuming the facts as recorded in Mr. TREEN'S pamphlet to be correct, we should be glad to have the experience of our own cultivators upon a point of so much moment. Mr. TREEN, it further appears, anxious to ascertain to what causes this exemption of the Majetin Apple was due, submitted a specimen and one of the Crab to the Government analyst at Melbourne for analysis. The result of the analysis, as given by Mr. JOHNSON, "show that the Majetin Apple tree, which is free from blight, is a much larger consumer of lime, and it is most probably to the presence of this substance that such immunity from blight is due. The Crab, on the contrary, seems to have absorbed a much greater quantity of clayey matters, which have not been able to protect from the attack of these insects." The ash of the Majetin, according to the analysis given, contains over 50 per cent. of lime, while the Crab exhibits not quite 23 per cent. These results strike us with some astonishment. Of course we do not in the least degree impute bad faith to any one, but before we can place implicit credence in them we should like to see the experiments very carefully repeated with Apples of various kinds grown on different soils. If from chemical analyses, such as those just alluded to, and carried out on a scale large enough to preclude or compensate accidental errors, similar results are obtained, the boon to fruit growers will be enormous—greater even, we will venture to say, than the discovery of a blight-proof Apple. We earnestly commend the subject to the notice of fruit cultivators, and of those chemists interested in horticultural pursuits.

—— A remark in the Report of the BOTANIC GARDEN, CALCUTTA, for 1870—71, which is now before us, adds confirmation to the oft expressed opinion, that, in order to be really profitable, a plant, no matter what its valuable properties, must be cultivated. Fibre must be procured by the ton to be remunerative. A wild Nettle may appear to be abundant in the Sikkim jungles, yet it is found practically a serious matter to get in 60 lb. of dry fibre. Any wild plant can only be economically valuable if it can be grown at small cost as a dense crop. Excellence in fibre, moreover, we are told, is not the most necessary condition that a fibrous plant has to satisfy in order to recommend it as likely to be economically valuable. The principal merit of Jute as a valuable fibre is that it can be easily prepared. The Nettle fibres generally will not endure lengthened maceration in water to get rid of the cellular tissue. Some 14 species of the Nettle family have been selected for experiment, all of which are common in lower Sikkim. Of these Villebrunnea appendiculata, a small tree, which may be grown as Osiers are here, seems at present the most promising, from the excellence of its fibre and the facility of its preparation. Among these fibre-producing Nettles is mentioned Laportea crenulata, the exudations from which are so virulent that it would hardly be possible to induce any labourers to work with it. Lindley, in his "Vegetable Kingdom," cites the virulent effects of this plant as recorded by LESCHENAULT DE LA TOUR, and in the report before us we are told that the head gardener at Rungbee protected himself from being directly stung while stripping the fibre, but was seized nevertheless with a violent swelling of the limbs and extremities, which lasted 24 hours with great severity.

New Garden Plants.

BEGONIA RICHARDSIANA, *sp. n.*

Tuberous, glabrous; stem dwarf, erect, fleshy, with slender branches; leaves obliquely ovate acuminate, bipartite, 5-lobed, the lobes unequal, dentate, one of them elongated, the lateral lobes shorter, teeth few, triangular, the acute sinus projected upwards, discoloured, and setose; stipules carinate oblong-acute setoso-mucronate; cymes axillary few flowered, bracts broadly ovate caducous; male flowers with two rotundate-reniform white sepals; petals none; female fl. 5-lobed, the lobes obovate, unequal, the inner ones smaller, capsule 3-winged, the wings equal, terminating in an obtuse angle above. Hab. Natal.

An elegant little greenhouse plant (fig. 243), with the tuberous fleshy stems and general habit of B. Dregei, but differing altogether in its deeply-cleft leaves, in which respect it would appear to approach closely the B. suffruticosa of Meissner, but from which, according to the description, it differs in several points—notably in the absence of petals. Moreover, the singular puckering of the acute sinus formed by the few coarse teeth of the leaves, and the transparent bristles developed from these points, are not alluded to in the very careful description of the vegetative organs given in De Candolle's "Prodromus" (xv. 385). The plant is dwarf and densely branched. The stem is fleshy, not at all zigzag as described in suffruticosa, stout below, slender above, of a deep wine-red colour, as are its numerous slender ramifications. The leaves have red petioles, upwards of an inch in length, and a limb 2 inches long, and nearly 1½ inch broad, divided in the line of the petiole into two portions, of which one is again separated into two lobes, the inner of which is much elongated, and the other is cut into three unequal shorter lobes; each lobe has a distinct costa, prominent below, and a less distinct vein parallel with the margin. The persistent stipules are whitish, oblong, keeled towards the point, terminating in a short bristle. The flowers grow in small cymes from the leaf axils near the ends of the branchlets, and are white, the males with two broad or roundish reniform sepals, and no petals, the females with five unequal obovate divisions, and a three-winged ovary,—both forms being developed from the axils of broad, ovate, concave, almost cordiform bracts.

The elegantly cut leaves of this pretty novelty, and its close dwarf habit will render it an acquisition among the smaller decorative plants for the greenhouse. It is a native of Natal, whence it was received by James Richards, Esq., of the Royal Horticultural Society, after whom it is named. We believe the stock is in the hands of the Messrs. Veitch & Sons. *T. M.*

BRITISH ASSOCIATION.

THE meeting of the British Association for 1871, in the capital of Scotland, is an event long to be remembered by those who had the good fortune to be present thereat. This cannot be accounted for by reason of any demonstrative welcome, in which previous meetings have been eclipsed, because it is many years since so little of the outward and visible signs of display have been exhibited. Bell-ringing and "bunting" are not Scottish institutions, and those whose memories reverted to Exeter and Norwich, as gay with flags, and merry with the clangour of bells, found a wonderful contrast in the conspicuous absence of all such accessories in Edinburgh. Neither can it have been from the surpassing interest of the subjects discussed in the sections, since "old members" who have presented themselves annually for many years past, declared the sections to have been "slow." Nor was any particular excitement derived from the President's address, which by infusion of its enthusiasm might have carried its influence through a whole week. Admirable as it might have been in some respects, it failed to produce any excitement, and the only feature remembered by many was the novel expedient of tracing the introduction of vegetation to this earth of ours through the medium of "moss-grown fragments from the ruins of another world." Yet the British Association meeting in "Auld Reekie" has been a memorable event. After so long and dreary a prelude of rain and cloud, fine weather came just when it was wanted for the success of the meeting, and, perhaps more than anything else, contributed to the good humour of everybody, and consequently to the satisfaction of visitors. The fine old city itself, and its manifold associations, contributed their share also to the common result, and despite all drawbacks, and the absence of some artificial stimulus, the general results have left their mark behind.

The biologist, leaving the presidential address as dealing chiefly with subjects beyond his sphere, found much compensation in the address of the President of the Biological section. Professor Allan Thomson, after rehearsing the history of the section, its titles and divisions in the past and in the present, passed on to a consideration of the condition of biological research, and the influence which the British Association had exerted beneficially thereon. Out of £34,500 contributed by the Association to the promotion of scientific research, about £2800 had been devoted to biological purposes. It may be remarked in passing that the absorption of so large an annual grant for one purpose as that hitherto required for the Kew observatory, is likely to be obviated in future, and there is a hope that no cause of complaint will hereafter be given to those who have thought, and not altogether without reason, that one branch of science had the lion's share. Adverting to the wide range of biological science, and the enormous extent of knowledge and research in its various departments, he indicated the danger of confined views on the part of those whose attention is too exclusively directed to the details of one department, or a subdivision of it.

"It is incumbent," he said, "on all those who are desirous of promoting the advance of biological knowledge, to combat the confined views which are apt to be engendered by the too great restriction of study to one department. However much subdivision of labour may now be necessary in the origin, investigation, and elaboration of new facts in our science (and the necessity for such subdivision will necessarily increase as knowledge extends), there must be secured at first, by a wider study of the general principles and some of the details of collateral branches of knowledge, that power of justly comparing and correlating facts which will mature the judgment and exclude partial views. To refer only to one bright example, I may say that it can scarcely be doubted that it is the unequalled variety and extent of knowledge, combined with the faculty of bringing the most varied facts together in new combination, which has enabled Dr. Darwin (whatever may be thought otherwise of his system) to give the greatest impulse which has been felt in our own times to the progress of biological views and thought; and it is most satisfactory to observe the effect which this influence is already producing on the scientific mind of this country in opposing the tendency perceptible in recent times to the too restricted study of special departments of natural history. I need scarcely remind you that for the proper investigation and judgment of problems in physiology, a full knowledge of anatomy in general, and much of comparative anatomy, of histology and embryology, of organic chemistry and of physics, is indispensable as a preliminary to all successful physiological observation and experiment. The anatomist, again, who would profess to describe rationally and correctly the structure of the human body, must have acquired a knowledge of the principles of morphology derived from the study of comparative anatomy and development, and he must have mastered the intricacies of histological research. The comparative anatomist must be an accomplished embryologist in the whole range of the animal kingdom, or in any single division of it which he professes to cultivate. The zoologist and the botanist must equally found their descriptions and systematic distinctions on morphological, histological, and embryological data. And thus the whole of these departments of biological science are so interwoven and united that the scientific investigation of no one can now be regarded as altogether separate from that of the others. It has been the work of the last 40 years to bring that intimate connection of the biological sciences more and more fully into prominent view, and to infuse its spirit into all scientific investigation."

After more specially alluding to histology and embryology, and the immense progress made in the former since the improvement of the microscope, the Professor passed on to the evolution of species, with the following remarks:—

"On the subjects of zoological and botanical classification and anthropology, it would be out of place for me now to make any observations at length. I will only remark, in regard to the first, that the period now under review has witnessed a very great modification in the aspect which the affinities of the bodies belonging to these two great kingdoms of Nature bear to each other, and the principles on which in each groups of bodies are associated together in classification; for, in the first place, the older view has been abandoned that the complication of structure rises in a continually increasing and continuous gradation from one kingdom to the other, or extends in one line from one group to another in either of the kingdoms separately. Evolution into a gradually increasing complexity of structure and function no doubt exists in both, so that types of formation must be acknowledged to pervade, accompanied by typical resemblance of the plan of formation of a most interesting nature; but it has become more and more apparent in the progress of morphological research that the different groups form rather circles, which touch one another at certain points of greatest resemblance, rather than one continuous line, or even a number of lines, which partially pass each other. Certain simpler bodies of the two kingdoms of Nature thus exhibit the increasing resemblance to each other, until at last the differences between them wholly disappear, and we reach a point of contact at which the properties become almost indistinguishable, as in the remarkable Protista of Haeckel and others. I fully agree, however, with the view stated by Professor Wyville Thomson in his introductory lecture, that it is not necessary on this account to recognise with Haeckel a third intermediate kingdom of Nature. Each kingdom presents, as it were, a radiating expansion into groups for itself, so that the relations of the two kingdoms might be represented by the divergence of lines spreading in two different directions from a common point. Recent observations on the chorda dorsalis of some Ascidians (or supposed notochord) tend to revive the discussion at one time prevalent, but long in abeyance, as to the possibility of tracing a homology between the vertebrate and invertebrate animals; and should this correspondence be confirmed and extended, it may be expected to modify greatly our present views of zoological affinities and classification, and be an additional proof of the importance of minute and embryological research in such determinations. The recognition of homological resemblance of animals, to which in this country the researches of Owen and Huxley have contributed so largely, form one of the most interesting subjects of contemplation in the study of comparative anatomy and zoology in our time; but I must refrain from touching on so seductive and difficult a subject."

The teaching of natural science in schools, and spiritualism, formed the remaining topics of the address, which was received with loud demonstrations of satisfaction.

The botanical papers in the Department of Zoology and Botany were, as a whole, unimportant. Professor Dyer, an abstract of whose paper on the so-called mimicry of plants has been previously given, called attention to plants belonging to different natural orders, and found in widely separated countries, in which the habit and foliage were strikingly alike. He attributed the cause to the action of similar chemical agents; but the chief object of the paper professed to be a protest against using the term "mimicry" in such cases, and the application of that of "pseudomorphs" to such divergences from the normal form in the order or family to which they belong.

Dr. Murie afterwards made a communication on the development of Fungi within the thorax of living birds. He referred to the circumstance of lowly-organised vegetable structures being not unfrequently found growing in animals and man, both externally and internally. For the most part these affected the skin, giving rise to several cutaneous diseases. They also flourished in the alimentary canal; and, among others, one peculiar form (Sarcina) had been described by the late Professor Goodsir from the human stomach. In nearly though not all instances where vegetable organisms flourished within the living body, it was in organs where a certain amount of air had free access. It was more difficult, though, to account for the cases where vegetable parasites arose in, so to speak, closed cavities. The instances which he (Dr. Murie) brought forward as coming under his own observation were three in number—viz., a Fungus-like growth in the abdomino-pleural membrane of a kittiwake gull, a great white-crested cockatoo, and a rough-legged buzzard. After a general description of the specimens in question, the author referred to them as in some ways bearing upon those doctrines whereby living organisms were supposed to originate out of the tissues themselves.

The organisms, as figured on the diagrams exhibited, consisted of a pale greenish patch, made up of delicate threads intermixed with elliptical spore-like bodies, somewhat like a sporotrichum. How the spores, if such they were, were attached was not shown. Dr. Perceval Wright thought that the organism was a Protococcus, and Mr. M. C. Cooke, being appealed to by the President, declared the drawing itself insufficient to determine whether the substance was algoid or fungoid, although evidently it was some low form of vegetable life. Dr. Bastian, believing it to be of very secondary importance what the organisms were, proceeded amongst Bacteria, and other infinitely minute bodies, to develope spontaneous generation.

Dr. Calvert read two papers on an allied subject, "On the Action of Heat on Germ Life," and "On Protoplasmic Life." A number of experiments were described which had been made by the author for the purpose of determining the effect of heat on living organisms. He took a solution of white of egg, and also of gelatine, and of sugar and hay full of microscopic life. These solutions were put into little tubes and submitted to temperatures of 100°, 200°, 300°, 400°, and 500° Fahr. It was found that at 100° the living organisms were not at all affected; at 200° they were not affected; at 300° they were still alive—three or four vibrios in each field; and it was only at 400° that life disappeared. The same solutions were then put on some single slips of glass, dried, some in the air and some at a temperature of 212°, and introduced into tubes. As before, it was only at 400° that life disappeared. By another experiment it appeared that in a fluid where life had been destroyed by heating to 400°, no life was subsequently developed, whereas in one which had been heated to some of the lower temperatures, such development took place. If, said Dr. Calvert, there was such a thing as spontaneous generation, he could not understand why there should not have been life reproduced in his tubes which had been heated to 400°, whilst a little life was reproduced in one heated to 300°, and more in one heated to 200°. It appeared to him that medical men would do well to consider the temperature at which life was destroyed. Admitting that the contagious disease was due to the introduction into the system of a germ of some kind, either vegetable or animal, so far as his experiments went, a temperature of 400° was necessary to destroy such germs on clothing to which they might have become attached.

Mr. John Sadler read a paper on the species of Grimmia (including Schistidium) as represented in the neighbourhood of Edinburgh.

Mr. A. G. More exhibited living plants of Spiranthes gemmipara, from Ireland, where he stated it to be rather plentiful on the one station where it is found. Professor Babington remarked on the interest of this plant, and the probability that only three botanists, himself, Mr. More, and another, had seen this plant in a living and growing condition. Dr. Balfour promised to take charge of the plants with a view to their cultivation, if possible, in the Botanic Gardens.

Mr. More made some observations upon Eriophorum alpinum, which was said to be an Irish and Scotch plant; he had traced the Irish record to be a false one, and the Scotch one was so doubtful that he did not hesitate to express the opinion that it was not a British plant at all. Professor Balfour narrated the circumstances connected with the collection of the single Scotch specimen in his herbarium, when he was a young man, of its being confounded with other plants for some years, and ultimately rescued from oblivion. It seemed to be the opinion of botanists present that it is hardly safe to consider it a British plant at all, without further confirmation.

A few other botanical papers were read in the section, but none of them of special interest—J. Birkbeck Nevins "On the Changes which occur in Plants during the Ripening of Seeds;" Professor W. T. Dyer, "On the Minute Anatomy of the Stem of the Screw Pine;" Neil Stewart, "Observations on the Intimate Structure of Spiral Ducts in Plants and their Relationship to the Flower;" Prof. Balfour, "On the Cultivation of Ipecacuanha in the Edinburgh Botanic Garden for transmission to India." They had two varieties of the plant in the Botanical Garden, one of which had been cultivated there for 40 years, and the other had just been procured from South America. It was hoped from the union of these two varieties to get a perfect seed, as hitherto they had not been able to get the perfect seed of the plant, and its propagation was accordingly but slow. Mr. McNab had discovered that by cutting the root numerous new shoots could be obtained, and the plant so propagated much more easily and plentifully. A brief discussion followed, in which Professor Christison, Dr. Cleghorn, and others joined, during which it was suggested that as so many difficulties beset the cultivation and introduction of this plant, that it might have been much better first to have carefully experimented with native Indian plants, such as Tylophora asthmatica and some others, both in India and in this country, as it was by no means certain that a good substitute for Ipecacuanha could not be found in a native plant, without the trouble and risk of naturalising a foreign one.

Dr. Robert Brown also read two short papers, one on "The Flora of Greenland," and the other on "The Geographical Distribution of the Flora of North-West America." Professor Dickson made "some Suggestions on Fruit Classification," and Neil Stewart communicated a paper entitled "An Inquiry into the Function of Colour in Plants; or into its Relationship to the Manner of their Illumination during different Stages of their Development."

Hence it will be seen that the papers on botanical subjects were few, and scarcely of the value or interest that might have been expected during one week's meetings of the British Association. After the last paper was read, members congratulated each other and dispersed, some to their homes, some to the mountains and lakes, and after the great gathering on Thursday all was over. Edinburgh, so meagre of "bunting" as the Association commenced, was gay enough as it dispersed. Wednesday, in honour of Scott, manifested where the heart of Scotland lies hidden. Nearly all Edinburgh was abroad, and the old city was in holiday attire. The modern Athens paid its homage to the mighty dead. The members of the British Association may now anticipate for twelve months the meeting at Brighton on August 14, 1872, under the presidency of Dr. Carpenter, F.R.S., &c.

THE AMATEUR GARDENER.

Propagation of Bedding Plants.—It seems premature to begin to talk of next season's supply of plants for open air culture, almost before the present stock has attained its expected display of flowers, but the experienced amateur knows that it is not so, and that if a strong supply of cuttings is to be had for 1872, they must be taken off and rooted during the present month. Materfamilias, more used to the children's nursery than to that of the garden, is very suspicious of our movements at this time of the year, and expresses discontent at our "poking about" among the bedded exotics, and extracting here and there sundry shoots not always destitute of bloom, which we convey to the potting shed. But in this respect the gardener must be resolute of purpose, and rather risk disturbing a little the perfect symmetry of the parterres, than allow the autumn to come upon him without any preparation being made for another year.

We are writing now of those gardeners whose pleasure consists in a large degree in all horticultural manipulations being performed by themselves. We have no sympathy with the large class of well-to-do people who adorn their residences as ladies do their persons, with things ready-made to their hands, and whose wishes are all realised by the effect produced by the outlay of a few pounds at a neighbouring nursery. The feeling of a man whose garden is filled with plants all "struck" by his own hand, or under his eye, is entirely different from that of the wealthy possessor of a brilliant display, for the production of which he has done nothing but pay the money. We question whether the pleasure of the cultivation is not greater than that produced by the crowning success of the flowering season, and this will account for the apparently reckless way in which we decimate our beds in August so as to have under our care a nursery of young stock for next year.

We know it is possible for a gardener to defer propagating till September, or even till the frost comes and robs the garden of its beauty, but then he must have at his command a supply of artificial heat, with appropriate glass houses, by which cuttings may be effectually rooted even during the winter. We write for those whose means or whose wishes do not rise so high as this, but who aim solely at keeping during the cold months what will make their garden gay in the warm ones. The gardeners we contemplate would not entrust the work to a nurseryman, even if they could afford the necessary pecuniary outlay, so they begin now to provide for the future. Very much is gained in filling a bed with exotic plants, if they have attained a good shrubby growth, and are well knotted with terminals ready to break into flower. We all know how long the bedding Geraniums, for instance, and Verbenas, bought by the dozen at a nursery, are before they do much in the flowering way and fill up the vacant spaces in the bed; and this inconvenience is avoided by the amateur striking his cuttings early, and subjecting each of them, when potted, to a process of training for producing an early effect when put out in the spring.

When it is known that most soft-wooded plants, as Geraniums or Pelargoniums, will strike readily if dibbled in the open ground in August, it will be seen that very little trouble is necessary to secure a stock for the future. Last month we visited a relative near the Crystal Palace, who has a large garden, and who kindly furnished us with a collection of cuttings of Zonal Pelargoniums, some of them of the newest kinds. These we planted the next day in an open border, after mixing the soil with a liberal supply of sand. We gave the whole a good watering, and left them to the weather till a month had passed, when, being rooted, they were all safely potted off and housed for future use. Anothed method, equally successful, but which requires more watching, is to put each cutting at once into the small pot which it is to occupy till the spring comes round. If looked after, and supplied moderately with water, these cuttings will do well, and when once rooted they are safe, and need very little care, except to keep them from damp and frost during the winter.

Many hard-wooded plants, as Roses, require a gentle hotbed for the quick production of roots, or, at the least, a frame or a hand-glass over them. Nothing is more easily propagated than the bedding Calceolarias, for they quickly produce roots, and will survive the hardest frosts if struck under a hand-light and afforded the protection of a mat in sharp weather. As the Calceolaria grows very rapidly when once rooted, we delay the striking operation as long as possible, indeed until the plants out-of-doors are no longer ornamental. We then strip off the side shoots, trim them up, and dibble in shallow boxes, which are placed under a north wall, bedded up to the edge in the soil of the garden. All that is needed afterwards is the protection mentioned above.

We do not approve of the plan of asking for cuttings of plants except on the principle of reciprocity. When we have given 5*s.* for a new variety, it is not pleasant to be asked for a "bit" of it, unless we can make the same demand on him who begs the favour. This equitable principle being understood, the eyes of the amateur should be kept open as he visits his friends' gardens, and the process of barter may be liberally carried on. But a lover of flowers should be generous in expenditure, according to his means, and not grudge rewarding the clever florist for his skill in raising new varieties of plants. We have no fellow-feeling with those who think that flowers are the last things on which money should be bestowed, and attempt to keep up a stock for amusement or display by boring all their friends and acquaintances for slips or cuttings. This system is as bad as that of never buying an umbrella, but relying on others to defend us from the rain. *H. B.*

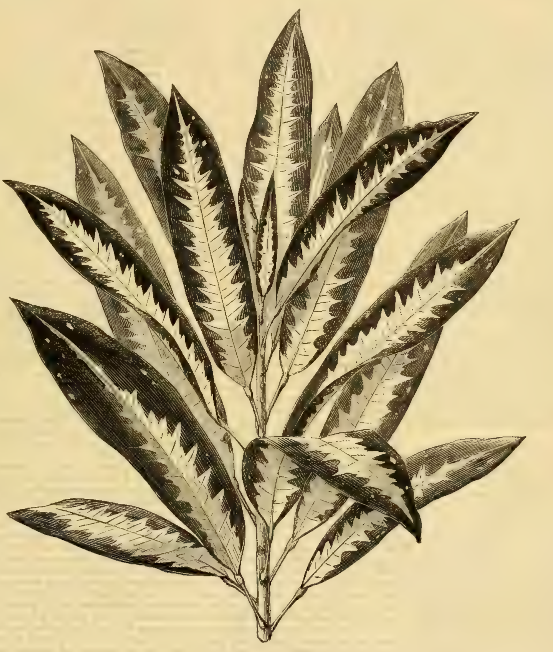

FIG. 244.—CROTON (CODIÆUM) HOOKERI (HORT.)

CROTON HOOKERI.

WE are indebted to Messrs. Veitch & Sons for the accompanying illustration (fig. 244) of this beautiful ornamental plant; as also for the following description, which we take from their catalogue:— "Another of the beautiful South Sea Island Crotons, brought home by the late Mr. J. G. Veitch. It forms a handsome compact-growing shrub, with broadly ovate lanceolate leaves, abruptly tapering or rounded at the base. The upper surface of the foliage is of a beautiful dark shining green, broken at the base with a broad blotch of golden-yellow, and with irregular projections of the same colour running from the midrib towards the margin, the midrib being golden-yellow, as are also the young stems and leaf-stalks." It appears to be the sub. var. flavum, described at p. 943 of our volume for 1868.

BAMBOOS.

THERE is no more graceful object in the vegetable kingdom than a fine clump of Bamboos—a good large clump, consisting of from 50 to 100 stems, growing as closely as possible together, and their extremities arching over and pendent, like the drooping foliage of a Weeping Willow, only more openly and far more symmetrically, recalling to mind a plume of lax feathers upon an exceedingly gigantic scale.

Perhaps the very finest of all this group of arborescent grasses is the Bambusa gigantea of the Indo-Chinese countries, which there attains the height of 100 feet, in low, swampy localities, each of the lower joints ranging from 20 inches to 24 inches in length, and as much as 36 inches in circumference. Under very favourable conditions this superb Bamboo has been known to grow as much as 18 inches in 24 hours; but, rapid as such growth undoubtedly is, it does not equal that of some of the species found in Lower Bengal, as will be noticed in the sequel. At Rangoon the Bambusa gigantea does not attain to more than 70 feet to 80 feet in height, and somewhat over 2 feet in circumference at the base. Introduced into Lower Bengal it further degenerates, so as not to exceed 65 feet or thereabout in height, though the stems still retain sufficient bulk to distinguish them readily from the various species of Bamboo which are there indigenous. As usual, the joints increase in length as the plant grows. Thus Bengal-raised specimens of B. gigantea, averaging 65 feet in height, have a length of joint at the base of about 10 inches, the second joint of 11 inches, the third of 13 inches, the fourth of 14 inches, and the fifth of 15 inches, and so on till an upper joint, in about one-third of the height, will measure about 20 inches long, and still higher about 24 inches; increasing yet more towards the top. The circumference of a joint at the base of the stem will be about 20 inches, the next joint 19 inches, the third and fourth 18 inches, and the fifth 17 inches.

The "tulda báns" of the natives (B. tulda) is one of the highest-growing Bamboos indigenous to Lower Bengal, and it far exceeds the great Burmese species in rapidity of growth. This Bamboo rises to its full height of about 70 feet in a month or thereabouts, its stems being about a foot in circumference at base. The "bálcoo báns" (B. balcooa) equals the "tulda" in height when growing in favourable localities, though not in rapidity of growth. This latter species also abounds in Burma, where it attains a finer development than in Lower Bengal. Under ordinary circumstances, in the latter country, the "bálcoo báns" averages from 50 feet to 60 feet in height, with a girth of from 12 inches at the base to 10 inches at the fifth and sixth joint, and with a length of joint at the base of 6 inches to 9 inches, and, of course, more in the upper part. This Bamboo is much prized for its extreme toughness and solidity, and it is consequently preferred to most other kinds for building purposes.

The small Chinese Bamboo, B. sinensis, thrives in Lower Bengal, and is there occasionally used for hedges, being kept well clipped. It thus makes a very good hedge, and in the climate of the south of England this species is almost hardy. Left to itself, it grows much as the other species do, and its comparatively diminutive size suits it to adorn gardens and pleasure grounds wherever it grows freely.

No one who has resided even for a brief period in any tropical country can have failed to observe the very numerous purposes to which these most useful plants are habitually applied. To enumerate all or nearly all of them would occupy more space than is here available. I will, therefore, mainly content myself with citing a brief extract from a paper "On the Uses of the Bamboo," which was read before the Botanical Society of Edinburgh, and contributed by Dr. Alexander Hunter, of Madras :—

> "The leaves when young and tender are eaten by various animals. The grain is given, in the form of a decoction, as a remedy for fever in cattle [though I should doubt with any effect]. The young shoots of the female or hollow plant are used for making arrows, while those of the male or solid plant are largely exported to Europe for the making of the tips of fishing rods. The pointed lateral shoots are used when young as pins. The stems are employed for props, palings, roofing, flooring, doors, and blinds. Some houses are built entirely of Bamboo. Paper and cloth are manufactured from it. The tender shoots are used for pickles, and they form one of the ingredients of the celebrated Chinese preserve, called "chow-chow." Baskets and boxes of various kinds are made of Bamboo. The lacquered boxes and cups of Burma are peculiarly beautiful. Among the other uses of the plant were noticed the following : Poles for palanquins, for carrying water, and for pushing boats, floating rafts, swinging poles at feasts, light bullock carts, ladders and fire escapes, fishing rods, boat poles, spear shafts, garden chairs, plant stands, distilling tubes, hookahs, and bows and arrows. The joints are employed for water pails and bottles; also for holding letters, for musical instruments, and for blow-pipes."

The joints are sometimes used, instead of earthen vessels, for cooking purposes. The natives of the interior of Arakan thus cook their rice in two-jointed Bamboos, for want of earthen *handies*. The rice is put inside with a small quantity of water, and then placed over a slow fire. By the time the wood-fuel is consumed the Bamboo is heated, and the rice is boiled. By the same kind of process, a sort of sweetmeat is made of sweet rice in Rangoon, and is commonly there sold in the bazaar.

About twenty years ago the "bálcoo báns" was turned to a novel use by the Burmese. It was just after the last war, when the inhabitants of Dalla and other villages near Rangoon were troubled with night attacks from marauders and desperadoes of all kinds. In the absence of any of the usual weapons of defence, the poor people converted the stumps of this Bamboo to account. By taking three joints, then cutting one to make a mouth, thoroughly scooping out the centre joint, and boring a touch-hole in the third, and then loading it with powder and shot, they managed to keep off the intruders. These imitation guns would often stand out five or six shots when well wrapped up with strong Jute fibre or any other strong description of rope. In the absence of this protective covering, the Bamboo cannon would commonly burst at the second discharge.

Wherever Bamboos abound, as in Lower Bengal, where available timber is expensive, they are very extensively used for building purposes, and always for scaffolding and for ladders. In the interior of the Tenasserim provinces the Kárens are famous for building a dwelling house in two hours that will last for three years, after undergoing some repairs in the third year. This I have personally witnessed. I was accompanying a friend, who was the Assistant Commissioner of Upper Martaban, for a four days' walk through the forest, in the course of which we had to cross the winding Yun-za-lin river several times upon Bamboo rafts. Houses of the kind to be described had been erected at suitable intervals, at which we successively slept and took our mid-day meal; but one afternoon, just as we had arrived at the bank of the river, a violent storm was evidently coming on, and there was no proper shelter from it to which we could resort. But our train of Káren coolies who were carrying our packages immediately set to work, dividing themselves into three parties, one of which proceeded to fell Bamboos, another to lop off their side shoots and bring the trimmed stems to the place selected, while the third party undertook the building of the habitation. A framework, with skeleton penthouse roof, was soon put together, some 14 feet long by about 10 feet broad, the fastenings being effected (if I remember rightly) with the tough, pliable stems of some creeping plant. Then a number of trimmed Bamboos were thrice half split longitudinally, and so opened out, and these served for the walls and flooring, the hard and smooth outer surface being of course placed upwards to form the floor, and outwards to form the walls. The flooring was elevated about five feet from the ground. The rapidity with which the work proceeded was marvellous to behold; and when as many Bamboos were cut and trimmed as were required, the first and second parties set to work, obtaining a quantity of pinnate fronds, like those of a Cocoa-nut or Betel-nut Palm, or of the Nipa fruticans, and the midribs of these were half split, and then one side turned over the other—a series of them forming an admirable and water-tight thatch. Before the thatching was half-finished, however, the thunderstorm came on, and we were glad to take shelter from the streaming rain beneath what part of the thatch had been put together. But the Kárens still worked on, and the thatch was completed, and also a door and a ladder were constructed by which to ascend and enter, the whole being completed within two hours from the time when all the materials of which the house was composed were alive and flourishing in the jungle.

Then the Kárens set to work to construct a roomy shed for their whole party, and also a Bamboo raft, by which we were to cross the stream on the following morning. By the time that these were finished the rain began to hold up, and away went our native servitors to collect a variety of plants, including different Fungi, of which they made a supper, thus obtaining food where an European in like circumstances would starve; but they did not overmuch like my prying into their culinary operations, suspecting, possibly, that I wished to take a toll of them. A beautiful evening ensued, and far from being fatigued by their labours, our Káren friends kept up their favourite game until darkness compelled them to desist from it. This game was a sort of battledore and shuttlecock, only that the sole of the foot served for the former, and the very large seed of the Entada Pursætha, a Leguminous plant with a slender creeping stem, and bearing a small pinkish-white blossom that is followed by an enormous pod, often 4 feet in length, with seeds of a magnitude to correspond; and these are the seeds which are tossed by the soles of the Kárens from one to another.

Bamboos make capital trellis-work for creepers in gardens; so long at least as they last, for in the rainy season, more especially in Lower Bengal, they become thoroughly rotten the third year, and are not good for much after the second rainy season. This is the great objection to them as building material—they decay so soon in a hot moist climate. Another objection to them is, that for building purposes, for ladders, for hackeries (native carts), &c., they admit of no improvement in construction, as in the case with the wood of exogenous trees, and thus the inventive faculty is not called into play, and people must needs go on as did their ancestors before them for countless generations, so far at least as the utilisation of the Bamboo is concerned—*stare super antiquas vias*. Yet to those who are daily accustomed to witness the multifarious uses to which the Bamboo is habitually applied, it really seems difficult to imagine how people can ever get on without it; and the same might be said of the Cocoa-nut Palm in Ceylon. I have seen those same Kárens of whom I have been writing, when preparing to cross a steep chain of hills where water is not readily to be obtained, cut and trim a few small Bamboos, bore through the septa of their joints with a red-hot iron, and then fill them with water to carry on their journey.

It is very rarely that the ordinary Bamboos flower and seed in the climate of Lower Bengal, and only in exceptionally hot and dry seasons, as was that of 1858, the year of the suppression of the great mutiny in India. The seed was then produced in large quantities, so as to lie two or three inches deep on the ground under the plants in many instances; and after flowering and seeding the common Bamboos invariably die. One species, however, the B. baccifera, produces seed annually, though only upon a few small and short stems, which do not perish after seeding. The death of so many ancient Bamboos in and about Calcutta in the hot season of 1858, after seeding, considerably altered the familiar aspect of certain localities. By the poorest class of natives the seeds of the Bamboo were then ground and variously prepared as food. *Z., in The Field.*

THE NATURAL HISTORY OF A FLOWERING PLANT.

[The following is an abstract report of Professor Thiselton Dyer's fourth lecture on "The Natural History of a Flowering Plant," in the Royal College of Science, Stephen's Green.]

THE plant is a community, the different parts of which labour for the common interest in varying but always subservient ways. The leaves, as we have seen, produce elaborated food; they build it up from matters in part absorbed by themselves—in fact, supplied by the roots, and derived from the outside mineral world. The sun's light and heat give them the force they need to pull these in pieces, and re-combine them into more complex combinations, containing less oxygen than the materials, and prone, therefore, to combine with more when burnt. Plant structures are our great stores of force, whether as food or as fuel; the force did its work at the time of growth in detaching the oxygen; it is therefore again set free when oxygen re-combines with their component elements. The human race must inevitably be ultimately restrained in its extension by the diminution of existing supplies of fuel, the consumption of timber and coal certainly going on at a quicker rate than any kind of renewal. Animals could not exist without plants—the materials they operate upon could support no animal's life; as Professor Huxley has remarked, a solution of smelling salts supplies almost all a plant needs for food, but an animal might swallow hogsheads of it and still starve. The products elaborated by the green parts of plants are nutritious to animals—*i. e.*, their protoplasm can assimilate them; but it must never be lost sight of that the protoplasm of the parts of plants not coloured green are equally incapable of preparing food for themselves from the mineral world. Parasitic plants, like Dodder or Broomrape, with no organs coloured by chlorophyll, prepare no food, but draw it all from their unwilling hosts; Mistleto with green foliage is less exacting, and draws part only of its nourishment. The growing roots, the ends of shoots with leaves still unexpanded, and the flowers with all their parts, behave towards the green portions of a plant, in respect to the food they consume, as if they were parasites. Still, what they borrow is not wholly without acknowledgment; the roots collect what the leaves, when expanded, will work upon, and the flowers produce seeds which perpetuate the race. Nevertheless, the plant community could go on, and does, indeed, in many cases go on, almost indefinitely, without producing seeds; so that flowers are really consumers of the plant resources of which all the other organs are more or less productive. It follows, therefore, that inflorescence is always an exhaustive process; indeed, in many cases, so much so that the plant's whole life is one great preparation for the production of flowers, which crown its existence with a true euthanasia. The development of the mass of flowers is in such cases rapid, and the consumption of the plant's store of food correspondingly so. In the Sago Palm the soft, pithy centre of the trunk is filled with starch (sago when purified). Till the outside of the trunk hardens it is protected by long and stout spines from the wild hogs which would otherwise destroy it. "When the flower and fruit are allowed to perfect themselves, which is in two years from the first appearance of inflorescence, the pith of the centre is found dried up, the leaves have fallen, and the plant perishes." The so-called American Aloe (which is properly an Agave, and not an Aloe at all), has a similar fate, which may, however, be very much deferred if it is grown slowly at a low temperature. The stores of the plant consumed in flowering frequently take the form of insoluble starch; to turn this into sugar, which is soluble and available, an excess of carbon is got rid of, in combination with oxygen which is absorbed. It is, in fact, burnt off, though very slowly, and the effect is to raise the temperature of the inflorescence very sensibly, especially where, as in Arums, the flowers are crowded together. The individual peculiarities of flowers are probably all the result of modifications of their particular organisation, so as best to do their work with regard to external conditions; the different ways in which they lend themselves to the visits of insects especially illustrates this. Probably the colours of flowers have their true use in guiding insects to the bribe of sugary nectar which plants offer them. It is well known that a flower is only the equivalent, although modified, of a leaf shoot; leaf-buds and flower-buds indeed, under some circumstances, are interchangeable. Leaf shoots, when first expanded, are often brightly coloured, becoming green when commencing their proper work; flowers, it may be said, therefore, preserve the temporary coloration of the young leaves, because they never do true leaf-work. It may happen that the flowers are attractive to the eye, not from colour of the floral envelopes proper, but from that of adjacent or floral leaves. This is pre-eminently the case with many of the Euphorbia family; in the Poinsettia, for example, the true flowers are quite inconspicuous, while in some species of Dalechampia they become green instead of pink when the fruit is formed, as if for the purpose of concealing it. The perfect flower consists of four circles of organs, the two outer being protective, the two inner producing pollen and ovules respectively. The fertilisation of the ovules by the pollen is essential for their development into seeds; directly this takes place the flower withers; but, if prevented, the freshness may be prolonged very considerably. All the organs of the flower are merely leaves specialised in their development for particular work; this is proved by instances in which all the organs have one or other changed places; and cases where they are entirely converted into leaves are not rare. Usually flowers are circularly symmetrical, but there are many deviations from this; these sometimes become symmetrical by the irregular portions being either suppressed or else regularly developed all round.

ON THE PLANTING AND KEEPING OF CEMETERIES.

THE Corporation of Salford has a cemetery extending over many acres of land, situated at the end of Stafford Street, on the Eccles New Road, about three miles from the Manchester Exchange; and it is but justice to say that this has been laid out and planted with trees and shrubs at considerable expense. The same Corporation has also a park for the people, called Peel Park, and this is kept partly as a flower garden, and partly as a green park for recreation. The keeping of this park is entrusted to a good practical gardener, and the planting of the flower-beds and the excellent condition of the walks are highly creditable to him; and he sees that the lawns or principal grass plots are kept neatly mowed and swept. Now, this is just what I and many others want to see done at the cemetery, viz., that it be as neatly kept as the garden part of Peel Park; and this is by no means an unreasonable standard of excellence, for if Peel Park were part of the private grounds of one of our merchant princes, its lawn grass would be more frequently mowed and swept than it can be now with the limited number of hands employed. As a place of burial this cemetery is as yet only in its infancy, and that is just the reason why its arrangements should now, at the outset, as it were, be made to harmonise with the spirit of the age.

The closing of churchyards has thrown the business of sepulture into cemeteries everywhere, and thus the subject has become invested with an interest which it never had before, for in the early part of my life such establishments were almost unknown. It is fortunate that this cemetery belongs to a public body, and that graves are bought and sold in the same business-like manner that a Manchester manufacturer would dispose of a bale of goods. There are, therefore, no vested rights to be respected, and no private interests to suffer, by ventilating the subject. That this cemetery and its keeping concerns me will be gathered from the sequel of this letter, but the careless way in which this and several other places of sepulture which I could name are kept, concerns many others as well as myself, and, therefore, with your kind permission, I will state a few plain facts, in the hope of bringing about a better state of things. This, I hope, will have more force than speaking at random, which might easily be mistaken for ill-will.

About two years ago I had to buy a grave in this cemetery, and, after laying a loved and dear one in her last resting-place there, I had intended to set up a headstone to mark the spot where loving hands had laid the mother of the family. Our oldest son, however, forestalled me in this, and got a headstone erected at once, and a neat stone border all round the grave, with his mother's name, age, &c., duly engraved on the headstone. It only remained, therefore, for me to have the grave planted, and this I undertook to do with my own hands. In Buchanan's "Land of Lorne," we read that the mariners inhabiting that stormy coast prepare their gravestones during their lifetime, and the reader will readily perceive that I am going to tell him, how I have planted what may be my own grave. My memory supplied me with a long list of low-growing plants, suitable for such a purpose; a halfpenny card would have ordered them from the nurseries where I knew they were to be found, and a post-office order would have settled the small bill for all the plants wanted to cover a space of less than two square yards, so that there could be no excuse for me to have the grave improperly planted. Now had I used turf, it would have required cutting frequently, which cemetery keepers would never have done, so I decided that the double-flowered fragrant herb Chamomile, with its elegant feathery foliage of the liveliest green, should be the carpet or canopy over the grave. As the red berries of the Cotoneasters have such a lively look in winter, I planted near the headstone a Cotoneaster Simmonsii about 2 feet high, which has bloomed and is now blooming freely, so that we may look for it to bear berries in due time, but its flowers are inconspicuous, and therefore some other plant with flowers fair and sweet had to be added, so I planted one Rose on its own roots, and one with a stem about 1½ foot high, and they have both bloomed freely. After all, there comes a time when Roses fade and their foliage falls to the ground—for Roses are far from being perpetual, although paraded as such in the catalogues—so there still had to be planted two real evergreen shrubs, to maintain a little liveliness in the dead of winter, and for this purpose I planted two Savins—one green and the other variegated; these would eventually cover the grave with their embrace, for they spread horizontally, like winged plants, brooding over what is beneath. Rich mould with plenty of manure was got ready for planting, and the soil, or rather subsoil, was removed from the surface of the grave. The Chamomile completely covers the area allotted to it, and is not surpassed in beauty by any plant that I could have employed, although it has not flowered, and I should not like to let it flower, because its leaf has such a fine effect.

Here, then, I have given the actual facts of the plants and the planting, as a guide to others similarly situated, for there is no end to the blunders made in this way—trees planted over a grave of a few square feet that in a few years would occupy a space 8 or 9 feet in diameter; annuals that, in the barren sand, yield only a harvest of disappointment; bedding plants in flower, plunged in the pots, in the same poor medium that starved the tender annuals. Such plants as the latter can only be for a very short time. What I complain of, however, is, not the blunders of well-meaning people planting unsuitable plants at untimely seasons, but the miserable way in which this Salford cemetery is kept; for long after midsummer I had to cut the long grass and weeds that grew between the graves, and I found that the keepers had then only just begun to mow the grass for the first time in another part of the cemetery. Once a month during the growing season all the grass in the cemetery should be mowed and swept. The heavy charges made for graves, we know well, will do this handsomely, but the keeping should not be measured by this standard, as if profit alone were the object the Corporation has in view. Public opinion should be enlisted in favour of a proper and decent keeping, and respect for the dead should have its due weight with those who are in authority.

We read in ancient history of the field with the trees, and the cave of Macpelah before Mamre, that Abraham bought for a burial-place of Ephron the Hittite; and from the account given, the field of Ephron was indeed a cemetery of a very high character. Later on, we read of the funeral *cortège* that accompanied the embalmed body of Jacob out of Egypt, when his princely son Joseph carried his father's bones to the same family vault, with a train of chariots and horsemen and a great company, such as had never been gathered together on such an occasion before, for we read that at one of their resting-places beyond the Jordan they actually spent seven days in vehement lamentation; leaving us an example of veneration for the dead such as, perhaps, never has been equalled.

Then we read in Homer's immortal verse of "the honours Ilion to her hero paid" when "peaceful slept the mighty Hector's shade." The shrines of illustrious characters everywhere attest the same veneration for departed worth, and the authors of fiction have often seized on these materials and worked them up with good effect. Thus Sir Walter Scott hitches Old Mortality into the tale as one who looked after the graves of the martyrs to the Solemn League and Covenant. In our day, one author would deprive us of the dignity of our origin, and another would deprive us of the dignity of our end. Du Chaillu, describing his first gorilla, has given us a faithful picture of the hairy brute standing on his hind legs, just like what a toad would be if reared up to look out for danger. Where would be our restraint on the score of morality if we were descended from such apes as these? It must be a degrading superstition that would rob a man of the image of God, and give him in exchange to claim kindred with a four-footed beast. There was a Latin inscription, beginning *Hic Simia*, &c., on a stone in the grounds at Sion House, where a favourite monkey had been buried. To this there was a counterpart, for be it known that Hugh Percy, Duke of Northumberland, was a successful breeder of monkeys. Whilst I lived at Sion one of them died, and T. Mott begged the body to have it stuffed, but when he had skinned the brute, and cut off the head and the feet, the appearance of the trunk was so like that of some child murdered and mangled, that he got the stoker to make away with it; he in his haste flung it over the garden wall into the Brent, but when the tide was out, the carcass was seen in the mud, a great uproar was made, and barbarous cruelty was laid to the charge of some person or persons unknown, though poor "Jocko" had had a comfortable life, and died a natural death. The tide at length bore the better half of him off to sea, and it is doubtful whether his friend with the Latin, &c., equalled him as regards the numbers that came to his funeral, and mourned the monkey mistaking him for mankind. It appears from the "Life of Lord Brougham," written by himself, that when a young man he had lost the Christian faith (if he ever had any), and entertained, like many others, great doubts about there being any future state of existence. In order to settle this important point, he drew up an agreement with one of his companions, written in blood (according to popular superstition), that whichever of them should die first should appear to the other. Not a word about common sense in the matter, which tells every one that a dead body is utterly incapable of fulfilling any engagement entered into during life; but when 60 years had gone by, Brougham's youthful companion had grown an old man, and resided in India, yet on the day of his death (Dec. 19) he appeared to Lord Brougham, and sat on a chair. By a piece of special pleading, Brougham, after relating these facts, tries to account for the vision, which happened on the very day of his friend's death, by thinking that he (Brougham) had been dreaming during the time he was in a warm bath. The whole affair had an impious character about it, and the terrible termination of the last act nearly shook the life out of the "learned lord." The truth of the narrative is not likely to be called in question; moreover, we have it from the first hand that his friend "implemented the premises," and Brougham, with all his failings, was never reckoned guilty of deliberate falsehood; but he is gone to his account, and what he has left upon record cannot now be arraigned, save only at the "last assize."

It is easy enough to make light of what is called a ghost story, but St. Paul rests everything upon Christ being risen from the dead, and it is upon this cardinal point that honour and respect are claimed for the places of sepulture of our departed friends. The escutcheon is always charged with the word *Resurgam*. In shunning the belief in ghosts, Lord Brougham, in early life, like many others, had gone sadly too far on the other side, so that the sublime vision of St. John in the Apocalypse, where the saint relates, "I saw the dead small and great stand before God," would to such an one have been only a gigantic ghost story. There is no way of dissociating the death of friends, and their funeral obsequies and places of interment, with the immortality of their souls, or, in other words, with the rising again to a life where poverty here will be no bar to greatness. Why should we be robbed of this hope? The poet Cowper lost his mother at an early age, and with his highly refined feelings he dwells upon the irreparable loss; but mark the childlike simplicity with which he speaks of the world to come, and of his unbounded trust in God, when he said—

> "There is a golden harp for me:"

as if he had said—Child of Song that he was—"Surely God, who has bestowed on me the gift of song, will for His glory perfect me in power to sing His praise."

In conclusion, let me state that the poorest persons may plant flowers upon the graves of their friends, and thus manifest their respect for the link that united them with a former generation. We see, however, in the public cemeteries, what was never seen in the parish churchyard, viz., three small churches, where the burial services are conducted. Thus even in death we are still divided, and cannot show a bold front to the scoffer. So that when we have mourned the dead we may even drop a tear for the living. *Alex. Forsyth, Salford.*

REMARKS ON THE FRUIT CROPS OF 1871.

(*Continued from p.* 1039.)

THE present season, so far, has been of unusual severity, and its effects upon the fruit crops most capricious; for while a few on high and fully exposed positions are rejoicing in the abundance of their crops, by far the greatest portion are all but a failure, as regards Apples, Pears, Plums, and Currants that bloomed profusely and suffered irremediable damage from insect pests, the leaves being shrivelled up, and in many instances entirely gone, the low ground temperature and persistent cold, cutting winds, with nightly frosts, entirely mastering growth. I am afraid that the late growth the trees are now making will not become sufficiently mature to bring a crop next year, unless the autumn proves unusually fine. The Potato disease is making rapid progress; one-third of the early kinds are now gone. Carrots have suffered greatly on all kinds of soil from the wireworm. Vegetables of all kinds are plentiful, and of extra quality. *G. Westland, Witley Court.*

—— Peaches and Nectarines are a good crop where the trees were plentifully supplied with water last summer, and the insects vigilantly destroyed last autumn and this spring. The black aphis was very prevalent last autumn; and where it was left unmolested, under the impression that the season was too far advanced for it to do harm, the trees shed their leaves prematurely, and at the time of opening in the spring the bloom was small and weak, and ill calculated to withstand the cold weather. Apples have suffered much more on dwarf trees than they have on large orchard ones, the latter being much more under the influence of wind and rain,—conditions that are not so favourable to the development of insect life. Here is another instance in support of the views I have always maintained, that fruit trees that make comparatively little wood through a judicious system of root-pruning, produce bloom stronger and better able to resist spring frosts than those not so treated. In February, 1870, we had occasion to move a number of large Gooseberry trees; these made little wood last summer, and have this year borne heavy crops; others not so treated, but under exactly similar conditions as to exposure, had their bloom completely destroyed by the frost. *T. Baines, Southgate House, N.*

—— The fruit crops in general are very fair considering the past severe winter, the cold and inclement spring, and the extremely wet summer. The small fruits have been fairly harvested for preserving, &c., although much later than usual, and fruit over-ripe was rendered useless by the rain; some varieties of Cherries were rotted before they could mature. Vegetables are doing well, but a little over-vigorous, Onions especially. Peas have overgrown their usual height by 2 feet, but have fruited well. Beans have done well; French Beans have been very late, and some sorts set their fruit badly; Globe Artichokes lost all their early fruiting crowns by the severe frost, in fact we thought we had lost them, but they have thrown up shoots wonderfully, and are now fruiting well; early Cauliflowers were very tardy, but now spring planted plants have done well; out of 1300 Broccoli plants of ten different sorts, only 15 escaped the general havoc of the frost—nearly all of them were layered in autumn; Tomatos will be very late. Bedding plants are inclined to be vigorous; Coleus, Amaranthus, and such-like have had a miserable existence. Subtropical plants have made a slow and sturdy growth; Ficus elastica has stretched out a foot; Dracænas have stood better than last year; Cannas, Ricinus, Solanums, &c., have grown well. The sunless weather has had a material effect on the colour of indoor fruits, which have done well this season. The rainfall for the first seven months of 1871 was as follows:—January, 2.14 inches, rained on 13 days; February, 2.80, rained on 16 days; March, 2.06, rained on 14 days; April, 2.44, rained on 17 days; May, 2.29, rained on 10 days; June, 3.21, rained on 14 days; July, 4.77, rained on 27 days; total rainfall up to the present, 19.71 inches, raining on 111 days, giving an average rain every alternate day. On June 23 it rained 1.45 inch, being more than the quantity which fell on June and July last year. This year has been as extremely wet as last year was extremely dry. *P. Middleton, Wynnstay Gardens, Rhuabon.*

—— Notwithstanding a very cold spring we had every prospect of a very heavy crop of Apples and Pears up to May 10. That night there was 9° of frost, which destroyed all blossoms then open. Even now the trees present an unhealthy appearance, the leaves being spotted and curled up. The wind continued from the north and north-east for many weeks, which had a scorching effect upon fruit trees not protected by a wall. Many varieties of the Thorn still retain their blackened foliage. Previous to the above frost the Plums were set and partly covered with leaves. The aspect being south-west, they were screened from the north-east wind. Peaches will be three weeks later than usual; indeed everything is late, as we have had no summer weather. *W. Hutchison, Castle Malgwyn, Pembroke, South Wales.*

Home Correspondence.

Orchid Cultivation.—In your edition of July 15, p. 906, I see Mr. Anderson's reply to mine at p. 874. With the spirit in which it was written I can have no sympathy, and I feel satisfied Mr. Anderson and his friends will regret that it was written; as it has been, I must reply. Mr. Anderson says, "Your readers may ask me how I know 'G. H.'s' establishment, and what object I have, even supposing I knew it, of exposing his hand." I believe the rules of newspaper controversy are, that, if a writer chooses only to put his initials without address, it is considered to be a name of incognito, and no one has the right to penetrate the mystery. The advantages of such a custom are many, and not the least of these is, that it prevents writers whose argument has given out, from falling back upon personalities to serve in lieu. Now it may be said that this makes an unequal contest. In the present case it does not, for Mr. Anderson was perfectly aware two years since who "G. H." was; he then visited "the establishment," as he says, and my name was given him by Mr. Brooke, but as he could not use that information, he tries now to make out that he has found it out himself. If he has lost sight of the real question, either to convey or to gain information upon the cultivation of Orchids, he had better retire from the controversy. With regard to the catalogue he named, your readers must judge for themselves if he has quoted fairly: and, as to the matter, I neither contributed to it, nor do I consider that I am able to draw up such a catalogue. I have not even used it, but, as I hear from Mr. Brooke that he has been encouraged by those who have — I believe yourselves among the rest—I have advised him to seek assistance in making it more complete and valuable to gardeners. Mr. Anderson may rest satisfied that such assistance will be acknowledged, and if there are any subjects found within the range of my capabilities, that he will find "G. H." at the end of such contributions. I think I have now said enough upon this personal matter, and I will proceed to again take part in the discussion upon Odontoglossum cultivation, to which I am already greatly indebted for information. I have read with great interest Mr. Gosse's letter, and the extract from Dr. Lindley's pamphlet, and Mr. James McPherson's letter. I am sorry that the latter does not give us the locality as well as the elevation at which Captain Auchterlonie's Tables of temperatures and rainfall were taken. When I last wrote I said that Mr. Isaac F. Holton's "Twenty Months in the Andes" had just come to hand. I take this opportunity of again thanking M. Jean van Volxem for the information he has thus placed in my hands. In the appendix I find the Table of temperatures he mentions, which I will send you, and you must use your discretion about publishing it. I also find another Table, which I should like you to give your readers, as a companion to Dr. Lindley's. I consider it an exceedingly valuable one. He calls it a Table showing altitudes, climates, and productions. Mr. Holton does not seem from this book to have been at all aware of the value of Orchids, and he only mentions them incidentally, but he seems to have investigated the effects of the climate upon vegetation very thoroughly, and I find great difficulty in selecting extracts to send you; so for the present I will say that he confirms in all respects the extracts I have given from Messrs. Purdie, Bates, and Orton, in the clearest way, and goes on to what may perhaps be more interesting, as supplementing the account M. Jean van Volxem gave, in your impression of April 1, at p. 419, of the situation where he found Odontoglossums growing. The altitude he gives for the falls of Tequendama, and the town of Fusagasuga, are so nearly the same as Mr. Holton's, that it becomes unimportant; but as Mr. Holton is so very particular in his description of these places, which are the result of repeated visits, I hope M. van Volxem will consider that my sending them to you is not in the slightest degree because I doubt what he has told us; on the contrary, I find Mr. Holton to bear out exactly what M. van Volxem wrote: and I take it that in giving me the name of Mr. Holton's book his intention was, that I should refer to this, which he thought was a trusty source of information. The description of the falls of Tequendama is rather long, but full of interest:—

> "The point where these observations are best made, is a sort of table-rock just at the brink of the water. Another rock overhangs it, covered with Thibaudias, Ferns, and Orchid plants, making almost a grotto for the observer. The mist of Tequendama has started some philosophical speculations in my mind. The people say that it often spreads in a dense fog over the surrounding country. This fog begins in the morning, at from 9 to 11. Is there more fog here than at Bogota? A day fog would diminish the mean temperature of a place; a night fog would raise it. The temperature here, then, ought to be lower than elsewhere at the same level. I found it by the water of a mine, about 54°, but I would like to see it confirmed. Now, although Bogota is 850 feet higher, its temperature is given 4° higher. This indicates a confirmation of my suspicions. In passing four times in sight of the Fall Mountains, I have always seen the mist either hovering among them, or pouring from them to overspread a few square miles of the adjoining country. Now, we must remember, that this country has no fogs like ours, but bears clouds and mountain mists in tropical profusion. This small body of water contrives to manufacture a hundred-fold more mist than Niagara, at a lower altitude. The mist is begun mechanically; of this there can be no doubt. Is it not propagated meteorologically? Has not one particle of mist the power of generating another in a favourable atmosphere? Here is a grave question — the quantity of mist generated directly by the falls seems very small; that proceeding from them varies at different hours of the day, and often streams off five or ten miles. Tequendama is one of the richest localities of plants I have ever seen. The woods are damp, while most land at this altitude is dry; on four of the five days I have spent here, I have literally loaded myself with rich specimens. [In the Table he puts the mean temperature at 59°, Bogota 56°.] From Cibaté I rose till I had a fine view of the plain, of which we must now take a long farewell. Nothing but the cold makes it a glad one to me. As I left the hacienda I saw the leaves of various plants nipped with frost, a rare occurrence indeed, but one that may happen any month in the year, not only under the mists of Tequendama, but all over the plain."

The plain of Bogota, Fusagasuga, is about 3000 feet lower than Tequendama, and a little higher than La Mesa, which is one of the highest spots in which Oranges grow.

> "I had no thermometer with me, but I have a strong suspicion that the temperature is put too high by Cáldao, 72°.5; Mosquera gives it as even 3° higher. I think it must be near 70°. Never was there a more beautiful climate than that of Fusagasuga. Twice have I celebrated New Year's day here by bathing in a stream of delightful temperature, and thinking of snow at home. It is just at the upper limits, or rather above the convenient culture of Cane, Plantain, and Oranges; and for these I would submit to a slight increase of heat."

Thus it was at about 500 feet higher than at this spot where Mr. Holton thinks the mean temperature should be put at 70°, or from 2½° to 5° lower than the two native authorities he quotes, that M. Jean van Volxem found O. Alexandræ growing. As your correspondent "Ex-Cantab" says (at p. 907) that I have not answered his question at p. 380, I will again give a quotation from mine at p. 450, which must have escaped his notice, and it will enable your readers to see how far I was out in my ideas of cultivation. But first, one of the native authorities, Mosquera, puts the mean temperature at 75°; now turn to Dr. Lindley's list, where such a mean is said to give 80° for a maximum and 55° for a minimum; what can this mean, but that the minimum is very rare? On a previous occasion I gave a quotation from Dr. Hooker, to show that moisture enables plants to attain to much higher elevations than they otherwise could; and I now should be able to add many quotations from Mr. Holton's book, showing how little variation in temperature there is experienced throughout the whole country. I should advise your correspondent, "X.," to give night ventilation, and in summer to syringe frequently not only the house but the plants, and to keep the temperature down in hot weather. I begin to think that it is more important to keep the temperature low in summer than in winter. However, this is what I wrote at p. 450:—

> "I do not advise Odontoglossa having a temperature of 80° in the day all through the winter, and do not know that I have advised it. I gave a mean for the year with a daily range of 10°; my house will go up to 90° with the hot weather, and no doubt go as low as 50° in the cold weather; but as I cannot prevent their growing—that is, not only making up bulbs, but also commencing fresh growths,—I cannot think that I should be wise to reduce the heat below 60° in the day as a rule, and running it up to 70°, if there was any chance of giving air."

At the risk of making my letter too long, I cannot resist giving another quotation from Professor Dyer at p. 771 of your journal:—

> "There is an inherent disposition common to all plants to hibernate during the winter; hibernation is forced upon them by deficiency in one of the conditions necessary to their growth—namely, warmth; and the absence of another condition—moisture—in hot, tropical countries, produces the same enforced rest in vegetation, only at the hottest instead of the coldest season. Where the winter is sufficiently mild, vegetation is not arrested; the trees retain their leaves all the year, and many of them keep growing continuously. All plants, however, even in warm countries, cannot do this. The great effort of flower-producing needs a special season of preparation and rest."

I think that Professor Dyer is right, and that he has placed before us the true test of successful Odontoglossum cultivation, which system prepares them the best for this effort of flower production. I congratulate Mr. Culley on the size of his flowers. *G. H.* [We may find an opportunity shortly to publish the Table and plan kindly furnished us by our correspondent. Eds.]

To Trap Bluebottle Flies.—In answer to your correspondent, "C. J.," as to some method of stopping the attacks of bluebottle flies on fruit, I can say that for many years I have known a hand-glass trap answer the purpose excellently. The plan used, which is very likely the same to which you allude, is to set one of the largest-sized hand-glasses, which are square below and conical above, on four bricks, so as to raise it from the ground; another hand-glass is placed on this—usually one of the same shape, but, if at hand, of a smaller size, and the junction between the glasses is carefully secured with Moss, so as to prevent the escape of any insects; of course the small hole in the top of the lower glass is left open, that in the upper one closed. A little decayed fruit thrown under the glasses attracts the insects, which, flying upwards, are caught in countless numbers, and much more successfully than by another method in common use, which I have seen tried. *E. A. O.*

—— I conjecture that your correspondent "C. J.," like myself, is plagued with cats, who kill the birds. There is no other means for keeping the multiplication of insects within proper bounds beside the creatures for whose food the Creator has destined them. I recommend him to stick up a notice such as I once saw in a large house: "No cats allowed." *J. S.*

Fairy Rings.—Two facts as to these:—1. The dark-coloured grass that forms the ring seems owing to the fertilising nature of the Fungus. This year in one field here, the aftermath not having been touched for a month, the ring-grass outgrew the surrounding pasture more than double in height and luxuriance. 2. In another field fed off by cows, the ring-grass was eaten by them closely down, showing that they relished it. Both fields had many rings. *Wolvesley.*

Orchard-houses.—To those who, like myself, cannot conveniently go in person to see the famed houses of Mr. Pearson, nothing could be more agreeable than a description of them by so competent an observer as your correspondent "F." (p. 1010). I venture, however, to make a few observations on a sentence which occurs in "F.'s" letter:—"It is a well-known axiom among Peach growers, that the nearer the glass the finer-flavoured the fruit;" and in accordance with this axiom, "F." prefers Peaches from trellises, 9 to 18 inches from the glass, to those grown in pots at a distance of 3 or 6 feet. Now that sunlight is the prime agent in giving flavour to Peaches is indisputable; though, whether this effect is due chiefly to the luminous, or to the heat-giving, or to the chemical portion of the rays, I will not attempt to decide. I have also noticed, as mentioned by "F.," that Peaches grown on the lower portions of bush trees, and therefore more shaded, are inferior in quality. But in gardening, as in most other things, we have often only a choice of evils, and in the trellissed houses which I have seen (though I admit my experience is limited) the plants have suffered severely from red spider, notwithstanding the peculiar advantages which the trellis gives for syringing the underside of the leaves. A few days ago I purchased in Covent Garden the best specimen I could find of a Peach from an ordinary

Peach-house. It had just arrived, was quite ripe, and for the variety (Noblesse) was well coloured. But upon comparing it with my orchard-house fruit I found it poor indeed. Possibly the tree may have been over-watered, but it is equally likely that the foliage was injured by red spider. I find in the orchard-house that shoots which stretch themselves near the glass are thus affected, notwithstanding a daily syringing, damping the floors frequently, and abundant ventilation. The experience of orchard-house cultivators seems to be leading them away from the time-honoured axiom we are now considering, for in my frequent visits to Sawbridgeworth I have seen the original small and low house gradually giving way before the larger and loftier form, and have tasted from these newer houses quite as good fruit as could be produced in the old. In my own houses, which are of the original build, I often suffer from too much sun, and am obliged to whiten the glass to prevent the Peaches ripening prematurely, and either becoming mealy or falling off while still acid. As to Strawberries, which all authors tell us must be grown close to the glass, all I can say is, that I am satisfied with fruit grown at a reasonable distance. *G. S.*

Tricolor-leaved Turnip.—I enclose a leaf of a Turnip (Red Tankard), which, besides the white and green variegation, is prettily bordered with pink. I do not know whether the latter circumstance is peculiar, white and green leaves are not uncommon. The pink tinge evidently arises from the colour of the root. I have ventured to send this specimen, as variegated plants are interesting, and the cause of such variegations still more so. *W. R.* [We have not previously noticed to so great an extent the pink variegation which occurs in this specimen. Eds.]

On Growing Pinks, &c.—If every nurseryman in the kingdom were asked how he would increase his stock of Pinks and Dianthi, nine out of ten would, I believe, say by pipings. Carnations and Picotees are more safely grown from layers, but many of these are propagated very successfully by pipings. Indeed I remember once seeing a frame full of pipings of Picotees put in by a lady, and a better take could not be, for every piping grew. The frame was on the cold ground, the soil inside was rather sandy; a more thriving lot of plants than these became I would not wish to have. If I had a number of pipings of Pinks, say a hand-glassful, I would put up a bed 2 feet square and 2 feet high of rather short horsedung, pressed somewhat closely together. Upon this I would put 6 inches of sifted sandy soil at once, fix my hand-glass to mark the space for the pipings, put them in not over long, give them a good watering with the rose, fix the glass firmly on, shade when needful, and I should have every hope of perfect success. The warmth from the dung would give the needful impulse to the cutting, causing it to strike without risk of burning, and as soon as the true signs of growth appeared I would give a little air. Pipings for speed, layers for certainty. *R. T.*

The Effects of Dew.—In reading so orthodox an article as that at p. 1006 upon the treatment of Peach trees by the Rev. Mr. Radclyffe, I cannot help feeling grieved at meeting with an heretical doctrine which has accidentally crept into it. Mr. Radclyffe cautions his readers against the evil effects of dew, as the means by which the frost is enabled to bite; the fact being, that the dew, or hoar-frost, disarms the frost of half its power. Dew, or hoar-frost, is deposited upon trees in consequence of their loss of heat by radiation, when their leaves, or branches, become colder than the surrounding air; but when the vapour dissolved in the air is so deposited, a large amount of latent heat is given out upon the change from vapour into water, and again upon the change from the liquid to the solid state. In frosty weather by all means let the trees be kept dry; in other words, warmer than the surrounding air, when no dew will be deposited. But, in a calorific point of view, I should say that the deposit of dew, or even of hoar-frost, would certainly mitigate the severity of the cold. *An Amateur.* [See p. 1063. Eds.]

Jackman's Clematises.—Jackmanii and Rubella have large rounded flowers, broad in the petals, and very handsome, as well as quite distinct. They form excellent companions. Prince of Wales and Rubro-violacea have narrower petals, smaller flowers, and are too much alike, as well as not sufficiently distinct from Rubella and Jackmanii, the latter especially. These four I have now grown for three years past, with the same result. One cannot praise Jackmani too highly; it is the grandest hardy climber we have. I know of nothing that can equal it. On the front of my residence at Ealing, which has an aspect due south, there is a plant of it that must have fully 500 expanded flowers at the present moment, of a fine bluish-purple tint. For six weeks past it has been loaded with flowers. It is cut down to the ground every winter, plenty of manure forked in about the roots, and during the summer it has an abundance of water, and an occasional supply of liquid manure. It must be grown generously. It is so much admired, that I confidently anticipate quite a local eruption of this rich blue-purple on our villa residences a few years hence, as every one who sees it declares that he must possess it. It is one of the best hardy plants of the past ten years. *Richard Dean* [Rubella is equally deserving of praise, and for distinctness magnifica is not to be despised. The great merit of this strain of hybrids is their wonderful fertility of flowers. The plants are literally and continuously masses of blossom; and such blossoms too! Eds.]

Treating on the Potato Disease.—A few mornings ago I received some letters by the early post, one of them was from a locality in which there were "40 acres of Potatos, 29 of which are stricken with the disease. They are being taken up and clamped. Those which are rotten are left in the field, but some will doubtless escape observation, and if stored along with the sound ones, will they impart the murrain to the whole lump?" I gave, as an inevitable consequence, the "little leaven" of Scripture for analogy, and at the same time I advised the bays of barns, cattle feeding or other sheds now most at liberty, to become the dry, twilighted receptacles for affected crops. I recommended that the tubers, as they are taken from the ground, should be spread out thinly in the above mentioned places, and turned and inspected once a week; and those that show the least sign of decay should be boiled at once, with about a handful of salt per bushel, for the pigs, and the water well strained away from them when cooked. But should there be more of them than the pigs could consume, then I advise that the surplus be rammed well down into hog-tubs for use as wanted; and so, if humanity becomes directly baulked of the food, it will at any rate reach us some time or other through the instrumentality of bacon or pork. Still, precautionary, in case the largest and most matured tubers should be required for human consumption, they may be assorted at the digging and housed in a dark, dry place, and the diseased ones singled from them as they occur, as stated above; but of course they must be constantly kept in the dark, for if allowed to become "greened" they would be unwholesome for domestic purposes. In a month or so, in both cases, the bulk of the tubers may be considered safe, through the practice of inspection, and unless "clamping" be absolutely necessary I would prefer to store them in lofts, or in a cool dry twilighted place, to be under observation and free from frost. I would not allow them to be heaped together too thickly, so as to encourage long "spurts" to be rubbed off and weaken them. Thus managed, capital seed may be expected from them next spring. My correspondent had 11 acres of his 40, which were late planted, free from disease; and these, through the favourable change of atmosphere which has occurred, I trust may be saved to him intact. My second, from "A. D.," a "chiel" afflicted with Potato on the brain, comes from the site of the first propoundings of Elizabeth Lazenby's sauce. He writes how "this plaguey disease is bothering of him altogether," and requests to learn of me "How it comes? What brings it? Does it begin in the leaf, in the old tuber, or in the root? Is it the result of atmospheric action? Is it the result of electricity? and, if so, what affinity has the Potato to electricity? I want to know the actual cause of the disease, how it operates, and why it operates, and why the Potato should be its special victim?" Cool, certainly, to one who wishes to lead a quiet, practical, horticultural life. My convictions, from years of "strike-home" observation, have led me to conclude, that the Potato disease must be caused by electricity, in connection with what is commonly called "white rain," viz., those insinuating showers which accompany effete lightning and thunder, with hot sultry intervening sunbeams, and moist muggy nights. The leaves always become first affected in the above state of atmospheric muddle, and the haulm browned in patches, and more frequently totally destroyed by three or four days' continuance of such weather. But when we get an honest, open-faced sky, with sun and drying intervening winds, it shrivels up the affected leaves to powder, and frequently then the stems will remain green minus the leaves, on account of the Fungus, or mould, not having been allowed sufficient time to insinuate itself along a damp bed of enduring moisture to become generate into living forms. Zoospores, the Rev. M. J. Berkeley, at p. 944, tells us are unable to move without wet, and, happily enough, our best living authority in mycology has, according to my thinking, thus scientifically "scotched this snake," exactly in accordance with my long practical pre-conceived notion of it; and I dare say it is well known how, under my dead and gone *incog.*, I have been with him in combating these zoospores, by growing my Potatos high and dry in ridges, and by plying the soil with lime rubbish and quick-lime at the time of planting—by allowing sufficient room between the rows for the sun and air to penetrate, and otherwise to keep the surface of the earth in as dry and friable a state as possible. The appearance and present state of my crops will back Mr. Berkeley up in what he says at p. 944. I have frequently had to do combat in print in defence of the ridge-and-trench system, though I do not presume to say that I can prevent the disease by adopting it; still, even now as I write, why should Providence favour me more than my neighbours, if there was nothing in it? They are complaining sadly of "the rot." Not one single affected tuber have I dug up to this present time, and, with the exception of one delicate, soft, hairy-foliaged new seedling, the leaves of above 60 varieties of my own I have growing here on the ridge are comparatively green and promising; and yet this garden, both for soil and surroundings, is most favourable for the "taking" of the disease. Yes, depend upon it, dryness is the only panacea for the murrain, and the ridge-and-trench sytem the antidote, as I tried to explain it in Nos. 6 and 13; and I trust in a few weeks' time it will enable me to appear at South Kensington as usual, to illustrate its excellent results. So, lance at rest, allow me to further parley with our querist. Most usually the foliage of Potatos becomes stricken with the spot at a certain matured stage, viz., at about the time of the "setting" of the skin, and then it must be that the energies of the leaves are being taxed to their utmost possibly to a degree to exhaust them, and so make them more susceptible to attack when batteries of electric fluid, with moisture, acting upon so delicate texture as the leaf of a Potato, and the generation of fungoid mould in its most destructive form, combine (all the more easily at that particular stage), to the annihilation of leaf, stem, and tuber. As a case in point, I have now got between 1000 and 2000 seedling Potatos of my last year's crops, growing under glass in an orchard-house, most fortunately, where a drop of atmospheric rain has not been able to fall upon them; and they are, every individual plant without an exception, free from the fell spot, whilst some of the very same batch of seedlings which I pricked out in the open air for want of room under the glass, are stricken. This serves to show, as another conclusive proof, if one is wanted, that the mould-laden rain is at the bottom of the mischief; for the mere atmosphere would, in its action, be the same inside as outside of the house, as I keep every available opening unclosed—and they are many—in order not to "draw up" the young hopefuls. Besides, they are artificially watered as required. In fact I have never found either rain or wet affect Potatos in the haulm unless tempest is prevalent: witness 1860. The uniform cold rains, unaccompanied by an electric atmosphere as "white rains," did not affect the crops. Never were better Potatos grown, or freer from disease, than in that cold, wet, untoward season. When a diseased dried up "old tuber" is planted as seed it will tell its own tale by unhealthy growth altogether, and probably succumb, whether the disease becomes prevalent or no; but the "spot" never has its origin either in root or tuber, so far as I have ever been able to discover. So for my part I give the result above as the actual features of "How it comes? What brings it?" and what sort of "atmospheric action" prevails for the production of the Potato disease. The Potato is not a "special victim" to electricity. A man, an animal, a tree, "what know I," have affinity to electricity in peculiar states of their existence. A duo of human bipeds shall be walking or standing together, and how often do we read that one will act as a lightning conductor, and be stricken dead, whilst the other is left? And to common observation do not these attacks occur when Nature is "most put to it," from nervousness, over-exhaustion, or being in contact with such? The "stoning" of the fruit, and at the full swelling-tide of the vegetables—are not these their most trying times and seasons of attack from various causes? We must ask these things of science, and some day perhaps we shall get our answer. Let "us other" keep our pens and wits sharpened, and our shoulders well up to the wheel, in connection with it; for most assuredly, in our day, practice cannot get on without science, or *vice versâ*. *Robt. Fenn, Rectory, Woodstock, August* 2. [Yes, but you deal too much in mere assumptions in the matter of electricity. Eds.]

Campanula Barrelieri.—I wish to commend this species as a plant for window culture. It well deserves a double First-class Certificate of Merit. Outside of my window there stand two 10-inch pots, each containing a plant of this lovely Campanula. It hangs down over the sides of the pot to a depth of 4 or 5 inches, and the plants are now, literally speaking, of a delicate greyish-mauve, the flowers nearly 1½ inch in diameter. It is perfectly hardy. If this species were bedded out, and used as a dwarf edging plant, it would create quite a sensation. *R. D.*

Grape Growing at Kingston Hall. — To say that the true version has been given, and that the border chambers are open to the arches underneath, is a mistake, as no alteration whatever has been made in respect to the chamber underneath the border, except the doing away with the ventilators in the interior wall of the house, against which the front pipes are now placed; hence the reason of the arch being turned slightly underneath to admit of ventilators to the chamber, which extends something like 15 feet under the border, sloping with the declination, and which has no connection whatever with the arches of the interior, for had this been the case, and the chamber been open to receive the full force of heat from the pipes as originally used, it is very evident what would have been the result on the Vine roots. I do not accept either censure or praise as to its merits or demerits,—to the originators alone are these due. Mr. Cruicshank draws upon his imagination as to the superiority of the original method of having the whole of the pipes underneath, a method that no practical person would for a moment uphold, and I may, moreover, add, that I found the present heating arrangements to answer admirably, and never had a single complaint from any one in charge. I think it would have been more graceful in Mr. Cruickshank to have pointed out any defect which might be attributable to me, than to insinuate that I should speak out on a subject I had not entertained or heard mooted before. I simply write for the vindication of truth, and I have not a doubt that in this respect my assertions will be verified by those who may take the trouble to examine for themselves, and explore the vaults underneath, as well as the interior chamber under the Vine border, which is in every respect as I have represented it to be. *Geo. Westland.*

—— I do not for a moment contest the point with Mr. Westland. My examination was not thorough enough to pronounce on the matter positively, as will be seen on turning to my notes. I wish now it had been more so; but my time was limited, and I was not aware but that alterations had been made. I followed local information, and also, I admit, your special correspondent, in the statement that the borders were not heated with pipes underneath them. If the fact is as Mr. Westland states, then, possibly, the high condition of these fine bunches of Grapes owes more to bottom-heat than would appear from my brief notice. With this modification, my account is still trustworthy. Of course, my sole object was to record facts, and I have to thank Mr. Westland for correcting me in such a gentlemanly spirit. *F.*

Gold and Bronze Pelargonium Beauty of Preston.—Of several Gold and Bronze (bicolor) Pelargoniums I am growing this season, the one most to be commended is Beauty of Preston. It is one sent out a short time ago by Mr. Thomas Sampson, Preston Road Nurseries, Yeovil, and to the best of my knowledge the Floral Committee of the Royal Horticultural Society awarded it a Certificate when seen growing at Chiswick. Compact in growth, yet free, short-jointed, and making a low spreading growth, it is well adapted for bedding; the leaves are quite golden in colour, with a regular orange-chocolate zone. Compared with this, the leaves of several others are quite green, while they are more rank in growth. *R. D.*

Utricularia montana (see p. 1039, fig. 233.)—I saw this curious plant when abroad some years ago, and had the pleasure of receiving living specimens from the Botanic Garden, Trinidad, in 1858. It is very plentiful on the mountains in Trinidad, growing on the trunks of trees, living and dead, among Moss, Lycopods, and trailing Ferns, in very shady situations, where the atmosphere is charged with moisture to such an extent that the clothes of the traveller become saturated in a very short time, and a peculiar chill is felt. The plant is seen to the best advantage on the moss-covered trunks of trees. It increases as rapidly as the Strawberry, and in the same manner, so that it will soon be plentiful. *Ebor, Blackpool.*

Bluegown Cucumber.—Your correspondent "J. C. N." (p. 1041) is at sea about the merits of this Cucumber. I planted two plants of this sort in a small three-light dung frame some time in the early part of May, and up to this time I have cut more than 40 yards of Cucumber of fine quality. If your correspondent would look in at the Newton House Gardens, near Bedale, which I presume is not far distant from Mount St. John, he would see a plant growing there which was a cutting about a month since, showing some splendid fruit. If your correspondent is not well up in growing good Cucumbers in a short time, he might get a few hints there, as they are grown largely for sale. *Cucumis.*

—— "J. C. N." could not have had the true Bluegown Cucumber. I planted in April two plants raised from a packet of seed sent by Mr. Turner; the produce has been most satisfactory—plenty of Cucumbers, averaging from 18 to 24 inches in length, of good appearance, and excellent flavour. They are growing on a hotbed, with the Telegraph in the same frame, which also is one of the best Cucumbers grown. *W. Fowle, Dogmersfield Gardens, near Winchfield, Hants.* [We have other letters testifying to the excellent merits of this Cucumber. Eds.]

Trial of Hot-water Boilers.—I think the Messrs. Weeks & Co. are deserving of hearty thanks for their suggestions upon this matter. Whether the place and mode of trial are the best that could be suggested, may safely be left to the collective wisdom of the boiler-makers and your readers. I may, however, add that I think the established boiler-makers have had but scant justice in recent controversies, and I am very glad to see one of the first and largest amongst them give a challenge to all comers to a trial of power, efficiency, and durability. My rule—and I have found it a very safe one—is never to part with an old servant—or boiler—in favour of a new, as long as the old one will do its work well. No one can doubt that tubular boilers have done good work, and many contend that they are the most economical of all forms, but these are the very points that ought to be settled by a fair test. I still think that this is a matter that the Royal Horticultural Society ought to take in hand. It is kind of the Messrs. Weeks to offer the use of their place and their assistance, but other makers might object to go there. The competition should be on neutral ground, and be superintended by a body free from interest in any particular boiler. The time allowed might easily be contracted. A twelve day and night trial would prove a very formidable matter; I see little difficulty in bringing it within much narrower compass. Were the boilers placed side by side, as near as might be, and some general principles of testing and trial agreed upon by the exhibitors, and thoroughly understood by the jury, the results might soon be collected and assessed at their proper value. Neither do I consider any system but that designated A by the Messrs. Weeks & Co. worth the labour of trial. Those who believe in sending the water down below the level of the boiler, as suggested in system B, and those inclined to drive the whole of the water by caloric alone, and thus dispense with the aid of gravity, and in fact fight against it, as in system C, would be free to test their theories against system A; but for each boiler-maker to test the three plans seems to me like a waste of time and a reflection upon our knowledge. A man may assert that trees would grow best planted head downwards, but that is no reason that we should seriously try the experiment. By all means let those try it that believe in it, and so let each maker put up one boiler alike in capacity and work provided for it, and let that one which does most work in the shortest time, with the least expenditure and without endangering its durability, win the highest honours. I do hope that our boiler-makers, old and new, will enter heartily into this trial of merit, so that we may have some better authority than every man's estimate of his own boiler to guide us in the difficult matter of selecting the best. I met with a most intelligent gardener the other day, who assured me that a boiler that has recently been much lauded for its economy and efficiency is the most extravagant form that was ever made. It burnt so much fuel last winter, that it is in serious contemplation to replace it with a tubular before another comes. All such incidents show the need of a thorough trial, and it is to the interest of the makers as well as the users of boilers that the best one should win, for one form is just about as easily made and as profitable to the makers as another, and we are only concerned with the efficiency and economy of boilers. *D. T. Fish, Aug.* 12.

—— I was not a little delighted to read in the last *Gardeners' Chronicle* of a proposed trial of boilers. I should certainly be most glad to take up my position in the competition. As the heating apparatus is the very heart and life of every horticultural establishment, perhaps nothing is more important to its welfare than a good boiler; and therefore I think the Council of the Royal Horticultural Society ought to take this trial in hand, so that it may be thoroughly and effectually carried out in mid-winter, in one of the arcades adjoining the conservatory. The place is admirably adapted for the purpose, and it would cause little or no loss or inconvenience, nor run to much expense, as there is an abundance of piping, and it can easily be fixed in whatever way may be deemed advisable. Moreover, as Messrs. Weeks have a boiler already in its place, I should imagine they would willingly agree to have the trial carried out there. I cannot see that their first condition as regards water space round the fire has anything to do with the real point requiring elucidation, that of heating a greenhouse say 100 feet long and 20 feet wide, some distance away from it. The question is, what apparatus can throw the most heat into it, in a given time, and in a uniform state, say for 48 hours or longer, with the least expense of fuel, labour, and attention, and which boiler is most likely to continue to do this for the greatest number of years without incurring doubt as to safety and expense. In the event of the Council not feeling disposed to offer to carry out the above trial, I should be glad to have my patent boiler tested, side by side, anywhere, with any other, a committee of six thoroughly practical men deciding upon the rules to be laid down—the winner to be proclaimed the best boiler, without fee or favour. *H. Cannell, F.R.H.S., Woolwich.*

Cypripedium niveum.—In reference to your paragraph on p. 1040, perhaps you can also inform "Juvenis" and myself who the celebrated "Mr. Downing" is (mentioned in the same monthly magazine as a "raiser of *species* and hybrids of Cypripedium"). This cannot be a misprint for the name of my respected friend Mr. Downie. Query: Should it be the "Downey Cove" or "Artful Dodger"? Gentlemen, can you also tell me where I can purchase seeds of that new Heartsease, said to have been lately exhibited at Regent's Park. I believe it is called the Chim-pansy. *S. O. Green, Ireland.* [Can you inform us which you pride yourself most on, your slang or your puns? Eds.]

A Heavy Thunderstorm.—We had a thunderstorm here yesterday, which will be long remembered. For several days previous the thermometer had ranged high—82° to 85°, wind variable, and on Sunday last we had thunder, but only some 0.12 inch of rain. Yesterday the thunder was first heard about 4 P.M., to the east, and at some distance, but was not long in being close upon us, and after some heavy peals the rain came down heavily. Shortly after 5 the storm abated, going off in a northerly direction, but soon returned; and all round, from 5.30 to 8 o'clock, we had a continuous storm, some of the peals of thunder being exceedingly loud, with much lightning and torrents of rain; indeed, in the four hours the storm lasted our rain guage gave 4.24 inches—the largest quantity ever known to have fallen in this neighbourhood in such a short time. Of course much damage is done, the roads and walks in many places being washed out to their foundations, as where, from local causes, a rush of water took place, the drains were found quite insufficient; part of the low flower garden was under water for some time; the pond overflowed its banks, and the kept grounds in the valley below were flooded at the lower end, and some wire fencing laid flat with the ground, and further down the park a house was flooded to the depth of 3 feet on the ground floor, the furniture floating about. Still lower down, at Melbury Village, in two instances, aged women were rescued with difficulty, and taken to other houses for the night—the flood passing in and out at their cottage windows. Several narrow escapes are reported, and we shall doubtless hear of many losses sustained, and by those who can ill afford to bear them. At present I have only heard of two Oak trees having been injured by the lightning. *T. C. Elliott, Melbury House Gardens, Dorchester, August* 15.

Dinner-Table Decorations.—According to my experience of dinner-table decorations, what "D., Deal," says is correct. What we have had to do in this way for the aristocracy never exceeds 18 inches, more often under a foot; but the newest thing now is to decorate on the table-cloth, without any stands at all. My opinion has always been, that the stands and decorations exhibited at all the flower shows were an absurdity, and got up by people who had never seen a dinner on the tables of the "upper ten thousand." *J. Standish, Royal Nurseries, Ascot.*

Gooseberry Caterpillars.—To do away with the danger of being poisoned with the dust of Hellebore powder on the Gooseberry trees, when the time arrives for digging between the trees carefully remove the soil from beneath them into the trench. I have always this done with a hoe. By this means the grubs that are afterwards hatched into flies that lay the eggs on the leaves, are destroyed at the bottom of the trench. We were eaten up with caterpillars some years since; but, by following out the above directions, the trees are now entirely free. *W. F.*

Roses from the North.—Being present at the Supplementary Rose Show at the Crystal Palace on Saturday last, I was struck with the remarkable beauty of the Roses; and, considering the extraordinary season, I think it was a great success, both in respect of quality and quantity. What I thought the most interesting feature was the display by Mr. J. Harrison, of Darlington. Grown so far North, and forwarded a distance of about 240 miles to compete with our southern growers, the flowers stood forth in a manner, not massed for a *coup d'état*, but scattered over trays with a plentiful background of Moss; which, though it took off the brilliancy of colour, yet threw out boldly the massive healthy foliage and buds with which almost every bloom was surrounded. I marvelled to learn such fine natural trusses obtained neither prize nor commendation. I have always understood that foliage and buds were a great acquisition, and always taken into consideration by the judges. I presume that taste in the arrangement, so as to show a mass of bloom, is of more consequence than merit. I shall be glad to learn, through the medium of your valuable paper, whether any other visitors noticed the excellence of these northern trusses, and also to learn whether it is necessary to arrange them in the boxes, as shown by our southern growers? If so, I for one would advise our northern friends to adopt the same plan. *J. H. A.*

Use of Nitrogen in Vegetation.—I would not again have ventured to trespass on your space with respect to the nitrogen question had you not mentioned my name in connection with it in your leading article on the 12th inst., when recording an interesting experiment conducted by Mr. George Davis and Mr. Newlyn. When questioning the accuracy of Liebig's broad assertion, that plants are incapable of assimilating nitrogen direct from the atmosphere, I did so because I had nowhere read the record of any very satisfactory or convincing experiment to prove they could not, and I was in hopes, by publicly calling attention to the matter, as I ventured to do at the Ratcliffe Observatory, Oxford, I might induce experimental chemists to turn their attention that way. I am still of opinion that even if free nitrogen cannot be obtained by the plants direct from the atmosphere in which they live, that still the value of ammonia, and other nitrogenous compounds as manures, does not consist merely or principally in supplying the plant with the requisite nitrogen. The percentage of nitrogen in all growing plants is so small, and the percentage in the air so great, that it seems contrary to the general economy of Nature and the usual order of Providence to surround plants with what is of vital importance to their existence, and yet deny them the power of obtaining what they require from it. It would be like putting an aquatic plant in water, yet denying it the power of obtaining hydrogen from it. The most important nitrogenous manure is ammonia, and we do not yet know what part ammonia may fulfil as a physical and chemical agent in the sap, enabling the plant to elaborate from the sap (the life blood of the plant) those various solid constituents that help to build up and form the plant; and undoubtedly ammonia is a great solvent of the various forms of carbonaceous matter to be found in all soils, especially those of a peaty nature, several of which are of themselves insoluble in water. Because plants are enabled to absorb carbon from the carbonic acid of the air, it has been assumed that they can obtain all the carbon they require from this source; but as the weight of the carbon in most plants is nearly 50 per cent., and in the air there is only about two parts in 10,000 of carbonic acid, this is assuming too much. May not ammonia, therefore, play the same part in the economy of plant life, as the gastric juice, pancreatic fluid, and other similar chemical compounds do in the human system, which enable us to assimilate and digest the food which we take? Moreover, both in plant life and animal life all nitrogenous compounds are more easily decomposed and digested, or assimilated, than those which do not contain N, and it is only while the power of vital force is in operation that the nitrogenous compounds of the human body are capable of existing without decomposition. Chemical analysis (both quantitative and qualitative) is only up to a certain point reliable: for instance, gum, starch, and sugar, are each by quantitative analysis the same, the formula for all these being $C^{24}.H^{20}.O^{20}$, and yet any child would distinguish one from another. In seeds, as of Wheat, for instance, a particular chemical substance called diastase is capable of converting starch into sugar. This is what takes place in sprouting Barley for malting purposes; diastase is capable of changing the insoluble starch into soluble sugar. May not nitrogenous compounds play some important part of this sort in the sap of plants, changing insoluble to soluble, and assisting in the endosmosis and exosmosis from cell to cell in vegetable substances? I know all this is matter of mere conjecture, but there are more elements of truth in it than there is in the Darwinian theory, that man is merely a development by natural selection from an ascidian, when in the whole course of historical and geological records there is no proof of any one species having changed into another, and though there have been many different types in the same species, as is the case in dogs and horses, pigeons, &c., yet in every case these different types have been fixed by human agency, not by natural selection only. This, however, is a digression. I cannot resist quoting an extract from Professor Johnston's "Agricultural Chemistry," p. 800:

> "If pure oil, which contains no nitrogen at all, will yet produce an enriching manure by mere mixture with the soil, or will increase greatly the effect of bones, we must obviously seek for some other principle upon which to account for the effect of manures besides, or in addition to, the proportion of nitrogen they contain. It is true that impure or refuse whale oil, when used for composts, may contain some nitrogen, but when pure oil is used, such can scarcely be the case to any great extent.
>
> "While, then, we put so much faith in theory as to believe that substances which contain much nitrogen are very likely to prove valuable manures, we must not allow ourselves to be so carried away by the simplicity of the principle as to believe either that the relative effects of manures upon our crops may be always estimated by the proportion of nitrogen they contain, or that a substance may not increase largely the produce of our fields in which no nitrogen is present at all. Indeed the effects of saline substances alone are sufficient to satisfy us how untrue to Nature this latter opinion would be."

C. P. Peach. [Our correspondent seems to have overlooked the experiment of Boussingault. EDS.]

Foreign Correspondence.

COULLIOURE, PYRENEES ORIENTALES.—The year 1871 will be noted in meteorological records for its irregularities and its excesses, and even as far south as this we have not been free from those returns to winter temperature which have done you in the north so much harm in the spring and early summer.

The month of May was quite a summer month with us; its mean temperature was 16°.68 Cent. = 62°.02 Fahr. On June 3, however, we experienced a strong gale from the north, which lasted for three days, and was both very cold and very dry. In the night of June 3—4, the thermometer went down as low as 6°.4 = 43°.52 Fahr., an unparalleled thing at such a time in this locality. If it had been simply cold as a result of radiation, no harm would have been done to the plants subjected to its influence, but being cold by convection and the accompanying wind violent and of long duration, the mischief done in gardens was great. I had a fine collection of Cucurbitaceæ, the seeds of which were sent to me from the Imperial Horticultural Society of St. Petersburg, with a request that I should examine them carefully and report on them. Up to June 3 these plants were in good condition, and I flattered myself I should obtain some valuable results; but the great and sudden lowering of temperature, in consequence of the north wind, killed them nearly all, and that suddenly. I call attention to this because many horticulturists and meteorologists seem to overlook the fact that the cold of convection is more injurious to vegetation than the same degree of cold produced by radiation in a still atmosphere.

Six weeks later we were witnesses of facts not less remarkable and unusual, but of exactly an opposite nature—an excessive degree of heat—excessive even here. Like the cold in the early part of June it occurred suddenly. On July 15 the thermometer indicated 35°.7 Cent. = 96°.26 F.; on the 16th, 34°.4 = 93°.92 F.; on the 17th, 37° = 98°.60 F.; on the 18th, 38°.2 Cent. = 100°.76 F.; and on the 19th, 39°.4 Cent. = 102°.92 F.

These readings were taken from a mercurial thermometer hung in the shade in a current of air, and swaying to and fro in the wind, but the fixed thermometers in a north aspect and protected registered on July 19, 43° Cent. = 109°.4 F. This day was most trying for human beings as for plants. The leaves of the Vines were rusted as if scorched by a furnace. Many of the stocks were killed, and at least a third of the Grapes destroyed by desiccation. The Figs altered their appearance, and their leaves were strewn on the ground as in November. The Olive crop, which up to that time was very promising, is much injured by this sudden Sahara-like temperature. Herbaceous plants left unwatered were roasted like a slice of bread on a gridiron.

In spite of these meteorological excesses, I have some interesting plants doing well. Among them the Solanum quitoense, which has edible fruits, and of which I received seeds from Mr. Daniel Hanbury; also a very curious grass from Guatemala, perhaps an undescribed species, but in any case one very remarkable for the vigour of its growth. If I succeed in making it flower and perfect seed here, it will probably prove a forage plant of first-rate importance. I received it from M. Durieu, of Bordeaux, who supposes it allied to Maize and to the Job's Tears, Coix—intermediate between the two. I have been less successful with the Voandzeia subterranea of Madagascar, which flowers with me in the open ground, but perishes immediately after, except in the case of one plant, which I have succeeded in keeping alive by watering it three or four times a day, from which I infer that it is a semi-aquatic plant. If any correspondent of the *Gardeners' Chronicle* can give me any information as to the conditions under which the Voandzeia grows in its native country, I shall be much indebted to him. *Charles Naudin.*

Societies.

ROYAL HORTICULTURAL: *August* 16.—W. Marshall, Esq., in the chair. At the general meeting, which was of very short duration, the chairman of the Fruit Committee, when announcing the awards made by that body, stated that it had that day, and for the first time, had one of its First-class Certificates returned, under the following circumstances. At a meeting, held on August 17 last year, this award was made to Mr. Pearson, of the Chilwell Nurseries, near Nottingham, for a seedling White Grape of great promise, named Chilwell White. Later on in the year Mr. Pearson suspected, from the appearance of one or two berries, that the Grape would not keep, nevertheless he propagated the variety to a considerable extent. This year, however, the fault has developed to such a degree that he cannot conscientiously send it out, and has therefore decided to destroy the whole of the stock on his hands, and to return the award made to him. It appears that the variety in question has a large receptacle, which is generally assumed to indicate good keeping qualities; but in this instance its tendency to separate is so great, that Mr. Pearson (to his honour be it said), instead of causing much disappointment, has determined to destroy the whole.

The Rev. M. J. Berkeley then proceeded to comment upon some of the objects of interest brought before the Floral Committee, first stating, with reference to a flower of Anthurium ornatum, from the gardens of Mr. W. W. Saunders, that it had a most delicious scent, and that nothing could be more beautiful than the contrast between its rich green foliage, white spathe, and delicate pink spadix. He had also received from the same gentleman a Gesneraceous plant, which he believed to be Drymonia bicolor, and of which there is a figure in the "Botanical Register" (vol. xxiv., plate 4). Mr. Saunders exhibited it under the name of D. cristata; but of this species there is a figure in "Paxton's Flower Garden," and the description states that the plant is downy, whereas in this case it is glabrous. Alluding then to specimens of Trefoil, exhibited by Messrs. Carter & Co. to show its value as a new food for cattle, Mr. Berkeley observed that it was figured and described in the "Botanical Magazine" so far back as 1823 (vol. xlix., tab. 2283), under the name of Trifolium cœruleum [now Melilotus cœrulea], and it was known in Switzerland many years before—Caspar Bauhin, in his "Pinax," mentioning the use of this plant made by the Swiss for flavouring chapziger cheese. The whole plant, but more especially the flower head, possesses a powerful scent of Fenugreek, an odour grateful to many, but to others extremely disagreeable. Previous to the date mentioned it was grown in most gardens in Europe for the sake of its scent, and was frequently laid in wardrobes to drive away moths. In Mr. Berkeley's opinion it would prove beneficial to fattening beasts, but not to cows, on account of the peculiar flavour which it might impart to the milk. Reference was then made to a trial of Onions, which will be found more fully described at p. 1064, the speaker remarking that a small Fungus, near to Peronospora destructor, nearly destroyed his crop, through killing the foliage.

Floral Committee.—Dr. Denny in the chair. From Mr. Croucher, gr. to J. T. Peacock, Esq., Sudbury House, Hammersmith, came 6 very interesting new Agaves, to two of which, named Simsii and imbricata, First-class Certificates were awarded. Mr. Green, gr. to W. W. Saunders, Esq., sent a cut specimen of Anthurium ornatum, a new species from Santa Martha, having bright green cordate leaves, a white spathe and delicate pink spadix; a decided acquisition, which also commanded the highest honours that could be conferred. Mr. Green also exhibited a very fine new Dracæna, near to D. fragrans, received from South Africa, and flowering examples of Eucomis clavata, and Griffinia intermedia. Mr. B. S. Williams sent two nicely flowered specimens of Erica Turnbullii, the merit of which consists in its free growing habit, as compared with others of the high-coloured sorts; and from Mr. Mackintosh, Hammersmith, came cut flowers of an inferior pink Epiphyllum. Mr. Wilson, gr. to W. Marshall, Esq., Enfield, sent a flowering plant of Lælia elegans var. Marshallii, remarkable for the distinct form of its richly-coloured lip—a plant which ought to have been certificated; the Rev. Lord Hawke, Willingham, Gainsborough, had a stand of fine new seedling and other Hollyhocks; and from Mr. Wills came a nicely grown specimen of the Ivy-leaved Pelargonium, Duke of Edinburgh.

The show of Gladioli, the principal feature of the meeting, was an unusually good one, the spikes being generally very fine, and exceedingly bright in colour. The first class was an open one for 24 cut spikes, the prizes being offered by the President, His Grace the Duke of Buccleuch. Messrs. Kelway & Son, Langport, were 1st with a splendid stand, consisting of the best of the older kinds, and several splendid new seedlings, the following of which were afterwards selected for First-class Certificates:—Araximenes, vermilion-scarlet, crimson-feathered, petals very broad and stiff; Yellow King, the gem of the exhibition, pale yellow, flamed with crimson, petals very broad and flat, forming a large, broad and compact spike; Astrea, bright scarlet, feathered with crimson, the spike fine but narrow; Lady Bridport, a shaded pink, feathered with crimson, and very fine petals; Lord Bridport, rosy pink, deep crimson-feathered, a fine spike; Archelaus, white, feathered and flamed with crimson; and Phidias, claret-crimson shaded with white, a very attractive flower. Mr. Douglas, gr. to F. Whitbourne, Esq., was a very close 2d, with good spikes of Meyerbeer, Princess Mary of Cambridge, Empress Eugénie, Princess of Wales, and several promising seedlings. Mr. G. Wheeler, Warminster, was 3d, and the Rev. H. H. Dombrain had an extra prize. In the amateurs' class for 12 Mr. Douglas came in 1st very easily with a stand of flowers equal to any in the show. This also included some remarkably fine seedlings, raised by Mr. Douglas, as Francis Whitbourne, white, beautifully flamed with rich crimson, forming a close, neat spike; Mrs. Francis Whitbourne, flowers larger and of a more pure white than the former, feathered purplish crimson, petals broad, and a fine spike; and William Earley, faint yellow, flamed with a reddish pink; and one of M. Souchet's new sorts, named Talisman, clear deep rose, with broad stiff petals, and a fine spike. These also were awarded First-class Certificates. Mr. J. W. Welch, gr. to J. Marshall, Esq., Belmont Park, Taunton, was 2d, with nice spikes of Lord Granville, Sir William Hooker, Pegase, Le Poussin, Sir J. Paxton, &c.; the Rev. H. H. Dombrain being 3d. The last-named exhibitor came in 2d in the class for 6, Mr. Douglas again being 1st with Orphée, Madame Desportes, and four fine unnamed seedlings; 3d honours were divided between Mr. Welch and Mr. F. Warren, Wellesley Road, Croydon. Messrs. Kelway & Son also sent a grand collection of 72 spikes, amongst which Lacépede, Horace Vernet, Plutarch, Norma, Madame Desportes, Meyerbeer, Eugène Scribe, Pioneer, Le Mauve, Alhambra, Celeste, and Heraclitus, were especially fine. An extra prize was awarded. Messrs. Carter & Co. also exhibited a large collection of seedlings and named varieties. For the best 6 Hollyhocks, cut spikes, the 1st prize was taken by Mr. W. Chater, Saffron Walden, who had excellent specimens of Bullion, Queen of the Yellows, Marion, Fair Ellen, Majestic, Fascination, &c. Mr. Chater was also 1st for 24 cut blooms, Messrs. Paul & Son being 2d; and Mr. G. Wheeler 3d. In the first named collection, Fred. Chater, Splendidus, Prince Albert, Leviathan, Joy, Eclipse, Invincible, and Enchantress were very fine. For 12 cut spikes of Phloxes, distinct, Messrs. Downie, Laird & Laing were 1st, and Messrs. Paul & Son 2d. Some very nice flowers were shown, but they flagged soon, and did not look nearly so bright and attractive as when put up in pots. Prizes were offered for a single dish of Apricots, and these were awarded 1st to Mr. G. Craddock, gr. to Lord Willoughby de Broke, Compton Verney, Warwick, and 2d to Mr. Smith, gr. to the Earl of Gainsborough, Exton Park, Rutland, both competing with Moor Park. Messrs. J. & C. Lee, Hammersmith, exhibited a very large collection of cut branches of hardy ornamental trees and shrubs, including 146 species and varieties. Amongst the variegated forms the most noticeable were Acer campestre variegatum, Castanea vesca albo-marginata, Cornus sanguinea elegantissima, Fraxinus aucubæfolia, Tilia argentea, Quercus purpurea, Fagus purpurea major, and Platanus elegantissimus. Other kinds, remarkable for the distinctness or boldness of their foliage, were Alnus cordata, bearing small cone-like fruit; Catalpa Kæmpferi, Gleditschia Bugoti pendula, new; Morus hispanica, new; Pyrus Aucuparia sibirica nana, bearing pretty scarlet fruit; Robinia hispida, Fraxinus Juglandifolia, Robinia pendula, Betula laciniata pendula, &c.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair. On this occasion Special Certificates were awarded to Mr. Tillery, Welbeck, for a beautiful dish of Barrington Peaches, along with which also came examples of a seedling Nectarine, raised at Welbeck, from Violette Hâtive, which becomes of a peculiar black colour when ripe, and a nice dish of St. Ambrose Apricot; to Mr. Thomas, gr. to T. Chamberlayne, Esq., Cranbury Park, Winchester, for two fine and well-ripened Queen Pines; and to Mr. J. Douglas, gr. to F. Whitbourne, Esq., for capital examples of Royal George and Bellegarde Peaches, and Washington Plums. Dishes of Apricots were shown by Mr. W. Gardiner, gr. to W. E. P. Shirley, Esq., Lower Eatington, Stratford-on-Avon, and Mr. Rutland, gr. to the Duke of Richmond, Goodwood, which, like most other Apricots this season, were much wanting in flavour. Mr. T. Thornton, Heatherside Nursery, Bagshot, sent fine specimens of the Heatherside Rival Cucumber, a neat smooth variety, which, if a good one for winter use, the Committee thought would be acceptable, and to that end they requested that it should be sent again in January next. Mr. Meaks, gr. to R. Fowler, Esq., Petersham, again sent specimens of Ingram's Scarlet Gem Melon, grown in a cold frame, and very poor in flavour. Mr. W. P. Roberts, gr. to Lady Derby, Holwood, Kent, sent three bunches of Grapes, cut from Vines over 100 years old, which a few years ago were in a very bad state, but are now recovering well, as the size both of bunch and berry fully testified. Mr. Pearson, Chilwell, exhibited a nicely finished bunch of his new Grape, Ferdinand de Lesseps, highly flavoured; two white seedlings, from Duchess of Buccleuch, totally distinct in character; two seedling black varieties from Black Morocco, distinct in character, good setters, producing large berries, and showing no signs of cracking; and a seedling variety from Mrs. Pince's Black Muscat, which produces a close very compact bunch, and fine berries. Some of these were considered very promising, but unfortunately all were unripe, so that a correct opinion of their merits could not be formed. Mr. Earley also sent a small berried seedling Black Grape, not quite up to the mark in flavour. Mr. Maurice Young, Milford, near Godalming, sent a Cucumber plant from 4 to 5 feet long, the stem of which was broadly fasciated, which seems to produce fertility, as the plant bore 15 fruit, all about the same age. Mr. Gardiner sent branches of Apple trees, to show the heavy crop they are bearing; and Mr. Foote, gr. to Sir A. H. Elton, Bart., Clevedon Court, Somerset, sent some fine Morello Cherries.

ROYAL BOTANIC: *August* 10.—The 32d anniversary meeting of this Society was held at the gardens, Regent's Park; Mr. B. Attwood in the chair. His Serene Highness the Prince of Teck was re-elected President, and Mr. W. M. Coulthurst, Treasurer; Dr. Brewer, M.P., and Mr. W. F. Low, were elected new members of Council. The Secretary, Mr. W. Sowerby, read the annual reports of the Council and auditors, from which it appeared that notwithstanding the very unfavourable weather during the season, the total receipts had exceeded the total of last year. This increase was in consequence of the large sum received on account of subscriptions. The total receipts from all sources, including the special subscription for the new conservatory building, was £8373 18*s.* 6*d.*, and the expenditure, including liabilities, to £8720 10*s.* 5*d.* This expenditure included above £2000, the cost of building a new wing to the conservatory, building stores and potting sheds, laying on water, and other permanent works completed during the year. A large number (116) of new Fellows had joined the Society during the year, and the ordinary subscriptions had been £3823 1*s.*, a sum which has only been reached six times during the 32 years of the Society's existence. The facts, however, of most interest to the public mentioned in the reports related to the valuable facilities gratuitously afforded to students for the study of plants in connection with medicine, the arts, and manufactures. 231 free orders of admission have been granted, and 22,541 cut specimens distributed, against 182 and 10,712 respectively in 1870; and the officers of the Society are constantly affording to artists, merchants, manufacturers, and others valuable information in answer to queries connected with their various pursuits, and illustrating the same by reference to the living plants furnishing the raw materials. The number of distinct species of plants in the educational garden is now more than 3300, of which above 500 are of medicinal or other economic value. A covered way, 200 feet long, from the public road to the conservatory, is in course of being built, and is expected to be finished before the end of November next, thus affording access to the conservatory in all weathers, and making it a true winter garden. Thanks were voted to the President, Vice-Presidents, and Council, the members of committees and other officers, and the proceedings terminated with a vote of thanks to the Chairman.

GLASGOW ROYAL BOTANIC: *August* 10 to 13.—This was the first of a contemplated series of flower shows to be held in the Botanic Garden at Glasgow. The directors of the gardens, assisted by the curator, Mr. Bullen, have prepared a special exhibition ground, laid out in agreeable undulations, the principal groundwork being covered with green turf, and intersected by spacious walks for promenading. This arrangement permitted the grouping of the plants in picturesque style, and very much enhanced the effect. Every one entering the spacious marquee thrown over this exhibition space must have felt that something of the kind was what every flower show committee should aim at, both for the comfort of the visitors and for the right and proper grouping of the plants. The day was brilliant.

The most prominent features of the show were arranged in the marquee above alluded to, and consisted chiefly of three miscellaneous collections of plants, which occupied the terraced divisions in the centre; the interior margins being filled with the lesser groups representing the subsidiary classes, all very pleasingly grouped. The 1st prize was awarded to Provost Russel, Falkirk, whose gardener (Mr. Sorley) put up an admirable lot of plants in a most artistic manner. His plants of the noble Seaforthia elegans and Cyathea dealbata, and the elegant-looking Australian Dracænas, towered quite up to the canvas, and formed excellent contrasting material with the beautiful cut-leaved Cupania filicifolia, a grand plant for ornamental decoration, and the New Zealand Coprosma Baueriana variegata, which, along with the equally hardy variegated Aralia of Siebold, and even the golden-topped Yews, show their adaptability for general decorative work. Confronting these was one of the rarest of rare Orchids, Lælia elegans Turneri, than which nothing in colour or substance could be finer. This, and the Lady's Slipper Orchid, Cypripedium superbiens, associate well with Ferns, among which there is no better species for hothouse culture than Adiantum farleyense, which was well shown in this collection, as were Yucca quadricolor and Cordyline indivisa. Messrs. J. & R. Thyne, who were placed 2d, had a group which showed good cultivation. Prominent were the tall tree forms of Areca sapida, a noble Palm, Cyathea princeps, and Phœnicophorium sechellarum. There were some excellent Crotons and Dracænas in this collection, one or two Pitcher Plants, some well-grown Todeas and Filmy Ferns, and one or two half specimens of Heaths, particularly of Erica Austiniana and Marnockiana, both sorts raised from seed by the indefatigable gardener at Bothwell Castle, Mr. Turnbull. Mr. Coats, of Ferguslie, gr. to Mr. Dickson, had a lot confined in less space, but which contained some excellent examples of horticultural skill. His Aerides nobile and Saccolabium Blumei majus, were two of the finest flowering plants in the show. The Heaths in this collection were also good, particularly Massoni, which is difficult to cultivate, but was here produced in fine style.

The smaller groups of miscellaneous plants were deficient in quality. Amongst them, however, were twelve Pelargoniums, in flower, and twelve remarkable for their foliage, which were magnificently grown.

The Roses from Messrs. Dickson & Sons, Newtonards, were grand, showing how well the Irish climate is adapted to the growth of these beautiful flowers. Dahlias were good, considering the season, the best coming from Ireland.

Fruit was really a very good exhibition. The collections from Mr. Johnston, gr. to the Earl of Strathmore, and from Mr. Methven, gr. to Colonel Campbell, of Blythswood, were excellent. The former had very beautiful bunches of Buckland Sweetwater Grape, Muscat of Alexandria, and Black Prince—all first-rate in quality. He had also Pine-apples, Melons, Peaches, Nectarines, and Figs, and smaller fruits of the ordinary kinds, along with Bananas, &c. Mr. Johnston took the chief positions in the single classes of Grapes. Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, showed magnificent Pine-apples, and the Peaches and Melons were generally good. Mr. M'Connachie, Cameron House, had a very large dish of various Grapes, put up in fine order, which was highly commended. Pansies were good, but not numerous. Vegetables did not form a large exhibition, but were a fair representation of what is fit for table at this season.

Among other miscellaneous awards, a Special Certificate was given to Mr. G. White, Ladyburn Nursery, for a dark self seedling Pansy; while Mr. W. H. Hilton, Liverpool, was commended for his new patent grass-border cutter, for horticultural purposes; and Mr. A. M'Lachlan, Greenock, received a First-class Certificate for his new patent verge cutter.

The directors dined with the judges in the afternoon in the gardens. Upon the whole, the first exhibition in connection with the Royal Botanic Society may be pronounced a success—a success due in a great degree to the unwearied energy of Mr. Bullen, the curator.

Notices of Books.

The Horticulturist; *or, the Culture and Management of the Kitchen, Fruit, and Forcing Garden.* By J. C. Loudon. Edited and revised by William Robinson. Warne & Co., 8vo, pp. 707.

This is an admirable book on practical gardening, and the publishers have done well in reissuing it and in entrusting its editorship to Mr. Robinson. We may congratulate the editor on the success of his task, and on the valuable assistance he has obtained and duly acknowledged from Mr. D. T. Fish, Mr. Barnes, late of Bicton, and other practitioners. If now, after this general commendation, we proceed to point out sundry minor defects or points in which the work has not quite been brought up to the present time, it must be understood that we by no means intend to disparage the value of the work as a whole. We open it by chance at p. 461, and find a brief, and, we must say, insufficient account of the new Vine disease. There is no clue given as to the date when the disease in question was first observed; so that, as far as appears from anything in the present volume, the disease might have been new in Loudon's time. There is not a word indicative of the fact that the insect was first described scientifically in our columns by Prof. Westwood months before the French commission began their investigations. There is nothing to show that "M. J. B." had also, unless we mistake not, discovered the identity of the insect on the roots with that on the leaf before MM. Planchon and Lichtenstein began their observations. In fact, nothing is said as to the insects attacking the leaves at all; and lastly, we fear that the statement that the pest "is said to exist in one or two vineries," by no means conveys an accurate notion of how widely spread the disease really is. In so saying we do not wish to raise an unnecessary alarm; we merely state that it is much more prevalent than the passage we have quoted would lead the reader to infer, basing our own statement on the number of specimens forwarded to us from various parts of the country during the last year or 18 months. Speaking generally, however, the editor has kept well abreast with the progress in practical horticulture that has been made since the book was first written, though here and there it is very doubtful in the mind of the reader whether it is author or editor who is speaking, while in other cases the state of things is rendered apparent by the anachronism evident. Such slips on the part of the editor are, so far as we have seen, comparatively few, and do not impair the value of the work.

—— We need only mention the issue of a seventh edition of *Thomson on the Vine* (Blackwoods). Such a fact speaks for itself. Of all classes of books, those devoted to practical gardening seem to be the most successful. Edition after edition is published with a rapidity that only a successful novel can rival, and keeping pace with these unceasing re-issues is the launching of new candidates for popular applause.

—— There is no necessity to commend to the notice of the aspiring young gardener or bailiff a knowledge of mensuration, a subject they will find of use to them nearly every day of their lives; but we may be doing them a service by calling attention to a brief and unpretending but clear treatise on the subject lately published, by Messrs. Longmans, under the title of *Explanatory Mensuration*, by the Rev. Alfred Hiley.

Florists' Flowers.

THERE is much reason to fear that, by the accident of non-use, many good plants are falling away into the cold shade of neglect,—plants that deserve to be much more kindly regarded. One of these is the PHLOX DRUMMONDII. Why this is so is not difficult of demonstration. It is not from any fault of the plants themselves, but simply because fashions change in matters of gardening as they do in many other things; and to be in harmony with the prevailing fashion is thought by many to be the *ne plus ultra* of human existence. Thus when glaring red Pelargoniums came to be the prevailing feature in flower gardening, there was a general outbreak of a floral scarlet fever, and the Phlox Drummondii had to give way to the new style, quite apart, however, from any relative value of the two, but simply because Pelargoniums were the correct thing. Strange, that to be fashionably correct should very often imply much moral and social confusion and contradiction. But it is so.

My next-door neighbour has a bed of Pelargoniums, and I a line of Phlox Drummondii along a narrow, sunny border. He vows he will next season discard the former, and go in for Phlox Drummondii. The neighbours, having floral tastes, pass by his Pelargoniums with a mere glance, but pause before my line of Phlox Drummondii, and wonder what they are. And well enough they might; for the sake of their pretty pleasant flowers be it stated, they are not grown so extensively as they deserve to be. I met with a capital bed of several varieties of this charming annual Phlox in an old-fashioned flower garden a few days since, and the various colours mingled together ranged from white with a slightly coloured centre to a rich shaded blood-crimson; and it struck me it was a happy thought that suggested to the gardener the planting among the Phloxes of some of the yellow Calliopsis Drummondii, which being of a somewhat spreading growth, did not get above the Phloxes, and supplied a colour in which they were most deficient.

Since the lilac-purple Phlox Drummondii was introduced from Texas, nearly 40 years ago, a number of garden varieties have been raised from it, of all shades of colour, and any one of these, even though the seed may be selected and saved with the greatest care, will be certain to show considerable variation in the seedlings. Some of the varieties are noted for their extreme richness of colour, others for their soft and delicate tints, and all for their profusion of bloom, as well as for the long time they continue in flower.

Some years ago nurserymen used to grow a batch of the finest and most distinct varieties of Phlox Drummondii, the plants raised from cuttings. The pretty striped form, Radowitzii, can still be found in catalogues, and it not only makes a charming bedding plant, but is also very useful for pot culture, and if kept during the winter, and allowed to get a little pot-bound, will flower very freely in the spring. A few years ago a fine and distinct striped variety was introduced by Messrs. E. G. Henderson & Son. Of varieties I have tried this season I can commend Cardinal, deep bright crimson, with a slight dark centre; General Grant, shaded purplish crimson, dark centre; and Rose d'Amour, pale pinkish rose, with shaded crimson centre. Each of these have produced types somewhat distinct in character, some of darker and some of lighter shades, some of the same hue, with differences in the density and quantity of the central shading; and in the case of the rose-coloured variety several have a distinct white ring round the eye. Even more marked are the differences in the form and substance of the flowers, some have large, flat, stout, and finely rounded flowers; others are small, rough, thin, and star-shaped. Some of the forms of Cardinal are of a shining black-crimson hue. Other good varieties are Alba, Empress Eugénie, crimson and white; Heynholdii, striped; Marmorata, marbled; Oculata alba, white and crimson; and Victoria Regina, purple.

A packet of mixed seed gives a capital variation for placing in a bed indiscriminately. The seed should be sown in a pan or box in a mild heat, and pricked off into other pans or boxes, about 2 inches apart, as soon as the plants are large enough, and then hardened off in a cold frame, or any sheltered place in the open air, where some covering can be placed over them during cold nights, till the weather is sufficiently warm to admit of planting out in beds or borders. A good rich, light soil, of some depth, is the one that suits this Phlox best; the leading shoot should be pinched back to induce lateral growth; and the strongest shoots so made should be treated in the same way. A dense bushy growth results, and then is secured a mass of shoots, the main of which put forth laterals also. This keeps the bed dwarf, and at the same time well filled; and a bed thus formed, as well as one formed of Verbenas, in which the different colours are blended togther similarly, will be among the pleasantest in the flower garden, especially if edged with some suitable foliaged plant. *R. D.*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, August 12, 1871.

Names of Stations.	Temperature of the Air. Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	Fall of Rain.
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	84.0	49.0	35 0	79.1	54.3	24.8	65.1	0.00
Blackheath ..	88.2	51.9	36 3	83.0	55.1	27.9	68.3	0 00
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	84.8	50 5	34.3	81.5	53.9	27 6	65.9	0 01
Wolverhampton	84 8	50.3	34.5	81.2	55.1	26 2	66.4	0.00
Leicester ..	88.7	52.5	36.2	84.2	54.9	29.3	67.8	0.00
Norwich ..	86.5	51.8	34.7	80.1	54.1	26.0	65.4	0.00
Nottingham ..	85.7	52.8	32.9	81.2	55.5	25.7	66.6	0.00
Sheffield ..	84.0	50.5	33.5	80.9	56.1	24.8	66.7	0.00
Liverpool ..	82.5	53.6	28.9	77.0	59.2	17.8	66.5	0.00
Manchester ..	..	..	..	..	..	..	..	..
Salford	85.6	50.2	35.4	82.1	55.7	26.4	67.2	0 00
Bradford ..	84.0	53.0	31.0	79.9	58.4	21.5	67.4	0.00
Leeds	86.0	51.0	35.0	78.7	56.9	21.8	66.1	0.00
Hull	84.0	47.0	37.0	78.1	53.9	24.2	64.3	0.00
Newcastle ..	80.0	54.0	26.0	76.6	59.3	17.3	66.3	0.00
Edinburgh ..	79.7	49.0	20.7	..	..	..	63.1	0.00
Glasgow ..	76.3	51.3	25.0	..	..	..	62.4	0.00
Dundee.. ..	75.0	55 0	20.0	..	..	..	63 3	0.00
Aberdeen ..	73.7	51 0	22.7	..	..	..	62.8	0.10
Paisley	..	..	..	..	..	..	..	..
Greenock ..	71 5	57.0	14 5	..	..	..	62.2	0 12
Leith	80.0	50.1	29 9	..	..	..	63.3	0.00
Perth	80.0	53.0	27.0	..	..	..	65.6	0 00
Dublin	81.9	49.5	32.4	..	..	..	64.0	0.00

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, August 16, 1871.

1871. Month and Day.	At 9 A.M. Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
August.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
10. Thurs. .	30.02	73.6	66.7	61.2	66	4.9
11. Friday .	29.98	65.5	61.3	57.9	77	5.3
12. Satur. .	29 94	76.7	69.7	64.8	67	6.6
13. Sunday.	29.83	80.0	71.2	65.0	60	6.7
14. Monday	29.79	76.1	68.0	62.3	63	6.1
15. Tues. .	29.78	70.5	63.7	58.3	66	5.4
16. Wednes	29.81	70.7	64.4	59.4	68	5.5

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
August.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
10. Thurs. .	85.0	53.7	31.3	69.4	+ 7.3	NE : E	110	0.00
11. Friday .	87.5	52.2	35.3	69.6	+ 7.5	E : SE	95	0.00
12. Satur. ..	88.2	56.0	32.2	72.4	+ 10.4	NNE : E S.E.	95	0.00
13. Sunday .	89.2	59.7	29.5	72.8	+ 10 9	NE : E	165	0.00
14. Monday	84.0	60.5	23.5	70.5	+ 8.8	N.E.	280	0.00
15. Tues. ..	79.9	57.5	22.4	67.0	+ 5.5	N.E. : E.S.E.	210	0.00
16. Wednes	79.8	54.5	25 3	65.5	+ 4.2	E.	125	0.00

August 10.—Hazy and foggy in morning. Generally cloudless throughout Many meteors at night.

— 11.—A little cloud present at times. Very fine meteors at night.

— 12.—Generally cloudless. A brilliantly fine day. Lightning at night.

— 13.—A little light cloud occasionally. Very fine. Frequent lightning at night.

— 14.—Generally cloudless till after 9 P.M.; cloudy between 10 P M and midnight. Fine day.

— 15.—Cloudless throughout. A very fine day. Lightning at night.

— 16.—Cloudless, with the exception of the period comprised between 4 and 9 P.M., when clouds were prevalent. A fine day. Hazy.

JAMES GLAISHER.

Miscellaneous.

THE BRITISH ASS.

(*Sung by a Cub at the Red Lions' Feed, Edinburgh, August* 7, 1871.)

Air: "The British Grenadiers."

Some men go in for Science,
And some go in for Shams,
Some roar like hungry Lions,
And others bleat like Lambs ;
But there's a Beast that at this Feast
Demands a special glass,
So let us bray, that long we may
Admire the British Ass !
With a tow, row, row, &c., &c.

On England's fragrant Clover
This Beast delights to browse,
But sometimes he's a rover
To Scotland's broomy knowes ;
For there he finds above all kinds
The Plant that doth surpass,
The Thistle rude—the sweetest food
That feeds the British Ass !

We've read in ancient story
How a great Assyrian swell
Came down from all his glory
With horned beasts to dwell,
If you would know how it happened so,
That a King should feed on grass,
In Section D, Department B,
He had joined the British Ass !

On Grecian senses charming
Fell the music of the spheres,
But voices more alarming
Salute our longer ears.
A swell profound doth now propound
How life did come to pass,
From world to world the seeds were hurled,
Whence sprung the British Ass !

In our wandering through Creation
We meet these burning stones,
That bring for propagation
The germs of flesh and bones.
And is it not a thrilling thought
That a huge misguided mass
Will come some day to sweep away
Our dear old British Ass !

The child who knows his father
Has aye been reckoned wise,
But some of us would rather
Be saved that sweet surprise,
If it be true that when we view
A comely lad or lass,
We find the trace of the monkey's face
In the gaze of the British Ass ! *Nature.*

What a Spider Did.—A gentleman once boasted to a friend that he could introduce to him an engineer of more wonderful skill than Robert Stephenson. In fulfilment of the boast, he brought out a glass tumbler containing a little scarlet coloured spider, whose beauty, with its bright yellow nest on a sprig of Laurustinus, had induced a young lady to pluck the sprig from the bush where it was growing. When brought into the house, it was placed on the mantelpiece, and secured by placing a glass over it. In a very short time this wonderful little engineer contrived to accomplish the herculean task or raising the sprig of Laurustinus, a weight several hundred times greater than himself, to the upper part of the glass, and attaching it there so firmly that it remained suspended for many years where it was hung by the spider.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

What an inestimable aid to the plant grower, as well as to the ingatherer of the fruits of our hardier soil and climate, is the gloriously fine weather which is experienced whilst I write, so bounteously fitted to our wants by the gracious Giver of all good. We rarely estimate at its proper value the really beneficial influences of a clear run of unbroken sunshine, and are apt to accept with a somewhat popular enthusiasm some of its most striking features, only as being worthy of consideration or remark. If our *Camellias* swell their bloom buds freely upon the season's young growth, we are not slow to attribute it to a fine autumnal period. Now, were it possible to under-estimate these facts, I would fain say, that fine bright sunny weather at this period is of even greater importance to the grower of soft-wooded plants, and such other kinds, of whatever dimension, as make their growth later in the season than the above. Whether we take late growing *Ericas*, *Pimeleas*, &c., or simply the commoner and even more succulent *Chrysanthemum*, this view is fully borne out. I have recently suggested in these pages that Chrysanthemums should not be pinched back any later than is absolutely necessary to guarantee fair bushy specimen plants, and that it is not a judicious procedure to stop them at all after July, if the production of fine blooms is the object in view. If these and all other similar habited plants make their growth too late, sufficient time is not allowed for that free development which a given quantity of light affords. Under these circumstances I may also suggest that every specimen plant should be partially turned round, so that all sides may reap a like benefit from those beneficial influences. Besides benefiting the plants this also proves beneficial to the roots, more particularly if they are placed out-of-doors in fully exposed positions. Here during very hot days the roots upon the sunny sides of fully exposed pots certainly cannot be as happy as they should be. Doubtless roots are formed, destroyed, and formed again at ruinous expenditure of strength on the part of the plant, but if these are turned round occasionally time and opportunity will be afforded them to collect food and re-establish themselves without suffering much harm. The cheerful looking *Begonia weltoniensis*, *B. digswelliana*, *B. Saundersii*, &c., will now in many instances be showing flower freely, and if it is not desirable to have them in bloom at their best a month hence (even though the two latter are perpetual flowerers, the first blossoms are always the best), it will be advisable to pinch off all flowers, stop the shoots when necessary, and induce further growth for a period. Oftentimes their having become pot-bound is the cause of their showing for flower, therefore another potting may be deemed advisable. Those *Cape Pelargoniums* which were cut back a few weeks ago, if they have commenced growing again, should be turned out of the old pots; have the old soil carefully removed from their roots, and be repotted in as small pots as the roots can be forced into without unnatural crowding. The little soil necessary should be composed of the best fibrous yellow loam possible, with a goodly quantity of silver sand and decayed leaf-mould. Be careful not to over-water them until the roots have fairly made a fresh start, but it would be advisable to lightly damp the young shoots over occasionally. Another sowing of *Mignonette* should now be made in pots, for winter flowering. Use good loam, and press it firmly into the pots upon a good, though not too abundant amount of crocking, upon which the seed should be sown. Continue to pinch back *Veronicas*, *Salvias*, and such subjects as *Coronillas*, *Genistas*, &c., which grow irregularly on misplaced shoots, or are not bushy enough. In stoves proper, the *Climbing Plants* will now need more than usual attention to keep them orderly, and free from ripening and decayed leaves. The purple-fruited Passiflora edulis, carrying a crop, will be much benefited by a good root-watering of wholesome liquid manure. So also will *Oranges*, *Citrons*, or *Limes*, which are now starting with a good crop of young fruit, be materially benefited by periodical applications of a like stimulant. Syringing over-head cannot be too frequently resorted to in the evenings of sunny days, in connection with all such plants.

FORCING HOUSES.

Maintain a good mean temperature in all *Pineries* while the fine sunny weather lasts, and so make up by every means possible for the dull weather of the past portion of the year. To this end 80° may be assumed as a mean under any circumstances, with a rise of about 10° more by external influences of temperature only. Be very careful not to over-water at the root those *Pines* which have lately been shifted on; as a rule, little water is needed for the first week or two following the potting. It is far more desirable to maintain them in a state of progressive growth by superficial applications with the syringe, and by maintaining a densely humid atmosphere. Give air with all possible freedom between the hours of 8 in the morning and half-past 3 or 4 P.M., according to the aspect of the structure. When the house is closed for the day give copious waterings to the side walls, walks, and all internal cool surfaces, syringing the *Pines* freely overhead at the same time during favourable weather. Be careful not to moisten unnecessarily those *Pines* intended for winter fruiting which are now in flower and "setting." Give manure-water freely to all such as have finished blooming, and so afford the plants individually all the aid possible at the time when they are best able to turn it to good account, as it is needless to ply them with stimulants when the fruit are finally swelling off. Also remove robber gills and suckers early from *Pines* at such a stage, for one and the same reason. Give air with great freedom to *late Grapes*, which now in a majority of instances will be beginning to change colour, by which means a better-developed skin will be formed, and the berries will be the better able to withstand the penetrating and injurious influences of the long and damp winter months. *Fig trees* from which late crops are looked for should now have a copious root watering, and if in greatly confined or poor borders, manure-water will prove beneficial.

HARDY FRUIT GARDEN.

Young trees of any kind of wall fruits planted during the past winter will, if this weather continues, and they are planted at a proper elevation, require root waterings. It should be needless to add how very beneficial occasional syringings will be to them during such weather as this. It is not necessary, however, be it understood, to induce them to continue a too exuberant growth by this aid. If the growth already made is maintained in perfect health, free from flagging, so that the young wood becomes well developed, to stand through the winter and to prepare for another season's advance, the only end that should be aimed at will be attained. To encourage a too robust growth to the last is in every way opposed to the preparation of well ripened wood. The young shoots upon *Pears* and *Apples* of the current season's formation should now be cut back to within about three leaves of their base, except where extension is requisite, when the stronger and best-placed growths should be chosen for that purpose. These should only be "headed back" a few inches. Persist in stopping any gross breast-wood that may show symptoms of pushing upon any trees not bearing crops, as there is a tendency following such a season for trees under these favourable conditions for growth to do so somewhat freely, and that often at the expense of those points or shoots which may more legitimately claim support. Continue to tack those shoots of outdoor *Vines* to the walls where an extended area has to be occupied, pinching or cutting back all laterals requiring removal.

HARDY FLOWER GARDEN.

Cutting making must now be earnestly entered on in connection with "bedding plants," selecting those most prized first, and so on to the necessary extent. *Calceolarias* should remain another month yet before any attempt is made to increase the stock of them; as to strike them too early has a very injurious tendency hereafter. *Rhododendrons*, Ghent and American *Azaleas*, and the lovely *Kalmias*, which bear seed-vessels tending to decrease the vigour of the plants, should have the latter picked off. The parterre and summer flower beds generally, must be frequently picked over by all who desire to blend neatness and display into a harmonious whole, in keeping with the requirements of elevated taste.

KITCHEN GARDEN.

Should the dry hot weather continue it will be necessary to water all seed-beds, comprising such things as *Lettuce*, *Spinach*, *Endive*, *Carrots*, *Onions*, &c., sown to afford successional winter and early spring supply. If we wait for rain it is but just to expect that a gap will occur in our supply at a critical time, and when no afterthought can be available for our aid. Immediately a good shower comes proceed with transplanting permanently those seedling plants of vegetables of similar kinds to the above which are sufficiently large so to do. Especially will this be necessary in regard to the kinds of salading referred to, as those now transplanted are likely to come in useful to lift for placing in frames or pits at the approach of winter. Water *Vegetable Marrows* and *ridge Cucumbers* copiously during hot dry weather. *Celery* will also need very frequent attention in this respect, as it is now—when the lengthened colder nights arrive, and with them the heavy condensed dews, bathing vegetation all around with their refreshing moisture—that Celery begins to grow apace. At such a period all the aid we can afford is accepted, and applied with a zest to increase the vigour of the plants. *Scorzonera* seems to have a great tendency to run to seed this season, therefore the flower-spikes should be cut out at once just above the originally formed strong leaves of each plant. *W. E.*

Notices to Correspondents.

CAMELLIAS : *Young Journeyman.* It is not a good plan to place Camellias out in the full sun after they have set their buds. When they are sufficiently advanced to be stood out-of-doors, a situation shaded at least from the mid-day sun should be selected for them. Azaleas require less shade.

CLEMATIS : *J. Nelson.* A good shaped flower, but apparently of a colour now plentifully supplied amongst Mr. Jackman's and Mr. Cripps' hybrids. Its merit would entirely depend on profuseness or otherwise of its flowers.

FOREIGN SEEDS : *B.* asks if anything can be put amongst seeds sent from foreign countries to prevent them being riddled by insects, as they often are. Camphor might be tried. The harbour for insects afforded by close packing should be avoided, and the seeds hung up in canvas bags, in a well ventilated cabin.

GALLS ON ELM : *Cor.* The large galls on your Elm are those of Schizoneura lanuginosa, Hartig.

NAMES OF PLANTS : *Hooper & Co.* Catalpa syringæfolia. *-Old Subscriber*, alias *Globe*, alias *Gosple*. Polygonum aviculare. — *James*, alias *Globe*, alias *Gosple*. Ononis arvensis.—*Gosple*, alias *Globe*. Echium vulgare. —*Rusticus*. Hypericum elatum, the tall St. John's Wort.—*W. Taylor*. Eutoca viscida, native of California.—*Prestbury*. 1, Spiræa aruncus; 2, Clematis integrifolia; 3, Spiræa callosa (otherwise, S. Fortunei); 4, Funkia ovata, also known as Hemerocallis cœrulea. —*Edwards*. Verbascum Thapsus.

ODONTOGLOSSUMS : *P.* O. triumphans Marshallianum is a very fine and distinct variety, grown by Mr. Marshall of Enfield. The flower sent was indeterminable. We do not know Oncidium macranthum Lambertyanum. Can any of our Orchid friends say in what respects it differs from O. macranthum hastiferum?

PARSONS' MIGNONETTE : *D.* writes, Can any uninterested correspondent furnish him with an opinion as to this plant?

PEACHES : *C. B.* The samples reached us in bad condition, but they were amply sufficient to confirm our correspondent's statement.

PELARGONIUMS : *Amateur.* Your tricolor sport, equal to Mrs. Pollock, but much more vigorous in growth, is certainly worth saving and testing, if your description is accurate.

PROLIFICATION IN ROSES : *Corr.* Not uncommon. In your case small flowers are produced at and from the part where the seed vessels usually spring.

ROSES FOR RAILWAY STATIONS : *Alex. Boyle.* Your suggestion is excellent, for why should our railway station houses, so often tasteful and picturesque in architecture, be the only homes which might have gardens, but, with some charming exceptions, have them not. In the strong loam which you mention, and with the protecting pales, most of our best Roses would flourish; but you probably require a combination of rapid growth and economy, and I would therefore recommend the Ayrshire or Sempervirens Roses, such as Ruga, Dundee Rambler, Rampant, Adelaide d'Orléans, and Félicité perpetuelle. Gloire de Dijon should not be omitted, and if you would witch the passenger world with a surprise of beauty, let me suggest an intermixture of Clematis Jackmani, the contrast of its large purple flowers with the yellow Roses being most effective. *S. R. H.*

SALAD HERBS, &c. : *W. C. Randolph.* The following list will perhaps suit you :—Celery, Lettuce, Endive, Dandelion (the improved variety), Celeriac, Beet Root, Succory, Onions, Corn Salad, various Cresses, Mustard, Rape, Rampion, and Radishes; amongst the kinds to be used most freely. Then there are the more piquant kinds: Borage, Burnet, Tarragon, Chervil, Horse Radish, Mint, Purslane, Scurvy-grass—and, if you will, Wood Sorrel, garden Rockets, and Nasturtium flowers. Your other question, as to the best method of furnishing a good salad for the greater portion of the year, we cannot answer in this column, without knowing what convenience you have, in the shape of glass, &c. See pp. 125, 267 of our volume for 1868.

STOVE PLANTS : *W. Jackson.* Cycas revoluta is given as a stove plant in Paxton and Don, which is sufficient to justify you in showing it as such; Chamærops excelsa is similarly catalogued. The others are certainly greenhouse plants.

VINES : *A. B. Whitland.* The affection under which your Vines are suffering is akin to shanking; caused partly through overcropping and alternate changes of dryness and excessive wet in the border.

CATALOGUES RECEIVED.—B. S. Williams' Descriptive Catalogue of Bulbs, Roses, Fruit Trees, &c.

COMMUNICATIONS RECEIVED : C. P. P.—H. W. W.—E. C. C. D. —D. S. G.—W. B. L. (with thanks).—J. G. B.—J. H.—J. W. —G. N.—H. M.—J. R. H.—D.—R. B. (anticipated).—T. C. B. J. F.—J. P.—G. H.—J. D.—H. D. P.—J. H. (thanks).

Markets.

COVENT GARDEN.—Aug. 18.

We have again to report a falling off in the supply of home-grown fruit, but the importations have been heavy, and are now meeting with a very steady demand. Strawberries are over. The Potato trade is quieter, and prices have slightly improved. The principal flowers in the market now are, Liliums, Pelargoniums, Asters, Calceolarias, Balsams, Mignonette, Dahlias, &c.

FRUIT.

	s. d. s. d.		*s. d. s. d.*
Apples, per ½ sieve ..	to 3 0	Oranges, per 100 ..	8 0 to 12 0
Grapes, per lb. ..	1 6 — 6 0	Peaches, per doz. ..	8 0 — 20 0
Lemons, per 100 ..	8 0 — 12 0	Pine-apples, per lb.	2 6 — 5 0
Nectarines, per doz.	4 0 — 10 0		

VEGETABLES.

	s. d. s. d.		*s. d. s. d.*
Beet, per doz. ..	2 0 — 3 0	Lettuces, per score..	0 9 — 1 6
Cabbages, p. doz. ..	1 0 — 1 6	Mushrooms, p. pott.	2 0 — 3 0
Carrots, p. bunch ..	0 8 — 1 0	Onions, per bunch ..	0 4 — 0 9
Cauliflowers, p. doz.	2 0 — 6 0	Parsley, p. bunch ..	0 4 — 0 6
Celery, red, p. bun.	1 6 — 2 0	Peas, per quart ..	10 — 1 0
— white, do. ..	1 0 — 1 6	Radishes, round, per bunch ..	.. 0 2 — ..
Cucumbers, each ..	0 9 — 1 0	Shallots, per lb. ..	0 8 — ..
French Beans, p. lb.	0 6 — 0 8	Spinach, perbushel	2 6 — 3 0
Herbs, per bunch ..	0 2 — 0 4	Turnips, p. bunch..	0 4 — 0 9
Horse Radish, p. bun.	3 0 to 5 0		

Potatos (good samples), New Round, 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

WANTED, a HEAD GARDENER.—Must thoroughly understand the profession as to Plantations, Hothouses, Vineries, Kitchen and Flower Gardens, &c Good and permanent situation. Must have references of the first class as to ability, honesty, sobriety, and good moral character —Address, stating age, married or single, former and present employers, to D. P. C., Post Office, Droitwich

WANTED, as HEAD GARDENER, an active and energetic Man, not beyond middle age, thoroughly master of Grape Growing, well up in Plant and Flower Culture, Rotation of Vegetable Crops, and general keeping of a Suburban Garden of two Acres inclusive. Extent of Glass.—Two Vineries, one large Conservatory, and two Plant Houses (more to be added). Two Under Hands kept. Wage 30*s.* weekly, with comfortable house adjoining, coals, and gas. The Gardener's Wife has one appointed morning duty, for which 5*s.* weekly is given. No one whose experience comes under the qualifications named need apply —Applications to E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, London, N W.

WANTED, a Practical WORKING FOREMAN (Single), where Vines are grown extensively both in Borders and in Pots for Sale; must have a thorough knowledge of Forcing, Thinning Grapes, and Stopping the Shoots of Vines: also must understand, and have had considerable experience of, the Value and Sale of Plants, as well as being a thorough good Propagator of Roses, Camellias, Azaleas, Heaths, and particularly choice Stove and general Plant Stock for Sale to the Trade. To live on the premises.—Address in own handwriting, stating wages required and references, to J. MEREDITH, The Vineyard, Garston, near Liverpool.

WANTED, an OUTSIDE FOREMAN, who understands Budding and Grafting Fruit Trees and Roses, Propagating Florists' Flowers, and is capable of taking charge of general Nursery Stock. Must be a good Salesman, and have first-class references.—DOWNIE, LAIRD, AND LAING, Nurseries, Forest Hill, S.E.

WANTED, a HEAD WORKMAN and KNIFEMAN, well up in Nursery work. Must be steady, and of good character. Wages according to ability.—JAMES HUDDART, Garrington Hall Nursery, Preston

WANTED, a middle-aged MAN to take charge of a Small Nursery; must be a good Propagator and Grower of Flowers and Plants, and understand the Value and Sale of Plants. Must be strictly sober. — State age, and salary expected, &c., J. DELAMERE, Hanley Nursery, Irlam Lane, Bootle, near Liverpool.

WANTED, a PROPAGATOR, for one of the principal Nurseries in America. He must thoroughly understand the working extensively of Roses, and hardy Ornamental Trees and Shrubs. To a suitable Man the situation may be permanent, and a liberal salary would be given.—Address applications, in the first instance, M. N., *Gardeners' Chronicle* Office, W.C.

WANTED, a MAN and WIFE, at Hendon, to live in the lodge. The Man must be a thoroughly efficient Gardener, and understand the Management of Cows; Wife a good Laundress —Apply, by letter only, stating wages required, and previous length of service, to W. H., 25, St. John's Wood Park, N.W.

WANTED, a respectable Man as PACKER; preference given to one accustomed to pack plants. Wages 25*s.* per week.—Apply, personally if possible, BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

WANTED, a careful, steady, married MAN and his WIFE, to take charge of a House. The Man to Cultivate 10 Acres of Arable and Grass Land, the Woman to look after Poultry, &c Wages 18*s.* per week, house rent free, and coals.—H., Box 102, Post Office, Sheffield.

WANTED, a CLERK and SHOPMAN in the Nursery and Seed Business.—KELWAY AND SON, Langport.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Married, no incumbrance. Ten years' good character —A PAGE, West Hallam, Derbyshire.

GARDENER (HEAD), age 40; married.—J. PRING, 11 years' Gardener to the late Hon. Mrs. Vernon Harcourt, Newsell's Park, Royston, Herts, is open to an engagement with any Nobleman or Gentleman requiring the services of a thorough practical Gardener; has had great experience in all branches of the profession. Could take the Management of Park or Meadow Land if required; has also had considerable experience in Ground-work, &c. Can furnish highest testimonials as to character and ability.—Address as above.

GARDENER (HEAD).—Age 37, married; no incumbrance.—Well skilled in all branches of the profession. Good reference.—C. M., Flora Cottage, Lion Road, Bexley, Kent.

GARDENER (HEAD).—Age 30, married; 14 years in first-class places; can be highly recommended.—J. M., Mr. Wm. King's, High Street Nurseries, Lincoln.

GARDENER (HEAD).—Age 30, married, no family; thoroughly understands the profession in all its branches. —W. C, 29, May Street, Northend, Fulham, S.W.

GARDENER (HEAD).—Age 33, married, no family; thoroughly understands all branches of the profession.—Three years' good character —M. R., Post Office, Caterham, Surrey.

To Noblemen and Gentlemen.

GARDENER (HEAD).—Age 39, married; 23 years' experience. Eight years and a half in last place. Highest references.—W. W., 1, Lewis Terrace, Chapel Road, Stamford Hill, N.

GARDENER (HEAD).—Age 28, Scotch, married, one child; a thoroughly practical Man, of good experience. Good character from present employer.—C. M., Floral Nursery, Hailsham, Sussex.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a Man thoroughly practical in all the various branches of the profession. No objection to Land or Stock. Good references to character and ability.—A. B., Post Office, Redbridge, near Southampton.

GARDENER (HEAD).—Age 33, married, one child; 21 years' experience. Thoroughly understands Vines, Pines, Mushrooms, Cucumbers, Melons, Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Leaving in consequence of the death of the late Lord de Blaguere.—T. BOLCOMB, The Lawn, Whitchurch, Hants.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Has had extensive experience in Early and Late Forcing, also the cultivation of Stove and Greenhouse Plants, Kitchen and Flower Gardening. Can be highly recommended. Nine years' character.—W. G., 54, North Street, Edgware Road, London, N.W.

GARDENER (HEAD, WORKING).—Age 38; well understands the profession in all its branches. Good character. Wife a good Laundress, if required.—S. R., 28, Charlotte Street, Old Street Road, Shoreditch, N.E.

GARDENER (HEAD, WORKING), age 32, single.—Mr CARLTON, Gardener to the Hon Mrs. Howard, Ashtead Park, can with confidence recommend his Foreman in the above capacity; has a thorough practical knowledge of all the branches of the profession, having been ten years Foreman in five of the principal establishments in England. Land and Stock if required. Character will bear the strictest investigation. No single-handed place accepted. —G. COATES, Ashtead Park, Epsom, Surrey.

GARDENER (HEAD, or good SINGLE-HANDED).—Married; well understands Vines, Pines, Melons, Cucumbers, Stove and Greenhouse Plants, also a good Strawberry and Mushroom Grower.—W. H. D., 6, Pleasant Cottages, Paragon Road, Hackney, E.

GARDENER (HEAD, or SINGLE-HANDED).—Age 28, married, no incumbrance; has had 12 years' practical experience in good establishments, and thoroughly understands the profession in all its branches, also Hot-water Work, Glazing, &c. Four years' good character.—H. W., Post Office, Acton, Middlesex, W.

GARDENER (HEAD), where two or three are kept.—A Gentleman going abroad is anxious to recommend his Second Gardener (age 30) to any Lady or Gentleman requiring a good and trustworthy Servant as Gardener. Good knowledge of the profession. Excellent moral character —A. B., Post Office, Cobham, Surrey.

GARDENER (FIRST-CLASS).—Age 28, single; thoroughly competent, having had good practice from early youth in all that appertains to the successful Culture of choice Flowers, Fruits, and Esculents, with the General Management of a Garden Establishment of any extent. The Advertiser is thoroughly steady, energetic, and not afraid of work. Good references.—THE GARDENER, Prospect House, Fairfield, Liverpool.

GARDENER.—Age 32, married; competent to Manage a first-class place. Good references.—J., Mr. Robson, Seedsman, Ashby Road, Bowdon.

GARDENER, where two or three are kept, or as SECOND GARDENER.—A steady, active young Man. Good character.—X Y. Z., 171, Malden Road, Haverstock Hill, N.W.

GARDENER (SECOND, or SINGLE-HANDED), in a Gentleman's family —Two years' character from last employer. —H A., 2, Osborn Villas, Lee Green, S E.

GARDENER (SECOND).—Age 22; has been accustomed to good places. Character will bear the strictest investigation.—S. C., Messrs. Paul & Son, the Old Nurseries, Cheshunt, Herts.

GARDENER (UNDER).—Age 23; six years' experience. Good testimonials from three places.—Address, stating wages, to Y. Z., Taplow Post Office, Maidenhead, Berks.

GARDENER (UNDER).—A respectable young Man, with three years' good character.—R. K., 19, Warwick Street, Warwick Square, London, S.W.

GARDENER (UNDER), in a Nobleman's or Gentleman's family.—Age 24, steady and intelligent; has had some years' experience. Good recommendation.—F. WINGUR, The Lawn, Whitchurch, Hants.

GARDENER (UNDER), or in a Nursery.—Age 20; has a knowledge of the Sale of Plants and Seeds. Three years' reference.—F. C., Messrs. Wood & Ingram, The Nurseries, St. Neot's, Hunts.

GARDENER AND BAILIFF.—A Lady wishes to recommend a married couple (ages 40, no children) for employment—Man as above, Wife to take charge of Dairy and Poultry. Very respectable and active. Four years' character; five years' previous —W. S., Post Office, Westerham, Kent.

FOREMAN.—Age 26, single; has been in present situation two years, where Early and Late Forcing is carried on to a great extent —A. B , Mr Boughton, Oak Street, Abingdon, Berks.

To Market Gardeners.

FOREMAN, or any place of trust.—A young Man, of steady habits and first-class experience; six years in last place. Unexceptionable references as to ability.—W. J. B., Mr. Barnes, 55, Buckland Street, New North Road, Hoxton, N.

WANTED, a place in a Gentleman's Garden, where there is a Gardener kept, by a young Man, aged 19. Has been a Gentleman's Servant. Two years' good character.—A. B., 13, Paterdown Place, Muswell Hill, Hornsey, N.

FARM BAILIFF.—Middle-aged, one child. Wife to Manage a Dairy, if required. Good reference.—J. R., Post Office, Eltham, S.E.

FARM BAILIFF, at Michaelmas next. — Age 44, married; thoroughly understands the Management of Light, Heavy, and Mixed Soils, also Breeding, Rearing, and Feeding all kinds of Stock, Land and Timber Measuring, Building, Draining, &c., and is a good Accountant. Twenty years' practical experience in the most approved system of Norfolk Farming. Wife can Manage a Dairy and Poultry if required Excellent character.—A. B. C., 279, Caledonian Road, Islington, London, N.

GAME-KEEPER or BAILIFF.—Understands Rearing and Breeding of Game. Wife can take charge of Dairy, if required Nine years' good character.—Apply, with particulars, to THOMAS RELF, Mr. Ley, Exotic Nursery, Croydon.

TRAVELLER, CLERK, or SHOPMAN.—Long and practical experience in both Nursery and Seed Trades. Highest testimonials.—O G., Mrs Nelson, Union Street, Retford

SHOPMAN.—Fifteen years' experience in all the Branches of the Seed Trade, and a good Knowledge of the Florist Business. Good reference.—C., Mr. Pestridge, Seedsman, Greenway, Uxbridge.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—

PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

Archangel Mats.

J. BLACKBURN AND SONS beg to inform their friends that the First Shipment of NEW MATS has just arrived, and they are of very good quality. Price List on application.

Russia Mat Importers, 4 and 5, Wormwood Street, E.C.

One Penny per Square Yard.

TANNED GARDEN NETTING, for Garden purposes, such as Protecting Fruit from Birds, Blossom from light Frosts, &c. Widths, 1, 2, 3, and 4 yards. The Trade also supplied.

HOOPER AND CO., Covent Garden, London, W.C.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the SCORCHING RAYS of the SUN.
WOOL NETTING, 2 yards wide and 1*s*. 6*d*. per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1*s*. 9*d*. per yard.
Three yards wide	2*s*. 8*d*. per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d*. to 8½*d*. p. yard.
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MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

ITALIAN ALP or LIGURIAN QUEEN BEES.—The autumn importations of these beautiful Bees having now commenced, GEO. NEIGHBOUR & SONS are offering QUEENS, warranted bred and fertilised in Italy, at the following low prices:—One Queen, 12*s*.; three, 33*s*.; six, 60*s*.

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GENUINE JOBBING and FURNISHING BUSINESS, established 24 years, situate at St. John's Wood, London, for DISPOSAL. Capital required, about £900. Excellent Connection, and most eligible Premises. Satisfactory reasons for leaving. For particulars, apply to

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TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

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TO BE SOLD, or LEASED for a term of Years, on advantageous terms, the OSBORNE PARK NURSERIES, close to Potter's Bar Station, Great Northern Railway, where Coals are delivered direct from the North, and easy of access to Covent Garden Market. The Nursery occupies about 2 acres of ground, on the high road, and contains a Dwelling House, Foreman's Cottage, Stable, Sheds, and 15 Glass Houses, fitted up with Hot-water Boilers and Pipes complete. Any one with a moderate capital about to commence trade, or to work it in connection with an established business, will find this a favourable opportunity.

For further particulars apply by letter in the first instance to L. W., Mrs. Huxtable, 2, Carthusian Street, London, E.C.

SALES BY AUCTION.

SALE THIS DAY, AT HALF-PAST TWELVE O'CLOCK.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, August 19, at half-past 12 o'clock precisely, 500 Lots of First-class HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and SNOWDROPS, from several well-known Bulb Farms in Holland. Lotted to suit the Trade.

On view the morning of Sale, and Catalogues had.

Highly Important Sale

Of the CELEBRATED COLLECTION of ORCHIDS formed by S. RUCKER, Esq., at WANDSWORTH.

MR. J. C. STEVENS has received instructions from Messrs. Veitch & Sons, who have purchased the entire COLLECTION, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, August 22 and 23, at half past 12 o'Clock precisely each day, the second portion of the above magnificent lot of Plants, amongst which will be found—

Cymbidium eburneum, true, best variety
Odontoglossum Alexandræ, fine varieties
Odontoglossum pulchellum mujus
Colax jugosa, very rare
Lycaste Skinneri alba, true
Masdevallias, of sorts
Sophronites grandiflora, fine varieties
Pleione lagenaria, and maculata, good masses
Ærides Lobbii, fine plant
,, Fieldingii, magnificent variety, from Borneo
Dendrobium Wardi
,, nodatum, finest plant in the country
Epidendrum myrianthum, fine plant

Phalænopsis amabilis, and Schilleriana
Dendrochilum filiforme
Saccolabium guttatum, narrow leaf variety, extra fine
Saccolabium guttatum Holfordi
Vanda Dennisoniana
Dendrobium Devonianum
,, Falconeri
,, bigibbum
Cattleya exoniensis
,, Dowiana
,, Warneri
,, labiata
,, Mossiæ
Lælia anceps Dawsoni
,, purpurata
Epidendrum nemorale, rare
Cypripedium Veitchii, and other sorts, &c.

All the Plants are in fine condition, and many are in bud, or blooming.

On view the mornings of Sale, and Catalogues had.

Very Important Sales of First-class Herds

Of PURE-BRED SHORTHORN CATTLE.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, on WEDNESDAY, August 23, at WESTLAND, CO. MEATH, IRELAND, the very FIRST-CLASS HERD of SHORTHORNS, bred by the late Thomas Barnes, Esq., whose adherence to the Warlaby and Killerby Herd for the last thirty years has given him the title of the "Booth of Ireland."

Immediately after the Sale, the small SELECT HERD belonging to R. W. Reynell, Esq., of Killynon, Killucan, Ireland, will be SOLD at WESTLAND, from which blood it has been bred during a period of nearly a quarter of a century.

On FRIDAY, August 25, will be SOLD, at CASTLE GROVE, LETTERKENNY, IRELAND, the ENTIRE HERD of FIRST-CLASS SHORTHORNS, bred by J. G. Grove (Wood), Esq., chiefly from Mr. R. Booth's Fame tribe, and crossed with Warlaby blood; no less than Eleven First-class Bulls having been in use at Castle Grove during Mr. Grove's long and eminently successful career as a breeder.

Catalogues, with Pedigrees, may be had of JOHN THORNTON, 15, Langham Place, London, W.

Sale of the late Mr. Barnes' Herd.

AT WESTLAND, COUNTY MEATH, IRELAND.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on WEDNESDAY, August 23, at 1 o'Clock, at Westland, near Kells, Ireland, the old-established and very celebrated HERD of SHORTHORNS bred by the late Thos. Barnes, Esq., whose well-known judgment has brought the Stock to very great perfection. It was founded nearly 30 years ago with two Cows of the Mantalini tribe, bought from Mr. J. Booth, of Killerby. To these were added Bright Eyes, descended, through Mr. Lawson's Herd, from Mr. Mason's stock; and Sweetbrier, of Mr. R. Booth's famous Isabella tribe. Bulls were, from the first, hired from Mr. John and Mr. R. Booth's Herds at Killerby and Warlaby. The Herd, consequently, is not only very deeply in-bred to the best of Booth blood, but is very select, and the animals will be found of very great merit and exceedingly uniform

Catalogues, with Pedigrees, may be had of Mr. W. BARNES, Westland, Kells, Ireland; or of JOHN THORNTON, 15, Langham Place, Regent Street, London, W.

Westland, near Kells, County Meath, Ireland.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, on WEDNESDAY, August 23 (immediately after the Sale of the late Mr Barnes' Herd), the small, select HERD of PURE-BRED SHORTHORNS, bred by and the property of R. W. Reynell, Esq., of Killynon, Killucan, County Westmeath. It numbers about Thirty Head, bred from two tribes—the Fairy Queen, descended from Stock bought by Mr. Holmes of Mr. Brown, at Chilton, in 1829 (whence the Oxford tribe came), and the Pauline family, purchased by the late Mr. Barnes from Mr. Whitaker, of Burley. The Bulls used have been of the best blood at Westland, Duke of Leinster (17,724), Royal Prince (27,384), and Lord Spencer (26,738) being the latest sires.

Catalogues, with Pedigrees, may be had of Mr. REYNELL, Killynon, Killucan; or of JOHN THORNTON, 15, Langham Place, London, W.

Castle Grove, Letterkenny, Ireland.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, on FRIDAY, August 25, at Castle Grove, Letterkenny, Ireland, the ENTIRE and VALUABLE HERD of FIRST-CLASS SHORTHORNS, the property of J. G Grove, Esq. It numbers about 50 head of Bulls, Cows, and Heifers, many of which are of the celebrated Fame by Raspberry tribe, bred by the late Mr. Richard Booth. The others comprise several old Shorthorn families, which have been crossed with Mr. Booth's bulls for a great number of years, no less than 11 first-class animals from Warlaby having been in service at Castle Grove.

Mr. Grove's long experience and repute as a breeder of Shorthorns (since the death of Mr. Barnes, perhaps now the oldest breeder in Ireland), and the splendid animals he has from time to time exhibited are the best proofs of the high standing and excellence of the stock

Catalogues, with Pedigrees, may be had of Mr. GROVE, Castle Grove, Letterkenny; or of JOHN THORNTON, 15, Langham Place, London, W.

Milcote, near Stratford-on-Avon.

HIGHLY IMPORTANT SALE of the MILCOTE DOWN SHEEP.

W. HUTCHINGS has been honoured with instructions from the Executors of the late J. C. Adkins, Esq., to SELL by AUCTION, at Milcote, near Stratford-on-Avon, on WEDNESDAY, September 13, at 2 o'Clock prompt (Luncheon at 12), the whole of the celebrated FLOCK of MILCOTE DOWNS, comprising 418 superb breeding Ewes and Theaves, 360 very superior Ewe and Wether Lambs, 22 grand symmetrical Shearling Rams, and 24 extraordinary Ram Lambs.

The great celebrity of this Flock demands a few words as to its formation. With Oxfordshire Downs as a foundation, the late Mr. Adkins, for many years, blended occasional strains of the best Cotswold and Hampshire Down blood, and with much judgment and careful selection succeeded in producing a distinct type of Down sheep. With great size, grand symmetry, good colour, and hardy constitutions, the Milcote Downs are remarkable for their heavy weight of lean meat and of wool, and for their early development and maturity. The rams will he brought forward in a natural and unforced condition. The Auctioneer can, with great confidence, call attention to this Sale; and can assure Flockmasters that an entire Flock of such high character is seldom offered to Unreserved Public Competition.

Catalogues will be circulated in due course, and may be had of the Auctioneer, 28, Bridge Street, Stratford on-Avon.

Trains stop at Milcote Station as under:—From Paddington, Oxford, Banbury, Leamington, Warwick, and Birmingham, 8 49 and 11.18. From Paddington, Oxford, Moreton, Evesham, and Worcester, 8.25, 11.0, and 1.15.

Holker Hall, Lancashire.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has the honour to announce for SALE by AUCTION, without reserve, on WEDNESDAY, September 6 next, a very choice Selection from the renowned Holker Herd, belonging to His Grace the Duke of Devonshire, which will consist of about FORTY HEAD of BULLS, COWS, and HEIFERS. Amongst them will be found some Oxfords, Wild Eyes, Blanche, Cleopatra, Asia, and other famed Kirklevington tribes. The young stock are chiefly by Grand Duke 10th (21,848), and Grand Duke 17th (24,064). Baron Oxford 4th (25,580), of the same line of blood, is now in service, and the whole will be found well worthy the attention of purchasers of first-class Shorthorns.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London, N.W.; or of Mr. DREWRY, Holker House, Grange-in-Cartmel, Lancashire.

Beaumont Grange, Lancaster.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions to announce for SALE by AUCTION, without reserve, at Beaumont Grange, near Lancaster, on THURSDAY, September 7 next (the day following the Sale at Holker Hall), a choice selection of BULLS, COWS, and HEIFERS, from Mr. W. W. Slye's Herd, principally of Kirklevington and Fawsley descent. Amongst them will be found descendants of the Czarina, Duchess, Garland, Lady Spencer, Moss Rose, and Sweetheart families, also some very valuable specimens of Bates blood in Grand Duke of Kent 2d, Lady Tregunter Bates, and Barrington Duke; the whole of which can be strongly recommended to the favourable notice of purchasers.

Catalogues, with Pedigrees, may be had on application to Mr. SLYE, Beaumont Grange, Halton, near Lancaster; or, of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Killhow, near Wigton, Cumberland.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to intimate that he is instructed to announce for SALE by AUCTION, without reserve, on FRIDAY, September 8 next, at Killhow, about FIFTY HEAD of very superior SHORTHORNS, belonging to J. P. Foster, Esq, that have been selected and bred with the greatest care from some of the most fashionable and pure strains of blood, to which have been used Bulls of the first class. 17th Duke of Oxford (25,994), from the famed Holker Herd, is now in service, and the young stock are chiefly by him.

Catalogues, with Pedigrees, may be had on application to Mr. TURNER, Killhow, near Wigton, Cumberland; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

For Horse Rakes,

APPLY TO

J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

The Agricultural Gazette.

SATURDAY, AUGUST 19, 1871.

IN several of the northern departments of France cattle disease prevails, according to the latest reports, and also in Lower Austria, Gallicia, and Transylvania. Poland has not suffered any fresh outbreak since the middle of June, when it was officially reported to be free from the disease.

We learn from a report in the *Chamber of Agriculture Journal* that the attempts to cure cattle plague are still continued in France, under the sanction of the Academy of Sciences. The system which is being carried into effect includes the administration of phenic acid (carbolic acid) and some additional process, which the inventor, M. DECLAT, has not yet made public. Whatever the merits of the curative system may be, our experience in this country justifies the statement that the general results must be disastrous. So long as diseased animals are kept alive for the purposes of experiment, the risk of communication of the infection is imminent, and no precautions will avail to prevent the spread of the disease. It is difficult to secure the complete isolation of sick animals on a single farm; but when the attempt is made on an extended scale in several districts, or counties, failure may be confidently predicted.

Veterinary authorities in Germany are quite as enthusiastic in their love of research as those of France; but having been taught by experience, they no longer incur useless risk in futile endeavours to cure a malady, which, whether curable or not, is so fearfully infectious, that its progress can only be stayed by the rapid destruction of every animal, or substance in which the germs of disease reside.

With the present regulation relating to the importation of French animals and materials which have been in contact with them, we do not run much risk of the direct conveyance of the disease to our shores, but of indirect communication of infection there must always be danger when the plague is only a few hours distant from us. Pleuro-pneumonia exists in many parts of this country and also in Holland, but not to the extent which might be apprehended from the vague reports which have been current; indeed, it appears from the official returns that pleuro-pneumonia has considerably decreased in the Netherlands during the last four years.

That we are, nevertheless, exposed to the danger of importing cattle affected with pleuro-pneumonia from Holland is a fact, which has been demonstrated recently by the landing of diseased cattle in London, but no instance of an outbreak of lung disease, arising from the movement of Dutch cattle inland, has yet come under our notice; while the instances are numerous of communication of disease by means of home-bred stock which have been purchased at fairs and markets, and driven to healthy localities. If the evidence, which has been obtained by inquiry and observation during the last six months, is worth anything, it tends to show that there is less risk incurred in purchasing Dutch cattle at the landing-place, than in buying home-bred stock at many of the large markets.

All that has been stated respecting the miserable condition of the Dutch cattle which are landed, at the outports particularly, is true; but the conclusion which is often drawn, of their being dangerous on that account, is entirely fallacious. No amount of hardship and privation will produce the lung disease, or any of the contagious maladies to which stock are liable; and even in reference to susceptibility to infection, there is nothing in the history of pleuro-pneumonia to suggest the idea, that poor and badly treated animals are more liable to take the disease than pedigree stock in the *acme* of fine condition. Foot-and-mouth disease has extended considerably in a southerly direction, and has reached Portugal, a country which is usually free from this disease. Cargoes of cattle from Portugal, affected with the malady, have been recently landed in this country. The disease has also increased in this country, and, from the inquiry which we have made in different parts, it would appear that the local authorities are disinclined in many places to take any active steps in reference to this disease; the expenses attending a regular system of inspection are considerable, and the benefits gained not by any means commensurate with the cost. There seems indeed to be a very general impression that the malady spreads, independently of direct contact with virus, and certainly there are circumstances which support this view. Numerous outbreaks have occurred in situations where infection, in the usual sense of the word, could not have had any influence.

Scab among sheep is unfortunately very rife; and, as the disease is curable with little trouble, its continuance must be ascribed to carelessness; it never exists on a farm where the ordinary precautions are adopted.

An Order of Council dated August 5 provides a means of meeting the difficulty by giving power to local authorities to make regulations for the treatment of sheep affected with scab. It remains to be seen how far the power will be exercised; but in answer to the complaints which will probably be made as to interference with the liberty of the subject, it may be suggested that a farmer who insists upon keeping scabby sheep on his farm inflicts injury upon the flocks of his neighbours, who have a right to adopt strong measures in their own defence. The following are the terms of the Order referred to:—

"1. This Order shall take effect from and immediately after August 9, 1871; and words in this Order have the same meaning as in the Act of 1869.

"2. A local authority may, from time to time, with the view of preventing the spread of sheep-scab, make regulations for the following purposes, or any of them:—For prohibiting any person from having in his possession or under his charge a sheep affected with sheep-scab, without treating that sheep, or causing it to be treated, with some dressing or dipping or other remedy for sheep-scab; for prohibiting or regulating the movement out of any field, stable, cow-shed, or other premises in which sheep-scab has been found to exist, of any sheep that has been in contact with, or in the same field, stable, cow-shed, or other premises with any sheep affected with sheep-scab; for cleansing or disinfecting sheds and places used by sheep affected with sheep-scab; and may, from time to time, revoke any such regulation.

"3. Provided that the Privy Council, if satisfied on inquiry, with respect to any regulation made under this Order, that the same is of too restrictive a character, or otherwise objectionable, may direct the revocation thereof, and thereupon, as from the time specified in that behalf by the Privy Council, the same shall cease to operate."

In the less productive parts of the country, where Woods, Shaws, Coverts, and Coppices occupy a large area, a considerable revenue is yielded when the management of this kind of property is understood; as, for example, in those south-eastern counties, famous for the growth of hop-poles, hurdles, and hoops. Unfortunately, except in particular localities, and on a comparatively few estates—the neglect of woodland property—so valuable in the aggregate—is lamentable. With the exception of a few districts where the growth of underwood has been stimulated, and where land of excellent quality has been appropriated to them, it is not often that one sees a wood that was well-planted in the first instance, or that is kept properly thinned.

It generally happens that the smaller coppices are let with the farms, and the larger woods are reserved. In either case, the planting of underwoods is a costly and permanent improvement which, under ordinary circumstances, a tenant cannot be expected to undertake; and when rabbits and hares, as well as winged game, are reserved, the improvements that might be effected are rendered impracticable both to owners and occupiers; for, unless ground game is destroyed, it is useless to plant any kind of wood or underwood, except perhaps Scotch or Spruce Fir, which they do not readily devour.

Presuming then that the teeth are to be drawn, or the mouths sealed, of the rodents whose mission it is to gnaw the bark and young shoots of trees when better food cannot be found in winter, we proceed to recommend the growing of underwood and to describe the soils and spots most suitable for the different kinds of wood; afterwards we propose to say something about the preparation of the land, and the costs and value of the crop.

In the ancient Weald, or wood, of Sussex, there is a district still called "the Forest," where every kind of underwood, from Chestnut to Birch, is grown on different soils and sites; and there is, perhaps, no locality which offers a better field for practical observation on various points connected with our subject than this extensive tract, which the Romans found and named a wood, and which from natural adaptability still remains so richly wooded, that when overlooked from surrounding hills the woods of Sussex appear to the eye to be almost unbroken. The hill district and the deep clay flat which surrounds it like a belt, form two divisions, in the latter of which the Oaks grow, in a bottomless clay, free as Willows, and Ash is the prevailing underwood; in the former the clay is mixed with sand in very fine particles, and the softer particles of soil are brought down the steeps of the hills by winter rains, so that a deposit of alluvial loam collects in the hollows. When these are wet, they are planted with Willow and Alder; when they are sound, as they usually are, Ash is planted. On the best land above Chestnut and Hazel are planted, and Birch, which is one of the least valuable of underwoods, though superior to Oak and Beech, occupies the poorest soils.

Birch affects even the sharpest sands, and is the natural growth of poor soils. We have seen it springing up on the former site of a wood where no seed was sown except by the hand of Nature, and rapidly take possession of the ground without culture, as soon as the timber was removed. And when a soft silky earth, filled with the roots of Fern and other plants, had been removed from the surface of a sand-hill, for gardening purposes, Birch had immediately occupied the denuded surface, growing in almost pure sand.

Hornbeam, which is to the poor clays what Birch is to the sands, and which covers a good deal of ground in some neighbourhoods, is a sure sign of neglected arboriculture, inasmuch as better wood may be grown on the same sites by properly cultivating the ground instead of leaving Nature to herself, unassisted by Art.

The Hazel requires a soil in which there is sand mixed with something better, forming what is called a tender or hazel-loam. On good soils and in sheltered spots, where the climate is mild, its growth is exceedingly rapid. The Hazel-nut is a native of Britain, but it ripens best in the southern counties, and grows fastest in the warm hollows and valleys south of the Surrey downs—a pleasant district, where folds of hazel-hurdles are set, and most of the farms are fragrant with sheep and early Turnips by September 1. We have known an acre of Hazel-nut produce 50½ dozen hurdles, at seven years' growth. The price paid by farmers to the itinerant hurdle-makers for making these useful wattles is 2*s.* 6*d.* per dozen when the rods are not so large as to require cleaving. On such soils Hazel should not be allowed to stand more than seven years before cutting it.

The Chestnut makes the most valuable underwood for hop-poles, on suitable soils, but it will not succeed either on poor soils or where the climate is severe. At exposed elevations it is liable to injury by cold winds in spring, and in low damp spots its young shoots suffer from early frosts. On any light land, of fair quality, it may succeed; and we have known it outstrip several other varieties of wood on a poor sandstone rubble, where the Birch was the native wood. It will be understood, however, that Chestnut is not the wood for weak soils, and it is worthy of notice that on the site alluded to, the native Birch, planted on trenched land, amongst Hazel, Chestnut, and other sorts, overtopped them all. On good sound land, consisting of mixed soil, drained by a chalk subsoil, Chestnut for hop-poles at 11 years' growth has been sold at more than £60 an acre, the buyers cutting it at their own cost. The value of the land to rent was about 35*s.* per acre.

The Ash, though by no means the only underwood growing in the clay district we referred to, is the most valuable and almost the only sort which is selected for clays when the land is prepared for the express purpose of planting. It grows, however, on a great variety of soils, and, mixed with Hazel, forms the *rows*, or wide hedges, planted for shelter, which frequently divide the fields in exposed situations on the chalk downs, where the rock is covered by drift.

Oak makes indifferent underwood, and Beech the worst of any. There are no other sorts of wood that merit particular notice.

We now come to the preparation of the land and costs. As a partial improvement, the vacant places in woods should be filled up with plants, raised in nursery beds, of varieties suited to the soil, and planted where the stubs that were thin or declining have been put to their proper use behind the winter's fire. Strong plants should be set in comfortable beds, made by digging holes 18 inches square and a spit deep. The cost of labour is 1*s.* 6*d.* per 100 holes in soils of common texture. The Marquis Camden's beautiful woods at Frant, in the Forest-district which we referred to, have been treated in this manner with great success; and on the soft rubble and mixed sand and clay which compose the soil and subsoil, the Chestnut grows apparently as rapidly as it would if the land had been trenched.

In general, trenching is recommended for Chestnut plantations at a cost of £8 per acre; and though not practised in the case of the famous Ash-groves in the Weald, some persons go so far as to recommend trenching even on the clays, apparently under the impression that the more you do for the plantation the better it must be in the end. Our own method of preparation, which we recommend to proprietors or tenant-farmers, is to clear the land in the ordinary way with the plough, and to use the subsoil-plough if there is a pan underneath. We recommend planting all kinds of woods at distances of 3 feet—4840 plants per acre—planting the kinds that are observed to be best suited to the soil, and keeping the varieties separate, so as to have only one kind in the piece. Autumn-planting is best, and early in November is the proper time. In the case of wet land the surface drainage, which alone is necessary or practicable, by means of watercourses, "grips," and ditches, should be completed before planting commences. The plants should be three year's old. The market price of well-rooted plants is from 20*s.* to 40*s.* per 1000, according to the sort and the locality, Chestnut being the most costly. They can all be more economically raised at home; foreign Chestnuts being set on seed-beds from which the surface-soil has been removed for the purpose of covering the fruit.

Weeds must be kept down until underwoods are old enough to smother them. Ash of nine or ten years' growth makes a good pole for various purposes. The Chestnut plantations in Sussex and Surrey which are grown for hoops for the London market, are cut down three years after they are planted, after which eight years' growth is the proper age for hoop-making, both for the Chestnut and other sorts. The price of well-established "planted underwoods," without timber, at the above age, is usually from £25 to £30 per acre.

These large figures and quick returns may, perhaps, induce some of our readers to plant, or to improve those unprofitable timbered woods where the good timber has been already removed, that which remains is not thriving, and the underwood, perhaps, is only worth £5 or £6 per acre at 14 or 15 years old! We saw recently 500 acres of woods and copses on one estate, where the planted underwood was worth £20 an acre as it stood, and the timbered underwood, at the same age, on similar soil, was only worth 20*s.* an acre; and the growth of the timber had made up only a small portion of the difference.

The prices paid for cutting underwood are—6*s.* per load of hoops, 1*s.* 6*d.* per dozen hurdles, 3*s.* per 100 for cutting out "spray" faggots and stacking them, 4*s.* for house faggots, 2*s.* 6*d.* per 100 hop-poles.

The possibilities for the Agricultural Labourer, and the actual facts of his condition, are two very different things. And whose fault is that? The whole subject has lately been exceedingly well discussed in the columns of the *Chelmsford Chronicle*, from which we extract the substance of several letters in another page. One of these, written by Mr. Offin, who occupies probably more land as a tenant-farmer than any other Englishman, will be read with much interest. We believe that, in the long run, that condition which arises out of a given set of circumstances, where there is no artificial interference with the natural tendencies, is the best of which that set of circumstances is susceptible. Let exceptional energy, industry, and wealth bear its natural fruit without hindrance—let farms increase in size by the failure of some and the success of others—let the labourer do the best he can for himself without any tie actual or implied to farm or parents—let every motive which freedom can offer be active everywhere for the increase of profit, whether to landowner working man, or tenant—let the profitable results of industry, whoever may be the recipients, be cordially welcomed as the natural premium by which industry is promoted, and we believe that the best results will come out of which the circumstances admit. But what are "the circumstances," or rather what is the leading circumstance, on which the whole depends? Unquestionably the whole condition depends infinitely more on character than on any other thing—the character including intelligence as well as morals, including industry and honesty, sobriety and resolution, as well as dexterity and skill. Education, therefore, is what is wanted—that sort of education especially which both inspirits and equips a man for the right discharge of whatever duties belong to the station in which he is born.

We add nothing further at present to the letters on this subject in another page; they give, we believe, nearly all that can be said, whether in commendation or in blame, of the several classes interested—in whom we at present witness the wealth and poverty, the recklessness and industry, the selfishness and self-denial, the merit and demerit on which partial critics successively comment.

—— A small supply of English Wheat at Mark Lane on Monday (including a few samples of new) met with a fair inquiry at previous prices; red declined 1*s.* to 2*s.* on the prices of that day fortnight. Trade was quiet on Wednesday, at previous rates.——The hot weather caused a slow trade at the Metropolitan Cattle Market on Monday, but prime qualities were not much affected in price. Choice Lambs were scarce and dear. On Thursday trade was again dull, at declining prices. ——The excitement in the Wool Market continues.

—— The Northumberland Agricultural Society's Meeting at Alnwick last week was most successful. The progress of this society has been exceedingly satisfactory, as is indicated by the large increase in exhibits. There were 84 entries in the Shorthorn classes, and among the bulls Mr. W. Linton's Lord Irwin took the first place in a commendable and commended class. The show of cows was excellent, the 1st prize being awarded to Sir John Swinburne for an animal which was also successful in obtaining Sir Walter C. Trevelyan's silver cup, valued at £20. Calves of both sexes also formed a good feature of the exhibition. The display of sheep was one of the best ever witnessed in the district, the prize-takers being the Rev. R. W. Bosanquet, Rock; Mr. G. Hope, Fenton Barns; Mr. Thomas Forster, jun., Ellingham; Mr. Thomas Elliot, Hindhope; Mr. Robert Shortreed, Attonburn; Mr. John Robson, Byrness; and Mr. T. H. Hutchinson, Manor House, Catterick. We are glad to learn that the shearing question was "the subject of considerable remark," and that the "opinions of the secretary and committee of the Northumberland Society are such that steps will probably be taken before long to prevent, if possible, the practice of clipping animals into shape." For the rest, there was a good show of horses, comprising 383 entries, well on to 100 more than had ever been entered before. Implements also formed an interesting and useful feature of what appears to have been a most excellent meeting.

—— The annual Midland Counties Show of Horses was opened on Tuesday at Bingley Hall, Birmingham. The weather was very fine, the show an excellent one, and the attendance large. The entries this year, as previously stated, were 283 against 282 last year. There was a great increase in the hunter classes. Thoroughbred stallions for getting hunters occupied the premier position. The class was a small one, there being only seven entries, and the 1st prize went to Messrs. C. and J. Moffatt, of Kirklinton Park, Carlisle, the owners of Laughing Stock. The winner of the 2d prize, Gem of the Peak, is the property of Mr. W. H. Logan, of Tamworth. Mr. W. E. Everett, Finstall House, Bromsgrove, took 3d prize for Paul Jones, the winner of the Chester Cup and the St. Leger. In the class of hunters exceeding 15¼ hands high, and equal to 15 stones, the 1st prize fell to Mr. J. Harvey, and D. Bayly, of Ollerton, Notts, for a chestnut horse; Mr. T. Perceval, Wansford, took 2d prize; and the 3d fell to Mr. Van Wart, of Edgbaston. In the class of hunters exceeding 15¼ hands high, without condition as to weight, and five years old and upwards, there were no fewer than 23 entries. Mr. S. J. Welfitt, of Tathwell Hall, South Lincolnshire, took the 1st prize; the 2d went to Mr. A. Newman, of Winchcombe, Cheltenham; and Mr. T. Percival, of Wansford, was awarded the 3d prize. For hunters not exceeding 15½ hands high, there were only two prizes offered. Mrs. C. F. Dilke, Coleshill, took the 1st prize with a horse which has been a competitor and taken prizes in previous years at this show, and the 2d fell to Mr. E. S. R. Wolferstan, Statford Hall, Tamworth, for a grey gelding. In the class for 4-year-old hunters, Major Barlow, of Hasketon, Suffolk, took the 1st prize with a horse which was 2d in the same class at Wolverhampton; the Major also took the 2d prize with the 1st prize horse at Islington last June; the 3d prize went to Mr. C. Cooke, of Taddington, Winchcomb. The prize-winners in the class of 3-year-old colts and fillies for hunting purposes were Major F. Barlow, Mr. E. Phillimore, Prestbury Park Farm, Cheltenham; and Major Barlow. In the class of 2-year-old colts for hunting purposes, the 1st prize fell to a gelding belonging to Mr. J. Goodliff, Conington Lane, Stilton; the 2d to a gelding, the property of Mr. J. M. T. Musgrave, Beverley; and the 3d to Mr. J. Watson, Hartlebury, Worcestershire. In the class of agricultural stallions, the prizes were awarded to the horses belonging to Mr. H. Tomlinson, Blithford, Rugeley; Mr. John Manning, Orlingbury, Wellingborough; and Mr. T. Middleton, Lyddington, Uppingham. The entries in the various classes of roadsters, hacks, and ponies were numerous. For weight-carrying hacks, not exceeding 14½ hands, the 1st prize was taken by Mr. H. Frisby, 13, James Street, Buckingham Gate, London; and the 2d by Mr. G. W. Shillingford, Eynsham, near Oxford. Mr. Frisby also took 1st for the best harness horse not exceeding 15 hands, the 1st in the class for horses exceeding 14, but not above 15, hands, and the prize for the best pair of horses in harness. Mr. H. J. Wilde, Bridgnorth, took the 1st prize for horses in saddle not exceeding 14 hands high; Mr. H. Gameson, of Birmingham, the 1st prize in the class of ponies in harness not exceeding 13 hands; Mr. F. A. Grew, Birmingham, the 1st in ponies not exceeding 12 hands; Mr. J. Goodliff, Stilton, the 1st in ponies not exceeding 12 hands high, to carry children; Mrs. C. F. Dilke, of Maxstoke Castle, the 1st in pairs of ponies in harness; and the 1st in ponies in tandem under 14 hands, went to Mr. C. Myring, Walsall.

OUR LIVE STOCK.

CATTLE.

The following prices were realised at the sale of Lord Faversham's Shorthorns, on Thursday, the 10th inst., at Duncombe Park.

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Sympathy	1865	35	Mr. Hodgson, Highthorne.
Pearl	1866	26	Mr. R. H. Bower.
Royal Celia	1868	35	Mr. Cattley.
Peppermint	1868	40	Hon. E. Lascelles.
Magdala	1868	31	Mr. Coverdale.
Leoline	1868	33	Hon. E. Lascelles.
Syren	1868	32	Mr. T. Stamper.
Princess of Ryedale ..	1869	27	Mr. W. Scoby.
Polygeneva	1869	56	Mr. Hodgson.
Victoria 2d	1869	30	Mr. Cattley.
Lily of Ryedale	June, 1870	18	Mr. Newton.
Lozenge	Mar., 1871	51	Mr. Cattley.
Cornucopia	1867	28	Mr. Newton.
Rose of Ryedale 2d ..	June, 1870	20	Mr. Radcliffe.
Bulls.			
Manchester (26,798) ..	1866	45	Mr. Cattley, Stearsby.
Capri	1867	30	Mr. Newton, Overton.
Hospitality	1867	35	Rev. Mr. Danby, Stamford.
Pylades	1868	33	Mr. T. Brookes, Thirsk.
Colonist '..	1869	53	Major Stapylton.
Coriolanus	1868	37	Mr. Burt, Grantham.
Chancellor	1869	31	Mr W. Taylor, Malton.
Corinthian	1869	33	Mr. J. Newton.
Colonist 2d	Feb., 1870	55	Sir H. Johnstone.
The Star	June, 1870	21	Mr. W. Mowbray.
Sedan	Sept., 1870	30	Mr. Priestman.
Cicero	Jan., 1871	24	Mr. Elliot.
Colonist	Feb., 1871	47	Hon. E. Lascelles.
Victorious	Feb., 1871	17	Rev. W. Prest.

—— Next week will witness three important Shorthorn sales in Ireland, conducted by Mr. John Thornton. On Wednesday the 23d inst., the late Mr. Barnes' herd, comprising 43 head, and Mr. Reynell's herd, comprising 24 head of cattle, will be disposed of. On Friday, 25th inst., the Castle Grove herd, so well known in connection with Mr. J. G. Grove, and consisting of 45 head, will be sold. Slightly reviewing these catalogues in the above order, we find a reservation on the part of Mr. W. Barnes of one bull and seven cows, to be the nucleus of a future herd. The catalogue opens with *Medora* by Dr. M'Hale (15,887), a direct descendant of *Medora* by Ambo, the first of the five tribes into which the entire catalogue may be divided. The names of Nimrod (13,388), Selim (6454), Rex (6385), and Sir T. Fairfax (5196), leading back to the celebrated Ambo family, and later of Duke of York (23,804) and King Richard (26,523) attests the care with which this family has been bred. This excellent strain was introduced by the purchase of Mr. R. Booth's *Sweetbrier*, of his favourite "Isabella" tribe, and consists at present of 13 females and three bulls. *Gift 5th* (lot No. 2) is the first of four descendants of *Gift* by Hamlet (8126) and also of the renowned Frederick (7023). *Spiranza* by British Flag (19,351), *Brilliant* (lot 4) by Ravenspur (20,628), and *Bright Eyes* (lot 5) by Ravenspur (20,628), three daughters of *The Nun* by Dr. McHale, are descendants through Mr. Lawrence's herd, from Mason stock, and are the origin of a large section of the Westland herd, comprising in all nine individuals. *Grand Duchess* by Mr. S. E. Bolden's Grand Duke 3d (16,182), dam *Sylph* by Hopewell (10,332), and of the famous *Mantalini* by Marcus (2262) tribe, was the ancestress of no fewer than ten animals, comprising *Grand Duchess 3d* by Royal Sovereign (22,802) and *Bracelet* by Royal Duke (25,014). Lastly, there are five descendants of *Red Rose* by Roseberry (5011), one of the first bulls used in the herd, and purchased from Mr. R. Booth.

Mr. Reynell's herd, which has been carefully reared at Killynon, Co. Westmeath, during the last 25 years, consists almost entirely of two tribes. It was first started with the cow *Fairy Queen*, purchased on the recommendation of the late Mr. Holmes, who had bought the cow by Mr. Mason's *Matchem* at the time of the Chilton sale from Mr. Brown, the breeder of the *Matchem* cow, which was sold to Mr. Bates and became the ancestress of the celebrated Oxford tribe. The "Pauline" family, bought of the late Mr. Barnes, was purchased by him from Mr. Whitaker, of Burley, Yorkshire, whose herd was noted for its great dairy properties. The bulls since used have been bred by Mr. Barnes, at Westland, and are chiefly of the celebrated "Mantalini" family. Several of the animals are by those noted sires Duke of Leinster (17,724) and Royal Prince (27,384), both hired to go to England, and used by eminent breeders. The young calves are chiefly by Lord Spencer (26,738), who will be sold with the Westland herd.

The Castle Grove herd consists of eight families, all of which are of Booth origin. The sires have been selected from Killerby and Warlaby, and have been used in the following order:—Prince Arthur (13,497), King Alfred (16,334), King Arthur (13,110), War Eagle (15,483), Sir Roger (16,991), Elfin King (17,796), Sir James (16,980), British Crown (21,322), The Sutler (23,061), Great Hope (24,082), and England's Glory (23,889). The catalogue opens with *Coquette* by Cornet (11,298), and from *Norma* by Druid (10,140), a direct descendant of Mr. Booth's celebrated cow *Fame* by Raspberry (4875). This excellent strain of blood is represented by 11 females and three bulls. Mr. John Colling's *Rachel* by Frederick (1060) was the foundress of what is known as the "Ruth" tribe, represented at Castle Grove by eight individuals, and Mr. Mason's *Lady Sarah* by Satellite, dam *Portia* by Cato, is the common ancestress of four heifers. The remainder are good cattle, having in several cases five or six crosses of first-class Booth bulls.

—— At the Winterfold sale on the 20th ult., Mr. Strafford disposed of 50 head of Shorthorns, the property of Messrs. John Harward and Isaac Downing, for the very good average of £54 15*s.* 9*d.* Thirty-nine cows made £61 15*s.* 9*d.* each, and 11 bulls made £29 19*s.* 5*d.* each, the total realised being £2739 9*s.* We have only space to record the highest prices obtained. After the first two lots had been disposed of, *Kirklevington 16th*, by Duke of Wetherby (17,753), dam *Kirklevington 12th* by 4th Duke of Oxford, and therefore an extraordinarily well-bred cow, appeared in the ring, and was sold to Mr. Thornton, for the Earl of Bective, at the high price of 355 gs. *Tacita*, by Duke of Rutland, was sold to Mr. F. Leney, for 60 gs. *Cherry Blanche 2d* by Charleston (21,400), and of the "Blanche" tribe, to Lord Chesham for 85 gs.; *Kirklevington 19th* by 7th Duke of York, to Mr. R. P. Davis for 175 gs.; *Lady Mary 3d*, to Mr. J. K. Foster for 83 gs.; *Kirklevington 22d* by 5th Lord Wild Eyes (26,762), dam *Kirklevington 16th* by Duke of Wetherby (17,753), was secured by Mr. Thornton for the Earl of Bective, for the very high price of 300 gs.; *Countess Blanche* by 3d Duke of Claro, was sold to Captain Webb at 71 gs.; *Lady Worcester 8th* to Colonel Kingscote at 80 gs.; and *Kirklevington 24th* by 5th Duke of Wharfdale (26,033), to Mr. W. Ashburner at 100 gs. In the bull sale, the only prize worthy of special note, after the extraordinary figures above given, was 70 gs. for the Earl of Chatham by 3d Duke of Claro (23,729), given by the Rev. C. W. Holbeach.

—— Mr. F. Leney's *Grand Duchess of Geneva*, a daughter of *7th Duchess of Geneva*, purchased at Windsor for 700 gs., produced on the 6th inst. a very good white cow calf, got by Grand Duke of Kent (26,289).

SHEEP.

The Right Hon. Lord Chesham has sold the whole of his draft Shropshire ewes to Richard Milward, Esq., Thurgarton Priory, Notts, and his lordship has selected a ram lamb from the flock of Mr. Thos. Nock, of Sutton Maddock, at 35 gs., being one of the pen of five which obtained 2d prize at the Royal Agricultural Society, at Wolverhampton.

RAM SALES.

At Adcott Hall, on Wednesday the 9th inst., a large number of breeders assembled to witness the sale of Messrs. Masfen's rams. The first ram was a 2-shear, Major, winner of the "Royal" 1st prize, 1871, by Conservative, bred by Mrs. Wadlow, which was also the sire of many of the best lots. He was purchased for Mrs. Beach, at 50 gs.; the 2d, also a 2-shear, and winner of the 2d prize at Oxford, being let to Mr. C. Byrd, at 40 gs. Mr. Kemp Bourne gave 32 gs. for a 3-shear, which had been let in previous years to Mr. Coxon and Mr. Firmstone, at 40 and 45 gs. Then followed the shearlings headed by the Wolverhampton 2d prize ram, True Type, by Marquis, which was hired by Messrs. Masfen and Keeling at 71 gs.; Mr. C. Byrd taking the next at 40 gs., at which figure a shearling was hired for the Earl of Bradford; and Mr. May secured a good shearling for the season at 31 gs. Other shearlings made 37 (to Mr. Bostock), 25, and 20 down to 5½ gs., the average for the 43 being close on £20.

The ewes did not make as much as was anticipated; four pens going to Lord Chesham at 67*s.* 6*d.* to 92*s.* 6*d.* each, two to Mr. German, at 90*s.* and 92*s.* 6*d.*, and others to Messrs. Felton, Roberts, Juckes, Price, &c., at from 80*s.* down to 60*s.* The average was about 72*s.* 6*d.*

—— Mr. W. G. Preece's 36th great annual sale, at Shrewsbury, commenced on Thursday week, when a very large number of rams from some of the most noted flocks in the kingdom were submitted. The attendance was scarcely so large as usual; but the rams offered, it was admitted, were, as a whole, of the very highest character, and at times the biddings were very spirited. The first lot brought to the hammer was a 3-shear ram by Young Patentee, the Prime, which was sold for 10 gs. A 2-shear, by Lord Warden, was let for 14 gs.; and a shearling, by Conservative, for 5 gs. Thirty-five rams, the property of the executors of the late Mr. Crane, of Shrawardine, and Mr. Edward Crane, of Forton, were next submitted. A grand shearling ram by Crosswood Hero, dam by Duke of Newcastle, was let for 41 gs.; and another by Crosswood Hero, dam by Plymouth 2d prize, for 41 gs. The whole made an excellent average. The Rev. C. P. Peters sold two shearlings for 5½ and 6 gs. respectively. Mr. Thornton, of Pitchford, disposed of a 3-shear ram, by Volunteer, for 18 gs., and a 2-shear for 17 gs. Mr. T. Horton, of Harnage Grange, sold 13 rams at a fair average, the highest figure being 16 gs. for a shearling by Pirate, by Corsair, a "Royal" 1st prize The Hon. E. Kenyon obtained 16 gs. for a good 2-shear by Packington 2d; but sold four other rams at lower figures. Mr. Joseph Crane, of Calcott, realised an average of over 12 gs. for five rams. Mr. Fenn, of Stonebrook House, Ludlow, and Mr. Harding, of Bicton House, offered five rams, all of which were sold; and a 2-shear ram, their property, was let for 20 gs. A 2-shear ram, by Fatback Patentee, was let for 50 gs., and a shearling, by the same sire, for 17 gs. Another shearling was sold for 27 gs. Fifteen of Lord Chesham's rams were disposed of; the competition being very keen for a shearling by Duke of Manchester, which realised 36 gs. The next highest price was 21 gs. for a shearling, by Kenyon's ram (No. 3). Mr. E. Bostock, of The Hough, Stafford, sold five rams; a shearling, by Horton's Duke of Kent, making 20 gs. Mr. Andrews, of Nobold, let one ram for 10 gs.

Nearly 1000 ewes were sold the second day (Friday), and would average close upon £4 each, these being sent by the following breeders:—Messrs. Crane, Evans, Horton, Fowler, Fenn and Harding, Williams, Edwards, Bowen and Jones, Minton, Payne, Lee, Everall, Pickering, Preece, Holder, Nevett, Bridgeman, Jones, Wood, Morris, Bather, and Captain Lovett. In several instances as high figures were paid for ewes from an ordinary farmer's flock as for the drafts from the most noted ram breeders, but a few show pens realised as high as 10 gs. per head.

—— At the Oxford ram sales in Mr. Smith's Close, near Worcester College, on Wednesday week, nearly 800 rams and other sheep from the most celebrated breeders in the county changed hands. The auctioneers were Messrs. Jonas Paxton and G. Castle, J. & W. Scroggs, Franklin & Gale, and Mr. J. A. Mumford. There was a large attendance of farmers and breeders from this and the neighbouring counties, and the rams, which were of excellent quality, and for the most part of extraordinary size, fetched very high prices. Many of those submitted to public competition were from flocks which had won prizes at the Royal Agricultural Society's and other exhibitions. The sheep were universally admired, and the competition throughout was spirited. Mr. Blake's (Botley) 45 Oxfordshire Down ram lambs realised £6 16*s.*, the highest price being 11½ gs.—Mr. Joseph Roberts, of Curbridge, sold 40 Oxfordshire Down shearlings, for an average of £16 9*s.*, and this, we understand, is the highest average for this class of sheep that was ever obtained. The highest-priced sheep was sold to Mr. Treadwell, of Winchendon, for 42 gs. The next highest was sold to Mr. Wallis, of Shifford, for 41 gs. Mr. Longlands purchased one at 33 gs., and two were sold to Mr. Baldwin (Stratford-on-Avon) and Mr. J. Bryan (Southleigh) for 28 gs. each.—Mr. G. Wallis' shearlings realised an average of £13 11*s.* 6*d.*; the highest figure was 21 gs., the buyer being Mr. Hobbs, of Maiseyhampton, and one was sold to the Duke of Marlborough for 13½ gs.—Mr. C. Gillett's 16 Cotswold rams fetched an average of £7 12*s.* 3*d.* The highest figure reached was 13 gs., the purchaser being Mr. C. Duffield, of Marcham. Mr. G. Drake, of Bignell, purchased one at 11 gs., and Mr. Brooks, Lyford, one at 10 gs.—Mr. W. H. Hunt's 12 Oxfordshire Down shearling rams were disposed of at an average of £12 14*s.* 6*d.* The best sheep in the flock was sold to Mr. Richard Eagle, Northmoor, for 18 gs., and one to Mr. Prickett, of the same place, for 13½ gs.—Mr. C. Gillett, of Cote House, sold some Oxfordshire Down shearling rams at an average of £10. The highest figure was 15½ gs., the buyer being Mr. Badcock, of Abingdon. Some of Mr. Gillett's sheep have won prizes at the Royal and other shows.—Mr. J. Parker, of Iffley, sold his Oxfordshire Down ram lambs at an average of £6 5*s.* 9*d.* One was sold to Sir Henry Dashwood for 13 gs., and one to Mr. Allin, Littlemore, for 10 gs. Mr. Parker took a 1st prize for sheep at the Royal Agricultural Society's Show at Oxford in 1870.—Messrs. W. and F. Franklin, of Ascott, sold 39 at an average of £6 8*s.* 10*d.* The highest figure was £15 10*s.*, the purchaser being Joseph Gale, of Cuddesdon. Mr. Franklin, of Cumnor, purchased one for £11 10*s.*—Mr. W. H. Gillett, of Southleigh, sold his Cotswold ram lambs at an average of £5 2*s.* 6*d.* Mr. Bolton, of Finstock, purchased the best sheep for 8½ gs. —Messrs. Franklin & Gale submitted for public competition about 50 Oxfordshire Down ram lambs, the property of Mr. H. Gale, of Cuddesdon, and they averaged £6 3*s.* 3*d.* each, the highest price being 16 gs., and the lowest 3½ gs. Mr. J. T. Gale, of South Minster, Essex, purchased the highest priced sheep.—Messrs. Franklin & Gale also sold 280 ewes and theaves, and 100 ewe lambs, the property of Mr. W. Parsons, of Elsfield, being the whole of his breeding flock of Oxfordshire Downs. This capital flock is descended from some of the best Oxfordshire Down blood, and was disposed of in consequence of the owner relinquishing breeding. The ewes and theaves made from 52*s.* to 73*s.* per head, and the lambs from 38*s.* to 70*s.*—Messrs. J. & W. Scroggs offered 35 prime Oxfordshire Down ram lambs and 8 shearlings, belonging to the executors of the late Mr. F. Pratt. They possessed good skins, were of first-class colour, and combined blood from the celebrated flocks of Mr. C. Gillott, Mr. Wallis, and Mr. Treadwell. They realised an average of 8½ gs.—Mr. J. A. Mumford submitted for competition about 20 Oxfordshire Down ram lambs, from the noted prize-taking flock of Mr. J. K. Shrimpton, of Easington. The average of this lot was £4 4*s.*, the best lamb fetching 6 gs., the purchaser being Mr. Mumford, of Boarstall. The other purchasers were Mr. Hopcraft (Brackley), Mr. Byford (Suffolk), Mr. Dover (Aston Sandford), Mr. White (Pollicott), Mr. Lindars (Tetsworth), Mr. Louch, Mr. Sheppard, and Mr. Clark.

—— On Tuesday Messrs. Ewer & Winstanley, of Salisbury, put up to sale by auction, at Salisbury, about 100 ram lambs and rams of the Improved Hampshire Down breeds, the property of Mr. Dibben, of Bishopstone. There were six lots of rams to be let until September 1, and for one of them the extraordinary price of 70 gs. was given by Mr. Budd, of Hatchwarren, Hants. The other five went at the following prices:—Lot 1, Mr. Jones, 7½ gs.; 2, 9 gs., Mr. R. Coles; 4, 9½ gs., Mr. Barton; 5, 8 gs., Mr. Olding; 6, 8 gs., Mr. Jones. Lambs sold as follows:—Lot 7, 11½ gs., Mr. Blake, Chitterne; 8, 12 gs. ditto; 9, 14 gs., Mr. Coles; 10, 6½ gs., Mr. Brown, Stockton; 11, 6½ gs., Mr. Jones; 12, 7½ gs., Mr. Jonathan Taunton, jun.; 13, 6 gs., Mr. Edwards; 14, 11½ gs., Mr. E. Pinckney; 15, 23 gs., Mr. J. Fleetwood; 16, 17 gs., Mr. Olding; 18, 11 gs., Mr. Pern; 19, 10½ gs., Mr. Pinckney; 20, 24 gs., Mr. W. Taunton.

—— The sale of Mr. Coxon's flock on Monday of last week, which was entrusted to Mr. Preece, of Shrewsbury, opened with Conductor, "Royal" prize sheep, which was let for the season for 101 gs. to Mr. German, after a keen competition from Mr. E. Crane. No. 2, winner of 1st prize at Oxford, used last year by Mr. German, went to Mr. Barnwell at 24 gs.; and other aged sheep made from 10 to 16 gs. The first shearling ram by Mansell's Mansion 3d, goes to Mr. Hamilton, Dunboyne, at 41 gs.; and another by Commander, to Earl Howe at 31 gs. Others sold at 24, 20, 19, 16, down to 6 gs.; the average being £47 4*s.* The ewes ranged from 135*s.* to 60*s.*, several pens making 100*s.* or upwards. The buyers included several gentlemen who are establishing a Shropshire flock. The results of the above sale tend further to prove that ram breeders must pay high figures to secure the best sires, if they are to maintain their positions; as new men are fast treading on their heels from the opportunities afforded for the obtaining the best blood in the ewes offered at the various public sales.

—— Mr. Cole's annual sale and letting of ram lambs and rams, by Messrs. Harding & Sons, of Frome, took place in a field adjoining the Boreham Road, Warminster. The sale commenced by letting ten ram lambs, some for a month, others for the season. Lot 1 was let for a month, at 9 gs.; lot 2, for the same time, 8 gs.; others made 6½ and 5 gs., one only being let under, viz., 4½ gs. The ram lambs for sale then followed. Lot 13 made 15 gs.; lot 15, 8 gs.; others made 7½, 6½, 6, to 5 gs., no animal being sold under that sum.

—— At the Cirencester August sheep and cattle fair, Messrs. Moore & Hill sold 16 Cotswold shearling rams, the property of Mr. Edward Fowler, of Aston Farm, at an average of £15 7*s.* 1½*d.*; 14 rams, the property of Mr. Charles Barton, of Coln St. Dennis, at an average of £13 13*s.*; and 14 rams, the property of Mr. Thomas Clarke, of Frampton Mansell, at an average of £12 16*s.*—Mr. James Villar sold 6 Cotswold rams for Mr. T. Beale Browne, of Salperton Park, at an average price of £10 17*s.*; 10 rams for Mr. W. Smith, of Bibury, at an average of £10 4*s.* 9*d.*; 26 rams for Mr. Henry Cole, of Ashbrook, at an average of £14 15*s.* 7*d.*; 4 rams for Mr. W. Peachey, of Cubberley, at an average of £8 10*s.* 6*d.*; and 3 for Mr. R. Peachey, of Chedworth, at an average of £7 17*s.* 9*d.*—Messrs. Acock & Hanks sold 13 Cotswold rams for Mr. J. H. Pedley, of Bibury, at an average of £11 16*s.* 2*d.*; 12 rams, the property of the executors of Mr. Thomas Gillett, of Kilkenny, at an average of £17 6*s.* 6*d.*; and 30 rams, bred by Mr. Barton, of Fyfield, at an average of £14 12*s.* 7*d.* Mr. Barton's average last year was £10 14*s.* 8*d.*, for 50 sheep.—Mr. Villar also sold 22 Oxfordshire Down rams for Mr. C. Hobbs, of Maiseyhampton, at an average of £12 7*s.* 6*d.*

A WALK IN WESTMORELAND.

THE year 1870 proved a most disastrous one as regarded the hay and green crops in the south of England; whilst in the North a succession of showers in May and June made the meadows more than usually full of grass, and the hay was housed in the middle of July in excellent condition; in fact, the yield was larger than were the demands of the district, and the slender crops of the South were supplemented, at a reasonable price, from the North. Green crops, too, were unusually luxuriant, and more hay was sold in consequence. A fortnight's tour in the Lake districts of Lancashire, Cumberland, and Westmoreland, in the middle of July, has induced me to make a few practical remarks on the agricultural position of these counties. Seeing much over which to rejoice and much to admire, I yet saw a good deal to deplore.

First, then, in season, I was glad to see the excellent crops of hay grass. The meadows are very full, and the recent and almost daily showers have greatly thickened the under or bottom growth. Owing to the difficulty which has been experienced in working and housing, consequent on the showery season, a portion of the hay must have deteriorated in quality. Sufficient, however, remains to render the crop considerably above an average. Some farmers, in their eagerness to get the grass under cover, took advantage of every gleam of sunshine to shake out the hay. In those cases considerable harm has followed, whilst those who left it standing in cock till a fine day came—and the wet and fine have been pretty alternate—housed it without material hurt. From the nature of the season, the fog or after-grass must necessarily be a heavy crop; meadows, from which the hay had been removed a fortnight previous, presented a most luxuriant growth.

In many portions of the country, however, acres and acres of good meadow land are to be seen quite overgrown with the Ox-eye Daisy, and many fields present the appearance of having been visited by a heavy snow storm. The plague of locusts with which Egypt was visited in the days of Pharoah was not more destructive than is this pest to the grass lands, and unless some united effort is made by farmers—and that speedily—it will entirely usurp the place of grass in the whole country. Every practical farmer is well aware that cattle will not eat the Ox-eye Daisy in its green state, and only in the extremity of want will they eat them when mixed with the hay. Such is the pertinacity of the seed, that it will grow after passing through cattle. An easy method of clearing the pest is to pasture the land, where it prevails, by sheep for three successive years. The sheep eagerly seek and nip the young flowers, and thus prevent them seeding; and if the farmer will take the precaution to cut off the few flowers which, in some cases, may escape the sheep, three years will see his land relieved from the incubus which now seriously threatens to destroy its fertility. This seems to me a duty which every agriculturist owes to himself, his landlord, and his neighbour. Another point we must briefly touch upon. As a nation, we are not able to grow sufficient produce to supply our wants. Yet, in the districts referred to, I have seen hundreds of acres of land, in the hands of landed proprietors, which did not produce one-tenth what they might be made to produce. From year to year, I was informed, the land has been left untilled, and the scanty produce sold by auction, until, at the present time, the grass crops are scarce worth the cost of labour to make them into hay. I should think a Bill to compel landowners, in the interests of the nation, to properly fulfil their duties to their fellow men, might meet with more favour than have many Bills of the present session. The green crops which are grown in the districts under observation are—Turnips, Mangel Wurzel, Carrots, Potatos, and a few Cabbages; more of the latter might be grown to profit. In all these the crops are very heavy and healthy (Potatos being especially productive, and free from disease), mostly very clean, and evincing great care. That these counties will have a sufficiency of autumn and winter fodder seems now almost beyond the possibility of doubt. Of the fruit crops I cannot speak so favourably. A severe night's frost in the middle of May completely destroyed the blossom of very many orchards, and the trees now present a leaf-blackened appearance, as though blighted by lightning. Gooseberry trees suffered from the same cause, and the caterpillar has also been very abundant. The latter pest is so easy of remedy that I wonder at its yearly infliction. A bunch of Gorse (or, as it is called in some districts, Whin,) tied in the middle of the tree, is an unfailing preventive. Wheat and Barley, of which there is a great breadth sown, particularly in Furness, evinces evidence of more than an average yield, and a fortnight of warm sunny weather would make them ready for the reaping-machine. Splendid in ear and long in stem—many of the fields showing a height of 6 and 5 feet respectively—the Wheat and Barley fields present a sight well calculated to gladden the eye of the agriculturist. Of the corn crop I cannot speak so favourably. Looking from a distance, no fault can be discerned, but a close examination shows a woeful number of black or "smut" ears; in fact, I never saw it more prevalent, and the quality of the grain will be much affected by it in the threshing and grinding. To prevent this, change of seed is frequently tried, but, in most cases, in vain. The surest method is to throw on to the seed a spadeful of quick-lime, work it up with a hay-rake till the seed is white, and then pass it through a pailful of old urine, or, as it is commonly called, "old chamber ley," and then dry. Another pest of the corn fields I was sorry to see most luxuriant, viz., "Wild Kail." Many acres of grain presented the appearance of the "Field of the Cloth of Gold." It is firmly believed by many farmers with whom I conversed whilst on my tour, that it is impossible to eradicate this weed, which only springs into existence after the land has been ploughed. I know of waste lands, which had never previously been disturbed within the memory of man, on being gone over with the plough, produce a heavy crop. My remedy is to well and carefully harrow the land in the autumn, and thus eliminate all the "wicks;" then green crop for three successive years, taking care to hand-weed should any stragglers make their appearance. I do not say that this will in all cases totally eradicate the "kail," but if proper precaution be taken it will be many years before it will again cause the farmer any inconvenience. In conclusion, I congratulate the farmers of the North on their promising prospects. A fortnight of warm, sunny weather will give them crops of all and every description, such as has not been experienced for many previous years. *J. R.* [Our North Lancashire correspondent, writing on the 9th inst., says that "The hay harvest is now completed, and, owing to the almost tropical heat which has prevailed since Saturday last, a great quantity of hay, previously uncut, has been housed in good condition, thus rendering the well-secured crop above an average. A succession of hot days, combined with brilliant sunshine, is also fast changing the colour of the grain, and some farmers have commenced Oat cutting. The fine weather has come in the nick of time, and will, no doubt, materially alter the aspect of affairs for the better; and the grain crops of the district, which a week ago were viewed with despondency, now promise a bright future. The same remarks will apply to green crops. Another week of similar weather to that of the present will place us in the midst of harvest."]

STEAM ROAD ROLLING.

[We extract the following from the columns of the *Athenæum*, where it appears as a Review of the "Report on the Economy of Road Maintenance and Horse Draught through Steam Road Rolling." By Frederick A. Paget, C.E. (Spon.)]

The state of the roads of a country is at once an index and a cause of the general civilisation of the period. No individual element of human progress is of more, it would be hard to name one of equal, importance. A visit to Portugal, to Greece, or to Southern Italy, is calculated to impress this fact very forcibly on the mind. Good roads bring freedom of intercourse, equality of prices, and encouragement for industry, and are the veins of that circulation, in the absence of which the body politic festers in sloth and brigandage.

The mighty European revolution, in the midst of which we find ourselves, is due, at all events as to its actual state, to the wonderful impetus given to national and international communication by the application of steam power to transit by land and by sea. But, before George Stephenson had astounded a committee of the House of Commons by proposing to travel at the rate of 16 miles per hour, we had attained that respectable speed by some of our best-appointed coaches. On the highway, as well as on the ironway, speed is to a great extent dependent on the smoothness of the surface of the road. Less than a century ago England was not better off in respect of internal communication than the less civilised parts of Europe are at this day. Even on the great mail routes different time-tables were adoped for summer and for winter. The scarlet-coated guard of the royal mail often laid down his blunderbuss to seize his horn, and warn some heavy, plodding waggoner to draw his vehicle aside out of his rut, and let the king's service pass. The man who effected this change—need we say that his name was Macadam?—enjoyed a green old age in the memory of some of us who do not yet consider ourselves old men.

The ideas carried out by this great reformer of our highways were simple, and were true. The earth has ultimately to bear the weight of all moving traffic. To do so, it only requires to be kept dry, and with an unabraded surface. Therefore the old idea of forming a road like a continuous arch, and throwing a stress on wedge-shaped stones driven in at the sides, is a mistake. Let the road be fairly levelled, sloped to either side, properly drained, and then covered with an artificial breccia, or stratum of broken stones, not larger than 5 or 6 oz. in weight, which will consolidate into a homogeneous mass, and at once keep the earth below from being cut into by the felloes of the wheels and from being soaked by the rain.

So far all is plain. Then comes the question, How is the broken stone to be consolidated? Here our road-surveyors stopped, arrested by the fear, which was a misjudged one, of expense. They left this consolidation to be effected casually, by the actual traffic passing over the road. In so doing they committed, and daily commit, two great economical sins. They consolidate their road in at once the least effective and the most expensive manner. They never make a homogeneous road. Ruts are formed in places, before the greater part of the surface has become smooth. Water percolates during the whole process. Repairs are needed irregularly, locally, and in the most inconvenient and expensive manner; and while the cost of the work actually done by the road-surveyor—the cost of metal, labour, and repair—is thus actually doubled, as compared with that of a similar road finished and consolidated at once, the cost incurred by the owners of the vehicles, which are thus converted into very inefficient rollers, may be estimated by the fact that the draught over the new road is five times that over an old, or, at least, over a smooth one.

It is, therefore, a remarkable and not a creditable fact that, while steam road-rollers have been used in France, with admirable results, since their invention by M. Louis Lemoine in 1859, and have even been seen on some of our principal metropolitan thoroughfares, completing, in a few hours, and that with admirable and perfect success, the work which is yet thrown on the owners of private vehicles, we are content to abuse the parish authorities, to double our road rates, to lame our horses, and to shake and damage our carriages, and our nerves into the bargain, by the barbarous layers of broken granite which are duly spread to welcome the London season. Only so recently as the opening of the Embankment road it was remarked, as a striking proof of the incompetence of the Metropolitan Board of Works, that the steam roller had not been employed. It is, therefore, with some surprise that we receive a "Report on the Economy of Road Maintenance and Horse Draught through Steam Road Rolling," which is "printed by order of the Metropolitan Board of Works."

How this comes to pass is not explained. In fact, the little pamphlet is not, strictly speaking, a "report." It is the work of an advocate,—a fair advocate, no doubt; but does not attain the judicial impartiality proper to an inquirer's report. The author tells us that "it is proposed to prove that rolling roads is indubitably a powerful means of economy in their maintenance." He keeps his word, and gives a large amount of valuable information bearing on the subject, both from English and foreign sources.

The residents of London are especially interested in the question, from the fact that paving is rapidly displacing Macadam. The lesser cost of maintenance on a paved road subjected to heavy traffic is such as to cover the larger original expense of paving. As it is in evidence that the durability of the Macadamised road is nearly doubled by the employment, in the first instance, of the steam-roller, every householder and shopkeeper in the great lines of traffic has a direct personal interest in the matter.

As to the ratepayers, Mr. Paget gives us some very detailed estimates, to the effect that the average sum of £280,000 per annum is expended annually on the maintenance (exclusive of cleaning and watering) of 1127 miles of Macadamised road within the City and the 38 parishes and districts of the metropolis. He tells us, indeed, that "within a radius of only 12 miles from Charing Cross there are at least forty millions of square miles of Macadamised road;" but this is, no doubt, only one of the inexplicable freaks of our "drudging goblin," the printer's devil. But the steady rate of metropolitan increase, the population doubling in rather less than 40 years, promises at least an equally steady augmentation of road area and road cost. To save £140,000 per annum at once is a consideration for the rate-payers, and it is well that they should know that this large sum is now wasted by the neglect of a simple and proper engineering process.

With regard to the actual money cost, and the far larger damage by way of depreciation, sustained by the proprietors of the 72,000 horses and 30,000 vehicles, that are now involuntarily employed in pulverising the broken granite, which they never properly consolidate, the estimate is less easy to form. If extra labour, shoeing, and damage to the horses, were taken at an average of *2s. 6d.* per horse per week, which, probably, few proprietors would think too high, we come to a tax imposed on horses of £468,000 per annum. Let us suppose the extra wear and tear of carriages and harness (the total value of the capital invested in which Mr. Paget estimates at £1,450,000), to be included in this allowance. The figures would give a cost of between *5d.* and *6d.* per superficial yard of Macadamised road as the cost of badly compressing it by expensive vehicles; and it is by no means certain that such an estimate would be excessive.

Mr. Paget has rendered a service to civilisation by bringing together in an accessible form so much information on a subject in which every Londoner may be said to be personally interested. We hope that the 39 governing bodies of the metropolis will be compelled by those whom they govern, no longer to take this extra £140,000 a year (to say nothing of the higher estimate) out of the pockets of the rate-payers. Drivers and driven in any vehicle, from the most elegant landau to the most closely packed omnibus, as they set their teeth when they find themselves grinding over broken granite, should be made aware that it is an unnecessary evil, altogether due to the obstinate neglect of the use of the steam-roller. Of that fact we have long been convinced; and we trust that the Metropolitan Board will proceed to practise what they preach with such undeniable force.

THE SANITARY CONDITION OF SCOTCH VILLAGES.

Colonel Sir James E. Alexander read a paper before the British Association at Edinburgh, "On Sanitary Measures for Scottish Villages." Among the evils pointed out as existing in these villages were the overcrowding of cottages, the system of "box-beds," in which father, mother, and children might often be found huddled together, the built-in windows quite incapable of being opened, the general want of air and ventilation, and the proximity of cow-sheds and pigsties. The writer showed how ministers, surgeons, schoolmasters, and employers might promote the welfare of the people by inculcating the laws of health and promoting a taste for pure and innocent recreations.

Mr. Wilkinson, Hertfordshire, did not intend to go into the question of drink, but was persuaded that a diminution of the number of beer-houses in country villages would do more than anything else to improve the moral, physical, and religious aspects of the poor.

Mr. Lamport, alluding to the erection of houses for the people, said his own idea was, that the working classes would not be got into good dwellings until they were educated to understand that their pockets were ultimately concerned in living in wholesome dwellings.

Mr. Thomas Knox said it occurred to him there was a previous question to be considered with regard to houses before any real progress could be made in sanitary reform, and in lowering the death-rate either in cities or villages. The questions of water, beershops, &c., were not essential. The first thing they had to do was to define what was a house or human habitation—how many cubic feet of air must a family of a certain size possess in order to live a healthy life. He held that traders in houses, like traders in every other thing, must be made amenable to fixed laws. Dealers in meat and bread were not allowed to expose unwholesome food for sale, and he held that such legislation must apply primarily to houses, and people should not be allowed to be huddled up simply because they were too poor to defend themselves. It might seem to be an interference with the liberty of the subject, and with what was called free trade, yet he believed it was the only one in the end to realise a perfectly moral and sanitary state of society. They did not go into these things at present on the ground of extravagance, but nothing was so expensive to a community as an epidemic. They sowed the seeds of epidemics by leaving the houses of the people in their present monstrous condition, and yet they thought it very remarkable, and an inscrutable act on the part of Providence, when they had a scourge passing from end to end of the city, and striking down rich and poor. In point of economy and humanity, they must endeavour to get back to first principles, and insist that no man should bring a house into the market which was not safe and habitable for human beings.

Dr. J. H. Gladstone, adverting to the question of water, said that there fell upon the roof of every house about enough water to supply the inmates, if they took care of it, but in scarcely any cottage was provision made for securing the rain-water. Were tanks or storage attached to each cottage, they should seldom hear complaints of drought, and they should also cultivate habits of purity and cleanliness. He advocated the system of earth closets, than which nothing of greater importance had been discovered within the last ten years.

Mr. Williams, Wishaw, said that a short time ago he had come to Scotland to erect iron works, and he had also found it necessary to build houses for the men whom he brought from England. Many of these men would not enter the Scotch houses, and wondered how people could live in such abominable places.

Rev. W. Caine, Manchester, said he had been for two years chaplain of one of the largest gaols in the kingdom. About 800 prisoners, on an average, were under his charge at once, and, on inquiring into their antecedents, he had found that a very large amount of crime arose from deficient house accommodation.

Professor Ramsay, Glasgow, stated that in Glasgow a ticket was placed on each common lodging-house, showing the amount of cubic feet of air it contained, and the number of inhabitants it was allowed to accommodate under the Police Act. The regulation was strictly carried out, and had done much good already to the city.

Mr. A. E. Macknight, advocate, traced a great deal of the evils in the social and sanitary condition of the poor to the conduct of the landlords in the country, who were unwilling to give land for building additional village accommodation; and he thought some compulsory measure was wanted to compel them to give the land at fair and reasonable prices.

SKIM CHEESE MANUFACTURE.

[The following is the conclusion of our extract from a paper on Butter Factories in the States, vol. vii., English Agricultural Society's Journal.]

The Oblong Shape.—Recently a new form, or style of cheese, has been introduced, which promises to be a success. The advantages claimed for it are—

1. The curd is pressed in a large cake (pressing in one curb or mould from 10 lb. to a 1000 or more) and then cut into blocks of any desired size. These blocks are then bandaged, and placed in the mould in layers, and again pressed, and the whey starts again, especially at the freshly cut sides. In this manner cheeses may be made weighing from 10 to 100 lb. each, to suit any market, and small cheeses can be made at very nearly the same expense as large ones.

2. The escape of the whey by evaporation is greatly facilitated by this form of cheese-cakes, for, as the whey percolates towards the bottom of the cakes (these cakes being turned from time to time only a quarter of a revolution), the whey, instead of turning back toward the centre of the cheese—as is the case with all round cheese—is turned at right angles thereto, and is consequently always tending towards the outside; and the whey is so far expressed and evaporated that decomposition is much less liable to take place.

3. These cakes being entirely covered with bandage, may be cured with or without greasing, and are thus rendered safe from flies.

4. They are much more easily turned and handled than round cheese.

5. They are shipped to market in boxes of thin stuff of any kind of timber. Any farmer can make them, making the boxes of such size as he chooses, and at an expense much less than for round boxes. For 10 lb. cheeses boxes are used with success containing 18 cheeses, 180lb.; and for 30 lb. cheeses, 8 in a case, 240 lb. This item of boxes is a great advantage. The boxes are solid, and there are no covers to come off. The cleats on the outside of the boxes prevent them from being packed too closely together in carrying or in store-houses. There is a great saving in weight, as, in the old style, down weights are given in each cheese, while in this shape only one down weight is given for 18 small cheeses or 8 large ones.

6. For retail trade this form of cheese is of great advantage. The dealer can weigh the whole cheese, and cut by measure the exact weight required, and many of the cheeses are sold without cutting.

7. For family use small cakes are a great success. A 10 lb. cheese is 10 inches in length and 5 inches square, and is cut for table use as follows:—

Turn the bandage back from the end, cut a thin slice from the end of the cheese, then cut off the desired slices for the table, and replace the thin slice and bandage; set the cheese on end, and it is sealed and as safe as an uncut cheese.

8. These cheeses cure much better than round ones, as the gases, if any be generated, escape from the ends, and are not forced back and forth through the cheese as with round ones.

9. They take less room in the dry-house, and women and children can easily turn and handle them.

10. For exportation they greatly excel the round cheese. They can be packed closer, boxes cost less, and small cheese can be boxed and shipped at nearly the same expense as large ones. They have been shipped to England with great success. We give cuts which will explain more fully this invention (figs. 245 to 248).

Fig. 246 represents a sectional elevation of a cheese-vat or mould. When the curd is ready for pressing, it is placed in the mould (A) of rectangular form, and with one side (B) arranged to swing open on hinges for the removal of the cakes after they are pressed. After the curd is pressed into a broad flat cake it is vertically cut with a fine saw into two or more blocks (C C), and bandaged with muslin. These are placed one upon another in layers, say two deep, in the mould, with thin boards or other plates between them, and are again subjected to the action of the press, by which the whey is still further pressed out, especially of the freshly cut sides of the cakes. The pressing is continued as long as needed, after which the cakes are removed to the shelf or curing-room, to allow the remaining whey to escape by evaporation. This is claimed to be facilitated by the form of the cake, because, as the whey percolates towards the bottom, and in turning as is required, from time to time, the cakes are only turned a quarter of a revolution, the whey instead of being turned directly back in its course is turned at right angles, and is consequently always tending nearer to the exterior.

In this way, together with the pressing, it is claimed the whey is so far dissipated that decomposition is much less liable to take place, and, therefore, the cheese may be preserved without the greasing commonly employed.

Fig. 248 represents a perspective view of a cheese made according to this improvement. It rests upon a table with scale-board (E), and with knife (F) for cutting into different weights, according to the measurement on the scale E. Fig. 247 represents a perspective view of a cheese cut and partly used.

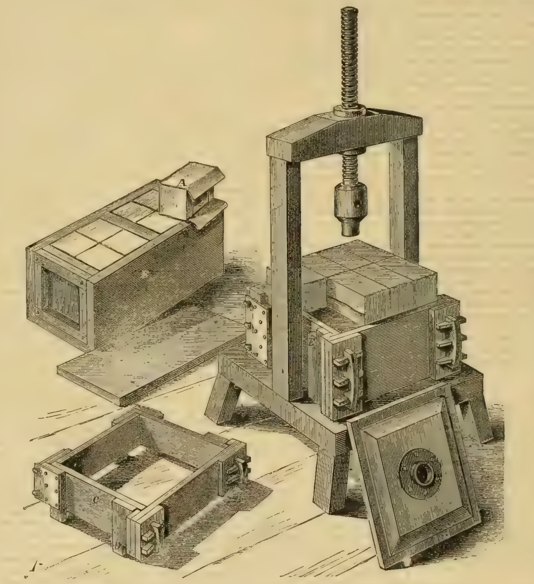


FIG. 245.—CHEESE-PRESS AND MOULD USED FOR THE HOLDIDGE CHEESE.

A, Cheese with bandage; B, Composite Cheese-mould; C, Square hoop; D and E, Morticed slips for connecting the hoops.

THE UNEMPLOYED LABOURER.

[A correspondence has lately appeared in successive numbers of the *Chelmsford Chronicle* on this subject. We take the following extracts.]

1. MECHANICS are much better educated than agricultural labourers, and consequently are more independent, because knowledge is power and teaches them to know their value. The labourer, working by himself, or, at most, with two or three mates, has not the same opportunity of interchanging ideas. There is no institute for them where they can meet together to ventilate their grievances, saving that institution, the taproom of the village public, where, over a pint or two of "adulterated," the little intellect they possess becomes woefully bemuddled, and from which the most respectable of their class keep away. Born and bred to their lot, they accept it; they are inured to it; they scarcely murmur, because they dare not, because that spirit of independence which every honest man should possess is crushed out of them. Because their murmurs are not heard, it does not follow that they have no grievance to complain of; because they submit to their lot it does not follow that lot is not a hard one. The fact is, they are utterly powerless; they are under their master's thumb, who very frequently is their landlord as well as their master, and as they do not wish to be turned out into the street, they submit almost to any conditions that may be imposed on them.

And it is unquestionably this system of large landholding and off-hand farming that fosters and increases an undue feeling of utter dependence upon his employer, on the principle that the fewer the number of farmers the fewer the number of hands employed, because the demand for labour is less. This state of things is unhappily exemplified in the parish where I live. Here the land is mostly held by a very few large farmers, and the consequence is that except at the busiest times of the year—viz., haytime and harvest—there are always hands out of work, not from any fault of their own, but because little more than three-quarters of the labourers are employed that would be were none of the land let off-hand; while in the neighbouring parish, where this pernicious system does not obtain, and where the number of farmers is greater, the demand for labour is higher, and consequently it is an exceptional thing to find a man out of work.

It would be very interesting if some of your readers would furnish the public with a few statistics, such, *e. g.*, as the number of acres there are in their parishes under cultivation and the number of hands employed per acre. For instance, let us take the case of Mr. Offin, who I am informed is the largest tenant-farmer in the county, and who farms I don't know how many off-hand farms. (I have not the pleasure of his acquaintance, though report says he is a kind-hearted, liberal man; but that is not the question. I select him only because he is a very large farmer; and I hope he will pardon me for using his name, but not in vain.) Does he employ as many labourers as would be employed were all the land he holds split up into smaller farms of not more than 400 acres each, with a tenant resident in each farmhouse? If he does not do so, then, kind and good as he may be, he is inflicting a great injury on the country, he is diminishing, or is helping to diminish, the amount of the public revenue, and is increasing or is helping to increase the local rates." *Observer.*

2. I think it important that there should be a good discussion on the subject of the farm labourer, his condition and prospects. As my contribution to it, allow me to suggest that the labourer's wrongs are in many cases self-inflicted. True, when a farm man has a family, it is well nigh impossible for him to put by against a rainy day. But take the case of young men. Why should not they when earning very nearly, and in some cases fully men's wages, steadily resolve to save a few shillings weekly towards acquiring a more independent position?

If a family of five or six can live on 12*s.* per week, surely a young man earning 10*s.* or 12*s.* per week might save, say from 4*s.* to 5*s.*, which would amount to from £10 to £13 per year. Various suggestions may of course be made as to the best mode of using these savings, but the most desirable appears to me to use a portion in emigrating to a country where labour is much more highly paid, where the rent of land is merely nominal, where thousands of acres are waiting for the labour with which this country is superabundantly supplied. A small capital spent in emigration must, if properly managed, yield a rich harvest; and besides providing a comfortable home and income for himself, his future wife, and family, the emigrant lessens the number of workmen in this country, rendering it easier for those who remain to find remunerative employment. But how few are willing to exercise sufficient self-denial to enable them to save even 2*s.* or 3*s.* a week. Instead of this, young men in too many cases squander their earnings while single, or marry early, thereby putting it out of their power to save money at all, and then follows the state of affairs described in the letter of "Observer." I have no wish to assert that the farm labourer is more improvident than many men in other classes. I know the difficulties with which he must contend are great, but not, as I think, insuperable. What is needed is more provident habits, industry, energy, and self-denial, qualities but too rare in all ranks of life.

If a farmer by taking several farms is enabled to discharge a few labourers, without diminishing the annual produce of those farms, the profits are increased by the amount of the wages of those labourers, and the wealth of the country is augmented. But if this increase of wealth is spent by the farmer and his wife on themselves, it is clear that in the end the wealth of the country remains the same as if he had not discharged the labourers. In the one case the increase of wealth, which might be saved and employed in producing more, is enjoyed by the farmer and his wife, and in the other case it is divided among the labourers. No doubt it would be better for the labouring class if the farmer would forego the hunters, &c., and employ more labourers, but in so doing he would be performing an act of charity—he would be employing a portion of his income for the benefit of the labouring classes. He might benefit them more effectually by employing his surplus in emigration. *Another Observer.*

3. Beyond a sense of Christian obligation, which unhappily is not to be in general expected, what motive has the young farm labourer of 20 for being exceptionally abstemious, frugal, honest, and industrious? Why should he take pains to understand soils, cattle diseases, and the best methods of cropping and general farming, seeing that he has no longer the remotest chance of being in a position to think and farm for himself? Why not marry before he can keep a wife, and drop his surplus at the taproom instead of the savings' bank, seeing that his becoming a pauper is only a question of time, and no character he could earn, or little capital he could put by, would ever give him a chance with the selfish landlord, who neither knows nor cares, nor means to know or care, about him? I forbear saying what such men are preparing and maturing to do for themselves.

All these and other moral coming evils and difficulties connected with bloated farm-holdings have been to some extent noticed. The following have not:—

1. When the village blacksmith, and wheelwright, and shopkeeper are gone (the two first reduced to the ranks as mere journeymen on the farm, the last superseded by the co-operation farm store), how are parish offices to be filled? how are coroners' juries and petty juries to be empanelled?

2. Will not and do not useful objects suffer, needing help in or outside the parish? I have in my eye a parish of 1200 acres. There were eight small but thriving farmers, true English stock, none of them ever wanting help, but all more or less ready to give it—now and then a stingy one, but the majority could always be depended on. Now the eight are reduced to two, and both are stingy, so the springs of charity are all but dried up. *A Third Observer.*

4. I do not intend to follow "Observer" through all the ramifications of his letters, but simply to state a few facts for his information.

As a farmer holding from 5000 to 6000 acres of land, I have several farms I hold off-hand which have come into my occupation through the landlord not being able to find a resident tenant, in consequence of the deplorable state the farm had been left in. I will just mention one special case.

A farm of about "Observer's" favourite maximum size for resident holding was occupied, to my own knowledge, by five different tenants in 15 years; each of those tenants took all he could out of the land, without putting anything into it; they employed little or no labour, and at last it was thrown on the landlord's hands, with a loss of two years' rent.

I would ask "Observer" what the landlord did for his property by allowing such tenants to occupy it? and what "Observer" would have done under the circumstances had he been the landlord? There can be only one reply, viz., to let the farm to a man of skill, with plenty of capital, for a given time at a lower rent, in order that the land, which had been starved to death, should be restored to life. I ask "Observer" how this could have been accomplished without great additional labour?

"Observer" appears to consider that off-hand farming to a large extent is detrimental to the "labourer, his condition and prospects."

I demur to this. I have cited one case only, thinking it would be sufficient to show "Observer" how it is that farms are held "off-hand" to the extent they are at the present day.

I could give him many more instances of the kind.

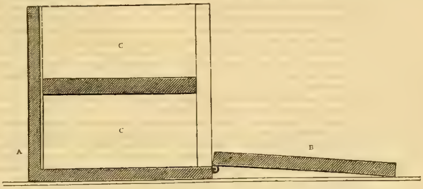


FIG. 246.—CHEESE-VAT, OR CHEESE-MOULD, FOR HOLDIDGE CHEESE.

Several of the farms I hold off-hand were pressed upon me under similar circumstances to that I have stated, but by means of capital I have been enabled to make the land yield me a fair return.

"Observer" will understand the word capital to mean "labour," which is the essence of capital. Money cannot yield a profit without labour. In my off-hand farms I keep sheep where no sheep used to be kept; I keep a herd of bullocks where no bullocks used to be seen; I keep double the number of horses and men my predecessors kept. I have everything possible consumed upon the farms instead of selling everything from them, and the average wages of the majority of my men throughout the year upon all my occupations is from 15*s.* to 16*s.* per week.

I should not have troubled myself about "Observer's" letters but for his having brought my name before the public in his letter No. 2.

I think your correspondent's letter No. 1 would have been better appreciated had he continued throughout to have advocated the "condition and prospects" of the labourer instead of showing his dislike to the farmers' wives of the present day, who I have no doubt perform their household duties in their day and generation quite as well (but in a different way) as their grandmothers did.

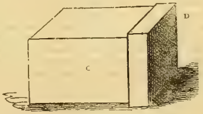


FIG. 247.—HOLDIDGE CHEESE.

"Observer" tells us what an old man said to him a few days ago, who had been to every farmer in the (his) neighbourhood in a vain attempt to get work. Well, it may be even so, but what sort of old man was it? Perhaps one who had had as many masters as he had seen summers—a man never satisfied. I regret to say I have some such in my neighbourhood. Good respectable labourers being scarce throughout the country, it is not necessary for such to travel far without finding constant employment and good wages.

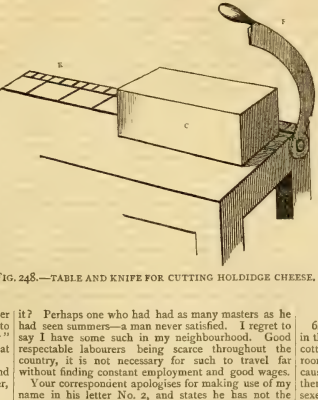


FIG. 248.—TABLE AND KNIFE FOR CUTTING HOLDIDGE CHEESE.

Your correspondent apologises for making use of my name in his letter No. 2, and states he has not the pleasure of my acquaintance. I therefore invite him publicly to come to Hutton, and I will introduce him to each of my separate holdings, where old labourers are still alive who worked for my predecessors, and from whom "Observer" might get some valuable information, so that when next your correspondent sits down to write upon the "Labourer, his condition and prospects," he may be better acquainted with the subject than he at present appears to be. *John Offin, Hutton, July* 17.

5. Mr. Offin states that in his off-hand farms he "keeps double the number of horses and men his predecessors kept." But does this prove that he keeps more than a respectable tenant and good farmer would keep? It seems to me merely to prove that his predecessors were not respectable tenants, or good farmers, and nothing more. Indeed he tells us so himself with respect to one of the off-hand farms which his landlord "pressed on him;" that "they took all they could out of the land without putting anything into it;" that "they employed little or no labour, and that at last it was thrown on the landlord's hands with a loss of two years' rent."

But had his predecessors been respectable tenants, is it not reasonable to suppose that they would have treated the land fairly? and is it not rather throwing a slur on the character of the Essex farmer to suppose the contrary?

The fact, then, that Mr. Offin employs double the number of labourers and horses his predecessors kept merely proves that he is a respectable tenant and a good farmer, and nothing more. The real question at stake is, does Mr. Offin employ as many men and as many horses on these off-hand farms as a respectable resident tenant, were there one such in each farm, would employ?

Mr. Offin puts two questions to me. First, "What the landlord did for his property by allowing such tenants (as the five predecessors Mr. Offin described) to occupy?" There can only be one answer. But, perhaps, some blame might be attached to the landlord himself in selecting a tenant. The fact, however, remains; it was bad for the land, and unfortunate for the landlord. Mr. Offin asks me, secondly, what I would have done under the circumstances had I been landlord? To this I reply, I would certainly not have let the farm in question off-hand to Mr. Offin, but would have let it at a low rate to some respectable resident tenant—to one who, even though he might not be a man of such capital as Mr. Offin, would at all events treat the land fairly.

Mr. Offin says he could "give many more instances of this kind;" but, as they would one and all only prove the same thing—viz., that Mr. Offin is a good farmer, and that his predecessors were bad ones, I need not stay to consider them.

It may then happen that on this one individual farm, or in "the many more instances of the same kind," that Mr. Offin keeps "double the number of men, &c., his predecessrs kept;" yet till he informs us what is the total amount of acreage he holds, and the total number of men he employs and horses he keeps, it is impossible to decide whether he employs as many on each of his off-hand holdings as a resident and respectable tenant would employ.

Suppose, for instance, Mr. Offin to hold 10 off-hand farms, and, if he will allow me to "cut him up" (metaphorically, of course) into 10 individualities — to place a resident Mr. Offin on each of these 10 farms, can the indivisible (non-resident in nine farms) Mr. Offin assert, that he now keeps as many men, &c., on these 10 farms as the 10 metaphorical (residents in 10 farms) Mr. Offins? This seems the fairest way of putting it. Would not the 10 Mr. Offins each keep a horse and gig? As it is, the revenue of the country loses the tax on nine horses and nine gigs. Would not those 10 families give more work to the village carpenter, blacksmith, &c., and would they not consume more food, and therefore do more good to the village butcher, baker, and in fact to all the local tradesmen, than the one indivisible Mr. Offin could or can possibly do? (I am leaving the fact of a great number of labourers being employed purposely out of the question for the nonce.) And, lastly, would not Mr. Offin's brother farmers who have sons and daughters growing up have a better opportunity of getting the former into farms and of seeing the latter married than they now possess by the 10 farms being in Mr. Offin's sole holding? *Observer.*

6. Does not one great reason of the want of efficiency in the labourer arise from the miserable deficiency of cottage accommodation? I feel sure that the limited room in the cottages of the labouring poor is the sad cause of the low state of morals so evident among them. How is it possible that the herding of the sexes while young can have any other effect? I fear their best feelings are tainted in the early period of childhood.

Is there not also another cause—that is, the almost entire absence of a good moral and mental training? True, many—perhaps most—of the children attend some school, but are they not withdrawn from such influence long before they are at all grounded in the rudiments of even reading, writing, or the first rules of arithmetic? Moreover, can the moral taint that so many so early imbibe be eradicated by three or four years of school training?

It may well be replied, But this is the effect of taking them away from school to agricultural pursuits; and it appears to me that the Factory Acts as regards women and children might be brought partially into operation; I say, partially, because from the want of labourers at certain times of the year they must be called from the school to the field, or most serious results will follow to the producers and consumers of farm produce. To a certain extent the truth has been told as to the occupation of large farms having an unfavourable influence, but I cannot think it has much; for on inquiry it will be found that such occupiers, being as a rule better cultivators of land, employ more hands than smaller occupiers. Here let me however state that a more serious injury, arising from large occupations, is the fact that so many families of the tenant class are deprived of the opportunity of having farms, a class, too, which by its kindly influence would greatly increase the sympathy which should exist between the employer and the employed. This, however, only indirectly touches the subject in question, though it must be evident to all that an occupation, say of 400 acres, with the farmer and his family as occupiers, must exercise a more healthy influence, and be locally more beneficial, than the same occupation with perhaps only a bailiff in the house and the rest let off to a movable population, who only reside at the busy seasons of the year. I ask, can "Observer" have made himself acquainted with the condition of the labour market when he asserts that there is a surplus of efficient labourers? I think not, for I cannot agree with him. True, there are times when there are labourers out of employ, and localities where there is an excess. But I do think that this arises, not so much from the deficiency of labour as from the fact that the vast proportion of partially employed labourers are a class of men who cannot be trusted to do their work efficiently. Such men are justly marked, and do not remain in permanent employ for that cause. It is too true that in some localities the labour market is glutted, and that low wages are the result, but the young labourer has his remedy if he will avail himself of it by seeking work elsewhere.

From my experience I think that a comfortable cottage and good early moral and mental training would greatly remove from the labouring classes the results all must deplore. I cannot but hope that a healthy public opinion will soon be brought to bear on all classes, for it cannot be denied that there are bad landlords, bad tenants, and bad labourers; and I trust we are approaching a time when it will be kept in mind as an active feeling that all classes are dependent the one on the other: for what would the landlords do with their broad acres without the tenants' capital, or the tenant without the brawny arm and willing service of the labourer and the artisan? *A. B. C.*

LEGISLATION ON THE UTILISATION OF SEWAGE.

ON Wednesday, the 2d inst., some members of the Essex Chamber of Agriculture paid a visit of inspection to the farm of Mr. W. V. Hope, in the parish of Hornchurch, which is irrigated with the Romford sewage, and, subsequently, held a meeting in the town of Romford, to discuss the subject of legislation affecting the utilisation of sewage.

Mr. HOPE, in introducing the subject, proposed to divide it into three parts, and consider, first, why there should be any legislation at all upon it; secondly, what legislation there has been; and thirdly, what legislation there ought to be in future. Regarding the first point, he read some extracts from a book by Professor Corfield, prepared for a committee of the British Association appointed three years ago, showing that from 1604 down to quite recently deficient and improper drainage had in various towns produced fevers, cholera, and plagues. This, in fact, was the state of things which existed in almost every town in this country till his friend, Mr. Chadwick, whom he was happy to see among them to-day, took them in hand many years ago. The diseases so produced spread out of the towns into the agricultural districts, and thus affected the whole community. Properly to manage the cleansing of a town was always a most difficult and expensive operation, but it paid in a twofold way when done. Health and strength were the labourers' working capital: but, to the discredit of Government, at present the working classes as a rule were anything but strong and healthy, and the mortality tables told a fearful tale of fevers and kindred diseases, the product of dirt--that was, matter in the wrong place—and the value of the lives of these unfortunate creatures was not only lost to the community, but each death of the head of a family inflicted a fine upon the surviving population by throwing the family on the parish. He thought, therefore, there was very little doubt that some legislation was imperatively necessary. The introduction of water-closets had been of immense assistance in carrying away all the filth which formerly filled the open cesspools and wide ditches, but to carry away this refuse into a river, to pollute that river, and to spread disease among the neighbours, was only benefiting themselves, without doing the country at large any service at all. Then with respect to the question of infection. These open cesspools, open ditches, and polluted rivers bred diseases, but until lately it had been very much disputed how these diseases were spread. In fact, the medical camp was divided into two parties—one who supported the germ theory of disease, and the other who supported the more empirical idea that the infection was carried in the atmosphere, and yet had no material existence.

Then he came to the question what parts of town sewage contained the dangerous germs of disease, and he was afraid that on this point as yet little was known. The Rivers Pollution Commissioners considered a certain standard of nitrogen in the effluent water capable of producing disease. But nitrogen in itself was not unhealthy. On the contrary, when we wanted to nourish ourselves we ate nitrogen, and if a patient had a bad headache the doctor ordered him ammonia, therefore in ammonia there was nothing *per se* unhealthy. But it would appear that some of the other ingredients that were generally concurrent with ammonia and nitrogen in town sewage contained the pernicious germs, and, in ignorance of what the particular sources of infection really were, it had been found convenient by the Rivers Pollution Commissioners and the Thames Commissioners to take the percentage of nitrogen as the measure of pollution. The measure of pollution was also the measure of production to the agricultural chemist. All manures were sold according to their analysis, and the price was regulated by the percentage of ammonia which they contained. He would now refer to the value of town sewage. A great many chemists had devoted their attention to this subject, and Professor Corfield, in his book, gave a *resumé* of the different analyses that had been made, from which it appeared that the value of the manure created by each person annually was about 8*s.* per year. He (the speaker) took the trouble some two years ago, in a paper which he read to the Institution of Surveyors in London, to work out the value of this wasted manure in loaves of bread. He calculated that one additional quarter of Wheat or two additional quarters of Oats over and above the ordinary produce of a farm might be obtained by the application of the sewage of four persons to each acre. Striking out the scattered population of the rural districts, there was a town population in the United Kingdom of upwards of 15,000,000, whose sewage, therefore, would produce 3,750,000 qr. of Wheat, or 7,500,000 additional quarters of Oats. From particulars obtained from bakers, who differed very much on the point, he reckoned that a quarter of Wheat would produce 108 quartern loaves.

A MEMBER: A quarter of Wheat will produce 180 quartern loaves.

Mr. HOPE said that was so much better for his argument. If a quarter of Wheat would produce 108 quartern loaves, it followed that by our present sanitary arrangements we wasted 405,000,000 of quartern loaves of bread every year; if a quarter of Wheat would produce, as had just been stated, 180 quartern loaves, then something like 700,000,000 loaves were wasted every year, and at the same time the wasted matter was polluting rivers that would otherwise be beautiful, poisoning fish, and spreading disease. Many said it would not pay to utilise sewage. It was this unfounded superstition which sent these millions of loaves of bread down the rivers, which necessitated our sending ships thousands of miles for food which we might produce at home, and which compelled us to ransack foreign parts in search of manures. In ten years, from 1841 to 1850, there were only 3½ millions of people in this country fed exclusively upon foreign Wheat, but in the last ten years no fewer than 8,600,000 were so fed. If a quarter of Wheat would produce 180 quartern loaves, he could have fed the whole of these people with food grown in this country, if only the sewage had been properly applied. The Wheat paid for by these 8,600,000 people must have been worth at least 14½ millions sterling. Next came the question how they were to extract this value from sewage. The precipitation processes had been tried and found wanting. The sewage of Romford last year contained about 4½ parts in 100,000 of ammonia; this year the ammonia was only about 2½ parts, owing to the immense rainfall, and the notion that these could be precipitated, and the value of the manure retained, was quite Utopian. The phosphate process had also been tried, but Royal Commission after Royal Commission, Parliamentary committee after committee had sat upon this question, and they had all come back to the one idea of irrigation. But when they had settled that irrigation was the only way of utilising and realising the value of sewage, they still had to determine what irrigation meant. Irrigation by the hose or jet, which carried away his friend Mr. Mechi, was not irrigation properly so called, and could never pay. The only plan was to flow the sewage over the surface of the ground by gravitation, but here again there were different modes of doing it. There was the catch-water system, a rough and clumsy method, which in some instances, as he had seen at Tunbridge, drowned the plants and certainly did not extract the valuable matter from the sewage. That system, he was satisfied, could not be allowed to continue beyond a few years longer. To pass on, he had brought with him some of the Acts of Parliament relating to sewage utilisation, but there was mighty little in them. They were the usual sort of permissive measures which we were so fond of in the present day, and whose chief virtue was that they afforded the Home Secretary a convenient means of shelving some subject which perhaps he did not understand. Lord Robert Montagu was the author of an Act making it permissive to towns to do a great deal which they might equally have done without any Act at all. There was, however, one practical clause in the measure, which, he was told, enabled a town to get an Act by asking the Secretary of State, for £15, whereas the act he (Mr. Hope) obtained in 1865 for the utilisation of the sewage of London cost £30,000. By that Act of 1865 the towns were able to grant leases of their sewage for periods not exceeding 25 years, but in the Sewage Utilisation Act of 1867 there was a clause, under the restriction of which he was suffering at this moment, preventing local boards from granting leases of any lands which they bought for their sewage for more than seven years. [A VOICE: It ought to be repealed.] Then they came to the question, what legislation was really required for sewage utilisation. At present there practically was no legislation, because he called a Permissive Act no legislation. It was playing with the subject. Legislation was to compel people to obey the law. He thought the utilisation of sewage and the prevention of the pollution of rivers ought to be enforced. The existing Acts, too, were defective, inasmuch as they did not even enable the towns to borrow the money for the purchase of the land upon the land itself. Romford only paid £10,000 for a farm of 121 acres, and they had the greatest possible difficulty in borrowing the money at less than 5½ or 6 per cent. One of the last objections raised to the utilisation of sewage by irrigation was urged six or seven years ago in a very clever pamphlet by Dr. Cobbold, who said that as vast numbers of the population of every town suffered habitually from various forms of internal parasites, if the sewage were applied to the land, the eggs of those parasites would be eaten by the ox, and so would get spread through the community. To convince Dr. Cobbold that these delicate eggs could hardly be preserved through these various processes, he (Mr. Hope) had an ox fed for 22 months on sewage-produce—grass, Mangel Wurzel, Cabbage leaves, and very often the rakings of the grass—and that ox was slaughtered last Saturday week, in the presence of Dr. Cobbold and other scientific men, and, after it had been minutely dissected and examined, the united talent of all these gentlemen entirely failed to detect any trace of disease whatever, and he was glad to say Dr. Cobbold was entirely converted to sewage irrigation. Nevertheless, it would only be prudent in the existing state of our knowledge that in any future legislation making sewage irrigation compulsory, the towns should be prohibited, at all events for a certain numbe of years, from allowing grazing on irrigation land. Not only did he think that legislation should be compulsory upon the towns to utilise their sewage, but that it should not be left to the towns themselves to choose the process of utilisation: that process ought to be prescribed by Government. We had paid vast sums of money for different commissions and committees. He made a list of 34 Blue Books that had been published upon this subject by Parliament, 10 years ago. Many had been published since, and he really thought the time had come for some practical legislation on the subject, in fact (and with these words he would conclude) he looked upon this as being almost as pressing a question as that of secret voting.

The PRESIDENT said he was sorry to hear that in Mr. Hope's opinion the present Acts of Parliament relating to sewage were not the highest embodiments of human wisdom, for he had fondly hoped they were. Mr. Hope, when he spoke of the ox slaughtered in presence of Dr. Cobbold, might also have told those present that they had been eating the ox at the luncheon that day. He (the President) felt rather uncomfortable when Dr. Cobbold's original opinion was stated, and was immediately relieved when he heard that he had changed his views.

The Hon. H. PETRE said he had always thought a great mistake was committed originally when towns were compelled to collect all their filth in the shape of sewage, and pour it down into one place; and this was the explanation of their resisting, subsequently, the enormous expense of providing for the sewage when collected. He was glad to hear that morning that the large number of Acts relating to this question were to be remodelled and consolidated. As to the Barking farm, with which he was connected, he thought it would well repay a visit. He did not wish to contrast it in any way with Mr. Hope's farm. The Barking farm was five years old, and Mr. Hope's was not yet two. Whether from that cause or some other, he could not say, but he thought the Barking farm would in some respects be found in a more satisfactory state than that which they had viewed to-day.

Mr. CHADWICK said he thought Mr. Hope had made a most important advance on this question. The old water-meadows of Edinburgh and Turin were enormously expensive, and created marsh surfaces. The Edinburgh meadows cost £30 an acre, while Mr. Hope's system, which was of course the most efficient, and not by any means so dangerous to health, only cost from £8 to £12 per acre. He had seen no working of the surface that appeared to him so complete as

Mr. Hope's. He quite expected to see that other towns would adopt this beneficial measure. With respect to legislation he might mention that some years ago, in order to drain a settled estate, it was necessary to make an application to the Court of Chancery. On that, he (Mr. Chadwick) submitted to Sir Robert Peel's Government that there ought to be a cheaper mode of attaining this object, and the result was successful. One serious evil of the present day was the great cost of obtaining local or private Acts of Parliament for small towns. In fact it amounted to a legislative abomination, which certainly ought to be got rid of. He sincerely hoped that the county of Essex would support Mr. Hope in this important agricultural movement.

Mr. Angel, engineer to the West Ham Board of Health, agreed with most that Mr. Hope had said, and was perfectly satisfied that in this movement he would come out successful, but he disagreed with some of his remarks about past legislation. The Government had published their experience, which had done good, and power had been given to purchase land at a cheap rate, which was a great concession. It was contrary to the spirit of legislation in this country to drive certain views down the throats of the people, and it would be a serious thing to compel towns to buy so many acres of land or to compel farmers to take the sewage. As to making profit of sewage irrigation, that depended greatly on the geographical position of the town, but he believed in the system, and was convinced it would make its way.

Mr. Perry Watlington desired to say just one word in reference to future legislation. The sanitary law was at present most confused, and something like a simplified code was most desirable. The Commission which sat last year made a report, and the result had been embodied in a Bill which was before the House of Commons only on the previous night, when one gentleman stated that the Commission had under its consideration no fewer than 45 sanitary Acts. Perhaps people in towns could manage, but certainly people in the country found it very difficult indeed to work 45 sanitary Acts.

Captain Russ also insisted upon the necessity of simpler and better legislation, and called particularly for the abrogation of the seven years lease clause, which prevented gentlemen from taking sewage-farms.

The President then proposed the following resolution, of which, he said, Mr. Hope approved: "That in view of the large amount of foreign Wheat paid for every year by the population of this country, and the large amount of manure wasted in polluting rivers with town sewage, it is desirable that such pollution should now be prohibited by legislative enactment, and that the 45 sanitary Acts in existence should be repealed, and a general and comprehensive law enacted."

The resolution was carried.

The proceedings concluded with votes of thanks to Mr. Hope and the President.

Home Correspondence.

Green Food: Stackyards: Machinery: Thick Sowing, &c.—The longer I farm the more I am convinced that the turning out and roaming-at-large system will come to an end, especially as land gets scarcer and dearer. It is cheaper and better to bring the food to the animal than the animal to the food; because in the latter case he is permitted to trample upon it, excrete upon it, and lie upon it. One fo the largest and most successful farmers that I know has always folded his sheep and cut the grass for them—one man, a lad, and a horse chaff-cutter being on the field, there feeding the sheep with green grass chaff, mixed with cake, &c. Although 77, he is, and always has been, among the very best root and corn growers among my acquaintance on an area of 1500 acres. Green Tares, Clover, &c., are all passed through the chaff-cutter for my horses and cattle, the corn ground and roots pulped. One trial will prove the fact, and put money into the pockets of my agricultural friends. Our sheep and lambs are close folded, and have no more food than they clear off. Fold moved twice a day—one 75 feet iron hurdle on wheels to every five sheep. Lambs have the first bite, and are followed by the ewes to clear it all up. Our green food (Tares, Clover, or Italian Rye-grass) after passing through the chaff-cutter, is spread thinly over an asphalted floor in the cool barn to prevent heating.—We must enlarge our stackyards, or so separate our stacks as to leave room for working the corn and hay elevators worked by a pony—for in one case near me the farmer who bought one of these finds it almost useless to him, because his stacks are placed close to each other in the stackyard; the pasture makes a good stackyard as far as room is concerned. The horse-work elevators, that carry up the sheaves or hay, and drop them in the centre or any other part of the stack, save the labour of quite three men, which is very important at hay time or harvest. Machinery grows upon us year after year, therefore our landowners will have to increase the machinery sheds, charging a fair percentage on their cost.—Is not mildew often caused by too thick sowing and early laid crops? I believe that this is one of the true causes. See what takes place. The densely packed mass of plants, weak below, tumbles down flat or twisted in various directions by winds and thunderstorms, and thatches the earth; so that, while rain can pass through the thatch, the wet earth is shaded from the action of the sun and air, and becomes in the like condition to a dark and damp cellar, where, we all know, mildew and Fungi flourish. I have a dark corner in a portion of my house here, where my boots and shoes always mildew, if left long unexposed to light. When crops stand erect, as nearly all mine do this year and generally, there is free circulation of air and light, and a free evaporation of moisture from the earth. Therefore, although from the intensely green luxuriance of the corn crops, mildew is often predicted by my visitors, it never comes. Of course, the drainage of land has a good deal to do with this, and so has the absence of trees and fences; but, wherever there is a dense closing in of the moist earth, either by too dense, flaggy, vertical, or laid crops, there we have risk of mildew, especially on rich boggy lands, that force a great or rank development of Flag. Some very good farmers remove the Flag from their cereals. My Wheat crops from a bushel per acre, drilled, are all I can desire, and even the 2 pecks per acre are undistinguishable from the rest of the field. Barley, 6 pecks, Oats, 2 bush., are enough for me. *J. J. Mechi, Aug.*

Labourers' Cottages.—A plan somewhat similar to the one you publish at p. 1023, of two cottages with three bedrooms in each, and one between these with two bed-rooms, may no doubt be adopted occasionally with advantage; but I think there are some defects in the plan you give which, to some extent, may be avoided with slight alteration. It is a great fault in a cottage when the living-room has two doors opening into it, unless, at least, they be close together. Everyone knows how uncomfortable a thing more than one door is even in a large room in a gentleman's house; and all the objections to this apply far more strongly to the living-room of a cottage. In the two end cottages in the plan given this defect can be perfectly well avoided by making the entrance-door at the side, either under the staircase (D), or at the end of the pantry (C), which is furthest from the front; and this would improve the plan in other respects, besides the improvement to the living-room. I should also prefer making the pantry open into the porch, instead of into the living-room. Some people object to the staircase being in the scullery, but I do not see much harm in it; and it certainly, in many instances, makes a plan of a cottage more simple. In the middle cottage it is, of course, difficult to avoid making a passage of the living-room; and for this reason I should in general object to building cottages in blocks of more than two. Moreover cottages ought always to have a good garden attached to them (not an allotment at a distance), and this can hardly be done with the middle of the three. Of course all cottages do not require to have three bed-rooms; but as a rule I think it would be better and more economical to provide the two-roomed cottages required by building one or two pairs of cottages on the plan No. 9 in my book; and for the rest, pairs of cottages on Richardson and Ross's plan. The cost would hardly be greater, and the accommodation would be very far superior. *C. W. Strickland, Whitby, August* 10.

Mr. Mechi and his Live Stock.—At p. 1023 Mr. Mechi says:—"On the sewaged Italian Rye-grass (14 acres) I have kept 200 sheep and lambs from April, seven horses for seven weeks, and yet a nice little haystack" (date August 1). Will he kindly give us more particulars. 1. The number of sheep and the number of lambs, and the age of the lambs, for we reckon nothing for a lamb during the first three months? 2. What date in April did the sheep go on, and what date did they come off, and did they get nothing else except the grass all the time? 3. Were the seven horses kept wholly on grass during the seven weeks, or did they get Oats and hay or straw in addition? 4. How large is his haystack (in tons)? It is usually reckoned that an acre of well-grown Turnips will keep from 2000 to 2400 sheep for one day, or an acre of well-grown Rape will keep 1800 sheep for one day; and if we allow an acre of Rye-grass for the four best months of the year to be equal to an acre of well-grown Rape, then his 14 acres ought to have kept 1800 × 14 = 25,200 sheep for one day, or 25,200 ÷ 120 = 210 sheep for 120 days. Mr. Mechi seems to have kept 200 sheep and lambs (suppose we call them equal to 150 full grown sheep) for 120 days, or 150 × 120 = 18,000 sheep for one day. He also kept seven horses for seven weeks (49 days), and if we allow each horse to eat as much as 15 sheep, then seven horses would be equal to 105 sheep, and these were kept 49 days, or 105 × 49 = 5145 sheep for one day. This, added to the former, gives us 18,000 + 5145 = 23,145 sheep for one day, whereas 14 acres of well grown Rape ought to keep 25,200 sheep for one day, so that he is 2055 sheep short; but then he has a nice little haystack, and this, I suppose, may be put down as the extra produce raised by the sewage. *G. A. H.*

The Harvest.—Glorious harvest weather, more than a week of bright sunshine, and a drying east wind, have converted the dark-looking and doubtful crops into a golden healthy hue, and taken most people by surprize. I suppose that, owing to the east wind coming overland, it dries everything quicker, and makes us feel the heat more than does a westerly wind coming over nearly 3000 miles of Atlantic waves. Certain it is that there have been several cases of sun-stroke last week, some of them fatal to labourers—the reaper has been spared much of the severe labour. We commenced harvest on the 7th, and have most of our corn down; all of it will be cut by the 18th, except some Beans. I need hardly say, that it is all dry enough to thresh, and much of it even to grind. I hear sorrowful accounts of the yield. Three days' threshing, not a hundred miles from here, only yielded 3 qr. per acre where the estimate was 6 qr.; and in another case, a whole day's threshing only gave 20 qr. I expect to hear of great disappointments where there has been thick sowing and early-laid crops. Nearly all my Wheat is sown with 1 bush. per acre. On one half acre we have only 2 pecks per acre. It has all along been undistinguishable from the 4 pecks, although drilled the same day, and surrounded by the bushel. We have cut it, and have the same number of sheaves as from the bushel. The stubble is also undistinguishable. It has been seen by a great number of practical farmers. As soon as threshed I will state the result. There are about 620 sheaves to the acre. The Wheat is Club-headed Rough Chaff White, drilled upon a clover-lea, once mowed for hay and then cake fed. If the disappointment as to yield of Wheat is extensive, there will certainly be a considerable rise in price. Our Barley, which is stacked and thatched, is long in the ear and plump kernelled—14 to 18 of a side. We sowed 7 pecks per acre, after Wheat; our usual quantity is 6 pecks, but it was on wireworm land. Our second crop of Clover grows so rapidly, that our 200 sheep cannot consume it, so we shall have to mow some for hay a second time. Our 13 acres, which was so thin that we once thought of ploughing it up, has now a fine second crop of red Clover. I must repeat here, what I have many times proved, that washed farmyard manure will produce straw, but often fails to produce corn, the elements of the grain having passed away with the drainings. This seems likely to be the case this year in too many instances. It is now 20 years since I first commenced using the reaping-machine, and 15 years since Fowler's steam-plough, with Cotgreave's subsoiler attached, was exhibited in work on this farm. P. S. Our root crops (Mangel, Kohl Rabi, and Cabbage) promise abundantly. Beans first-rate, both winter and spring. *J. J. Mechi, August.*

Crops in Northamptonshire.—I must supplement my opinion of the crops round here, sent to you on July 24. Since then we have had a great fall of rain—no less than 1.25 inch—0.88 of which fell on Saturday and Sunday last. The Wheat is terribly knocked about; Beans are now covered with fly, and will be considerably below an average, and during the last few days the Potato blight has increased rapidly. I never saw the haulm decay faster. Hay very much damaged. *J. Borlase Tibbits, Barton Seagrave, Kettering, Aug.* 1.

Foreign Correspondence.

Berlin.—There is sweetness even in death, and still more in any phase of life, however melancholy. Supposing the German soil were, like the English, a mixture of feudal-and-common-lawlessly-lost-and-nobody's-property, what would have become of the German nation in the late crisis? And supposing the German nobles were not impoverished, what would have become of the country? I dare say Polonia will serve as an illustration. There is no lazzaroni in all Napoli more fond of his *dolce far niente* than an average German noble of his court, after French cut of gambling, and of the beaker after truly German cut. In former times they drank out of a boot, a something like six bluchers made into one. You may find innumerable old and new ballads sung by labourers in the fields, and by the students at their beer, treating of some old Landgraf gambling away with one of his villages after the other, and in one afternoon, too—being lifted on to his horse by four stout connobles, and riding off, to be seen no more! It is the gambling that is settling them, gambling being, as Tacitus told you, one of the chief and most noble occupations of the German freeman from time immemorial. Even in our times, when common sense ought to tell them that there is no longer any difference between a nobleman and a rich man, except the money, they have not yet acquired the art of earning it. If you meet with any illustrious name with the Von prefixed, you may be sure it is of modern date—the Von Bismarcks and Von Moltkes are but exceptions. Even Von Thaer has been newly created. And if your eye is struck by a Von over a shop-window of some butcher, you may be sure the meat, the money, and the industry, have come from the mother's side, her maiden name being something like Stumps, while my lord, the father, giving his noble name to an ignoble son, has, as soon as sober, shot himself.

How about modern agriculture and the tile draining-plough, with such material as this? Who can wonder that a man like Fürst Bismarck has—with a sigh, perhaps—decided upon assisting the National Liberals, the Jews and their money, and daring unpopularity with the Junkers, just to get the country out of the mire as soon as possible, and has made it his life's task to get rid of those little courts, who cultivated gambling—generals with an army not quite strong enough to stand, all the lot, under one Lime tree during the hot hours.

You must not, however, imagine drinking and gambling to be an intrinsic part of the national character, which only privileges could spoil and freedom improve. I have been for years about all parts of the country, and found sobriety to reign supreme. The thing is, that topers will die early, and have done so for centuries without, or with but a feeble, progeny ; and so the type of mankind most addicted to drink has died off ever since alcohol came into vogue, and it may be owing to the severe ravages of the alcohol devil during the middle ages and during the Boors war that the power of N_2 H_4 O_6 has broken down from want of material, the Mohicans having vanished. Perhaps there is some solace in this for the teetotallers and for the national economists, the labourers' friends and parsons in England.

The labourer's social position is, on the whole, I dare say, a shade happier than on the Isles, chiefly because they are of a philosophical turn of mind—silent, never boisterous, even during the harvest festival, and ever pondering upon something. This something is sometimes of a most transcendant nature. One of them asked me—just imagine !—whether I had the force of mind to present to my senses the world with everything in it just the reverse of what it was at the time being. Now, you might write a book upon this settler ; you would go mad upon it most likely ; but the man who suggested the idea to me was a "mayer," an overseer or head labourer, the most practical artisan, and quite a Bismarck in his little sphere, if little spheres there be.

This comparative richness of mind is not so much owing to any comprehensiveness, proper only to the German brain by preconstruction ; it is due rather to compulsory school training, which they have all, rich and poor, undergone—which is the fruit, too, of the same epoch of 1807, to which Germany owes the mobilisation of her soil. It may be termed the mobilisation of mental power in analogy, for it has given many a chance to low-born genius, created, too, many a Cobbett to be mentioned, many an artist, many a poet, from the most unlikely source, and is a necessary assistant to the military training which, drawing country people into the towns, certainly trains the agricultural districts, but adds another chance of getting up in the scale of society according to talent.

I will not enter upon the economy of the farm labourer's house and home. Money being dear, the average wages do not rise above 1*s.* a day, women receiving but 6*d.*, and children 3*d.* But they are put into a little house, two families under one roof, semi-detached ; they fatten a pig or two, cherish a goat like a grandmother, have a cow in the farmer's stable, and a few sheep, perchance ; grow some geese, the feathers of which, stored in gigantic beds, they put great pride in ; gather some dry wood in the forests on certain days in the week, some hay on some ditch side, and have a little plot of land given to them to grow Flax and Potatos. So, with a stray bottle of thin beer from the grocer (there is no public-house), with knitting a mile of stocking, spinning their Flax, and looking to their little ones' slate, on which the queerest characters and figures appear and vanish like dissolving views, they manage to pass through existence quite smoothly, and pass that much of their time which is not taken up by field work in comparative innocence too.

They are not so well nourished, however, as the English labourers, nor can it be denied that there is something slow about their everyday life, which, I venture to say, is owing to their want of acquaintance with proper animal food—Potatos, bread, dumplings, and dried Plums, cold Buckwheat with milk, being considered the only ingredients of the human body, besides Chicory and Tobacco.

As to their higher endowments, they are mostly rationalists of the purest water. They don't believe in anything they can't see, but they make up by going to church, for the sake of singing an old venerable hymn. On the whole, however, they are not as yet the race for intensity of anything, least of all of agriculture.

I am speaking of the poor provinces now, and of the back lands in the East. In consequence of the predominance of capital in the West, and of the gradual condensation of industrial powers towards the great centres, and along the railways and rivers, these back lands have been sorely depopulated. So much so, that the eastern railroads have had to be built chiefly with English money, and by English labourers, who, no doubt about it, are in better training for such kind of work, and go at it with twice as much muscular energy at least, because of their eating meat and drinking tea.

Then, again, the Russian frontier is a great obstacle. It is like a world's end, or rather, like a dark cloud at the horizon. There are many false notions afloat in England about German alliance with Russia, but I can assure your readers that Germany has no greater enemy to her national development than that giant in the East, and that her statesmen act on compunction if ever they go hand in hand with Russian desires. It is one of the most imprudent things English statesmen could have done to make common cause with France and Austria against German unity, and to want the hands of Germany to be shackled by the French in the West. England knows well, which will be her chief enemy in less than a century hence ; why then prevent a brother nation from growing strong against that same giant, who is no less her enemy too? I suppose I must not but touch upon this in an agricultural paper, still it is just on the ground of agriculture that Germany feels herself most oppressed by Russia shutting herself up. It is not fair that Germany should have to carry the blame of a willing alliance where it is not willing in the least. They are planting Oak trees now all about Germany in commemoration of the late triumph over the Erbfeind, who is more commiserated than triumphed over (for they say it ought not to have come to the destruction of Paris, under any circumstances whatever, and Bismarck ought to have prevented it) : I do not believe these Kaiser trees will bear fruit before what I have said above will have become more apparent to the English.

There are other complaints still ushered by the agriculturist party in the East, and they have put them all into a programme for their representatives in Parliament to stand upon. They will remind us of the period preceding the Reform Bill in England, and with their enumeration I will drop the curtain for to-day.

1. The inequality of taxation between town and country has to cease, the country having to bear about 70 per cent. of the income-taxes, and thereby being depopulated.

2. The indirect taxation (chiefly on colonial wares and iron implements) must gradually be reduced. Tea, tobacco, coffee, &c., must be taxed, not according to weight but to quality, so that the rich may bear proportionally to their wealth, and that the necessaries of life, as also the implements of culture, may be cheaper.

3. The city octroi on agricultural products (meat, corn, cattle, &c.) must cease, because it oppresses agricultural produce and the every-day consumpt of the poor. This octroi exists in many of the large towns,—Berlin, Stettin, Konigsberg, Breslau, Magdeburg, &c., and has been added to income-taxes in some of them already.

4. The military duties of the agriculturists, both in peace and in war, viz., giving shelter to the manœuvring troops, giving their fields to be trampled upon, their horses to be driven to death, and their larders to be pilfered, must be remunerated according to the laws of equity. (This smacks of the Game-laws and the law of trespass.)

5. Free trade (introduced by Baron von Stein) must not be abused, merely for the sake of the manufacturers, whose raw products have free ingress, whilst the iron implements (from England), cloth, &c., have to bear a heavy duty, in consequence of which the 78 per cent. of agriculturists and agricultural labourers in Prussia become tributary to the 22 per cent. of town inhabitants, and the back lands (Prussia proper, Silesia, Pomerania, Posen) tributary to the western parts of the empire.

6. The guardianship, which is assumed by the Government, over the credit and insurance institutions of the agriculturists must cease (acting in the way of a stamp, which till now no other money transactions have to bear). And now what sort of people are these programmists? Are they Whigs or are they Tories? *O. B.*

Societies.

LEICESTERSHIRE AGRICULTURAL.

THE third show since the amalgamation of the Sparkenhoe with the county society, was held on the 9th and 10 inst. We condense the following from a contemporary :—

Horses were a little more numerous than usual, and, as may be expected in the hunting county, many first-class weight-carriers were amongst the 177 entries. The £20 and £10 prizes, whether open to All England or limited to "the Belvoir, Quorn, Mr. Tailby's, Cottesmore, Atherstone, and Pytchley Hunts," were awarded to local men. Mr. F. L. Ward, of Burton Overy ; Mr. J. E. Bennet, of Husbands Bosworth ; and Mr. R. D. Miles taking the three first and the "jumping" prizes ; and Mr. Bennet's fortune was in the ascendant in three other classes.

The great contrast between the present gathering and the Leicester meetings of the "Sparkenhoe" Club lies in the cattle classes. Then we had Mr. Swinnerton's ox, about twice as big as anything on the ground this year, and who won the great prizes of Smithfield, Birmingham, and Liverpool ; and we had the pride of the Branches Park and Bushey Grove herds. Comparing this year with the last there is a falling off of one-fifth in numbers. The five prizes for fat oxen and cows brought out five competitors, and the same number competed for the four bull prizes, two of them going to Sir W. de Capel Brooke for an 18 months son of Mr. F. Leney's DUKE OF WATERINGBURY, and for a 4-year-old son of Mr. Tanqueray's KNIGHTLEY GRAND DUKE, both sires being descended from *Charmer* by LITTLE JOHN. The winner of the latter prize is a straight level red bull with great size and substance ; he "lies out with the cows," and is in just the condition that store bulls should be in. Mr. Bradburne's well known WHITE SATIN (1st at Hinckley last year) stood 2d. The bulls under one year were very moderate, only one exceeding five months old.

Mr. W. Bradburne took 1st and 2d prizes for cows in milk, 1st for cow above three and under four years old, 1st for in-calf heifer, and 2d and a commendation in the tenant-farmers' heifer class, four of which, as well as WHITE SATIN, were at the Wolverhampton Royal. They are heavy fleshed animals, but have not style enough for a very high position. Mr. Cheney sent two daughters of *Lady Waterloo 11th*, a yearling by GENERAL NAPIER, thick but not very showy, and a very nice calf by 7TH DUKE OF YORK.

To say that Lord Chesham and Mr. W. Baker sent more than a dozen pens of Shropshire sheep, is to say that it was a good class. The county members' prizes for breeding ewes require pens of 10 instead of 20 as in former years, when they were the most interesting of the sheep classes. It is true that the new Leicesters were left to their fate amongst Longwools, when in their county ; only two entries were made in the breeding classes, and these neither bred nor fed in Leicestershire.

The following is a list of the prizes awarded :—

HORSES.

JUDGES.—Hunting and Hack Horses : C. Millward, Esq., H. Corbett, Esq., G. Higgins, Esq. Cart Horses : G. Bedford, Esq., G. C. Woolhouse, Esq.

1. Hunter, Gelding, or Mare, not less than five years old and under ten, open to all England.—1st, R. D. Miles, Keyham ; 2d, J. Pain, Shangton.

2. Gelding or Filly (four years old) adapted for hunting purposes, bred within the limits of the Belvoir, Quorn, Mr. Tailby's, Cottesmore, Atherstone, and Pytchley Hunts.—1st, F. L. Ward, Burton Overy ; 2d, A. J. Milner, Kinoulton.

3. Gelding or Filly (three years old) adapted for hunting purposes, bred as above.—1st, J. E. Bennett, Husbands Bosworth Grange ; 2d, G. Hill, Bourne.

4. Gelding or Filly (two years old) adapted for hunting purposes, bred as above.—J. E. Bennett.

5. Yearling Colt or Filly.—J. E. Bennett.

6. Mare, calculated to breed hunters.—1st, J. W. Jenkins, Husbands Bosworth ; 2d, Capt. Baillie, Illston Grange.

7. Hack, not less than 14½ hands, and not exceeding 15-1 hands high.—1st, J. E. Bennett ; 2d, L. Turner, Leicester.

8. Cob, not exceeding 14½ hands.—1st, T. Burnaby, Kettering ; 2d, R. Milward, Southwell.

9. Pony, not exceeding 13½ hands.—1st, R. D. Miles ; 2d, W. Fowler, Uppingham.

10. Gelding or Filly (two years old) best adapted to the general purposes of agriculture.—1st, J. M. Brown, Ibstock ; 2d, J. Perry, Claverley.

11. Gelding or Filly (one year old) best adapted to the general purposes of agriculture.—1st and 2d, S. Pilgrim, Hinckley.

12. In-foal Mare best adapted to the general purposes of agriculture.—1st, J. A. Beale, Brockhurst ; 2d, H. Burgess, Illston Grange.

13. Stallion for agricultural purposes, *bonâ fide* the property of a member of this society.—1st, H. Spencer, Loughborough ; 2d, J. S. Hack, Braunston, Oakham.

14. Foal best adapted to the general purposes of agriculture.—1st, the Executors of Lord Berners ; 2d, H. Burgess.

CATTLE.

JUDGES.—C. Howard, Esq., and T. Harris, Esq.

17. Bull, above one year and under two years old.—1st, Sir W. de Capel Brooke, Bart., Geddington Grange ; 2d, R. D. Miles, Keyham.

18. Bull, of any breed, over two years of age.—1st, Sir W. de Capel Brooke, Bart. ; 2d, W. Bradburne, Wolverhampton.

19. Bull calf, under one year old—C. Bays, Kettering.

20. Cow in milk having had a live calf since January 1, 1871.—1st and 2d, W. Bradburne.

21. Shorthorn cow, above three and under four years of age, having had a live calf since January 1, 1871.—1st, Wm. Bradburne ; 2d, J. J. Sharpe.

22. In-calf heifer, above two and under three years of age.—1st, W. Bradburne ; 2d, R. D. Miles.

23. Stirk, above one and under two years of age.—1st, J. J. Sharpe ; 2d, E. H. Cheney, Gaddesby Hall.

24. Heifer calf, under one year old.—E. H. Cheney.

25. Longhorn Bull.—1st, J. Godfrey, Hinckley ; 2d, W. T. Cox, Derby.

26. Longhorn Cow, in milk, having had a live calf since December 1, 1870.—1st, W. T. Cox ; 2d, R. H. Chapman, Upton.

27. Longhorn Heifer, in calf, above two and under three years of age.—1st and 2d, W. T. Cox.

28. Alderney and Guernsey Cow, or Heifer, having had a live calf since January 1, 1871, or now in calf.—R. D. Miles.

29. Bull, of any age, whether hired or *bonâ fide* the property of the exhibitor.—1st, J. A. Beal ; 2d, Joseph Mudford.

30. Cow, in milk, having had a live calf since January 1, 1871.—1st, E. Wright, Sysonby House ; 2d, J. J. Sharpe.

31. Heifer, under three years old.—1st, J. J. Sharpe ; 2d, W. Bradburne.

32. Pair of Stirks, under two years old.—1st, R. H. Chapman ; 2d, S. Burchnall, Burton-on-Trent.

SHEEP.

JUDGES.—R. Brown, Esq., and T. Cartwright, Esq.

33. Pure-bred Leicester Shearling Ram.—G. Turner, jun., Allexton Hall.

34. Pure-bred Leicester Ram of any other age.—G. Turner, jun.

35. Long-woolled Shearling Ram.—1st, J. Lynn, Stroxton ; 2d, A. Hack, Buckminster.

36. Long-woolled Ram of any other age.—1st, J. Lynn ; 2d, A. Hack.

37. Pen (of three) under 20 months old, Pure-bred Leicester Fat Wether Sheep.—1st and 2d, the Executors of Lord Berners.

38. Pen (of three) under 20 months old, Long-woolled Fat Wether Sheep.—Sir W. de Capel Brooke, Bart.

39. Pen (of three) Long-woolled Ewes.—1st and 2d, J. Lynn.

40. Pen (of five) Long-woolled Theaves under 20 months old.—T. W. D. Harris.

41. Pen (of five) Long-woolled Ewe Lambs.—T. W. D. Harris.

42. Shropshire Shearling Ram.—1st, W. German, Atherstone ; 2d, Lord Chesham.

43. Shropshire Ram, of any other age.—Lord Chesham.

44 Pen (of three) under 20 months old, of Shropshire Fat Wether Sheep.—Lord Chesham.

45. Pen (of three) cross-bred Fat Wether Sheep, under 20 months old.—Sir W. de Capel Brooke, Bart.

46. Pen (of three) Shropshire Ewes.—1st and 2d, Wm. Baker, Atherstone.

47. Pen (of five) Shropshire Theaves, under 20 months old.—Lord Chesham.

48. Pen (of five) Shropshire Ewe Lambs.—Wm. Baker.

49. Pen (of ten) Long-woolled Breeding Ewes.—1st, T. W. D. Harris ; 2d, Wm. Everard, Narborough Wood.

50. Pen (of ten) Short-woolled Breeding Ewes.—1st, W. Baker ; 2d, S. C. Pilgrim.

PIGS.

JUDGES.—R. Brown, Esq., and T. Cartwright, Esq.

51. Boar of the large breed.—1st, M. Walker, Stockley Park; 2d, R. E. Duckering & Son, Northorpe.

52. Boar of the small breed.—1st, R. Duckering & Son; 2d, M. Walker.

53. Berkshire Boar Pig, not exceeding 18 months old.—1st, R. E. Duckering & Son; 2d, J. Wheeler & Son, Shipston-on-Stour.

54. Breeding Sow of the large breed.—1st, M. Walker; 2d, J. Wheeler & Sons.

55. Breeding Sow of the small breed.—1st, J. Wheeler & Sons; 2d, R. E. Duckering & Son.

56. Three Breeding Pigs of the large breed.—1st, R. E. Duckering & Son; 2d, M. Walker.

57. Three Breeding Pigs of the small breed.—1st, R. E. Duckering & Son; 2d, J. Wheeler & Sons.

EAST LOTHIAN.

Land Letting in East Lothian.—At the last meeting of this Club, Mr. R. SCOT SKIRVING said he wished to make a statement with regard to the remarks of Mr. Smith at the previous meeting on the renewing of leases in the county. He was sorry that he had not been present, and he wished to refer to the matter now, because by reading the proceedings he could not see whether Mr. Smith's statement had been homologated and adopted by the Club, or whether it had been disputed. It appeared that somebody in England wrote something in the Journal of the English Agricultural Society, avowedly at the prompting of Mr. Hope, of Fenton Barns. Mr. Hope appeared to make a very languid answer and reply, and the only thing he seemed to accuse Mr. Smith of was youth and inexperience.

The CHAIRMAN: I was reported as saying that Mr. Smith was a young and inexperienced man, but I never said any such thing.

Mr. SCOT SKIRVING: Well, what he wished to say was that Mr. Smith seemed to have misapprehended the drift of the article, in so far as renewals of leases were concerned. Mr. Smith asserted that of late years most of the farms had been let on renewals. He (Mr. Skirving) was exceedingly happy to hear it; only he did not think that was the point at issue at all. The next four or five years might reverse that; and it was only when they took a considerable period of time that they could give an answer, yes or no, to the question whether farms were generally being renewed in East Lothian. He did not say whose fault it was, or that it was the fault of any class; but simply as a matter of fact and truth, he thought the truth should be known, and the real facts should go forth. He had been at considerable pains to ascertain the real state of the case; and the result of his inquiry compelled him to come to the conclusion that Mr. Smith's statement was radically wrong, and that Mr. Hope's statement, as published in the paper referred to, was radically and justifiably right. Mr. Smith stated at last meeting that he had examined the list of farmers in the county as published in Neill's Register last year, and had drawn his information therefrom. He (Mr. Skirving) did in another way the same thing as Mr. Smith. The principle he went on was this. The leases in East-Lothian ranged from 19 to 21 years—the great majority being 19 years. He had therefore taken the list of tenants as it stood a quarter of a century ago, and compared it with the list of the present year, and partly from his own knowledge, and partly from the source, he had written down the names of every farmer in the county (dealing as such with holders of 70 acres and upwards); and the result of the whole comparison was this—that there were 55 names standing on the register at the present day which existed as families (not merely as individuals) farming land in the county 25 years ago, and that 138 names, which appeared as well-known farmers in the county 25 years ago, had, either as individuals or families, utterly disappeared from the register. A very few more would have made the proportion of changes three to one. This change was not altogether equal over the county. They had been talking a good deal about Salton lately, and he found that the changes on that estate were fewer than on any other in the county, while on Yester they were greatest. He could only find the name of "Crease" remaining in the parish of Yester of those who had farmed there 25 years ago.

Mr. DURIE: He is not a farmer now. There is no such a name.

Mr. SKIRVING: The name stands against the same piece of land as a voter that it did 25 years ago.

Mr. HARPER: Mr. Murray's family was there at that time.

Mr. SKIRVING said he might be wrong as to that matter of detail, but they could examine the returns which he had prepared for themselves. They would find that, while on some estates there had been almost no change, on others the old families were nearly all swept away.

Mr. SMITH (Whittingham), in replying, said he was glad Mr. Skirving had limited his observations to matters of fact. Until a short time ago, when Mr. Skirving told him, he had not been aware that he was under a delusion in what he had stated at the last meeting; and he had offered to Mr. Skirving what he now suggested to the Club—that scrutineers should be appointed to go over the list to which he (Mr. Smith) had referred, and so to test the accuracy of his statement at the previous meeting. He had no objections to take to what Mr. Skirving had advanced, further than this—that he had put it as if he (Mr. Smith) had really not dealt with what Mr. Jenkins had written. Now Mr. Jenkins did not deal with the county as it was 20 years ago, but as it appeared in 1870, and his report bore that it was founded on what he saw and heard in the county in that year, when he (Mr. Smith) had personally met with him. In that case how could Mr. Skirving correct him when he had gone on the data plainly furnished by the article itself which he had laid before the meeting when he made his statement. If the question at issue was tested over a period of 25 years, it might make a considerable difference. He could not tell what phase the matter would assume in that case; but he contended that the drift of Mr. Jenkins' article, as read by any stranger, was that in East Lothian farms were put up to competition, and that through the law of hypothec such high rents were drawn that it was impossible for tenants to renew their leases. That was the real gist of the whole article, and it was a very different thing from the question raised by Mr. Skirving. He did not wish to enter on any discussion with reference to the changes in the tenantry, as represented by Mr. Skirving; but he was prepared to maintain that the changes that had taken place in any period did not arise from high rents. If families had disappeared, it might have arisen from ordinary causes which affected all populations, more especially in busy centres of industry. He did not pretend to account for these changes, but all he meant to say was that the article of Mr. Jenkins conveyed an erroneous impression as to the state of matters as they at present existed in East Lothian. At the same time, matters of fact must be kept in view, and he did not wish for a moment to challenge Mr. Skirving's reading of these facts, neither had he any inclination to notice the various articles which his statement had called forth. There was one, however, which he would just mention. One writer stated that if a person started at one end of the county, and passed along the great post road to the other, he would not go through three farms on the whole road that had a tenant under a renewed lease. Now he had no hesitation in saying that was not the fact.

Mr. DURIE: Can you say how many there are?

Mr. SMITH: No; he had not gone over the line of road with the question in view; but he said that within a few miles of that road they would find three cases of renewed leases. Had he known the subject was to be brought up there that day, he would have been prepared to go into that particular matter. Other things had been said, but of so irrelevant a character, that from the way in which Mr. Skirving had taken up the question, he did not think it necessary to go into them.

Mr. SCOT SKIRVING wished Mr. Smith to know that he had written nothing on the subject, and knew nothing about the authorship of the articles referred to.

Mr. DURIE was glad the subject had been again brought up. He had wished the discussion at the previous meeting adjourned, because Mr. Smith's remarks went to show that renewal of leases was the rule in that county. Now, everybody who knew East Lothian knew that that was not the case, and he had been sorry to hear a man in Mr. Smith's position, who ought to have known better, giving out such a statement. Mr. Smith talked about finding three cases of renewal in a ride through the county by the post road; but suppose he had found six cases, did that prove renewals to be the rule in the county?

Mr. DOUGLAS: What is the proportion of renewals according to your list, Mr. Smith?

Mr. SMITH: I said about one-half.

Mr. DOUGLAS: Do you dispute it, Mr. Durie?

Mr. DURIE: I say distinctly that renewals must be the exception, because, according to Mr. Skirving's list, there have, during the last 25 years, been only 55 renewals against 138 changes.

Mr. DOUGLAS: But is that a true bill?

Mr. DURIE: I take it to be a fact as it is there. I don't say there is anything wrong about these removals. The land belongs to the proprietors, and they can do with it as they like, but at the same time that is no reason why a factor in the county should come here and say that the rule is reletting, and changes of tenants the exception. Why, in the parish in which I was born there is only one old family left.

Mr. DOUGLAS: It would surely be a simple matter to prove the accuracy of Mr. Smith's data.

Mr. SMITH: I have suggested scrutineers; but I think that is losing sight of the real point of the article I commented on. If you admit that it was not from over-renting that the changes took place, then I have nothing to say as to how many changes there are.

Mr. SCOT SKIRVING: We admit nothing.

Mr. SMITH: I will go back 29 years if you like, and I will say that the changes that have taken place in East Lothian have not been caused by over-letting; and to prove that I say that the men who succeeded the previous tenants in these changes have thriven, and are thriving as a body at the present day. Hence the whole force of Mr. Jenkins' article was not only a mistake, but a misrepresentation. I say that the changes that have taken place have not been from the causes stated in Mr. Jenkins' article. They have arisen from purely natural causes, and not from any wholesale clearance on the part of proprietors.

Mr. SCOT SKIRVING: I am content to deal with the matter of fact. As to going into causes, that is a different thing, and one into which I do not care about entering at all.

Mr. DURIE: But I maintain that every one of these removals has been caused by high rents. Why else should they have removed? Do you think they went out of their farms for nothing? I am telling Mr. Smith a fact, when I say that every tenant who has been removed has been removed because he could not pay the rent that the landlord wanted.

Mr. DOUGLAS: But that does not prove over-renting. These parties were removed after they had had an opportunity of retaking their farms, and did not do so, while others did and throve in them. You cannot say if a man left his farm rather than pay a particular rent, and another man stepped into his shoes, and profited thereby that the first tenant was removed in consequence of over-renting?

Mr. SMITH: That was all I meant.

Mr. DURIE: Well, I maintain that they are not either thriving or prospering. In my farm three tenants have been rouped out of it because they could not pay their rent, and I am nearly being the fourth.

Farm Memoranda.

FARM OF THE BOARD OF EDUCATION, GLASNEVIN.—An agriculturist, visiting the Irish metropolis, could not employ a portion of his time more agreeably or profitably than by visiting the farm of the Board of Education, situate at Glasnevin. At the present time this institution is in most creditable condition, and evidences the judgment, care, and industry of the manager. There are something like 200 acres, divided into three portions, each of which is farmed on systems supposed to suit the great bulk of Irish farms. There is the small farm of five acres, which, as it is now managed, is ample proof that such *petite culture* need not be a bugbear to political economists of a certain class. Here we have a farm, which carries a stock of three cows, a pig or two, and provides about 1½ acre of Potatos, with a like quantity of Oats each year, and with little extraneous aid from manure or purchased food, we find a progressive improvement in the quality of the soil. It may be asked how this improvement can be possible when the bulk of the farm produce in milk and corn is sold off. Careful cultivation, and sedulous attention to the manure-heap, are the agents which have certainly improved very materially the value of this small farm. It is cultivated altogether by spade husbandry, and is intended to show what may be done by a farmer with the assistance of his family. The implements used are spade, fork, hoe, sickle, and hand-cart, or wheelbarrow. The cows, three in number, are of the cottager's class. They are chiefly house-fed, and with a small paddock for exercise, they enjoy perfect health. For results, it is honestly shown that a farmer may support with comfort a family on a farm, such as the "Glasnevin small farm;" and Mr. Baldwin, who devised and elaborated the system, deserves much credit for what has been done. He has done his duty. It now remains for others to do theirs by extending throughout the country what would undoubtedly enable many to live comfortably who are at the present time engaged in a severe struggle for existence.

A farm of 25 acres is managed to exemplify what would be an improvement in the system of cultivating such farms in Ireland. Here the stock and appliances are such as are within the reach of what are called in Ireland medium-sized farmers. A four-course rotation with a piece of land in permanent grass, is the system of cultivation; a stock of 10 cows, two or three heifers, one horse, and some pigs, are fed; the milk is either sold in the city or converted to butter, the corn of the Wheat crop is sold, as is a portion of the Oats, a small quantity of artificial manures is bought, and occasionally a little artificial food. A systematic and exact set of accounts shows a good profit from this farm. About 150 acres are farmed on a more liberal scale. Here we find all the aids which a large farmer would call in: a team of good strong horses and modern implements are kept, skilled workmen are engaged, a stock of well-bred dairy cows, sheep of good breeding, and pigs of the white and black breeds are kept, in fact stock breeding, summer grazing, house feeding, and tillage farming are all shown here. Not the least interesting is the portion of the farm set apart for the trial of experiments; this must always have an interest for farmers. As a rule, agriculturists are not experimentalists, and those who expend time and intelligence in conducting experiments are true benefactors. English agriculture would not occupy the position it now does were it not that there were enthusiasts and self-sacrificing men who laboured hard in experimental farming. At the present time a most interesting experiment in the effects of various manures is being carried out, and it is to be hoped Mr. Baldwin will make the results generally known.

That the Albert Model Farm is calculated to work much good is certain. There are a large number of young men sent from it every year, either to farm on their own account, or to conduct the farming operations of large occupiers of land. These young men cannot have attended the lectures on scientific and practical agriculture which are delivered each session without carrying with them much that is valuable. The example of neatness, regularity, and order which are for everyday observance must do a great deal, when carried throughout the country, towards remedying the slovenly systems which have been too long observable. Amongst the chief difficulties which such institutions have to contend against is the idea—pretty general—that immediate good results ought to follow their operations. Agriculture is a slow-paced animal, and it has a wonderfully powerful enemy in those head-shaking, hands-in-the-pocket gentlemen, who are Sir Oracle when anything "new" is proposed, and who are content to jog along in the old style so long as they are saved the trouble of looking far into the future. *T. C.*

Miscellaneous.

LIME.—We have before us a curious old work on "Agriculture," that first saw the light in the days of Cromwell, in which lime is highly commended. It seems to have been among the first attempts at book-writing on agriculture in England. The writer, a Capt. Bird, aims to be practical, and though somewhat confused and complicated in style, yet, as showing the "wisdom of our ancestors," an extract may not be deemed out of place. "Liming, he writes, "is of so great use that whole countries, and many counties that were naturally as barren as any in this nation, and had formerly (within less than half an age) supplied with corn out of the Fielding corn country, and now is and long hath been ready to supply them, and doth and hath brought their land into such a posture for bearing all sorts of corn, that upon land not worth above 1*s.* or 2*s.* an acre, they will raise (well husbanded with lime) as good Wheat, Barley, and white and grey Peas, as England yields; yea, they will take a parcel of land from off a lingy heath, or common, not worth the having; nay, will not have it to husband it, and will raise some gallant corn, that naturally is so barren, worth £5 or £6 an acre. * * * If men would, after good liming, take three, four, or five crops, and then lay down to graze, it would not be the least prejudice; a little manure now would produce more fruit than as much more upon the old sward. Many men have had ten crops of gallant corn after one substantial liming, some more upon very reasonable land of about 6*s.* 8*d.* an acre. Some men have had and received so much profit upon their lands upon once liming, as hath paid the purchase of their lands. I myself have had great advance thereby, yet I lived 20 miles from lime, and fetched it so far by waggon to lay it upon my lands." *American Paper.*

THE TRICHINA SPIRALIS.—A case of Trichiniasis is reported from Workington, and is thus commented on by Dr. Cobbold in a recent lecture before the Society of Arts of Workington:—

"Dr. Dickinson has at the present time under his care a family suffering from the so-called flesh-worm disease, resulting from the consumption of ham prepared from pigs reared by the family themselves. A portion of ham sent to me swarmed with recently encapsuled trichinæ. Dr. Dickinson being thus the first person who has diagnosed trichiniasis in the living subject in England, I hope he may be induced to give us further particulars." The editor of the "British Medical Journal," in commenting upon this letter, added a practical point, which I wish especially to bring to your notice. He says:—"The subject of parasitic diseases of domestic animals is one of widespread and increasing interest. It is being treated in the Cantor lectures, now in course of delivery at the Society of Arts. It is immediately related to the irrigation of fields with sewage." The editor, of course, made that statement on independent grounds, and on his own responsibility. If he had said the subject bears an indirect relation to such questions, he would have said no more than is absolutely true, for, as I shall take occasion before the close of the lectures to explain, there is every reason to suppose that certain forms of parasitic disease may be propagated by means of sewage. In this connection some of you may be disposed to ask the question:—"Are there any sources of comfort to be gathered from the facts!" Or you may say, supposing that in future our British swine are not as free from trichinæ as they have hitherto been, can we possibly avoid the contingency of playing the part of host to those creatures? Certainly, I reply; it is simply a question of cooking your food. If these farmers have not cooked their food at all, or scarcely at all, that will at once account for their being laid up. I should tell you that the lady and the daughter are recovering, that they are convalescent, but that the man-servant is very ill indeed. If the man-servant ate only 1 oz. of this flesh with living trichinæ in it, he will have, I reckon, at this present moment at least 42,000,000 of those guests in his muscles. You will say at once, Will he recover? Yes; if he ate no more than that: but I am afraid that he has eaten much more than that. If he has eaten 2 oz. thoroughly underdone, depend upon it he has 80,000,000, and if he has eaten 3 oz. he will have over 100,000,000 of trichinæ in his muscles. Could he survive if he had eaten over 3 oz., and thus have 100,000,000 and upwards of these inhabitants? I think he could. I have evidence on this point from a case the nature of which I hardly like to open to your view, because, perhaps, it would make you more uncomfortable than you wish to be. For myself, there is little or no discomfort on the subject, since, in the course of the last 20 years, I have escaped almost entirely from any annoyance, although millions of these creatures and their eggs have passed through my hands. However, it is something to know what you are handling, and what you are looking at, because there are many parasites which are dangerous. There are some residing in meat which you and I eat every day without any bad consequence. Though of a totally different zoological character, they are as harmless as cheese-mites.

"There is no need to be in the slightest degree nervous about flesh-food, provided it is properly cooked. I believe there will be no fatal issue in the case of any of the three individuals alluded to; but the chief practical point before us arises out of the fact that we have here, for the first time in England, the commencement of an epidemic of trichiniasis. By thus calling attention to the subject, it will be easy to take those precautions by which future epidemics of the kind may be readily avoided."

The Week's Work.

AUGUST 19.—There is nothing more difficult than the harvesting of corn when the atmosphere is highly surcharged with vapour, for, instead of drying, the standing corn and stooks absorb moisture, and thus become more wet. In such weather corn and straw both lose colour, quality, and value. Small sheaves should be made with only eight or ten to the stook if the straw is long, and only six to the stook if the straw is short; some put on two hood-sheaves, and a well hooded stook will carry off rain for a long time, but when the stook is badly set, and the hoods improperly put on, they often do more harm than good, and on that account hooded stooks have become the exception—the object now aimed at in setting a stook to fend rain being to bind the straw straight in the sheaf, to plant each pair of sheaves opposite each other, and bring the stook to a fine ridge, as in thatching a stack, so as to carry off the rain to either side.

Drying Corn artificially in Harvest, so as to fit it for stacking or threshing, is one of the many improvements of the day. Like all others in farming, the practice now in use is doubtless subject to further improvement, for, as has justly been observed, "there is no end to improving a thing;" but to look on at corn and straw being spoilt in the stook is now unpardonable, provided the expense of drying is less than the loss sustained. On this subject, our past reports of Mr. Gibbs' drying machinery may be consulted.

Stacking Corn is a work requiring the highest degree of skill and art to perform it properly, the stacker being generally considered the best man in harvest. An apprenticeship is necessary to learn the art. A well-built stack is not a question of mere form and outward appearance, although too apt to be viewed in this light. Thus a good stacker will "build out the rain," a bad one will "build in the rain;" the former will "prevent a stack heating," while the latter will "set a stack on fire," and so on. These are extreme but familiar expressions in most places, embracing a broad difference between the value of the labour of two workmen who too frequently look for the same amount of wages. Every farmer knows what a relief it is to have a man in the stackyard in whom he can place implicit confidence. Stacks, whether round or oblong, should always be built on stack-stands, and the stack-stands should be arranged so as to provide for the proper ventilation of the stacks, for an improperly ventilated stackyard will heat whilst a well ventilated one will keep cool, other things being equal. If a stack is confined and close on one side and free on the other, it will set down unequally, however perpendicularly and uniform in density it may be built, but if equally ventilated all round, and built uniform in density, it will settle down fairly and cool, assuming the sheaves to be equally fit for stacking in both cases.

Thatching should be done immediately the stack is up. To delay until it is seen how the stack will settle down, is at best a poor apology for bad stacking. And the same remark applies to cutting the outsides of the stack—cut the outsides as you build, and let the thatcher follow close up, the stacker taking care to have the roof of the stack properly consolidated and raked down hard in the building.

Rye-grass and Clover Seeds, when intended to follow either Wheat, Barley, or Oats as a grass or hay crop, may be sown on the stubble as soon as the labours of the harvest will permit. When the corn crop is harvested in August, seeding after harvest will be found preferable to seeding in spring, both for the corn crop and the seeds. Where the land is clean, as it always should be, and free from weeds, sow on the stubble, and bush or chain harrow in about the same quantity of seed as directed in spring. Where the seeds were sown in spring, and have brairded, but the plants are partially killed by the drought of summer or otherwise, blanks and thin places should be seeded with the hand, and the seed left to be washed in or covered by the first shower of rain, as the harrow cannot be used, and rolling is objectionable at this season.

Live Stock find little in the stubble now as compared with the olden time. Autumn tillage amongst the stooks, and the seeding of the land with Turnips, Rape, &c., preclude the admission of either sheep, black cattle, or pigs into corn stubbles. The old bands of gleaners are likewise excluded. But the improvements thus taking place have all for their object more food for stock, not less; and as suitable provision for live stock in August is a cardinal point in stock management, the practical solution of the question is often no easy task.

Lamb Weaning in Scotland (Cheviot and black-faced) usually takes place from the beginning to the middle of the month. Blackfaced and Cheviot ewes that have fattened cross-lambs will also be ready for drafting for the shambles.

Notices to Correspondents.

AGRICULTURAL PRINTS: *T. C.* We know of no special place where prints of Shorthorn cattle may be obtained, but have frequently observed them and purchased them in second-hand book and picture stalls in London. They are very generally diffused, and can be bought for little money.

DISEASED CHICKENS: *A Subscriber* says—I have lost a great many chickens this summer when they get to seven or eight weeks old. I have some still with the same complaint; loss of appetite, drooping wings and tails, sore swollen eyes, go quite blind, look very red all over, smell very offensive, then die. A hint would greatly oblige. [Wholesome food and frequent change of place ought to do much to remove what you complain of. Keeping chickens cooped on the same ground is a fertile source of loss.]

DRESSING GRASS LAND: *Redcliffe* asks—What quantity of gas-lime per acre would be sufficient to dress grass land with? and what quantity of soil would be required to mix with a ton of gas-lime for the same purpose? [Mr. W. Scott, of Howford, gives his experience in the latest edition of "Stephens' Book of the Farm." He makes a compost of two-thirds earth and one-third lime, letting the heap lie at least six months, turning it once or twice in that time, and giving from 10 to 12 tons on one acre.]

UTILISING PEA HAULM: *Rusticus.* Good Pea haulm will be eaten with relish by live stock, especially sheep, without any preparation. The suggestion to chaff and treat with steam or water may possibly be an improvement. We hope that the conclusive answering of the above inquiry will be undertaken by some one of our numerous practical readers.

Markets.

METROPOLITAN CATTLE MARKET.

MONDAY, Aug. 14.

There are a few more foreign Beasts, but not quite so many English, making the total number about the same as last week. The hot weather causes a slower trade, but choicest qualities are not much lower. The number of Sheep is rather smaller; the average quality has, however, improved. Trade is not so brisk as of late, and Thursday's quotations are barely maintained. Choice Lambs are still scarce and dear. Calf trade is unaltered. Our foreign supply consists of 2550 Beasts, 12,780 Sheep, 255 Calves, and 5 Pigs; from Scotland there are 5 Beasts; from Ireland, 200; from Norfolk and Suffolk, 40; and 1125 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d*
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	.. to ..
Best Shorthorns ..	5 4—5 8	Do. Shorn ..	6 0—6 4
2d quality Beasts	3 8—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do. Shorn ..	5 0—5 6
Do. Shorn ..	6 4—6 8	Lambs	7 0—8 0
		Calves	3 8—5 8
		Pigs	3 4—4 8

Beasts, 3920; Sheep and Lambs, 23,710; Calves, 269; Pigs, 70.

THURSDAY, Aug. 17.

We have a much larger supply of Beasts than on Thursday last, and the demand is very limited, consequently prices generally are lower, and a clearance cannot be effected. The number of Sheep is also larger, and trade very dull; prices on the average are lower, and several lots remain unsold. Choice Lambs continue to be very scarce and dear; in some instances our top quotation has been exceeded. Calves are dearer. Our foreign supply consists of 440 Beasts, 6340 Sheep, 450 Calves, and 5 Pigs.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 6to5 10	Best Long-wools	.. — ..
Best Shorthorns ..	5 2—5 6	Do. Shorn ..	5 10—6 4
2d quality Beasts	3 8—4 6	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do Shorn ..	4 10—5 4
Do. Shorn ..	6 4—6 8	Lambs	7 0—8 0
		Calves	4 0—6 0
		Pigs	3 4—4 8

Beasts, 1090; Sheep and Lambs, 14,360; Calves, 624; Pigs, 10.

METROPOLITAN MEAT MARKET, Aug. 17.

Best Fresh Butter .. .. .. 14*s.* per dozen lb.
Second do. do. .. .. .. 12*s.* „
Small Pork, 4*s.* 8*d.* to 4*s.* 10*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

The excitement continues unabated, and prices are daily rising. Many parties who a few weeks hesitated to buy at 2*d.* or more below the present level are now anxious buyers at the advance.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Aug. 17.

PrimeMeadowHay	140*s.* to	145*s.*	Clover, old ..	..160*s.*	170*s.*
Inferior do.	90	108	Inferior do. ..	..110	120
New Hay	95	110	Prime new do.	..120	140
Inferior do.	50	70	Inferior do. ..	.. 60	80
Straw	45	50			

CUMBERLAND MARKET, Thursday, Aug. 17.

Sup. Meadow Hay	147*s.* to	155*s.*	Inferior Clover	..135*s.* to	147*s.*
Inferior do. ..	..110	130	Prime 2d cut do. ..	—	—
New do.	.. 70	115	New do.	.. 90	130
Inferior do. ..	.. —	—	Straw	.. 42	50
Superior Clover	..158	175			

JOSHUA BAKER.

MARK LANE.

MONDAY, Aug. 14.

There was a small supply of English Wheat at this morning's market, of which a few samples of new were shown; for white there was a fair inquiry, at previous prices; red sold slowly at a decline of 1*s.* to 2*s.* per qr. upon the prices of this day fortnight. The attendance was small, and to effect sales a similar reduction on all descriptions of red foreign had to be submitted to. Barley, Beans, and Peas were unchanged in value. Oats were in small demand, at a decline of 6*d.* per qr. Flour must be quoted 6*d.* to 1*s.* per barrel and sack lower.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk..White	54—58	Red......	56—58
— fine selected runs ....do.	58—61	Red......	58—60
— Talavera	60—64		
— Norfolk	—	Red......	—
— Foreign	47—67		
BARLEY, grind. & dist., 27*s* to 33*s*..Chev.	—	Malting ..	36—41
— Foreign .. grinding and distilling	29—33	Malting ..	35—43
OATS, Essex and Suffolk	23—25		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	22—25
— Foreign ......Poland and Brew	22—26	Feed	19—21
RYE	31—33	Foreign ..	33—36
RYE-MEAL, Foreign..................			
BEANS, Mazagan....—*s.* to —*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	45—47	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	—	Suffolk ..	—
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	36—40
MAIZE	—	Foreign ..	33—36
FLOUR, best marks, delivered..per sack	—		
— 2d ditto ....ditto	—	Country ..	—
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Aug. 16.

At Mark Lane to-day there has been a moderate supply of English Wheat, and fair receipts from abroad. The trade has been quiet, at the rates previously current. There has been a fair supply of Barley on offer. Transactions have been restricted, on former terms. Malt has been dull, at late prices. Oats, the show of which has been good, have met a moderate inquiry, at previous quotations. Beans and Peas have changed hands slowly, at about late rates. Flour has been quiet, on former terms.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	300	—	—	—
Irish ..	—	—	—	—
Foreign ..	19,900	5820	36,780	— 2810 brls.
	20,200	5820	36,780	

LIVERPOOL, Aug. 15.—The attendance was not numerous, but there was a fair consumptive demand for Wheat, at steady prices for fine descriptions, while inferior was irregular. Flour slow, but unchanged. Oats steady for fine, but others were rather easier. Oatmeal slow. Beans 3*d.* to 6*d.* lower for Egyptian. Peas unchanged. Barley, no sound here. Malt dull. Indian Corn in moderate request, at 3*d.* to 6*d.* reduction on the week.

AVERAGES.

	Wheat.	Barley.	Oats.
July 8	59*s* 0*d*	34*s* 10*d*	27*s* 1*d*
— 15	58 6	34 7	27 10
— 22	58 10	35 11	27 2
— 29	58 0	34 3	28 3
Aug. 5	58 0	36 7	27 4
— 12	58 5	35 11	26 6
Average ..	58 6	35 4	27 4

SEED MARKET.

The agricultural seed trade continues in a quiet state. In red Clovers there is for the moment nothing passing. Trefoils are in improved request, and realise more money. White Clover seed is firm. New winter Tares have appeared this week at market, but the high prices demanded have prevented business. Of new winter Barley there is an abundant supply offering. New Rye for seed is in good request. Trifolium is easier; of fine quality seed there is, however, very little now left. Rape and Mustard are without alteration. We have an inquiry for new blue Peas. Canary seed shows an advance of 1*s.* to 2*s.* per qr.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

HOPS.

BOROUGH MARKET, Aug. 16.

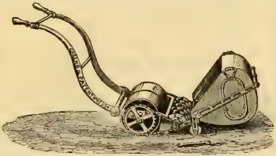
There is almost no demand for Hops in our market, and prices remain unaltered. The weather appears to be favourable to the growth of the Hop plant in most places, but some planters think heavy rain for a couple of days would assist in effecting improvement. From Poperinghe the accounts come better, but in Alost, one-eighth of a full crop is all that is expected. The last advices received from Bavaria and Bohemia are not encouraging.

COALS.—Aug. 16.

Holywell Main, 18*s.*; West Hartley, 18*s.* 6*d.*; East Wylam, 18*s.*; Walls End Harton, 16*s.* 6*d.*; Walls End Thrislington, 17*s.*; Walls End Braddyll's Hetton, 17*s.* 6*d.*; Walls End Russell's Hetton, 17*s.* 3*d.*; Walls End South Hetton, 18*s.* 9*d.*; Walls End Heugh Hall, 17*s.* 3*d.*; Walls End Original Hartlepool, 18*s.* 6*d.*; Walls End South Kelloe, 17*s.* 3*d.*; Walls End Tees, 18*s.* 6*d.*—Ships at market, 35; sold, 33; unsold, 2; at sea, 5.

Great Reduction in Prices for 1871,
OF
GREEN'S
PATENT SILENS MESSORS
OR
NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices :—

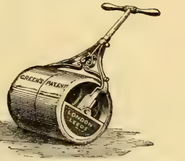
To cut	Price	
8 inches	£2 10 0	Can be worked by one person.
10 ,,	3 0 0	
12 ,,	4 0 0	
14 ,,	5 0 0	
16 ,,	6 0 0	This can be worked by one person on an even Lawn
18 ,,	7 0 0	By Man and Boy.
20 ,,	7 10 0	,,
22 ,,	8 0 0	,,
24 ,,	8 10 0	,,

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED
PATENT ROLLER,
FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.



PRICES of HAND ROLLERS.

Diameter.	Length.	£ s. d.	Diameter.	Length.	£ s. d.
30 in.	32 in.	7 10 0	20 in.	22 in.	3 10 0
24 in.	26 in.	4 10 0	16 in.	17 in.	2 15 0

PRICES of ROLLERS, fitted with Shafts,
Suitable for Pony or Horse-power.

Diameter.	Length.	£ s. d.	Diameter.	Length.	£ s. d
30 in.	32 in.	10 0 0	30 in.	60 in.	15 10 0
30 in.	36 in.	10 15 0	30 in.	72 in.	17 10 0
30 in.	42 in.	11 15 0	30 in.	84 in.	19 10 0
30 in.	48 in.	13 10 0			

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

24 inches by 26 inches	.. .. ..	£4 0 0
20 ,, 22 ,,	.. .. ..	3 2 6
16 ,, 17 ,,	.. .. ..	2 10 0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds; and 54 and 55, Blackfriars Road, London, S.E.

The Patent Imperishable Hothouse.
AYRES'S PATENT.
GLASS, IRON, and CONCRETE.
Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the
IMPERISHABLE HOTHOUSE COMPANY,
Newark-upon-Trent, Notts.
MANAGER—W. P. AYRES, C.M.R.H.S.,
Forest Road West, Nottingham.
Plans, Specifications and Estimates supplied upon the shortest notice.

Indestructible Terra-Cotta Plant Markers.
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.
The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

Weeds Eradicated from Lawns.
WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30*s.* per cwt.; 36-lb. tins, 10*s.* Directions and testimonials on application.
Principal Agent:—W. D. BARBOUR, 3, Park Row, Leeds.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size.
Prices rom 16*s.* 6*d.* [Prices from 35*s.*
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

J. TYLOR AND SONS'
FOUNTAIN JETS.
A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.
Illustrated Catalogues on application.

VASES, FOUNTAINS, and JETS,
FOR THE GARDEN AND CONSERVATORY.
ILLUSTRATED CATALOGUE, containing Prices and full information concerning FOUNTAINS and VASES, and with 30 large Pages of beautifully Lithographed Designs, Post Free for 12 stamps, which will be allowed if an Order is given.
A. HANDYSIDE AND CO., Britannia Works, Derby.
London Office—32, Walbrook.

Horticultural and Window Glass Warehouses.
JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

Glass for Garden Purposes.
JAMES PHILLIPS AND CO.
beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—*s.* *d.*		Each.—*s.* *d.*
2 inches in diameter	0 3½	12 inches in diameter	1 9
3 ,, ,,	0 4½	13 ,, ,,	2 0
4 ,, ,,	0 5½	14 ,, ,,	2 6
5 ,, ,,	0 6½	15 ,, ,,	3 0
6 ,, ,,	0 8	16 ,, ,,	3 6
7 ,, ,,	0 10	17 ,, ,,	4 0
8 ,, ,,	1 0	18 ,, ,,	5 0
9 ,, ,,	1 2	19 ,, ,,	6 0
10 ,, ,,	1 4	20 ,, ,,	7 0
11 ,, ,,	1 6		

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter	0*s.* 6*d.*	9 inches in diameter	1*s.* 8*d.*
5 ,, ,,	0 8	10 ,, ,,	2 0
6 ,, ,,	0 10	11 ,, ,,	2 6
7 ,, ,,	1 1	12 ,, ,,	
8 ,, ,,	1 4		

Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2*s* 0*d.*	16 inches long	1*s.* 4*d.*
22 ,,	1 10	14 ,,	1 2
20 ,,	1 8	12 ,,	
18 ,,	1 6		

WASP TRAPS, 3*s.* 6*d.* per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—*s.* *d.*		Each.—*s.* *d.*
12 inches	6 6	20 inches	10 6
14 ,,	7 6	22 ,,	11 6
16 ,,	8 6	24 ,,	12 6
18 ,,	9 6		

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to
JAS. PHILLIPS AND CO, 180, Bishopsgate Street Without, E.C

No. 1, Peel Street, Manchester, 1871.
OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide ..	at 8½*d.* per yard run.
No. 2.—54 inches wide ..	at 7*d.* per yard run.
No. 3.—54 inches wide ..	at 5½*d.* per yard run.
No. 4.—54 inches wide ..	at 4*d.* per yard run.
No. 5.—54 inches wide ..	at 5½*d.* per yard run.

In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

Latest Improvements
IN
HEATING by HOT WATER.

THE IMPROVED CONICAL BOILERS, for HEATING PINERIES, CONSERVATORIES, GREENHOUSES, MANSIONS, HALLS, WAREHOUSES, &c.,

Solely Manufactured by
POLLARD, JEPHSON, AND CO.
(late Bury & Pollard, Successors to John R. Peill, late Stephenson & Peill).

These BOILERS are adapted for setting in Brickwork, or as shown in sketch they require NO BRICKWORK.

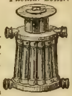
Price Lists free by post.

Bear Garden, New Park Street,
Southwark, London, S.E.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating
GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

Improved Conical.

Tubular Boiler.



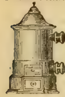
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.

Portable Boiler.



Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

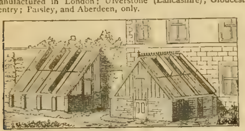
INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

HOTHOUSES for the MILLION. –Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.
Manufactured in London; Ulverstone (Lancashire); Gloucester Coventry; Paisley, and Aberdeen, only.



Illustrated Price Lists free. A Pamphlet, with Views of these and other styles of Glasshouses, post free, 3*d.* Estimates given for Conservatories, &c., to any design in Wood; also for Heating Apparatus.

HEREMAN AND MORTON, Horticultural Builders,
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and HOT-WATER APPARATUS MANUFACTURERS,
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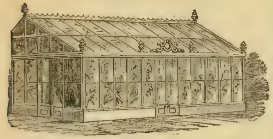
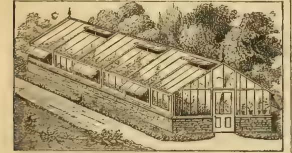


200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

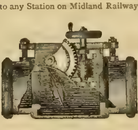
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.*	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
,, ,, glazed, 16-oz. good sheet glass	6*s.* ,,
6 ft. ,, ,, 2 in. thick, unglazed	5*s.* ,,
,, ,, glazed, 16 oz. good sheet glass ..	11*s.* ,,
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* ,,
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* ,,

Estimates given for Conservatories or Greenhouses to any Design.

T. G. MESSENGER, HOT-WATER ENGINEER, Loughborough, is delivering HOT-WATER PIPES, &c., free to any Station on Midland Railways, for cash, as under (nett):—



4-in. Hot-water Pipe, 2*s.* 2*d.* p. yard
3-in. Hot-water Pipe, 1*s.* 9*d.* ,,
2-in. Hot-water Pipe, 1*s.* 1*d.* ,,
Connections at proportionate rates.

The Heating of all kinds of Buildings by hot water, direct or exhaust steam, undertaken by Contract, and satisfactorily completed, in any part of the country.

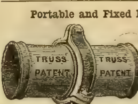
MESSENGER'S PATENT VALVES for Water, Gas, or Steam, shut off perfectly, are full bore, and cheaper than any other made. Form a cheap and excellent Chamber and Valve for Pumps. Thousands at work.

Prices:—4-inch, 21*s.*; 3-inch, 17*s.* 6*d.*; 2-inch, 15*s.*

MESSENGER'S PATENT HOT-WATER BOILER is more powerful and economical in fuel than any other Boiler.

Further prices and descriptions on application.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.
6, Bankside, Southwark, London, S.E.

Greenhouses and Conservatories.

H. FREEMAN AND SONS' HORTICULTURAL WORKS, 106, Mare Street, Hackney, E. Established 25 years.
Good substantially made GREENHOUSES, glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15; a handsome CONSERVATORY on hand, 35½ feet by 18 feet, £110; Nurserymen's LIGHTS, £25 per 1000 feet.

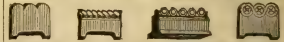
By Appointment to H.R.H. The Prince of Wales.

BARTON'S PATENT STABLE and HARNESS ROOM FITTINGS, BRACKETS, &c.

Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps.

For ALTERATION of STABLES a competent person can be sent to any part, to inspect and give Estimates.
JAMES BARTON, Iron Works, 370, Oxford Street, W.

Rosher's Garden Edging Tiles.



THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

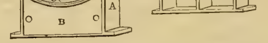
F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



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"JAMES VEITCH & SONS."

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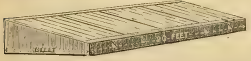

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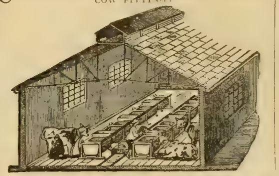

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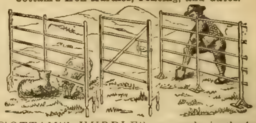

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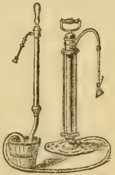

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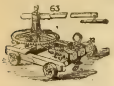

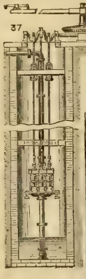

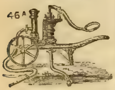

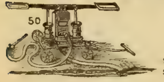

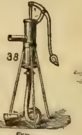

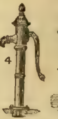

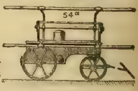

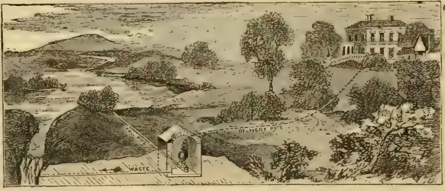

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, August 19, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 34.—1871.] SATURDAY, AUGUST 26. Registered at the General Post Office as a Newspaper. Price 5d. POST FREE, 5½d.

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THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for 12 months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

WELCHPOOL HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will take place on THURSDAY, September 7, 1871, when SPECIAL PRIZES, open to all England, will be offered. ENTRIES to CLOSE on SEPTEMBER 2. LIST of PRIZES and ENTRY FORMS may be obtained on sending stamp to D. P. OWEN, Hon. Sec.

EXHIBITION of ROSES and other FLOWERS.—The AUTUMN SHOW of the REIGATE ROSE ASSOCIATION, will be held at the New Public Hall, Reigate, on SATURDAY, September 9. Admission by Members' Tickets at 1 o'Clock; from 2 till half-past 4, to the Public, on payment of 1s.; after half-past 4, 6d. Close at 6 o'Clock.

Staffordshire.

LEEK FLORAL and HORTICULTURAL SOCIETY.—The AUTUMN EXHIBITION of FLOWERS, FRUIT and PLANTS will be held on SEPTEMBER 14 and 15.

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JAMES WATT, } Partners.
July 1, 1871.

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For Sowing during August.

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PEAS.	*s.*	*d.*	
DILLISTONE'S EARLY PROLIFIC ..	9	0	per bushel
SANGSTER'S No 1	8	6	"
EARLY EMPEROR	7	0	"
BECK'S GEM or TOM THUMB ..	9	0	"
McLEAN'S LITTLE GEM	15	0	"
DICKSON'S FAVOURITE	8	0	"
HARRISON'S GLORY	8	0	"
FAIRBEARD'S SURPRISE	8	0	"
PARADISE MARROW	8	0	"
PRIZETAKER	8	0	"
McLEAN'S PRINCESS ROYAL.. ..	8	0	"
BEDMAN'S IMPERIAL	8	0	"
BLUE SCIMITAR	8	0	"
WOODFORD GREEN MARROW ..	8	0	"
WATERLOO or VICTORIA	8	0	"
BURBIDGE'S ECLIPSE	9	0	"
FAIRBEARD'S FORTYFOLD	10	0	"
BRITISH QUEEN	10	0	"
NE PLUS ULTRA	10	0	"
CHAMPION of ENGLAND	9	0	"
HAIRS' DWARF MAMMOTH	10	0	"
YORKSHIRE HERO	10	0	"
COMPETITOR..	10	0	"
ALLIANCE or EUGENIE..	10	0	"
CLIMAX or NAPOLEON	9	6	"
VEITCH'S PERFECTION..	9	0	"
McLEAN'S ADVANCER	9	6	"
" PRINCE of WALES ..	10	0	"
" WONDERFUL	10	0	"
" PRINCESS of WALES ..	9	6	"

ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., begs to offer the above to the Seed Trade. All are of Crop 1871. Deliveries can be made of all before Christmas, all of which shall be well hand-picked samples, and all are true to name. Early orders solicited.

BEDFORDSHIRE SILVER SAND and PEAT, sold only by J. ARNOLD, 29, Clarendon Square, N.W. Acknowledged by the largest and most extensive Growers and Nurserymen to be the best Sand obtainable for growing Plants, &c., in the United Kingdom. Strongly recommended by all who have used it

Maiden Lane, and Kingsland Goods Depôt, N. L. Railway. By the truck-load to all parts; at the Wharf, 14*s.* per ton. Terms nett cash. All orders to be addressed,

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WHEELERS'
COCOA-NUT CABBAGE

WHEELERS' COCOA-NUT CABBAGE.

Wheelers' Cocoa-Nut Cabbage, per pkt., 1s.
" " small packet, 6d.
Wheelers' Imperial Cabbage, per oz., 8d.
Wheelers' Tom Thumb Lettuce, p. pkt., 1s.
" " small packet, 6d.

N.B.—Wherever this charming little Lettuce is grown it is a remarkable favourite. It may be obtained *true* from either Gloucester, or Mark Lane, London. We recommend everybody to try it who have not already done so.

All the above Post Free.

WHEELERS'
BROCKWORTH PARK PEAR,

10s. 6d. each.

This magnificent Pear is a cross between Williams' Bon Chrétien, and Louise Bonne of Jersey. It considerably surpasses both its parents in SIZE, fine QUALITY, BEAUTY, and FLAVOUR, ripening about the same time, viz., September and October; grown against a wall, the fruit is remarkably large and handsome, the Pears weighing about 12 oz. (¾ of a lb. each). On the dinner-table well-ripened specimens are remarkably conspicuous for their size and beauty, and their flavour and juiciness are fully equal to their appearance.

A First-class Certificate was awarded to this handsome variety last autumn by the Royal Horticultural Society, and Trees were ordered by the principal Nurserymen in the kingdom; but the demand was so great that we were Sold out of all our Saleable Plants immediately they were offered. Coloured Plates, taken from Nature, may be had at 6*d.* each.

We are now Booking Orders to be executed in November next; all Orders will be executed in exact rotation as received, as far as the Plants will go; but we expect to be Sold out long before the season is over.

The price of young PYRAMIDS is 10*s.* 6*d.* each. We have a few Plants trained for walls at 15*s.* The Pyramids will furnish plenty of buds next summer for budding Trees of other varieties established against walls. This fine variety is well worthy of a wall, and of a good aspect.

☞ **Orders are now being Booked.**

J. C. WHEELER & SON,
NURSERYMEN,
GLOUCESTER; and
59, MARK LANE, LONDON, E.C.

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PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO (Limited), 58, Old Broad Street, London, E C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.
"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

SCOTT'S WASP (and other Garden Pests) DESTROYER.—This widely-famed Composition can only be had genuine from the PROPRIETOR, as prepared from the original recipe, *and which has given so much satisfaction.* All imitations are therefore *spurious*, and should be avoided The genuine is sold in bottles at 1*s.* 6*d.* and 2*s.* 6*d* each, with full directions for use.

All orders and communications should be sent to J. SCOTT, The Seed Stores, Yeovil, and to no one else.

N.B.—B. R. Davis is no longer in my employment.

H. APPLEBY'S REGISTERED FUMIGATOR was awarded a First-class Certificate at the Great National Horticultural Exhibition, Glasgow Royal Botanic Gardens, August 9, 1871. Testimonials may be had on application.

Large size FUMIGATORS, 6*s.* each; second size, 4*s.* 6*d.* each.

COMPOUND TOBACCO PAPER (requires no blowing) sold in 2 lb. and 4 lb. packets, 1*s.* 6*d.* per lb, warranted to keep 12 months.

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FRETTINGHAM'S LIQUID COMPOUND, for the DESTRUCTION of INSECTS of all kinds, and MILDEW INFESTING PLANTS, has been proved to be the most effectual application for destroying Aphis of all kinds, Thrip, Mealy Bug, American Blight, Green and Brown Fly, Red Spider, Wasps, Ants, &c., hitherto offered to the Public. It will be found invaluable for Vines, Peaches, and Fruit Trees of all kinds, as in most cases one dressing will keep off the ravages of Insects for a whole season.

The Liquid Compound will not injure the most tender foliage of Stove or Greenhouse Plants; and, if mixed occasionally with the water ordinarily used for syringing, will, if applied before the appearance of insects, prove a certain preventive. Broccoli and other Greens may be thoroughly cleansed from insects and filth of all kinds by sponging, or using the Liquid Compound by means of the "Horticultural Vaporiser"

We select two voluntary Testimonials from a great number we have recently received :—

"Elvaston Nurseries, Borrowash, June 28, 1871.

"DEAR SIR,—We beg to bear testimony to the efficacy of your Liquid Compound, which we have used in our Nursery, both out-of-doors and under glass, with perfect success. We consider it the best preparation we have tried. It thoroughly clears the plant without injuring the foliage.—We remain, dear Sir, yours faithfully,

"Mr H. C. Frettingham. "WILLIAM BARRON & SON."

"Upton Nurseries, Chester, July 11, 1871.

"DEAR SIR,—We have very carefully tested your Liquid Compound for destroying insect life. We have tried it upon most of the pests which prey upon vegetable life, and find it very effective in cleansing all kinds of plants from scale, mealy bug, aphides, thrip, red spider—in fact all kinds of insect life seem to succumb to its power most effectually and rapidly, and that without injuring the tenderest foliage, as far as we can observe. We consider the Compound most valuable to all growers of plants.

"FRANCIS & ARTHUR DICKSON & SONS."

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R. G. Backstone, Esq., The Ash Hall.
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Mr. Speed, Gr. to the Duke of Devonshire, Chatsworth.
Mr. Wm. Parker, Gr. to the Misses Strutt, Derwent Bank, Derby.
Mr. F. Harrison, Gr. to F. Wright, Esq., Osmaston Manor, Ashbourn.
Mr. W. S. Milford, Gr. to T. W. Evans, Esq., M.P., Allestree Hall.
W. P. Ayres, C.M.R.H.S., Consulting Landscape Gardener, Nottingham.
Mr. W. Thompson, Gr. to Sir Seymour Blane, Bart.
Thos. Crump, Esq., Quarndon, near Derby.
Fitzherbert Wright, Esq., The Hayes, Swanwick.
Mr. James Tegg, Gr. to the Duke of Newcastle, Clumber Gardens.
Messrs. G & W. Yates, Market Place, Manchester.
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PRICE LIST.—One gallon bottles, 5*s.* 6*d.*; half-gallon bottles, 3*s.*; pints, 1*s.* each, bottles included. In Casks:—10 or 12 gallons, 4*s.* 6*d.* per gallon; 20 gallons and upwards, 4*s.* per gallon, casks returnable. Carriage paid on all orders to the amount of 20*s.* and upwards.

May be obtained of the principal Seedsmen and Nurserymen throughout the country.

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Red Spider. Magnified.

GISHURST
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Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

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PRICE'S PATENT
CANDLE COMPANY
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Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

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Good substantially made GREENHOUSES, glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15; a handsome CONSERVATORY on hand, 35½ feet by 18 feet, £110; Nurserymen's LIGHTS, £25 per 1000 feet.

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THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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A liberal discount to the Trade.

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THE IMPROVED CONICAL BOILERS, for HEATING PINERIES, CONSERVATORIES, GREENHOUSES, MANSIONS, HALLS, WAREHOUSES, &c.,

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These BOILERS are adapted for setting in Brickwork, or as shown in sketch they require NO BRICKWORK.

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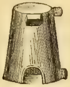

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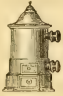

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Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

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☞ *They are made of all sizes, which, with prices, may be had on application.*

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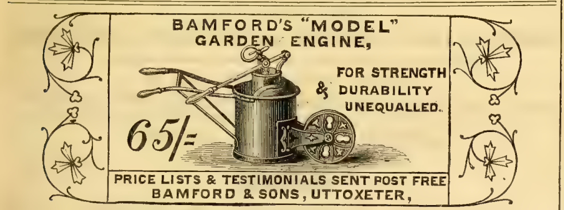

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PRICE LISTS & TESTIMONIALS SENT POST FREE
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PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.

GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

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Great Reduction in Prices for 1871,
OF
GREEN'S PATENT SILENS MESSORS
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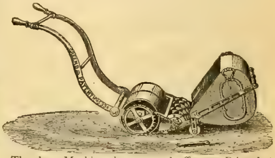
NOISELESS LAWN MOWING, ROLLING AND COLLECTING MACHINES.

During the last few years our Machines have been submitted to numerous practical tests, and found to possess all the advantages in working and keeping a Lawn in the greatest possible state of perfection. We therefore have no alterations to report, as they are unnecessary.



The above Machines have carried off every Prize that has been given in all cases of competition.

They are warranted to be superior to any others. We guarantee them to give entire satisfaction, otherwise they can be returned, free of cost to the purchaser. With the increased facilities we possess for the Manufacture of Lawn Mowers, we are enabled to Sell them at a reduced rate on former years, as will be seen from the following Scale of Prices:—

To cut	8 inches	.. Price	£2	10	0	Can be worked by one person.
,,	10 ,,	.. ..	3	0	0	
,,	12 ,,	.. ..	4	0	0	
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,,	16 ,,	.. ..	6	0	0	This can be worked by one person on an even Lawn
,,	18 ,,	.. ..	7	0	0	By Man and Boy.
,,	20 ,,	.. ..	7	10	0	,,
,,	22 ,,	.. ..	8	0	0	,,
,,	24 ,,	.. ..	8	10	0	,,

T. GREEN & SON have pleasure in announcing that the demand for their Lawn Mowers this season far exceeds all previous ones, and from this fact they are led to believe that the machines of their manufacture are held higher in the estimation of the public than ever.

Prices of HORSE, PONY, and DONKEY MACHINES on application.

☞ *Repairs executed with efficiency and despatch, both at Leeds and London Establishments.*

GREEN'S IMPROVED
PATENT ROLLER,
FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,
Suitable for Hand or Horse-power.

PRICES of HAND ROLLERS.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	7	10	0	20 in.	22 in.	3	10	0
24 in.	26 in.	4	10	0	16 in.	17 in.	2	15	0

PRICES of ROLLERS, fitted with Shafts,
Suitable for Pony or Horse-power.

Diameter.	Length.	£	s.	d.	Diameter.	Length.	£	s.	d.
30 in.	32 in.	10	0	0	30 in.	60 in.	15	10	0
30 in.	36 in.	10	15	0	30 in.	72 in.	17	10	0
30 in.	42 in.	11	15	0	30 in.	84 in.	19	10	0
30 in.	48 in.	13	10	0					

These ROLLERS possess many advantages over all others; they are made in two parts, and are free to revolve on the axis, affording greater facility for turning, and the outer edges are rounded off, or turned inwards, thus avoiding the unsightly marks left by other Rollers. They are manufactured of the best materials, and are got up in a manner surpassing any ever yet brought out.

The ROLLERS, 24 by 26 inches, 20 by 22 inches, and 16 by 17 inches, are also made in one part, at a reduced price; and for Rollers of that size, will be found to answer many requirements, as the handle can be reversed to either side of the Roller at pleasure.

PRICES.

24 inches by 26 inches	.. .. ..	£4	0	0
20 ,, 22 ,,	.. .. ..	3	2	6
16 ,, 17 ,,	.. .. ..	2	10	0

Delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

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Trains from Bishopsgate Station, Great Eastern Railway, and St Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance from the platform, Waltham Station.

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DOUBLE SCARLET GERANIUM VICTOR LEMOINE, the finest double grown for Bedding or Winter Flowering. 4s., 8s., and 12s. per dozen.

SURPLUS STOCK of SPRING FLOWERING and HERBACEOUS PLANTS.

Per doz.—	s.	d.
ANEMONE HONORINE JOBERT, fine white	3	0
ARTEMISIA STELLERIANA, white edging plant, hardy	3	0
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CHEIRANTHUS ALPINA	3	0
DAISIES, in four varieties per 100	10	0
DIANTHUS HIGH CLERE, finest of all	3	0
GEUM COCCINEA GRANDIFLORA	3	0
HESPERIS MATRONALIS ALBA FLORA PLENA, Double Rocket	3	0
Ditto, RUBRA PLENA, ditto	3	0
LATHYRUS GRANDIFLORUS	3	0
MYOSOTIS DISSITIFLORA, true per 100	10	0
PHLOX FRONDOSA	3	0
VIOLA CLOTH of GOLD, finest yellow grown	4	0
„ IMPERIAL BLUE	6	0
„ CLIVEDEN, in four colours per 100	16	0
„ THE CZAR, fine, sweet per 100	12	0

The above are all good, strong planted. Price to Trade, per 100, on application

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The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

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CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

INTERNATIONAL PRIZE CALCEOLARIA.

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Saved with the greatest care, and from one of the largest collections in the kingdom.

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„ dark Carmine	2	6
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And are pleased to say that they are in splendid condition.

J. V. & SONS were awarded the following Prizes at the London Exhibitions last spring—viz.,

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1st Prize for 18 White Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
1st Prize for 12 pots Tulips, in 6 varieties, Royal Horticultural Society, March 15, 1871.
2d Prize for 6 New Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
Extra Prize for Group of Hyacinths and Tulips, Royal Horticultural Society, March 15, 1871.
1st Prize for 12 Hyacinths, distinct varieties, Royal Botanic Society, March 22, 1871.
1st Prize for 12 pots Tulips, distinct varieties, Royal Botanic Society, March 22, 1871.
Extra Prize for Collection of Hyacinths, Royal Botanic Society, March 22, 1871.

JAMES VEITCH AND SONS had also the pleasure of supplying to the Commissioners of Her Majesty's Works, the Tulips, Hyacinths, and Crocuses, which made such a grand display last Spring in Hyde Park.

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Autumn, 1871.

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DELPHINIUM, from a fine collection, in 12 sorts		2 6
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SWEET WILLIAM, extra Auricula-eyed	1s. and	0 6
WALLFLOWER, dwarf, blood-red, fine		0 6

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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz. :—Dr. HOOKER, C.B., F.R.S.; W. WILSON SAUNDERS, F.R.S.; Rev. M. J. BERKELEY, F.L.S.; M. DECAISNE; G. F. WILSON, F.R.S.; Professor REICHENBACH, of Hamburgh; Dr. MOORE, of Glasnevin; Rev. S. R. HOLE, M.A.; E. J. LOWE, F.R.S.; and JAMES MCNAB, of Edinburgh.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden

The Gardeners' Chronicle

SATURDAY, AUGUST 26, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Aug. 30 THURSDAY, — 31	Crystal Palace Flower Show.

THERE are certain phenomena of vegetable life which are familiar to us from daily observation, but of which, nevertheless, we know wonderfully little. This is the more to be regretted, inasmuch as there can be but little doubt that the thorough investigation of the causes and *modus operandi* of these phenomena would ultimately lead, not only to results of the highest value scientifically, but also of the greatest importance from a practical point of view. Let us take, for instance, the MOVEMENTS which occur not only in climbing plants, but in leaves and flowers, and, indeed, more or less in ALL PARTS of the PLANT. Time was when all these movements were vaguely referred to vital force, organic irritability, and such-like expedients for concealing ignorance. These and similar expressions abound even in our best horticultural text-books, and their influence is likely to be baneful, as putting a check to investigation by the assumption of a limit, which may indeed exist, but which certainly has not yet been reached. To give precision to our remarks, let us take the case of those movements now known to be consequent on VARIATIONS in the degree of TENSION in vegetable tissues. We will specify some of these, and endeavour, so far as our means and limits will allow, to explain them in accordance with the facts brought to light in recent experimental inquiries.

Let us take, first, one of the simplest of these cases, the separation of the divided portions of a stem when cut lengthwise. Take almost any young growing shoot, preferably one hollow in the interior—the flower-stalk of a Dandelion, for instance, and cut it down lengthwise for a short distance; immediately the separated portions diverge one from the other, just as happens when a shoulder of mutton is carved at the dinner-table. The appearance thus presented is like that of the letter V; or when, as often happens, the edges roll up, we have an appearance resembling that of the zodiacal sign of Aries, ♈. Again, let the layers of bark and wood tissue be carefully dissected off from a young Vine shoot, so as to leave the pith exposed; and it will be seen that, while the bark and wood become contracted, or in other words shorten, the pith lengthens. A similar contraction ensues, but in a transverse direction when a ring of bark is cut off from a shoot; it contracts; try to fit it on to the stem from which it was taken, and it will be found impossible to replace it accurately.

Other examples might be cited did space permit. It must suffice merely to allude to the movements of climbing plants, of sensitive plants, the turning of leaves and flowers to the light, and so forth.

Now, every one of the phenomena we have just alluded to would, a few years ago, have been explained as manifestations of so-called vital force, a force modified, it is true, by physical agencies, but one assumed, on the whole, to be beyond man's ken. Fortunately, now-a-days, the tendency is to get out of this groove, and to take a wider view of things. Dr. GOLDING BIRD was, so far as our knowledge goes, one of the first to show that the divergence in the case of divided stems to which we have just alluded, was due to physical causes. If, as had been previously suggested, the divergence were due to vital irritability solely, it would not occur, as it does, as well in dead tissues as in live ones. Dr. BIRD, moreover, decisively proved that the divergence in question was due to varying degrees of tension, these variations being dependent in his experiments on the alternate emptying of certain cells, and the filling or turgescence of others, and *vice versâ*,—the transfer of fluids in this case from cell to cell, taking place in accordance with what is now called osmosis, or the tendency which a thin fluid has to intermix with a denser one separated from it by a membranous barrier. Dr. BIRD'S experiments were published as long ago as 1837, in "Loudon's Magazine of Natural History," then edited by CHARLESWORTH, and sufficient credit has, to our thinking, not been given to him by later experimenters and writers.

It seems certain, however, that though this passage of fluids from cell to cell by osmosis is an efficient cause of the movements witnessed in certain cases, yet that there are other instances, and these the most numerous, where no such passage of fluids takes place, and yet the movements occur. For instance, a field of Wheat is laid by heavy rains, such as we have had in the present season. Under certain circumstances the straw will get up again. How is this? Clearly the turgescence of certain cells would not be likely to produce this result, but rather the reverse.

In endeavouring to explain what is the real cause of the phenomenon, we must allude briefly to what the physiologists, and specially those of Germany, HOFMEISTER, SACHS, KRAUS, and others, have lately told us as to the nature of tension in vegetable tissues. Certain of the tissues are erectile, left to themselves they have a tendency to extend in all directions; certain other of the tissues are by comparison passive, and act as a check on the erectile tissues. Speaking generally, the spongy cellular portions, such as the pith, and the cellular portions of the bark, are erectile, *i. e.*, have a tendency to swell; while the skin or epidermis and the fibrous stringy tissue (wood) are passive. To varying relative conditions of these parts the movements of plants may, in great measure, be attributed. For instance, the divergence which occurs when a Dandelion or other herbaceous stem is cut down, depends on the sudden disturbance of the balance heretofore existing between the more elastic central portions and the passive outer portions of the skin: the latter gain the advantage, and curvature results, owing to the adhesion of the cells to the rind; but if, as in Dr. BIRD'S experiments, the advantage of the central tissues is restored by the imbibition of fluids, the cut surfaces then lose their curvature and become parallel to each other. And so, in regard to our second illustration, the contraction that takes place when a ring of bark is removed from the subjacent cells affords another illustration of the difference in tension of the different elements of the stem.

The tension which occurs in plants is always liable to fluctuations in degree, and may either be permanent or transitory. Permanent tension is that which occurs as a result of unequal growth, while transitory tension is due to variations in the quantity of water absorbed, as in the experiments just alluded to. There is always a tendency to maintain an equilibrium, the tensive forces are, in theory, at least, equally and symmetrically distributed, but this equal distribution is continually being interfered with by variations in the vigour of growth and the amount of light, heat, and moisture to which plants are subjected.

For instance, to refer again to laid Wheat, we may suppose that the elasticity of the passive tissues on the side of the straw next to the ground is diminished, it offers less resistance; while, on the other hand, the expansion of the erectile tissues, finding the less obstacle, and stimulated by light and heat, tends to pull the stem into an upright position again. But, it may be asked, if this is a correct interpretation, how is it that creeping plants, or plants which normally hang down from rocks, walls, &c., do not get up? Simply because, according to KRAUS, the amount of tension-force in their tissue is not sufficient to allow them to do so.

Alterations in tension, too, produce a healthy vigorous growth. KNIGHT used to unnail his Peach trees and let them blow about for a time in the wind; HERBERT SPENCER has shown how the progress of the sap is facilitated, and the deposit and ripening of the wood augmented from the same reasons. Let us see what light these comparatively new researches on tension throw on these matters. It has been long known that if a growing shoot be shaken several times in succession, a curve will ultimately be formed in it, the centre of which curve corresponds with the place where the tension is at its maximum. The disturbance produced by the continued shaking stretches the passive tissues (epidermis) and diminishes their elasticity and consequent power of resistance to the erectile tissues within, which are, in consequence, enabled to grow the more rapidly. If this stretching of the rind be uniform on all sides of the shoot, a simple lengthening will take place; but if, as is usually the case, the stretching be more on one side than on the other, then a curve is produced.

The degree of tension varies in different parts of the day; in different plants, as we have already mentioned in the case of creeping plants; and in different parts of plants. Under ordinary circumstances, the tension diminishes in early morning, and is at its minimum at 2 P.M., from which time it gradually increases.

In annual plants, according to KRAUS, the maximum degree of tension is at the base of the stem, and diminishes towards the ends of the branches and of the roots. Now it will be remembered that these are precisely the points where growth is most active, and the effect of the increased tension at the base of the stem would be to force the nutritive fluids in the two directions where it is most required. In trees the young shoots act in the same way as annual plants.

In the case of plants with bulbous, tuberous, or fleshy root-stocks, if the intensity of tension were greatest at the base of the stem the sap would, it is clear, be driven away from the reservoir, bulb, tuber, &c., where it is most required for future growth. Accordingly, we find that the point of greatest intensity changes in these plants; all the time leaves and flowers at one end, and roots at the other, are forming, the greatest squeezing force, if we may so term it, is exerted at the base of the stem—the most advantageous place, but when the necessities of the case are altered, and it is time to provide for the store-house bulb, rhizome, tuber, or what not, then (that is, towards the end of summer) the maximum squeezing power is exerted higher up the stem in such a manner as to facilitate the passage of the nutritive juices from the branches to the bulb. Another of those wonderful provisions of Nature which testify to the infinite wisdom and prescience of its Author.

The great importance of these matters, from a practical point of view, must serve as an excuse for our endeavour to lay before our readers an account of these, at present, very obscure and complex phenomena.

—— WE are glad to be able to state that a most interesting and, as we believe, useful MEETING, was held in the CHISWICK GARDEN of the ROYAL HORTICULTURAL SOCIETY on Tuesday last. The occasion was that of the examination of Bedding Pelargoniums by the Floral Committee—a good and useful work, partially resumed since the remodelling of the garden has been completed. The Council, very judiciously, took advantage of the opportunity which thus presented itself to meet the Society's working committees, and at the same time the whole of the exhibitors, who were invited to join in the inspection of the newly arranged garden. Nearly 100 persons were present. After the primary work of the day had been got through by the Floral Committee, and the members of the Fruit Committee and the visitors had made an inspection of the new arrangements, which seemed, so far as we could learn, to be highly approved (especially when the short time which has yet elapsed since the beginning of the new works is considered), the whole party partook of luncheon in the great conservatory, beneath the shady foliage of the Vines, and under the presidency of Mr. Wilson Saunders. This part of the programme also appeared to afford satisfaction to those engaged in working it out. A very pleasant afternoon was spent, during which sundry matters connected with the future operations of the Society, especially in the exhibition department, were brought under discussion by various speakers, Mr. Wilson Saunders, Maj.-Gen. Scott, C.B., Major Clarke, Dr. Masters, Mr. G. F. Wilson, Mr. W. Paul, Dr. Denny, Mr. J. Fraser, Mr. T. Baines, Mr. Williams, Mr. Lane, Mr. Cox, Mr. Earley, and others; and no doubt the various hints and suggestions which were dropped will be gathered up and turned to useful account, in the conduct of the more extended operations to which the prosperity due to the connection of the Society with the International Exhibitions seems likely to lead. At any rate, it was a good day for Horticulture when the different sections of the horticultural world thus met in friendly *réunion* in the old garden whose very existence was so seriously threatened a year or two since, but which has always been regarded by horticulturists as the real headquarters of Horticulture in this country.

—— Professor Koch, referring in a recent number of the "Wochenschrift" to our article (p. 737, 1871) on the Fertilisation of the Flowers of the Grape Vine, says that his observations lead him to believe that self-fertilisation does not take place. He states as a general fact that the stigma is incapable of receiving the pollen until it has been exposed, for a short time at least, to the influence of the air; and further, that the stamens shed their pollen simultaneously with the fall of the petals; hence the necessity of foreign fertilisation. Professor Koch has, however, fallen into error in his assumption of our view of the matter, for, although we said that self-fertilisation "clearly does occur," we also observed further on that "we found many instances in which the pollen was ripe before the stigma had attained maturity, and *vice versâ*." From this we may infer, perhaps, that there is no certainty or constancy in the order of development of these organs in the Grape Vine.

—— Mr. T. Lamson Scribner, of the Maine Agricultural College, has issued a little *brochure* upon the Weeds of Maine, affording brief popular descriptions and practical observations in regard to the habits, properties, and best methods of extermination of nearly 250 weeds found in the State. The work, though small, is of considerable interest, many details being given as to the introduction and spread of the various weeds. We find that Bromus secalinus, introduced from Europe, is very troublesome, and that our Transatlantic brethren share the English belief that this species is degenerated Wheat. Several years ago, when first introduced from Europe, it was known as "Willard's Chess," and fabulous prices were offered for the seed; but it was not long before the true character of the plant was found out; and people became aware that it was too poor in quality and quantity to be worth cultivating, and that they had been encouraging the growth of a troublesome weed. By sowing clean seed and clearing waste ground of this grass, it may be kept under.

—— Mr. Chapman has sent us sketches of his registered Multum in Parvo Plant and Flower Protector. It consists of a wooden box made in two parts which are held together by clips, provided with a glass top, and supported by a notched stake when used to protect flowers, such as Dahlias, at a distance from the ground. An indiarubber valve prevents the ingress of insects. For such purposes it would appear to be an efficient contrivance. Mr. Chapman also proposes to use it for ground plants instead of hand-glasses. Of course, when used in this way, it would answer in the case of plants requiring such light only as the glass top would admit, but the questions of cost and durability would here intervene before its real merits could be ascertained. From being made in halves, Mr. Chapman believes they may be much more readily stored away when not in use.

—— What is Tulp? A serious inconvenience to those whose lands are infested with it, if we may judge from a case recently tried at Graham's Town, and reported at length in a newspaper of that region. It appears that some cattle having been put out to graze upon a certain farm, "the said pasturage was unfit for the depasturing of the said cattle, and was covered with Tulp, whereby, and by reason whereof, the plaintiff lost two oxen," and naturally desired to get back the money which he had paid in advance for this objectionable pasture. From the evidence it appears that "cattle won't eat Tulp unless they are very hungry, when it is in flower;" that "there is Tulp about all farms about town;" while one witness deposes that he had "seen lots of oxen dead with Tulp," and that "many of the oxen were sick with" it, though only two died. We have made many inquiries, and have consulted many books, but have failed to ascertain the botanical name of this noxious weed. Can any Graham's Town correspondent enlighten us?

—— The Ants in Panama are not merely mining engineers; they build tubular bridges. A corresponding member of the Glasgow Natural History Society, who has lately been in that country, describes the curious covered ways constructed by these ingenious insects. In tracing one of these covered ways he found it led over a pretty wide fracture in the rocks, and was carried across in the air in the form of a tubular bridge of half an inch in diameter, which was the scene of busy traffic. There was nearly a foot of unsupported tube from one edge of the cliff to the other. Fancy the Menai Bridge being only the result of transmitted instincts after all.

—— We are used to wonders from America, but the following account of a New Jersey Apple Tree, although vouched for by good authority, is even beyond the ordinary range of Yankee achievements. This tree, on July 26, 1869, had upon it Apples nearly full grown, the blossoms of which appeared at the usual season. On the same branches was another set of Apples, less advanced, from blossoms which appeared in June; while the wood of last spring was covered with blossoms, which it was expected would produce good fruit, and a fourth show of bloom was preparing for August. The Apples are all of the same kind, and of good quality, the only difference being in the time of ripening. The tree keeps bearing in this way from year to year.

—— The Maximum Temperatures of the Air during the week ending Aug. 19 ranged from 89°.2 at Blackheath and Leicester to 66° at Greenock, with a mean for England of 82°.1, and for Scotland of 72°. The Minimum Temperatures of the Air ranged from 55° at Leeds to 43°.2 at Glasgow. The mean for all stations in England was 52°.7, and in Scotland 48°.9. The highest mean temperature recorded in the past week was 67°.1 at Blackheath, and the lowest 56°.3 at Glasgow. The mean for the English stations was 63°.7, and for the Scotch stations 58°. Thus it will be seen that the temperatures in the northern country were lower in all respects than in the southern. Rain was recorded as having fallen at all stations on one or more days during the week, the greatest falls being 1.79 inch at Birmingham, and 1.13 inch at Greenock. The mean fall for England was 0.69 inch, and for Scotland 0.62 inch.

—— Out of evil comes good. The Siege of Paris has, amongst other things, demonstrated the value of Begonia leaves used as Spinach, and shown the hardiness of Niphobolus Lingua and Choisya ternata, both of which are stated in the "Revue Horticole" to have sustained the frost of last winter uninjured. In the same journal many Cacti, as well as Agave mitræformis, A. micrantha, A. Salmiana, and A. Jacobiana, are mentioned as having supported a temperature many degrees below freezing point.

—— We are enabled to supplement the information we gave recently concerning the Alexandra Park, at Hornsey, with the following details furnished by the Secretary:—

"This building is situate on the highest part of the park, commanding on all sides extensive, varied, and beautiful views of the surrounding country. The building is erected partly from the material of the late Exhibition building at Kensington, designed to make it appropriate to its new situation and purposes. The general plan consists of a nave 900 feet long and 85 feet wide, a centre transept 430 feet long and the same width as the nave, and two shorter transepts, each 320 feet long, the same width also as the nave, and intersecting at a short distance from each end: there are, therefore, three points of intersection of the nave and transepts; the centre has erected over it a great dome, which is 170 feet in diameter, and 220 high in the interior, appropriately panelled and decorated, light being admitted near the top, and by lunette windows at the sides. At the intersections of the shorter transepts with the nave there are pendent octagon cupolas supported on slender columns, lighted by windows in the sides. The ends of the nave and three transepts are terminated with large circular or rose windows, decorated with stained glass. On each side of the nave and transept are erected buildings about 50 feet wide and two storeys in height; these have brick external walls, with arcaded openings and windows, and form extensive galleries next the nave and transept. The ground floor, on the south-east side, will be almost entirely devoted to refreshment and dining rooms, of various sizes and classes, opening by French windows to a verandah overlooking the terrace beyond; and in the basement beneath are such extensive and complete cellar and kitchen arrangements, as will insure a first-rate and hot dinner for private parties, and general convenience and perfection in the refreshment department for large numbers. Other arrangements, such as news, reading, writing, and coffee-rooms, library, museums, picture-galleries, sculpture, plants, and flowers, &c., are all considered, together with many things tending to the entertainment and comfort of the public; and an organ, one of the most powerful and complete in England, will form the centre of an orchestra for musical performances on a grand scale. The building will be thoroughly lighted by gas in an ornamental and brilliant manner, for evening promenades, &c., and will always be maintained at a genial and agreeable temperature. The interior is elegantly decorated throughout in coloured ornamentation, and will be filled with objects of beauty and interest arranged in spaces so as not to interfere with the grand avenues for promenade. Externally, the end of the nave and transepts present eight grand façades flanked by supporting turrets, containing the large windows and entrances. These façades are united by the walls of the lower buildings, two storeys in height, and by the clerestory walls and roof of the nave and transepts; and the whole is terminated by bold cornices and ornamental parapets. The general character of the architecture of the exterior is Italian, and consists principally of brickwork in colours, with stone dressings and ornamentations. Above the roofs in the centre of the building rises a bold tambour, pierced with windows, from which springs a great dome, terminated at the top by a simple balustraded parapet, and a standard mast 50 feet high. This dome, and the octagon cupolas at the smaller intersections, are decorated with moulded ribs and panelling in bold relief. On all sides of the building are formed handsome and spacious terraces, on which, and the ornamental slopes adjoining them, stand many large and handsome trees, giving relief and effect to the building. The terrace on the north-west side, which will be 1000 feet long and 160 feet wide, supported by Italian arcades, will cover a noble railway station, from which access will be had directly to the building at the ends of the three transepts, and to which station all the railways of London will ultimately be brought. There will also be covered carriage entrances at the ends of the nave, communicating by an easy drive with the public roads. Adjoining the building, and commanded by the southern slope of the hill on which it stands, is the racecourse, with a grand stand replete with all conveniences. There are also cricket and archery, &c., grounds with their appropriate buildings and accommodations. The extensive park is laid out in agreeable carriage drives, walks and avenues, interspersed with flower gardens."

—— It would seem, from a paper read before the Institution of Engineers of Scotland, by Mr. William Clapperton, that there is now a fair chance of a sufficient supply of pulp for Paper Making being obtained at a remunerative rate from wood. Shavings of deal are repeatedly boiled under high pressure in water charged with a certain proportion of caustic soda. By these means the resin, oil, and turpentine, are removed, and the wood reduced to a condition suitable for the use of the paper-maker without any admixture. By this process, paper can, it appears, be more cheaply produced than with Esparto-grass, the price of which has greatly risen of late.

OVERCROPPING IN ORCHARD HOUSES.

The prevalence of red spider in this remarkable fruit season cannot be entirely attributed to the great climatal disturbances which are its chief feature. Whatever may be the causes otherwise, it is generally agreed that weakness of the trees exposes them to greater risks from insects and blight, and there is no surer means of producing this weakness than by excessive cropping. It is easy however to theorise, but our practice does not always correspond. This is the reason that I remind cultivators of the soundness of the maxim, that they will obtain far better, and also greater crops of fruit in the average of years, by considerably diminishing what has become to be considered a proper allowance for a tree to bear. For in seasons like the present these trees have to undergo severe trials, which we should bear in mind at the thinning season next year.

These remarks apply chiefly to trees in orchard-houses, and of these we know that Peaches and Nectarines form the staple. But they are applicable to Peach trees on the open wall also; and the observations of that sound and practical cultivator, Mr. Radclyffe, have always been read by me with pleasure, for he seems so thoroughly to know the habits of the Peach out-of-doors, and its wants in our climate. I myself of late years have removed a whole wall of Peach trees, partly because they were so troublesome, and partly because we had such an abundance in the orchard-houses, and so much finer fruit. I have again, however, laid in a few on Dubreuil's first system, which I first began with, 16 years ago, and which were the first ever so tried in England; and if some readers of this journal desire any hints on them, I shall be happy to afford them, for the trees are doing remarkably well, and are very healthy and strong. They are diagonal cordons, with long shoots tied to the wires—the only long pruning I care for.

One of them is the Princess of Wales. I chose it because Mr. Radclyffe had frequently written to me about it. We have it in the houses, but this is no perfect guide for outdoor culture. But in such seasons as this extra care is required to produce really fine fruit. This year many think our crop of Peaches and Nectarines small in size, and so they are; but this is due in the first instance to former over-cropping, and now the attacks of red spider will reduce still further the vitality of the later trees, so that thinning during next season must be freely done.

It is also a pity to lower our standard of fine fruit for the sake of mere number and apparent display. No doubt the temptations to exhibit an enormous crop are great, and in certain cases it is even necessary. The evil can also be remedied by renewing or completely resting the trees. Amateurs, with vigorous young trees, are anxious to prove their skill, and realise some profit, and gardeners have too much expected from them by ignorant employers. But, after all, the fact remains, that this is contrary to Nature's teaching and to the best experience, and, practised on a large scale, would bring serious loss with it. Study the health of the tree above all, and let it undergo no sudden shock to its constitution from any cause within our power to prevent. *Th. C. Bréhaut, Richmond House, Guernsey.*

BOTANY FOR BEGINNERS.—XIII.

It has often been our lot to look through local herbaria and collections made by juvenile botanists, and to note the comparative rarity with which such common plants as the Daisy and Dandelion are collected and preserved. This arises, probably, from the frequency of their occurrence. What can be got at any time is very liable not to be procured at all. Another phenomenon of quite an opposite character, and which has very often struck us, is this, that the would-be botanist has a tendency to try his hand at first starting on Daisies and Dandelions, under the impression, perhaps, that they must be easy, because they are common. It is quite necessary to dissipate this notion, and to recommend the student to begin his dissections with flowers of simpler character and larger size, such as those mentioned in the earlier articles of this series. In truth, the so-called flower of these plants is really a mass of tiny flowers. A Sunflower, a Dahlia, an Aster, a Chrysanthemum, all of which are near allies of our humbler Daisies and Dandelions, in like manner do not bear single flowers, but a large number of minute flowers—florets as they are called—grouped into heads; hence, the term composite flowers; hence also the name Compositæ applied to the whole group, a group the most extensive, in point of numbers, of any in the whole series of flowering plants, and one in general readily recognised by the flowers being in "heads" as above described, and, invariably, by the anthers being joined together or coherent by their edges. The combination of these two circumstances is quite enough to enable us to detect a Composite. The mere fact of the flowers being in heads is in itself not sufficient, inasmuch as many other plants, besides Composites, have their flowers in heads. Disregarding for the present other characteristics of the Composites as a whole, let us indicate some of the structural peculiarities of the two plants before us. In the Daisy, as in the Dandelion, the true stem is excessively short. The consequence of this is that the leaves are closely packed, and spring, as it were, from the very top of the root, and lie flat on, or at no great distance from, the ground. The main distinction between the stem and the root consists in the power that the stem has of bearing leaves in some shape or another. A true root has no such power, and so when, a few lines previously, we described the leaves as springing from the top of the root, we committed a technical error. The so-called top of the root, or crown of the root as a gardener would call it, is really in this case a short subterranean stem, because the *internodes* are not developed. In the Houseleek, or in a bulb, the leaves are closely packed from the same cause,—the spaces between them are not developed. So in an ordinary flower, the sepals, petals, and stamens, are all in close approximation, because the *internodes* are not formed. Thrust forth from the axils of the leaves in the Daisy and Dandelion rise the flower-stalks, straight, undivided, usually leafless branches, bearing at the summit the head of flowers surrounded by a ring or rings of small closely-packed green leaves or bracts. This ring of bracts has very much of the appearance of a calyx, but a calyx belongs to a single flower; this ring of bracts encloses a large number of flowers, hence the necessity for the distinguishing term of *involucre*, which is applied to a ring of bracts encircling a number of flowers.

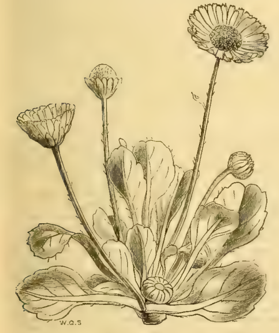

Fig. 249.—Daisy.

In the case of the Dandelion the involucre, as shown at E, fig. 253, consists of two or three rings of bracts, of which the outer are bent downwards, while the inner are erect. Pull off all the flowers within the involucre, or cut the flower through the centre from below upwards, and the end of the flower-stalk will be seen expanded into a sugar-loaf-shaped mass in the Daisy (1, fig. 251), into a flat cushion in the Dandelion (fig. 253, P). This expanded portion is the *general receptacle*, from which all the florets spring. It bears the same relation to all the florets of the head that the *thalamus* does to each individual flower. Children have a very ready way of demonstrating the general receptacle of the Dandelion when they blow off the feathery seed-vessels to see, as they say, what o'clock it is (O, P, fig. 253).

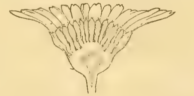

Fig. 250.—Section through Daisy flower, showing receptacle.

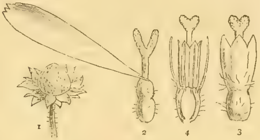

Fig. 251.—Separated florets of Daisy.

1, Receptacle and involucre; 2, Ray-floret; 3, Floret of disc; 4, Section of floret of disc, showing stamens.

Now we come to an important difference between the Daisy and the Dandelion. The florets of the former are of two different shapes and of two different colours—"daisies pied," as Shakspeare, and Milton after him, called them. At the circumference we have a ring of white florets, often "crimson tipped," as Burns describes, and in the centre a dense mass of yellow tubes. The white florets are those of the *ray*, the central yellow ones are the florets of the *disc*. In the case of the Dandelion (which, beautiful as it is, does not seem to have attracted the attention of the poets), the florets are all of one shape and colour, and hence there is in that plant no distinction into florets of the disc and of the ray respectively.

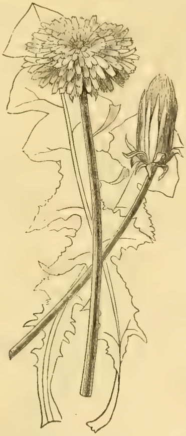

Fig. 252.—Dandelion.

Picking off a ray-floret of a Daisy, the beginner will look in vain for a calyx. In truth, the calyx, distinct at a very early age, becomes fused with the ovary long before maturity, so that in the adult stage no trace of it, except in connection with the ovary, is visible. The calyx, though similarly adherent to the ovary in all Composites, generally presents more traces of its whereabouts than is the case in the Daisy, as will shortly be pointed out. The corolla is much more conspicuous; the "wee crimson-tipped" strap is the corolla, in fact, but a corolla of peculiar shape.

Let us describe the floret as it appears, and then attempt to explain the peculiarity. Starting from below, then, each of the florets (2, fig. 251) springs from a short tubular portion; suddenly there comes an alteration, the tubular form is exchanged for that of a flattened strap turned to one side, and at the tip of the strap are usually to be seen two or more shallow notches. These notches are all that are left to indicate five petals. In point of fact that now apparently simple strap is a compound of five petals united together, turned to one side, except at the very base, where they are in their ring-like order, and form the short tube. This is hard to see certainly, and may be hard to be believed, nevertheless the advanced pupil will have no difficulty in verifying the statement by a comparison with other Composites, in which the five petals are more clearly distinguishable. Even the Dandelion (fig. 252) may help to make this matter more apparent. The ray florets of the Daisy, then, are made up of five petals, absolutely free only at the extreme tips, imperfectly separate in the middle, where they form a flat strap, perfectly inseparate or connate below, where they form a tube; at the base of the strap-shaped floret thus constituted, is the ovary, of a single cavity with a single ovule in it, and surmounted by a style, apparently single, but really of two congenitally blended, except at the extremity, where the two stigmatic ends reveal the constitution of the style. There are no stamens in these florets.

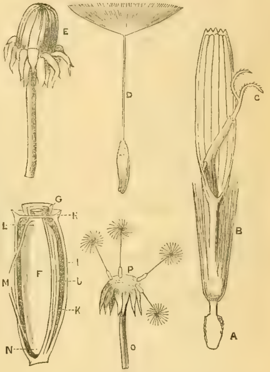

Fig. 253.—Structural details of the Dandelion.

A, Ovary.—B, Pappus calyx, above which is the strap-shaped corolla, and the stigmas, C, protruding from the anther-tube.—D, Ovary, with tubular calyx, ending above in pappus.—E, Involucre outer bracts reflexed, inner ones erect.—F, Ovary.—G, Disc.—H, Calyx.—I, Lower part of calyx adherent to the ovary.—J, Ovule.—K, Raphe, or cord suspending the seed.—L, Base of the seed.—M, Vascular bundle.—N, Point of seed.—O, Peduncle.—P, General receptacle, with four fruits still attached to it.

The florets of the disc (3, 4, fig. 251) are of a different nature. The calyx is the same as in the former case, but the corolla is here of a strictly regular tubular form, made up, as may easily be seen, of five petals, free at the tips, inseparate below. Slit up the tube with a needle or knife point, and the five stamens will be seen inseparate from the corolla below, the filaments also free, but their anthers cohering by their edges into a sheath or tube, surrounding the style, so that with a little care one may easily extract the style without disturbing the sheath formed by the stamens. This cohesion of the anthers is the characteristic mark of Composites.

The style is of the same conformation as in the ray-florets.

Turning now to the Dandelion (figs. 252, 253), we find all the florets are strap-shaped, and that all have both stamens and styles. Moreover, the calyx is more apparent than in the case of the Daisy, inasmuch as, instead of being wholly blended with the ovary, as in the Daisy, a portion is free and is easily recognisable, from its light, feathery-looking appearance (fig. 253, B). A feathery calyx of this description is called a *pappus*, and a very large number of Composites have this pappus calyx, which is only too familiar to gardeners in the form of Thistle-down or Groundsel. It generally increases in size as the seed vessel ripens, perhaps in correspondence with the increased weight of the seed, which it serves to transport on the wings of the wind. The other points in the construction of the Dandelion have either been already mentioned, or are too similar to those of the Daisy to demand further notice in this place.

The two forms of the corolla are readily enough observable in many of our garden flowers—the Sunflower or Marigold, for instance, with their ray-florets and their florets of the disc ; the Dahlia and Chrysanthemum, in which the florets of the disc have by the gardener's art been brought to resemble the florets of the ray. In Nature we have some Composites with strap-shaped florets only, as the Dandelion, Lettuce, Chicory, &c. ; the plants of this group have usually a milky juice. There are other Composites which in the wild state have tubular florets only, like the Thistles ; while a third group, including the Daisy, the wild Chrysanthemum, the Coreopsis, and a host of garden flowers, have both forms associated in the same head.

SCIENCE AND PRACTICE.

YOU deserve the thanks of all the craft horticultural for your vigorous leader on this subject, p. 901. I hope it may serve as a winnowing-fan to sweep off the huge mass of encumbering chaff that has gathered round it. Those who object to science among gardeners really don't mean what they say, or say what they don't mean ; while those who refuse to concede to the ordinary run of clever horticulturists that they are scientific, are alike ignorant of the business of gardening and its practical professors. These misconceptions have arisen chiefly from those mistakes about names which are, and always have been, so common. True, we are constantly queried, What's in a name ? and the answer virtually is, nothing ; and if we doubt this rendering, the hackneyed quotation is hurled at us with a defiant air of triumph which bears down all opposition, "A Rose by any other name would smell as sweet." Would it though ? I don't believe a word of it. Only dub it Nettle, Dock, or Hemlock for a century or so, till all the sweetness, beauty, and fragrance that has reached our hearts on the back of Rosa is forgotten, and see if it would be as much prized then ? Why every sharp thorn darts up defiantly from Queen Rosa's perfumed bed to protest against the loss of her charming name, and we hug it fondly to our heart of hearts as a sweet portion of the flower. Yes, there is very much, I had almost said everything, in names. The world is governed by names. Hearts and homes are lost and won by them. Men rule, deceive each other, nay more, play pranks upon themselves, through the cunning witchery of mere names.

"Give a dog a bad name and hang him" is as true of men and things as of dogs. The proverb has its better side ; thus, "Give anything a good name, and idolise it." In fact, the saying about the Rose's name and the dog's character are but the obverse sides of the same medal, stamped at the mint of truth. Nothing escapes wholly from the influence of names. Bad names are like swaddling-clothes fettering our mental limbs ; good are intellectual baby-jumpers, raising us higher than we could reach without them. Even knowledge, though heaven-born, has not escaped from these subtle influences, or, rather, it has been more helped or hindered by names than aught else. Call common knowledge by the high name of science, and some fall down and worship it. The wildest fancies, the crudest speculations, the most baseless fabrics of impracticable dreams, have thus been deified by a name. The greater the folly, or, at least, the more dense the mystery, and at times the more foggy and indistinct the muttering voices, the higher the respect, the deeper the veneration of many. There are those that respect science as the old lady did her clergyman—in the exact ratio of her inability to understand him ; her veneration grew as his theology deepened, and reached a climax as she declared that nobody, she even doubted whether the Almighty, quite knew all he meant. With such, whatever is incomprehensible is esteemed as scientific, and prized accordingly.

Again, there are others who reckon science the art of classification, or description of natural laws or phenomena. For things, principles, forces, powers, realities, they give you names ; and their science is a sort of nicely-arranged cabinet of the skeletons of names. Those are mostly daintily scientific who take up science and wear its honours as they would any other accomplishment. All such, however, and many others that might be specified, speak well of science, whatever they may mean by it.

But a much larger class run a tilt against science, as a mad bull at a red rag. The very name excites them to anger and strife, more especially if the science is found among those in lowly station ; they treat it as an enemy deserving of no quarter—a something to be gored, torn, rent, trampled under foot—a nuisance to be rid of at any price—a thing that no sensible man wants in his garden.

And yet this very science is the talisman of success in horticulture. Show me the amount of a man's science, and I will tell you the measure of his power. True, we hear much about thoroughly practical men—mere working gardeners, and the absurd inference is hurriedly drawn that he who has least science will do the most work. There never was a greater fallacy. The truth lies wholly on the opposite side of that proposition. We have no work apart from thought outside Bedlam, and, if we had, it would be worse than useless in our gardens. The value of every man's work is in proportion to the thought, that is to say, the science, he puts into it. And if this is true of other work, it is emphatically so in gardening, every process of which is a fresher, higher, better thought. And this law holds good of the work of our hands as of that of the brain ; or, rather, the brain helps the hand to do even its most common operations,—and never was there such a helpmeet to the strong hand as the scheming mind. The two together constitute the finest scientific machine in the world.

Take a man from the plough-tail, and set him in a garden to dig ; observe what a mess he makes of it, how irregular and uneven lies the ground. The man has strength, will—why then does he fail ? He lacks the science of digging, that is, the knowledge how to dig ; give him that and he does it well ; and yet men fear scientific gardeners. But is this not a better workman, worth more money, that is, does more and better work with science than without it ? Undoubtedly, and it is so through all the operations of gardening. The more science, the better we can mow, sow, train, cultivate, plan, economise ; every working machine (and man is no exception to the rule) is valuable in proportion to the science put into it. Why are the lawn-mowers, grass and corn reapers, so much stronger, cheaper, and more efficient workers than the scythe ? Because they embody more and higher science. All machinery but preaches a fresh sermon on the inexhaustible text—"Knowledge is power." Yes, and the more knowledge the more power, and with every additional increment of power there is a saving of time, a lessening of cost, and greater efficiency in the arts of planning, controlling, beautifying, producing. Strange inconsistency, that those who are glad enough to welcome science almost everywhere else should attempt to drive it forth from the Edens where it is of all places most useful. Everywhere else men have gladly sanctioned the nuptials between science and mechanical force, by which most of the fagging work of the world has been taken off our hands. We are waited upon hand and foot by science. It fetches and carries, hews our wood, draws our water, does most of our heavy work, drives all our machinery. Everywhere it is chained by skill to the hand of labour, and who are these that would burnish up this flaming sword with the grit of prejudice and the worn-out leather of obsolete ignorance, to set it up, to warn science out of our earthly Edens ? It cannot be. We have tasted of this tree of life, and hunger to eat more of it. The more we eat, the more beautiful the gardens will become. For science is strength and beauty, while the want of it is weakness and worthlessness to gardens. A want of science is the loss of force ; it is working in the dark instead of the light. Ignorance is a blind Sampson—strong, indeed, but only strong to ruin, mar, destroy. It is a game of chance, a medley of haphazard. As proof in point, what could be more apposite than the doings of your correspondent ? Blind as a mole, because without science, he gropes along, trying to hybridise Heartsease with Calceolarias, Pansies with common Brakes, Hemlock and Geranium, Borage and Pelargonium, and then reveals his yet grosser darkness by telling you how he had succeeded ! Here, however, his caution seems to have got the better of him, and, a vision of an editorial request looming in the future, to send up samples of these little wonders appearing to him, he conveniently adds that they soon died. Did not live long, indeed ! Was there ever a stronger proof (and thousands of a similar sort are happening daily) that ignorance is ever weakness—utter uselessness, if not worse ? A very little science would have turned all this energy into useful channels ; for the want of it, all was lost.

And yet we have employers deprecating science, and great societies ignoring its existence among practical men, though every step in horticulture is right or wrong as science guides, or does not guide it. Talk of dividing science and practice : the thing is impossible. They are one. The best practice is saturated with science —the only science worth the name rests on a practical basis. How, then, are these prejudices to be removed ? Well I agree with you, that it may be wise for one thing to change the name if we can save the knowledge intact by the sacrifice of this little Jonah—viz., science, by all means let the name go. This remedy is the more likely to be effective, because the prejudice is mostly against the name ; and we lose nothing, probably gain a good deal, by giving it up. This may be termed a dust age, I fear, for our Lexicons, and I believe that science, according to Walker, may surprise not a few— "Knowledge : certainty grounded on demonstration ; art attained by precepts, and built on principles ; and generally any art or species of knowledge." Why, these read like the veritable qualifications of a modern gardener, and unless there be those who prefer darkness to light, weakness to strength, uselessness to efficiency, surely all else will say, the more of such qualifications among gardeners the better. But let us lay aside the name of science, and follow after knowledge ; and with the name it is to be hoped the prejudice against science will cease, and that the more a man knows, and the better use he makes of his knowledge, the higher he may reasonably expect to climb in his profession, and the more ought he to be respected. Knowledge is the highest power in horticulture, and as such it is worthy of more direct recognition and encouragement than it has mostly received from our official bodies. Possibly orders of merit or fellowships sparingly and wisely awarded would work well. At present, when circumstances and tastes are favourable, a man puts his knowledge into prize fruits, plants, flowers, or vegetables, and is rewarded. Others put theirs into a landscape flower garden, a well ordered garden, a fully, richly supplied home table, a book, an essay, the press ; and the societies entirely ignore all the latter class, which are by far the more numerous and equally talented and deserving. Without taking anything from our present prize-takers, might it not be possible to distribute at least some honours and rewards among these outsiders ? Doubtless knowledge is its own reward, but, like the bread and butter our London friends set before their country cousins, such rewards will bear doubling a good many times. *D. T. Fish, F.R.H.S.*

DIGGINGS FROM OLD MINES.

THE EFFECTS OF THE SCION UPON THE STOCK, AND VICE VERSÂ.

A GOOD deal has been made of some recent instances of the Abutilon Thompsoni infecting with its variegation the common Abutilon striatum, and I have lately seen some curious cases of a modification of the character of black Grapes, alike in flavour, size, and colour, by being grafted on the White Syrian and White Nice ; notably, that recent introduction, Mrs. Pince, had its bunches and berries both grown out of normal character, and its flavour spoilt by being so treated. Other cases, such as the Purple Laburnum, are familiar to most cultivators. Going back to olden times we find instances cited from experiments made by Mr. Fairchild, as to his budding or inoculating of a Passion-flower, whose leaves are spotted with yellow, into one of that sort of Passion-flower whose leaves are plain, and though the buds did not take, yet after it had been budded a fortnight the yellow spots began to show themselves about 3 feet above the inoculation, and in a little time after that the yellow spots appeared on a shoot, which came out of the ground from another part of the plant. The same thing happened to the variegated variety of the common white Jasmine. Mr. Fairchild likewise grafted the evergreen Oak, or Ilex, on the common Oak. The leaves of the common Oak fell at the usual time, but those of the evergreen held its leaves and continued green as usual ; thus proving that the scion had the power of attracting a sufficiency of sap through the deciduous stock at an unnatural season.

The same gentleman exhibited many other experiments before the Royal Society, as the New England Cedar, or rather Juniper, grafted on the Virginian, and a branch left several inches below the grafting continued growing as well as the upper part above the grafting. A Cedar of Lebanon was also grafted on the Larch, and continued to grow and retain its leaves all the winter, equally good and healthy, above and below the graft.

Another point demonstrated by Mr. Fairchild was, that the scion supported the stock, the branch the root, as much or more as the stock the scion, or the root the branch, and that, in a word, the sap flowed in any direction where it was needed.

To establish this fact the following experiments were made just 150 years ago, in March 1721-2 :—This experiment was on a Pear tree, which he inarched upon two Pear stocks, leaving the roots out of the ground, and was in a good flourishing state with a branch in blossom, that received no other nourishment but by the juices that returned down the other two branches, which, though it had been done two years, yet it continued shooting suckers out of the roots, which is esteemed as a proof that the branches are as useful to support the roots as the roots the branches ; and hence we infer that it is not strange that so many trees miscarry in planting, when there are no branches left to the head to maintain the circulation to the roots. This sensible inference is not yet universally acted upon, and the severe cutting-in of newly planted trees is still a fruitful source of failure.

The Rev. Dr. Hales, who differs entirely from Mr. Fairchild about the circulation of the sap, yet accepts all the facts about the gilding of the inoculated buds of the Passion-flower and the Jasmine, and thus accounts for it : It is easy to conceive how some of the particles of the gilded bud in the inoculated Jasmine may be absorbed by it, and thereby communicate their gilding miasma (far from a flattering description of our variegation mania) to the sap of the other branches, especially when, some months after the inoculation, the stock of the inoculated Jasmine is cut off a little above the bud, whereby the stock, which was the counteracting part of the stem, being taken away, the stem attracts more vigorously from the bud.

The fact of the grafts infecting the stocks of fruit trees with canker is explained in the same manner. Lastly, the argument is very cleverly carried against those who contend for a compound circulation of the sap in plants analogous to that found in animals by the pertinent query addressed to the stock of the deciduous Oak, why the evergreen scion does not enable it to keep green also throughout the winter ? In the *Gardeners' Chronicle*, a few months since, there was an inquiry to the effect whether the Larch might not be considered a kind of deciduous Cedar. It might be worth trying to graft the Deodar upon it, and to see whether by such means it might become evergreen. Several of these old experiments seem worth repeating and carrying further. In this matter we are hardly wiser than our fathers; doubtless had the beauty and usefulness of these variegations been seen or appreciated 150 years ago, instead of being stigmatised as gilded mania, we should have had our fine-foliage era a century earlier. As it is, possibly we owe some of our best so-called sports of to-day to the experimental graftings, buddings, inoculations, and mixing of sap by our forefathers 150 or 200 years ago. *Antiquator.*

FLAVOUR IN FRUIT.

My attention was called to an article at p. 1040 under the above heading, which, with your permission, requires a little explanation from me. In a short review you were kind enough to write in a previous number of your paper, on my third edition of "The New Method of Growing Fruit, Flowers, &c.," you doubted whether it was the radiation at night which enhanced the flavour of the fruit, attributing it rather to the free exposure of the trees to the night air; in which view your correspondent in the above article concurred. I am glad not only to receive information, but correction also, at the hands of my brother gardeners. In the present case it must, I think, be from not having expressed my views clearly that a misunderstanding of them has arisen. I quite agree with yourselves and your correspondent that it is the amount of cold which the plant attains by free exposure to the night air which causes the change of circulation (if I may so express myself), which is so beneficial to the general health of the plant. The position I wished to establish, and which is indeed beyond controversy, is, that no amount of ventilation given at its sides would allow the plant to become so cold by several degrees, as being quite clear overhead, and having no intervening body between it and free space perpendicularly. In short, that ventilation given by the side lights of a house, beneficial though it is to the plants in its immediate proximity, will not produce the same result as free exposure to the night air (as you rightly add), "judiciously managed."

The old and well-known theory of M. Prevost, of Geneva, in which he was followed by Dr. Wells, in his celebrated treatise on dew, was taken by me to illustrate the position. He attributes this extra cold to a latent power in the plant to radiate its heat into free space perpendicularly, but not laterally, till it becomes actually colder than the atmosphere, and thus a deposit of dew takes place, where such radiation is not interfered with, which deposit does not take place where the free air is only admitted at the sides. It is to this extra amount of dew-producing cold, so pernicious in the spring, and so valuable in the summer, that I attribute the excellence of the flavour of fruit submitted with judgment to its influence. I am aware, and have stated in my pamphlet, that different views are taken of the cause of this extra cold, but I purposely avoided entering at large into the scientific question, the result being all that was required for my purpose. Indeed, in all matters connected with the organisation of plants, and the different influences and processes which produce their growth, ripening, and decay, great care and circumspection are required before hazarding an opinion. The results we may give fearlessly, but the causes, whether tested by induction, or even chemical analysis, are so delicately strung together as to tax to the utmost the judgment of our scientific men. *John Fountaine, Southacre Rectory, Brandon.*

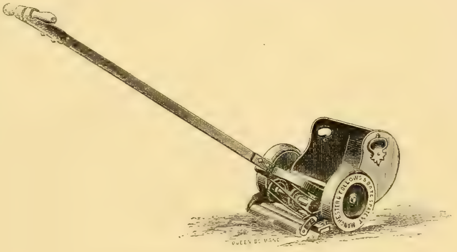

Fig. 254.—New patent "Anglo-American" lawn-mower.

"ANGLO-AMERICAN" LAWN MOWER.

A number of lawn-mowers of different sizes of this pattern were exhibited at Chiswick on Tuesday last, and gained the approbation of the several committees and of the exhibitors there present. The revolving cutter consists of six knives, placed diagonally, as usual. There are two driving wheels, and a collecting box in front of the knives, which may be removed at pleasure, in which case the grass is scattered. Behind the knives is a small wooden roller. The handle is in a direct line with the axles of the driving-wheels, a circumstance which adds greatly to the easy working of the machine; which, from what we saw of it in operation, we are disposed to think very highly of. The sketch we give with this (fig. 254) will show the nature of the machine better than words could describe it. We incline to the opinion that it is much superior to the Archimedean, but we have had no opportunity of testing its merits on slopes or on uneven ground.

Home Correspondence.

Condition of the Fruit Crops in Scotland.—In looking over your report on the condition of the fruit crops in Scotland this season, I find no returns from Caithness-shire, Sutherlandshire, Ross-shire, and Inverness-shire, and, as I have travelled through these counties lately, and been in almost every gentleman's place of note in them, I send you the following notes: — Caithness: Apples, abundant; Pears, fair crop; Plums, fair crop; Strawberries, abundant; Cherries, fair crop; Raspberries, Gooseberries, and Currants, abundant. Sutherland: Apples, Apricots, and Pears, average; Plums, poor; small fruits, abundant; Cherries, average. Ross: Apples, Pears, and Apricots, average; Plums, moderate; Strawberries most abundant, and other small fruits, average. Inverness: Apples, half a crop; Apricots, average; Cherries, good; Plums average; Strawberries, average; small fruits, good. *John Downie, South Frederick Street, Edinburgh.*

Gloxinias and Achimenes Flowering in Autumn.—It may not be generally known among those who possess a little greenhouse, and a frame or two only, that these pretty things may be had in flower by them through August and September. With only ordinary attention given to them, I have seen fine plants—indeed, I have some now—that have been brought on by no other means, and which are cleaner, more healthy, and quite as full of flower as those which are found in hothouses. In the beginning of May place the bulbs into well drained pots—size according to the size of the bulb—which have previously been a little more than two-thirds filled with equal parts of burned earth, wood-ashes, and good loam—if the last is not available, good garden soil. In covering allow a little room for water, but do not water them immediately, say not for a week, if the soil is at all damp, and even after that, very sparingly until the leaves begin to appear. If this is not attended to the bulbs will in all probability rot. Calculate to have a hotbed made a fortnight previous, in which Cucumbers may be sown; place the pots into this frame, they will there soon push on: care must be taken against too much moisture. A little air given at the back every night, just sufficient to let the steam escape, is necessary. Before the Cucumbers over-run them, place the pots into another warm frame—one prepared, it may be, for Melons; before they get in the way there they may be placed in the greenhouse, where they will go on and flower, and well repay the trouble taken. Care must be taken that the bulbs are well dried off in the autumn. Afterwards put each sort into a little bag, with its name if desired, and place them into a warm cupboard, where they can remain quite dry through the winter and early spring. *H. M.*

Varieties of Pelargoniums.—In answer to your correspondent "R. F.," it would not do for nurserymen to erase too hastily old favourites among bedding Pelargoniums. There are no doubt in many lists far too many sorts, but the chief fault lies in recommending new sorts as superior to the old ones without sufficient trial. Some raisers of Pelargoniums think their own seedlings superior to those of others, and they send out a new batch every year, both for the sake of profit, and to keep their names before the public, independently of their merits. There are others, again, who devote great care and attention to the subject, and who never send a seedling out till they have fully proved it, and are convinced of its superior merit. There are, of course, a great many nurserymen who are not raisers, but who merely propagate those sent out by others; they are obliged to take these seedlings on the credit of the raiser's reputation, or on the recommendation of those who have seen them flowering. It takes, however, at least three seasons to fully try the merits of new Pelargoniums, although where there are already so many good ones it is easy to discard some at the end of the first season. It would, however, be a great step to improvement if nurserymen had to curtail their number of varieties to 70, as "R. F." suggests. I have on trial this year above 100 sorts of the flowering section of bedding Pelargoniums (that is to say, not including Tricolors, Bronzes, or variegated sorts). I have 54 varieties of these in separate beds, and yet out of these I shall only discard this year some eight or ten, among them Cybister, Glorious, Roi d'Italie, Vesuvius, Glow, Masterpiece, Kentish Fire, W. Underwood, Duchess. Some of these, as Glorious and Roi d'Italie, I should have discarded before, but have heard them so highly praised by others that I have extended their trial, thinking their merits would eventually be brought out. Some persons will be surprised at my discarding Vesuvius, but I have two others much better of the same shade of colour, and the flower trusses are not sufficiently large to make it attractive. One of the great faults of the system of bedding-out, is that too many go in for mere masses of colour, and do not make their gardens interesting by having sufficient variety. If, for instance, a long border is divided out into panels, and the different divisions of the panels are mere repetitions one of another—as soon as you have seen one part you have seen the whole; you may admire the general effect, but the details will be uninteresting. If, however, no two beds of Pelargoniums are alike, the effect of the whole is much softened, and the interest increased by comparing one sort with another. The best beds I have this year are Violet Hill, Grand Duke, Duke of Devonshire, Bayard, Vesta, Waltham Seedling, Maid of Kent, Lady Kirkland. Duchess of Sutherland is, as your correspondent observes, in some respects better than Lord Palmerston; but again, Lady Kirkland is better than Duchess of Sutherland; but they all three have faults. Dr. Lindley has long ago been discarded by me; both Lord Derby, Clipper, and Rival are better; so is Marie Sisley. But a new one of Pearson's, Corsair, is likely to be the best of all this type. Violet Hill is my model of what a bedding Pelargonium ought to be—free blooming, short jointed, short stiff flower-stalk, large truss, dwarf habit; but it requires high cultivation, and the beds may be manured thoroughly, as it never grows coarse. I am sorry to say, however, that there is a duplicate Violet Hill in the trade, a very inferior flower with a straggling habit. I have seen it in two nurserymen's collections, and sent to them as the true sort. The reason why Violet Hill is not more known and grown is, that it is difficult to get a stock of it, and nurserymen do not like it on that account. I have never thrown a plant away, and give away all I can spare. Some of the plants I am now bedding for the fourth season are still not more than 6 inches high, and it will never do any good with those who starve and maltreat their plants during winter *C. P. Peach.*

Orchid Cultivation.—After a long silence, your correspondent, "G. H.," again comes forward in defence of his favourite theory, and, as usual, supports his views by extracts from a work upon tropical climates. Now, I think it is worthy of notice that "G. H." has brought forward no examples of his own cultivation since January (see p. 76); and further, that the spike of Odontoglossum Alexandræ then exhibited is the only specimen of the cool Orchids that he has brought forward at any time this year. Now, when we consider the very prominent position occupied by "G. H." in this discussion, it does appear somewhat remarkable that there should be such an utter absence of home-grown examples, your correspondent appearing to rely almost exclusively upon the Travellers' Library. Far be it from me to undervalue the information to be derived from such a source, but I may say that if "G. H." wishes to convince the Orchid-growers of the present day that cool treatment is a mistake, he must bring forward home-grown examples of his own system—or, as he puts it, arguments require examples to the point to convince. Many examples of cool treatment have been given in these pages at different times by various writers, thus confirming their theory by their practice, and "G. H." will do well to follow their example. We can appreciate good plants, and honour the man that will show us how to grow them better than we do at present, but we do not appreciate all book and no plants. *Ex-Cantab.*

Table Decorations at Flower Shows. — Few can have failed to observe how deficient in taste and judgment have been many of the displays of dinner-table decorations lately seen at the London flower shows. Much of this has been, in my opinion, attributable to a want of understanding between the exhibitors and the prize givers. It is, therefore, with much pleasure that I learn from the honorary secretary of the Metroplitan Society for the Encouragement of Florists' Flowers, that at their next exhibition, to be held at the

Crystal Palace on the 30th inst., the competitors will be given to understand that no decorations will be allowed round the margin of the tables for a distance of 15 inches from the edge, and that the tables will all be of one size, 8 feet by 4 feet. This is a move in the right direction, tending to put all exhibitors to a great extent upon an equality. We shall now see what are the views of the various decorators, both amateur and professional, upon the quantity and variety which looks best upon a table of a definite size. *W. T.*

—— At p. 1042 your correspondent mentions cursorily the professional class, and complains that there was not room left upon the tables for glasses, plates, &c., the tables being crowded to groaning. Had he read the schedule, he would not have fallen into this error. The Palace Company, in their schedule, wisely invited tables of 9 feet, to be furnished florally only. From this arrangement designs were expected which, collectively, would be suitable for a very large party and which would also be available for a very small one. From the design to which the first prize in the professional class was awarded, a table was shown florally decorated for a company of at least 100 persons, and which could be so reduced as to accommodate companies down to a couple of persons. Again, he alludes to wet sand; but here he errs, as no sand was used in the decorations which, professionally, were placed first. Now your correspondent should be more scrupulous how he reports upon matters which require a careful and refined taste. There were, upon this occasion, the bulk of the old exhibitors contesting, including the names of Buster, Chard, &c.—exhibitors whose taste has been extolled from time to time in your pages, besides very many others who, exhibition after exhibition, have distinguished themselves; and, altogether, there never was before such a display as was rendered upon this occasion. Mr. Standish, likewise, has gone far beyond reasonable bounds, when replying to the invitation of "D., Deal." There is nothing new—indeed, much very old—in the idea of decorations upon the cloth; and I can fairly and practically negative the statement of Mr. Standish that this fashion has been predominant this season. I can affirm that very few of the rank and fashion of Belgravia will allow upon their tables anything so devoid of grace and beauty as the arrangement propounded by him. What we should all aim at is to inform, not mislead, those who are unable to attend these great trials of skill to judge for themselves; and I will leave the readers of these pages to judge for themselves whether the remarks of Mr. Standish are likely to bring about less absurd arrangements than were to be seen in any design to which he refers. *Ransley Tanton, F.R.H.S., The Nurseries, Epsom.*

The Potato Disease.—I bend low in the presence of Mr. Fenn, and I am ready to subscribe for a gold medal in bas-relief, emblazoned with his best "taters," to be presented by the marshalled hosts of Potato eaters throughout the three kingdoms, and to be worn by him as a badge of honour for evermore. No man is more worthy of such honour. He speaks and writes with an authority on these matters that other scribes cannot pretend to. Still, somehow, as I read his last letter, I had the impression that he was taking us in and doing for us, and enjoying the fun of our discomfiture. He fills our eyes with the dust of zoospores, takes our breath away with showers of white rain, hurries us with his Potatos on to high and dry ridges; and then, when Nature is nervous, overdone, severely put to it, finishes readers and "taters" off together, by making both the special victims of a series of shattering shocks from fully-charged electric batteries, that take one and leave another in the most inscrutable manner: all of which probably is meant to teach us that the Potato disease is an inscrutable mystery, or, in other words, is caused by electricity. But Mr. Fenn, as is his wont, gives us practical lore with these transcendental theories. He tells us how to scotch this terrible snake, the Potato disease, by growing the Potatos on ridges, high and dry, with plenty of space between. The plan is a good one, only it will not cure the rot. Some years ago I had the same recipe from Belvoir. I brought it, and the very sorts, specially Paterson's Victoria, which had proved disease-proof there, home with me to Hardwicke. The ridges were duly made, plied with burnt earth, ashes, and quicklime, and the result was such wholesale disease that I lost the varieties so grown altogether. I agree with Mr. Fenn about the time that the disease attacks the Potato. There is a certain time of the year, and a certain stage in the growth of the Potato, which may be truly defined as the time of disease. But why skin-setting time? Mr. Fenn answers, "because then Nature is most put to it." And he proceeds to compare this skin-setting to the full swelling time of vegetables, and the stoning time of fruits. I fail to discover any analogy between the processes. On the contrary, the skin may be held to set because growth has ceased, while the stoning of fruit makes large demands on the vital energies of plants, and is followed by a second and rapid enlargement. I cannot see how, upon any comprehensible theory of over-exhaustion, the Potato should become a special victim of disease at that particular period of growth. Finally, I conclude that the electrical hypothesis is a guess at truth, and nothing more. Does not, indeed, the immunity of Mr. Fenn's seedlings under glass disprove the agency of electricity; or is it seriously contended that the passage of electric currents through glass would rob them of their disease-originating force? Or, is the electricity powerless unless associated with the white rain, which forms the tail of effete thunder and lightning, whatever the latter may be? Perhaps those seedlings, yet so green and promising, have not yet reached the skin-setting, that is the disease-hitting, stage. No one who knows Mr. Fenn's intensely practical devotion to his favourite tuber, will begrudge him this outing on the high bracing Alps of speculation. When he returns to the sound level of his most successful practice, I would respectfully call his attention to the views propounded in your leader of last week. As the raiser of many new and good Potatos, I know no one so fit to work out the great problem of providing us with strains that will ripen so early and keep so late that they may be safely harvested before the disease comes. It seems as if this were the only possible mode of saving the noble tuber from plague and pestilence and sudden death—that is, the disease. Mr. Fenn will, I am sure, forgive the freedom of these criticisms. I challenge him to pay them back with interest, full measure, pressed down and running over, and I thank him by anticipation for his hearty response. I took his advice, and sharpened—no, my pen is always sharp—and put my shoulder to the wheel, and this is what has come of it. And as to science, it has done nothing for us yet, in the way of cure, in this matter of the Potato disease—I wish it had; but I have more faith in Mr. Fenn to help us out of this utter Slough of Despond than all the philosophers, and I trust he will inform us what he thinks of the early harvesting and late keeping remedy in your next. *D. T. Fish, F.R.H.S.*

Scale on Vines and Lemon Trees.—Will some of your correspondents say what is the most effectual way of getting rid of scale on Vines and Lemon trees? I have had every leaf of my Lemon tree washed above and underneath with strong solution of Gishurst Compound, cazelin oil, and carbolic acid, and powdered with sulphur; yet the leaves are covered again with scale in a couple of days. The above liquids were left on the leaves. The carbolic acid destroyed the scale and leaf too. *R. B.*

The Effects of Frost on Vegetation.—The hypothesis of Messrs. Prillieux and Mer, as set forth rather prominently in your article (p. 1064), may possibly be true; but it makes too great a demand upon our faith, until the reasons are given for assuming that the *modus operandi* by which plants are killed by undue exposure to cold is "their loss of water, and the consequent drying of their tissues." [Rather the passage of the water out of the cells into the spaces between the cells, the latter becoming desiccated.] So far as we are informed in the article referred to, this idea of the desiccation of the plant seems to be the cornerstone of the hypothesis. But is there any reason to believe that a tender plant exposed to extreme cold, in an atmosphere saturated with moisture, will be desiccated, or that it will not be killed? We are also told that, in May, 1869, after a hot day, certain trees were injured by frost in the night, but that in certain other trees on the same occasion "the water which had been squeezed out by the cold was afterwards re-absorbed, and no injury took place." What proof is there that water was "squeezed out" or "re-absorbed," or that the water was not a mere deposit of dew, which disappeared before the rays of the sun? If the blood of an animal were once "squeezed out" by cold, it would be a hardy assertion to say that it could ever be re-absorbed, and restored to circulation; and I see no more reason to believe that the extravasated sap, or blood of plants, could ever be re-absorbed, and restored to its proper and innumerable cells. The action of cold upon life is a very complicated and obscure subject, but there seems little reason to believe that it has anything to do with mechanical pressure. It may be true that the "so-called laws of heat have only a limited application to the facts of vegetable life," but they afford a very complete and reliable explanation of all the phenomena in which heat or cold is concerned. *A Meteorologist.*

Melons.—Is it the fact that to grow Vegetable Marrows in the vicinity of a Melon bed is destructive to the quality of the latter fruit, through the agency of the bees conveying the pollen of one to the other, or any other cause? For two seasons together my Melons have had little better flavour than Turnips, or at best Marrows, and, as my gardener selected the seed from first-rate sorts and different places, I can only account for the failure in the way above suggested. Am I right? and, if so, how is the matter to be remedied in future? At what distance can it be safe to grow both Melons and Marrows? *S. P.* [We should hardly expect foreign pollen to alter the character of the fruit, but rather that of the seedling plant, though it has been stated that in certain cases the fruit has been affected. Eds.]

Gladioli.—It is gratifying that your correspondent "Glaïeul," in your issue of August 12, endorsed much that I said relative to the Gladiolus, but as he has made a remark of an unfair character relative to the Messrs. Kelway, and has also said something not very complimentary about M. Souchet, I am induced to trouble you with a few lines by way of rejoinder. "Glaïeul's" opinions are not supported by facts when he speaks disparagingly of the Messrs. Kelway's seedlings, and, in common fairness to these eminent growers, the following statement should be published:—Refering to the report of the Floral Committee of the Royal Horticultural Society (the highest recognised authority) of August, 1868, I find that three First-class Certificates were awarded to the Messrs. Kelway for seedling Gladioli, one of which was considered so superior by the editor of the "Floral Magazine" that he figured the flower in the number for October, 1868, and thus describes it: "Julia, the flower figured in our plate, is a large, well-shaped flower, very much in the style of that fine flower of M. Souchet's, Madame Furtado, and shows that Mr. Kelway is not only a successful grower, but that he has obtained a good strain of seedlings." At the Royal Horticultural Society, in August, 1869, the same English raisers were awarded two First-class Certificates for seedlings, "One of which," says the *Gardeners' Chronicle* "is the boldest and finest shaped flower of its race." During the present month the Messrs. Kelway have received no less than eight First-class Certificates from the Royal Horticultural Society; and the general impression at the last exhibition of the Society was, that the other seedlings were not of an ordinary character, and that they would certainly compare favourably with the Continental varieties. Any one knowing the character of our English growers, is aware of the scrupulous care they exercise before pronouncing a seedling worthy to be placed in their list. The fine names and alluring descriptions of new sorts, as put forth in some of the Continental catalogues, have led to much disappointment in the growing of such sorts, and I need only appeal to both amateur and professional growers to receive confirmation of the statement. I observed that of the 33 varieties issued on the Continent in 1869, not more than six were exhibited at the Kensington show of August 16. With regard to "Glaïeul's" remark that M. Souchet could not compete last year at Kensington because he was in too weak a state of health, I can hardly understand its meaning, except as being of an uncomplimentary character. That M. Souchet's cultivation went on pretty much as usual I have proof in the fact that the catalogues are made up with his seedlings much as usual; and surely his establishment is not so inefficient but that some one could be found to whom to entrust a few specimens to England. *F. W., Croydon.*

- - — Your correspondent's remarks on Gladioli (p. 1041) tend to convey the impression that no good seedlings have issued from our establishment. If he will refer to the awards of the Floral Committee of the Royal Horticultural Society, South Kensington, reported in the *Gardeners' Chronicle*, he will find that 14 First-class Certificates have been awarded on the following dates, viz., August 18, 1868; August 17, 1869; August 2 and 16, 1871; and in addition upwards of 30 more at other exhibitions, including four at the Crystal Palace. *James Kelway, The Nurseries, Langport, Somerset.*

A Fruitful Cool Peach-house.—*Apropos* of the scanty crops of Peaches and Nectarines out-of-doors this season, it may be instructive to note what can be done under glass. Outside, skeleton trees, with bare arms, or covered with stunted fruit—the deep scars left by one of the most inclement seasons ever known; inside, in many cases, one of the richest harvests of choice fruits that has been garnered for years. One such has recently been adverted to in your columns, as seen at Kingston Hall. I saw another and a fuller one to-day at Bury St. Edmund's, in the garden of Chas. Beard, Esq. To this gentleman's love of horticulture we are indebted for his patent mode of glazing, and his glass walls. Like all true philosophers, he was anxious to test his theories by the touchstone of experience before offering them to the public. With this object he erected several houses, of various shapes and sizes, for different purposes in his own garden. Some were devoted to fruit, others to plant-growing. All these early houses were, I believe, made of galvanised iron. In one of these original structures, erected nine or ten years ago, and which has not cost a crown for repairs or paint since, is now to be seen one of the finest crops of stone fruit that it is possible to find anywhere. The house is a lean-to, placed against a wall 10 feet high at back, and has a front elevation of 2 feet, wholly of glass. It is 12 feet wide, and 40 long. Trees are trained on a portion of the back wall, for several of them have not reached the top, and on a trellis within 15 or 18 inches of the glass roof. Some of these roof-trees are likewise small, so that a good portion of the upper part of the trellis is not clothed at all. Probably it is not too much to affirm that one-sixth of the entire area of the roof and wall are uncovered. Notwithstanding this curtailment of fruit-bearing space, the quantity of fruit now ripening in this modest-looking house, which could be erected of virtually indestructible materials for something like £60, is astounding. On the roof trellises 38½ dozen Peaches, 27½ dozen Nectarines, and on one Hamburgh Vine 90 bunches of Grapes; on the back wall, &c., 45 dozen Apricots, Plums, &c., several of which have been gathered. Independent of the Grapes, over 100 dozen of stone fruit from a cool Peach-house, that is secured from all the ills of such a winter and spring as the past by the aid of these roofs alone, speaks volumes for their efficiency. Neither are these small or indifferent fruits; on the contrary, the majority are of fair size and marvellously rich in colouring. Nectarines are glowing with scarlet, almost all round alike, and the Peaches are painted with the most exquisite tints. [We can confirm this. EDS.] Even Galande and Noblesse Peaches are suffused with softest pinky feathering, on a rich creamy ground, which evidences to the very highest lusciousness of flavour. The entire house and the trees are flooded with light, and the result is seen in the unusual vividness of colouring, and tasted in the quality of the fruit. What surprised me most, however, was to learn that this house had had no heat, none whatever during the late most severe winter and trying spring, and yet how often we hear that these metallic houses are colder than others. I have already pointed out, in your columns, that Beard's patent rafter is probably as warm, or warmer, than a wooden one of equal, or stronger scantling. The conductive power of the metal is cut short in the middle, or rather close to the outside, by the intervention of one thickness of glass and two of stout felt between the ┳ rafter and the upper covering bar; this arrests conduction, and effectually baulks the egress of heat from, or the ingress of cold to the house. It is is impossible, therefore, that the metallic rafter can facilitate the loss of heat; and as the glass used is stout, 26 oz. to the foot, these houses are warm as the majority of wooden ones. Such was my opinion from the beginning, and certainly a fruit crop such as now fills this house, grown without aid from artificial warmth in such a winter and spring as the past, completely confirms it. These metallic houses are not exceptionally cold; the glass is warm as any other glass of equal thickness, and neither heat nor cold can pass directly through the metallic rafters by conduction. Certainly it is most satisfactory to find that this splendid crop was produced without any artificial heat. I ought to add that Mr. Beard, who is a keen gardener as well as a skilful mechanician, and an ardent experimental philosopher, has a theory about his success. He is a great advocate for skilful ventilation; and because it ought to be skilful he has turned his attention to mechanical contrivances for placing it under immediate and facile control. His principle is to ventilate at the lowest and the highest points—the ground line and the apex—but never, unless during fine genial summer weather, to open the two sets of ventilators together. It matters less, he thinks, than is generally supposed which ventilator is opened; but till the end of May in cool fruit-houses, never open both at the same time. Draughts are ruin to fruit trees in bloom, or the tender leaves of stone fruits in the early spring. During ungenial spring weather don't trouble much about air at all. Should the sun run up the temperature a good many degrees it matters little. If forced by bright weather to admit air, give but little, and beware of the wind rushing in or down upon your trees. There is probably a good deal more in this than might appear at first sight. This much is at least certain, Mr. Beard has achieved a great success, and as a faithful chronicler I could hardly do less than reveal, for the thoughtful consideration of your readers, the chief causes of that success, as they appear to him. I am authorised to say, in conclusion, that the house may be seen by any respectable persons interested in horticulture. But those who intend to visit this rich little shrine of Pomona must do it quickly, as the fruit is ripening fast, and the altar will speedily be stripped of its richest offerings. *D. T. Fish.*

Trial of Hot-water Boilers.—While thanking you for kindly inserting our letter, and apologising for troubling you again so soon, we venture to express a hope that cause will not be given us to say more upon this subject, at least until the proposed trial has been put into some definite form. We do not fail fully to appreciate the complimentary observations of Mr. D. T. Fish upon our former suggestions, and duly reciprocate his sentiments, that "the established boiler makers have had but scant justice in recent controversies." However, we have now hope for better things. With respect to his proposal that the period of trial named by us should be curtailed, we would respectfully remark, that in matters purely floricultural we should hesitate before differing from him, but on the subject of heating by hot water, our friend must generously excuse us if we speak with less reserve. Now, without entering upon a host of explanations, which would look like lecturing others, we simply assert, and are prepared to show, that a boiler (especially those of the horizontal form) rarely exhibits its real capabilities during the first day or two of its operations, hence the period named by us should at any rate form the *minimum*; and if any alteration be made, it would be better to prolong rather than shorten the time. Again, Mr. Fish repudiates the extension of trial to system B upon the ground that the whole of the water is driven "by caloric alone," and that we "thus dispense with the aid of gravity." This one sentence clearly indicates how little our theorists understand the matter, because practically the "aid of gravity" is much more depended upon in system B than in A, but to what extent it is one of the objects of the trial to ascertain, as upon this point hinges to a great degree the vital question of a deep, a shallow stokehole, or their entire abolition. Respecting the trial being carried out with the present piping in the arcades of the Royal Horticultural Society, we see several objections to this, and it will be time enough to enter into that matter when the subject is fairly set on foot by the properly constituted authorities. Finally, we observe that if ever what is worth doing at all is worth doing well, surely this is one of those subjects to which the adage applies. In order to frame a more comprehensive set of laws than those published for the proposed Paris trial of 1869-70, it is to be hoped, after a general committee is properly constituted, and a finance committee and a committee of organisation elected, one of their first acts will be to receive evidence and suggestions from such practical manufacturers as are willing to compete, and so collect the best materials wherewith to form the basis of the rules by which the trial is to be governed. *J. Weeks & Co., King's Road, Chelsea.*

Fertilisation of Leschenaultia formosa—It was Darwin who first pointed out that self-fertilisation was injurious in the long run, and this important fact we continually see confirmed by weighty evidence, not in the vegetable kingdom alone, but also in the animal world. I happened the other day to examine rather closely certain flowers of that somewhat uncommon greenhouse plant, Leschenaultia formosa, and was agreeably surprised to find it furnished with everything needed in order to insure the most perfect fertilisation of the stigma by pollen from its own flower, or, to speak more correctly, every provision is made for the pollen to become located in the stigmatic cavity of the style, although the production of perfect seed is not at all common by this plant,—a fact rather surprising to a superficial observer, since the most perfect arrangements are made for the pollen to become not only deposited, as I said before, but retained there very effectually by the peculiar construction of the stigma itself. In order to make myself fully understood a few figures will be necessary, and it will be as well to state at the commencement of my description that the pollen is shed by the anthers before the expansion of the flower, as is the case with many plants, those belonging to the Leguminosæ more especially. When young, or in the unexpanded bud, the style is shorter than the five stamens, the anthers of which slightly cohere by their margins at this stage of their development, as is the case also in Composite plants. At this time the mouth or stigmatic cavity of the style is open, as at 1, fig. 255, which represents the style after it has forced its way up the tube formed by the coherent anthers, rupturing them until they only cohere by their apices. When the style has lengthened sufficiently to bring the apex, or stigma, in close contiguity with the introse anthers, the latter shed their pollen, and from their peculiar position around the open stigma it is nearly impossible that any can escape, seeing that the anthers form a close basket, so to speak, round the apex of the style, and the whole being closely enveloped by the, as yet, unexpanded flowers. After the pollen is shed from the anthers the flowers expand, and the style elongates still more, but the mouth of the 2-lipped stigma becomes firmly closed, as shown at 2, but in every flower I examined (35) I found pollen located in these closed, box-like stigmas, as at 3, which shows one partly opened by force. The flowers themselves are irregular and tubular, the upper three lobes of the corolla being slightly reflexed, the two lower, which form the keel, are projected at a right line with the tube, and the style and stigma lie on these after the full expansion of the flowers. The lower portion of the stigma is bearded, as shown in the figure (2, 3), and immediately above the hairy portion it is slightly glutinous. Now, looking at the above-mentioned facts, one is led to inquire how it is that a plant like the present—the flowers of which are invariably fertilised with their own pollen—comes to be comparatively barren. I myself have never seen seed produced, but a well-known plant-grower and horticulturist informs me he has obtained seed from it, but whether naturally or by artificial fertilisation with pollen from other flowers, I am not in a position at present to state with that degree of certainty requisite in inquiries of this description. The question naturally enough arises, Has the plant degenerated and become sterile in consequence of this invariable self-fertilisation? If so, how can we account for the Leguminosæ, most of which are naturally fertilised by pollen from their own flowers, for they—like the plant at present under consideration—in many cases shed their pollen before the corolla expands? Perhaps some of your numerous and intelligent readers can inform us if they have ever gathered perfect seed from Leschenaultia formosa. *F. W. B.* [A very interesting case. EDS.]

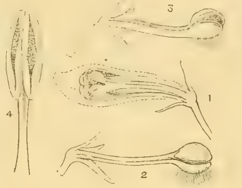

FIG. 255.—LESCHENAULTIA FORMOSA.

Standards, Pyramids, and Bushes, for Orchard-house Culture.—It is now some 12 or 15 years since I commenced growing fruit trees as standards and half-standards in my orchard-houses; their head, formed on the tabular system, is described in the "Orchard House," p. 87. For some five or six years I was much charmed with this mode, but I now find that it is most difficult to keep these tabular trees, some of them 15 years old, in a proper state, even with the most severe pruning, for their heads become too thick, so that much of the fruit is hidden by the foliage from the sun, and is colourless. After all, for large trees there is nothing to compare with the pyramid. Many of my trees are now 9 to 10 feet in height, and the fruit at the bottom of the trees, resting on the pots, is as large as that 8 feet from the ground, and, what is valuable, it is eight or ten days later. Pyramids require skilful culture, but when well done, they are unrivalled. For forcing, bushes are to be recommended, and even for orchard-house culture they do well. My bush trees twenty years old are marvels of health and fertility. *T. R., Sawbridgeworth.*

Hoar Frosts.—I am a very poor physiologist, but "facts are stubborn things." I suffer but little here from hoar-frost, being on the apex of Okeford; but at Rushton my garden was in the valley, close to the river-side, and there hoar-frosts made sad havoc, till I covered my Peach trees with sheets at night. I put them on early (4 P.M.), and took them off at 10 A.M., as quick transition from cold to sudden exposure to the sun's rays is most mischievous. Before I sheeted my trees I grew literally nothing, but after I sheeted my trees, and kept off "Amateur's" friendly dews, I grew in nine years on three Peach trees (Royal George) 4560 Peaches. The valley, for eight or ten weeks off and on, was like Moscow in the Napoleonic winter. I was obliged to cover my Ashleaf Kidneys with a trough, like the roof of a house. Those exposed to the hoar-frosts were cut down and blackened; those kept dry by the troughs felt no effect of the hoar or black frosts. The rays of the sun, following the frosts, do great mischief. At p. 1064, the Editors express my experience, from the words, "if this go on freely," down to the words, "is the exposure to the sun." I call "Amateur's" attention to them. *W. F. Radclyffe.*

Hardy Plants for Table Decoration.—Several of your correspondents during the last three years have been advocating the claims of hardy plants for decorative purposes. It will be to them a pleasure to hear that out of four 1st prizes, which were awarded at the last flower show at the Crystal Palace for table decorations generally, two of those prizes were taken with hardy flowers and Ferns; and this on an occasion when the competitors were numerous, and their flowers generally were good. Your reporter is of opinion that the hardy flowers used were "a comparatively poor selection." I made a note of what the selection was, and how they were grouped. If your reporter will favour us with some other selections, I, for one, shall be much obliged to him. The vase that took the 1st prize for a drawing-room table contained Nymphæa alba, Gypsophila muralis, a large species of Briza, and common male Fern. There were three pairs of vases on the dinner-table to which I allude; one pair had, below, large deep blue Delphinium and Coreopsis lanceolata, while above them were spikes of Pentstemon barbatus, and grasses; a second pair had, below, scarlet Gladiolus and double-flowered Spiræa Filipendula, the prominent flowers in the upper part being Campanula rotundifolia; the third pair consisted of Nymphæa alba and Statice latifolia below, with grasses above. Gypsophila muralis was used freely throughout to give lightness. The foliage was confined to the fronds of the male Fern. The colouring on this table was so soft and delicate, compared with the brilliancy of the scarlet Pelargoniums and yellow Calceolarias on some neighbouring tables, that many were disposed to pass it by as wanting in effect. Others with more patience, though doubtful at first, became admirers of the arrangement when they had looked on it long enough to forget the more gaudy displays close by. I trust the success achieved on this occasion with hardy plants will assist in bringing them into more general requisition for such purposes. *W. T.* [Our reporter's objections apply to the "weedy" look which some of the vases alluded to presented, and which might have been obviated by selecting flowers of stouter habit. Lightness is one thing, but a straggling habit is another. EDS.]

Potatos.—I have dug up all my Potatos ripe, and find more damage than I supposed when I last wrote. I have to thank Mr. Rivers for the Royal Ashleafs and Mr. Fenn for the Lapstones, Gryffe Castle Seedling, and Pebble Whites—of the Lapstone strain; deducting the bad ones they are an excellent crop. Of the Napoleons, Early Uprights, and a friend's seedling, three parts out of four were bad. Of the Yorkshire Hero and Taylor's Yorkshire Hybrid at least one-half are bad. The Potatos are very fine this year. The crop of all, if unmolested, would have been three quarters of a sack per perch. I am, on the whole, quite satisfied. As we dig we plant Cabbages, or sow Early Stone Turnips, so that my ground will not owe me much. The Editors' advice is good. "Get early ripeners, and among them some that will keep till Ashleafs come in." Get these: Rivers' Royal Ashleaf, or Veitch's, or Myatt's Prolific—all good sorts to begin with. Plant Gryffe Castle Seedling, of the class Regents, a white round Potato, of good quality, a good cropper, an early ripener, and with short haulm. Deep-eyed Potatos, and such as have strong haulm, are not early ripeners, and suffer more than short-haulmed varieties in disastrous seasons. Gryffe Castle is not a late keeper, but Royal Ashleaf is, and it will take you to Christmas. Then the Lapstones—best of all Potatos—Pebble White, Hero, and Taylor's Hybrid—all early ripeners, late keepers, and with short or moderate haulm, will serve you till new Potatos come in. I never have a bad Potato for dinner. Do not manure Potatos at planting time, but manure highly for preceding crops: make your ground as light as you can: plant with a stick, as it causes drainage under the roots. The origin of moral evil and the Potato disease alike confound me—I never could discover a Fungus or insect. I think it must arise from electrical rains: it never occurs in dry seasons. Probably the stalk is overcharged with more moisture than it and the leaves can elaborate, and the solanic juices poison the Potatos. I merely guess, and cry, "O dark, dark, dark." *W. F. Radclyffe.* [The whole course of the Potato disease is perfectly well known, but the means of cure or of prevention remain at present mysterious. EDS.]

—— I think Mr. Fenn has done much during the past 20 years towards attaining that desideratum mentioned in your leading article (p. 1064), namely, the "multiplication of good keeping early varieties" of the Potato. Only those who enjoy the friendship of Mr. Fenn know how patiently and persistently he has worked in this direction. At my seed grounds at Bedfont there were lifted, a few days ago, several of Mr. Fenn's seedlings, all of which have now been tested for three years at least; and of these some 12 or 15 were selected and named, subject to a fourth and even fifth year's proof. I dare say something will be heard of these ere long. Mr. Fenn's determination first of all to secure definite results in the way of his seedlings, and then to thoroughly test and fix the desired characteristics, regardless of the time and toil expended on the work, is worthy of the highest commendation. The influx of coarse American varieties during the past few years, which, quite irrespective of their quality, have been sold at fancy prices because they were American varieties, may perhaps have diverted the attention of some from a regard to quality to that of mere quantity; but the disappointment many have already experienced will cause them to welcome anything of approved character that has been carefully tested. When the reaction sets in with a full flow, Mr. Fenn will, I have no doubt, be prepared to offer, in the place of large tubers of coarse texture and indifferent quality, something entirely opposite in character, that it will be both pleasant and profitable to cultivate. *Richard Dean, Ealing, W.*

—— I procured in the spring of last year 1 lb. of Early Rose Potato, which I cut into 60 sets, and the result was 60 lb. of Potatos. I took 1 lb. from them this spring, which I cut into 40 sets, and the result this season is 72 lb. of very fine Potatos; 3 lb. of these were diseased. I purchased this season 1 lb. each of Peerless and Climax, and the result is as follows:—Peerless, 57 sets, produced 86 lb., of which 14 lb. were diseased; Climax, 62 sets, produced 60 lb., 3 lb. being diseased. The tubers of Peerless are very large and heavy, and of the Climax a fair average size. I think the American Potatos have proved less liable to disease than many of our older sorts. I have some Regents, Early Frame, and Paterson's Victoria, which are not worth lifting, while the Early Rose has produced a fine crop from a peck of cut sets. I lifted 10 bush., and found but very few diseased. *John Harland, Gr., Writtle Park.*

—— In the spring of the year I purchased 1 lb. of Bresee's Peerless Potato, and cut them into 46 sets. I planted them February 16, dug them up August 22, and the produce was 135 lb. Many of the tubers weighed 2 lb. They were planted in the ordinary kitchen garden soil, without any additional manure. *Thomas Pender, The Gardens, Sharpham, South Devon.*

Grape-growing at Kingston Hall.—As Mr. Westland only writes for the vindication of truth, I hope before he again gives a description of the heating arrangement at Kingston he will himself explore the chambers under the Vine border, and thus refresh his memory. First we had hot-water pipes under the external border, which I deny, and now we have "an arch turned slightly underneath to admit of ventilators to the chambers." These exist only in Mr. Westland's imagination, as there is neither arch nor ventilator to be found here, as represented by him. Should any one have a wish to explore the chambers under the Vine borders (and I hope some one may turn up to verify the case), I must here say that they cannot get under three of our Vine borders, unless they can get through a pigeon-hole 9 inches by 8. Still this difficulty may be overcome, as I myself, three years ago, had a man-hole cut in the front wall of the early vinery, so that I could get under the border with thermometers for my own personal observation. Into this any approved person may get, and it will illustrate the whole range, as they, I presume, are all alike. Should they find two 4-inch pipes under the external border, or an arch turned slightly with ventilators to the chambers, as represented by Mr. Westland, then, and not till then, will I acknowledge that any misstatement has been made by your two correspondents or myself. I this morning measured the chamber under the border. It is exactly 18 feet from the front wall outward. The two so-called bottom-heat pipes are under the front path, just 3 feet 6 inches inside the house. Any heat that may come from them enters the chambers under the borders through a few pigeon-holes, 9 inches by 8 inches. But it was impossible for them to heat to any extent. Never having seen the original system at work I may not judge; but as Mr. Westland has not denied that beautiful crops were produced by it, my imagination still points to its having something practical about it. Now for my ungracefulness. As your first correspondent mooted this heating question in your columns on June 24 (see p. 810), and Mr. Westland's visit did not take place until July 11 and 12, I leave your readers to judge whether he could have spoken on the subject when here. I think he might have given me the first opportunity of correcting any misstatement, if one had been made by either of your correspondents, through my information, instead of rushing into this unprofitable and unedifying controversy. *William Cruickshank, Kingston, Derby, August* 23. [Enough of this. EDS.]

Veitch's Autumn Giant Cauliflower.—I was surprised to read "J. C. N.'s" remarks, at p. 1041, on the above vegetable. I have at this time about 1000 plants of it in different stages, and have only had occasion to pull up about four or five "rogues" amongst them. Probably the fact of "J. C. N.'s" seed being sown too early may have something to do with the running prematurely, though I myself sowed a pinch of seed in February which turned out well. I am of opinion that when this Cauliflower becomes more known, and seed is a little more plentiful, it will be prized as the best winter Cauliflower we have. I had a small plantation last year, and, from what I saw of them, I should have no hesitation in undertaking to furnish a supply of it until the end of February, with proper successional sowings. Some of ours were taken up and put in the vegetable shed, with a little moist leaf-soil amongst the roots, the largest leaves being cut off, and they kept in good condition for six weeks. Previous to being taken up they stood 10° of frost without injury, and the only protection they had was a few leaves broken over them. Our plants were seen in October and November last year by several good gardeners, who all pronounced them to be the finest autumn Cauliflowers they had ever seen. If sown in the middle of April it will come in well the beginning of October anywhere in the south or south-west. *Gr., Hackwood Park, Basingstoke.*

Water Weeds.—In reply to the inquiry of "W. E." (at p. 1041), in reference to water weeds, I may state that some years ago the lakes in the Botanic Gardens at Manchester were one mass of Anacharis Alsinastrum, Myriophyllum, Chara, Potamogeton, &c. They used to be mown down several times during the season, and laborious work it was to get through the matted mass. So rapid was the growth of the Anacharis, that it was completely the master of the lakes. Ultimately swans were introduced, and they soon proved themselves the best extirpators of these obnoxious weeds; for, in a short space of time they quite cleared the lakes of the Anacharis, &c. If "W. E." has no swans on his lake, I would advise him to try a few couples, and I think he will be pleased to find that swans are useful water scavengers, as well as noble, elegant, and graceful aquatic fowls—an ornament to any sheet of water. To have his lake concreted would be an expensive affair, so the swans are the simplest remedy. *Thomas Campbell, 11, Thurza Street, Chorlton Road, Manchester.*

Poisoning by Fungi.—A week or two ago a case was reported of a family being poisoned by unwholesome Fungi near Falmouth. A woman and two children partook of the Fungi; and, according to the printed statement of T. Stokes Guppy, M.D., of Falmouth, "no symptoms of poisoning occurred till about 14 hours after [an unusually long period], when violent vomiting and purging came on, followed some hours after by delirium in the mother, and convulsions in the children." After lingering for three days, both children, aged respectively 6 and 13, died, but the mother gradually recovered. Dr. Guppy also states that three fowls were killed by some of the Fungi left being thrown out to them, and that a gentleman in the same village, about two weeks previously, threw some suspicious Fungi (probably the same species) to eight chickens, and they all died after partaking of them. Some half-dozen specimens "of the kind eaten by the Rusdens, picked from the same place by one of the family," were kindly forwarded to me from Mr. Guppy (through the Rev. J. E. Jones-Machen) for examination. They proved to be the well-known Champignon (Marasmius Oreades). They differed slightly from the normal type, in being very strongly scented, and having the gills connected with veins. No species of Fungus enjoys a better name than Marasmius Oreades: Mr. Berkeley says it is "the very best of all our Fungi," and that "no species may be used with less fear," yet I have long been disposed to think it occasionally dangerous. I therefore had the six Falmouth specimens cooked at once, and I ate them. I suffered no serious inconvenience at the time; but an hour or two after the usual symptoms of poisoning by Fungi came on, with burning of the throat, irresistible depression of spirits and disordered stomach; but I soon got round. I have no doubt (and this is why I write to you) that Marasmius Oreades worked the mischief. I have several times suffered slightly from it, and once seriously, but at that time I laid the charge against an immediate ally. As the account of the latter incident has been published, and is confirmatory of the sometimes dangerous character of Marasmius Oreades, I cannot do better than repeat it here:—

> "I think I was once poisoned by it (M. urens) in Bedfordshire. I well remember, on my return home late one evening, gathering a quantity of Champignons for supper; as it was dark, I imagine I gathered both species (M. Oreades and M. urens). I did not cook them myself, neither did I examine them after they were taken from the basket, but I noticed at supper time that they were unusually hot, and I thought the old woman who cooked them had put too much pepper in the stew. In about half an hour after partaking of them my head began to ache, my brain to swim, and my throat and stomach to burn, as if in contact with fire. After being ill for some hours, a terrible fit of purging and vomiting set in, which appeared soon to set me to rights, for after a day or so I was no worse for it."

I have since had reason to believe that I did not make a mistake and mix the poisonous species with the edible, but that M. Oreades was the culprit. Half a cupful of sweet oil is a good thing for urgent cases. *Worthington G. Smith.* [As the Champignon is so largely used without ill effects, we can only suppose that the drying to which it is generally subjected dissipates the poisonous properties; at any rate, the case above cited is most important. We should recommend an emetic to be given immediately, and the doctor to be sent for without delay. Oil would merely palliate and dilute, not remove, the poison. EDS.]

The Thinning of Grapes by the Syringe.—It seems strange that any one who has ever grown Grapes should believe this to be practical. Either the healthy flowers of the Grape Vine—and by the word healthy here I mean those that would set if left alone,—can be squirted off forcibly by the syringe or they cannot. If they can, what security have we that a stream of water will thin the Grapes with regularity? If the water removes any, why not too many—all? And who in his senses would risk such a result for the sake of saving a little time in thinning? Could reckless folly further go than incur the expense of building houses, making borders, buying Vines, growing them, and then committing the produce, crop or no crop, to the blind keeping or destroying of a mechanical squirt? Talk about penny wise and pound foolish, such a course as this is not even penny wise, while it risks the loss of hundreds of pounds. But I contend that the syringe, unless applied with a force that would ruin all, will not remove any embryo Grapes that would have set. There are many berries show that don't set; they are defective from the first. Nature seemingly never designed them to hold on. It is her way of thinning, and in some varieties, such as the Canon Hall Muscat and others, it is rather too effective. Sweep a stream from a syringe over these, and off they come. Give the Vine a shake or a tap, and they do likewise. And I might just as logically affirm that I can, or do, thin Grapes by tapping, which, as a rule, always precedes the scissors, as that others can or do thin them with the syringe. I hope I have now drifted into an answer that will satisfy your correspondent, Mr. Boyle, and others, and that we have now heard the last for a long time to come of one of the most preposterous ideas that ever was seriously discussed—that of thinning Grapes with the syringe. Those who think good Grapes not worth the most careful and painstaking thinning had better leave off growing them. They certainly are not worthy to look upon nor to eat good Grapes. I have thinned many and eat but comparatively few, but I trust the time may never come when the glorious bunches that adorn our Vines will be turned over to be washed out anyhow by a stream of water, or given up to a mechanical operation. We have too much of the latter already; Grape thinning demands above all things intelligence and expert manipulation. When these can be put into a dashing spray of water, then may the end of the syringe or the conductors of our squirts be brought upon our bunches of Grapes in flower, or after, for the purpose of thinning them with regularity and skill, not before. *A Practical Hand.*

Jackman's Clematises.—I was not particularly struck with C. magnifica, as shown by Messrs. Jackman & Son at South Kensington on August 2. Perhaps the fact that it was grown in a tub was hostile to its proper development of character. My note of it, made at the time, is as follows :—"Colour, washed-out purple, with flame of pale red along each segment; poor, and not sufficiently distinct;" a criticism both robust and emphatic. I have not grown it, but will give it a trial another season, in the hope I may be converted to a better appreciation of its merits. I was much more struck with C. Alexandræ, which bore pale blue flowers, pretty in hue, and somewhat distinct in character; as shown, a capital companion to C. Jackmanii. Mrs. Bateman was very pretty also; the flowers opened of a pale reddish-claret hue, then changed to pale mauve, which improved in colour as the flowers aged. These two will certainly be added to my collection. The first bloom of C. tunbridgensis has just expanded. The first is small, because the plant is quite young; but I have marked this variety as both free-growing and free-blooming. I don't set myself up as an authority about Clematises. I am deeply interested in them, and I venture to commend those I have tried with marked success. *Richard Dean.*

Parsons' Mignonette.—Observing "D.'s" inquiry, in your issue of last week, in reference to Parsons' Mignonette, I send by sample post specimens of that and of the common kind perpetuated by "self-sowing" during many years, by which you will see that about 57° N. lat., on a rather stiff and cold clay, there is not much gained by growing the new variety. The plants of Parsons' are stronger, doubtless, a result of more liberal treatment, but seem less sweet-scented than the old variety, perhaps from the same cause. As many hundreds throughout the country, from the noble and wealthy, to whom half-crowns are of little significance, down to the humble cottager, whose time and half-crowns are both limited, will have tried this old favourite under its improved (?) form, it would be interesting to know whether any peculiarity of treatment, or special condition of soil, has been found instrumental in bringing it into the condition in which it has undoubtedly been shown by the raiser during last year. *Yellowby.* [There is little appreciable difference in the samples sent. Probably the new variety has not been sufficiently fixed before sending out. It was certainly shown good, and apparently distinct, last year. Eds.]

The Golden Hamburgh Vine.—This season I was surprised at seeing the foliage of this Vine stained with yellow blotches on the green ground; and on examining the bunches of fruit, nearly formed, numbers of the Grapes fell off when shaken about a month before the usual time of their ripening. Had this Vine been alone I should have expected to have found the cause in the roots; but it is in a house in which there are 15 varieties, the foliage of all the others remarkably fine, clean, and without a spot on any of them, many measuring 15 inches across. My gardener has an impression he has heretofore seen an observation in the *Gardeners' Chronicle* on this Vine, that it is not to be relied on for two years together. Perhaps some of your readers may have had the like experience, and would state whether, in such case, there would be any objection to treat it as a stock to bud another sort on at this season, rather than risk the disturbance of the roots of its neighbours by removing this Vine of some years' growth. *Charles Lawrence, The Querns, Cirencester.* [This variety is liable to be affected in the way described. Eds.]

Potato and Artichoke Grafting.—I give Mr. A. Dean full credit for "open confession;" for your readers will remember that, when this subject was first mooted in your columns between two and three years ago, Mr. Dean was amongst the first to try and stifle it; and so thorough was his scepticism at that time, that he even believed if he were to graft a Potato into a cricket-ball he might just as reasonably expect that the produce (if any) would be "leathery," as to expect any change would be effected between the stock and scion of the Potato; nay, he even went further, and disallowed the terms stock and scion in the above sense altogether. Not so now, however, as see p. 837, where he not only pays a compliment to (quoting his own words) "that persevering apostle of the Potato-grafting theory, Mr. R. Fenn, of Woodstock," but openly avows himself a convert to the faith. Well done, Mr. Fenn! If every true apostle can succeed in winning but one disciple from secpticism to true belief, there is cause for thankfulness, inasmuch as it would ultimately lead to the conversion of the whole community. I also hope, and firmly believe that the day is not now far distant, when I shall be able to convert Mr. Dean and other sceptics into the belief that it is possible to effect a perpetual cross between the Jerusalem Artichoke (so called) and the Potato. I have repeated my former experiments, but will reserve any comment for the present, and allow the produce to speak for itself at one of the Royal Horticultural Society's meetings in September; and in the meantime I should like to know what has become of the Chiswick experiment, also whether it has been repeated in any other quarter, and with what results? *Thos. Simpson, Broomfield.* [We shall require much convincing ere we become converts to our correspondent's views. Eds.]

Yucca filamentosa.—Few things are more attractive in the shrubbery at this season of the year than the noble looking spikes or heads of flowers of these plants. Spiræas, &c., are over, and the varied tints of the leaves are not yet ripe, nor are there any berries yet of sufficient colour to be noticeable. This plant, therefore, comes in just when something is wanted; they contrast well with the Hydrangeas, which, by-the-by, are flowering very early this year. Planted in clumps they look well almost anywhere; they are also worthy of a prominent position in the herbaceous garden, or what used to be the flower garden. Even now it may be used with effect in the present style of flower gardening. It is one of those things that would serve to break the monotonous look of many gardens. Good sized plants, if planted in the centres or angles of beds, or as one of the back rows of a ribbon border, would lend to them a noble appearance when in flower, and the leaves of the plant after flowering would look better than many things, or, as is sometimes the case, nothing at all, in winter. Plants, when once established and liberally treated with, will flower every year. Cutting away the dead flower stems and leaves in the autumn, and thinning out the plant so as to leave the strongest sucker which will flower the next year, and one to grow on to prepare for flowering the year after that, will ensure a yearly display; the suckers thinned out will readily grow, and add to the supply of plants. *Henry Mills.* [Single-stemmed plants of the variegated Acer Negundo, introduced amongst evergreens, have a distant effect, very similar to that of flowering plants of Yucca filamentosa. Eds.]

Foreign Correspondence.

Madras : *July* 24.—It may, perhaps, be interesting to some of your readers to hear something about the Neilgherry Hills in a botanical aspect. It is not new ground, and few unknown plants remain undiscovered to science, yet numbers of very rare plants, which have never been introduced to England—plants well worthy of especial attention, and a place in the home gardens, where they would stand out for the greater part, if not the whole, of the year, with a little additional protection during the winter months.

The thermometer at Ootacamund in June stands at about 65° F. in the middle of the day in the shade, and in the cold season there are sharpish frosts in the mornings.

These hills are now reached—that is to say, Coonoor—in 24 hours from Madras, partly by rail and partly by transit. There are steamers almost every week to England from Madras, through the Suez Canal, at reduced freights compared with the old Peninsular and Oriental Company's rates, thanks to competition and M. Lesseps, so that living plants can be sent home much cheaper than formerly, and without any transshipment. I sent a Ward's case a few days since, which cost about £1 15*s.*

The ascent of these hills from the east, or Madras side, commences at a place called Kular, 33 miles from the railway. The new ghaut is 16 miles, being just double in distance to the old one. The old one is still in use for horses and palanquins.

The new ghaut has an easy ascent, the heaviest gradient being about 1 foot in 19. The scenery is very beautiful, the mountains right and left of the valley rising abruptly 5000 to 6000 feet. At the foot of the ghaut about Kular the jungle is chiefly of Bamboo, and it is very feverish and unsafe to rest in during the night. Here I noticed several Orchids, particularly a large mass of Vanda Roxburghii, in full flower, the flowers varying in shades of colour. This variation in the colour tints of the flowers of plants, in Orchids especially, I have frequently noticed, and the cause I have never been able to find a satisfactory reason for.

My first impression was, that these variations in tints depended on the amount of light and shade the flowers happened to be subject to, or that the colouring matter of the bark of the tree upon which the plant was located entered into its circulation, or that the cellular tissue of the plant being of various degrees of thickness in different parts, the chemical distillation, or action set up to produce the colour, was imperfectly performed. Vanda Roxburghii is described in Wight's "Icones," p. 10, vol. iii., and a very meagre description it is. One of its nearest allies, Vanda Bensoni, described in Bot. Mag., tab. 5611, Nov. 1866, has a different habit of growth, and each in its native habitat could never be mistaken for the other. In Vanda Bensoni, as in V. Roxburghii, there is the same want of uniformity in the colour of the flowers. Leaving this subtle question to be settled by some of the philosophers of the city of Hulee, mentioned in "Frazer's Magazine" for June last, I will continue my description.

Cymbidium erectum, very like C. aloifolium, Vanda Wightiana, and a small Luisia, were the Orchids which I observed until I had arrived at about 2500 feet, where Saccolabium paniculatum came to the front, so to speak. From the description of S. rubrum in Wight, I mistook this plant for it, never having seen either before. For beauty, now that I have seen both in flower, I am dubious to which to accord the palm.

The white variety of paniculatum is very delicately marked on the lip with a magenta stripe. It is an exceedingly pretty flower, and the inflorescence very compact. Many of the plants have a single spike; on the other hand, rubrum—at least what appears to me to be a variety of rubrum (Warneri ?)—is sometimes paniculate. In paniculatum the seed vessel is more rounded, with strongly emarginated sutures, whilst those of rubrum are angular, somewhat flat-sided. I am inclined to think that the slight difference in those two plants is caused from the different elevations at which they are found; thus paniculatum, growing at low elevations, is nearly white, increasing in depth of colour at the higher altitude of 6000 feet; Coonoor and Kartary, pale pink or rose; at 8000 feet, deep red, or "rubrum." Of course this is mere conjecture on my part, but the more I see of species approximating to each other in the same parallels of latitude, the more strongly am I impressed that climate is a powerful agent, although slow in its operations, in causing variety in species. The change, I suspect, is too gradual to be perceptible to man.

The age of some Orchids is very great. I have in Saccolabium giganteum counted as many as 60 cicatrices of the fallen leaves. Many other scars, too much obliterated to be counted accurately, were present, but taking one year for each cicatrix, which is much below the mark, the plant might be fairly computed to be above 100 years of age. It is quite cheerful as you mount up to see the wild Rose creeping over the top of the underwood, showing its large white petals—Rosa involucrata; it reminds one of the hedgerows in old England.

Coonoor is the first station on the hills, about 6000 feet above the sea. There is no plateau. The houses are built on the sides of the hills, the church on a prominent position in the centre, thus giving the scenery a very picturesque effect, being surrounded with higher mountains.

The temperature of Coonoor is about 70° in the shade in the middle of the day. The rainfall is small, being shielded from the south-west monsoon by the higher range intervening between it and Ootacamund; the highest point in the whole range—Dodapet, above 9000 feet, being one. The vegetation shows the absence of great moisture; the trees and rocks, instead of being crowded with epiphytical and parasitical plants, were comparatively bare to what they would have been at the same elevation in Burma. The Tree Fern, Alsophila, grows abundantly in the watercourses, and in some the trunk was, I should say, at least 20 feet high, but slender. Rhododendron arboreum is also thickly dispersed throughout these jungles, of great size. It is a glorious plant. The number of Loranths was astonishing. In one morning I counted during my ride no fewer than 10 different species. Wight gives 11, I think; but this I should say was much under the mark. In the vicinity of Coonoor, a handsome shrub grows in abundance, described by Wight as Solanum verbascifolium. The flower is inconspicuous, but the cluster of fine red berries, contrasting with the white leaves of the plant, makes it handsome and showy, well worthy of a place in the garden at home as a decorative bedding-out plant. The same may be said of Solanum Wightii. It is found on rocks, in decayed vegetable soil, its large deep blue flowers rendering it a most noticeable plant. It is as fine a plant as any I met with in those regions. Again, Lysimachia Leschenaultii (a Primula), according to Wight, grows near Coonoor and the higher slopes about Ootacamund. Its flowers are red, the stamens exserted, inflorescence racemose, compact, and large, the protrusion of the stamens giving it a hairy appearance.

Sonerila speciosa I do not recollect seeing in England; here it grows in moist places on the rocks, where there is trickling water. Its flowers are deep scarlet, with orbicular leaves, reddish above, and deep purple below. For its foliage alone it is a good plant. In some of these moist, mossy spots, on stones, its companion is a lovely little gem—an Impatiens. It has a single dark green round leaf, with a scape bearing several rich rose-coloured flowers. It seems to sparkle with the moisture, and would answer for rockeries in conservatories on the edges of artificial pools of water. Mr. Mendel's magnificent ferneries at Manchester immediately occurred to me as a suitable home for this beauty.

Of Balsams there are a great variety: some of the Impatiens might be termed arboreous, from their thick stems and large size.

Aerides Lindleyanum, the finest Orchid on the hills (with the exception of Schrœderi, of which only one plant has as yet ever been found), grows on rocks; it is a free flowerer, and ranges from 5000 to 8000 feet. Those growing at higher elevations have a longer stem with narrower leaves. It is too well known to require further comments from me. The following are some of the Orchids I came across :—Aerides Wightianum, Vanda n. sp. ?, rather pretty and sweetly scented; Bolbophyllum neilgherrienses, Cœlogyne nervosa, C. odoratissima, Dendrobium aureum, Eria reticosa, Saccolabium Rheedi, to me a variety of S. Blumei. There are two more plants I must not forget to mention, and they are, 1st, a very handsome pink Begonia, Begonia dipetala (?), and a little Didymocarpus, with blue and yellow flowers. Most of the plants mentioned here have been sent home by me.

For new species or varieties I should say there was a good field for inquiry amongst Zingibers, Cucumis, Aroids, and Asclepiads, all interesting orders.

I was only a short time at Ootacamund, but visited the Botanical Gardens, for which purpose I went expressly. Mr. Jamieson, from Kew, is in charge.

He deserves great credit for the way in which they are kept. It is a lovely spot, formed in the ravine of one of the surrounding hills by a series of ascending plateaus. There is a glasshouse at the entrance, as ugly an object as can well be conceived or contrived; it intercepts the view and breaks up the entrance space; the sooner it is removed the better, in my opinion. I think botanical garden is a misnomer—horticultural would be more appropriate. The plants are not even named. There is no herbarium and no special collection of valuable indigenous plants for economic purposes, distribution, &c., but as a garden for floriculture and beauty, for its limited size, it equals any I have ever seen. *H. Benson, Colonel, F.L.S.*

Florists' Flowers.

A DRY spring, with a chilly east wind and sunny days predominating, followed by an early summer, as uncongenial as could be imagined, did seem, and was generally believed to be, hostile to the development of ROSES. They were backward, and the early blooms thin, but, notwithstanding, some grand Roses have been shown during the past two months, and especially from the nurseries of Messrs. Paul & Son, at Cheshunt, who have been pre-eminently successful as Rose exhibitors during the present year. Perhaps, of all the high-class features belonging to the Nottingham show, there was not one of more general interest than the twelve magnificent blooms of Roses with which Messrs. Paul & Son won the Rev. S. R. Hole's handsome cup. The Nottingham Rose growers, who can grow, and therefore keenly appreciate beautiful and finely developed Roses, hung about this stand, loud in exuberant praise, with hearts overflowing with admiration.

The new Roses of 1869-70 have been tried at Cheshunt this season, and while some have failed to answer the descriptions given of them, others have proved first-class acquisitions. The following were seen in bloom during the third week in July:—Auguste Neumann, bright red, with a shading of violet-crimson, very fine and full, and a good grower. Candide, clear fleshy white, and in bright weather becoming pure white; a thoroughly good Rose, that needs fine weather to bring out its delicate beauty. Climbing Victor Verdier, very fine, and having a vigorous climbing habit, and so will make a splendid pillar Rose; this originated as a sport at the Cheshunt Nurseries. Comtesse d'Oxford, bright carmine-red, very large, full, and of fine form; this is one of the Victor Verdier race, is of vigorous growth, and of an exquisite glow of colour. Edward Morren, glowing rosy-pink a grand full Rose of great substance, and very double, very vigorous constitution. Ferdinand de Lesseps, violet-purple, with dark shading; a thoroughly first-class Rose, and giving a very acceptable hue of colour. General de Lamartinière, the centre bright crimson-rose, the circumference of the flower bright red; very large, full, and of fair form. Lena Turner, bright pale cerise, a very pretty pale Rose, but not so good as Madame Charles Crapelet, which is in the same way. Louis Van Houtte, scarlet-crimson, finely shaded with darker crimson, a grand full Rose of a splendid hue of colour; the flowers also die off well; growth vigorous. Madame Laurent, brilliant cherry-rose, fine globular form, full, and rich hue of colour; habit vigorous. Madame Liabaud, one of the very best of the white Roses; this opens blush white, changing to pure white as the flowers become fully developed. Mdlle. Eugènie Verdier, a very beautiful Rose, of a bright rosy flesh hue tinted with salmon and white, large deep petals, full, and of fine substance. Marquise de Castellane, clear vivid rose, flowers very large and finely expanded; vigorous habit. Paul Neron, bright rose, flowers very large and full, and measuring when fully expanded 6½ inches in diameter; growth vigorous: this promises to become a very popular Rose. Reine des Blanches, delicate flesh, almost white; a seedling from Victor Verdier, of large size and good form, but so very dwarf in growth as to affect its usefulness. This does not include all the new Hybrid Perpetuals, as some were scarcely in bloom, while others had passed the blooming season. Size, fulness, rich or delicate colouring, and robustness of habit, appeared to characterise a great portion of the foregoing.

Of the newer Hybrid Bourbons, Mdlle. Favart, shining pale rose, with pale dashes distributed over the flower, fine in form, very promising, and of good habit, appeared to be a good addition to this section. Among the Noisettes, Rêve d'Or, deep yellow, to all appearance a climbing pale-coloured Madame Falcot, as the flower is of the build of this favourite Tea-scented Rose, can be highly commended. The new Teas were not in condition, but it was noticeable how fine the old rose and white Rubens had come this season, the flowers large, finely coloured, and very full.

A great number of Seedling Roses, raised from seed sown in April last, were already blooming, though so young. There were patches of seedlings raised from Duke of Edinburgh, General Jacqueminot, Charles Lefebvre, and other fine varieties. Seedlings from Duke of Edinburgh were conspicuous for their robust growth, and in many instances the wood was thickly spined, which is not a characteristic of the parent. As a matter of course the blooms were small, but sufficiently full to enable a rosarian to give some idea of their probable value. There was a very rich crimson seedling of Charles Lefebvre, of the same build of flower, but much deeper in colour, and of a very strong constitution. Another seedling from the same parent had white flowers, and seemed full of promise. A white Charles Lefebvre would be indeed an acquisition. Several seedling Roses were in course of trial, but as they will have another season's growth, it would be premature to speculate on their merits. A seedling from Duke of Edinburgh, very much deeper in colour, and so free in growth as to suggest it would make a good climber, was thought much of.

There are yet the two new varieties raised by Mr. Thomas Laxton, namely Princess Louise and Prince of Wales, which have just been distributed by Messrs. Paul & Son. The former is blush white, large, full, and of fine form, and vigorous in growth; the latter is a greatly improved Lælia in point of colour, being of a glowing pale pink hue, fine in shape, and of full substance. Earl of Eldon, a Tea-scented variety, raised from a Cloth of Gold, has a very vigorous habit, and promises well as an effective pillar Rose.

Messrs. Paul & Son have in their possession an exceedingly novel and very fine Tea-scented Rose named Cheshunt Hybrid, some blooms of which were shown at Nottingham. It was raised from seed of Madame de Tartas, which was grown in the house of Tea Roses in the nursery; and growing by the side of this was a plant of Prince Camille de Rohan. It is thought the former must have been accidentally fertilised with the Hybrid Perpetual, as the flowers are large, deep in build, very full, and of a deep violet-rose colour; it is also highly perfumed. *R. D.*

The Apiary.

IN looking over an old book, on "Insect Transformation," published by Charles Knight in 1830, I read, in the first chapter, of the first hive that was roughly invented, by one who was evidently "an out-of-doors observer of Nature;" and although he had had, at the latter part of his career, his eyes put out to make sport, he had his revenge in a fearful manner upon his friends, as well as his secret enemies, who had assembled one day to rejoice in his humiliation. For he had given in earlier days his would-be friends such a puzzling question about bees, their honey, and the kind of hive they had occupied, that they actually bribed those near and dear to him to tell them the secret, which was to be found out before the wedding breakfast he had prepared; and thus, poor fellow, he lost his wager on that day. Nevertheless, it is written, he did invent a skeleton hive. My object in looking, however, into this book was to try and trace the truth "if all insects came from eggs, as plants do from seeds;" but the question of wasps, aphides, and raising the larvæ by "osmosis," or "feeding," has really taken up so much of your space, that I will beg only for an easier task, and attempt to describe the principles to be observed in constructing the "best beehive," not only for observing the operations and natural history of the honey bee, but it should be the best beehive, in which the bees may be left to their fate under the greatest amount of neglect that the bee-keeper can desire, both in summer and winter. Recalling the able summing up of the writer in the *Quarterly Review*, some 30 years ago, when reviewing "Bee Books and the Beehive," with the advice to country gentlemen to read up the fourth "Georgic" of Virgil on that subject, and to keep to the dear old "cottage straw hive, with its various associations of childhood, Watts' hymns, and contentment," I am almost inclined to fall back into the same tone of mind, and pray, like the country mouse, "Give me again my hollow tree" (a straw hive)—more picturesque than any of those modern patent wooden boxes, or coal shoots. It makes one still more long to recall those young and pleasant days, and wish those reviewers still lived to cheer on, whilst correcting the errors of enthusiasm, the painter or poet, the politician or the naturalist, as writers; but to us older men, who are left, even Darwin's epicurean ideas are not new. I give the following quotation from this old book, from p. 9:—"The ancients, it would appear, had the shrewdness seldom to venture upon illustration of their philosophical romances by particular examples; this was reserved for the more reckless theory builders of our own times." We find Robinet, for example, asserting that, as it was Nature's chief object to make man, she began her "apprentissage" by forming minerals resembling the single organs of the human body, such as the brain, in the fossil (Meandrena cerebriformis, Parkinson). Darwin, again, dreaming that animals arose from a single filament, or threadlet of matter, which, by its efforts to procure nourishment, lengthened out parts of its body into arms and other members, made the oyster grow into arms and legs, and then, when it tried to rise from its native rocks, wings were produced, and it became an insect, and thus soon improved into a bird. The different forms of the bills of birds, whether hooked, spooned, or long, were, he says, gradually acquired by the perpetual endeavours of the creatures to supply their wants. The long-legged waterfowl (Grallatores, Vigors) in this way acquired length of legs sufficient to elevate their bodies above the water. "A proboscis," he says, "of admirable structure has thus been acquired by the bee, the moth, and the humming-bird, for the purpose of plundering the nectaries of flowers." But I must turn to the kind of hive the bee requires to lay its eggs in, to be in its natural condition; but, not to lengthen this communication unduly, I must defer speaking of this matter till another opportunity. *W. A. Munn.*

Garden Memoranda.

VICTORIA PARK.—This is one of the most beautiful of our London Parks, yet one that we hear little about. It consists of about 200 acres, and is situated in the midst of a thickly-populated district in the East End of London. I was greatly astonished on the occasion of a recent visit, for it surpassed my expectations. It is most tastefully laid out, and great credit is due to those who had the arrangement and making of such a public boon as it is. Before it was taken for this purpose, it was evidently a piece of flat ground, but by skilful management it has been converted into a beautifully undulating and well-wooded park; the banks of trees and shrubs, which appear to support beds of the gayest colours, are very luxuriant. The beautiful specimens of Hollies, Thorns, Chestnuts, &c., and, indeed, the general collection of trees, is not to be equalled in any park near London. The lakes are a prominent feature here. They are studded with pretty wooded islands, the most conspicuous trees being Purple Beech, Weeping Willows, Weeping Elms, and many others that make a really effective intermixture, and produce a most refreshing effect on the visitor as he rests on the seats around their banks and under the splendid avenue of trees which occupies one side of the park, on such a hot day as I experienced there, and one on which the shade afforded by Nature is so appreciated; as it was in the fullest sense of the word by the thousands of people that were there.

All kinds of recreation and amusements are to be found. Amongst the most important are the bathing lakes, cricket field, and two large pieces of ground set apart as public gymnasiums. There is accommodation for several thousand bathers, who have the privilege of using the water from 4 o'clock in the morning until 8. This is really a boon and refreshment to those who make use of so advantageous a gift.

Coming to the horticultural department, it must be mentioned that the flower gardening is well done; the beds are prettily formed, and the flowers in them are well arranged. I noticed two most beautiful raised beds having trees in the centre, and around each of which there were some 1200 bedding plants; they were tastefully arranged with Pelargoniums, Ageratums, Verbenas, Coleus, Calceolarias, and a variety of other beautiful plants. Besides the two beds already mentioned, there are numerous others, in variety of form; one especially beautiful, in the shape of the Prince of Wales' feathers, which was surrounded by beds that harmonised with it in colour as well as in form, all backed with the foliage of lovely trees. In almost every part of the park flowers as well as trees form an important feature in its laying out.

Tropical gardening is also carried on, and with very good effect, the undulations, banks, and glens being so suitable for the purpose. I noticed a most beautiful piece of work of this description laid out on a rocky bank; the Echeverias, Dracænas, Yuccas, and the different kinds of Sedums, &c., were in a most thriving condition, and very artistically arranged. The winding walks are a great advantage to this park, as you do not get the whole view at once, but at each turning come on something fresh and lovely in tropical gardening.

The scenery is more varied and charming in this park than I have seen in any other; in some parts you could imagine yourself miles in the country, seeing nothing but lovely trees and flowers—it almost reminds one of the dreams of childhood, or of an imaginary peep into Fairyland—instead of being surrounded by bricks and mortar, and those not of the brightest hue imaginable. One grand evidence of benevolence must be credited to the Baroness Burdett Coutts, in the shape of a massive and handsome drinking fountain, which I believe was erected at a cost of something like £13,000. It is chiefly composed of various kinds of marble and granite; it seems to be appreciated by the public. If such magnificent donations were more common, we might be sure of having our streets as well as our parks much freer from the effects of strong drink. Around this fountain is a well arranged garden, and pieces of water between each large bed of flowers, and at each corner is a splendid planted vase, all tending to make the crystal stream more tempting. I was fortunate enough to meet with Mr. McIntyre, the new superintendent, who appears to be the right man in the right place. A fine park is of little use unless made attractive by the energy and management of its superintendent, who should be thoroughly practical, and well up in his business.

I should advise all who are lovers of gardening to lose no time in visiting this place, for it so much pleased my friends and myself that I could not refrain from giving the public a short description of it. Although living within a few miles I had never before seen it, but I trust my first visit may not be the last. *B. S. W.*

Obituary.

WE greatly regret to see the announcement in the "Revue Horticole" of the death of Professor LECOQ, of Clermont, in his 70th year. M. Lecoq was well known as a geologist and naturalist, who was possessed of a very wide range of knowledge. His *magnum opus* was a work on the geographical distribution of plants, as full of facts and inferences as the treatises of Mr. Darwin. M. Lecoq has left considerable legacies to the Botanic Garden and other institutions of Clermont, and has bequeathed to the town his valuable collections in all branches of Natural History. M. Lecoq was one of the distinguished foreigners who took part in our Botanical Congress in 1866, and charmed us with the fulness of his knowledge and the fluency of his speech.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, AUGUST 19, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg	In.
Portsmouth ..	86.2	54.0	32.2	79.2	57.6	21.6	66.7	0.88
Blackheath ..	89.2	54.0	35 2	79.8	56.8	23.0	67.1	0 69
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	84.1	52 5	31.6	75.0	56.5	18.5	64.1	1.79
Wolverhampton	82.3	49.6	32.7	74.6	54.7	19.9	62.9	0.51
Leicester ..	89 2	52.0	37.2	78 0	57.2	20 8	65.9	0.32
Norwich ..	84.5	50.5	34.0	74 6	56 8	17.8	64.0	0.47
Nottingham ..	87.4	53.2	34.2	78 4	56.1	22.3	65.5	0 94
Sheffield ..	81 5	52 5	29.0	75.8	55.3	20.5	63.3	0.85
Liverpool ..	78.5	53.3	25 2	70.1	56.5	13 6	62.7	0.27
Manchester ..	..	..	..	..	..	..	..	..
Salford	81.1	52.0	29.1	73.7	54.2	19.5	62 2	0 73
Bradford ..	79.7	54.8	24 9	73.5	56.6	16.9	63.3	0.35
Leeds	82.0	55.0	27.0	74.6	56.1	18.5	63.7	0.54
Hull	75.0	50.0	25.0	70 0	55.3	14.7	60.9	0.79
Newcastle ..	68.0	54.0	14.0	66.0	55.5	10.5	59 0	0.48
Edinburgh ..	75.0	47.0	28.0	..	..	..	58.1	0.60
Glasgow ..	71.0	43.2	27.8	..	..	..	56.3	0.37
Dundee.. ..	72.0	52.0	20.0	..	..	..	58.4	0.20
Aberdeen ..	67.9	50.2	17.7	..	..	..	57.5	0.82
Paisley	..	..	..	..	..	..	..	..
Greenock ..	66.0	51.0	15 0	..	..	..	57.0	1.13
Leith	73.3	51.1	22.2	..	..	..	58.3	0.53
Perth	79.0	48.0	31.0	..	..	..	60.3	0.70
Dublin	75.7	45.0	30.7	..	..	..	57.6	1.01

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, AUGUST 23, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
August.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
17. Thurs. .	29.71	74.6	67.2	62 0	66	6.0
18. Friday .	29.31	68.1	64.8	62.2	81	6.1
19. Satur. .	29 68	63.5	56.2	50.4	62	4.0
20. Sunday.	29.92	68.3	61.2	55.5	64	4.9
21. Monday	29 85	66.4	64 2	62.4	87	6.2
22. Tues. .	29 94	68 2	64.2	61.0	78	5.8
23. Wednes	29.78	65.4	62.2	59.6	82	5.6

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
August.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
17. Thurs. .	82 4	54.5	27 9	67.9	+6.8	S.	160	0.11
18. Friday .	72.1	57.7	14.4	62.6	+ 1.6	variable	245	0.58
19. Satur. . .	71.5	54.0	17.5	60.8	— 0.1	variable	330	0.00
20. Sunday.	71.1	50.6	20.5	59.1	— 1.7	S.S.W.	345	0.00
21. Monday	78.7	63.0	15.7	69.1	+ 8.4	SW: N	270	0.01
22. Tues. ..	76.9	52.8	24.1	63.2	+ 2.5	N.E.: S.W.	165	0.00
23. Wednes	72.9	56.1	16 8	62.8	+ 2.2	S.W.	210	0.03

August 17.—Light clouds prevalent during the day. Overcast at night Rain fell from 10 P M. till midnight.
— 18.—Rain fell till 5 A.M., and again at times during the day. Overcast till night; then generally cloudless.
— 19.—Variable till night; then cloudless A fine day.
— 20.—The clouds varied rapidly from time to time. Windy.
— 21.—Generally overcast.
— 22.—Foggy in morning. Generally cloudy till night.
— 23.—Generally cloudy throughout the day. Rain fell heavily about 2 P.M., and thinly at times in the evening.

JAMES GLAISHER.

Miscellaneous.

MR. RUCKER'S ORCHIDS.—The following are some of the prices realised at Stevens' Rooms during the four days' sale of this magnificent collection :—

Masdevallia species, bought by Mr. Rucker for M. elephanticeps, £5 10*s*. ; Cymbidium eburneum, fine plant, £8 10*s*. ; Masdevallia candida, £6 10*s*. ; Saccolabium guttatum, Mr. Rucker's No. 3 variety, £8 ; Epidendrum vitellinum majus, best variety, very fine plant, in flower, £16 10*s*. (Lord Londesborough) ; Odontoglossum triumphans Marshallinum, £7 ; Vanda Denisoniana, fine plant, 14 leaves, £5 ; Cattleya labiata, autumn-flowering variety, the finest specimen in the country, £36 15*s*. (Lord Londesborough) ; Vanda Batemanii, in flower, 22 leaves, £5 10*s*. ; Phalænopsis amabilis, fine specimen, one of the three plants originally imported by Messrs. Rollisson, £8 10*s*. ; Phalænopsis Schilleriana, £6 10*s*. and £4 ; Cattleya devoniana, £15 (Lord Londesborough) ; Colax jugosus, very rare, £8 10*s*. ; Aerides quinquevulnerum, fine plant, in bloom, 20 leaves, £7 ; Agræcum sesquipedale superbum, a fine specimen, £15 15*s*. (Lord Londesborough) ; Oncidium Barkeri, £7 ; Cattleya Mossiæ superba, splendid specimen, £9 ; Dendrobium Wardianum, fine plant, rare, £15 ; Cypripedium lævigatum, fine plant, two strong growths, £8 10*s*. ; Aerides Veitchii, fine specimen, £22 1*s*. (J. Day) ; Aerides Fieldingii, from Borneo, a rare variety, £14 10*s*. (J. Day) ; Cattleya exoniensis, fine plant, £12 12*s*. (Mr. Bockett) ; Epidendrum verrucosum or nemorale, £11 (J. Day) ; Vanda insignis, true, £12 12*s*. (Mr. Bockett) ; Dendrobium Bensoniæ, a very fine variety, in bloom, £5 ; Pleione maculata, £7 ; P. Wallichiana, £5 5*s*. ; P. humilis, £6 6*s*. ; Aerides affine, Loddiges' old variety, £8 10*s*. ; A. virens, Kenrick's variety, fine specimen, £5 15*s*. ; A. Larpentæ, £5 ; A. Lobbii, £5 10*s*. ; A. Fieldingii, a very fine specimen, 30 leaves, £15 (W. Bull) ; A. rubrum, £5 ; A. Schrœderi, fine plant, £6 10*s*. ; Cattleya Reichenheimi, £17 10*s*. (J. Day) ; C. exoniensis, £12 (W. Bull) ; C. labiata var. Sion House, £6 ; C. Schilleriana, magnificent specimen, £19 19*s*. (J. Day) ; C. amethystoglossa, fine specimen, £5 ; C. Leopoldi, £8 10*s*. ; C. superba, £6 10*s*. ; Lælia anceps Dawsoni, £6 ; L. anceps Barkeriana, £8 8*s*. ; L. elegans, a magnificent specimen, £20 (Mr. Hanbury) ; L. elegans Turneri, £7 ; L. elegans Wolstenholmiæ, £5 10*s*. ; Phalænopsis Schilleriana, £5 ; P. grandiflora, fine plant, £5 10*s*. ; P. amabilis, fine plant, £7 10*s*. ; P. grandiflora, nice plant, £7 10*s*. ; Epidendrum vitellinum and vitellinum majus, £6 10*s*. and £5 10*s*., fine specimens, in flower ; Oncidium Rogersii, of which it is said there are only four plants in Europe, a piece of the original plant, £12 ; Cypripedium Harrisianum, £5 10*s*. ; C. Veitchii, £7 and £5, fine plants ; C. villosum, extra fine specimen, £10 (Jackson & Son) ; Vanda tricolor, Mr. Rucker's No. 1 variety, very fine, £6 ; V. Lowii, magnificent specimen, £20 (J. Day) ; V. cœrula, fine plant, £6 10*s*. ; Miltonia candida major, fine plant, £13 13*s*. ; Masdevallia coccinea, £10 10*s*. (W. Bull) ; Odontoglossum nævium majus, £6 10*s*. and £5 15*s*. ; O. pulchellum, fine specimen, £12 10*s*. (J. Day) ; O. Phalænopsis, splendid mass, £7 ; Dendrobium crassinode, £6 6*s*. ; D. Schrœderi, fine plant, true, £12 12*s*. (Lord Londesborough) ; D. thyrsiflorum, £12 ; Cymbidium eburneum, unmatchable specimen, £73 10*s*. (Lord Rendlesham) ; C. Mastersii, fine specimen, first rate variety, showing flower, £6 10*s*. ; Angræcum sesquipedale, fine specimen, £5 5*s*. ; Sobralia macrantha (Woolley's variety, very rare), £5 10*s*. ; Dendrochilum filiforme, magnificent specimen, £18 10*s*. ; Saccolabium guttatum, fine plant, £10 10*s*. The principal purchasers were Lord Londesborough, Lord Rendlesham, J. Day, Esq., Tottenham ; R. Hanbury, Esq., the Poles, Ware ; — Bockett, Esq., Clapham ; W. F. Terry, Esq., Fulham ; Rev. W. Ellis, Hoddesdon ; Mr. B. S. Williams, Mr. W. Bull, Messrs. Jackson & Son, &c.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THOSE showy mid-winter decorative plants, *Poinsettias*, than which for that season there is nothing more attractive, should now in all instances receive their final shift. The summer or autumn-struck cuttings need not be put into large pots ; indeed, those that were struck late, and are about 6 or 8 inches in height, will furnish fine large bracts in 48-sized pots only. Small thrifty plants of *Euphorbia jacquiniæflora* may also receive another moderate shift. Both of these subjects delight in having their leaves frequently syringed with fresh water. Conservatories and show-houses will now require a considerable amount of attention in the matter of supplying a constant succession of flowering plants, and in regulating the growth of Creepers, &c. *Gesneras* of the zebrina and cinnabarina type must now be pushed along quickly. Small shifts only are advisable, and these into a compost of two parts of coarse fibrous peat, one of fibrous loam, and a good sprinkling of leaf-mould. Drain the pots effectually, and pot the plants firmly. Also continue to shift on *Petunias*, *Heliotropes*, and *Zonal* and *Scented-leaved Pelargoniums*. Tie up neatly *Chorozemas*, *Hoveas*, *Stephanotis*, &c., and so expose the wood of each that it may become well-ripened in due season. Give manure-water freely to Italian Tuberoses—*Polianthes tuberosa*—now that they are flowering, and giving off their delicate but delightful fragrance. Carefully remove all old flowers from *Leschenaultias*, and look sharply after mildew both on these and on *Gompholobiums*, *Boronias*, *Heaths*, &c., as it is very likely to establish itself quickly at this season, especially amidst such alternations of temperature as we have experienced during the last few days. Thin out young seedling plants of *Mignonette* to five, seven, or nine plants in each pot. It is injudicious to leave them too thickly in pots of any size. Continue to maintain a moist warm temperature in stoves proper, as previously suggested. Endeavour, by affording as much air as possible, in conjunction with the maintenance of a sufficiently high temperature, to insure to all *Orchids* a suitable ripening period, for without this, whether the plants possess pseudobulbs or not, there will be but little hopes of attaining success in the flowering season. I have lately referred to the fact that red spider at this season readily attacks *Fuchsias*, which are flowering freely, also *Clianthuses*, *Acacias*, *Tacsonias*, &c. ; therefore apply the syringe vigorously amongst them occasionally.

FORCING HOUSES.

During dull cold days, such as are often experienced for short periods during weather fluctuations at this season, it will be necessary to apply brisk fire-heat to all *Vineries* containing Muscats in the last stage of ripening ; as it is only by a high temperature that the rich aromatic flavour peculiar to this class is fully brought out. Of course this must be varied by the admission during the early morning—very early if fine and sunny—of fresh sweet air. Though a high temperature is necessary to insure a good "finish" to late thick-skinned Grapes of the Lady Downes type, it is injudicious to push them along faster than is absolutely necessary. See that all *Pines* which have set their fruits, and have commenced swelling, are afforded a liberal supply of wholesome properly prepared liquid manure. At this stage any assistance of the above kind is of much more benefit to them than if applied subsequently, when the fruit is three parts grown. The protection of fruit in *Vineries*, &c., from the ravages of wasps, flies, &c., should be well attended to now. The former are not so numerous this season as usual, but even a few will do much injury by puncturing the berries to their irremediable injury.

HARDY FRUIT GARDEN.

Strawberry plants grown for forcing should, as soon as the pots become tolerably well-filled with roots, be supplied with alternate waterings of liquid manure. Care must be taken, however, to afford them only that which is of very moderate strength, because to incite them too greatly at this season is to risk the formation of fresh leaves, and so to impoverish the crowns. Early *Pears* should be gathered two or three days before ripening, more especially if the sun has much power, as it forces the ripening process too quickly, to the deterioration of the flavour ; but if gathered a day or two sooner, and stored in a cool place, the process is more gentle and the flavour better. Even in the cases of *Peaches* and *Nectarines*, it is better to gather them by anticipation than to leave them until such time as they may be endangered by falling, or by the tender mercy of insects. *Figs* ripening out-of-doors are attacked the most here in Essex, but it is necessary that they should remain upon the trees until fully ripe ; and the only hope of saving any seems to be in employing a few dozens of muslin bags, moving them from those which are ripe and picked on to such as are next in order of ripening, and so on.

HARDY FLOWER GARDEN.

Proceed with all despatch in the matter of propagation. Insure a good strike of desirable varieties of *Verbenas*, following with *Heliotropes*, *Iresine Lindeni*, *Ageratums*, *Pelargoniums*, *Tropæolums*, &c., in rapid succession. Again I recommend the gardener to leave the *Calceolarias* until later on. Remove all flowers from *Dahlias* as soon as they are past their best, as they impoverish the younger blooms coming on. Where an autumn display of *Roses* is of importance, attend to the plants in the matter of removing too exuberant shoots, and encourage those having bloom buds at their apices. In addition to the mulching lately recommended as being a great aid to them, liquid manure of great strength may be afforded with benefit. Proceed with the tacking-in of climbing plants to walls, and fasten such as require it to pillars, &c. Attention must now be given to the selection and purchasing of bulbs for the ensuing spring display. Make the selection at once and give your order, remembering that the old maxim, "first come best served," has a great deal of truth in it. Matters of taste vary so greatly that it would perhaps be superfluous to add anything regarding the varieties, but I may state that where any are required for forcing in pots this should be stated in the order. Single *Hyacinths* of various colours are the most beautiful, take them all-in-all. Of *Tulips* the old double Tournesol is the most showy and generally useful. The dwarf single white *Roman Hyacinth* is a perfect gem when grown three or five in a small pot, and forced into flower at Christmas ; it is, besides, the most fragrant. *Crocuses* should now be planted out permanently when it can be done without unduly interfering with such plants as already exist in beds or borders. Remove, as they continue to form, the side shoots or suckers from all plants of *Violets*.

KITCHEN GARDEN.

The late showers have proved of great assistance to vegetable growers. They have aided in setting a heavy successional crop upon *Kidney Beans*, which had began to jerk off their blooms, as well as afforded an opportunity of transplanting successional crops of *Coleworts*, *Lettuces*, *Endives*, &c., dispensing materially with the thankless work of artificial waterings. Attend to the cutting down of all old flower-stalks upon *Globe Artichokes* ; if not removed they tend greatly to impoverish the base, from which young shoots should now emanate sufficiently strong to maintain the stools in a robust state throughout the trying period of winter. Tie up *Endive* and a further batch of *Lettuces* for early autumn use. Finish transplanting *Leeks*, and sow a small and last sowing of *Turnips* upon a fully exposed situation. Thoroughly thin out the leaves upon fine plants of *Parsley*, transplanted and intended to stand the winter through. By these means firmer leaves will subsequently form, and the check will tend to harden each plant to withstand frost. *W. E.*

Notices to Correspondents.

APHIDÆ ON SPINACH : *C. C.* Sprinkle sifted wood ashes heavily over the bed after a natural or artificial shower, or heavy dew ; be sure to let the ashes remain on the leaves till quite dry ; then cleanse your plants by watering. *Alb. M.*

CUCUMBERS : *J. F.* Your Cucumber leaves are infested by myriads of a minute species of aphis, on which several small yellow larvæ of a Syrphus are feeding. Proper close fumigation with tobacco smoke will certainly destroy them. *I. O. W.*

FUCHSIA : *W. T.* By a light-coloured Fuchsia is meant one of those with pale tube and sepals. Those with scarlet tube and white corolla form a distinct group, and must not be classed with the light-coloured sorts.

GLASS : *W. Taylor.* The patent rolled glass—by which we understand you to mean that which is not clear, but cloudy—is not in favour either with plant or fruit growers. Better shade when necessary than adopt perpetual shade, except for such plants as Ferns or perhaps Camellias.

GRAPES ON TENDRILS : *J. M.* sends us an illustration of this not very unfrequent occurrence, which confirms the opinion that the tendril of the Vine is an abortive flower-stalk.

LATE GRAPES : CHRYSANTHEMUMS : *An Old Subscriber.* It is injudicious to keep your late vinery closed "night and day," as you cannot retard your late Grapes by such means. Give air freely by day, and with moderate freedom by night. As you have, by keeping them close, no doubt induced a somewhat weakly growth, enter upon this fresh phase of air-giving by degrees, so as not to expose them all at once to the searching influences of air from without. We approve of your treatment of Chrysanthemums, and your future intentions regarding taking them up next month. You, doubtless, grow them in this manner to save labour, otherwise it is not the best way, if great success is looked for. They must be grown in pots from the first, if the finest possible blooms are required. Choose a moist, rainy period, towards the middle of the month, to pot them up, and aid them over the check occasioned thereby by frequently sprinkling the surface and by applying manure water to the roots. *W. E.*

NAMES OF PLANTS : *J. W. Smith.* Scolopendrium vulgare laceratum, a variety of one of our common British Ferns.—*R. P., Tooting.* Spiræa bella of Sims (the Comely Spiræa).—*H. D. P., Redditch.* Your plant, found growing in a Clover field, is the common Melilot (Melilotus officinalis). — *J. E. B.* Abelia rupestris,

PEACHES : *T. Wilson.* The beginning of August is the usual period for early outdoor Peaches, but the seasons vary from a week to ten days.

POTATO DISEASE : *Correspondent.* Surely you overlooked the phrase, "the nature of the disease is patent enough." The researches of Berkeley and others have put this beyond dispute, and we certainly did not intend to convey the impression that the cause of the disease was still unknown. We were alluding to the means of prevention or cure, as the whole tenour of our article shows.

PRIMULAS : *Constant Reader.* We cannot tell without seeing them why your rare Alpine Primulas won't grow. Probably the hot, dry season has been too much for them, and the cooler nights and moister skies we now enjoy will be more propitious.

PRIZES AT EXHIBITIONS : *R. B.* We cannot undertake to give lists of all awards made at flower shows.

RUST ON GRAPES : *R. H.* The discoloration of your Grapes seems to be an exaggerated form of rust, which arises generally from sudden chill, or cold draughts of air. The specimens are, however, scarcely sufficient for forming a good opinion. *M. J. B.*

STOVE PLANTS : *J. H.* We cannot, without far more information than your letter conveys, tell why your stove plants drop their flowers without expanding, and show a spindly growth. Probably it is from want of due and sufficiently early ventilation. As, however, you are in the centre of a city, the one may be caused by want of water, the other by want of light. Is there any escape from the flues, or any other appreciable impurities? Has the watering been duly attended to, but without excess?

WATSON'S LAWN SAND : *W. M.* See our advertising columns, or apply to your nurseryman.

COMMUNICATIONS RECEIVED : J. Mc. P.— R. C. E. —A. R. J. D. & S.—J. J. & S.—W. B. S.—North Yorker—F. W. B.——W. E.—D. T. F.

Markets.

COVENT GARDEN,—Aug. 25.

Light supplies and a moderate demand have prevailed during the week in connection with home-grown supplies, but importations continue heavy, in Pears and Plums especially. West India Pines are over for this season ; home-grown ones in rather better request.

FRUIT.

	s. a.	s. d.		s. d.	s. d.
Apples, per ½ sieve ..		to 3 0	Nectarines, per doz.	4 0	to 10 0
Apricots, per dozen	0 6	— 2 0	Oranges, per 100 ..	8 0	—12 0
Grapes, per lb. ..	1 6	— 6 0	Peaches, per doz. ..	6 0	—12 0
Lemons, per 100 ..	8 0	—12 0	Pears, per dozen ..	2 0	— 4 0
Melons, each ..	2 0	— 5 0	Pine-apples, per lb.	2 6	— 5 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Beet, per doz. ..	1 0	— 2 0	Lettuces, per score ..	0 9	— 1 6
Cabbages, p. doz. ..	1 0	1 6	Mushrooms, p. pott.	2 0	— 3 0
Carrots, p. bunch ..	0 6	0 8	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	2 0	— 4 0
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, round, per bunch	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Shallots, per lb. ..	0 8	— ..
French Beans, p. lb.	0 4	— 0 6	Spinach, perbushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch ..	0 4	— 0 6
Horse Radish, p. bun.	3 0	to 5 0			

Potatos (good samples), New Round, 5s. to 6s. ; Kidneys, 5s to 7s per cwt.

For Reaping Machines,

APPLY TO

J. AND F. HOWARD, Bedford, or their Agents in any part of the Kingdom. Catalogues free.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application ; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO , Benthall Works, Broseley.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec 17, 1870.

BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on Thames.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents ; the PATENTEE, Gloucester ; or W EASSIE AND CO , who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

SLATE, for Gardening and Agricultural Purposes, &c. GARDEN BOXES, not liable to rot, can be made of any size. Prices rom 16s 6d. [Prices from 35s

MANGERS, easily kept clean, non-absorbent, and not liable to rust.

GARDEN STEPS and PAVING, unsusceptible of vegetation

DUST BINS, clean, take up little space, and do not decay.

CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.

ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S E.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market

Paxton Works, Sheffield Established upwards of 125 years.

Archangel Mats.

J. BLACKBURN AND SONS beg to inform their friends that the First Shipment of NEW MATS has just arrived, and they are of very good quality Price List on application.

Russia Mat Importers, 4 and 5, Wormwood Street, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the SCORCHING RAYS of the SUN.

WOOL NETTING, 2 yards wide and 1s 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide .. .. 1s. 9d. per yard.

Three yards wide .. .. 2s 8d. per yard.

Four yards wide .. .. 3s 6d. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d to 8½d. p yard.

HESSIAN CANVAS, do , do , 54 and 72 inches wide, 6¾d. and 8¾d per yard.

ELISHA T ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E C : and of all Seedsmen in London or the Country.

NOTICE.—Removed from 7, Great Trinity Lane.

Nursery Business.—Partnership or Otherwise.

WANTED IMMEDIATELY, a thoroughly practical Man, capable of investing say £200, and to act as MANAGING PARTNER in a thriving Nursery within an easy distance of London The entire business may be purchased on reasonable terms. Part purchase money may remain —VERITAS, 26, Park Road, Haverstock Hill, London, N.W

WANTED, as HEAD GARDENER, in Sussex, an active, energetic, married Man, without incumbrance, thoroughly experienced in Grape Growing, Plant and Flower Culture, Rotation of Vegetable Crops, and general keeping of a nice place in good order Long character from last place as to ability, honesty and sobriety indispensable Two Under Hands kept. A good cottage.—Letters, stating service, wages required, &c., may be addressed to M. F , Mrs King's, Duke Street, Portland Place, W.

WANTED, a MAN to take Charge of the Propagating and Management of Fruit Trees and Hardy Shrubs.—Address, in own handwriting, stating references and wages required, W. HOOPER, New Wandsworth, London, S.W.

Cheshire.

WANTED, a GARDENER, who thoroughly understands Flower and Kitchen Gardening. No glass Age 25 to 35. State terms and references —Box H.H. 7, Post Office, Manchester.

WANTED, a GARDENER and BAILIFF, who understands Meadow Land and Stock, also Wall Trees and Growing Grapes in Greenhouse. Wife for Dairy and Poultry.—Address, stating full particulars, including last situation and length of service, A. B., Post Office, Pinner.

GROUND WORKMEN.—Mr. AYRES is in IMMEDIATE WANT of steady and experienced Men to act as FOREMEN.—Address with references and terms, W. P. AYRES, Nottingham

FOREMAN and SALESMAN REQUIRED by LUCOMBE, PINCE, AND CO , Exeter Nursery, Exeter. No one who is not acquainted with the Nursery Business, and thoroughly competent to act as Salesman, need apply.

WANTED, an OUTDOOR FOREMAN, who thoroughly understands Fruit Trees, Roses, &c., and to act as Salesman of outdoor Plants.—Apply by letter only, giving references and wages required, to A R L , *Gardeners' Chronicle* Office, W C.

WANTED, an OUTSIDE FOREMAN, who understands Budding and Grafting Fruit Trees and Roses, Propagating Florists' Flowers, and is capable of taking charge of general Nursery Stock. Must be a good Salesman, and have first-class references.—DOWNIE, LAIRD, AND LAING, Nurseries, Forest Hill, S E

WANTED, as NURSERY FOREMAN, in a country Nursery, a good general Man, well up in Fruits, Roses, and with a knowledge of the other Stock generally met with in a good Nursery Above all, he must know how to do his work, and to take the head of the other men employed.—Address, stating full particulars, B S , Post Office, Ashford, Kent.

F. AND A. SMITH have an OPENING for a young MAN as Propagator and Grower of Soft-wooded and Bedding Plants, such as Zonal Geraniums, Hollyhocks, Phloxes, Pentstemons, Verbenas, Dahlias, Bouvardias, &c To an energetic and careful Man the situation will be permanent if otherwise suitable —The Nurseries, Dulwich, S E

WANTED, a PROPAGATOR of Soft-wooded Plants.—A young, active, industrious Florist, of ability and good character, will meet with every facility, and be fairly remunerated. A permanent situation to a suitable person F AND A. SMITH, The Nurseries, West Dulwich, S E.

NURSERY FIREMAN.—E. G. HENDERSON & SON, St John's Wood, N W , REQUIRE a competent MAN to Manage Fires. State age, if married, and reference where last employed

NURSERY CLERK.—JAMES DICKSON & SONS REQUIRE, for their Nurseries, a thoroughly respectable and competent CLERK, accustomed to Correspond, and who has filled a similar situation in a large general Nursery. State age, and all particulars as to experience, salary expected, &c —"Newton" Nurseries, Chester

BARR AND SUGDEN, 12, King Street, Covent Garden, W C , have an OPENING for a respectable, intelligent young MAN, who has just completed his Apprenticeship in a good provincial house. Preference will be given to one who has spent part of his time in a Nursery, or who has been some time employed in a Gentleman's Garden. Salary progressive, commencing at 21s per week.

WANTED, a SHOPMAN, having a thorough knowledge of Garden and Farm Seed Departments. One with some experience in the Cut Flower Trade perferred.—Particulars as to age, salary expected, &c., to DRUMMOND BROTHERS, 52, George Street, Edinburgh.

To the Seed Trade.

WANTED, ONE or TWO SHOPMEN, within a month or two, by W. DRUMMOND & SONS, 58, Dawson Street, Dublin Young Men just out of their Apprenticeship preferred —Apply, stating age, length of service, and giving reference to last employer

Seed Trade.

THE SUBSCRIBERS are in WANT of a thoroughly efficient SHOPMAN, well up in Garden and Farm Seeds ; one having some knowledge of Nursery Stock and able to take short journeys preferred. To a respectable and suitable Man the situation will be permanent and comfortable.—Apply, stating experience and salary expected, to SMITH AND SIMONS, Seed Merchants and Nurserymen, Glasgow.

WANTED, as ASSISTANT SHOPMAN, a young Man, of good address, and possessing a general knowledge of the Seed and Nursery Trade.—EDMUND PHILIP DIXON, Yorkshire Seed Establishment, Hull.

WANT PLACES.—Letters to be Post Paid.

To Gardeners and Bailiffs (Head, Foremen, or Under).

JAMES CARTER AND CO. having many applications for the above, request that those WANTING SITUATIONS will send NAME, ADDRESS, and COPIES of TESTIMONIALS, for ENTRY in their FREE REGISTER. Only those who can send unquestionable references need apply.

Any Lady or Gentleman requiring GARDENERS or BAILIFFS may rely upon J. CARTER & Co adopting the most stringent regulations in reference to testimonials as to ability, honesty, &c.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

£10 WILL BE GIVEN to any person who procures the Advertiser a good FOREMAN'S SITUATION, or charge of a Department in an extensive Establishment. Has lived as Foreman in good places, and can produce the very best of recommendations.—G. N., 7, Edern Terrace, Langsdale Street, Islington, Liverpool.

GARDENER (HEAD).—Age 37, married ; no incumbrance.—Well skilled in all branches of the profession. Good reference —C. M., Flora Cottage, Lion Road, Bexley, Kent.

GARDENER (HEAD). Age 46, married, no incumbrance Near town preferred. Six and a half years' good character —J G., Eydes Hill House, Guildford, Surrey.

GARDENER (HEAD).—Age 29, single ; 14 years' experience in the Cultivation of Stove and Greenhouse Plants, Flower and Kitchen Gardening, &c. Two years' character.—G. H., 2, Britannia Road, Surbiton, S.W.

GARDENER (HEAD).—Age 34, married ; thoroughly understands the profession in all its various branches. No objection to Meadow Land. Good recommendation from last and previous employers.—R. O., Hanworth, Hounslow.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Has had extensive experience in Early and Late Forcing, also the cultivation of Stove and Greenhouse Plants, Kitchen and Flower Gardening. Can be highly recommended. Nine years' character.—W. G., 54, North Street, Edgware Road, London, N.W.

GARDENER (HEAD), where three or more Men are kept.—Age 32, no family ; thoroughly practical in each branch, and has eight years' good character from present and last employers.—S WHITE, Barr & Sugden, 12, King Street, Covent Garden, W.C.

GARDENER (UNDER).—A respectable young Man, with three years' good character.—R. K , Post Office, Hildenboro', near Tonbridge, Kent

GARDENER (UNDER).—Age 18 ; three years' experience in Forcing-houses. Good character —A. V., 31, Lower William Street, St. John's Wood, London, N.W.

GARDENER (SECOND, or SINGLE-HANDED), in a Gentleman's Establishment.—Two years' character from last employer —H A., 2, Osborn Villas, Lee Green, S.E.

GARDENER (SECOND), or where he could improve. —Age 24 ; has been in the Houses 12 months Good character — Z. Y. X., 5, Norwood Terrace, Gipsy Hill, Upper Norwood, S

FOREMAN (WORKING).—Thoroughly practical, and acquainted with the Propagation and after Management of Nursery Stock, both in and outdoor. Good knowledge of Plants, and their value. Well known to most of the principal London Nurserymen Will be disengaged end of September.—T. SMITH, 64, Hill Street, Newry, Ireland

HORTICULTURAL BUILDER and REPAIRER, in a Gentleman's Establishment or Nursery, where the services of a thoroughly useful Man are required. Advertiser is an experienced Gardener. — J. S., 8, Chambers' Terrace, Victoria Road, Stoke Newington, N

IMPROVER, in a Gentleman's Garden or Nursery.—A young Man Will pay a Premium. Can be highly recommended.—G. D., Hanworth Rectory, Hounslow.

BAILIFF.—An experienced married Man, who understands Farming in all its branches, both Heavy and Light ; also Breeding, Buying, and Selling all kinds of Stock. Wife a good Dairy and Poultry Woman. First-class testimonials from late employers —R S , Post Office, East Grinstead, Sussex

TRAVELLER or FOREIGN CORRESPONDENT. —Well acquainted with the English, German and French Seed Trade, and speaks and writes these languages fluently. Has already travelled successfully on the Continent in the Seed Trade. Unexceptionable references.—P. W. Y., 28, Fenelow Road, Warwick Road, Kensington, W.

Seed Trade.

TRAVELLER or SHOPMAN.—Good knowledge of the Trade. Highest testimonials.—L. B., General Post Office, Birmingham.

Seed Trade.

SHOPMAN (UNDER).—Age 19 ; has been in the Wholesale and Retail Trade. Good reference. Town or country —M J , *Gardeners' Chronicle* Office, W.C

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

ITALIAN ALP or LIGURIAN QUEEN BEES.—The autumn importations of these beautiful Bees having now commenced, GEO NEIGHBOUR & SONS are offering QUEENS, warranted bred and fertilised in Italy, at the following low prices:—One Queen, 12*s*; three, 33*s*.; six, 60*s*.

GEO NEIGHBOUR AND SONS, 149, Regent Street, W.; or 127, High Holborn, London, W.C.

TO BE LET, a NURSERY, FLORIST, and SEED BUSINESS, remarkably well placed for business, in a fashionable London suburb. Six thousand feet of Glass.

A. B., 35, Sydenham Park, S.E.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

SALES BY AUCTION.

SALE THIS DAY, AT HALF-PAST TWELVE O'CLOCK.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, August 26, at half-past 12 o'Clock precisely, several consignments of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other Bulbs, just arrived from Holland.

On view the morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, August 29, at half-past 12 o'Clock precisely, several importations of ORCHIDS from the East Indies, South America, and West Indian Islands, comprising fine plants of choice and rare varieties

On view the morning of Sale, and Catalogues had.

Choice Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, August 31, at half-past 12 o'Clock precisely, some choice established ORCHIDS, the property of a Gentleman giving up their culture, comprising—

Sophronites grandiflora
Pleione humilis
„ lagenaria
Cattleya Warneri
„ Mossiæ
Lælia purpurata
Vanda suavis
„ tricolor
Dendrobium Bensoniæ
„ McCarthiæ

&c. &c.

Also an Importation of valuable ORCHIDS, including—

Phalænopsis grandiflora } Fine plants, established on blocks.
„ amabilis }
„ Luddemaniana
Cypripedium lævigatum
Saccolabium giganteum
Saccolabium Harrisonianum
Aerides, species, fine looking plant
Vanda Cathcartii

&c. &c.

On view the morning of Sale, and Catalogues had.

Freehold.—The Vineyard Nurseries, Neithrop,
BANBURY, OXON.

TO BE SOLD, by AUCTION, on SEPTEMBER 25 next (if not previously disposed of), the above, containing Four acres of Land, well stocked with permanent Fruit Trees, situate upon which is a Seven-Roomed Dwelling House, Span-roofed Greenhouse, Two Vineries, and Brick Pits, the whole well heated with hot water; also brick built Piggeries and Coach-house For particulars apply to

Mr C. WILSON, Warwick.

Milcote, near Stratford-on-Avon.
HIGHLY IMPORTANT SALE of the MILCOTE DOWN SHEEP.

W. HUTCHINGS has been honoured with instructions from the Executors of the late J. C. Adkins, Esq., to SELL by AUCTION, at Milcote, near Stratford-on-Avon, on WEDNESDAY, September 13, at 2 o'Clock prompt (Luncheon at 12), the whole of the celebrated FLOCK of MILCOTE DOWNS, comprising 418 superb breeding Ewes and Theaves, 360 very superior Ewe and Wether Lambs, 22 grand symmetrical Shearling Rams, and 24 extraordinary Ram Lambs

The great celebrity of this Flock demands a few words as to its formation With Oxfordshire Downs as a foundation, the late Mr Adkins, for many years, blended occasional strains of the best Cotswold and Hampshire Down blood, and with much judgment and careful selection succeeded in producing a distinct type of Down sheep With great size, grand symmetry, good colour, and hardy constitutions, the Milcote Downs are remarkable for their heavy weight of lean meat and of wool, and for their early development and maturity. The rams will be brought forward in a natural and unforced condition. The Auctioneer can, with great confidence, call attention to this Sale; and can assure Flockmasters that an entire Flock of such high character is seldom offered to Unreserved Public Competition.

Catalogues will be circulated in due course, and may be had of the Auctioneer, 28, Bridge Street, Stratford-on-Avon.

Trains stop at Milcote Station as under:—From Paddington, Oxford, Banbury, Leamington, Warwick, and Birmingham, 8 49 and 11.18. From Paddington, Oxford, Moreton, Evesham, and Worcester, 8 25, 11.0, and 1.15.

Brailes House, Shipston-on-Stour.
IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to announce that he has received instructions from Henry J Sheldon, Esq, of Brailes House, Warwickshire, to fix the FOURTH BIENNIAL SALE of PURE-BRED SHORTHORNS for THURSDAY, September 21, which will consist of about 45 Bulls, Cows, and Heifers, chiefly of Kirklevington and Fawsley blood. The Sire now in service is the 18th Duke of Oxford (25,995), bred at Holker from this justly renowned tribe of Shorthorns.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square; or of Mr. SHELDON, Brailes House, near Shipston-on-Stour.

Ellington, near Kimbolton, Hunts.
VERY IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to announce for SALE by AUCTION, without reserve, on THURSDAY, September 28 next, the extensive and valuable HERD of PURE SHORTHORNS, bred by and the property of Mr. Ladds, of Ellington, which numbers about 100 Head of Bulls, Cows, and Heifers; prominent amongst them will be found several fine specimens from Red Duchess and Princess, bred by Mr Chrisp; Jacintha, by Mr. Beasley; Farewell and Verbena, by Mr Booth, as well as other old and favourite tribes of the Marquis of Exeter, Mr Robinson, and other eminent breeders. First-class Bulls have been used for many years from Farnley Hall, Cobham Park, Revesby Abbey, and latterly, Cambridge Barrington 1st (14,223), bred by the Duke of Devonshire, Wellesley (25,421), from Lord Penrhyn's, and 2d Earl of Barrington, bred by Mr. Sheldon from the same famed line of blood: the two latter are now in service.

Catalogues, with Pedigrees, will shortly be issued, and further particulars given in future advertisements.

London: 13, Euston Square, August 24, 1871.

Upper Tooting.

A CHOICE COLLECTION of STOVE and GREENHOUSE PLANTS, in first-rate condition, the property of a Gentleman leaving the neighbourhood; including Orchids, Gardenias, Allamandas, Dracænas, Stephanotis, Begonias, Ericas, Camellias, very fine Azaleas, Epacrises, Oleanders, Aloes, Fuchsias, &c

MESSRS. HARDING AND DEAN will SELL the above by AUCTION, at the Garden of Park House, Upper Tooting, on TUESDAY, September 5, at 1 o'Clock.

Catalogues of the GARDENER, and at the Auctioneers' Offices, 17, High Street, Clapham, S W.

Shropshire Sheep.
THIRD GREAT SALE in the SMITHFIELD, SHREWSBURY.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, in the Smithfield, Shrewsbury, on TUESDAY NEXT, August 29, at 11 o'Clock to the minute, 140 Pure-bred SHROPSHIRE RAMS, and 300 SHEARLING and OLDER EWES, from the noted flocks of—

W. O. Foster, Esq., of Apley Park, Shifnal.
Tr. H. Matthews, of Montford, Salop.
M. L. Meire, Esq., Eyton-upon-Severn.
Messrs. Morris, Gare, Welshpool.
H. J. Sheldon, Esq, Brailes House.
Mr. Tanner, Frodesley, Salop.
Lord Willoughby de Broke.
Mrs Wadlow.
Mr. Williams.
Mr. W. Yates, Grindle, Shifnal.
Mr E. Lythall.
Mr. S. Ashton.
And other celebrated breeders.

The above will include several Royal Agricultural Society Show Sheep, and amongst the Lots will be found many worthy the attention of the first Ram Breeders.

For Catalogues apply to the Auctioneers, 39, New Street, Birmingham.

Shropshire Sheep.

MESSRS. LYTHALL AND CLARKE have received instructions from Mr. H Matthews, of Montford, for the Sale of about TWENTY highly-descended SHEARLINGS, and a few older RAMS, EIGHTY SHEARLINGS and older EWES, to be held in the Smithfield, Shrewsbury, on TUESDAY NEXT, August 29, at 11 o'Clock.

The MONTFORD FLOCK of SHROPSHIRES was one of the first ever established, having been founded by the ancestors of the present Proprietor upwards of 200 years ago, since which period it has been looked upon by Ram Breeders as one of the most valuable sources from which to obtain sires of pure breeding and uniform character, and Flockmasters have always evinced a strong predilection for the Montford Sheep, having derived great advantage from the purity of their blood, hardihood of constitution, great size, high quality, firm texture of flesh, and heavy class of wool.

39, New Street, Birmingham.

Shropshire Sheep.
ELFORD PARK, TAMWORTH.
MR. MAY'S IMPORTANT ANNUAL SALE of PURE-BRED SHROPSHIRE RAMS and EWES.

MESSRS. LYTHALL AND CLARKE inform the Breeders and Feeders of Blackfaced Sheep that they will SELL by AUCTION, at 2 o'Clock, on TUESDAY, September 5, at Mr. May's, Elford Park (Luncheon at 1 o'Clock), about FORTY First-class RAMS, and ONE HUNDRED large-sized healthy EWES and THEAVES

Elford Park is one mile from the Haselour and Croxall Stations on the Midland, and two miles from Alrewas Station on the South Staffordshire Railway.

An Omnibus will meet the 11.4 A.M. down train, and 12 10 and 12 18 P M trains at Tamworth.

The above are a genuine lot of Shropshire Sheep—pure in blood—very large in size—full of wool and mutton—and very suitable for improving the stamina of a Blackfaced flock, or for crossing with other breeds.

For Catalogues, apply to the Auctioneers, 39, New Street, Birmingham.

Shropshire Sheep.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, at New House, Sutton Maddock, Shifnal, on FRIDAY, September 8 next, at 1 o'Clock punctually (Luncheon at 12), the SUTTON MADDOCK FLOCK, consisting of SIXTY SUPERIOR SHROPSHIRE RAMS, and ONE HUNDRED SHEARLING and STOCK EWES, the property of Mr. Henry Smith.

The Sutton Maddock Flock has attained a reputation second to none among the Shropshires. It has secured the highest honours at the Royal Agricultural Society of England, the Birmingham, Smithfield Club, and numerous other important Shows, where no fewer than 130 prizes in plate, money, cups, and medals, have been awarded to it. The leading Flockmasters have acknowledged its superior merits, and the last three Royal meetings have amply confirmed its value, by the positions obtained by Lord Chesham's and Mrs. Beach's Rams and Ewes.

Conveyances will meet trains at Shifnal and Coalport Stations. An omnibus will also leave Shifnal at 11 30, and return after the Sale.

For Catalogues, apply to the Auctioneers, 39, New Street, Birmingham.

Holly Bank, near Burton-upon Trent.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, on TUESDAY and WEDNESDAY, September 12 and 13 next, the ENTIRE FLOCK of THREE HUNDRED SHROPSHIRE SHEEP, including FORTY RAMS; the HERD of FIFTY HEAD of SHORTHORN CATTLE, several of them being of pure Bates' blood; HORSES, PIGS, IMPLEMENTS, POULTRY, CHEESE, &c. (the property of Willoughby Wood, Esq., who has let his Home Farms).

Conveyances will meet the Trains at Barton and Walton Station, on the Midland Railway, and at Wichnor Junction, on the South Staffordshire Railway.

ORDER OF SALE.

TUESDAY, September 12, the entire Flock of Sheep.

WEDNESDAY, September 13, Implements, Cattle, Horses, Pigs, Poultry, Cheese, &c.

Luncheon on Tuesday at 11.30; Sale at 1 o'Clock.

Luncheon on Wednesday at 10 30; Sale at 12 o'Clock.

The Rams are of great size, excellent Wool Cutters, and possess plenty of muscle The Ewes are remarkably true in character, with great scale, and very prolific. Among them will be found, in addition to the carefully bred ones belonging to the flock, many purchased at a high price from Messrs. Beach, Baker, Byrd, &c.

The Dairy Stock are remarkably well bred, many having three or four crosses of pure blood.

They are of great size, rich colour, and good milkers.

The Young Stock are well worthy the attention of gentlemen wishing to procure well bred stock.

The Auctioneers can confidently recommend this Sale as a first-rate opportunity to any one desirous of founding a high-class Flock of Shropshires or Shorthorn Herd. As Mr. Wood is giving up his farm, the whole of the lots will be sold without the slightest reserve, and it is seldom a better bred or more useful lot of Sheep and Cattle are disposed of

For Catalogues, apply to the Auctioneers, 30, New Street, Birmingham.

Shropshire Sheep.
The THIRTEENTH GREAT CENTRAL SALE, at BINGLEY HALL, BIRMINGHAM.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, on THURSDAY, September 14 next, at 11 o'Clock punctually, TWO HUNDRED PURE-BRED SHROPSHIRE RAMS, and SIX HUNDRED EWES, from the noted Flocks of

The Right Hon. the Earl of Bradford.
The Right Hon. Lord Wenlock.
The Right Hon. Lord Sudeley.
The Right Hon. Lord Willoughby de Broke.

Mrs. Beach.
W. C. Firmstone, Esq.
Mr. Glover.
W. Lort, Esq.
Mr. Lythall.
Mr. Nock.
Mr S C. Pilgrim.
H. J. Shelden, Esq.
Mr Dodds
Thomas Walker, Esq
C. Stubbs, Esq
Mr. Yates.

And Others.

The above will include Prize Rams and Ewes at the Yorkshire and other important Shows.

Auctioneers' Offices, 39, New Street, Birmingham.

P.S.—Further entries should be sent to the Auctioneers before September 1.

THE LANDS IMPROVEMENT COMPANY.
(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT)
DRAINAGE, RECLAMATION, FARM BUILDINGS, LABOURERS' COTTAGES, TRAMWAYS, RAILWAYS, &c.

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The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

UTILISATION of SEWAGE.—The Company also advances money for the purpose of Works of Sewage Irrigation.

The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

No investigation of title is required.

For Forms and further information, apply to GRANVILLE R. RYDER, Esq., Managing Director, No. 1, Great George Street, Storey's Gate, Westminster, S. W

Agricultural Land Improvements.
DRAINAGE, SEWAGE IRRIGATION, FARM BUILDINGS, LABOURERS' COTTAGES, &c.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY.
(Incorporated by Act of Parliament in 1849.)

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Agricultural Improvements of every kind are executed by the Company, or the outlay thereon repaid to Landowners who prefer carrying out the works by their own agents.

Tenant Farmers may also, by agreement with their Landlords, procure the execution of such Improvements.

The outlay, with all official expenses, may be charged upon the Estate, and paid off by a Rent-charge of about 6 per cent., in 31 years, or at the option of the Landowners in a shorter term.

No investigation of title necessary, and no legal expenses incurred.

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Special arrangements will be made with Boards of Health, Sewer Authorities, and others, for undertaking Works of Sewage Irrigation, together with all Works incidental thereto. The outlay in respect thereof may be repaid either by a sum in gross, or by a terminable yearly payment, discharging in a fixed period the principal amount with interest thereon.

Application to be made to ARTHUR MILMAN, Esq., the Secretary, at the Offices of the Company, 22, Whitehall Place, S.W.

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LIMITED.

Chairman—JOHN HEGAN, Esq.
Agent in the Republic—E. HARRY WOODS, Esq., C.E., Buenos Ayres.
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The Directors offer, on advantageous terms to Settlers, either as Tenants or Purchasers, PLOTS, varying from 80 to 400 ACRES each, of the COMPANY'S LAND, situate on each side of the Central Argentine Railway, from the Port of Rosario to the City of Cordova, the entire length being 246 miles. Towns and Villages are being laid out at various points on the Line, where smaller Plots may be secured for Building purposes.

To secure the best class of Agricultural Settlers and facilitate the Emigration of Families, the Directors are prepared to treat for the Colonisation of Lands within easy reach of the Stations on the Central Argentine Railway, and adapted for immediate cultivation.

Further particulars may be obtained at the Offices of the Company:
London—85, Palmerston Buildings, Bishopsgate Street, E C.;
Buenos Ayres—87, Calle de la Reconquista;
Rosario—Terminus of the Central Argentine Railway;
Where the Surveys of the Land (about 1,000,000 Acres), together with the Plans of the Colonies already established, can be inspected.

GEORGE WOOLCOTT, Secretary.
85, Palmerston Buildings, Bishopsgate Street, London, E.C.

The Agricultural Gazette.

SATURDAY, AUGUST 26, 1871.

IT is said that our countrymen are less careful of SMALL GAINS than people on the Continent, where, so far as Agriculture is concerned, little farmers are obliged to look closely after little things, or the little freehold would soon be mortgaged! Great gains, especially in farming, are made up of small ones aggregated together like the pebbles in a mass of conglomerate; and it is by constant attention to details, picking up pebbles, so to speak, that they are accumulated. The endless and varied details of farming, and the interest attaching to its operations and experiences have made it the subject of observations and of discussions which began with history, and promise to be endless. Most men thirst after agricultural knowledge, and some feel a longing desire for agricultural experience, and a farmer's affection for his art ceases in many cases to have any mixture of mercenary or selfish motive. How long he lingers with the flock, or where labours and tillages are going on! How far he wanders sometimes out of pure affection! What journeys he takes out of mere romance, departing periodically, with cost and pains, to some distant show or sale, like a tame raven that stirs himself in the spring time and hops off, nobody knows where, moved by some curious instinct nobody can define. How earnestly he watches the procedure at distant farms, on spots not so hallowed as his own homestead, but where he hopes to gain a wrinkle! How eagerly he listens when the professor or adept propounds the words of science, or of approved and most recent practice! How instantly he strikes in among neighbours at the market table, or wherever ideas are moving, and likely to be bagged! How he ponders in his mind afterwards by his own fireside, notions old and new—all he has heard or found out rumbling up and down in his head!

Surely something must come of all this

endeavour. Progress—an advance towards something not yet reached—must and does come of it. In agriculture the advance—in knowledge and profit—was always slow, and we believe it always will be; so we cannot afford to lose either in knowledge or effects. The lose of the nine books on agriculture that MAGO the Carthaginian wrote, was a most melancholy thing, which mankind have never ceased to deplore. Nothing can be spared, and nothing should be lost or thrown away, not even the Journal, which may contain nothing but a dish of pseudo-chemico-agricultural twaddle.

This is an age for restorations, and we propose to lay before our readers a leaf of one of the lost books of MAGO, which we are assured related to small economies in agriculture, such as are met with in the poorer districts of England, where agricultural lessons of no small importance may sometimes be learned.

Our earliest experience was on such a spot, far removed from all examples of modern grand farming, with central homestead, factory-like. The portable steam-engines and threshing-machines came to disturb us about the year 1864; till then we had no machinery except turnip-cutters, chaff-knives, and a grindstone. We had nine barns, and as many pairs of flails at work in the winter.

From a bold promontory or "corner" on the downs, with the tableland behind, and the sheepwalk and Furzes around and on the slope, we overlooked our big farm with the eight little homesteads, pictures of comfort for stock; the rich land in the valley, the broad acres of Turnips, the little copses and the "mount," where we grew our hurdles, the trout streams, the distant tower in the village, and a black heath beyond, fringing our domain with as poor and dreary a sand tract as any in Surrey, with Fir-clad sandhills bounding the view, and forming a waste where we have flushed the blackcock, and been astonished by the capercailzie, which the squire introduced but never naturalised.

This pleasant spot is by no means ill-farmed. In the autumn, any time after September 1, the farms around smell of early Turnips, the folds are set, and the sheep bells tinkle, making music as though the country rejoiced in the fold; and no doubt it does, for we have ourselves pitched the finest white Wheat on the waggons—carts we despised; loaded 16 qr. of Oats per acre, and had a hand in Mangel crops of 40 tons; for in return for a great deal of sport in the trout streams and copses work was expected from young hands at busy times.

It was easy to make both ends meet, and something more, on the flats and in the bottoms, and it was easy to lose your small gains within a stone's-throw on the "brows," where the deep marls and loams thinned off to thin chalk or ironstone sand, bearing naturally little but sorrel (sorrow). The neighbourhood is the home of industry and economy of that humbler kind which the wise MAGO informs us is sure to be rewarded.

It always turned out wrong to run a-muck against the old habits and customs; they did not yield easily to new-fangled ideas—an innovator generally burnt his fingers. So when one collected the Mangel leaves and pickled them, the sands cried out, "Plough them in for manure;" and the cattle said, "We won't eat your saur kraut!" When another sowed Swedes before June 1, the mildew observed, "Too soon!" and settled upon the leaves about the end of August. When chemists first went about lecturing and recommending "phosphorous for Turnips," our loams answered, "Not here!" and we learned to gain our practice on the farm and to seek explanations only in the laboratory. In those days little confidence could be placed in chemists and scientific teachers, who generally promised more than they could perform, and were very often too much elated by something they had found out. But we could always rely, then as now, on farmyard manure and the sheepfold. We observed, after breaking up our Furzes by grubbing and ploughing, that Rape and Oats were the best crops; Wheat was peculiarly liable to blight until after some years of high farming. We noticed too that the Whortleberry grew over several miles of country on the left of a certain lane, while on the other side of that boundary, on the same formation of sand, scarcely a plant was to be found. Tares, too, which on Romney Marsh are the best possible preparation for Wheat, even when they have been saved for hay, ruined some of our land for several years, though they were eaten on the ground by sheep. Mangels, sowed afterwards, turned yellow, "stuck up," and refused to grow. Scientific men could not explain these things, and they did not affect to do so, but several pretenders to science pretended to explain them; and in those days—early days for agricultural chemistry—there were more mountebanks and enthusiasts in the agricultural world than there ever will be again perhaps, the word went round, "Another great discovery!" and the answer came back, "Wonderful!"

Caution and observation enabled us to retain those small gains which some people—gaining too fast and innovating too much—converted into losses. Guano was by far the most valuable of the innovations about that time; it started the Turnips, and laid the foundation for corn, that filled the nine barns fuller than they had ever been filled before. We had thought of "centralising" the barns, but, instead of that, they were repaired and rebuilt, and they greatly aid the small economist in cartage of straw, manure, and roots.

When COBBETT called, on his rural rides, and praised our Cabbages, we had not carried out all our economies; we had not then laid open our fields, or formed sheepwalks connecting the downs with distant parts of the farm, and the belt of clay (gault) under the hill—a mere strip, seldom wider than a single field—was, here and there, a little wet. In a light land district draining was not among the economies that were understood; it would have cost a good deal to dig a main drain to carry the water away, and we did not immediately think of digging a hole in the sand below and letting it soak away.

When COBBETT rode by, the selling value of the poorer sands was about £20 an acre. Most of it is now worth four times as much, and some dry knobs, for building on, have sold at £600 an acre. Railways have brought the whole district to the gates of the great metropolis, and many little industries and small gains have now been created in connection with luxuries and the general produce required for a wealthy population.

We propose to give a column on our practice in saving our own Turnip and Mangel seeds, which saved us some pounds a year in seedsmen's bills, besides a considerable gain in the weight and quality of our crops. This is one of those small matters of detail which are important. Mr. HENRY DRUMMOND, the popular member for West Surrey, and a shining light in the agriculture of the county, used, 30 years ago, to end his agricultural addresses with the pregnant words, "Go and buy guano!" Guano has degenerated. Our lives and fortunes change in a moment, and it is not surprising that advice which was good in our youth should be bad after 30 years. Let us conclude with words of more stability, and say, "Go and save your own seeds!" There is nothing in MAGO'S lost work that would bring so much gain and satisfaction to modern farmers as the improvement, by selection, of the plants they cultivate.

—— THE supply of English Wheat at Mark Lane on Monday was small, and sold readily at the previous Monday's rates; at Wednesday's market, prices had a downward tendency.——On Monday, at the Metropolitan Cattle Market, choicest qualities of beasts brought nearly previous prices, and this remark holds good for Thursday's business. Little alteration in sheep and lambs.——For Hops the demand is steady: the plantations are improving.

—— Many of our readers will hear with deep regret of the death of Mr. RICHARD STRATTON, of Burderop, so long known as a successful breeder of Shorthorns, and an eminent agriculturist. We understand that Mr. STRATTON died at Winchester on Tuesday, the 15th inst., after a long illness.

—— When the ordinarily silent AGRICULTURAL LABOURER speaks, it is only fair that we should listen to him. Says a contemporary:—

> "A meeting of some significance was lately held at Leintwardine, a village on the borders of Herefordshire and Shropshire. The audience consisted entirely of agricultural labourers, the chairman, Mr. STRANGE, having himself risen from the rank and file of rural industry. The chairman, in a long address, after describing some of the difficulties of the farm labourer, recommended as the main remedy the division of farms into large, middle, and small sized farms. He said—'Let us for a moment look at a large farm, say 500 acres. Now, out of that take a farm of 200 acres, and one of 100 and two of 50 acres each; there you see would be four families living where only one now lives; or, suppose we took another of 600 acres. Then out of that take one of 300 acres, one of 100, two of 50, and three of 33, you will then have seven families where now but one lives.' And though admitting that the large farmer may employ as many labourers as the aggregate body of smaller farmers, amongst whom it is proposed to divide the large farm, Mr. STRANGE contended that with smaller farms there would be more work for the local tradesmen, and that the landlord, notwithstanding the necessity of keeping up more farmhouses and steadings, 'would not have to build such mansions as are called for on grouped farms.'
>
> "Then a discussion followed, and both the chairman and the labourers concurred in demanding better cottages, some of them wishing to rent their cottages directly from the landlord, and not from the farmers for whom they work.
>
> "But the main burden of the labourer's complaint was lowness of wages. One man 'had a wife and two children to keep on 11*s.* a week.' Another 'thought it only reasonable and right that they should have 15*s.* per week.' A third remarked, 'that if a man worked two or three hours overtime he ought to be paid for it.' One man had a wife and seven children, with wages of 9*s.* a week.
>
> "Then one speaker said—'They ought to be bound to give us wages enough to bring up our children properly;' while a subsequent one said—'We get our masters to lower the rent and raise the wages.' And THOMAS GREEN thought they wanted a labourer's club-room. 'Through competition, if one man did not take the work from a farmer another did, and so, through the men not sticking together, they lost ground gradually. If labourers would only stick to each other, and stick out, they might do much, as the farmer could not do without them.'"

The labourer then perceives that he ought to be better paid and better housed, and concludes that "they ought to be bound to give us wages enough." Since, however, it must be evident to every thinking man that "they" never will be coerced into giving a fixed wage regulated by Act of Parliament, some better suggestion must be offered. A kind of trade union is, indeed, still possible, whereby "if labourers would only stick together and stick out, they might do much." Much harm and much misery might accrue, no doubt, but eventually little good could be effected in this way. Colliers and working mechanics have for years past seen many instances of their employers quickly accumulating gigantic fortunes, and this spectacle, together with the sense of their own united power, raised the question why they should not be better paid, and thus participate in a general prosperity. Such, however, is not the case in the country. Landlords are poor, tenants barely get more than ordinary interest on their capital, and labourers are badly paid. No county class suffers from plethora of wealth, and an increase in labourers' wage would be enough to ruin many an endeavouring tenant. But these labourers urge in their dumb way, "We get our masters to lower the rent and raise the wages." Quite impossible. Competition is too strong a tide to be thus stemmed, and no economist would recommend a compulsory regulation of rent. Two courses appear open to us in this difficult but all-important matter:—First, "co-operation" between labourers and masters, in which mutual help would result in mutual advantage; in which the labourer would rise in prosperity with his master, and in which the well-being of the master would become the aim of every labourer. Secondly, legislation, not direct, but indirect; upon which solution we again have recourse to our excellent contemporary the *Economist*:—

> "Now, the first requisite to any general advance of agricultural wages is a better system of managing landed property. Abrogation of game preservation, long and rational leases to farmers of competent capital, and the due performance by the owners of such durable improvements as properly belong to them, are the main points on which the wages question depends. All these are entirely within the control of the landowners and beyond the control of the farmers. Whether the searching scrutiny to which the law and practice of landowning in England is becoming subject will awaken the landowners to something like a rational sense of their duties and their interests it is difficult to say; but if England is to continue the paradise of landlords they must look about them, and that without loss of time. On the other hand, it should be pressed on the attention of the labouring classes that the reckless way in which they marry very early in life, without having made any kind of provision for a family, has much to do, not only with the pressure which they individually sustain from numerous families, but also with the competition which exists among them for employment."

We have passed over Mr. STRANGE'S suggestion of dividing farms as thoroughly unpractical and impossible, however essential it may appear to him and those who think with him.

—— Although farmers cannot fairly be blamed for the many shortcomings of which our RURAL ECONOMY is guilty, yet it is evident that their inertness as a body allows many injurious customs to continue, and hinder reform. Mr. EVERETT spoke correctly before a recent meeting of the Lavenham Farmers' Club, when he said:—

> "There were no men in this country that were less public men than farmers, or that took less interest in public affairs. The gentlemen present this evening knew very well how difficult it was on any occasion, and with regard to any question, to convene a meeting of farmers in large numbers. There was a good deal of reason in it. The whole tenour of a farmer's life was to make him a quiet, home-loving bird, whom it was difficult to drag out of his cage when once returned to it from his day's labour. He thought that in this matter the farmers had been much to blame. It became every man in a land like England to take some part in public affairs. The want of public spirit, however, seemed to be in some degree

diminishing; and the great progress that had been seen to take place in reference to the formation of Chambers of Agriculture was, he took it, a good augury for the future."

Farmers have paid much attention to the direct improvement of their land and live stock, but there are certain grave questions regarding their position as citizens, and their relations to their dependents, which as yet have not received united action. It is high time that this indifference should be abandoned; and we venture to assert that, if the tenantry of the country, with united and intelligent voice, spoke their convictions regarding tenant-right, leases, security of tenure and capital, game, Poor-law administration, and the obstructive character of our present land-laws, they would not express their opinions in vain.

—— Mr. T. CHANDLER thus writes from Devizes on the STATE of the CROPS in WILTSHIRE, under date of August 16:—

"The harvest is now general, and the farmers are taking advantage of the present glorious weather to gather in their crops with the greatest expedition. By the assistance of the improved machinery for cutting and harvesting, they are enabled to cut the corn before it is too ripe, thereby preventing great waste as well as a deterioration of quality. A fortnight or three weeks of such weather as we are now blest with will leave but little corn unsecured. The journey that I had reserved for my last inspection has been on Salisbury Plain. Getting a lift as far as the 'Bustard,' I took a southerly direction through Elstone to Orcheston, Tilshead, and Lavington. The Wheat on the down land as well as the field is bulky; and, notwithstanding the sheaves are not so heavy as in some years, it may yield a fair crop. It is very much improved in appearance during the last 10 days, and the samples generally are plump, and a good colour. It would be presumptuous at present to hazard a decided opinion as to the yield. This will soon be determined by that unerring standard of truth in such matters, the threshing-machine. The experience of past years may to a great extent serve as a guide as to the probable yield of the present year. In taking a retrospective view of the weather during the past three or four months, and comparing it with corresponding months, in years when the harvests have been very productive, I fear 1871 will not bear a favourable comparison. At the critical period of blossoming and for some little time after, the weather was very cold, boisterous, and unkindly, and although the moisture considerably increased the growth of straw, it was not at all genial for the grain. It is to be hoped the beautiful forcing weather of the last fortnight may to some extent counterbalance the want of heat in June and July. Taking these facts into calculation, I do not think we must expect the yield from the straw to be equal to the average of years. That there is an average amount of straw throughout the country will be generally admitted, but, as in many instances, where the plant of Wheat was thin, the butts of the sheaves are filled with Poppy and Charlock, their appearance is very deceptive. I was sorry to observe, in passing through the district I have named, which is so celebrated for its Barley, that a marked change for the worse in that grain had taken place within the last few days. After rubbing out a great many samples, I unhesitatingly say I did not meet with a really choice one. This remark is not confined to this district only. In the kindly soil from Everleigh through Upavon, &c., the Barley is little better than tailing. Barley is the most deceptive crop that is grown. It may look as promising as the most sanguine could wish till within a few days of its ripening, and turn out badly after all; which I fear will be the case this year. Fields that a fortnight ago indicated a yield of 6 qr. per acre are now more like four, with a quality not so good by 4*s.* or 5*s.* a quarter. The Peas, a good crop, well harvested. Beans much improved. The Turnips, &c., on the hills require rain, where they have not been fortunate enough to meet with showers."

—— Respecting the HARVEST in HAMPSHIRE, the *Hampshire Advertiser* informs us that:—

"The work done in this locality during the early part of the week was something enormous. A large portion of the Wheat crop has been cut and got into shock. Steam threshing has also begun here and there in the open field; the yield is no doubt good, but we have heard from the lips of harvestmen, probably full of the idea that they themselves ought to get a larger dividend, that there are 16 sacks to the acre. We do not believe that the average yield is nearly doubled, but the prospects of the farmer at present are very encouraging. Some of the soldiers from our barracks have been allowed to go out and help to gather in 'the kindly fruits of the earth,' and the good humour with which they return after the day's labour shows that they appreciate the liberty to toil. Barley, in many fields, will be an uneven sample, the recent heavy showers having caused a good deal to be laid. The crop of Oats is a splendid one, and though the disease has shown itself rather strongly amongst the Potatos, a few days' sunshine has arrested it, and we hope no very great amount of mischief has been done."

—— Of the POTATO BLIGHT in IRELAND, *Bell's Weekly Messenger* says:—

"We regret to learn that the Potato blight has broken out with great virulence in Tipperary. It is said that in some places fully nine-tenths of the tubers have rotted already, and the remainder is despaired of. In fact, says a telegram, there has not been such a heavy visitation since the great famine 25 years ago; and, were it not for the favourable condition of cereal crops, the consequences might be as disastrous as then to the peasantry. In the neighbourhood of the Potato land the air is most disagreeable from the oppressive odour caused by the blight."

—— The RECENT HEAT is the subject of a letter in the *Times* from Mr. F. NUNES, Heathfield Lodge, Chiselhurst. In this communication the writer says:—

"The following very high temperature, which we have experienced here from the commencement of the present month, may perhaps prove of interest. The thermometers are standard instruments, the one in the sun being in vacuo, and placed on the grass. It will be seen that on three consecutive days—viz., 11th, 12th, and 13th, the temperature in the shade stood at or above 91°, certainly quite the ideal conception of "harvest weather."

Date.	Max. in Shade.	Max. in Sun.	Date.	Max. in Shade.	Max. in Sun.
Aug. 1	78.1	147.0	Aug. 8	81.0	147.0
,, 2	83.6	150.0	,, 9	85.8	151.5
,, 3	83·7	150.2	,, 10	89.4	148.2
,, 4	72.1	139.3	,, 11	91.7	150.7
,, 5	77.3	148.0	,, 12	91.0	146.5
,, 6	80.3	145.5	,, 13	91.1	147.0
,, 7	81.8	148.0	,, 14	84.6	145.0

—— We hear of several instances of DEATH in the HARVEST FIELD. The intense heat has for some days made it very difficult for labourers to work in the harvest fields in Devon and Cornwall, and on Monday a man named ROGERS expired very suddenly while at work near Kingsbridge. Two cases of sunstroke are reported from Cornwall.

SOVEREIGN (27,538).

FEW bulls have been more successful prize-takers than Mr. Chaloner's SOVEREIGN (27,538), whose portrait we are enabled to place before our readers, through the kindness of his courteous owner. The woodcut (fig. 256) is from a photograph by Mr. Newman, who was employed by Mr. Chancillor, Lockville Street, Dublin. Rather more than a year ago we described SOVEREIGN as he appeared at the Dublin spring show, as follows:—

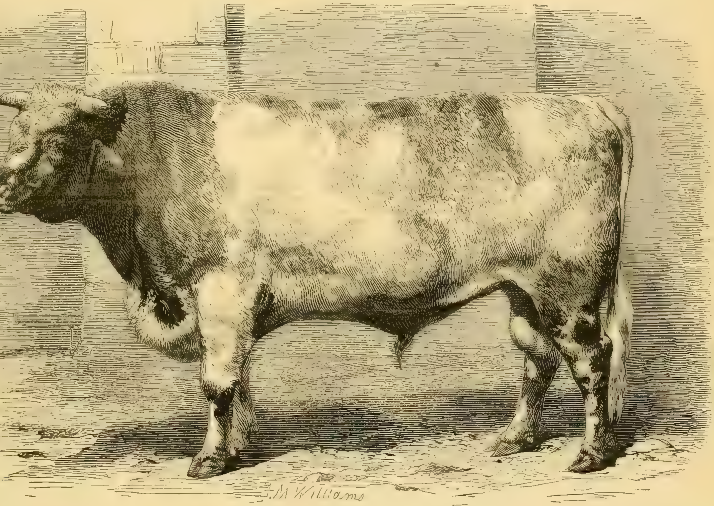

FIG. 256.—SOVEREIGN (27,538).

"A handsome bull of light roan colour, very deep and massive, with rather drooping quarters, and withal an excellent stock-getter. The honours he has won for his well-known owner and breeder have been exceptionally high. On Wednesday, April 20, he was awarded the Towneley or *Irish Farmers' Gazette* Plate, valued at £155, and the Irish Railway Challenge Cup, value £150. The latter prize will be permanently retained at King's Fort, Mr. Chaloner having won it three times consecutively with the same bull, thus removing it from further competition. The Towneley plate is still afloat, owing to BOLIVAR having won it in 1868, thus breaking the continuity of SOVEREIGN'S successes. That this bull's stock are true to their ancestry has been sufficiently proved at King's Fort, and, as an instance, we may mention that of SIR LEOPOLD, the winner of the prize for calves dropped in 1869, at the same show. Although his thighs are a trifle light at present, age will probably supply the deficiency. In general he may be described as a thick-fleshed bull, of rich colour, with much of his sire's style about him, and wonderfully altered since he appeared in the sale ring at King's Fort 12 months since, and was bought in by Mr. Chaloner at 12 gs. The pedigree of such a bull as SOVEREIGN is an interesting study to the breeder. He is now just four years old: he was by Mr. R. Booth's ROYAL SOVEREIGN, and from Mr. Torr's *Village Rose* by BLOOD ROYAL (14,169). The following diagram, which takes up his pedigree immediately after *three consecutive crosses of* Western Comet (689), according to the fashion of the old breeders, will assist the reader in tracing his lineage :—

A Cow, the result of three consecutive crosses of Western Comet (689).	Frederick (1060).
White Fan.	2d Hubback (1425).
Wharfdale Lady.	Pilgrim (4701).
Village Belle.	Sir Leonard (10,827).
Wharfdale Maid.	Crown Prince (10,087).
Village Maid.	Blood Royal (14,169).
Village Rose.	Royal Sovereign (22,802).
Sovereign.	

Royal Sovereign was very full of Buckingham (3239) blood, and traced back directly to that noted sire through his 4th g.dam. Blood Royal, an Aylesby bull, was by Duke of Bolton by Grand Duke (10,284), which at once connects Sovereign, not very remotely, with the famous Bates' Duchesses, Grand Duke being out of *Duchess* 55; Crown Prince and Sir Leonard again take us back to the noted sire Buckingham, through *Charity* and *Cherry Blossom*; so we see in Sovereign an animal whose pedigree contains the best strains of the two rival families of Shorthorns so long associated with the names of Bates and Booth."

Since then, and during the present year, he further signalised himself by securing the Towneley or *Irish Farmers' Gazette* Challenge Plate, the Purdon Challenge Cup, Gold Medal, &c., at the Dublin Spring Show, where he was greatly admired. The *Irish Farmers' Gazette* then notices the competition in question :—

"In the section of bulls, three-year-old and upwards, there were 24 entries, among which were several well-known winners at previous shows. Mr. Chaloner's Sovereign was again exhibited in this section, and, as formerly, took his place at the head of it. Not only did he win the 1st honours as an aged bull, but he also won the Towneley or *Irish Farmers' Gazette* 150 gs. Challenge Plate, as the best animal in the breeding classes of neat cattle, male or female. Sovereign won the plate first as a yearling in 1867, but he dropped it in 1868 to Bolivar, taking at that time, however, at that time the Railway Cup, which he permanently won last year for Mr. Chaloner. The *Farmers' Gazette* Plate, however, came back to him in 1869; and, as he also won it last year, and now for the third time in succession, it, too, would have become a fixture at Kingsfort, were it not that Mr. Chaloner, in his usual generous spirit, has presented it to the Society, to be again competed for under similar conditions as those which have hitherto been attached to it."

OUR LIVE STOCK.

CATTLE.

A Shorthorn and Hereford Herd Book is in course of compilation in New South Wales, by a committee appointed by the Council of the Colonial Agricultural Society. The revision committee consist of Major Lowe and Mr. Alexander Bruce, and the following rules have been constructed with reference to entries :—

1. All stock entered in the English Shorthorn and Hereford Herd Books.
2. All colonial bred cattle descended by an unbroken pure line from those mentioned in No. 1.
3. All stock which can be traced for two generations to pedigree sires and dams.
4. All cattle bred without admixture from stock entered in the Shorthorn or Hereford English Herd Books, but whose pedigree cannot be traced—upon the owner producing a certificate from the breeder, that to his personal knowledge the cattle in question had for three generations at least been bred accordingly.
5. Entrance fees, 2*s.* 6*d.* each.

Several breeders have already furnished contributions to the proposed work.

SHEEP.

The exceedingly improbable story, related by Mr. Thomas Bell in his newly published "History of Improved Shorthorns," relating to Leicester sheep, is not likely to add to the credit of his volume. He introduces us pleasantly to many worthies of the last and previous generation, and among others to Bakewell, Waistell, Maynard, the Cullys, &c.; and the book, so far as we have made its acquaintance, is pleasant to read, and doubtless contains much information on dubious points connected with the early history of Shorthorn cattle. We should like to hear the opinion of Leicester sheep breeders on the following anecdote :—"Mr. Bates often mentioned a fact which showed Mr. Waistell's discernment (?), and it was this. 'Mr. Bakewell,' he said, 'had concealed from the world how he had produced that wonderful improvement in his flock, but if the truth were known he was sure that it would prove he had done it by the use of a black tup.' Seventeen years after Mr. Bates heard Mr. Waistell state this, he named it to a gentleman who had visited Mr. Bakewell in his early career as a breeder, and he said that, 'While staying with Mr. Bakewell I observed that there was one part of his premises he never showed me, and I got up very early one morning, and went and examined those premises, and I there found a black tup, a most extraordinary sheep; but as it was a liberty I had taken, I never named it before to any one.' This he told Mr. Bates, which confirmed what Mr. Waistell had said. Mr. Bates stated that he had learnt from good authority that Mr. Bakewell bought this black tup at Ashbourne Market, in Derbyshire, and that the fact was well known there by those who saw Mr. Bakewell buy the black tup. Mr. Bates stated that he had good authority for saying that of late years black lambs occasionally came from Leicester ewes, though none were ever seen in Mr. Bakewell's day, which is as strong a proof as can be given that animals breed back even to remote ancestors, &c." It is our opinion that Mr. Bakewell's inquisitive friend found a mare's nest; that it is exceedingly unlikely that Mr. Bakewell should have used a black ram, and still more unlikely that, had he done so, there should have been no black lambs dropped in his day. That black lambs are now produced occasionally in Leicester flocks is no proof of the truth of the above "cock-and-bull" story, for black lambs will occur in any breed of sheep. We append a few well-considered sentences from the pen of Mr. Darwin, which may throw light on the occasional occurrence of black lambs :—

"There is reason to believe that sheep in their early domesticated condition were 'brown or dingy black,' but even in the time of David certain flocks were spoken of as white as snow. During the classical period the sheep of Spain are described by several ancient authors as being black, red, or tawny. At the present day, notwithstanding the care which is taken to prevent it, parti-coloured lambs and some entirely black are occasionally dropped by our most highly improved and valued breeds, such as Southdowns. Since the time of the famous Bakewell, Leicester sheep have been bred with the most scrupulous care, yet occasionally greyfaced, or blackspotted, or wholly black lambs appear. This occurs still more frequently with the less improved breeds, such as the Norfolks. As bearing on this tendency in sheep to revert to dark colours, I may state that the Rev. W. D. Fox was informed that seven white Southdown ewes were put to a so-called Spanish ram, which had two small black spots on his sides, and they produced 13 lambs, all perfectly black."

—— A correspondent in the *Field* of last Saturday draws attention to the cruelty practised by farmers in docking lambs. This "friend of dumb animals" says :—

"On questioning farmers why they do it, I am informed :—1. That the fat would all go to the tail. 2. That lambs look bigger afterwards. 3. They would get so dirty. 4. They would suffer more from maggots. 5. That it strengthens the back. Where so many bad reasons are given, a good one is generally wanting.

"In reply to the five objections :—1. There is no more fat on a full-grown sheep's tail than there is on a cat's, but there is a great loss of wool by the operation on a flock of, say, 400 sheep. 2. While I could never see that it made them look bigger, I feel no man who would exercise his power for that purpose ought to enjoy even that privilege. 3. If getting dirty is the reason, the same argument would deprive them of their legs. 4. Are not tails sent to brush off the flies, which are the cause of the maggots? 5. If I were to lose my arm, it would not strengthen my back."

We differ from the writer of the above. First, because we think the reasons given by the farmers on behalf of their custom are conclusive; secondly, we cannot help noticing that the replies to what the farmers urge in extenuation of their practice, indicate ignorance as to what the farmers meant to express, probably the result of defective knowledge upon rural affairs. First, then, regarding the statement "that the fat would all go the tail." Having never heard such a reason given for docking sheep, we are inclined to think the farmer or farmers have been "taken up" wrongly. A short-docked sheep will handle better at the rump, just where the tail is set on, than a long-tailed sheep. Hence, allowing the tail to grow long deprives the carcase of a good handling point. We do not believe there are facts to warrant the statement that the fat would all go to the tail, but rather that the "tail head" would not handle so well. We pass over the second reason as an insufficient one for continuing the practice of docking, and we quite agree with "a friend of dumb animals," that it is inadmissible. The third and fourth reasons are, however, the best that can be given for "docking." Could sheep be kept on natural food, their tails might be left intact, but being for the whole period of their short existence under artificial conditions, subsisting on Turnips, cake, meal, and other purchased foods, they are very apt to "scour," or, in other words, to suffer from diarrhœa. In consequence of this the shepherd is compelled to trim the wool from the posterior portion of sheep so affected, and if he had to contend with long-tailed sheep, his task would be rendered much more difficult. Were we, however, to follow the suggestions of this mistaken friend of dumb animals, and to leave the sheep entirely to Nature, they would speedily be in the most deplorable condition of wet and filth. Unless sheep are kept *clean*—and we hope that this sheep's friend, should these remarks catch his eye, will now understand what is meant by the word—they will in spring and summer, previous to the clipping season, be exceedingly liable to maggots, and, from our own observation, we can state that the tail of a sheep, when allowed to remain intact, cannot be used to brush away flies, but is only capable of movement within exceedingly narrow limits. To leave a flock of sheep undocked would greatly increase the cost of shepherding, and instead of a gain there would be a diminution of wool from the increased amount of trimming that would be necessary, and the damage to other portions of wool from the accumulation of filth.

Considerable interest has been aroused in South Australia regarding the Angora goat. Since every animal which ministers to our wants is of importance and interest, we abstract from the Journal of the Agricultural Society of New South Wales, a letter from Mr. Binns, which affords more information respecting the various breeds and their comparative value than we are likely to obtain from any other source :—

"So many inquiries have been recently made respecting the flock of Angora goats in South Australia, under my management, belonging to Mr. Price Maurice, that I am induced to publish the same information about them. The locality where they are depasturing is Oladdie, a hilly country, abounding in shrubs, bushes, and varieties of feed, 200 miles north of Adelaide, being a sheep station leased from the South Australian Government. The original stock was procured from the progeny of the celebrated flock consigned by Mr. Titus Salt to the late Mr. J. F. Haigh, of Tiatucka, which possessed the purest blood obtainable. An increase has been made to the flock by the importation, early in 1870, of eight pure ewes, and two pure bucks, procured by an agent employed by Mr. A. L. Elder, on behalf of Mr. P. Maurice, who purchased them in Asia Minor, and afterwards reported upon them as follows :—'The 10 goats are from Castambul, which is the most northern district in Asia Minor, situated about 80 miles from the south coast of the Black Sea. The region is mountainous, and abounds with Oak and other shrubs. This is the finest class of Angora goat, and give the best quality of hair. I never saw a finer lot of goats. September is the best time for purchasing. There are what we term three best breeds, but each varying in class somewhat, and yet more in quality. We class them thus: —Castambul—The finest quality, highest lustre; Angora —Next finest, but not so lustrous; Buy Bazar—The lowest in quality and lustre, but the longest in staple and heaviest in fleece. The natives cross the finer qualities of Castambul and Angora with the Buy Bazar bucks, and sometimes *vice versâ*. This is to keep up the size and increase the weight of fleece. The Angora and Buy Bazar districts are not mountainous like Castambul, but flat country, chiefly grass and herb, but lean feeding for goats even. They make this up by growing a little hay now and again, and sometimes a little bran, and at other times Oats. I suppose Mr. Maurice is aware that dry salt must be given once a week, and that pure water is indispensable to their thriving. The natives know nothing about treating sick goats. Disease of the liver prevails in this country; mange is common also. If Mr. Maurice wishes a perfect specimen in a drawing of the finest Angora goat, let him take a photograph of any of the ten sent out, which may arrive in healthy condition.' Head, horns, and ears as they exist in the ten goats sent out, show, without doubt, the real and purest breed of our Angora goats. *J. Binns, Constantinople, May* 3, 1870."

RAM SALES, &c.

The sale of Mr. Horley's flock, founded upwards of 20 years ago, principally upon the far-famed old flock of Mr. Masfen, of Norton Canes, took place on the 8th inst. Although no very high prices were reached, there was a steady demand all through, the 66 rams averaging slightly over £10 10*s.* each. The ram lambs were thin, not having received any artificial food or stimulants, but their blood secured customers for the 60 at from 50*s.* to 105*s.* each. The shearling ewes numbered 100, and were a very level lot. The two best pens made 90*s.* and 105*s.* respectively, the others going at 80*s.*, 75*s.*, down to 70*s.*, the lowest price paid. The general average was about 77*s.* 150 older ewes were offered, and for these the competition was very brisk, 120*s.*, 115*s.*, and 100*s.* per head being paid for the best pens; the general run was 80*s.* to 85*s.*, the average running close to the last-named price. The ewe lambs were matchy, and showed a good deal of breed. They ranged from 60*s.* to 80*s.*, averaging nearly 70*s.* each.

—— On Thursday, the 10th inst., Mr. Sanday, jun., sold his well known flock of Leicester sheep, through the agency of Mr. J. M. Pott. The flock consisted of 13 rams, 65 ewes, 20 shearling ewes, 36 ram lambs, and 35 ewe lambs. Mr. Pott, after an effective speech, offered the shearling rams for sale, with the following result :—Shearling rams : By A Y, dam by M M, g.d. by C N, g.g.d. by Y N, g.g.g.d. by G, g.g.g.g.d. by T, g.g.g.g.g.d. by A—Mr. Mead, 35 gs.; by A Y, dam by H, g.d. bred by Colonel Inge—Mr. Massey, 20 gs.; by A Y, dam by M M, g.d. by X X, g.g.d. bred by Mr. Buckley—Mr. Cranfield, 11 gs.; by A Y, dam by D X, g.d. bred by Colonel Inge—Mr. Cranfield, 12½ gs.; by A Y, dam by S T, g.d. by S C (prize ewe at Salisbury), g.g.d. bred by Mr. Buckley—Mr. Birchnall, 11 gs. Old rams, 3-shear: by Quid, dam by M M, g.d. by X X, g.g.d. by W X, g.g.g.d. by L N (dam of L X)—Mr. Langdale, 36½ gs. 2-shear: by L X, dam by S T, g.d. by C S (prize ewe at Salisbury), g.g.d., bred by Mr. Buckley — Mr. Allen, 10 gs.; by D X, dam M M, g.d. by W X, g.g.d. by No. 3—Mr. Mann, 16 gs.; by L X, dam by H, dam bred by Colonel Inge—Mr. Harrison, 10 gs.; by L X, dam by

M M, g.d. by X X, g.g.d. by G Z, g.g.g.d by A Y (dam of 90-guinea sheep)—Mr. Marshall, Rempstone, 8½ gs. ; by L X, dam by X X, g.d. by G N, g.g.d. by A Y—Mr. Messenger, 10 gs. ; by L X, dam by M M, g.d. by XX, g.d. bred by Mr. Buckley—Mr. Spencer, 9½ gs. Six-shear : By M M, dam by C N, g.d. by Y N, g.g.d. by G—Mr. Cresswell, 32 gs. The remainder of the lots made fair prices.

—— On Aug. 11 the annual gathering of Leicester ram breeders and farmers was held at Mr. Stamper's, Highfield House, Nunnington, North York, where Mr. Boulton, the auctioneer, let the sheep. The highest shearling was taken at £20 5*s*. by Mr. Tinsley, of Malton, the average price being nearly £8 each. The 2-shear sheep brought a strong competition. The prize sheep at the Ryedale Show the previous day let to Mr. Greenwood, of Swarcliffe Hall, for £31 10*s*., and the lot averaged about 10 gs. per head. The aged sheep averaged about £7 per head. The general average throughout the day was over 8 gs. per head, only three sheep being turned back.

—— On Wednesday, the 16th inst., Mr. Wentworth, auctioneer, offered for competition 56 rams, the property of Mr. George Walmsley, Rudston House. The letting began with No. 1 of the shearlings, which realised £8 ; the highest, No. 10, reached £24. Out of 22, four were passed, and the average was £10 5*s*. 4*d*. Of 18 2-shear, 16 were let, the lowest at £6 5*s*., and No. 28 for £26 10*s*., the average being £11 15*s*. Of the 3 and 4-shear, 15 were offered and nine disposed of, the lowest at £6 5*s*., and the highest, No. 41, at £14, average £7 11*s*. 8*d*. ; the mean average of the whole being £9 17*s*. 4*d*., the highest of any ram show in the district.

—— Mr. German, of Measham Lodge, near Ashby-de-la-Zouch, held his annual sale of Shropshire sheep on Wednesday, the 17th inst., when 44 rams and 165 ewes were disposed of. The last three years the sheep from this flock have been sold at the Ashby-de-la-Zouch Smithfield, but from the fact of the spirited determination of the proprietor to make his flock equal to any in the country, and the confidence the public has shown in purchasing his rams on previous occasions, induced him to hold his sale this year at the Measham Field Farm, and we congratulate him on the great success he has achieved. The sale was commenced in a most spirited manner by Mr. John German, of the firm of Davenport, German & Allen, Ashby-de-la-Zouch, commencing with a grand 2-shear ram, which was let to Mr. Rose, Ash, near Derby, at 21 gs.; No. 2, a 3-shear ram, sold to Geo. Moore, Esq., 17 gs.; No. 3 was let to Mr. Geo. Astle, at 17 gs.; No. 4, Mr. W. Princep, 19 gs. ; No. 5, the first shearling, was let to G. Fulton Esq., of Shardlow, 21 gs.; this sheep was highly commended at the Royal Agricultural Society, Wolverhumpton, and took 1st prize at Leicester Agricultural Show, at Leicester. No. 6, Mr. Orme, 14 gs.; No. 7, Mr. Singlehurst, Kingstone, 17 gs.; No. 8, Geo. Moore, Esq., 18 gs. ; No. 9, Mr. Sale, 10 gs.; No. 10, Mr. Barber, Bestwood Park, 9 gs.; No. 11, Mr. J. W. Fanx, 12 gs.; No. 12, Mr. Singlehurst, 14 gs.; No. 13, Mr. Booth, 16 gs. ; No. 14, Mr. Gardner, 21 gs. ; No. 15, Mr. Everard, Narborough, 14 gs. ; No. 16, Mr. Sale, 8½ gs. ; No. 17, Mr. Fowler, 11 gs. ; No. 18, Mr. G. Sale, 7½ gs. ; No. 19, Mr. Oakey, Packington, 13 gs. ; No. 20, Mr. Hatchett, Lockington, 14 gs. ; No. 21, Mr. Edge, Stretton, 23 gs. ; No. 22, Mr. Alcock, Burbage, 18 gs. ; No. 23, Mr. Webster, 8 gs. ; No. 24, Mr. Garner, Willesley, 16 gs. ; No. 25, Mr. Henson, Burton Lodge, 13 gs. ; No. 26, Mr. Geo. Dewes, Willesley, 15 gs. ; No. 27, Mr. Sale, sen., 8 gs. ; No. 28, Mr. Startin, 8 gs. ; No. 29, Mr. Clare, 8 gs. ; No. 30, Mr. H. E. Goodall, 16 gs. ; No. 31, Mr. Smith, Rangemoor, 17 gs. ; No. 32, Mr. Ratcliff, 11 gs. ; No. 33, Mr. Thirlby, Packington, 9 gs. ; No. 34, Mr. T. Ratcliff, 10 gs. ; No. 35, Mr. Booth, Tamhorn, Stafford, 21 gs. ; No. 36, Mr. Wood, Clifton, 18 gs. ; No. 37, Mr. Eaton, Derby, 10 gs. ; No. 38, Mr. F. Walker, 7½ gs. ; No. 39, Mr. John Thompson, 10 gs. ; No. 40, Mr. Lilley, Swepstone, 9 gs. ; No. 41, Mr. Barber, 8 gs. ; No. 42, Mr. W. Bali, 6½ gs. ; No. 43, Mr. Booth, Tamhorn, 12 gs. ; No. 44, Mr. Princep, 10 gs. ; the average price of the rams being over £15 each. The competition for the ewes was most spirited, prices ranging from 60*s*. to 102*s*. 6*d*. per head, or an average of 75*s*. ; the purchasers were Mr. W. H. Clare, Mr. Savidge, Mr. Fulton, Mr. Barber, Mr. G. F. Brown, Mr. Alcock Mr. Edge, and Mr. Fowler.

—— Mr. Edmund Olding's annual ram sale took place on Wednesday, at his farm, Court House, Lower Woodford. These rams were selected from the improved Hampshire Down sheep, descended from the well-known flock which was brought to great perfection by Mr. Olding during the time he resided at Ratfin Farm, near Amesbury. The highest lots fell as under :—To Mr. Dibben, lot 3, 28 gs. ; to Mr. Charles Waters, of little Durnford Farm, lot 4, 21 gs., both these lots being lambs let for the season only ; to Mr. Moore (who competed keenly for all the best lots), lot 50, 16 gs. ; lot 16, 14½ gs. ; to Mr. Squarey, lot 40, 13½ gs. ; Mr. M. H. Marsh (Ramridge House), lot 56, 12 gs. ; and lot 55, 10½ gs. ; to Mr. Gay, lot 20, 10 gs. ; to Mr. W. Long, lot 10, 9 gs. Messrs. Cossins, of Somerton, Mr. Miles, Wexcombe, and Mr. Green, Salterton, each purchased several lambs at very fair prices. The average of 58 lambs sold and let was £7 10*s*. 8*d*. each.

—— On the 17th inst. a sale of Hampshire Down sheep took place at Bradwell, near Wolverton, at the residence of Mr. W. G. Duncan, of Bradwell House. The breed is not much known in this district, although it is a very useful one, as it is much more hardy than many other breeds, and on cold rough land it will do well when other sheep would degenerate. The bidding generally was not brisk, and the prices, in the majority of cases, were not so high as last year. The following is a return of the sale :—Sheep : Three ewes, £4 5*s*. per head, Mr. Bull, Newport. Three ewes, £3 8*s*. per head, Mr. Bull. Three ewes, £2 19*s*. per head, Mr. Linnell, Great Brickhill. Five theaves, £3 7*s*. per head, Mr. Craddock, Bradwell. Five wether lambs, £2 9*s*. 6*d*., Mr. Checkley, Tyringham. Five ditto, £2 6*s*. 6*d*., Mr. Checkley. Five ditto, £2 6*s*., Mr. H. E. Bull, Tickford Park. Five ditto, £2 5*s*. 6*d*., Mr. J. Townsend, Tyringham. Five ditto, £2 7*s*. 6*d*., Mr. H. E. Bull. Two wether lambs, £2 6*s*. per head, Mr. Checkley. One Hampshire Down ram lamb, £3 12*s*. 6*d*., Mr. Mills, Newport. One Hampshire ditto, £4, Hon. Percy Barrington, Westbury. One Hampshire ditto, £4 5*s*., Mr. Linnell, Paulerspury ; ditto, £5 2*s*. 6*d*., Emerton ; ditto, £4 12*s*. 6*d*., Goosey, Wavendon ; ditto, £3 15*s*., Franklin, Haversham ; ditto, £5 5*s*., Holdham, Fenny Stratford ; ditto, £12, Checkley, Tyringham ; ditto, £3, Walker, Stony Stratford ; ditto, £11, Clode, Great Linford ; ditto, £9 5*s*., Captain Borlase Tibbits, Barton Seagrave ; one shearling Hampshire Down ram, bred by Mr. W. King, Hungerford, £14, Major Levi, Woughton-on-the-Hill ; one Hampshire Down ram lamb, £3 2*s*. 6*d*., Craddock, Bradwell ; ditto, £3 2*s*. 6*d*., W. Pike, Castlethorpe ; ditto, £12 5*s*., Thompson, Hanslope ; ditto, £4 15*s*., Linnell, Great Brickhill ; ditto, £4, Price, Newport Pagnell ; ditto, £4, Pike, Hanslope ; ditto, £3 12*s*. 6*d*., Pike ; ditto, £6 10*s*., Ratliffe, Hanslope ; ditto, £4 5*s*., Pike ; ditto, £4 2*s*. 6*d*., Ward, Newport Pagnell. Alderneys : A grey and white cow, four years old, in calf, to calve October 23, £21 5*s*., Hon. Percy Barrington ; a brown and white heifer, 18 months old, in-calf, £13, J. Clode ; a self-coloured heifer, 18 months old, in calf, £14 15*s*., Whiting, Castlethorpe ; two steers, 21 months old, £15 15*s*. each, Pike ; two ditto, 19 months old, £14 5*s*. each, Pike ; a barren heifer, 2½ years old, £16, Atkinson, New Bradwell ; a barren cow, £10 10*s*., Linnell, Great Brickhill ; a ditto, £11 10*s*., J. Townsend ; a ditto, £11 10*s*., Mills, Newport ; a self-coloured bull, 20 months old, a pure-bred Dauncey, £15 5*s*., John Fountaine ; a ditto, £11 10*s*., Walker. A number of pigs were also sold, making good prices.

—— Mr. George Kent's third annual lamb sale at Needham Hall, Gazeley, was held on Thursday, the 17th inst., Mr. Stanley (Newson, Stanley & Co.) officiating as auctioneer on the occasion. Upwards of 78 rams were offered, the highest priced lamb ram making 12½ gs., and shearling ram 15½ gs. The first pen of black-faced ewe lambs made 72*s*. per head ; the pen of wethers made 45*s*. ; and a few lots of full-mouth sheep and crones varied from 59*s*. to 60*s*. per head.

Britford Sheep Fair. — This, one of the largest and most important fairs in the south-western counties, was held on the 12th inst. The supply of sheep was from 5000 to 10,000 below the average, and the attendance of farmers and dealers was not quite so large as usual, owing probably to the progress of harvest operations. Lambs were in short supply, and sellers commenced by asking extravagant prices, which, as usual under the circumstances, led to a slow trade being done as the day advanced. Wethers were not in much request, and both ewes and wethers gave way 1*s*. to 2*s*. a head as compared with Weyhill and other recent fairs in the district. The chief demand was for lambs, and prices were altogether from 10*s*. to 15*s*. a head higher than last year. Wethers may be quoted at from 48*s*. to 58*s*. ; ewes from 48*s*. to 52*s*. ; lambs, 30*s*. to 50*s*. a head. Sir E. Hulse obtained 3 gs. each for 100 ewes. Mr. Fleetwood sold a remarkably fine lot at 75*s*., and 100 lambs, fed without corn, at 53*s*., Mr. Parker being the purchaser. Mr. E. Rawlence bought a splendid lot of ewes from Mr. Newton, of Dogdean, also at 75s. Mr. Morrison sold 100 ewes at 60*s*., and obtained 54*s*. for a second lot of 160. Mr. Futcher, of Fovant, realised 62*s*. Mr. E. F. Mills sold 100 ewes at 65*s*., and Mr. Dibben, of Bishopstone, obtained 50*s*. each for lambs (the third selection from his flock). Mr. Smith, of Durnford, realised a like figure for his best lot, and 43*s*. for his culls. He sold his ewes at 60*s*. Col. Heathcote sold two lots of ewes, one at 58*s*. and the other at 53*s*. A lot belonging to Mr. Richard Rooke realised 59*s*. Mr. Read, of Charford, sold lambs which took the 1st prize at Salisbury, at 3 gs.—an advance of 15*s*. a head on the offer made for them a month ago ! These were sold again at a profit during the fair. Mr. Higgings, of Wishford, showed a fine lot of lambs, which sold at 50*s*. a head ; and Mr. Geo. Sidford sold a useful lot at 47*s*. Mr. Brown obtained 54*s*. for ewes ; and the Messrs. Marlow bought one lot from Mr. Futcher at 63*s*. Mr. Compton, of Fisherton Delamere, made 63*s*. a head for 100 ewes (Mr. Downs, of Basingstoke, being the purchaser), and 59*s*. for a second 100. Mr. James Read, of Winterbourne, made 49*s*. a head for lambs.

Great Sale of Lambs at St. Boswells.—On the 15th inst. an extensive sale of Leicester lambs took place at the Southern Central Auction Mart at St. Boswells, on the North British Railway. The weather was exceedingly hot, and there was no wind to subdue the influence of the scorching rays of the sun. The sale was conducted by Messrs. John Swan & Sons, sheep and cattle salesmen, Edinburgh. The number of lambs put through the ring was fully 7000, and the sale was, on the whole, a satisfactory one. Prices, however, were not so high as those obtained at St. Boswells lamb fair last month, but in present circumstances consigners expressed themselves as being well pleased with the result of the sale. Pastures are considerably barer than they were in consequence of the broiling weather of the last few days, and it is almost impossible just now to keep butcher meat. In addition, the lambs disposed of were not so good in quality as those sent to St. Boswells, or those submitted to competition at the last auction sale held there. Generally, lambs may be quoted 1*s*. 6*d*. to 2*s*. down from last month. There was a capital attendance of purchasers from nearly all parts of Scotland, and from the border and midland counties of England, many of whom were in waiting for Melrose Lammas Fair on the 16th. All the stock was sold. The following were the lots sold :—Three-parts-bred : Blainslie lot, 30*s*. 6*d*. ; Philiphaugh, 31*s*. ; Sneep, 34*s*. 6*d*. ; Fawside, 34*s*. 6*d*. ; Standhill, 27*s*. 6*d*. ; Cathpair, 38*s*. 6*d*. and 33*s*. 6*d*. ; Rawflatt, 27*s*. 6*d*. ; Huntingdon, 31*s*. 6*d*. ; Castle Moffat, 28*s*. ; Smailholm Mains, 36*s*. 6*d*. and 33*s*. ; St. Boswells, 31*s*. ; Ferniehirst, 28*s*. 6*d*. ; Corniston, 29*s*. ; Dryburgh, 24*s*. ; Greenhead, 32*s*. and 27*s*. 6*d*. ; Minto Kaimes, 37*s*. ; Birkenside, 33*s*. 6*d*. ; West Morriston, 26*s*. 6*d*. ; Crichton Mains, 36*s*. ; Boon, 33*s*. 6*d*., 33*s*., 35*s*. ; ditto ewe, 30*s*. ; Whitemore, 32*s*. ; Cunzierton, 28*s*. and 26*s*. 6*d*. ; Sharplaw, 28*s*. 6*d*. ; Earlston, 34*s*. Half-breds : Ruccastle lot, 28*s*. ; Dolphinton, 31*s*. 6*d*. ; Evelaw, 29*s*. ; ditto ewe, 29*s*. 6*d*. ; Borland, 25*s*. ; Raeleas, 30*s*. ; Bygatehall ewe, 26*s*. ; Sisterpath, 30*s*. ; ditto ewe, 34*s*. 6*d*. ; Lordscroft, 25*s*. ; ditto ewe, 29*s*. 6*d*., 28*s*. 6*d*., 29*s*., and 25*s*. ; Purveshaugh, 30*s*. 6*d*. ; Newburgh ewe, 30*s*. 6*d*. and 29*s*. 6*d*. ; Howden Moor, 27*s*. 6*d*. The principal purchasers were Mr. Kirkton, Durham ; Mr. Somerville, Glendevon ; Mr. Wallbank, Berwick-on-Tweed ; Mr. Nicol, Littleton ; Mr. Frier, Cathpair ; Mr. Harrison, Skipton ; and Dr. Murray, Kersknowe. *North British Agriculturist.*

Melrose Lammas Fair. — At this old-established and important fair there was a very large attendance of farmers and dealers. The show of lambs was not so large as last year, it being reckoned that the number would range from 20,000 to 30,000. The small show is in a manner to be attributed to the sales held in the district and even on the sale ground, also to the plentiful supply of grass. The business of the fair commenced at 4 o'clock, and was pretty dull up to 8 o'clock, when trade considerably revived, and by 11 o'clock almost all the lots on the fair ground were disposed of at prices from 6*s*. to 8*s*. above the prices of last year, and 2*s*. above the prices obtained at the sales on the evening previous to the fair. The appearance and condition of the lambs are stated to have been excellent. Among the principal sales made were :—Messrs. Aitken, Kelso, sold a lot of lambs at 41*s*. 6*d*. ; and the Midshiels lot brought 40*s*. Mr. Smart, Bowshank, sold his lot at 34*s*., going to Fife. Mr. Hume, Jeaniefield, sold his lot at 32*s*. 6*d* ; Mr. Elliot, Harehead, sold his lot of three-parts at 32*s*. ; Mrs. Hume, Bluecairn, sold a lot at 33*s*. ; Mr. Elliot, Chapel Mains, sold a lot of three-parts bred at 33*s*. ; Mr. Gibson, Ferniehirst, sold his three-parts at 32*s*. ; the Newhall lot of half-breds brought 29*s*. ; the Thornielee lot (Mr. Roxburgh) brought 26*s*. ; Mr. Pringle, Nisbet, sold his seconds, three parts bred, at 36*s*. 6*d*. ; the Rawflat lot was sold to Mr. Ord, Eastfield, at 29*s*. ; Mr. Bruce sold the Thirlestane lot at 30*s*. ; Mr. Hogg, Crammond Hill, sold a lot of three-parts at 30*s*. ; Mr. Hall, Kilnknowe, sold a lot at 30*s*. to Mr. Craig, Whitehill.

Falkirk Tryst.—The proceedings of this market were brought to a close on the 16th inst. The weather was splendid. On the whole, the market was a very satisfactory one. The police presented a clean bill as regards crime, and at Larbert Station all the trains were got off without any mishap occurring. The next "tryst" opens on the second Monday of next month.

NOTES ON AGRICULTURE.

ANCIENT AND MODERN FARMING—SMALL AND LARGE FARMS—THE STEAM-ENGINE DOES IT.

WHAT a change has come over British agriculture in my time, and I am only 69 last birthday. The primitive and pastoral age is passing away ; so is the small farmer, and so are waste lands, rough pastures, and low rents.

What has made British agriculture ancient in 50 years? Steam. Steam has made everything ancient that existed before its introduction. It has multiplied power a million of times, for 1 lb. of coal by its aid will raise 1,000,000 lb. a foot high. We talk now of the ancient coaches, coach roads, and hostelries : post horses and postillions have departed with the old mail coaches and sailing packets. Distaffs, spinning-wheels, and hand-looms are now antiquarian. Slow coaches of any sort won't do now. Steam has so multiplied and enriched our population, by creating profitable employment, and has thus so disturbed the ancient relation and proportion between population and acres (the latter having no children), and has so increased the value and rent of land, that ancient farming can no longer be profitable.

Steam not only enriches the merchant, manufacturer, or trader, but also transports him so quickly and pleasantly that he can combine farming with his other occupations, so that we often find him competing for farms, either as owner or tenant, sometimes both. This is good for the country at large.

Adam Smith says, in his "Wealth of Nations," p. 167:—"The increase and riches of commercial and manufacturing towns contributed to the improvement and cultivation of the countries to which they belonged in three different ways" (as detailed at p. 440 of my first volume). He also says, "Merchants are commonly ambitious of becoming country gentlemen, and, when they do, they are generally the best of all improvers. . . . The merchant is commonly a bold, a country gentleman a timid, undertaker. The habits, besides, of order, economy, and attention, to which mercantile business naturally forms a merchant, render him much fitter to execute, with profit and success, any project of improvement."

All-powerful and cheap steam will do for agriculture what it has done for manufactures and commerce. This was my opinion 22 years ago, when I erected the first new fixed farm steam-engine in our county. The steam-engine has taken agriculture by surprise and found it napping, both as regard landowners and tenants, for the former has hardly yet fully realised the inconvenient necessity of adapting his land and homestead to modern agricultural requirements. Farmers are gradually awakening to the new idea that everything is to be of iron, if it is to be cheap and durable. The landowners' once beloved timber, as a source of revenue, has lost its value, and now absolutely impedes the advance of rent by what would naturally follow steam cultivation on the great scale.

Great hedgerows and little fields will not be tolerated by men of capital who mean to make steam-power pay to them and their landlords a modern and better profit. Drainage, good hard farm roads, plenty of shelter for increased live stock, and for modern machinery and implements, have become a necessity for which men of capital are ready to pay a fairly increased rent. There is no occasion to wonder where the money for all this is to be found, because our modern draining and land improvement companies will do the whole thing, and only ask a security on the land, where there is a real owner of it.

But let us see how it is that small farms become absorbed into large ones, about which we hear such lamentation. It is a mistake to suppose that small farmers have not been replaced by farmers. Of course, there are many cases of town competitors, but the real and true cause is the great general increase of prosperity, which has enabled good small farmers to become large farmers by absorbing the farms vacated by men who, keeping no stock, and taking all out of the land—farming, in fact, without sufficient capital or modern appliances—have beggared the soil and themselves. I speak with authority upon this matter, for during the last 30 years I have seen this cause in operation in a vast number of cases, so that it ought to be a subject more of congratulation than of regret, and must be taken as an evidence of our rapidly increasing wealth and prosperity, just as we see in our time, the gigantic growth of commercial, trading, manufacturing, and monetary institutions. I am no believer in the croakers who conclude that our labourers, mechanics, and operatives are the worse for this increase; on the contrary, all the evidence is the other way. Agricultural and general labour was never better employed. The mere implements and machinery of modern agriculture afford vast employment, and have absorbed great numbers of agricultural labourers. It is true that an exceptional case may here and there be found of a farmer who extends his holdings—having the good will and confidence of some land-steward, who is blind to his agricultural and suicidal shortcomings in the non-employment of labour, but the rule is all the other way. For successful and money-making farmers, of whom I know many, keep plenty of well-fed stock, manure the land well, keep it clean, and not unfrequently chalk and drain it; all this being a direct contrast with the out-going farmer, who has impoverished the land and himself. The ancient farmer who cannot, will not, or, at any rate, has not adapted himself to modern requirements, goes to the wall. In my early days a small farmer did much laborious work himself, and so did his wife and family. He grew his own wood, and had no coal bill, or a very small one. He avoided butchers' profits by salting down his own pork, and only had butcher's meat once a week. Eggs and poultry and butter went to market to enable the good wife to procure dress, &c., for the family. It was only on festive occasions that poultry was consumed at home.

There was great and commendable frugality, and much industry in every department. By home-made wine and home-brewed beer he avoided extensive tradesmen's bills; the grocer and clothier were mildly availed of, and schooling was brief (sometimes too brief) and inexpensive. Early to bed and early to rise was the order of the day. In the management of the farm the implements were few and simple; in many cases not even a drill, certainly no horse-hoes or threshing-machines. The man of the flail did nothing but thresh for years. Good farmers kept their land clean and productive by frequent ploughings and long summer fallows, thus cultivating and resting the land. They could have no artificial manure bills or cake accounts in those days. Their rents, rates, and tithes were moderate—a most respectable and deserving class they were, and are, and very hospitable, as I know from experience. Like Pope's Sir Balaam—

> "Religious, punctual, frugal, and so forth,
> His word would pass for more than he was worth."

A piano was an unusual luxury, and the furniture was ancient and scanty; but now that steam has made us rich we are all getting on very fast, perhaps quite fast enough, for wealth begets luxury and refinement, but, I hope, not idleness and extravagance. At all events, during the transition, some worthy ancient yeomen have succumbed to the altered circumstances, and found themselves unable to compete with more modern practice. Landowners should take note of all these things, and adapt their arrangements also to the altered circumstances.

The great old barns and open farmyards should now be superseded by spacious but covered yards with paved floors, adapted for a larger quantity of live stock. There should be shelter for all the valuable and indispensable implements and machinery of modern agriculture. The land should be drained, and the fields large, rectilinear, and free from timber, and thus suited for steam-cultivation. Farmers of capital, with their £20 per acre, naturally require residence suitable to their means. The old lath-and-plaster and gable-ended farmhouses are fast becoming labourers' or bailiffs' cottages. I think most people will agree with me that steam has done it all, and will do much more, for its power is irresistible. How thankful we ought to be for all the benefits and comforts it has conferred!

I had nearly forgotten to say that our county bridges have also become ancient and unavailable. The following is a proof of it. Not long ago an engine foundered on Battles Bridge, in Essex. I hope and believe that our country authorities will remove this hindrance to improved and modern agriculture.

"Chelmsford, August 16, 1871.

"DEAR SIR,—I am sorry we shall not have a cultivator we can send you (very likely at the time you require it). Our cultivator is now in Cambridgeshire, and the bridges are so bad between Kelvedon and Sudbury that we should rather it kept where it is till you have some new ones built. I am, sir, yours respectfully,

"W. EDDINGTON."

I expect that the archways on our farms will also have to be strengthened, to carry the steam monsters. *J. J. Mechi, August.*

P.S.—In my last communication, for "75 feet of iron hurdle to every five sheep," read "15 feet," &c.

THE HARVEST AND THE CROPS.

WE extract from the *Times* of the 24th inst. the following communication on the above most interesting subject, from the pen of Mr. James Sanderson:—

Rarely has the result of a year's crops been so anxiously looked forward to as that of the crops of the present year. The light-land farmer had experienced three adverse seasons in succession, while two years of the three had proved disastrous to the graziers. By midsummer the produce of 1870 was well-nigh exhausted; home granaries were almost totally depleted, barnyards empty, straw nearly all used, and only a few hayricks unconsumed. It was, therefore, not without reason that consumers, as well as producers, eagerly watched the progress of this year's crops.

The year has been characterised by a frosty winter, a backward spring, and a cold and gloomy summer. The frequent naked frosts in winter destroyed a large area of Turnips, and consequently involved on the part of the farmer a large and unforeseen expenditure on artificial foods. The recurrrence of naked frosts in spring caused considerable damage to the Wheat crops, and, by retarding the growth of seeds and intermediate crops, deprived farmers of the early use of natural stock food. May was cold and ungenial, and throughout the month pastures made little progress. The weather in June was marked by an almost total absence of sunshine and a low temperature; July—usually the best grain-maturing month—was generally gloomy, having only a few days of bright sunshine, and during the month there were frequent heavy rainfalls, accompanied with violent gusts of wind. Up till the end of the month, the harvest prospects were by no means encouraging. Harvest threatened to be fully a month later than usual, the ripening of many fields of spring-sown Wheat seemed doubtful, while with the continuance for another fortnight of such weather as the past a large area of the rain-beaten and wind-twisted crops would be fit only for the dunghill. Happily, with August came brilliant weather, bright sunshine, and a cloudless sky, which so rapidly matured the crops that instead of the harvest being a month later, as was anticipated, than usual, it is only a fortnight later than in ordinary seasons, and three weeks later than the harvest of last year.

Crops throughout England have ripened almost simultaneously, cutting is general in the home counties, one-half of the cereal crop is secured, and with favourable weather for the next fortnight the great bulk of the grain crops will be ingathered. But to notice the different crops in detail. There were early indications that the Wheat crop would not be productive. The severe frosts of spring decimated the plants on undrained land, and on loose soils, especially on black fen land, which had not been recently clayed. The ravages of the wireworm were unusually severe, and, from the wet condition of the land, the only means—heavy and frequent rollings—of mitigating the evils referred to were unavailable; hence a considerable area of Wheat was ploughed up, and a large breadth that was allowed to grow was so thinly planted that it could not yield half a crop. The ear-forming stage was by no means favourable, while the blooming season, from being wet and windy, was the most adverse I ever remember. So early as in the middle of June it was evident that under the most favourable circumstances the Wheat yield of 1871 would be deficient.

The gloomy month of July tended more to the production of straw than grain, and the heavy and frequent rains greatly injured the crop on loose soils.

The extensive fen area, which usually has a greater acreage yield than any other description of soil in England, has suffered severely from storms. I have seen several fields not worth the cost of harvesting, and I do not hesitate to say that the yield of Wheat in the fen districts will be one-half short of that of last year. Speaking generally, it is the heavy or Wheat soils (barring the chalk-loams of East Kent, the red marls of Worcester, and the red sandstone of Hereford) that are most deficient, while it is the light soils—which have yielded inferior crops the last three years—that have relatively produced the best crops. There is fully one-third more straw than last year, but the heads are short, the spikelets are widely apart, many husks are empty, and there are an unusual number of barren ears. Crops, where laid and in sheltered situations, have been attacked by mildew, in a few districts rust has caused considerable damage, and the majority of fields have a leaden instead of a golden hue.

The results of threshed-out fields in Kent, Surrey, Essex, Berks, Northampton, and Lincoln have not been satisfactory, and as the greater portion of the laid crops is still uncut I anticipate that, as the process of threshing advances, results will prove more disappointing.

I estimate the Wheat yield at 22 bush. per acre, or 8 bush. under average, or, as compared with recent years, 8 bush. per acre under the yield of last year, 2 bush. per acre under the crop of 1869, 14 bush. short of the great crop of 1868, and about equal to the crop of 1867; or, to take the aggregate yield, and assuming that the area under Wheat will be equal to that of last year, the results are as follow:—In the year 1868, 16½ million qr.; in the year 1869, 12 million qr.; in the year 1870, 13 million qr.; and in the year 1871, 9½ million qr.

Barley, which has been appropriately termed the Grape of England, is by far the best of the cereal crops. Bulky in straw, thickly planted, long and closely set in ear, the Barley crop of 1871, for bulk, yield, and quality, has seldom been equalled. The chief cause of the success of this—as well as of all spring crops—must be ascribed to the favourable seed-bed they secured. The soil was not only baked by summer droughts, but also pulverised by the bare winter frosts, therefore a more favourable seed-bed was never obtained. The rainfall during the end of last week—by swelling the kernel, which promised to be somewhat shrivelled and steely—has vastly improved the quality of this grain. I estimate the yield to be 25 per cent. over average.

As in 1869, so also in this year, the Oat crop is the most erratic and variable. In the South this crop, contrary to ordinary years, far excels that in the North, and crops are bulkiest on soils generally considered unsuitable for the production of Oats. The yield in the South exceeds expectations. A field I saw threshed out in Northamptonshire yielded 10 qr. per acre, and the weight of grain was 45 lb. per bush. Taking this crop as a whole, I consider it to be a good average.

The Bean crop is most prolific, thickly planted, strong and lengthy in stem, and closely podded. I consider it nearly equal to the crops of the last three years combined. I estimate this crop to be 20 per cent. over average.

The Pea crop, too, is singularly bulky, and promises an unusually large yield. From the almost total failure of seeds last year, a large breadth of Peas was sown; and, taking the exceseive area together with the enormous yield, probably a larger Pea crop was never produced in England.

The Potato crop, so far as number of plants, vigour of stem, and number of tubers are concerned, was never more promising. Disease, however, especially in low and sheltered fields, has already caused considerable damage, but with a continuance of dry weather it is hoped something approaching to an average crop of sound tubers may yet be obtained.

Root crops, comprising Turnips, Mangels, and Kohl Rabi, never looked better. The Turnip crop especially—which, when good, is the basis of a successful rotation of crops, is the best soil-restoring crop, and lessens the farmer's outlay on artificial foods—is singularly promising. Not a patchy nor a blighted field is to be seen, but everywhere this crop is remarkable for luxuriance.

The hay harvest was protracted, on account of the frequent and heavy rains. Meadow hay, on the whole, was secured in fair condition, and proved an average crop. From the failure of seeds last year, artificial hay was limited to a small area, and was an indifferent yield.

Pastures were backward in the early part of the season, but rarely have cattle and sheep fattened so rapidly as during the last three months. Those who predicted the destruction of Clovers and the finer grasses from the severe drought of last year were premature in their opinions, for seldom have Clovers been so abundant, the sward so close and luxuriant, or pastures carried so large a number of stock. The abundance of Milfoil or Yarrow is doubtless caused by the drought of the last three years, which fosters the growth of this plant.

Young seeds are singularly luxuriant. Green crops—Tares, Sainfoin, and Lucerne—are abundant, and the yield of vegetable produce has not been equalled for several years.

Taking the produce of 1871 as a whole, it may be safely said, notwithstanding the deficient Wheat yield and the general failure of orchard fruit, that seldom has English produce been so valuable and abundant. To quote the words of the Hebrew poet, "The pastures are clothed with flocks; the valleys also are covered over with corn; they shout for joy, they also sing."

With respect to demand for labour, the contrast between this year and the last is remarkable. Last year union-houses were full; there was little or no hay to mow, almost no Turnips hoeing, and unusually light harvest labour. This year there is a scarcity of labourers, and as much as 8*s*. 6*d*. per acre has been paid for simply tying and shocking corn.

It is worthy of remark that every description of farm produce is dear. Breadstuffs command full prices, the prices of beef and mutton have rarely been exceeded, store stock are 30 per cent. higher than in last year, and wool is realising 15 per cent. over last year's prices.

Coupling the high prices with the abundant produce, the year 1871 will doubtless prove a bountiful year to the farmers. *James Sanderson*, 11, *Pall Mall East*, *S.W.*, *Aug.* 23.

CARR'S DISINTEGRATING FLOUR MILL.

MR. BARCLAY read a paper at the recent meeting of the British Association in Edinburgh, upon Carr's Disintegrating Flour Mill. The mill reduces Wheat by percussion, while it is unsupported and falling freely, or being projected, through the air. The Wheat, in passing through the machine, is struck by a series of bars moving at immense speed in opposite directions; it is so instantaneously reduced into a state for bolting, that no injurious heat is caused, and the flour produced is of a much superior quality to that obtained by ordinary grinding, while the cost of its production is considerably less. Messrs. Gibson & Walker, of Bonnington Mills, Edinburgh, have now one of these machines in their perfected state in full operation, and they give the produce of two different lots of Wheat passed through it. The first, as follows, is—Old Scotch Wheat, which produced:—Flour, 45 per cent.; semolina, 26 per cent.; bran flour, 4½ per cent.; exhaust flour, 1½ per cent.; seconds, 4 per cent.; parings, 1¾ per cent.; bran, 13 per cent.; black dust, 2¾ per cent.; loss, 1½ per cent.—100 per cent. The other was a mixture of Baltic and Ghirka Wheats, and produced:—Fine flour, 35 per cent.; semolina, 36; bran flour, 4⅛; exhaust flour, 1¼; seconds, 3⅜; parings, 2; bran, 13; black dust, &c., 3; loss, 1½—100. These statements show the varied effects produced by this novel process on different descriptions of Wheat. The quantity of semolina obtained from hard Wheats, it will be observed, is much greater, and that of flour much less, than from soft Wheats. But what is of most importance is the ultimate results. The quantity of finest flour obtained varies, of course, according to the quality of the Wheat used. Messrs. Gibson & Walker at present obtain from 55 to 60 per cent.; but they expect, when they have a sufficient quantity of machinery for dressing the semolina, that their minimum production will be increased to 60 per cent.; the inferior qualities of flour will then, of course, be proportionally reduced. By this process Messrs. Gibson & Walker are able to produce a very superior quality of flour from good Scotch Wheat alone; whilst by stones, they can only use a very small proportion of such Wheat, mixed with superior qualities. With regard to the quantity produced within a given time, it may be stated that Messrs. Gibson & Walker pass 20 qr. per hour through the machine at present, and they say that they could easily increase this to 25 qr. per hour, or more, if they had sufficient cleaning machinery to keep all their mills going. Estimating the grinding power of a pair of millstones at 6 bush. per hour, 27 pairs of stones would be required, together with at least 3 pairs under stone-dressers' hands, or 30 pairs in all, to grind 20 qr. per hour. Deduct from this estimate the 5 pairs required along with Carr's patent mill, and it would be found that this machine is actually performing the work of 25 pairs of stones with perfect ease. The disintegrating flour-mill, together with the five pairs of millstones in connection with it, and the whole of the dressing and cleaning machinery, are driven at Messrs. Gibson & Walker's with ease by an engine of 100 nominal horse-power, with cylinders of 28-inch high and 36-inch low pressure, 3 feet and 6 feet stroke. In regard to the cost and working of the very much smaller prime cost of the disintegrating flour-mill, compared with that of the 25 pairs of millstones it supersedes, may be mentioned, as well as the very slight and rarely needed repairs it required—making altogether such a saving in the cost of manufacture as millers will themselves be best able to appreciate.

In answer to Mr. Douglas, the PRESIDENT said he had been informed that 5*s*. per qr. more was obtained from Wheat treated in this manner than from Wheat treated in any other way.

Mr. BRAMWELL mentioned that he, along with several other gentlemen, had visited the mills at Bonnington, and had seen the machine in operation. Experiments were made with it, with the following results:—When grinding 20 qr. of Wheat per hour, the disintegrator consumed 145-horse power; when grinding 15 qr. per hour, 123-horse power; when empty, 63-horse power; and when running with the two discs lashed together, only 19-horse power was consumed. In some other remarks, he said that this was absolutely a new principle in grinding material, and was a most ingenious one.

In answer to a question, Mr. WATSON, engineer at the works, stated that the machine created less dust than the ordinary process.

The PRESIDENT pointed out that if they took away the 63-horse power expended in driving the empty machine from the 123-horse power necessary to grind 15 qr. of grain, they arrived at the power necessary to disintegrate 5 qr., viz., 20-horse power, irrespective of the power expended in driving the empty machine.

The thanks of the meeting were accorded to Mr Carr.

FLAX CULTIVATION IN IRELAND.

AGRICULTURAL STATISTICS, IRELAND, 1871.

RETURN, showing, in statute acres, the extent under Flax in each county and province in 1870 and 1871, compiled from information obtained by the Royal Irish constabulary and metropolitan police, who so efficiently act as enumerators; also the number of scutching mills in each county and province in 1870.

Counties and Provinces.	Extent of Land under Flax.		Difference between 1870 and 1871.		Number of Scutching Mills in 1870.
	1870.	1871.	Increase	Decrease	
ULSTER.	Acres.	Acres.	Acres.	Acres.	
Antrim	16,958	14,040	..	2,918	168
Armagh	17,362	12,180	..	5,182	132
Cavan	11,119	7,494	..	3,625	39
Donegal	24,411	20,464	..	3,947	289
Down	31,146	27,078	..	4,068	263
Fermanagh ..	6,845	4,652	..	2,193	28
Londonderry ..	22,384	21,323	..	1,061	210
Monaghan	19,665	16,039	..	3,626	63
Tyrone	30,522	23,918	..	6,604	217
Total of Ulster ..	180,412	147,188	Decrease, 33,224		1,409
MUNSTER.					
Clare	539	425	..	114	3
Cork	2,659	1,764	..	895	24
Kerry	412	368	..	44	3
Limerick	110	63	..	47	..
Tipperary	420	294	..	126	7
Waterford	52	15	..	37	2
Total of Munster ..	4,192	2,929	Decrease, 1,263		39
LEINSTER.					
Carlow	11	5	..	6	1
Dublin	2	11	9	..	..
Kildare	1	1	..	..	..
Kilkenny	48	37	..	11	..
King's	595	563	..	32	5
Longford	1,158	638	..	520	5
Louth	1,465	1,310	..	155	9
Meath	551	336	..	215	8
Queen's	100	127	27	.	3
Westmeath ..	152	80	..	72	3
Wexford	155	91	..	64	5
Wicklow	..	..	..	..	..
Total of Leinster ..	4,238	3,199	Decrease, 1,039		39
CONNAUGHT.					
Galway	499	208	..	291	5
Leitrim	1,121	796	..	325	6
Mayo	2,574	1,441	..	1,133	8
Roscommon ..	1,094	432	..	662	6
Sligo	780	571	..	209	6
Total of Connaught	6,068	3,448	Decrease, 2,620		31

Total acreage under Flax in Ireland in 1870 and 1871:—1870, 194,910 acres; 1871, 156,764 acres. Total decrease in 1871, 38,146 acres,

Total number of scutching mills in Ireland in 1870, 1518.

Total extent of Flax grown in Ireland in each of the following years:—

	Acres.		Acres.
1851 ..	140,536	1862 ..	150,070
1852 ..	137,008	1863 ..	214,099
1853 ..	174,579	1864 ..	301.693
1854 ..	151,403	1865 ..	251,433
1855 ..	97,075	1866 ..	263,507
1856 ..	106,311	1867 ..	253,257
1857 ..	97,721	1868 ..	206,483
1858 ..	91,646	1869 ..	229,252
1859 ..	136,282	1870 ..	194,910
1860 ..	128,595	1871 ..	156,764
1861 ..	147,957		

The foregoing return exhibits a decrease of 38,146 acres in the total area under Flax in 1871, compared with 1870. This decrease is general. In Dublin and Queen's County there is a slight increase of 9 acres and 27 acres respectively. In the province of Ulster alone the decrease is 33,224 acres. Of the entire number—(1518)—of scutching mills in 1870, 1409 were in Ulster; 39 in Leinster; 39 in Munster; and 31 in Connaught.

I do not apprehend that any important difference will be found in the acreage under Flax now given, and that which will appear in the Tables of the general abstracts which are being compiled, and will soon be ready for publication; they will give the acreage under the various crops, and also the number of live stock, by counties and provinces. *William Donnelly*, *Registrar-General*, *General Register Office*, *Charlemont House*, *Dublin*, *August* 2, 1871.

HARVESTING CORN IN WET WEATHER.

MUCH hay has been damaged by rain during the present season, and we cannot yet say how far changes of weather may influence our harvest prospects. It is well, therefore, to bear in mind that the farmer is no longer obliged to sit quietly by while the rain soaks his sheaves and deteriorates his samples of corn. Thanks to Mr. W. A. Gibbs, a simple apparatus has been designed, by means of which the produce of an average half acre may be dried in an hour. As a rule, we are favoured with good harvest weather, and, so long as the sun shines, the farmer will probably be content to trust in Providence rather than purchase a cumbrous and expensive apparatus. Having, however, inspected Mr. Gibbs' hot-blast fan and iron Wheat-house, we believe that any farmer having sufficient knowledge as to the principles upon which Mr. Gibbs works, would be able to erect the necessary "plant" at a small cost, and at once be in a position to meet the exigencies of a wet season. Should such an unhappy change occur in our present fine harvest weather, we cannot help thinking that Mr. Gibbs will be deluged with letters from all parts of the country, begging for information as to his process of corn-drying. A full account of this process, and the requisite machinery, appeared some months since in our columns, and it is not our intention here fully to describe either. We wish to remind our readers that there is such a process, and to show that there is nothing complicated about it. An 8-horse power portable engine turns a fan-blast, which blast draws the hot air and products of combustion from the fire-box of the engine, and sends the heated gases through a house or enclosed shed, in which the Wheat or hay is placed. In Mr. Gibbs' own words—

"The engine is the ordinary portable engine of 6 or 8-horse power, now in general use for threshing and other farm work; the smoke-pipe has been taken off at the hinges and a short lead pipe fastened on to the 'exhaust,' to carry off the steam. The back plate of the smoke-box having been removed, the engine has then been drawn up and 'butted up' against a corresponding opening in the back casing of the hot-blast; a screen of malting wire, interposed between the two openings, intercepts any large sparks that might otherwise be drawn through the fan. A 5-inch driving band is carried from one wheel of the engine on to a small rigger on the flyer-shaft of the fan, whilst another band can be carried from the other wheel over the roof of the iron shed, so as to work an elevator or a threshing-machine simultaneously with the drying process. The fan absorbs only about one-fourth of the power of an 8-horse engine, so that the remaining three-fourths are available for other work. With this arrangement we were able, last season, to render drenched Wheat fit for threshing-out in fifteen minutes. The drying shed which was used in these experiments was only 12 feet square, and held 32 sheaves in each compartment; but, with a shed of 12 by 24 feet, which is the size best suited to large farms, 64 sheaves could be dried off in a quarter of an hours = 256 per hour. These 256 sheaves represent about the average produce of half an acre of land; and hence, by dividing the harvestmen into two gangs, and working on through the night, between 10 and 12 acres might be cleared in the day and night, at an average cost of 2*s*. per quarter on the Wheat thus dried. As a full description of these experiments and close calculations of costs have already been published, I pass on to the more immediate subject-matter of this report, viz., the work done by a still simpler arrangement of this machinery during the past hay season.

"This re-arrangement of it was put to the test in order to show its capability of being worked by horses in lieu of steam-power.

"The same hot-blast and drying-house are employed, but an ordinary horse-gear has replaced the steam-engine to give the requisite motive-power; a sunk furnace supplies the heat; an old cart wheel has been adjusted to form an eccentric, which gives movement to a set of levers. The advantage of this up and down movement in the making of hay is very great, because it enables the men to use large hay forks, and to lift up heavy masses of the wet 'clingy' hay, and shake them out before the hot hair without being exposed to it themselves. For hay drying I have hitherto found it best to remove the false floors, the central partition, and the valve, and expose the hay to the direct action of the air as it issues from the fan mouth; with this simple arrangement I obtained the following results, which are taken from my rough note book:—

"*Experiment* 1.—*On Upland Meadow Grass, estimated at* 1½ *Load to the Acre, June*, 1869.

"Grass cut by scythe on Friday morning, once shaken out by the hay tedder; winnowed up by evening; weather fair and occasionally sunny, but the air somewhat moist.

"Shaken out by hand on Saturday by noon time, and put into small grass cocks by evening; weather as yesterday.

"Left in cocks all Sunday, weather fine and drying.

"On *Monday* morning from half-past two o'clock to half-past nine very heavy rain fell; remainder of day dull and moist; left the hay untouched.

"*Tuesday* morning. Three hours heavy rain before eight o'clock; between eight and ten o'clock no rain, shook out two rows of cocks; by half-past twelve o'clock a torrent of thunder rain for three quarters of an hour, which drenched both the spread and the unspread hay, so that the centres of the cocks were as wet as the outsides; by half-past three o'clock the sun came out and a wind sprung up; shook out the two rows and dried them partially by five o'clock; then carted up to the drying-house two heavy loads (which weighed when dried rather more than 37 cwt. of hay fit for stacking), and dried them in three hours; coke consumed, 320 lb. This work was performed in one half of the drying-house only (before the partition was taken down), and it is recorded chiefly to form a first basis for the estimate of cost of the process, not as any fair indication of the time taken by it. If for the convenience of calculation we call the 37 cwt. 36, *i.e.*, equal to two loads of truss-bound hay, the cost of finishing it in this manner stands at 3*s.* 3*d.* per load, as the following estimate will indicate :—

Estimate of Extra Labour per Diem.

2 Horses and boy to drive	£0	5	6
1 Boy to pull hay from cart	0	0	6
1 Man to feed wet hay into house	0	3	0
1 Man to guide lever-fork	0	3	0
1 Lad to throw dry hay out of house	0	2	0
	£0	14	0

14*s.* for 12 hours, equals 3*s.* 6*d.* for three hours ; add to this the 3 cwt. coke at 1*s.* = 3*s.*, and we obtain 6*s.* 6*d.* as the cost of drying the two loads of wet hay, or 3*s.* 3*d.* per load.

"Now, on the same field from which these two loads were taken, there remained three other loads in precisely the same condition of wetness. As the afternoon turned fine we had the opportunity of testing the comparative labour — cost of finishing it by natural means and in the ordinary way ; this required the constant labour for six hours of eight men, which amounted, therefore, in money cost to 12*s.* on the three loads, or 4*s.* per load. Hence the use of the drying-house resulted in rather less cost than the trusting to Nature—besides which, it is still more important to consider that had rain come on during the field-working of the hay, all the foregone labour of opening out the cocks, shaking out the hay, forming it into beds, and turning it over, would have been wasted, and worse than wasted, inasmuch as the spreading out would have exposed it to the damaging action of such rain ; moreover, if the hay had not dried sufficiently for the carting during that afternoon, it would have had to take the risk of rain in the night, and more labour would have had to be expended on it on the following day."

Home Correspondence.

Our Water Supply.—In your paper of the 12th you reprint, with approval, a letter on "Our Water Supply," signed "Lechlade." Though a short answer of mine appeared in the *Times*, I wish with your permission to comment on his letter rather more at length. It is not necessary to say anything on the importance of the subject ; I might be content with referring your readers to evidence given by me before the committee presided over by the Duke of Richmond, but Blue Books, we know, are seldom read. That the valley of the Thames possesses abundance of water to meet the demands of its occupants I freely admit, though I cannot admit that the question lies in a nutshell—it is rather, in my judgment, a "hard nut to crack." I admitted that the rainfall might be 28 inches, but I contend that all calculations must be based on a minimum, which may be 16 inches. Nothing can be more delusive than to calculate on areas and rainfall—nothing can vary more than the watershed of the Thames above Oxford. I know that there are valleys well fitted for the storage of water, such as the sites of the reservoirs which supply the summit levels of the Oxford canal ; but such are not now needed for the supply of London, and so long as we have enough water issuing from so called springs, the aggregate of which form the river ; surely these sources are to be preferred to water stored in reservoirs. Take, for instance, the reach immediately above Maidenhead, or Boulter's Lock, where the river receives its last contribution from the body of the chalk stratum—a quantity, as has been proved, due to the drainage of the chalk into the river bed in its course from Moulsford or Pangbourne, irrespective of the affluents, equal, and more than equal, to the present wants of London from the Thames. But to return to the district above Oxford. "Lechlade" asserts "that the flow of water through Lechlade Bridge is from 200,000,000 to 300,000,000 gall. every 24 hours." I saw the river a short distance below that point a few days since. I feel sure this an over-estimate now ; but I contend, not for one gauging, but a *minimum.* I have before me a series of gaugings of the river above Oxford, taken by a person duly qualified, in winter and summer ; and the lowest, giving the whole river, is 60,408,430 gall., not one-third of the quantity given by "Lechlade" under the bridge in whose name he writes. The Windrush and Evenlode, and other smaller affluents giving their waters, swell the total of the gauging in question. It will be time enough to utilise the overflow of the Thames when it is wanted. I think that the existing reservoir, which I saw on Friday last, must contain more than 8,000,000 gall. ; as for its cost, I think that is not duly estimated ; but be it as it may, it must be remembered that all the water is pumped into it from the level of the Thames, and it is in no wise a type of such reservoirs as probably would be constructed in the Thames valley if they were needed, of which "Lechlade" says, "There is no expense, no pumping required, no machinery. It is true that part is stopped by the monopoly of the water companies, who now distribute the water." How that is to be done at an almost nominal charge I am at a loss to understand. Some one, I suppose, must pay for the pipes, &c. Then as to the quantity passing under Lechlade Bridge, as compared with that known to pass over Teddington Weir. Allow, all told, 100,000,000 gall. for the abstraction of water by towns and London water companies —less if you please. If 200,000,000 gall. pass under Lechlade Bridge, the Windrush, Evenlode, Cherwell, Ock, Wycombe stream, Kennett, Loddon, Coln, the smaller affluents, and the water issuing into the river's bed in its passage through the chalk stratum, would swell the minimum discharge at the very least to 500,000,000 gall., whereas the known minimum is 350,000,000 gall. If "Lechlade" will have the water passing under his bridge carefully gauged, he will soon see his error, and will be more careful before he writes on an all-important question, which I think he will find does not lie in a nutshell. *J. C. Clutterbuck.*

Steam Cultivation.—I have no doubt that steam cultivation is right, both on Fowler's and on Smith's plans. What we want, in order to get this and many other improvements more generally adopted, is security of tenure. We dare not farm high under the present system of land-holding in England. Many farmers would be willing to lay out their money in steam-tackle and manures if they were certain that their outlay in improving their farms would still remain their own property ; but they know that, under our present laws, the landlord has power to appropriate to himself the tenant's improvements after a six months' notice to quit. Whether the landlord turns the tenant out and raises the rent to a successor, or whether he keeps on the same tenant and raises his rent, the effect is the same : the improving tenant's outlay is confiscated. It is this dread of landlord absorption of tenant-right that starves English agriculture. Mr. Mechi at Tiptree and Mr. Smith at Woolston (to whom we owe much) are safe in whatever outlay they make in improvements. Both those gentlemen must own that there are hundreds of farmers in England who know how to farm land as well as they ; but then, under the vile six months' notice to quit, not one farmer in a hundred dare spend his money so freely as they do, because there is no security for their outlay. I suppose this safety for tenants' improvements must come in time, but it is a weary while in coming. Whoever wishes well to his country should try to hasten that time, when more food can be raised from our soil. *H. H. O.*

Sanitary Arrangements in German Towns.—Reference has been made in the *Agricultural Gazette* to the sanitary arrangements that exist in German towns, and extolling them in preference to the English system. I cut the enclosed paragraph from the *Aberdeen Free Press* of August 11. It formed part of a letter from "Our own Correspondent," dated Elberfield, August 7, and explains itself :—

"The cholera is apparently on its way to us from the far East. That awful scourge is raging already in St. Petersburg, Moscow, Rybinsk on the Wolga, Tambov, Riga, Wilna, and many other places in Russia. If it makes its way up to Elberfeld, I am sadly afraid it will reap a luxurious crop of victims, owing to the very defective state of our sanitary arrangements here. It makes a sensible man sick to see the shameful and senseless way in which the Elberfeld manufacturers turn the glorious little mountain stream, the Wupper, to account, exclusively for their own selfish ends, turning it into a common sewer and receptacle for all the dirtiest impurities and offal from their works. The city has no sewers, but there is a cesspool in every house, and the pump-carts go about nightly, pumping out the contents, poisoning the air with the most pestiferous stench. The municipal and communal taxes are extraordinarily high here ; yet very little indeed is done by the city authorities to give the taxpayers a reasonable *quid pro quo.* The lighting of the streets is also execrably bad. As regards one of the chief necessities of life, pure water, this is, in many houses, more especially in certain parts of the town, almost unattainable, notwithstanding the surprising natural facilities of obtaining the article in a state of high purity, which the mountains offer. An English Water Company, with a sufficiently large capital, and a skilful, enterprising, and energetic chief engineer, might realise large dividends here." *Wm. Nicol, Brigend, Pitcaple, August* 17.

Feeding Stock to Make Manure.—At p. 1023 Mr. Mechi says, "My live stock capital is usually £6 per acre. Could I afford it I would make it £12 or more, and then I would consume all my straw, treading none under foot, and keep all my cattle and pigs on sparred floors." Did it ever occur to Mr. Mechi that to make manure with cattle tied up is not always the most economical plan? I have gone to look at a good many farm-steadings, and I have seen many well worked, and evidently money-making farms, on which a great many cattle were kept, and which were making manure, some by treading straw under foot in open strawyards, and some by having it littered under them as bedding in tied-up stalls, and some in loose boxes or hammels, as they are called. But amongst all these three plans commend me, so far as good manure is concerned, to the loose box or hammel. But then comes the question of expense. If my landlord is a "brick," and says, "Never mind the expense ; I will build hammels for you, and charge nothing for them," it may be all very well ; but if I have to pay interest and wear and tear on the cost of the hammels, I am not quite so clear about it. Mr. Mechi's sparred floors may be very good, for he saves all the urine (the best part of the manure) ; but I rather think that interest and repairs will come to a deal of money. Wood rots very quickly, and, used as Mr. Mechi would use it, would quickly need renewing ; but if I, as tenant, have to replace it, I may buy my manure too dear. As for strawyards and open sheds round them, all the rains of heaven fall upon them, and of course wash the best part of the manure down the gutter ; and as that gutter very seldom indeed is arranged to irrigate a meadow, the best of the manure goes into the neighbouring brook. With cattle tied up in stalls it is a little better, but even then how often do we see the urine (the best manure of all) running down the channel, to find its ultimate destination goodness knows where. Then look at the dung-pit ! It likewise is exposed to all the rains of heaven, and the drainage from it, which may really be called "the cream," filters away and is lost. If we have a hammel or loose box this is not the case, for the urine is absorbed by the thick layer of dung and dry straw below ; but then, as I said before, the expense is enormous. One of my cattle houses, which is fitted up for 48 beasts to be tied up, is 72 feet long and 29 feet wide (clear inside measurement) with a feeding passage down the middle. Now this house cost me about £200, or say £4 per head for each beast tied up, but if it were fitted up for loose boxes, still retaining the feeding passage down the middle, it would only hold 20 beasts, and would have cost me at least £50 more for extra divisions and extra height in the walls, making £12 10*s.* for each beast in a loose box, instead of only £4, the cost of house-room for a beast tied in a stall. And if we reckon 10 per cent. for interest and repairs, it would be 8*s.* per head for each beast tied in a stall, and 25*s.* for each beast in a loose box, or more than three times as much ! Now, even if I were willing to pay this increased annual expense, where is the first outlay for building to come from? Landlords are not usually overburdened with spare capital. That straw must be consumed so as to manure the land is admitted by all ; the only question is, which is the most economical way of getting it back on the land as manure? If it is utilised by feeding cattle, those cattle require houses, and a great deal of attendance ; and, after the manure is made, there is a heavy expense and labour in carting it on to the land, not to mention that the urine, the most valuable part of the whole manure, is, to a very large extent, absolutely wanted. But is there no other stock than cattle that can be used for this purpose? Why not use sheep? Sheep will eat straw quite as well as an ox will if you only give it to them at the right season, and in the right way. When sheep are on Turnips, eating them off the land, they will consume a large quantity of straw ; and it is not necessary to make it into chaff to make them eat it. If it is given to them in racks, like hay, sheep will use up about 1½ lb. of straw per head per day. Of this quantity about 1 lb. is eaten, and ½ lb. is trampled under foot. But as it is trampled into the land, where it is wanted, and as the whole of the urine of the animal also falls on the land, it is pretty evident that very little is wanted, at the same time that the cost of cartage is saved. No doubt the straw has to be taken to the fields, but it is no more trouble to take it there than it would be to take it to the cattle-houses. Sheep, in fact, can be made to use up profitably everything that cattle in houses would consume—hay, straw, roots, and corn ; and, as the sheep foldis shifted daily, every part of the farm in turn gets its share of the manure. Of course, if it is heavy clay land, the trampling of sheep will not suit it, but even on heavy clay sheep can be used if the roots and straw are given to them on the Rye-grass and clover lea, where the aftergrass has been finished. On light land no better stock "as manufacturers of manure" can be kept, and if light land be worked on the six years rotation, three years in crop and three years in grass, selling no corn but consuming it all upon the land with sheep, it will pay better than it does at present, and the artificial manure bill may be reduced to zero. On a light land farm, if the grain is sent away from it, artificial manure, or bought food, must be brought back, or the land will get out of condition. But if all the corn grown in the land is consumed there, and nothing but fat stock sold from it, then neither artificial manure nor bought food are necessary to keep up the condition. *G. A. H.*

Sewage Irrigation : Broad versus Narrow Beds.—Mr. Morgan will not leave me alone. When he shirked my challenge to submit his figures as to quantity to the implement judges of the Royal Agricultural Society, I thought that he would have been a little more cautious for the future, but it appears that I was mistaken. He now attacks the principles that I have laid down for the distribution of sewage, with a view to economising both the water and the manure. Having previously stated that he uses much larger quantities of sewage than I do, he now states that by means of his broad beds he is able to get a much smaller quantity to flow over the ground at one time than I can on my narrow beds. Now, this statement is of precisely the same nature as that of Mr. John Hampden—that the earth is flat. Mr. Wallace found it impossible to argue with Mr. Hampden, and I will not attempt to argue with Mr. Morgan ; but I will undertake to prove, both mathematically and practically, that his statement is nonsense, to the satisfaction of the said implement judges, or of any first-class professor of mathematics or engineering. Will Mr. Morgan accept the challenge? or is he afraid of this one also? *W. Hope, Parsloes, Aug.* 14.

Foreign Correspondence.

BERLIN : *Aug.* 15.—*The Liernur Pneumatic System.* —I am sorry to find, on reading one of your recent leaders and Mr. Mechi's communication (p. 1023), that I have been sorely misunderstood. I am, however, indebted to Mr. Mechi for contradicting the statement that irrigation has been abolished in his fields, and am quite sure his German contemporaries would like nothing better than particulars, for they have heard the most contradictory statements about Tiptree Hall proceedings. Perhaps I may, on my side, oblige Mr. Mechi by telling him that I abhor cesspools as much as he. The very reason mentioned in my last for speaking a word in the cause of Liernur's plan, is, that it does away with cesspools. The reason, moreover, why I feel enthusiastic about the pneumatic system is, that it does away with the sewers also. To my sense of recognition the water-carriage is no better than a huge diluted cesspool in the highest degree of development ; and as it is incomplete and irrational without irrigation, and as irrigation is an impossibility with the German climate, Liernur is to be thanked for his invention of pneumatic sewers.

I have called Liernur's the inverted gasworks, which alone would tend to show that there can be no cesspools about them. There are certainly subterranean reservoirs of cast-iron, and of air-tight construction, serving as evacuators for eight rows of houses at the street corners, but these are very far indeed from being anything like cesspools. However, I have heard of Liernur tenders being used in several places for evacuating cesspools, but this is done, I should say, because the pneumatic reservoir and tubes have not been as yet adopted, for various reasons, which I will trouble myself to inquire into, although I should like to drop the subject for good, and never more to offend your admirable prejudice, "Wash and be clean," which is no less my own. In my own defence, however, I may be allowed to add a few words upon this particular washing process, as it goes on in connection with the sewerage system. If washing means diluting, generating diseases, and distilling malaria into the very bedrooms, then the sewerage system is washing indeed ; but if it means making evil things imperceptible to any and every sense, and innoxious to health, then I can but stick to Mr. Liernur's invention, and call him a waterman *par excellence*. Water is a very good thing for cleansing purposes, but if, after that, you don't know where to send it, you must own that in this case (as it would be with the drawbacks of climate in Germany) you have made matters worse, and instead of washing away you have but diluted and magnified dirt.

I won't dwell upon the sanitary side of the question, and upon the growing mortality in seweraged towns. I can but say that in Heidelberg, Germany, the typhoid fever has been growing worse ever since the town was undermined with sewers, and that from 34 cases in 1860 it has risen to 107 cases in 1867, gradually but steadily, and that those parts of the town without waterclosets are still by far the healthiest, varying in different parts from 26 to 57 cases per thousand. I won't dwell upon the words of one of your medical authorities, who said that a good stink is better than that morbid gas which is distilled into English houses —I won't dwell upon sewage-fevers, sewage-tongues, and what else ; I can but say that wells and pumps are no better between sewers than they are between cesspools, perhaps worse. My admiration for English sewers never was equally genuine, as you may have read between the lines. Water is not the thing to quench putrefaction—water is the very element of its growth.

Besides, as to noses : let Mr. Mechi's be the most sensitive organ of smell there ever was, is, or will be, I have got a ladder at home to go up and down stairs with—meaning a nose—which is no less offended by cesspools than by sewers, let alone the irrigation. If this be a question of noses, give me Liernur's plan, his ventilating closets, his pneumatic tubes, air-tight cast-iron reservoirs and tenders, self-acting decantations, and have all those things the nose don't like sent out of town every day, every night, in express trains, well stoppered ; let them be put into cesspools in the country, mixed with earth, ashes, lime, gypsum, &c., by thousands of very willing farmers, and used for gardening purposes, or let them be ploughed into the ground by special contrivances, such as you might call barrel-ploughs. But if it be no question of noses, then let England enjoy her sewers and irrigation fields, dilute and spread what other people hide and bury ; let her grow Rye-grass, and no end of it, but let her abstain from nasal evidence ; let her convert her fields into putrid pools, which to live and work in a new race of Egyptians would have to be born ; let her people be the walking habitations of entozoa, and say it pays !

I have not had the pleasure of enjoying the country breezes at Lodge Farm, Barking, but to judge from those infernal smells I could not help enjoying on the irrigation lands south of Berlin, I would prefer not to ; and I hope that this also is a healthy prejudice. However, I could not but be astonished that in Great Britain, what with her climate, sewerage, and gentleman farming, there are as yet no more than 13 irrigation farms, with no more than 1630 acres between them,—I mean sewage-irrigation farms, of course. I believe the sheets of paper that have been spoilt in the irrigation question present a larger area than the lands that have been spoilt with the thing itself. There is no doubt about this being the case in Germany, and perhaps some knowing chap would find it easy to state the same for the home of irrigation—for Old England.

Perhaps, as Beetroot growing will go on, in Germany with the Liernur manure and in England with sewage, some facts will turn up to show what is paying, in Mr. Mechi's sense of the word. Taking, as I do, sewerage and irrigation as a unit, and summing up what a ton of manure may cost to the town and what it will produce in the fields on the one hand, and summing up what an equivalent of Liernur manure will not cost, but will pay to the town, and what can be grown by that, I can, *à priori*, not decide in favour of Mr. Mechi, though he obliges us by filling up, with numerals and cyphers, what I leave to mere logic. *O. Beta.*

Societies.

KEIGHLEY.

THE 29th annual show of the Keighley Agricultural Society was held on the 18th inst., and was fully equal to those of previous years.

The *Cattle* were altogether a very fine show. The aged bulls were a splendid class. The 1st prize in this class was taken by Mr, J. Outhwaite, Catterick, with a white bull, two years and seven months old. This was really a magnificent animal, of enormous size, well fed, and shapely, with a beautifully sleek, silky hide. He was the subject of universal remark and admiration by the visitors. The 2d prize was taken by an animal belonging to Mr. T. Statter, jun., Stand Hall. This was also a fine beast. For a Shorthorn bull above one year old, the 1st prize was taken by Mr. R. Stratton, of Swindon, and the 2d by Mr. R. Parker, Burnley. The 1st prize for a bull calf, under 12 months old, was awarded to Lady Pigot, Branches Park. Lady Pigot was an exhibitor in almost all the classes of cattle. There was a remarkably good show of Shorthorn cows, in milk or in calf. The 1st prize was taken by a cow of very large size, and finely formed, belonging to Mr. J. Outhwaite. The 2d prize was awarded to Mr. A. Dugdale, Burnley. For the best Shorthorn heifer, under three years old, the 1st prize was taken by Lady Pigot, with a very nice beast ; and the 2d by Mr. J. How, Huntingdon. Mr. R. Stratton took the 1st prize for a heifer under two years, and Mr. J. How the 2d. Lady Pigot was 1st in the class of heifer calves, and Mr. T. Statter, jun., Stand Hall, 2d. The dairy cows were an excellent show, and the whole class was highly commended by the judges. The 1st prize was awarded to Mr. W. Bentley, Allerton ; and the 2d to Mr. H. Crossley, Halifax. In the class of Alderney or Guernsey cows, a pretty cow, the property of Mr. E. Holmes, Keighley, took 1st position ; the 2d prize was won by Mr. R. L. Hattersley, Keighley. A special feature of the show was the offering by the Society of three prizes of £50, £10, and £5 respectively to the exhibitors of the best, 2d best, and 3d best three Shorthorns. The 1st prize was taken by the fine bull belonging to Mr. Outhwaite, winner of the 1st prize amongst the aged bulls. The 2d prize was taken by Mr. J. How, and the 3d by Mr. R. Stratton. A number of premiums were offered to tradesmen and farmers living within a radius of 15 miles from Keighley. In this department the 1st prize for a Shorthorn bull above two years old was won by Mr. W. Tillotson, Marsden Hall ; 1st for a bull under two years old, by Mr. R. Parker, Burnley ; and the 1st for a bull calf by Mr. J. Dinsdale, Exleyhead. The last was a remarkably large animal for its age. In cows, Mr. H. Crossley, Halifax, took the 1st prize. In heifers, Mr. B. Baxter, Elslack Hall, took two 1st prizes ; and for the best heifer calf Mr. T. Hird, Skipton, was 1st. The calf with which Mr. Hird took this prize was wonderfully large, and well-fed for its age. The 2d prize for a heifer calf was won by Mr. J. Duckett, West Morton, with an animal that took 2d prizes at the Horton and Allerton shows.

In the *Horse* classes there was a very good show of roadsters, draught horses, cobs, and ponies ; but the speciality of the show was the hunters, of which there was a greater number than in any former year, and many of them animals of first-class quality. For a coaching stallion Stirk Brothers, Kildwick, took the 1st prize ; and for a roadster stallion Mr. J. Gill, Silsden, was 1st ; while Mr. J. Forshaw, Burley, took the 1st prize for a draught stallion. The stallions were rather a poor show. Mr. J. Ellis, Beeston, Leeds, was 1st for a 3-year-old roadster ; Mr. J. F. Crowther, Mirfield, for a 2-year-old ; and Mr. P. Parker, Barrhead, for a 1-year-old. For the best draught brood mare, Mr. T. Statter took the 1st prize. Mr. E. Holmes, Keighley, was 1st for a roadster brood mare. For a cob under 15 hands, Mr. E. Charlesworth, Rooley Villa, Bradford, was awarded the 1st prize. Mr. B. Smith, Manningham, took a 1st prize for a fine display in the single harness competition. The committee, with a well-judged liberality and enterprise, offered a 1st prize of £50 for the best hunter, and the result was that a large number of fine animals were shown. The 1st prize was won by a beautiful bay, five years old, the property of Mr. J. B. Booth, Killerby Hall, Catterick. The 2d prize was awarded to Mr. J. M. Tattersall, Musgrave ; and the third to Mr. E. Nesfield, Scarborough.

The *Sheep* were, on the whole, rather a poor show, and the whole of the first prizes for the Longwoolled varieties, open to the kingdom, were, with one exception, carried off by Mr. T. H. Hutchinson, Catterick. The exception was a first prize won by Mr. R. Surr, Ripley. Mr. M. Lamb, and Mr. G. Greaves, Otley, were the principal district prize-takers. Lonk sheep were considerably below last year's show. The prinpal prize-takers were Mr. B. Dobson, Ilkley ; Mr. J. G. Bridge, Rawtenstall ; Mr. J. Pickup, Newchurch ; Mr. J. Gill, Silsden ; and Mr. M. Lamb, Otley.

The *Pigs* were a large show, and amongst them were many well-fed animals. Mr. C. Roberts, Wakefield, won the siver cup for the best pig in the show. There was a very deserving show of working men's pigs. The silver cup for the best pig in this department was won by Mr. L. Steel, Keighley.—There was a large show of poultry, and the pigeons were of excellent quality.—Three fine stands of agricultural implements were shown. Messrs. W. & F. Richmond, Colne, showed a most extensive and choice selection, and received the first prize. Towards the close of the day a leaping competition took place, and excited much interest. The number of visitors was large, notwithstanding very disagreeable weather. *Condensed from the "Chamber of Agriculture Journal."*

PRESTON.

THE annual show of this young Society was held on the 16th inst., and the entries in all the classes were larger than at the first meeting a year ago—the number being about 250.

Cattle.—There was a first-class collection in both classes, gentlemen's and tenant-farmers. The 1st prize was awarded to Mr. Parker's roan ROYALIST, a fine animal with grand points certainly ; but there can hardly be a doubt that had the owner of the 2d prize bull, Mr. Statter, given the age he would have stood 1st. The show was a capital one in every way. The bulls under two years were a very fair class, but there was a considerable falling off, in point of quality, between the younger animals and the older ones. The aged bulls were decidedly the best class. There were one or two nice bull calves ; but the specimens were not extraordinarily good, especially compared with the fine samples of breeding and condition which had previously paraded the ring. The prize-takers were good and promising youngsters. There was an excellent class of aged cows, and the judges experienced much difficulty in getting them sorted for the prizes. Mr. Statter was again to the front, closely followed by Mr. W. Dodgson, of Plumpton Hall. Under three years, the heifers turned out fairly, and were what may be called a good class. For the best heifers not exceeding two years of age, however, the quality was not remarkably good ; and with regard to the calves, they were not so good as could have been wished. The tenant-farmers' bulls were an excellent lot, and it was difficult to make a selection for the prizes ; but when the aged lot was left, the young bulls showed a similar falling-off to that experienced in the other class. Mr. Tomlinson's calf was of more than an average merit, and Mr. Marsland's was fittingly rewarded. The remarks already made may be applied to the cows or heifers—the old ones were decidedly the best ; but the display was better than ordinary of the "over two" heifers, where the competition was close, Mr. Marsland again taking the 1st prize with a nice roan. In the class below, the young heifers rather fell off in quality, and the calves, too, were scarcely found so good as could have been desired, although there was not much room for fault-finding. The prizes for the three best dairy cows brought out two splendid groups, each animal being veritably a picture ; and the winners, Mr. Lund, of Hollingshead Fold, and Mr. Dodgson, Plumpton Hall, deserve the highest compliment. In addition to receiving the 2d prize, Mr. Dodgson was highly commended.

Horses.—Unquestionably the horses constituted the strong point of the show, leaving out of the reckoning the classes of lesser importance ; and the collection, for a local exhibition, merited the high encomiums it received both from the judges and the visitors. In sheer point of numbers it far overtopped other classes, but even this flattering feature was surpassed by the excellence of quality. Five thoroughbred stallions were brought into competition, and these horses included the animals best known and most favoured in the district. The chief prize fell to "Lord Hastings," belonging to Mr. Joseph Tate, of Pole Street, Preston, a fine-looking horse, with splendid legs and hocks, and altogether as good inherently as attractive outwardly. "Lord Hastings" has been exhibited at eight shows, and at seven has carried off the 1st prize decisively. Mr. Brown's fine brown horse "Humdrum," with nothing at all humdrum or ordinary about it, took the 2d prize worthily. Messrs. Lund & Redman's roadster stallion "Octavian" won easily in point of quality. In the draught stallions the decision of the judges at the Royal North Lancashire meeting at Blackburn was singularly reversed, and we do not care to venture any explanation. Mr. Cooke, of Much Hoole, carried off the 1st prize with his "Ploughboy," a very good horse, with excellent legs and superior action ; and Mr. Edmundson, of Extwisle, near Burnley, had to be contented with a 2d place, although at the show referred to he was placed before his opponent. The brood mares were a capital show, and Mr. Jenkinson's Nateby mare, "Star," fully deserved the position attained at the head of the list. Mr. Statter's mare, which came in 2d, is a good animal, but she has not the decided quality of the other competitor. The mares for road or field in foal were also a nice class, and Mr. Fox, of Singleton, took the prize with the handsome chestnut "Pink," a fine goer. The pairs of draught horses were only moderately good, if we except the takers of both prizes, Mr. Brierley's, Middleton, which were far in advance of the rest in all particulars. The draught 3-year-olds were capital, and the winning horses of both 1st and 2d prizes in the next class for other purposes, Mr. W. Jackson's "Singleton," and Mr. W. Coddington's "Blackburn," were nice blood-looking horses. The prize-winner in the 2-year-olds for draught purposes is a nice bay filly, belonging to Mr. Rimmer, of Farington. The "other purposes" 2-year-olds were an average class, and the yearlings for draught fair, but not of first quality. Mr. T. H. Miller carried off the 1st prize in the yearling class for general purposes with a good brown colt, and Miss Aglionby won 2d honours with a lively chestnut. The colts and fillies for draught were a good show—an excellent show, in fact; the leaders being Mr. W. Harrison, Woodplumpton, with a good brown of four months, followed very closely by Mr. T. Cartmell, of Clifton, with an equally promising grey by "British Ensign," three months old. In the succeeding class there were some fair colts.

Sheep.—There was a particularly good show of Leicesters and of Longwoolled sheep, and the Southdowns were of fair character, but only limited. The Fell sheep merited warm commendation. In white-faced lambs, also, the collection was to be commended; whilst the gimmer lambs were of extraordinary merit, and ranking above an average class. Altogther, the show of sheep was excellent, and several exhibitors from a distance expressed surprise at the high character of several of the pens brought forward from the district. The whole collection was in good order and condition.

Pigs.—These formed a fine show, considering its limited extent; but the chances of local exhibitors were altogether swamped by the porcine wonders forwarded by Mr. P. Eden, of Salford. His two splendid boars of the large breed—without question a couple of the best animals in all England, as recent contests have proved—carried off the 1st and 2d prizes without difficulty; but Mr. Wareing, of Woodplumpton, received high commendation for a fine young boar of 10 months. The result was varied in the small breed boars, Mr. Eden having to content himself with the 2d place, giving way to Mr. Leigh's, of Lea, fine boar Sam. The Berkshire boars were tolerably well grown, and the 1st prize winner, shown by Mr. Curtis, Garstang, was deserving hearty commendation. In breeding sows, Mr. Eden went again in front for both premiums; and for the smaller kind he again took 1st money, but was closely followed by Mr. Leigh. The Berkshire sows were tolerably good pigs. *Abridged from the "Mark Lane Express."*

DEVONSHIRE.

Savings Banks for Landowners, Farmers, and Labourers.—The following is an address on this subject, lately delivered before the Devonshire Chamber of Agriculture, by the Rev. E. Girdlestone, of Halberton, and since published in a pamphlet form. Mr. GIRDLESTONE said:—

Amongst the many idle tales which have been circulated about me, one is, that my interest is centred in the labourer exclusively, and that I have no care or consideration for the landowner or the farmer. This is altogether incorrect. In truth, it is impossible to separate the interests of these three classes from one another. A man must be a fool to make the attempt. One might as well expect that the rainbow would be as bright with one of its elementary colours omitted, or the air we breathe be as wholesome with one of its constituent gases left out, as that the land can be well cultivated in any other way than by the joint and prosperous action of the three classes who are indispensable for its cultivation. Landowners, farmers, and labourers must stand or fall together. The bow is no weapon apart from the string and the arrow. The rifle is useless without powder and ball. The whole human body sympathises in, and is deteriorated by, an injury to any one of its members. That which for profit or loss affects any one of the three agricultural classes, equally affects the other two. In speaking to you, then, this day about savings banks, I propose to consider them with reference to landowners and farmers, as well as with reference to labourers. I define a savings bank to be a depository for savings. I consider that that is the best savings bank which insures the largest amount of profit with the largest amount of safety. Savings banks are equally necessary for landowners, farmers and labourers. On a right use of them by each of the above three classes the proper cultivation of the land, and, in consequence, the prosperity of the whole agricultural interest, in great measure depend.

1. *As to landowners.*—A non-residence on or in the neighbourhood of their property, such as is too common; a very luxurious and expensive life in London, or on the Continent, for a large portion of the year; an abandonment of their estates chiefly to the care of agents, stewards, and bailiffs—these, it is clear, are no savings banks for landowners. However large be the amounts of rent paid into their hands, if they are invested in any of the above ways, they will be money not saved, but wasted. Principal and interest will both vanish together. Horse-racing and gambling, the latter now, unfortunately so, almost always, more or less, mixed up with the former, need only to be mentioned in order to be condemned. To such practices it is owing that many large and even noble landed proprietors, some by their own fault, others by the vices of their sons, are at this moment bankrupt, and many vast landed estates are lying unimproved, to the great detriment of the occupiers and labourers, as well as of the prestige of the whole class of large landowners itself. No one, of course, will pretend that any of these practices are safe, or profitable, or even respectable investments for the produce of the land. I pass on to those which have a right to be considered as such. For instance, there are the Funds, British or foreign, railways, mines, and joint-stock companies for purposes too many and numerous to be enumerated. These, of course, may all be considered as unobjectionable savings banks, as well for landowners as for any other class. They are all more or less profitable, safe, and even respectable. Still, neither these, nor anything of a like sort are, to my mind, the best savings banks for landowners. The savings bank which I would most strongly recommend to the landowner is the land itself. Nowhere else will his rents be invested so safely or so profitably. From no other source will he obtain so sure and so large a return. The land is proverbially honest. By those landowners who have been wise enough to put implicit confidence in it, it has been found as honest as by any other class connected with its cultivation. Draining; the improvement of farm-houses, farm-buildings, labourers' cottages; the enclosure of useless roadside wastes; the proper repair of gates and fences, including the abolition of those which are useless; the construction of water-tanks, to which the injury inflicted to both crops and cattle by the severe drought of the last two summers is directing special attention, and with respect to which much useful information may be obtained by a reference to Mr. G. Legard's "Farming of the East Riding," published some years ago in the Journal of the Royal Agricultural Society of England; attention to county business, magisterial duties, and the administration of the poor, highway, and education rates, resulting in less extravagance, crime, and pauperism, together with better roads and a more instructed peasantry—this is the best savings bank for landowners. The safety of this bank is undeniable. The profit is sure. A landed estate thus managed by its owner, and let on lease to carefully selected tenants, with all proper security against their being deprived of the benefits of any improvements made by them, and due provision against any loss by game, will command such rents from responsible parties as will be the best and safest investment. It is thus that a mill, a factory, a foundry, a colliery, a mine, a pottery, or even a mercantile or banking business, is made to answer. The misfortune is that so many landowners look upon their land as anything but a business, yet there is no business which, if time, attention, and money, be invested in it, is more profitable. In the debate in the House of Commons on April 26 last, Mr. W. Fowler, M.P. for Cambridge, spoke as follows:—"The country needed a large number of improving landlords, who would do their utmost to improve their estates, and thus benefit the community at large. At present the value of capital as an improvement of land was not sufficiently appreciated; but without capital the land was impotent. In the *Times* of November 11 last, a case was noticed of a gentleman who purchased 450 acres of land for £15,750, and having spent £3800 upon it during four years, he netted £1880 on the sale of the crops of 1870 from an annual average outlay of £3450. The tenant's profit at a rent of £2 per acre, and 10*s.* for taxes would be, through this expenditure of capital, £1150 per annum during the four yours. Other instances equally trustworthy showed how greatly the produce of the country would be increased if capital were employed upon the land in this way." Had a tenant taken this farm at a rent of £2 per acre, and 10*s.* per acre for rates, he would have netted more than 20 per cent. on his year's farming in 1870. For landowners, then, the safest and most profitable savings bank is the land. When all has been spent by its owner upon the land which it needs, or is capable of receiving, it will be time enough to look out for some other investment. This, however, will not often be required. For if, on the one hand, the land is not only very honest, but even liberal, as regards repayments, on the other hand it is very exhaustive. It may certainly be added, that there is no savings bank in which deposits can be made by the landowner with more pleasure, health, and comfort to himself, with more domestic and social enjoyment, with a more encouraging sense of duty rightly discharged, obligations faithfully fulfilled, and, under God's blessing, permanent benefits secured to his own neighbourhood and the country at large.

2. *The best savings bank for farmers.*—I have no need, in the case of farmers, as in that of landowners, to advert to such subjects as non-residence or luxurious and expensive living. Expensive living is not a fault which can often be charged upon a farmer, and the difficulty is, not to keep farmers at home, but to move them from home. An occasional visit to different parts of the country for the purpose of seeing modes of agriculture different from their own, a run, for instance, into Norfolk, or Yorkshire, or the Lothians, would, for the specific instruction it would convey, as well as for the general wakening effect it would have upon the mind, be always well worth the money it would cost, and be anything but a bad investment of a few small savings. Farmers, though not to the same extent as landowners, may be tempted to invest their savings in railways, mines, limited liability companies, and other like speculations. These are more or less both profitable and safe according to circumstances, and thoroughly unobjectionable. Still, I cannot recommend any of them, not even the old-fashioned 3½ per cents. themselves, as the best savings banks for farmers. To the farmer, the same as already to the landowner, I recommend the land as the safest and most profitable bank in which to invest his savings. The land is as honest to the occupier as it is to the owner. The owners may force it to be less honest to the farmer than it otherwise would be by refusing a lease, declining to give security for tenant-right, overstocking it with game, or by that general apathy and carelessness, and disinclination, or even inability to provide the funds for necessary improvements which in so many cases renders the farm so much less profitable to the occupier than it ought to be, and otherwise would be. Still, under the most adverse conditions, the land is so proverbially honest, as to be always the safest and most profitable savings bank for the farmer. A careful, constant, unremitting personal supervision of the farm; the employment of all the newest and best machinery; unsparing use of the most approved manures, carefully chosen with reference to the crop and soil; care in the selection and rotation of crops; the securing at any expense hay and corn harvests while the sun shines; the improvement of stock, even though the cost be heavy; good wages punctually paid to labourers; and such kind treatment of them and their families, and care for their religious and moral welfare, as attaches them to the persons, and identifies them with the interests of their employers, and at the some time indisposes them to drunkenness or pauperism; this is the best savings bank for farmers. You will say that to farm on this principle will cost a good deal of money. So it will. But in what way can you more securely or profitably invest every penny which you can save after your rent is paid and your household and personal expenses are supplied? Every penny will come back again into your pocket with compound interest. Machinery, for instance, no doubt, is costly. So are artificial manures. So is a good breed of horses, cattle, sheep, and pigs. But the farmer who refuses to invest in these novelties, who says he cannot afford a mowing, or reaping, or haymaking, or threshing machine, and stolidly contents himself with such old-fashioned implements as the scythe, reaping-hook, pitchfork, and flail, and persists in applying to every crop, without exception or distinction, the manure out of his own stable alone, will find that he has very few savings to invest anywhere. He may live, though that is questionable, but to thrive or prosper is impossible. So also it is often pleaded that to give good wages to a labourer and to treat him with liberality and kindness, and look after his religious and moral welfare, is all very well for gentlemen, but does not pay the farmer. What is it, I ask, in reply to such a plea, which chiefly impoverishes a farmer and deprives him of his profits? Undoubtedly the heavy and almost crushing burden of local rates, and damage to horses, stock, and other property, through the drunkenness, carelessness, and want of interest in the welfare of their employer, which are so common amongst the labouring class. Is there no advantage, then, for the farmer in so raising the condition of the labourer as to make him an independent, and sober, and moral, and attached servant? Will he not, in diminished poor rates and less damage to property, put into one pocket more than he takes out of the other for higher wages aud multiplied comforts? For the farmer, then, as for the landowner, the best savings bank is the land. The land will exhaust all the savings of the farmer, but it will repay him with surer and larger interest than any other investment. As long as a man occupies land, his wisest course is to spend all his time and money in improving it. It will be time enough to invest his savings elsewhere when he gives up business and ceases to be a farmer.

3. *I pass on to the labourer.*—At present, unfortunately, the most popular savings bank amongst labourers is the Poor-law. This may be described as a savings bank without the trouble, self-denial, and sacrifice involved in saving. It is a savings bank in which those who reap no benefit from it—the farmers more than anyone else—to their great cost and detriment, contribute all the funds, while the idle and dissipated reap all the benefit, and are, consequently, encouraged in habits of idleness and dissipation. Young men and women of the labouring class marry in large numbers without having saved a penny beforehand, with scarcely a bed to lie on, or clothes to their backs. They belong to no club, and have no nest-egg in any savings bank. They look from the very first to parish relief as their right. At the first occurrence of

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* B. Prowse, Newton Abbot, Devonshire.

sickness, or other adverse circumstance, they resort to it, and cling to it without the slightest feeling of shame or degradation. In old age they look upon it as so completely their proper source of maintenance that even if, as is often the case, they happen to have children in independent circumstances, and well able to help them, these very frequently are not ashamed to allow their parents to be maintained at the public expense. Neither Queen Elizabeth, who first established the Poor-law, nor those statesmen who, in successive generations, have attempted to alter and improve it, ever intended it to be the gigantic pauperising engine which it now is; for generally speaking, especially in the west of England, the agricultural labourer has at some period of his life been dependent on the Poor-law for relief to himself or family, and in old age has no other source of maintenance. The Poor-law was enacted, not to supplement wages; not to supply the deficiency of industrious, sober, saving, thrifty habits; or to make up for a want of filial duty to aged and infirm parents, and so encourage pauperism, dependence, idleness, and vice; but only to meet exceptional cases, and, when all other proper and legitimate means of maintenance failed, to provide that none should starve.

The sooner the administration of the Poor-law is reformed, though the change can, of course, be only gradually made, and brought back to the principles on which it was originally enacted, and the labourer taught to look to a more wholesome sort of savings bank, the better it will be for all parties concerned. It is chiefly the married labourer, of course, who can follow the example of the owner and occupier, and, on a small scale, make the land his savings bank. This he may do by spending every moment of time and every penny of money he can spare on his garden, Potato-ground, pig, poultry, and cow, if, as in some instances, he has one, than which he will never find a safer or more profitable investment. A co-operative farm also (which has been tried in several places—by the late Mr. Gurdon, for instance, at Assington, in Suffolk—and found very successful), is a good savings bank for labourers. A certain number of labourers in a parish form themselves into a company, and take a farm. A fund is raised adequate to the rent and other expenses, say in £1 shares. One of the number is appointed at a fixed salary as the bailiff or manager of the farm. The labour is equitably divided amongst the shareholders, at such times as suits their convenience, on days when they have no other work, or after other work is done; at a fixed sum per day or hour; and, if these fail, independent labourers are engaged. The profits are divided at so much per share. It is a pity that those landowners who have the power of doing it, do not set on foot, one in a parish or district, co-operative farms of this sort for labourers; or, failing this, have a cowshed and a small piece of ground attached to a few of their cottages, to be allotted as they fall vacant as prizes to the more thrifty of the labourers on their estate. There cannot be a better sort of savings bank for them, or one which would more efficiently encourage habits of industry, thrift, and independence. The same may be said of co-operative stores or shops for all sorts of food and clothing. These are founded on exactly the same principle as co-operative farms, and are already to be found, and flourishing, for all, including even the highest classes of society, in London, many large cities and towns, and several country villages. It is almost incredible how large a proportion of the small wages of labourers is, instead of being saved, absolutely wasted by the purchase at small shops of adulterated food and flimsy clothing at high credit prices. A co-operative store in a village, managed by the labourers themselves, in which they lay in their own goods, at wholesale prices, from the best markets; retail them amongst themselves at ready-money prices; are relieved from the profit of the retail dealer; get out of the bad and pauperising habit of always being in debt; and, in the end, share the profit,—is a first-rate, most profitable, and instructive savings bank. Young unmarried labourers, and farm servants of both sexes, should begin to save as soon as they begin to work. They would not then, as too many do now, enter on married life without a penny beforehand, and with no resource in sickness or sorrow but the Poor-law. They would, moreover, have contracted a habit of saving which would never leave them, but in after life would lead them to add, as opportunity offered, to the nest-egg laid in early youth, and be one of the best safeguards against yielding to the temptations of intemperance and extravagance. I cannot very strongly recommend clubs or friendly societies as savings banks for labourers. Some undoubtedly are well managed, safe, and prosperous. But a very large number are constituted on incorrect statistics; are badly and extravagantly managed; are too much connected with public-houses; are on the eve of bankruptcy, and in very few cases make provision for such an amount of old-age pay as can render the labourer in his declining years comfortably independent of the Poor-law.

There are other savings banks for labourers much better suited than these for the present improved and improving times. That which I would most recommend is the post office savings bank. The post office savings bank is as safe as the funds, is, in fact, identical with the funds, and, unless the whole country were ruined, can never become bankrupt. It is the safest possible investment, and is largely used by all classes, from labourers upwards. The depositors in post office savings banks at the end of the year 1869 were 1,085,785, an increase of 12.49 per cent. over the preceding year. The amount, inclusive of interest of £2 10*s.* per cent. per annum, standing to the credit of all accounts open at the end of 1869 was no less a sum than £13,524,209. The average amount of deposit to each depositor was £12 9*s.* 1¼*d.* In the year 1870, the ninth year in which the post office savings banks have been in operation, deposits to the amount of £5,995,121 were received, and repayments of principal and interest were made to the amount of £4,758,187. The charges of management and expenses for the year were £67,945. The sums due to depositors at the close of the year 1870, including interest accrued, amounted to £15,099,104, being above a million and a half more than at the beginning of the year. These figures show, not only the large extent to which the post office savings bank is used, but also, since the average of deposits in proportion to depositors is so small, that it is chiefly used by the working classes. Not less, however, than 1*s.* can be deposited in the post office savings bank. It is difficult in many cases, especially for agricultural labourers, to spare so much at one and the same time, or themselves to save up so much by degrees; and hence the post office savings bank has been comparatively little used by them. Penny banks, which have been established in a great many places, and are prospering wherever they are established, very happily meet this difficulty. Some one person in the parish, say the clergyman, or the squire, or some benevolent lady, receives at a certain appointed time and place every week deposits from a penny upwards, gives to each depositor a bank-book, provided gratis by the post office, and periodically remits the amount so collected to the post office savings bank, thus facilitating the deposit of even the smallest sums. The Bristol penny bank has been established 10 years. During that time there have been 307,517 depositors, whose deposits amounted to £16,606 9*s.* 6*d.* The depositors are, for the most part, of the poorest class of the working population, the average of the sum deposited in proportion to the number of depositors being 10*d.*, though a great number deposit only 1*d.*, 2*d.*, or 3*d.* There are at the present time 12,000 depositors. The whole sum deposited in 1870 was £1940 6*s.* 4*d.* As an example of what may be done on the same principle in a country village, I will add that a penny bank of the above description, in connection with the post office savings bank, was established at Halberton no longer ago than March 6 last, and that already there are 48 depositors, whose deposits amount to £17. The Postmaster-General is also empowered to insure the lives of persons of either sex between the ages of 16 and 60, for not less than £20 or more than £100. He is also empowered to grant immediate or deferred annuities of not more than £50, than which there is no better plan for securing an independence in old age. Thus, to take a single instance by way of example, a man aged 30 by the payment of £1 8*s.* 4*d.* per annum till he is 60 years old, may secure an annuity of £10 for the remainder of his life, and, of course, a larger annuity by a proportionably larger payment. Or he may secure the same annuity by one payment of the sum of £24 3*s.* 4*d.*, which would be no bad way of spending the money which he has deposited in the savings bank previously. Full information on all the above subjects may be obtained by the purchase of the "British Postal Guide," which is sold at all post offices for 6*d.*, and a new edition of which, with all additional information, is published every quarter. For labourers, then, especially young unmarried farm servants, there is no safer, more profitable, or more easily accessible savings bank than the post office savings bank, annuities for old age, and insurance of life. The establishment of a penny bank in connection with the post office, as has been shown above, enables many, who otherwise could not, to avail themselves of this mode of saving; encourages even young children, instead of wasting, to accumulate their little presents and earnings; lays, in short, and deposits in safe keeping many a nest egg, destined, perhaps, in after life, not only to attract to itself such accumulations as may make an ample and comfortable provision for old age, but, which is even more important, to engender habits of thrift and independence, which may change the whole character and conduct of the man and his family. If, as already has been shown to be the case, it is of the highest importance for the interests of the owners and occupiers of land to encourage habits of thrift and independence amongst the labouring classes, I know of no way in which they can more readily give a helping hand towards this object than by establishing and personally superintending penny banks in connection with the post office savings bank in their several parishes, and explaining to the labourers living on their estates, or in their employ, the condition and advantages of Government insurance and annuities. In truth, an improved peasantry is so completely identified with the prosperity both of the owners and occupiers of land, that I believe that every penny of money or moment of time these spend upon the establishment of penny banks for labourers, is money and time safely and profitably invested on their own account. So that a penny bank is as much indirectly for landowners and farmers, as it is for labourers directly, a savings bank.

The paper, which I have now read to you, does not pretend to be exhaustive. It is a mere sketch of only one out of innumerable subjects connected with the improvement of land. The time, in truth, does not admit of anything more than a mere sketch. But, such as it is, this sketch has been drawn under a very deep sense indeed of the vast importance of the whole subject to which in only a very small part it refers. The improvement of land, and of all who are connected with land, is the one thing most important for this country. The land is the backbone of the nation. Landowners, farmers, and labourers are its thews and sinews. The more these are improved, the firmer and more enduring will be the foundation on which the prosperity of the whole country rests. Had the owners and cultivators of French soil been more enlightened and independent, that personal irresponsible rule, which has been the main cause of all the misfortunes of our unhappy neighbours, would have been impossible. In order to save themselves trouble, they suffered themselves to be led on to nurse the snake which has stung them to the quick; for on no class have the misfortunes of France fallen more heavily than upon her landowners, farmers, and peasantry. Yet even now, in her hour of severest trial and deepest distress, when the population of her capital and chief towns has been tried, and found wanting, it is upon her landowners, farmers, and peasantry, and upon the land itself, that the hopes of France for reconstruction and restoration mainly depend. Nor, by the blessing of God, will our own country ever decline if only the land, and those who cultivate it, are not neglected. For some time past, it must, I think, be admitted these have not received from the Legislature their proper share of attention. The public mind, however, has of late become more alive to the national importance of this subject, and we may hope that, on public grounds, there is for agriculture a good time coming. This is no reason, however, for landowners, farmers, and labourers to neglect their own interests, sit with their hands folded before them, and merely keep their mouths open in expectation, which, after all, may prove vain, that the Legislature will fill them. God does not ordinarily help those who are too idle to help themselves. The maxim which Longfellow puts into the mouth of his quaint hero, Miles Standish, is as applicable to agriculturists as to any other class—

> "That's what I always say: if you wish a thing to be well done
> You must do it yourself; you must not leave it to others."

Farm Memoranda.

East Barns.—The literature of agriculture abounds in records of the manner in which natural difficulties have been overcome by farmers; but the methods by which natural advantages have been turned to account have attracted less attention. This feature of agriculture I shall endeavour to illustrate by the following description of East Barns, in the occupation of Mr. James Murray. The farm is 3 miles east of Dunbar, and lies on both sides of the high road to Cockburnspath, between the Lammermuir Hills and the sea. It is wonderfully sheltered from extremes of climate, and the winter temperature is so mild that it makes a great difference in the period at which some agricultural operations are carried out. There is, however, something more than degrees of temperature or inches of rain to be noticed. The soil is a rich red loam, which has been formed by the decomposition of the more or less subjacent Old Red Sandstone; it is about 9 inches in depth, and is endowed with remarkable natural fertility. But natural fertility requires to be sustained, and even this is partly done by Nature, for Mr. Murray's lease includes the privilege of hauling "sea-ware" from about a mile and a-half of coast, which is equal to a heavy dressing of farmyard manure for from 25 to 40 acres of land, according to the season. [For ground plan of farm-steading see fig. 257, next page.]

The farm consists of about 500 imperial acres of arable land. It is held on a 19 years' lease, under Alexander Mitchell-Innes, Esq., of Ayton Castle, at an annual rental of £2400, and the current lease is the second which has been taken by the present tenant. Considering the nature of a small piece of about 19 acres of pasture, and the fact that the arable land includes about 5 acres of "links,"—a poor sandy soil—it is clear that the natural advantages which have been referred to require to be turned to the best possible account to enable the tenant to obtain a profit after paying a rent which averages nearly £5 per imperial acre. From this point of view, it is hoped that the following description of Mr. Murray's farming operations will be invested with considerable interest. The appearance of the farm, which must be seen to be appreciated, bears evidence of the most studied and careful management, the most thorough and even fastidious neatness and cleanliness; and it shows that, great as is the annual expenditure as rent, the item of labour must also be very large in comparison with the acreage.

The following shift is adopted instead of the ordinary six-course that is most prevalent in the Lothians, partly in consequence of the absence of permanent pasture, and partly on account of the importance of the Potato crop:—1. Turnips; 2. Barley (occasionally a little Wheat) with seeds; 3. Seeds—a part mown, and part grazed; 4. Seeds—grazed; 5. Half Oats and half Potatos; 6. Potatos after Oats, and pulse after Potatos; 7. Wheat.

The pulse in the sixth year, after Potatos in the fifth, consists of Beans on the stronger land, and of a mixture of Beans and Peas on the lighter. As a rule, therefore, the farm is annually divided as follows:—One-seventh Turnips, one-seventh Potatos, two-sevenths seeds, two-sevenths Wheat and Barley, and the remaining seventh is equally divided between Oats and pulse. The stronger land breaks consist of about 65 acres each, and the lighter land fields of about 70. The former yield as much as the latter, and require as much labour, so that the division is fair in each aspect.

Crops.—1. *Roots.*—The Wheat stubble is ploughed from 7 to 9 inches deep, according to the land, when convenient during the autumn; it is then left until after the spring corn has been sown—generally until the middle or end of April, when it is ploughed along the previous ridges. Occasionally cross-ploughing is adopted, but not often. In dry weather, the harrow follows immediately after the plough, to keep the moisture in the soil; and the land is rolled as soon as the surface is dry enough for a roller to work clean. In the interval between the time of ploughing, harrowing, and rolling the land and the preparation of the seed-bed—generally from three weeks to a month—there is time for the nascent crop of annual weeds to make a braird, of from half an inch to double that length, in the well-pulverised and now mellow soil. These weeds are entirely destroyed by subsequent operations, and a weed in flower is rare to see on Mr. Murray's farm. Four or five ploughs are set to open about a dozen drills to begin; they are followed by carts with manure, and by women who spread the manure in the furrows; for Swedes, to the amount of about 25 Scotch cartloads per imperial acre, and 4 cwt. of dissolved bones, or other artificial manure. When there is more farmyard manure available, the quantity of artificial is proportionately diminished. The return ploughs cover the manure, and are immediately succeeded by two following drills, each of which distributes, at a different depth, 1 lb. of seed per acre in drills 27 inches apart, and is followed by a light roller. Turnip-sowing commences about May 10 with Swedes, which are all in by the 20th, and immediately after hybrid and white Turnips follow, the whole being got in by the beginning of June. The young plants are horse-hoed once, and hand-hoed and singled by women working day-work, and the crop is again horse and hand hoed in the course of another fortnight and three weeks.

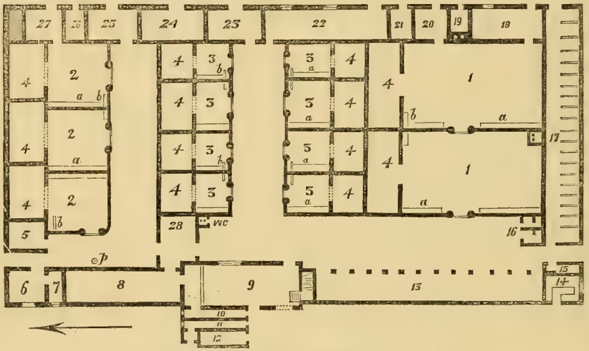

FIG. 258.—GROUND-PLAN OF THE FARM-STEADING AT EAST BARNS.

REFERENCES TO PLAN:—1–3, Fold-yards; 4, Shelter-sheds; 5, Cow-byre; 6, Stable; 7, Harness-room; 8, Large straw-barn; 9, Corn-barn, with fixed threshing-machine and chaff-cutter; 10, Engine; 11, Boiler; 12, Coals; 13, Cart-shed, with granary above; 14, Poultry; 15, Tool-house; 16, Piggery; 17, Stable for farm-horses; 18, Hay-house; 19, Boiling-house; 20, Cake-house; 21, Killing-house; 22, Servants' cow-byre; 23 and 25, Turnip-houses; 24, Machine and tool-house; 26, Gig-house; 27, Extra stable, with water-cistern at side; 28, Small straw-barn; *a*, *a*, Food-troughs; *b*, *b*, Water-troughs; *p*, Pump.

What with clean land in good condition, a soil naturally fertile, and a growing climate, the Turnip crop is never a matter of anxiety in the commencement of the season. It is, however, the most precarious crop on East Barns; but the difficulty is not securing a braird, nor in the ravages of the "fly." The anxious time is the latter end of summer and the early part of autumn, when, should dry weather set in, the root-crop sometimes falls short. Mr. Murray stated that if he could secure a fair amount of rain in the autumn, he could be certain of a good crop. About one-third of the break on East Barns is sown with Drummond's Purple-top Swede, and the remainder with hybrid and white Turnips. No Aberdeen yellows are grown. Mr. Murray is of opinion that the seed should be two years' old, and his system is to buy new seed, say in 1868, to be sown in 1870, and 1869 for 1871, and so on. His conviction is that the plants bulb better than from new seed, and do not run so much to top.

2. *Barley.*—As soon as convenient after the Turnips are cleared off the light land, it is ploughed from 6 to 7 inches deep, and harrowed down fine as soon as the weather will permit. In this state it remains until the annual weeds have made a braird, when the skim-plough is put over the land, cutting about 1½ inch below the surface, and destroying the pestiferous wild crop. In the course of another day the land is again harrowed, and is then ready for drilling. Usually not more than 24 hours intervene between the harrow and the drill. From 1½ to 2 bush. of seed Barley according to the richnesss of the land, is drilled, lightly harrowed in, and the land rolled. The seeds are then sown, the land lightly harrowed, and finally well rolled.

The strong land for Barley, or sometimes Wheat, does not require so much preparation, as it is not so likely to produce the adventitious crop of annuals, which is the object of Mr. Murray's especial solicitude. It is ploughed when the roots are cleared off, and, if dry enough, harrowed immediately; but otherwise it is left until fit, when the harrow and drill follow in close succession, and the seeds are sown as before.

3. *Seeds.*—A large quantity of seeds are usually sown per acre, the mixture being:—3 pecks Italian Rye-grass (one-half English and one-half foreign), ½ bush. perennial Rye-grass,* and not less than 20 lb. of different Clovers, 6 lb. red, 6 lb. Alsike, 5 lb. white Dutch, and 3 lb. Trefoil; also a quantity of Plantain and Parsley, not more than 2 lb. of each. The system of management commences soon after the Barley is carried, by pasturing with sheep to the extent that the young plants are strong enough to bear. The first year from one-third to one-half of the break is mown, and the aftermath is fed. Two-year-old seeds are entirely pastured, the sheep getting white Turnips on them for two or three weeks before they go entirely on roots. Clover sickness is rare.

4. *Oats.*—As Wheat is never taken after seeds, the lea is not broken up until the end of January or beginning of February, when it is ploughed to the depth of 6½ or 7 inches. Immediately before drilling the land is harrowed, and if there is any appearance of annual weeds the crop is also horse-hoed when sufficiently advanced. Black Tartarian Oats are usually grown, the climate being too dry to suit the white sorts, and about 11 pecks of seed is generally the quantity used. The whole of the crop is consumed on the farm, as well as the straw. *Journal of Royal English Agricultural Society*, vol. vii.

(*To be Continued.*)

Miscellaneous.

DRY EARTH FOR PIGSTIES.—A friend of mine who has some valuable thorough-bred pigs, which he kept as breeding stock in the country, having to abandon his country property and remove to the city, where from the requirements of the sanitary regulations it was thought the pigs could not be kept, except at considerable risk, has overcome the difficulty through applying the principles of the earth-closet to the use of his pigs. Box sties were put up in a covered building in the rear of the yard of his city residence. A large quantity of well-dried friable loam was obtained and placed under cover, where it would keep dry. At the farthest corner of each sty sufficient straw was placed to make a comfortable bed for piggy to lie on. He never defiles his bed if he can help it. Over the rest of the sty, and especially near the feeding troughs, dry earth was spread over the boarded floor. At first it was thought necessary to clean out the sties every day, and put in a fresh supply of dry earth, but it was soon found out that a shovelful of dry earth thrown every morning and night over what was in the sty, entirely disinfected it of all odours, and so obviated the necessity of cleaning out oftener than once a week. I have visited the place several times, and found no bad smell whatever arising from the sties, nor has anyone, either in the residence or among the neighbours adjoining complained of any annoyance therefrom. The pigs seem to thrive well, are healthy, and quiet. One sty, containing several young pigs, is kept entirely covered with several inches of dry earth, no straw being allowed them, and they appear to delight to roll and root about in it. It might be worth while to try the application of this same principle, on a more extensive scale, in stables, cow-byres, and poultry-houses in the cities and towns. Even in the country, if the earth could be properly dried and stored away for winter use, it might be found of great value as an absorbent of the ammonia in the droppings of stock. This might be done by sprinkling a little over the fresh droppings night and morning, before throwing out the manure heap. By a proper and systematic use of this valuable adjunct, the quality of the manure made on the farm might be largely increased, without adding to its bulk by the admixture of so much useless straw as is customary. *J. M., in "Country Gentleman."*

The Week's Work.

AUGUST 26: *Harvest in Scotland.*—Over the greater part of Scotland the command of labour is limited to a regular staff of harvest hands, so that the whole work has to be done by them; and the task is severe, calling into requisition the assistance of reaping-machines by those who have hitherto only used the scythe.

Hemp Harvest generally takes place about this time. In some cases the sheaves are allowed to lie open and dry, and when bound up, the crop is stacked like corn, and dew-retted prior to being sent to the mill for breaking and scutching. When grown for both seed and fibre, Hemp is seldom water-retted or steeped. Small farmers who have plenty of spare time on hand, first pull the male plants, which they water-rett and grass-rett as Flax, and afterwards pull the female crop for seed and coarser Hemp; but this mode of separation is slow work, and seldom practicable on large farms with hired labourers.

Trifolium incarnatum.—Sow on a clean stubble about 20 lb. of seed to the acre, after rain, and cover with bush or chain harrows.

Autumn fallows attend to as soon as the work can be begun. It has become an established fact that ploughing or smashing up land when dry is more advantageous than ploughing it wet. Steam-power has even superseded the old maxim of ploughing clay lands between the wet and the dry. It is needless to say that the drier land is ploughed the better, and therefore the first opportunity after harvest should be embraced to prosecute the work of fallowing, with all the force at command, before the weather breaks, and the earth becomes soaked to its maximum with the rains of autumn.

The Teams in harvest require special attention in food, water, grooming, and rest. Corn crops are this year bulky; but the loads, so long as the work lasts, will be as heavy, if not heavier, than usual. A great number of reaping-machines are in the field. "The work must be done," is always the order of the day; and under such an arbitrary rule horses should have an abundance of easily digested food, with plenty of pure, soft, filtered water. Cold hard water to horses in the harvest field is worse than unwholesome, and so is water full of animal and vegetable life. There is little rest for the teams in harvest, and therefore the back of the carthorse should be relieved from the weight of the load when unloading in the stackyard, and at night thorough grooming is essential to recruit the exhaustion of the system that has taken place during the day.

Turnip Hoeing.—This operation must not be neglected even in the time of harvest. Where there is a sufficiency of moisture in the land, the first sown stubble Turnips grow with great rapidity, so that if neglected for a day or two to be singled the loss will be heavy.

Farrow Sows that bring forth their second litter attend to. Dairy porkers and bacon hogs, as the days become colder, will bear moderate forcing, but the diet should be cooling.

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* Pacey's is never used now, as it was found to get short, dry, and hard.

Notices to Correspondents.

Diseased Chickens: Your correspondent, "Subscriber," (p. 1088) has not mentioned how his "diseased chickens" are kept, but when I have had some ill in the same way, when kept in the courtyard by the house, with a free run on grass, I have found the best cure to be to send them to the home farm, where the constantly fresh surface of the straw-yard, and the shelter from any cold or wet winds amongst the stacks or sheds, generally restores them to health, at the same time feeding them on broken Wheat (tailings) or barley meal, sometimes mixed with chopped Onions, never giving soaked bread, which will often cause the disease of itself. A new fowl or two next year, by raising a stronger breed of chickens, would probably prevent the recurrence of the disease. *G. E. O.*

Measuring Hayricks: *An Old Subscriber* writes:—Can you inform me the correct scale or manner by which I can ascertain the weight of hay in hayricks, and how to apply it both for square and round-made ricks? [You will find very good information on the above subject in "Ewart's Agriculturist's Assistant," Blackie & Son, Paternoster Row. This excellent little book contains a large mass of information regarding measurements, quantities, prices, &c., connected with rural economy.]

Utilising Pea Haulm: We give at length the inquiry of "Rusticus," to which attention was directed at p. 1088, in our last issue. He says:—"I have just harvested 8 acres of Hogg Peas in the best possible condition, and I shall be pleased to hear how I can best utilise the haulm when the Peas are threshed out. Should the haulm be cut into chaff, and boiling water, treacle, &c., be poured upon it? I trust Mr. Mechi or one of your numerous contributors, will enable me to turn this species of food to good account."

Vinegar: *M.* The following is a recipe:—Put to 10½ gall. of water 10 lb. of brown sugar, boil it gently till no scum is on the surface, taking what does arise off with a skimmer; put it into an open tub or pail to cool, and when quite so, add a teacupful of yeast, to put it into a fermentation; in three days put it into a cask, filling about two-thirds of it, which will cause it to acidify quicker. Place the cask in the sun, with the bunghole open, covering it with a coarse piece of muslin to prevent flies from getting into the liquor.

Markets.

METROPOLITAN CATTLE MARKET.

Monday, Aug. 21.

We have a considerable increase in the number of Beasts; there is a demand for choicest qualities, at nearly late quotations; some lots of inferior remain unsold. There are a very few more Sheep than last week, and the trade for them is about the same as then. Lambs are decidedly lower; it is difficult to effect a clearance. The Calf trade continues unaltered. Our foreign supply consists of 1940 Beasts, 10,140 Sheep, 350 Calves, and 5 Pigs; from Ireland there are 250 Beasts; from Norfolk and Suffolk, 100; and 2290 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 6to5 10	Best Long-wools	.. to ..
Best Shorthorns..	5 2—5 6	Do. Shorn ..	5 10—6 4
2d quality Beasts	3 6—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do. Shorn ..	4 10—5 4
Do. Shorn ..	6 4—6 8	Lambs	6 8—7 8
		Calves	4 0—6 0
		Pigs	3 4—4 8

Beasts, 4580; Sheep and Lambs, 24,950; Calves, 369; Pigs, 75.

Thursday, Aug. 24.

The number both of foreign and English Beasts is about the same as last Thursday; trade is not very brisk, yet there is scarcely a quotable difference in price. The supply of both kinds of Sheep is shorter; although trade is slow, prices are but little altered, if at all. Lambs and Calves are selling lower on the average. Our foreign supply consists of 455 Beasts, 5420 Sheep, 463 Calves, and 15 Pigs.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 6to5 10	Best Long-wools	.. — ..
Best Shorthorns ..	5 2—5 6	Do. Shorn ..	5 10—6 4
2d quality Beasts	3 6—4 8	Ewes & 2d quality	.. — ..
Best Downs and Half-breds ..	.. — ..	Do Shorn ..	4 10—5 4
Do. Shorn ..	6 4—6 8	Lambs	6 8—7 8
		Calves	3 10—5 8
		Pigs	3 0—4 8

Beasts, 1070; Sheep and Lambs, 11,550; Calves, 594; Pigs, 15.

METROPOLITAN MEAT MARKET, Aug. 24.

Best Fresh Butter	15*s.* per dozen lb.
Second do. do.	13*s.* „

Small Pork, 4*s.* 6*d.* to 4*s.* 10*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

The business has not been quite so large during the last week, owing to the very high prices now asked by holders, and owing to this many consumers who have lately bought freely are holding off for a time. It seems more than probable, however, that before long another spurt will take place.

HAY.—Per Load of 36 Trusses.

Smithfield, Thursday, Aug. 24.

Prime Meadow Hay,	120*s.* to	125*s.*	Clover, old ..	..150*s.*	160*s.*
Inferior do.	70	90	Inferior do. ..	..100	110
New Hay	85	100	Prime new do.	..120	130
Inferior do.	40	50	Inferior do. ..	.. 50	70
Straw	35	40			

Cumberland Market, Thursday, Aug. 24.

Sup. Meadow Hay	126*s.* to	140*s.*	Inferior Clover	..120*s.* to	138*s.*
Inferior do.	90	110	Prime 2d cut do. ..	—	—
New do.	70	112	New do.	84	130
Inferior do.	—	—	Straw	42	48
Superior Clover ..	165	175			

Joshua Baker.

MARK LANE.

Monday, Aug. 21.

The supply of English Wheat at this morning's market was very small, and both new and old sold readily at the full prices of this day se'nnight. There was a good attendance, and a better demand for Russian and American Wheat, and in some instances rather more money was obtained for these descriptions. Barley, Beans, and Peas were without change. Oats were a dull sale, at previous rates. Flour was unaltered in value.

Price per imperial Quarter.	*s. s.*		*s. s.*
Wheat, Essex, Kent, Suffolk..White	54—59	Red......	54—58
— fine selected runs ....do.	58—61	Red......	58—60
— Talavera	60—64		
— Norfolk	—	Red......	—
— Foreign	46—67		
Barley, grind.& dist., 27*s* to 33*s*..Chev.	—	Malting ..	36—41
— Foreign .. grinding and distilling	28—31	Malting ..	—
Oats, Essex and Suffolk	23—25		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	22—25
— Foreign ......Poland and Brew	22—26	Feed	14—19
Rye	31—33	Foreign ..	—
Rye-meal, Foreign..................			
Beans, Mazagan....—*s.* to —*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
Peas, White, Essex, and Kent..Boilers	—	Suffolk ..	—
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	34—38
Maize	—	Foreign ..	29—30
Flour, best marks, delivered..per sack	—		
— 2d ditto ....ditto	—	Country ..	—
— Foreign ....per barrel	24—28	Per sack..	38—60

Wednesday, Aug. 23.

A quiet feeling pervaded the Corn Exchange to-day. Business was transacted to a limited extent, and prices in some instances gave way. The supply of English Wheat was small, but that of foreign was large. The demand for all qualities was inactive, at prices tending towards reduction. Barley sold quietly on former terms. Malt was dull, and drooping in value. Oats, the supply of which was extensive, experienced a slow sale, at drooping prices. Beans and Peas were quiet, at about late rates. Flour was dull, and prices favoured purchasers.

Arrivals of Grain, &c., into London by Water Carriage.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	140	—	—	—
Irish ..	—	—	—	—
Foreign ..	36,570	6920	46,900	1930 6220 brls.
	36,710	6920	46,900	

Liverpool, Aug. 22.—There was a rather thin attendance at to-day's market. Wheat in a fair consumptive demand, at 1*d.* per cental advance on red American since Friday last, but there is no change in value of white. Flour fully as dear. Beans steady. Oats and Oatmeal dull. Indian Corn in good demand, at 3*d.* per qr. reduction. Mixed American, 30*s.*

Averages.

	Wheat.	Barley.	Oats.
July 15	58*s* 6*d*	34*s* 7*d*	27*s* 10*d*
— 22	58 10	35 11	27 2
— 29	58 0	34 3	28 3
Aug. 5	58 0	36 7	27 4
— 12	58 5	35 11	26 6
— 19	57 10	35 9	27 6
Average ..	58 4	35 6	27 5

SEED MARKET.

Clover seeds of all descriptions are quiet but firm. For Trefoil seed values continue to tend upwards. White Mustard seed sells on former terms. We have a good inquiry for new Rapeseed. Trifolium is in slow request, at the recent decline. Hemp and Canary move off in retail, at unchanged currencies. New winter Tares and Rye are coming to hand, at moderate quotations. In Italian Rye-grass there is as yet but little doing.

John Shaw & Sons, Seed Merchants,
16, Water Lane, London, E.C.

HOPS.

Borough Market, Aug. 24.

Messrs. Pattenden & Smith report a steady demand for consumption for both English and foreign. Choice samples are scarce, and rule firm in price. The plantations have improved to some extent, but the result cannot exceed about 3 cwt. per acre on the average. American reports are daily more unfavourable. On the Continent the prospects are equal to only about one-fourth of last year's growth.

COALS.—Aug. 23.

East Wylam, 18*s.*; Walls End Harton, 16*s.* 3*d.*; Walls End Thrislington, 17*s.*; Walls End Hetton, 18*s.* 6*d.*; Walls End Hetton Lyons, 16*s.* 3*d.*; Walls End South Hetton, 18*s.* 6*d.*; Walls End Kelloe, 16*s.* 9*d.*; Walls End East Hartlepool, 17*s.* 9*d.*; Walls End Original Hartlepool, 18*s.* 6*d.*; Walls End South Kelloe, 17*s.* 3*d.*; Walls End Tees, 18*s.* 3*d.*—Ships at market, 36; sold, 28; unsold, 8; at sea, 15.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

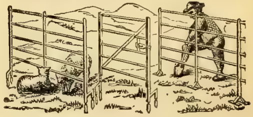
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

J. TYLOR AND SONS'
FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

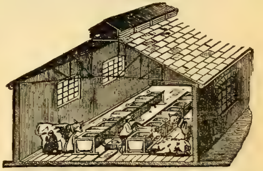
Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

Illustrated Price Lists on application to COTTAM AND CO., Iron Works, 2, Winsley Street, Oxford Street, London, W.

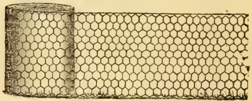
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

GALVANISED WIRE NETTING.—First-class Certificate Royal Horticultural Society, and "Mention Extraordinaire" Amsterdam Exhibition, 1869.



Prices per Lineal Yard, 24 Inches High.

Mesh.	Mostly used for	No. 19.	No. 18.	No. 17.	No. 16.
2 inch	Dogs or Poultry	3¾*d.*	4½*d.*	5¾*d.*	7*d.*
1⅝ „	Small Rabbits, &c. ..	4¼*d.*	5¼*d.*	6¼*d.*	8*d.*
1½ „	Smallest Rabbits ..	5¼*d.*	6¼*d.*	8*d.*	10*d.*
	Pheasantries, &c. ..	10*d.*	1*s.* ½*d.*	1*s.* 4*d.*	1*s.* 10*d.*

J. B. BROWN AND CO., 90, Cannon Street, London, E.C.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15*s.* 0*d.*	19*s.* 6*d.*
Third quality..	16*s.* 0*d.*	22*s.* 6*d.*
Seconds	18*s.* 6*d.*	26*s.* 0*d.*
English..	20*s.* 0*d.*	27*s.* 0*d.*

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.
Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths. *s. d.*	3rds. *s. d.*	2nds. *s. d.*
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12	16 to 17 oz. to the foot.		
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12*s.* 6*d.*
by 6	8½ by 6⅜	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13*s.* 6*d.*

Boxes 2*s.* each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

The Patent Imperishable Hothouse.

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Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the

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MANAGER—W. P. AYRES, C.M.R.H.S.,
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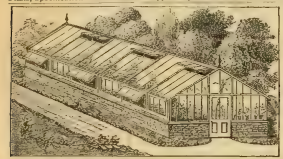
Plans, Specifications and Estimates supplied upon the shortest notice.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

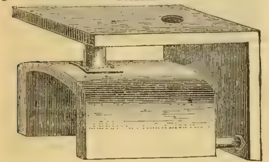
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in thick, unglazed..	3s. each
,, ,, glazed, 16-oz. good sheet glass	6s. ,,
6 ft. ,, ,, 2 in thick, unglazed	5s. ,,
,, ,, glazed, 16 oz. good sheet glass ..	11s. ,,
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. ,,
Portable box containing two ditto, 6 ft. by 8 ft.	55s. ,,

Estimates given for Conservatories or Greenhouses to any Design.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.

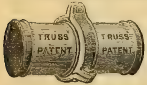


These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 ,,	18 ,,	24 ,,	450	6 0 0
20 ,,	18 ,,	30 ,,	600	7 0 0
24 ,,	24 ,,	24 ,,	700	8 0 0
24 ,,	24 ,,	30 ,,	850	10 0 0
24 ,,	24 ,,	36 ,,	1,000	12 0 0
24 ,,	24 ,,	48 ,,	1,400	15 0 0
28 ,,	28 ,,	60 ,,	1,800	20 0 0
30 ,,	30 ,,	72 ,,	2,600	30 0 0
36 ,,	36 ,,	96 ,,	4,500	50 0 0
48 ,,	48 ,,	108 ,,	7,000	75 0 0
48 ,,	48 ,,	144 ,,	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



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HOTHOUSES,
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PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

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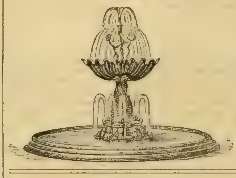
VASES AND FOUNTAINS FOR THE GARDEN AND CONSERVATORY.



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LONDON OFFICE:—32, WALBROOK.

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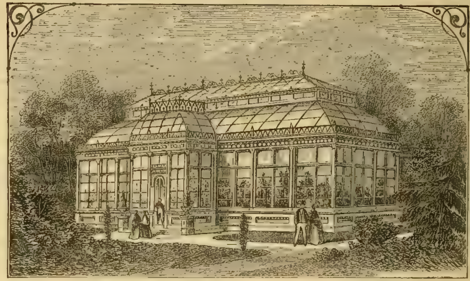

CONSERVATORIES, GREENHOUSES, &c.

ARCHITECTS' DESIGNS CAREFULLY CARRIED OUT.

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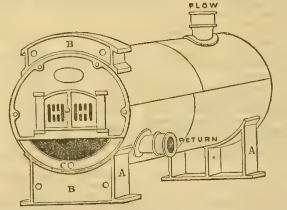
STEVENS' "TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

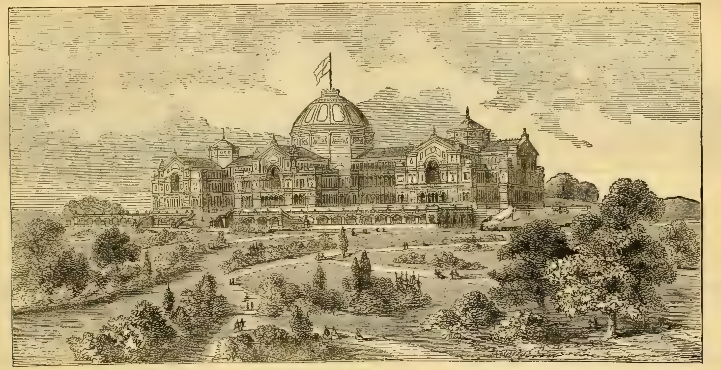
"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE."

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED,
FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.



THE ALEXANDRA PALACE AND MUSWELL HILL ESTATE TONTINE.

(TO TERMINATE ON THE 30th JUNE, 1886.)

THE ALEXANDRA PALACE and MUSWELL HILL ESTATE TONTINE. (To terminate on the 30th June, 1886.)

TRUSTEES—
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JOHN HACKBLOCK, Esq., Bolton Gardens.
JOHN HORATIO LLOYD, Esq., Inner Temple.

The Palace is a splendid, capacious, and substantial structure, and the Estate comprises nearly 500 acres of beautiful freehold land within a radius of 6 miles only from Charing Cross.

The object of the Tontine is to complete the purchase and improve the property, and thus to provide for all classes of the inhabitants of the metropolis, and especially of its northern and eastern portions and suburbs, and for the many thousands of country excursionists, a grand institution of healthful recreation and elevating instruction, which will combine the solid advantages of the South Kensington Museum and Schools of Art with the lighter pleasure and pastimes of the Crystal Palace at Sydenham, thus giving effect to the large and enlightened views of the late Prince Consort.

The main advantages of this undertaking may be said to be as follows:—

The holder of a Tontine Certificate for ONE GUINEA or upwards, will become entitled to—

A share in the realisation of the estate in 1886, when the nett proceeds must be of enormous value.

Free admissions in the meantime, on certain occasions.

A share in the Art Unions (proposed to be held once in every three years), when the prizes will be considerable.

To be reimbursed 20s for each Guinea paid in the event of the Life nominated, and upon which the Tontine privilege depends, not surviving till June 30, 1886.

Thus the Tontine (besides its other great privileges) presents the opportunity of making, at a very slight cost, an ample endowment for children, or of ensuring a very large return for the capital invested.

It being a "Trust," Subscribers incur NO LIABILITY, and must benefit.

If no issue is made, the Subscriptions will be returned in full.

For further particulars, see Detailed Prospectus.

Admissions to view the Palace can be obtained at the Offices of the Company, 5 and 6, Great Winchester Street Buildings, E.C.

THOS. DIXON, Secretary.

ALEXANDRA PALACE.—The advantages offered to the Public were thus summed up by *The Times*, of July 18th:—" Under the title of 'Alexandra Palace and Muswell Hill Estate Tontine,' certificates representing 850,000 guineas are about to be issued, which will entitle the holders, in proportion as they may possess a single certificate of one guinea or any larger number, to participate in the various objects of the institution, or to take their share of the entire property of the Palace and grounds of 498 acres, should they, 15 years hence, be among the surviving holders. Under an elaborate but ingenious plan framed for the purpose, each subscriber will have several options as to the mode in which he may obtain a return for his investment, and be virtually guaranteed against loss. The Trustees and Board of Directors consist of experienced persons, familiar with the management of London properties and of public establishments, and it may be hoped that the result of their arrangements will be to furnish to the population of the North of the metropolis a place of resort as attractive as that on the other side at Sydenham."

ALEXANDRA PALACE.—In an address delivered by that distinguished lawyer, Mr. John Horatio Lloyd, one of the Trustees of the Alexandra Palace and Muswell Hill Estate Tontine, "Mr. Lloyd explained the principle on which it was proposed to raise the necessary capital, and declared that he was perfectly satisfied that no possible loss could be sustained by any one investing; as, in addition to the value of the property, a system of insurance had been devised which was a practical guarantee against any possible failure. He declared that he would not have accepted the position of trustee had he not been satisfied that the undertaking was one offering many solid advantages to investors, commercially secure against failure, and commending itself in the highest degree to the favourable consideration of all interested in providing for the acknowledged wants of the working classes, and desirous to do so in some more substantial form than by mere words."—*Advertiser.*

New and Enlarged Edition.

This day is published, price Five Shillings,

A PRACTICAL TREATISE on the CULTIVATION of the GRAPE VINE, by WILLIAM THOMSON, of Tweed Vineyard, Galashiels, lately Gardener to his Grace the Duke of Buccleuch, K.G., at Dalkeith Park. The Seventh Edition, enlarged

WILLIAM BLACKWOOD AND SONS, Edinburgh and London.

THE NEW METHOD of GROWING FRUIT and FLOWERS (by the Rev. JOHN FOUNTAINE, Southacre, Brandon), being a practical combination of Vinery, Orchard House and Conservatory, as now worked in a New House erected for the purpose at Chiswick. Third Edition, Illustrated. Free for seven stamps to the

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Notice.

(*By Appointment to the Royal Horticultural Society.*)

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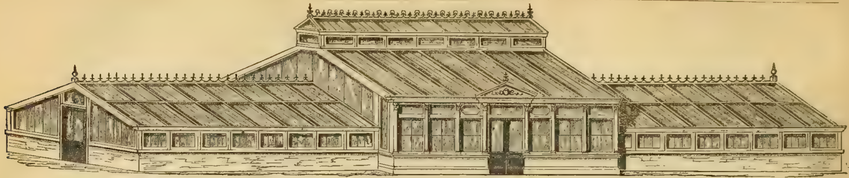

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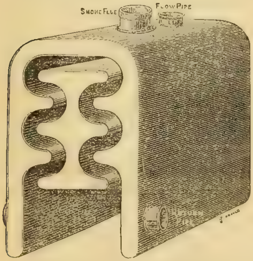

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THEY ARE SAFE FROM SUDDEN FAILURE.

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by William Richards, at the Office of Messrs. Bradbury, Evans, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said William Richards, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, August 26, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 35.—1871.] SATURDAY, SEPTEMBER 2. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

NOTICE.—FLOWER SHOW, FRUIT and FLORAL COMMITTEE MEETING, on WEDNESDAY NEXT, September 6, at 11 o'Clock. GENERAL MEETING at 3. Band of the Royal Horse Guards from 3.30. Admission 2s. 6d.

ENFIELD HORTICULTURAL SOCIETY.—GRAND AUTUMN FLOWER SHOW.

The AUTUMN FLOWER and FRUIT SHOW of this Society will, by the kind permission of Mr. Adams, be held in the grounds of Chase Park, Enfield, on THURSDAY, September 7. A Military Band will be in attendance. Admission :—From 2 till half past 4, 2s. 6d. ; a quarter past 4 till half-past 5, 1s ; and half-past 5 till half-past 6, 6d.

Enfield, August 30. W. MARSHALL, Hon Sec.

To the Trade.—Cyclamen persicum Seed.

R. CLARKE, MARKET GARDENER, Twickenham, begs to offer the above, saved from the most distinct and vigorous plants, same as exhibited at South Kensington, November and December last, and awarded Special Certificate at each meeting. Price on application.

Brodiæa coccinea.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to announce that he is now able to supply BULBS of this beautiful hardy species at 2s. 6d. and 3s. 6d. per bulb, according to size. Price to the Trade per dozen, on application. A Coloured Figure will be found in the "Florist" for July, 1871.

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To Gentlemen's Gardeners, Amateurs and others.

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British Fern Catalogue.

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Filmy Ferns, Orchids from Jamaica.

MESSRS. TEUTSCHEL AND CO., Colchester, Agents for the Sale of Foreign Plants, have on hand, HYMENOPHYLLA ASPLENIOIDES, HIRSUTUM, POLYANTHOS, TONBRIDGENSE, CATHARINÆ (Hooker), very scarce; also, ORCHIDS, BROUGHTONIA SANGUINEA, ANGRÆCUM FUNALE (very rare), ONCIDIUM LURIDUM, BRASSAVOLA CAUDATA. All in good order.

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To the Trade.

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To the Trade.

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CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.
The above can be had, of all sizes, wholesale of
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Retail of the principal Seedsmen. Prices on application.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO., who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

BICKLEY'S PATENT HORIZONTAL SASH-BARS require neither Paint nor Putty; an orchard-house or greenhouse, &c., may be easily, cheaply, and quickly made with them by an amateur. Four hundred feet can be firmly glazed or unglazed in one hour. Drawings, &c., for 1 stamp, of the Inventor and Patentee, THOMAS A. BICKLEY, 70, Smallbrook Street, Birmingham.

Proceedings in Chancery will be taken against any person infringing this patent.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30s. per cwt.; 36-lb. tins, 10s. Directions and testimonials on application.

Principal Agent:—W. D. BARBOUR, 3, Park Row, Leeds.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size. Prices rom 16s. 6d. [Prices from 35s.
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

For Horse Rakes,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

W. S. BOULTON AND CO., Norwich, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.

These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES.—Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

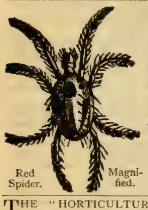
If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
17½ feet long by 6 feet wide..	£5 0	31½ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.
PLANT PRESERVERS.
Illustrated Catalogues free on application.
Rose Lane Works, Norwich.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.


Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

THE "HORTICULTURAL VAPORISER," for the Application of Frettingham's Liquid Compound, or other Preparations, for the Destruction of Insects on Plants.

By means of this Apparatus, liquids may be diffused over Plants in a state of minute division, or fine spray, in sufficient quantity to thoroughly moisten them, without ruffling or disturbing the most delicate flower or foliage.

Besides these advantages, great saving of the liquid is effected. A tablespoonful applied by the Vaporiser is equal to a pint applied by means of a sponge, or the ordinary methods in use.

As a Disinfectant Distributor, for Sick Rooms, it is invaluable. The minuteness of the spray preventing a single particle of the liquid calling to the ground, thus the whole of the Disinfecting Liquid used comes into active operation at once, without fear of damaging the carpets or furniture. Price 3s. 6d. each.

May be obtained direct from PARR AND ATHERTON, Nottingham; or of their Agents throughout the country.

The Apparatus will be forwarded to any address in England on receipt of 4s. in stamps.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s. 6d. per pkt. Instructions for raising and growing sent if required

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S.E.

Seed Warehouse: 44, English St., & Blackfriars St.
NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs. LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.

LITTLE AND BALLANTYNE
WM. BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

CARTER'S
FARM SEEDS for PRESENT
SOWING.

ITALIAN RYE GRASS
BROMUS SCHRŒDERI
TRIFOLIUM INCARNATUM
MUSTARD | RAPE

Lowest price on application. All Seeds carriage free.

The Prize Medal of the Worcestershire Agricultural Society was awarded to JAMES CARTER AND CO. for their Collection of Farm Seeds, Roots, &c., at Malvern, August 22, 1871.

JAMES CARTER AND CO., Seedsmen to the Queen and H.R.H. the Prince of Wales, 237 and 238, High Holborn, London, W.C.

SUTTONS'
NEW and CLEAN SEEDS
FOR PRESENT SOWING.
Carriage Free.
SUTTONS' PERMANENT PASTURE MIXTURES,
specially prepared for all soils.
SUTTONS' IMPROVED ITALIAN RYE-GRASS.

Trifolium incarnatum.	Bromus Schrœderii.
Trifolium, new late red.	Mustard.
Trifolium, new late white.	Rape.

Samples and lowest prices may be had on application.
All goods carriage free. 5 per cent. off for cash payment.

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

BEDFORDSHIRE SILVER SAND and PEAT, sold only by J. ARNOLD, 29, Clarendon Square, N.W. Acknowledged by the largest and most extensive Growers and Nurserymen to be the best Sand obtainable for growing Plants, &c., in the United Kingdom. Strongly recommended by all who have used it.

Maiden Lane, and Kingsland Goods Depôt, N. L. Railway. By the truck-load to all parts; at the Wharf, 14s. per ton. Terms nett cash. All orders to be addressed,

J. ARNOLD, 29, Clarendon Square, N.W

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

J. Scott's Seed Business.

PUBLIC NOTICE.—Having just been informed that MY LATE SHOPMAN, B. R. DAVIS, has sent circulars to all, or nearly all, my customers, the impression has gone abroad that I was giving up my SEED BUSINESS AT YEOVIL. *This is not the case.* The same steady attention to the wants of the numerous Friends who have so kindly supported me during 20 years, will still be maintained, and, if possible, renewed exertions and attention to supply everything of the best quality only will be my aim.

All letters and orders for SEEDS to be addressed to me, at the SEED STORES, YEOVIL; and all orders for TREES, SHRUBS, and PLANTS, to be sent to THE NURSERIES, MERRIOTT, SOMERSET.

JOHN SCOTT.

N.B.—SCOTT'S WASP DESTROYER can only be had genuine from the Proprietor of the recipe. All imitations are spurious.

B. R. Davis is no longer in my employment.

Death to Wasps, &c.

W. BREWIS begs to call the attention of the Nobility, Gentry, Clergy, and Gardeners, to an invaluable ingredient for the Destruction of Wasps, Hornets, Flies, and other Garden Pests, including Rats and Mice. On receipt of 4s. in stamps, the recipe will be supplied, without the least reservation. The ingredient was discovered by W. B. 50 years ago; it is simple, efficacious, and readily and cheaply made. The Public are cautioned against spurious imitations.

W. BREWIS, Gardener to R. B. Sheridan, Esq., Frampton Court, Dorchester.

Wasps.—Wasp Destroyer.

B. R. DAVIS, SEEDSMAN, &c., Yeovil (Manager for the last 11 years of Mr. Scott's Seed Business), having been the Maker of the above celebrated article, which has gained such a wide-spread and well-deserved reputation, has carefully tested it, by repeated experiments, since it was first introduced, the result being the production of an article very different from the original, and decidedly more effectual, as it will not only prove certain destruction to Wasps, but also to Crickets, Cockroaches, and other Garden Pests, as well as Rats and Mice. It has been used with success for the destruction of Ants. Price 1s. 6d. and 2s. 6d. per bottle, with directions for use. A great saving is effected by taking the larger size.

Notice.

WASPS: WASP DESTROYER.—Respecting the Advertisement which appeared in last week's issue, I beg to say I am not at all disposed to have a paper battle with the Advertiser respecting the relative merits of his "Original" preparation, and my "Improved" Wasp Destroyer. I am quite content that the public shall be the judges; and among many others, I have had the honour of supplying Mr. J. Scott, of the Seed Stores, Yeovil, with a large quantity within the last few days, who, I venture to say, is an excellent judge of the qualities of such an article, being an extensive fruit grower.

B. R. DAVIS, The Seed Warehouse, Yeovil, Somerset.

SPECIAL OFFER of PEAS to the SEED TRADE.

PEAS.	s.	d.	
DILLISTONE'S EARLY PROLIFIC ..	9	0	per bushel
SANGSTER'S No 1	8	6	"
EARLY EMPEROR	7	0	"
BECK'S GEM or TOM THUMB ..	9	0	"
McLEAN'S LITTLE GEM	15	0	"
DICKSON'S FAVOURITE	8	0	"
HARRISON'S GLORY	8	0	"
FAIRBEARD'S SURPRISE	8	0	"
PARADISE MARROW	8	0	"
PRIZETAKER	8	0	"
McLEAN'S PRINCESS ROYAL.. ..	8	0	"
BEDMAN'S IMPERIAL	8	0	"
BLUE SCIMITAR	8	0	"
WOODFORD GREEN MARROW ..	8	0	"
WATERLOO or VICTORIA	8	0	"
BURBIDGE'S ECLIPSE	9	0	"
FAIRBEARD'S FORTYFOLD	10	0	"
BRITISH QUEEN	10	0	"
NE PLUS ULTRA	10	0	"
CHAMPION of ENGLAND	9	0	"
HAIRS' DWARF MAMMOTH	10	0	"
YORKSHIRE HERO	10	0	"
COMPETITOR..	10	0	"
ALLIANCE or EUGENIE..	10	0	"
CLIMAX or NAPOLEON	9	6	"
VEITCH'S PERFECTION..	9	0	"
McLEAN'S ADVANCER	9	6	"
" PRINCE of WALES ..	10	0	"
" WONDERFUL	10	0	"
" PRINCESS of WALES ..	9	6	"

ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., begs to offer the above to the Seed Trade. All are of Crop 1871. Deliveries can be made of all before Christmas, all of which shall be well hand-picked samples, and all are true to name. Early orders solicited.

The Royal Seedsmen.
HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

JAMES CARTER AND CO.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

INTERNATIONAL PRIZE CALCEOLARIA.

	Per packet.—s.	d.
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d.; smaller packets ..	1	6
" finest Spotted, 2s. 6d.; smaller packets ..	1	6
Saved with the greatest care, and from one of the largest collections in the kingdom.		
CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2	6
PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.		
PRIMULA, choicest Mixed Fringed, 2s. 6d.; smaller packets..	1	6
" dark Carmine	2	6
" new Scarlet	2	6
" Rose Fringed	2	6
" choicest White Fringed	2	6
" choicest Fern-leaved Carmine	2	6
" choicest Fern-leaved White	2	6

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free.

JAMES CARTER AND CO., The Royal Seedsmen, 237 and 238, High Holborn, London, W.C.

NEW and SELECT PLANTS.—The following are now offered at the prices annexed. No charge for package. On all orders of £1 the carriage will be paid to London:—

		s.	d.
12	fine varieties DOUBLE GERANIUMS	4	0
12	superb new varieties DOUBLE GERANIUMS of 1870 ..	8	0
12	varieties best selected FUCHSIAS	2	0
12	varieties new FUCHSIAS of 1871	4	0
12	varieties best selected VERBENAS	2	0
12	fine new varieties VERBENAS of 1871	2	6
12	varieties best selected COLEUS	2	0
12	fine new varieties COLEUS of 1871	2	6
12	varieties best selected CHRYSANTHEMUMS	2	6
12	fine varieties new CHRYSANTHEMUMS of 1871	3	0
12	fine new varieties PENTSTEMONS	4	0
12	fine varieties PERENNIAL PHLOXES	3	0
12	varieties selected ZONAL GERANIUMS	3	0
12	fine new varieties ZONAL GERANIUMS of 1870	6	0
12	fine var. GOLD and GOLDEN BICOLOR GERANIUMS	6	0
12	fine varieties JAPANESE AUCUBAS	12	0
12	new varieties Hardy CHILIAN MIMULUS	3	0
12	fine varieties ACHIMENES	2	6
12	fine varieties IRIS GERMANICA	4	0
12	fine varieties SEDUMS	3	0
12	fine varieties SEMPERVIVUMS	3	0
12	select varieties SAXIFRAGAS	3	0
12	fine varieties ANTIRRHINUMS	3	0
12	select varieties PANSIES	4	0
12	fine varieties JAPANESE EUONYMUS	6	0
12	fine varieties BOUVARDIAS	6	0
12	fine varieties MESEMBRYANTHEMUMS	4	0
12	select varieties HELIOTROPIUMS	3	0
12	select varieties LANTANAS	4	0
12	fine varieties PELARGONIUMS	6	0
12	fine varieties IVY-LEAF GERANIUMS	6	0
50	select varieties FUCHSIAS..	8	0
50	select varieties CHRYSANTHEMUMS	8	0
50	select varieties HARDY HERBACEOUS PLANTS ..	14	0
100	select varieties HARDY HERBACEOUS PLANTS ..	25	0
12	fine varieties DOUBLE and SINGLE PETUNIAS.. ..	6	0
12	fine varieties TROPÆOLUMS	3	0
12	fine varieties HYDRANGEAS	6	0
12	fine varieties VIOLA ODORATA	6	0
6	fine varieties ECHEVERIAS	3	0
12	fine varieties GREENHOUSE CLIMBERS	8	0
12	select varieties GREENHOUSE SUCCULENTS .. 6s. to	12	2
12	select varieties GREENHOUSE PLANTS .. .. 6s. to	12	0
12	fine varieties select STOVE PLANTS .. .. .. 6s. to	12	0
4	new AGERATUMS, White Tom Thumb, White Imperial Dwarf; Tom Thumb's Bride, the whitest; Sultan, the darkest, for 1s. 6d.		
12	varieties AGERATUMS, including the above	3	6
12	fine varieties tall HERBACEOUS LOBELIAS	9	0
12	fine varieties VERONICAS	6	0

B. W. KNIGHT, Florist, Battle, Sussex.

New Seeds.

F. AND A. SMITH are now sending out new SEEDS of the undermentioned :—

		s. d.
ANTIRRHINUM, very choice	1s. and	0 6
AQUILEGIA, single, in 12 colours, separate		2 6
„ „ mixed		1 0
„ double, 12 colours		2 6
„ „ mixed		1 6
CALCEOLARIA, of the finest strain	2s. 6d. and	1 0
CINERARIA, of the finest strain	2s. 6d. and	1 0
CYCLAMEN, choice selection	2s. 6d. and	1 0
DELPHINIUM, from a fine collection, in 12 sorts		2 6
„ „ mixed		1 0
HOLLYHOCK, finest mixed	2s. 6d. and	1 0
PANSY, fine show varieties	2s. 6d. and	1 0
„ Belgian or fancy..	2s. 6d. and	1 0
PRIMULA, finest Red and White	2s. 6d. and	1 0
PETUNIA, from hybridised sorts	2s. 6d. and	1 0
POLYANTHUS, from selected strains	2s. 6d. and	1 0
STOCK, Intermediate, Purple, Scarlet, and White	1s. and	0 6
„ East Lothian, Purple, Scarlet, and White	1s. and	0 6
SWEET WILLIAM, extra Auricula-eyed	1s. and	0 6
WALLFLOWER, dwarf, blood-red, fine		0 6

The Nurseries, West Dulwich, S.E.

Strawberries.

JAMES CARTER AND CO. having this season potted several hundred thousand of the finest varieties of STRAWBERRIES, which are now well established, and if planted early will produce a good crop next season, beg to inform their Patrons that a Descriptive LIST will be published in their BULB CATALOGUE, now in Press, a Copy of which will be posted as usual.

Runners, in pots, our selection,	25 of a sort ..	10s. 6d. per 100.
„ „ „	100 „ ..	7s. 6d „
Runners, out of pots, our selection,	25 of a sort.	5s. 0d. „
„ „ „	100 „	3s. 6d. „

Black Prince
British Queen
Carolina Superba
Comte de Paris
General Havelock
Goliath
Keens' Seedling
Prince Arthur
Prince of Wales
Princess Alice Maude
Princess Royal
The Lady
Victoria
Wizard of the North
Wonderful

Runners, out of pots, per 100, 3s. 6d.; Runners, in pots, per 100, 10s. 6d.

Dr. Hogg
Duc de Malakoff
Premier
President
Rifleman
Sir Harry
Vicomtesse Hericart de Thury.

Runners, out of pots, per 100, 5s.; Runners, in pots, per 100, 12s. 6d.

New kinds at a slight advance in price according to our stock. Newest sorts, such as The Amateur, Royalty, Brown's Wonder, and several French varieties of the late Dr. Nicaise's raising, at same prices as advertised by the firms distributing them.

JAMES CARTER AND CO., 237, High Holborn, W.C.; and Crystal Palace Nurseries, Forest Hill, S.E.

SUTTONS' SUPERB DUTCH HYACINTHS, for Pots and Glasses, specially selected for Exhibition purposes.

25 splendid new varieties, 40s.
12 „ „ „ 20s.

CHEAPER COLLECTIONS,
containing the best old varieties.

			£	s.	d.
100 Hyacinths in	100 very choice sorts		£4	4	0
100 „ „	50	„	3	10	0
50 „ „	50	„	2	2	0
50 „ „	25	„	1	15	0
25 „ „	25	„	1	1	0
12 „ „	12 extra fine	„	0	12	0
12 „ „	12 choice	„	0	9	0
12 „ „	12 good	„	0	6	0

MINIATURE HYACINTHS, finest named varieties, 4s. per dozen.

*** To secure the best Bulbs, early orders are solicited.

For complete Cultural Instructions, and list of Flower Roots, see SUTTONS' AUTUMN CATALOGUE for 1871, price 1s.; gratis to customers.

SUTTONS' SELECT LIST of DUTCH FLOWER ROOTS, gratis and post free on application.

All Flower Roots carriage free.

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

WM. PAUL'S ROSES are NOW in BLOOM, inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St. Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

PAUL'S Nurseries, Waltham Cross, London, N.

WELLINGTONIA GIGANTEA.

HUGH LOW & CO.

Offer healthy ONE-YEAR SEEDLING PLANTS, established in single pots, at **30s.** per 100, or **£12 10s.** per 1000. Special price for five or ten thousand.

CLAPTON NURSERY, LONDON, E.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR ANNUAL SUPPLY OF

HYACINTHS, AND OTHER BULBOUS ROOTS FROM HOLLAND,

And are pleased to say that they are in splendid condition.

J. V. & SONS were awarded the following Prizes at the London Exhibitions last spring—viz.,

First	Prize for 18 Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First	Prize for 18 White Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First	Prize for 12 pots Tulips, in 6 varieties, Royal Horticultural Society, March 15, 1871.
Second	Prize for 6 New Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
Extra	Prize for Group of Hyacinths and Tulips, Royal Horticultural Society, March 15, 1871.
First	Prize for 12 Hyacinths, distinct varieties, Royal Botanic Society, March 22, 1871.
First	Prize for 12 pots Tulips, distinct varieties, Royal Botanic Society, March 22, 1871.
Extra	Prize for Collection of Hyacinths, Royal Botanic Society, March 22, 1871.

JAMES VEITCH AND SONS also supplied to the Commissioners of Her Majesty's Works, the TULIPS, HYACINTHS, and CROCUSES, which made such a grand display last Spring in Hyde Park.

CATALOGUES are now ready, and will be forwarded Post Free on application.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

PAUL'S HYACINTHS, TULIPS, &c.

"MR. WM. PAUL * * * * well maintained the high reputation he enjoys for the successful cultivation of this class of flowers."—*Journal of Horticulture*, 1871.

"A remarkably fine display of Hyacinths."—*Gardeners' Chronicle.*

WILLIAM PAUL

BEGS TO ANNOUNCE THAT HIS

HYACINTHS, TULIPS, CROCUSES, and other DUTCH FLOWER ROOTS

Have arrived in excellent condition, and he respectfully solicits early Orders.

PRICED DESCRIPTIVE CATALOGUE Free by Post.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c., is now ready, and may be had gratis and post free on application.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

CARTER'S

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NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz. :—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Professor REICHENBACH, of Hamburgh
Dr. MOORE, of Glasnevin
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, SEPTEMBER 2, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Sept. 6	Royal Horticultural (Fruit and Floral Committees), at S. Kensington ..	11 A.M.
	Ditto (General Meeting)	3 P.M.

◆

WE have been induced to lay before our readers a plan of an ARBORETUM and FRUIT GARDEN, proposed to be established at Berlin, in order to call attention, not only to what appears to us to be a very carefully considered and well arranged plan for the purpose, but also to deprecate the astonishing apathy with which a subject of such national importance and, as one would think, of such general interest, is received in this country. Was there a single proprietor, or forester, or gardener, who put in a plea for the retention and maintenance of the arboretum at Chiswick, now irrevocably passed out of the hands of the Royal Horticultural Society, and indeed in part destroyed? Of what avail was the protest of a few botanists when they were in no way backed up by the practical men, to whom an arboretum should be of greater value than to the man of science? It is of no use lamenting over spilt milk, however; let us rather rejoice that though the arboretum be lost, the pomological collections at Chiswick, if diminished in extent, will at least be increased in value, and that there at least we shall have what Professor KOCH wants for Berlin—a collection of the best sorts of fruit trees, and illustrations of the best modes of cultivating them.

If of late years little interest was manifested in the arboretum at Chiswick, little more is generally felt for that at Kew. We do not believe that the efforts made by the late director to get together a collection, in spite of great difficulties from the hungry nature of the soil, and the absolute loss from our nurseries of many fine and interesting kinds, have been at all appreciated as they should be. We do not believe that the value of the large collections of hardy shrubs at Kew is at all generally recognised, and those who note what is in course of carrying out at the present time in the improvement of the arboretum and the formation of a pinetum, seem to us to look at the matter from the standpoint of the landscape gardener rather than from those of the forester or of the botanist. But in a large national establishment, so far as possible, all interests should be studied; and if we now, for the moment, lay stress on the useful rather than the ornamental, it is not that we undervalue the latter, but because the ornamental is pretty sure to be attended to alike in our private and in our public establishments. Moreover, a knowledge of the kinds of trees most suitable for particular purposes, of their habit of growth, the circumstances favourable or adverse to their cultivation, and so forth, is becoming every day of more and more importance. We have cleared so many of our trees, and drained our fields so thoroughly, that there are at least some grounds for fear lest we may not have injured if not killed the goose which lays the golden eggs, and that our climate will suffer from our overweening efforts at "improving the land." Be that as it may, it is a fact that there are thousands of now barren acres, miles of now waste places in the British isles, unsuitable for almost any form of culture but that of trees, and which might profitably be utilised in the cultivation either of timber or of fruit trees. The amount of capital required to start with would be comparatively trifling; the expense of maintenance would be small; the amount of knowledge demanded is not greater than any manager or forester should, nay, in most cases does, possess.

What then is the reason of the prevailing apathy? We can only attribute it to the subject not being sufficiently kept under the notice of the public. Our country gentlemen want the practice and the precepts of another EVELYN to stimulate them in their turn to exertion.

The complaints which reach us from India, from Australia, from almost all our colonies in fact, of the consequences of the reckless nomanagement of the forests, should stir up our foresters and gardeners to increased efforts, so that we might turn our own treeless wastes to good account, and be spared the humiliation of having to send our would-be Indian forest-officers to France and Germany to learn what, were there a proper system, could be equally well learnt here.

Foremost among our requirements are experimental gardens and collections, such as those advocated by Prof. KOCH, and where the planter might see what is available for his purposes, and where he might resort with the certainty of obtaining information on the subjects in which he is so much interested.

WHATEVER be the fate of the silk culture in Japan, whether it follow the course experienced in India, China, and the other continental lands to its west, or escapes from the frightful risk to which its reckless cultivators have exposed it, by introducing eggs from infected countries, one thing is plain, that it behoves Australia and every other country which has as yet a clean bill of health in the matter of the silkworm disease, to extend the same caution to Japan which they have hitherto given to countries recognised as the abode of the Pebrine. This caution comes well at this time, because the Acclimatisation Society has been vigorously exerting itself to introduce from Japan not only the eggs but the whole system of treatment practised by the Japanese. No harm has been or can have been done yet; but in the future let them walk warily. Dr. BENNETT and Mr. CHARLES BRADY have been conspicuous by their exertions in this direction; and Sir HARRY S. PARKES, K.C.B., Her Majesty's representative at Yokohama, has, at their solicitation, interested the Japanese minister DATÉ in the movement, and obtained through him not only everything that could be necessary in the way of samples of silks and supplies of eggs, but also a complete set of all the different instruments and machinery used by the Japanese in their *magnaneries*, consisting of upwards of 50 different trays and sieves, feathers and brushes, racks and reels, pans and stoves, baskets and tubs, and all the little implements that can be thought of to save labour and facilitate work. The seed sent consisted of 112 cards of the very best qualities, obtained from mountainous districts at a distance from the sea, which it is thought are most favourable to the production of healthy stock. These cards are more numerous than can be conveniently dealt with by the Acclimatisation Society at Sydney, and several have therefore been dispatched to Adelaide, Melbourne, Brisbane, and New Zealand, for utilisation there; and it would appear a point of no mean importance that this contribution has been made before it was possible that the introduction of European infected eggs into Japan could have affected the natural quality of the eggs in that country.

The above evidence of goodwill on the part of the Government of Japan is more than we were prepared for. It affords one instance of the benefits to be derived from having a British officer to appeal to in a foreign country where the minister understands his duty to his country, and is anxious to perform it.

The intelligence that we have regarding the progress of silk culture in India is derived from a report of the proceedings of a meeting of the committee of the Agri-Horticultural Society of Madras, dated August 3, 1870. In this there is published a letter from Dr. G. BIDIE, the Secretary of the Society, to the Acting Secretary of the Board of Revenue, dated May 21, 1870, from which we are sorry to learn that the SILKWORM DISEASE still prevails in India.

It appears that the Board had asked DR. BIDIE to furnish them with specimens of the cocoons of silkworms indigenous to the Presidency of Madras, in order to see if they could be procured for acclimatisation in New South Wales; and Dr. BIDIE, in his reply, sends a few cocoons of the only wild kinds which he knew to exist there. He knows of only three. The one belongs to the old genus Saturnia, and seems nearly allied to Attacus Ricini, the castor-oil worm. At Madras it feeds on Zizyphus Jujuba (Bhere tree), Terminalia Catappa (country Almond tree), and sometimes on Nauclea parvifolia; so that no difficulty would be experienced in procuring food for it, should the experiment of domesticating it be tried at Madras. The castor-oil worm itself, indeed, in indigenous to Madras; but it is not cultivated there, although it is reared in some parts of the Hyderabad country. The other indigenous silkworm alluded to by Dr. BIDIE is the Atticus Cynthia, discovered some years ago on the Himalaya, and now cultivated in Bengal, as well as introduced into Europe. Dr. BIDIE mentions that the only domesticated worm known in Madras is a variety of the China insect, Bombyx Mori, but in Mysore other cultivated kinds have been introduced from other parts of the world; he does not think, however, that it would be safe to get any from that quarter at present for the purpose of supplying Australia, as the disease which has been so disastrous to sericulture in France and Italy is prevailing there, and it is readily communicated from infected stock either by egg or chrysalis.

It is gratifying to observe that the attention of the Government in the Madras Presidency has been directed to this most important subject, and that the liberality with which they desire to assist in the acclimatisation of silkworms in New South Wales is tempered with a wise discretion; for in the proceedings upon Dr. BIDIE'S communication we find it noted that "it is evident that the greatest care is necessary in selecting worms for exportation, and so far as the Board are aware the only worms in the Presidency which have been entirely free from epidemic disease are those cultivated to a very limited extent in the Tinnevelly district." It is not, however, known with certainty of what species these are. The Board, however, are not of opinion that the wild worm of their Presidency is of any great value, an opinion in which we entirely concur.

—— A RAMBLE through KEW GARDENS is always a source of pleasure, for there is something there to meet everyone's fancy. For our own parts, although fully concurring in the desirability of doing away with a number of small houses, and of massing the plants in "ranges," we yet can but note that many of our old favourites seem lost in their new abodes, and that many plants of interest, which attracted attention when scattered through several small houses, are now liable to be passed over in the crowd in the larger tenements. The large round bed at the end of the long walk, of which we gave an illustration in our last volume, 1870, p. 1344, is planted in a somewhat similar but less frittered manner than last year. The design is now bolder, and equally or more effective. It consists of a series of elliptical figures radiating from the central vase, triangular spaces fill the intervals between the ellipses below, and the whole is margined by a circular belt of Echeveria secunda glauca. The plants in the upper and lower halves of the elliptical figures are different, which has an odd effect, more pleasurable at a distance than in close proximity to the bed. The upper half of the ellipse consists of a broad belt of Centaurea ragusina, within this a band of Coleus Verschaffeltii, encircling a central mass of Abutilon Thomsoni. Instead of continuing this arrangement, which is effective enough, the lower half of the ellipse consists of plants of larger growth, and has in the centre, below the Abutilon, a patch of plants of Sempervivum ciliatum, edged with Golden Feather, and this encircled with a line of single plants of Echeveria metallica, bounded on either side by a zone of Alternanthera amabilis, and the design completed by a double line of Echeveria secunda glauca, corresponding to the edging of Centaurea ragusina above. The triangular spaces between the points of the ellipses and the outermost border are filled with a centre of plants of Sempervivum velutinum or S. canariense, springing from a carpet of Alternanthera, and edged with the variegated white-leaved Koniga maritima. In some of the other flower-beds it is singular to notice how certain favourite bedding plants maintain their ground in spite of new comers. Not to speak of Mrs. Pollock, Purple King Verbena amply justifies Mr. SMITH'S choice, as also do Duchess of Sutherland and Lady Constance Grosvenor Pelargoniums. Iresine Herbstii is poor, and Mauve Queen Viola, as seen at Kew, no improvement on the older sort. It is a relief to turn from these vulgarisms to the noble Palms. The Arenga saccharifera, one of the finest of the Kew Palms, is now bearing a splendid drooping plume of young fruits. Of quite another character, but noteworthy in its way, is the plant of Dammara australis in the temperate house, and now bearing a a few young cones—a very distinct-looking plant. In the same house it is interesting to see the different character which the Vitis (Ampelopsis) tricuspidata (Veitchii of gardens) assumes as it grows older, when it produces large deeply-divided leaves intermediate between those of an ordinary Vine and those of the old Virginian Creeper in form, and quite different from the small neat Ivy-like foliage borne by the young branches. Talking of creepers, those in search of effective plants of this kind should by no means overlook Lonicera sempervirens, which, for beauty of colour and continuous blooming qualities, may well compare with many better known plants. On the rockery is a plant of Opuntia Rafinesquiana in flower, and a patch of Sedum cœruleum, a little gem; but we urge our readers to go and revel for themselves. We cannot indicate a tithe of the noteworthy plants.

—— The EAST LONDON AMATEUR FLORICULTURAL SOCIETY has hit on a recipe for filling its exchequer. From a local report we learn that "during the evening large numbers of the fairest of the fair inhabitants of privileged Bow," were assembled on the occasion. "To account for this it is necessary to state that the band of the 2d Middlesex Artillery Volunteers were located on the field, and supplied music to which ere long the youthful feet were tripping merrily over the green sward; their owners elated with the thought that no censorious mamma was at hand to check their vivacity." It is needless for us to remark that floriculture was at a discount, and the only flowers that found favour were the "dancing girls!"

—— The following suggestive passage occurs in Mr. BENTHAM'S Presidential Address to the Linnean Society, lately published. We quote it as illustrative of the aim that societies and public institutions should strive to attain. "The formation of our ZOOLOGICAL SOCIETY and gardens opened a new era in the cultivation of the science. * * With an annual income of about £23,000 the Zoological Society is enabled to maintain a living collection of about a thousand species of vertebrata; and although some portion of the surplus funds is necessarily applied for the sole gratification of the paying public, yet a fair share is devoted to the real promotion of that science for which all the fellows are supposed to subscribe—the accurate observation of the animals maintained, the dissection of those that die, and the publication of the result. Physiological experiments are either actually made in the garden, or promoted and liberally assisted."

—— A new application of CHARCOAL has recently come to our knowledge. We are told it is now largely used in the manufacture of a permanent enamel, or varnish for coating the insides of casks. The charcoal, which is made from the wood of Salix alba, is reduced to a very fine powder, and mixed with proper proportions of shellac and methylated spirit. When ready for use it is laid on with a brush, and the inside of the cask is fired, so as to remove the spirit and leave only the lining of charcoal and shellac; it is then coated again and fired a second time, after which it is allowed to stand a short time before being used. This composition is said to form a perfect enamel, and while it prevents any chance of leakage it preserves the casks in an extraordinary manner. It answers admirably for beer and acids, and is largely adopted by some of our principal brewers. Its preparation and use is protected by a patent.

—— Amongst the many NEW ANNUALS introduced year after year, there are few that hold a permanent place in our gardens. The majority are rejected on account of the short duration of their flowering season, which seriously interferes with the beauty of a garden planted in the style almost universally adopted at the present time. Two recent introductions seem likely to prove valuable acquisitions, either for the geometrical garden or indeed borders. I refer to Godetia Whitneyi and Tagetes signata pumila. The former (for figure and description, see *ante*, p. 103) certainly deserves all the praise bestowed upon it. The splendid rose-coloured flowers, with a crimson blotch on each petal, strongly reminding one of those of an Hibiscus, are produced in the greatest profusion for a long period. The plants in the bed I have in view are dense bushes, about 18 inches high, literally covered with flowers. Tagetes signata pumila, and especially the variety flore-pleno, is a very pretty, dwarf, compact yellow-flowered plant, suitable for bedding, and much more to be depended upon than the Calceolarias, of which, by-the-by, I have not seen a good bed this season, all being more or less diseased. *H.*

—— The MAXIMUM TEMPERATURES of the AIR during the week ending August 26, ranged in England from 78°.7 at Blackheath, to 67° at Newcastle-on-Tyne, with a mean for all stations of 73°; in Scotland the highest recorded was but 68° at Perth, and the lowest 64° at Greenock, the mean value being 65°.6, or 70°.4 lower than the corresponding value for the southern country. The MINIMUM TEMPERATURES of the AIR were more equable over the whole country, the highest value being 52°.8 at Portsmouth, and the lowest 40° at Hull, and the means 44°.9 for England, and 43°.8 for Scotland. The mean temperatures ranged from 63° at Portsmouth and Blackheath, to 53°.3 at Aberdeen. The decrease, as shown in Mr. GLAISHER'S Tables in the present issue, is very striking, the values, with but few exceptions, declining nearly uniformly from south to north. The mean value for England was 59°.1, and for Scotland, 53°.9. RAIN is recorded as having fallen at all stations during the week, though much heavier in Scotland than in England, the maximum fall in the latter country being 1.12 inch at Eccles, while at six out of the seven stations in the former the values exceed this amount. At Glasgow and Perth 2.49 inches and 2.16 inches were measured. The mean fall for England was 0.45 inch, and for Scotland 1.67 inch.

—— The Messrs. DICKSON & CO., of Edinburgh, have sent us another batch of SEEDLING VIOLAS, similar to those referred to at p. 772 of our last volume. They are described to be dense and branching in habit, hardy in constitution, and invaluable as continuous bloomers from spring till autumn; indeed, as we learn, "they have been almost a sheet of flower throughout the season." The Messrs. DICKSON state, that they find Viola stricta a very useful species for crossing, as the seedlings from it have a fine, soft, waxy-looking colour, and a good substance. Of those referred to last year, the deep golden yellow, now called Dickson's Golden Gem, is one of the finest; and those called V. lutea pallida, and V. lutea Grievei, with The Primrose and V. suaveolens major, are extremely showy, and of different shades of pale sulphur-yellow. V. coriacea, creamy white, with violet eye, looks like a useful bedding Pansy. Another smaller-flowered white, V. stricta alba, pure white, with a small orange spot at the eye, if of a suitable habit, must be quite a gem for bedding purposes. Strongly contrasting with these are V. amœna magnifica, a rich mulberry colour, with the lower petals pucy-violet, the eye yellow; and Vanguard, like a small self-coloured mulberry Pansy—both charming flowers. Violet Fairy Queen is again quite distinct, having yellow lower petals, and deep violet top petals, evenly bordered with yellow, so bright and cheerful-looking that it must be an excellent massing plant. With these came several highly-promising bedding Pansies, of which one, named Celestial, a deep reddish-purple, and New Colour, a sort of reddish plum-colour, both said to be first-rate in habit, struck us as being likely to be extremely useful.

—— One of the handsomest and most symmetrical plants of THUJOPSIS DOLABRATA we have fallen in with, is growing in the pleasure-grounds at Ashridge Park. The plant is in vigorous health, about 5 feet 6 inches high, and fully as much through at the base, and forms a dense cone of perfect symmetry, very different from the abrupt and unfinished appearance so often presented by the leader and uppermost branches of this really handsome and hardy Conifer. An equally well-furnished plant of the prettily variegated variety, of about half the above size, is growing in another part of the grounds.

—— In reference to the names of ONCIDIUM MACRANTHUM HASTIFERUM, and LAMBERTYANUM, Professor REICHENBACH writes that both are due to M. LINDEN, of Brussels and Ghent. "I remember very well how he pointed out one day, to Director FUNCK and to myself, the differences between these varieties from the very bulbs. Every one knows that M. LINDEN'S ability to discriminate species from the bulbs alone is quite unrivalled. The unfortunate name of hastiferum was given, if I remember aright, to the best variety. It gave rise to the suspicion that my 'hastiferum' was the same plant, though that is quite as distinct from hastiferum as a rhinoceros from a hippopotamus, since it bears an erect blade on its anterior lip, while the hippopotamoid macranthum does not rejoice in such an ornament. Now I believe Oncidium macranthum Lambertyanum was, by 'second choice,' named in honour of Monsieur le Comte de LAMBERTYE, the distinguished grower of Strawberries. Finally, Oncidium macranthum itself appears to have been that much inferior variety, bearing much smaller flowers and scarcely any black violaceous ornaments on the lip. The numerous sketches I have at hand show remarkable differences in the side laciniæ of the lip. This is, however, perhaps a matter of no great importance, since I do not at all know whether I did not get several of these first flowers, which ultimately often prove to be mere abortions. M. LINDEN'S last catalogue specially attributes a higher value to the two varieties than to what he takes as the type. There is, however, scarcely any doubt that the hastiferum is what was originally intended for macranthum, which was gathered by RUIZ and PAVON, and which I have from Dr. LINDLEY'S own hands. If I cannot give a very accurate answer, I have, however, done my best to make some remarks."

—— Those who have to supply FRENCH BEANS in any quantity throughout the winter and spring months are strongly recommended by a correspondent of the "Florist and Pomologist" to waste none, but to adopt the plan of preserving them, while there are plenty to be had. When thus preserved, he finds that an immense anxiety is avoided in winter, from not having to grow them; indeed for the last three winters he has not had to force any. The mode of preserving them is as follows:—To 12 lb. of Beans allow 6 lb. of salt. In a pan place a layer of Beans, and then a layer of salt, until the vessel is full, the last layer of salt to be rather thicker than the others; put a plate or anything that will nearly cover the Beans, on the top of the pan, and a weight of about 6 lb. on the top of all. Let them remain thus for two days, when the salt will have turned into brine; then take out the Beans and put them in jars, pour the brine, which must be equally divided, on them, put a small plate on the top of the Beans to keep them under the brine, and then tie a bladder over the jars. If well covered with the brine, the Beans will keep good for 12 months. The Beans should be gathered on a dry day. Before using, they should be laid in cold water for an hour, changing the water several times. If properly done it is said to be difficult to tell them from newly-gathered Beans, either as regards appearance or taste.

—— Messrs. CARTER & CO. have sent us samples of various forms of FRENCH and AFRICAN MARIGOLDS, grown at their seed farms in Essex. We can pronounce them to be very good examples of their respective sorts. The Africans are represented by the usual orange-coloured and lemon-coloured varieties. Amongst the varieties of French Marigold, those which we prefer are labelled Dunnett's Double Tall Orange, of a clear deep orange hue; Double Gold-striped and Double Dwarf Gold-striped, two handsomely marked gold and brown sorts, and the Double Tall Dark, of a rich Spanish brown. In all these the colours are well marked, and the capitules full and symmetrical, with the florets well developed, and spreading out into a handsome rosette.

—— Judging from the appearance of numerous plants in the nursery at Great Berkhamsted, and from the information obtained from Mr. LANE, we are inclined to accord a very high position amongst ornamental—perhaps even profitable—Conifers to the VANCOUVER'S ISLAND FIR, which GORDON called Picea grandis. Its growth is most rapid and elegant, and in the high grounds of Berkhamsted it is perfectly unaffected by any frosts. We might with safety designate it as one of the most rapid-growing members of the Coniferous family.

New Garden Plants.

ONCIDIUM EXASPERATUM, *Lind.*, *Rchb. f.*

Affine Oncidio coccifero, Rchb. f. Sepalis tepalisque extus valde muriculato-exasperatis; sepalis cuneato ovatis apiculatis; tepalis paulo latioribus; labello triangulo basi utrinque obtusangulo; callo depresso a basi in discum; apice utrinque unindentato antice, utroque latere dentibus ternis; carinis intus geminis; columna sub fovea isthmo insiliente constricta.

One of the smaller flowered species, with chestnut-brown flowers, the lip, however, yellowish with brown streaks. The calli of the lip are beautifully lemon-coloured. It may come from Ecuador, and is one of the Wallisian discoveries, introduced by M. Linden. Its most extraordinary feature consists in the asperities on the outside of the flower. *H. G. Rchb. fil.*

ODONTOGLOSSUM CROCIDIPTERUM, *n. sp.*

Affine Odontoglosso nævio, Lindl. Labello ante unguem erectum angulato usque hastato, antice valde velutino; callis erectis geminis emarginatis ante basin; columnæ alis plurisetis laceris, angulo in basin foveæ stigmaticæ insiliente.

Much in the way of Odontoglossum nævium and odoratum, but apparently different from either in its many-fringed column wings, which take the place of the single bristles. Its colour is a pallid yellow, with many chestnut-brown spots. The lip has its anterior part covered by a large brown spot, and on each side of the calli a similar smaller one. The merit of introducing this New Grenadian Orchid pertains to Mr. Stuart Low. I have obtained it twice from this invaluable correspondent, the last spike bearing very curious flowers with spreading angles before the base of the lip. Now I have before me a rich spike coming from J. Day, Esq., and who makes some very interesting remarks as to the organs of vegetation. "It is quite different," says he, "as regards the bulbs and leaves, from anything I have seen. The bulbs are nearly elliptical, not tapering to the apex as most do, shorter and rather blunter at the edges than most other Odontoglots. In age the bulbs shrivel and wrinkle all over irregularly, and never get sulcated in deep groves as the others." The flowers are scented, but the scent is disgusting. *H. G. Rchb. fil.*

GLEANINGS FROM CHISWICK.

FEW things afford the true lover of horticulture more pleasure than occasional visits to its oldest and most venerated shrines, amongst which dear old Chiswick stands pre-eminent. Approach the old gardens from whatever direction one may, happy reminiscences are recalled to one's mind, and a glow of warmth runs through us as we think of its glorious past and now hopeful future. Where is the gardener, old or young, who has not profited by the lessons in practical horticulture which after much careful and laborious study have been disseminated far and near for the benefit of all? It was here, too, that the lamented and greatly esteemed Thompson compiled the mass of facts which afterwards resulted in the "Gardener's Assistant," and which, whether in the cause of pomology or in teaching of the young gardeners who aim at future excellence in their calling, stands out boldly as a sign-post on the road to success. The older members of the profession knew this unassuming but faithful and laborious author, and there are very few of the younger ones who have not a well-thumbed volume of "Thompson" upon their "bothy" shelves. The reader, I am sure, will pardon me for thus giving vent to feelings which possessed me, in common, I doubt not, with others, who lately made a visit to these old grounds. I had intended only to give the pith of a few useful observations which I gathered a few days ago, and will therefore not digress further.

The large vinery (better known to some as the conservatory), under the present management, points to a present and to a future of very great success. The "huge span" is laden throughout its whole extent with a beautiful crop of Grapes, and of young growth and healthy foliage, which affords a prospect unsurpassable in its way in the three kingdoms. Mr. Barron, the undeviatingly courteous superintendent here, as well as at Kensington, may well be proud that his attempt to renovate the old border has thus early proved successful. Having removed a walk which was made much too near to the house, he has enlarged and partly renewed the border, and in so doing has considerably elevated it above its former level. Mr. Barron believes, and, I think, rightly, that by elevating a Vine border well above the surrounding natural ground, far more favourable conditions as regards drainage are insured than by the customary method of supplying this by means of rubble at a lower depth. And so far, assuredly, the Vines, huge as they are—some 30 feet long in the rod, are answering in a remarkable manner to the valuable aid given them, as many of the young growing rods of the current season's formation average 20 feet in length, and are uniformly strong in proportion. The crops upon the true Frankenthal, which Mr. Barron considers the best of all black Grapes, the Black Hamburgh not even excepted, are very fine, many carrying bunches by the score, averaging from 2 to 3½ lb. weight, and colouring well. The canes of Gros Guillaume (Barbarossa) are carrying a great load. Many of the bunches, which are ripening, or, I should say, colouring, rather earlier than usual, average from 16 to 18 inches in length, and are proportionate in width. Raisin de Calabre, the white companion to West's St. Peter, is very heavily laden. It succeeds well in this cool house, and is one which Mr. Barron values for its hanging capabilities. The Mill Hill, or Champion Hamburgh, is readily distinguished here, as in other places, by the peculiar flagging of its leaves. The Black Monukka, with its peculiar stoneless berries, is also fruiting freely. It is in connection with this Grape that Mr. Barron has effected a cross, of which great hopes may be formed, whatever be the issue. This peculiar variety was used as the male parent in crossing the Frankenthal, and, strange as it may appear, the seeds so obtained have produced seedlings having the peculiar shaped leaves of the Monukka, hence there exists great hopes that the berries may possess the stoneless characteristic of the Monukka, which, it is needless to say, would be a great gain.

I should add that, amongst the many other kinds which are grown and are doing well in this huge house, Trebbiano is especially noticeable, with its large showy bunches, which hang so well.

Mr. Barron, from what I observed, evidently pins much faith upon the capabilities of old Vines; when, as I have before stated, young rods are grown therefrom, as by grafting approved kinds on to old sorts of less repute, not only has so much been attained, but the promises for the future are favourable in the extreme. Whilst upon the subject of Grapes, I must refer to a smaller house, which contains a very fine crop of Muscats, wherein the Madresfield Court, grafted upon the Troveren Frontignan, is grown, and in a very limited space. Next the door are some very finely berried bunches, proving it to be a grand Grape, of "the first water." The bunches look solid, heavy, and compact, and fine for exhibition, whilst the flavour, we know, is past question. Its characteristics are found in its producing its fruit unusually near to the main rod, and in the berries having thick, strong footstalks, and the usual indications of long-keeping. Much is due to Mr. Barron for having thus ably confirmed the fact that in this variety we possess a most valuable late Grape; indeed, were I going to plant a house to come in late, I should use no other black Grape than this.

There are at Chiswick two orchard-houses, pure and simple, having no assistance from artificial heat, as many so-called orchard-houses have. Here the trees are in good health, and on many there is a heavy crop of fruit. I noticed the Plum General Hand as being a fine showy fruit, of good flavour, very large, and of the true Green Gage type. Pond's Seedling is also a fine large showy Plum for pot work. Amongst Peaches, Royal George and Stirling Castle are particularly noticeable, and hold their own against many newcomers; Crawford's Early is also well represented; it has yellow flesh, is a freestone, of good flavour, and a good cropper.

In a long narrow orchard-house in which Grapes, Peaches, and Nectarines have been grown for comparison, and with great and lasting benefit, as many synonyms have been proven for one and the same fruit, are other Peaches, which it will also be well to refer to now. First, I would say that the trees have done remarkably well in this house, the fruit having been fine and abundant. Here Bellegarde was very fine, as also were the evidently near relatives, Violette Hâtive and Galande. Rosanna is a good flavoured, yellow-fleshed Peach; while Shanghai, or Chang-hai, has little save size to recommend it. But of all Peaches, commend me to the Belle Beauce, a good early variety, which is something like Grosse Mignonne; it is a variety of great merit, earlier than the Early York, and of double the size, and has a flattened, showy fruit. Amongst Nectarines, "you can put down Pitmaston Orange as one of the best for pot work," said Mr. Barron. The Bowden and the Victoria are each worthy of being noted down. The Violette Hâtive, Downton, and Rivers' Pine-apple, appear prominent; Victoria is like Stanwick, save that it is three or four weeks earlier.

I cannot refrain from mentioning the Fig-house as affording part of the useful information I have gleaned. I refer to two or three prominent varieties amongst a house full of pot plants, all in rude health and abundant bearing. De la Madelaine is there the earliest amongst the early varieties, ripening even in advance of the good and fruitful White Marseilles. But of all the varieties, the true Bourjassotte Grise is Mr. Barron's favourite. I should not omit to mention the Panachée, or Striped Fig, illustrated so well in a late number of the "Florist and Pomologist." It should be known that the ornamental stripes are exhibited by these beautiful fruit onward from their earliest infancy.

The tramway system of orchard-houses, introduced by the Rev. J. Fountaine, is also illustrated in the Chiswick Gardens; and why should it not? The old "City Road" has given place to the modern innovation; and why not old Chiswick? I cannot say that the trees look in any great degree the better for the appliance, quaint and plaything-like as it appears on the surface. Certain it is that the thing is well carried out to the end in view; and well would it be for all gardeners if like conveniences were extended to the many other departments requiring much labour in attending to them. One of the running trucks (rolling stock) I should observe, had upon it a fine load of the largest possible Black Diamonds, not the black diamonds from Cannock Chase or Wallsend, but the Plums of that name.

I must pass by the many other subjects of interest, including the beautiful collection of Phloxes and Pentstemons in full bloom at the time of my visit, and say finally, that the hardy fruit trees—one of a sort—removed into their new quarters, are thriving well, and will yet, in association with the older pyramidal Pears, prove a pleasing feature. The fine pyramidal Pears have many of them been regrafted with more approved sorts than some of them proved to be, and the grafts have taken remarkably well, having made young shoots so vigorously and so plentifully that a casual observer would not have noticed that such a harsh process had been undergone by them. The new, or rather reserved ground, now remaining in the hands of the Society, is far more compact and replete with the symptoms of general good culture than was the old garden. The annuals, bedded-out Pelargoniums, and the fruit trees in pots, call for especial note.

I may further say that, though much has been looked forward to through this curtailment of space, which gives to the able superintendent some chance of doing things as he would, and not as means allowed him, as formerly, we already see an earnest of what may be anticipated in the future in the neat, orderly, and skilful display afforded. Yet we look forward to a still more glorious future, knowing that, however successful heretofore, no man will be found more heartily to join in the emulating acclamation—Advance, than Mr. Barron. *William Earley, Valentines, Ilford.*

CONVERTIBLE FLOWER OR FRUIT VASE.

It must have often occurred to many besides myself, that if they could only procure this or that flower, what a much prettier arrangement they could have made. It must also have often occurred to many that, if the same limited number and variety of flowers had only been arranged in this or that form of vase, instead of the one they happen to be placed in, how much better they would have looked. Some years ago I rarely saw a dinner-table decorated but what some new form or other suggested itself to me as an improvement upon what was already in my collection; and when time permitted the reduction of these ideas into the form of working drawings, an order to the zinc-worker or glass-blower was the usual result. In this way I got together a great variety of vases, dishes, stands, &c., and then found it best to wait until the flowers arrived before determining what vases should be used. Before my collection became so varied I used to get out a certain set of vases, as suitable for a table of a certain size, and to order flowers that would look well in those vases; and if the flowers ordered arrived, all went well. But the best-intentioned of florists cannot always supply what they confidently promise; and my experience teaches me, that the least trouble in the end is to get the flowers first; and having sorted them, and put them into separate vessels of water, to look over the collection as a whole, and then to determine the form of vases to be used. I have often thought of sending you sketches from my collection [Pray carry out your intentions still further. Eds.], and now forward you one of a vase which I have found more generally useful for either fruit or flowers than any other form I know of.

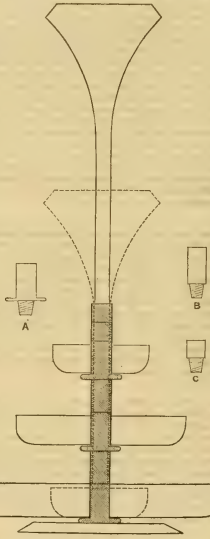

Fig. 259.—Convertible flower or fruit vase.

This vase consists of the following 11 parts:—a glass foot, half-an-inch thick, into which is fixed a metal tube 2 inches long; six pieces of metal tube, each furnished with a male screw at one end and a female screw at the other, and all the screws alike; of these six, two are 1 inch long, C, and four are 2 inches long, A and B, two of these four having a projecting flange half an inch wide at the end next the male screw; three glass dishes, of the respective diameters of 5, 9, and 13 inches, and each having in the centre a tubular hole, so that it can pass over any of the metal tubes and rest on a flange: the dishes are about 2 inches deep, and the metal tube is nearly an inch in diameter. The remaining part is a trumpet-shaped piece of glass, having at one end a male screw, like all the others, and at the open end an edge turned in more than half an inch. This inversion of the lip is found to be of great use in holding the ends of the lateral shoots of Fuchsia, which, by thus lying in a natural position, display their blooms without crowding.

When all these pieces are put together it forms a vase 28½ inches high, as shown in the sketch (fig. 259). The dotted lines show that the top piece may be screwed into the foot, without any intervening piece of metal tubing, when the height will be only 18½ inches. It will also readily be seen that by the use of one or more of the metal tubes, the height of the vase may be raised inch by inch to any extent between these extremes. In the same way, by an alteration in the distances between the flanged tubes, the dishes may be brought nearer to each other, or placed farther off from each other. Again, the dishes may be used with or without the rest of the vase, or the vase may be used with only one or with two dishes, or one or more of the dishes may be used on the foot without the top piece. In short, the foot may be used without the top-piece, or with it at eleven different heights, and each dish may be used separately, or at ten different heights upon the foot. Your mathematical readers may amuse themselves by calculating the number of combinations which eight of these vases enable me to effect.

When the dishes are arranged as shown in the sketch, loops of wire may be clipped over the edges of the upper dishes, and thus tall grasses may be made to stand erect amongst a lightly-arranged pyramid of flowers. But if a pyramid of fruit be wanted, it might be better to use the two flanged pieces without any tubes between them, in which case the three dishes would rest one just above the other. Supposing that a ring of Peaches were arranged upon the lowest dish, a ring of Nectarines upon the second dish, and a Pine or a few Plums upon the top dish, then any one kind of these fruits may be taken from the group without disturbing the other fruits. I will not occupy your space with a description of any of the other numerous ways in which such a vase can be dressed with fruit, or flowers, or both, but will only add that I cannot too strongly recommend it, particularly to those whose selection of flowers is often very limited. These vases have been made from my drawings by Messrs. James Powell & Sons, of the Whitefriars Glassworks; and I gladly avail myself of this opportunity of testifying to their readiness and willingness in working out new designs, and to their patience and courtesy in troublesome matters of this kind. *W. T.*

A GARDEN OF TREES.

We have had recently the opportunity of inspecting the plans and notes relating to an arboretum and fruit garden proposed to be established at Berlin. The proposal emanates from Professor Karl Koch, the highest authority on all matters connected with Dendrology, and the author of a standard treatise on that subject, already alluded to by us (p. 225, 253, 1869), and which has but two serious faults, both of which can be remedied. The first is, that we have at present only the first volume—a defect, we are glad to learn, which is likely speedily to be removed; and the next is that it is written wholly in German. While awaiting a full English translation, a Latin synopsis of species, such as might readily be given as a supplement to the whole work, would be of immense service to the busy reader, be his nationality what it might. Reverting however to the subject before us, we may say that we were struck with the importance of Prof. Koch's project, and impressed with the manner in which he proposed to carry it out. Although, says Prof. Koch, here and there in Germany, and especially in England, greater and smaller collections of trees have been made, some of which still exist, and which were called arboretums, at the time when the so-called English style was the fashion, these were but first attempts which, in Germany at least, with the exception of the Royal Botanical Gardens in Berlin, were made by private individuals, with the assistance of Willdenow, and fell to the ground at his death.

Most of these lacked a scientific basis, and this is particularly the case in the arboretum at Muskau, which owes its origin to the munificence of H.R.H. Prince Frederick of the Netherlands, and which, thanks to the admirable direction of the inspector of parks, Mr. Petzold, far excels, in a horticultural point of view, any collection of the kind now extant. When in 1772 Duroy, a Brunswick physician, published the first Dendrology, he described 310 kinds of trees, which were at that time cultivated in the garden of Veltheim, judge of the Duchy of Brunswick, at Harlke, near Helmstadt. Since then a hundred years have not elapsed, and the number of trees has been nearly tripled, through introductions from foreign countries alone. For instance, in the above-mentioned work 10 kinds of Maple were described, 24 are now cultivated. Duroy knew 13 wild Plums and Sloes, and only 7 Thorns (Cratægus); we now possess 35. In addition to this it must be remembered that in the course of culture a great many varieties and forms have crept in, which sometimes outnumber the original forms, and that these, being in many cases preferred by amateurs, and fetching a higher price in the trade, have been further propagated.

For more than 30 years Professor Koch has made the plants in question his particular study, and in the course of his researches has made many journeys, especially in western Asia, whence we have received many of our trees. He fixed more especially upon that district as the land of his particular researches, because he rightly imagined he had discovered in it the fatherland of most of our fruit trees. The origin of pomaceous and stoned fruits has

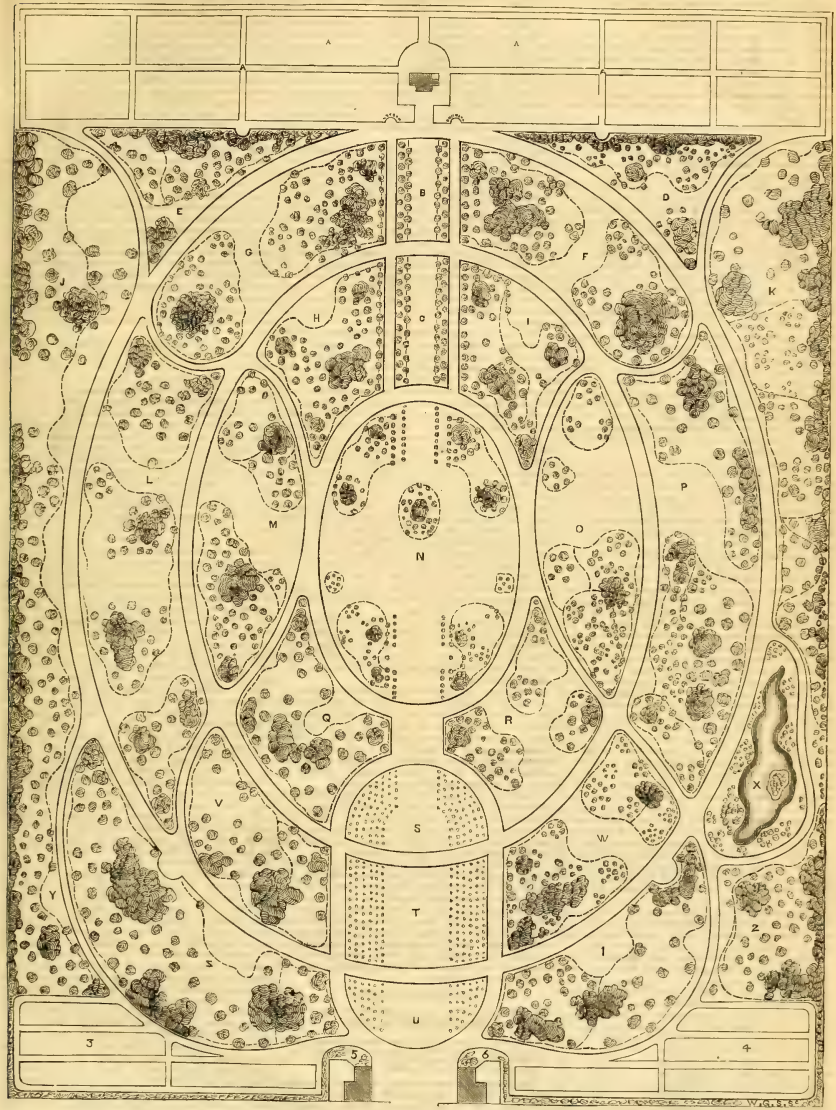

FIG. 260.—PLAN OF THE PROPOSED DENDRO-POMOLOGICAL GARDEN AT BERLIN.

REFERENCES :—A, Fruit trees, pyramids, espaliers, and cordons ; B, Cultivated pomaceous trees ; C, Medlars, Cratægus ; D, Cultivated Bush fruits ; E, Cultivated Walnuts, Mulberries, Figs, Chestnuts, Filberts ; F, Cultivated stone-fruit trees ; G, Cultivated pomaceous trees ; H, Wild pomaceous trees ; I, Wild stone-fruit trees ; J, Poplars ; K, Ash, Olives, Caprifoils, &c. ; L, Pines, Larch, Cedars, Firs ; M, Cypresses, Yews, Ephedra ; N, Evergreen shrubs ; O, Roses, Philadelphus, Cornus, Aralia, &c. ; P, Hickories, Rhus, Leguminosæ, &c. ; Q, Planes, Hornbeam, Elm ; R, Daphne, Laurel, Elæagnus, Myrica, Celtis, Planera, &c. ; S, Wild Roses ; T, Cultivated summer and autumn Roses ; U, Hydrangeas, Pæonies, Hibiscus, &c. ; V, Birches and Alders ; W, Berberis, Ribes, Celastraceæ, &c. ; X, Rhododendrons, Erica, &c. ; Y, Willows ; Z, Oaks, Beech ; 1. Limes, Magnolias, Calycanthus ; 2, Horse Chestnuts, Maples, &c. ; 3, Climbing plants and Creepers ; 4, Wild and cultivated Vines ; 5 and 6, Brambles, Ivies, &c.

never been scientifically determined. Only long-continued attempts at cultivation, such as can be carried on in some institute set apart for the purpose and secure from the chance of individual change of purpose, will ever lead to a scientific conclusion.

The dendro-pomological garden has, besides its scientific, a practical side. Young men who are making forestry and agriculture their study would there have the opportunity of improving themselves and acquiring a knowledge of the different kinds of trees and of the modes of planting and culture, especially fruit trees, as well as those adapted for planting along roads and highways, &c.

A circumstance of great importance has hitherto proved an almost insuperable obstacle to the acquisition of such knowledge, that is, the great confusion in the nomenclature of trees from which even the best nursery gardens and arboretums are not free.

A true scientific nomenclature of trees will only be obtained when these have been observed for years in Nature. Trees are the more difficult to determine in that they require a long time to blossom, and are in some cases, like the Willow and Poplar, of different sexes. In addition to this our trees—and this is not only applicable to those foreign kinds with which we have been acquainted for hundreds of years, but also to indigenous ones,—often become in the course of culture so altered that their outward form is quite different from their natural and uncultivated aspect, and consequently frequent mistakes arise. Such varieties and forms whose origin is not known have thus been described as independent kinds, and under different names. Not a few foreign trees, whose acquaintance one has made for the first time in the form of a fragment in some herbarium, have been described by different botanists under different names. Were such plants cultivated beside one another, so that they might be contrasted one with the other, such errors would soon be exposed. Gardeners, too, have frequently made use of any sports or chance deviations from the normal form, and propagated them, in order to be able to sell them as something new.

A dendrological garden has still another important object. The effort to beautify our grounds, and make them more habitable and pleasant by planting, has, especially of late years, made great advances. The environs of Berlin and Potsdam rank first in this respect. Those who can look back 30 years can judge what has been done in that comparatively short time to adorn and beautify the country. In Silesia and Pomerania, and even in the distant provinces of Prussia and Posen, the growing spirit has borne fruit. The intelligent observer will note that the beautifying of the land has kept pace with the cultivation and civilisation of man himself. Man becomes the better in proportion to the degree in which he occupies himself with plants and their culture. This moral influence is not sufficiently recognised. Notwithstanding that so much has already been done in this respect, or that the desire of beautifying one's surroundings has been generally aroused, the interest would be greatly increased were we made more fully cognisant of the rich material at our disposal. But this can only effectively be made known by a dendro-pomological garden, such as Professor Koch proposes. Of the importance of this there is still much to be said. The possessor of a garden can always inform himself with more ease of the nature and habit of a tree or shrub which he grows himself. The same principle applies to the more extensive facilities given by a dendro-pomological garden. The number of avenue trees now existing is pretty considerable. We have them for all soils, circumstances, and situations. But, owing to the want of the necessary knowledge great mistakes are often made. Still more difficult is the right choice of blossom and fruit-bearing shrubs. No doubt the reason that the latter are by no means sufficiently appreciated, as a means of adorning our residences, especially late in the season, is, that a knowledge of the abundance of material which is available for this purpose is wanting. Not less charming and instructive would be the effect of plants arranged in geographical groups. In this way a new means of developing the mind and taste of the people would be obtained, which would be of use not only to the young, but also to those of riper years.

Such a garden will, however, only imperfectly fulfil its purpose, unless the better kinds of fruit trees, and such as deserve to be generally propagated, are cultivated in it. In Prof. Koch's opinion every province should have its own particular garden, in which the provincial pomological characteristics might be exemplified; and, in addition to this, there should be a general pomological garden, in which, besides matters of pure practice, strict scientific investigations should be carried on. The sciences are, now-a-days, so blended, that in most researches the co-operation of many learned men, such as may be found gathered together in Berlin or other great towns, is required. Every separate science has now become so extensive, that one man can no longer embrace everything in it. Whoever occupies himself with physiology and the life history of plants is in general so entirely engrossed, that he has seldom time to do anything in systematic botany, and *vice versâ*.

Every year a great number of landed proprietors visit Berlin, especially in the winter time. These gentlemen often seek for instruction in those matters which concern their own lands. Nothing, however, would so entirely minister to the requirements of such proprietors as a collection of the best fruit trees, and they would at the same time have an opportunity of becoming acquainted with the fruits produced by them.

In such a collection not only the best mode of culture should be found from which every one might learn, but both expert and novice alike might gain a knowledge of the advantage of rational practice and scientific theories in pomology. On that account, says Prof. Koch, there should be examples of the different methods of cultivating the high stem, the pyramidal, the wall fruit trees, and such modes of training should be exemplified on the same species, in order that the apparent differences in the results of culture might be seen and tested.

In the arrangement of the garden a museum must not be lost sight of, in which fruits and other interesting subjects of culture should be exhibited for the benefit of the public. The different appearance and various degree of excellence of one and the same fruit, according to the manner of its cultivation, cannot fail to direct attention to more careful culture. The laying out of a dendro-pomological garden, which should provide at one and the same time for the requirements of science, practice, and æsthetics, is undoubtedly a difficult task, which Prof. Koch says (with too great modesty as it seems to us) that he felt himself not capable of superintending in all its branches. On that account he appealed to Mr. Meyer, of Sans Souci, for assistance, especially as far as the last part was concerned.

The form of a hippodrome was considered by Mr. Meyer to be the best for a dendrological garden. In spite of the regularity of such a form, the visitor would be hardly conscious of it when inside the garden. On the two sides most exposed to the wind it is proposed to plant high trees, to which the name of wind-breakers has been given. An outside compartment is destined for the large trees, the inner one for the next in size, and the centre one for the smallest and most tender plants. The ground slopes on the inside somewhat downwards, so that the piece of ground in the centre which is to be planted with evergreens lies lowest (N). It might also be well were the ground to be undulating, as some trees prefer such a position. Further, the trees should be so planted that the regularly formed ones, such as Limes, Maples, Nut trees, &c., should occupy the one, and the more irregular ones, as Oaks, Poplars, Beeches, &c., the other side. In order to show the progressive advance in their culture, the wild Roses should be placed first, then the Roses as they were for 20 years before the climbing Roses appeared, and lastly the best kinds of the present day. Such contrasts between early methods of culture and those now prevalent should also be made with the Pæonies, Hortensias, and Hibiscus, &c.

Creeping plants should have a place for themselves in another compartment. Wild Vines and the best kinds for wine should be planted; and lastly a hedge composed of all the various kinds of plants capable of being used for the purpose, ought to surround the dendrological garden.

The garden should not only be open at all times to the man of science, the forester, and the agriculturist, but everyone should have the right to seek instruction in it, and both director and inspector should be prepared to impart it. Seeds, grafts, or cuttings, should be presented gratis to proprietors, so far as this may be done without undue expense. Professor Koch then submits detailed plans of the proposed garden, in which all the trees and groups are laid down.

In addition to this, he gives a scientific catalogue of all the trees which he recommends for a place in the dendrological garden, and indicates the place they should occupy. In order to be better understood, the trees are divided into scientific classes, which more or less harmonise with the different quarters.

As far as we can estimate the extent of ground necessary for this undertaking, 40 acres would be sufficient for the whole dendrological garden; and, should it be necessary to make special provision for the agricultural and forestry part, space for culture, experiments, additions, &c., Prof. Koch considers that 60 acres would be ample, and that to maintain it, no great annual charge would be required. We hope to hear soon that Prof. Koch's plan, which has received the sanction of the Prussian authorities, will be carried out in the manner he proposes.

THE NATURAL HISTORY OF A FLOWERING PLANT.

[The following remarks are taken from Professor Thiselton Dyer's fifth lecture on "The Natural History of a Flowering Plant," in the theatre of the Royal College of Science, Dublin. The subject treated upon was "The fruit."

THE essential parts of a flower are the two innermost circles, or whorls. These are, like the outer whorls, equivalent to leaves, but have been very much modified in the course of their development—the stamens, to contain the pollen; the carpels, which occupy the centre of the flower, for the production of ovules. The real nature of these bodies is shown in their occasional replacement under abnormal conditions by true leaves, and also by their reduction in some double flowers to a petal-like state, the analogy of which to the leaf, colour excepted, is more obvious. The upper part of a stamen corresponds to the blade of a leaf; but the cellular substance between its two surfaces is modified in its growth so as to produce eventually a great abundance of isolated cells or pollen grains. In the majority of plants these are discharged as a fine powder by the disruption of the cavities in which they are formed; so vast, indeed, is the quantity shed by cone-bearing trees that it has been sometimes attributed to showers of sulphur. The carpels are formed by the infolding of a leaf, the edges uniting to produce a closed cavity which protects the ovules. These are at first merely small cellular out-growths from the seam where the margins of the carpellary leaf have united, and to which, therefore, they must be looked upon as belonging. The whorl of carpels are either separate or united into a compound body, which may have a single cavity, or as many compartments as there are carpellary leaves, according as they have entered into combination, open or closed. In order that ovules may grow into seeds, it is necessary that they should be subjected to the influence of the pollen. This is shed from the stamens upon the tops of the carpels which are not quite closed in at that point, and the pollen cell then grows down into the carpel at the expense of sugary matter, which it absorbs, till it comes in contact with the ovules. Leaves will occasionally bear buds upon their margins; ovules, on the other hand, sometimes approach the character of leafy buds. Whether they are really their equivalent is not completely ascertained. Pollen grains, however, it is quite certain, are merely specialised and detached cells. They have even been produced, in rare instances, from the cellular structure of the ovule itself.

It was an old dictum that "Nature abhors a vacuum." Darwin has given a similar expression to another natural law, in saying that "Nature abhors perpetual self-fertilisation." This—which is, of course, out of the question where the stamens and carpels are borne on different flowers, or even on different plants—is constantly obviated even where seemingly inevitable. One frequent mode is by the pollen being produced either before or after the time that the adjacent receptive surface is prepared for it. Access of other pollen is, therefore, necessary, whether wafted by the wind or carried by insects. In Orchids the pollen is coherent and not powdery, and has to be transferred bodily by the latter agency from one flower to another.

After the pollen has produced its effect, all the parts of the flower, except the carpels, wither away, but the carpels swell and grow into the fruit. If there has been any adhesion between the carpels and other whorls of the flower, then the adhering portions share in the after growth; in the Apple, indeed, they form the bulk of the fruit. It may happen that fruit forms, notwithstanding that the ovules are barren, and this is an advantage in many cultivated kinds. The barrenness seems to be caused by the unnatural conditions of cultivation, the elaborated matter unused by the seeds making the rest of the fruit or some other parts of the plant more succulent. Whatever be the structures that have entered into its formation, the mature fruit consists of two distinct things—the contained seeds and the containing seed vessel. This last may vary infinitely in texture, from yielding pulp to bony hardness, depending upon the degree to which the constituent cells have been indurated by deposits in their interior. These variations are not casual. When the seeds have an edible covering they are eaten by birds, and dropped undigested; Mistleto, Mezereon, and wilding Apples are certainly distributed in this way. Where the seed vessel, on the other hand, is very woody, it retains often for a considerable time seeds not at first fit for germination; this is especially noticeable with many Australian plants. The fruit may be provided with winged projections, as in Ash, Elms, and Maples, or with a tuft of silky hairs,—either of these arrangements facilitates its carriage by the wind; there may be appendages of the same kind to the seed. If the surface of the seed vessel is spinous or rough, as with our native Cleavers or Burdock, the fur of animals will be the means of its dispersal. All plants, all living things, indeed, like change. Particular plants draw from the soil its perhaps minute supply of some substance necessary to them, but not to many other plants, which take the place of those that migrate. What the precise ingredient is may be difficult to ascertain; in the case of land which has become clover-sick it is still doubtful. Nevertheless, it is easy to see that enlargement of a plant's area will, from this and other causes, be often a condition of its existence. Plants of aquatic habit are often quite cosmopolitan; their seeds are, doubtless, widely dispersed by the muddy feet of wading birds, known to be great wanderers. Larger fruits could hardly be distributed, except by water; experimentally, it is found that they often float longer than small ones; still, as might be expected, their areas of growth are comparatively small. The Cocoa-nut flourishes best on the shore, and its nut gets easy access to the waves that carry them to new islands; it is found all through the tropics, but this is rather the work of man than of Nature.

There is a kind of antagonism between ordinary growth and fruit-bearing. Plants continually propagated, not by seed, but by detached buds, like the Potato, rarely produce fruit. The Nuytsia, or Flame-tree of Australia, derives its name from its sheet of blossom, yet never has been known to produce a single seed. Plants whose growth is over-stimulated in warm countries will not flower, except they receive a violent check. A kind of mean between excess and deficiency in the supply of nutriment is needed. A certain accumulation is required before a tree bears, but anything beyond this defeats its own object.

The prolonged vitality of seeds has been greatly over-rated. The most authentic cases do not carry it beyond 100 years, and these are exceptions. Wheat, for all practical purposes, loses its vitality in seven years. If popular beliefs were true, there would be no temptation for seedsmen to manipulate their old seed for sale.

Home Correspondence.

Hardy Succulent Plants.—Out of a small collection of succulent plants, containing upwards of 250 species, of which about 150 were Cactaceæ, the following sustained the entire severity of the frost of the last winter, although some of them have suffered somewhat; nor have the adults flowered too freely this summer:—Agave americana; A. americana, fol. var.; Sempervivum barbatum, Cereus flagelliformis, C. Martianus, C. tubulosus (on its own roots), grafted specimen killed [On what grafted?]; C. colubrinus, C. colubrinus var. flavispinus, C. pumilus; Opuntia Rafinesquiana, O. clavarioides, O. corrugata; Echinopsis Decaisneana, E. oxygona; E. multiplex, var. with long spines; E. multiplex, ordinary form damaged; E. flammea, one example; E. formosa; E. Pentlandi, one small example; E. Pentlandi rosea carnea, E. Pentlandi Scheerii, E. P. rhodanthe, E. P. elegans vittata; Echinocactus Monvilei, one specimen; E. Ourselianus, two; E. concinnus, E. mammulosus, E. setispinus, E. gibbosus, E. longihamatus, E. Williamsii, E. ingens, E. cornigerus, and various seedlings from imported seed not yet flowered; Echinocereus pectiniferus; E. pectiniferus var. lævior, E. Scopa, E. cinerascens; Mamillaria Bocasana, M. Wildiana, M. gracilis, M. gracilis pulchella, M. stellaris, M. pycnacantha, one example; M. ? sp.; M. ? sp. seedlings; Cereus cœrulescens; C. serpentinus, one specimen; Phyllocactus phyllantoides. *John E. Daniel, The Terrace, Epsom.*

The Potato Disease.—The sound advice which you have lately given in a leading article should be followed by all growers of Potatos, namely, to depend upon some of the best keeping early and second varieties for the main crop, and to plant them as early as the season and soil would permit. For the last 20 years I have promulgated this opinion, and in a letter inserted in the *Times* a few years after the mildew first appeared, I stated from experiments I had made in frames with early Potatos, that the disease never appeared to any extent before the end of July, and that the crop would always be safe if ripened early. When the summer is favourable for the development of the mildew it only attacks Potatos in a certain stage of their growth in the end of July and all through August, heat and moisture being its foster-parents. In this district a great many cottagers and farmers now plant their Potatos earlier than they used to do, and having selected some of the best keeping early and second early sorts, they have them already lifted and stored for their winter's supply. Had August this year, with increased heat, been as wet as July, I believe that the Potato crop would have shown more loss from disease than in any year since it first appearance. In 1868, 1869, and 1870 the summers were too dry for the mildew to show itself to any extent, and many growers of Potatos hoped that it had taken its departure. To show the advantages of early planting and lifting I had this year, at the end of July, a quantity and fine sample of Myatt's Prolific raised for keeping in boxes for seed. They are as yet quite sound, whereas about 12 rows were left in the ground for daily use, and on raising them now about one-half are diseased. The American new varieties are quite as much affected here at this date as our old early and second early sorts. The later varieties are likewise beginning to show the fatal blotches on the haulm and foliage, and the peculiar stench from the fields of Potatos at night denotes that the mildew is universal amongst them. It is, however, possible that the cold dry nights now prevailing, and the hot sun in the day may arrest its progress, and should September be dry the loss may not be so serious at lifting time as we now expect. *William Tillery.*

—— The electrical and atmospheric conditions to which, at p. 1071, Mr. Fenn ascribes this disease have surely existed, and will continue to exist, from the beginning to the end of the world. The Potato disease, we may hope, may be classed among those things which "have their exits and their entrances." The *onus probandi* lies upon the shoulders of those who advocate the electrical theory, of showing why this supposed destructive agency has not affected the Potato in the slightest degree through the long period of its history and culture previously to the year 1845 or thereabouts. I cannot, therefore, but agree with the Editorial comment on this point of Mr. Fenn's communication. It seems to me far more reasonable to attribute this evil to the fungoid mould which the writer speaks of, and which, like the oidium of the Grape Vine made its first appearance with the disease. The observation which identifies the appearance of the disease with those electrical and atmospheric conditions may be perfectly correct, for these conditions may be exactly those under which the fungoid mould vegetates and thrives. The value of Mr. Fenn's remarks upon the treatment of the Potato, so as to secure abundant light, sunshine, and aëration to the foliage of the plant, cannot, I am convinced, be over-estimated. Mr. Mechi's valuable remarks (p. 1085) on thick sowing and mildew harmonise with this advice. I have acted for years on a set of rules in accordance with the same principle, and have suffered a minimum loss, while I have seen dreadful loss ensue in multitudes of cases from its neglect. Whether or not a fungoid mould is the cause or only a consequence of the Potato disease, the experience of 20 years has fully demonstrated the fact that those conditions under which fungoid growth is the least vigorous are those under which the Potato is most secure from the ravages of disease. The summer rains have prevented my securing these conditions this year so perfectly as usual, and my loss by disease is greater than usual, and especially where the over-luxuriance of growth has produced the most crowded state of the foliage; yet the worst loss in my case has not exceeded one in twenty, while my poor neighbours, who in the endeavour to increase their produce by close planting have subjected their plots to the danger arising from drawn, blanched, immature, and top-heavy stalks and foliage, are losing one-half, and even more of their Potatos within a stone's cast of my garden. The wisdom which profits by experience so far as to choose the most open and well drained spot, free from the shade of hedgerow and fruit trees, is all thrown away, if the system of close planting reproduces the evils arising therefrom, viz., insufficient aëration, darkness, and exclusion of the sunshine. Woe to the crop when the top-heavy, immature foliage sinks down like a dense carpet, shutting in damp, and shutting out light, sun, and air. The fertility of the soil, the genial shower, become then evils. I manure abundantly for Potatos, and have never suffered from doing so, because I have given abundant room for growth. Rank-growing kinds, of course, require much more room than the dwarf sorts. From 30 to 36 inches between the drills is not too much for the former, according to the fertility of soil and quantity and quality of manure; in my neighbours' gardens 20 inches for all kinds is the rule, with no exceptions. We must aim at producing a short-jointed, stout, hardy, well-matured stem, with foliage to match, in our Potato plots and fields, just as we do in training the Vine, wall fruit trees, &c. A day or two's black frost, which made dreadful havoc in low sheltered gardens in the spring of one year, did no injury to my Potatos, because from the exposure of the ground to the action of the wind, and the abundant room given them, the plants were dry, firm, and hardy. Those who are unwilling to adopt the editorial recommendation to plant only the early sorts, should choose among the later those which combine largeness and excellence of produce with dwarfish stems. It may also answer well to plant alternate drills with the earliest and latest kinds, the former ripening off and leaving ample room for the latter to throw abroad their stems. I have tried this plan partially this year with satisfactory results. I propose next year to plant Suttons' Racehorse and Paterson's Queen in the same manner. I have long since proved the great value of liquid manure for Potatos. Its tendency is to increase the weight of produce without great luxuriance of leaf and stem, and to produce tubers of the highest quality. But manure of any kind in which the whole of the liquid portion is carefully preserved will be very satisfactory. The healthiness of the plant is, I think, materially aided by the abundance of saline matters contained in this generally wasted but most valuable manure. For 15 years and more, since I have observed this rule, I have never grown a hollow Potato, the very largest tubers being as good for the table as the smaller sizes. *J. M. Taylor, Seer Green Vicarage, near Beaconsfield.*

The Neilgherries.—A slight inaccuracy occurs in Colonel Benson's interesting letter, which I am sure he will permit me to correct. Dodabetta (not Dodapet) has always been considered to be 8760 feet above the sea, and not "above 9000 feet," as stated. As there was an observatory on the summit for a number of years, I think it most likely that Colonel Benson is wrong. With reference to Aerides Schrœderi, I believe Colonel Benson will find another plant, growing on a Jack tree (Artocarpus), near the first basket-maker's hut on the road from Kullar to Meetapolliam; at any rate a very distinct-looking, dark-green leaved Aerides (?) was there two or three years ago, which I tried to secure, but could not find a man at the moment who belonged to a tree climbing jadee, or caste. *James MacPherson.*

Poisoning by Fungi.—I should be sorry to be disenchanted of the opinion I have held and acted on for many years, that the true Champignon (Marasmius Oreades) is perfectly wholesome and nutritious. I frequently make a meal off it, cooked soon after gathering, never yet with a previous drying of them, and the feast has never been followed by any unpleasant symptoms. Your correspondent evidently has his doubts about the Cornish plant, which, he says, "differed slightly from the normal type;" and as to the "suspicious" Fungi, which had some time previously killed eight chickens, why were they suspected? Evidently because they did not look the same as, and certainly were not, the true Champignon. Mr. W. G. Smith does not give his reasons for having changed his opinion, that those Fungi which on a previous occasion he had incautiously gathered in the dusk, eaten without examination, and found deleterious, were a mixture of M. Oreades and the known poisonous M. urens, which most probably was the case. I have hitherto always found the toughness of the stalk a true test of the real Champignon, that of its poisonous relative being brittle. Might not vinegar, which is said, if used in cooking them, to render poisonous Fungi innocuous, be a good antidote? though certainly an emetic, as you suggest, would generally be the surest way to remove the noxious body. With regard to the apparent poisoning of children, by various seeds or berries usually considered as harmless, they are often swallowed entire, without bruising or mastication, in which state they of course are generally indigestible, and therefore may be the direct cause of the poor children's deaths. *W. C. Trevelyan, Wallington, August* 27. [We believe children are often saved from evil results by the indigestibility of seeds, &c.; *e.g.*, Laburnum seeds swallowed whole produce no ill effect, crushed, they act as irritant poisons. Eds.]

Scale on Vines and Lemon Trees.—I find "Frettingham's Liquid Compound," now advertised in the *Gardeners' Chronicle*, will kill scale and other insects better than any preparation I have used for the purpose. Unlike some compounds of the kind, it will not injure the most tender foliage. *Alfred Page, Forest Cottage, Bulwell, Notts.*

The Trial of Boilers.—Permit me to correct a slight mistake, doubtless made unintentionally by Messrs. J. Weeks & Co. At p. 1103, col. *a*, they quote me as repudiating the extension of the trial to system B, on the ground that the whole water is "driven by caloric alone, and that we thus dispense with the aid of gravity." Messrs. Weeks then, with a politeness which we should all do well to imitate, goes on to remark, that "this one sentence clearly indicates how little our theorists understand this matter, because practically the aid of gravity is much more depended upon in system B, than in A." Be that as it may, you will permit me to add that my remark was applied to system C, or that popularly known as the conversion of the flow-pipe into the return, as stated at p. 1072, col. *b*. I quite agree with Messrs. Weeks that questions of time, &c., had better be left very much to the makers. Still to the uninitiated it would appear a grievous fault in any boiler, new or old, if it took from 24 to 48 hours to get it into working order; and if it thus "jibbed" at first use, I should need a warranty that it would go all right ever afterwards; for in horticulture wreck and ruin hang upon hours, not days, and rapid, constant, sure results, are indispensable. I trust the Messrs. Weeks and other boiler makers will not think me presumptuous if I suggest that the three systems, A, B, and C—that is, the boiler under its work, the boiler above its work, and the boiler above, below, and on a level with its work, but the lowest pipes heated first, leaving the water at the end of its work to take a header from the highest point of the apparatus into its hot bath, the boiler—might be tried simultaneously, and thus the time of trial be curtailed. It would assuredly prove a most difficult matter to empanel such a jury as would command confidence, and to keep them boiler testing for a fortnight at a stretch, for the trial ought to be continuous, and the supervision must be thorough and complete if the results are to have any value. I adhere to the views quoted in regard to system C, though I am well aware that several correspondents have advocated that system also, on the ground that it more fully developed the aid of gravitation in circulating the water than the usual arrangement, as seen in system A. I have replied to such to the best of my ability in a paper or two, which seem to have stuck fast in the pigeon-holes of Wellington Street. If wrong in this "*rationale* of heating, &c.," I should be glad to be put right; and a discussion of principles before the trial could hardly fail to be useful, and might, indeed, assist in bringing that trial to pass. According to our new lights, and we have a good many of them now, we are all astray. In the matter of heating we have been lighting our candles at the wrong end, and I should not be surprised to receive a prospectus at any moment of a patent underfire boiler, warranted to take in caloric as a sponge water. We practicals will welcome any boiler or contrivance that will give us more heat for less coal with less labour. *D. T. Fish, August* 26.

Cucumber, "The Marquis of Lorne."—I am one of those people who like (in the spare evening hours) to look over my neighbour's garden hedge, or, if he is inclined to be friendly, I turn in to see what he is doing, and many a "wrinkle" may thus be picked up in the garden of the cottager as well as in that of the squire. With this view I turned in to see my practical neighbours, J. Hamilton & Son, Botcherby. After the usual hearty shake of the hand (every one seems to be welcome), I was introduced to the Marquis, occupying a house 60 feet by 16, a most beautiful sight. I could not help thinking, from his appearance, that he was very like a "Cumberland Lad." Mr. J. Hamilton, sen., pronounces the Marquis to be the best flavoured and most prolific variety he ever raised. To this I can bear testimony, one young fruit that was still growing rapidly, and about the right stage for table use, measured $26\frac{2}{3}$ inches in length and $1\frac{1}{2}$ in diameter. Three other fruit measured 35, 36, 37 inches respectively. I must say the Marquis has a beautiful neck, perfectly smooth and straight. Altogether this will make a first-rate exhibition variety. It is a very shy seeder, consequently the flesh is solid and firm. Out of this small space 260 ripe fruit had been cut for seed, independent of quantities weekly cut for market. At the present time there are 120 in various stages of ripening; 70 of these measure from 30 to 35 inches. This fine Cucumber was raised from the Invincible, Needle-gun being the male parent. I must commend the noble Marquis to gardeners generally, and particularly to those whose plants have been diseased, and who would like to procure a healthy stock. *J. Taylor, Rose Hill, Botcherby, Carlisle.*

Mimicry.—As connected with the subject of plant mimicry or pseudomorphism, or whatever may be the most acceptable term for these interesting phases of plant life, it may be worth while to record two instances of variegation which have been recently brought to my notice. In the first a quantity of the common wild Convolvulus had grown up and become thickly intermingled with a Japanese Honeysuckle; the leaves of the Convolvulus, though, of course, retaining their normal shape, had, in places where they were thickest, assumed the variegation of the Honeysuckle. In the second instance the leaves of an Onion which had grown near a mass of the variegated Phalaris arundinacea, had partaken of an exactly similar variegation with the grass. These facts, though having no relationship with the instances of plant mimicry such as have been mentioned before in these columns—namely, that of two plants of widely dissimilar natural affinities and geographical distribution assuming similar external appearances—are, perhaps, worth noticing, with the view of inviting records of any similar occurrences, the cause and effect of which might be made the subject of close observation. Can it be a system of vegetable photography—the originally variegated leaves covering those of the intruding plant, so that by the effect of a strong light or sunshine a portrait of the variegated leaf is cast upon the plain one? If such is the case, an exactly similar operation takes place as in photography proper, the Honeysuckle being in the position of the negative, the dark blotches upon the leaves of which become light blotches on the leaves of the Convolvulus. In the "Journal of Botany" for August, Mr. J. G. Baker mentions an instance of a singular change in the leaves of a plant of Viola sylvatica, which had accidentally grown amongst specimens of the cristate form of Lastræa Filix-mas. Many of the leaves of the Violet "had become abnormally dilated, and at the same time plaited and crisped, after the fashion of the pinnæ of the Fern. It produced flowers and fruit, and has been reproduced from seed." *J.* [Does our correspondent infer that variegation in the instances he cites was "catching?" Eds.]

Parsons' Mignonette.—Seeing an inquiry in the *Gardeners' Chronicle* of the 19th inst. respecting Parsons' new Mignonette, and also a reply in last week's number, I am induced, although not an uninterested person, to send you some specimens of the plant, and to offer a few remarks on them. In the first place, it is a well-known fact that the choicest varieties of flowers and vegetables, however distinct, lose their characteristic features and superior qualities under unskilful treatment. Even the common Mignonette varies considerably, according to the nature of the soil it grows in, and a luxuriant specimen of it would compare well with a starved plant of our best strain. There is no secret in our treatment of Mignonette, and yet we are tolerably successful, as numerous visitors who have seen our establishment in autumn or winter can testify; but we certainly exercise all our knowledge and care in the culture of this as well as other plants. The best horse in the world needs generous diet, and the purer the breed the greater the necessity for food of the best quality. I send for your inspection specimens of our "Improved Tree Mignonette," and also of our variety called "eximia," both from our seed-bed in the open ground, as we have no pot plants in bloom at this season. I may add that we have experienced no difficulty in keeping these varieties pure and distinct, and in pots the variety eximia is much finer, and the flowers of a purer white, than when grown in the open ground. Respecting odour, many persons have expressed the opinion that our variety possesses a most exquisite perfume, exceeding the common as much in this as in any other respect. *H. Hemsley, Manager for F. Parsons.* [Our own proved to be a very mixed and uneven sample. The selected specimens now sent are fine. Eds.]

What is Tulp?—The enclosed extract, though not answering this question, may be of interest as showing that the herb has long existed in the country near the Cape. The extract is from Joan Nieuhof's "Zee en Lant-Reize," Amsterdam, 1682; and as I only can make out the meaning from its resemblance to German, I copy the paragraph at length. I gather the meaning to be that there grow great and small plants of some sort (I do not make out the word), with knobbed roots, and savoury fleshed herbs; also grow Tulp Tree, Houseeek, and many other herbs (kruiden) in the wild. "Daer groeit grote en kleine zuuring met knobbelige wortelen, en veelerlei geurigh vleesch-kruit: ook grooien aldaer tulpen, boomhuislook, en meer andere kruiden in 't wilt." I do not trouble you with this for publication unless, of course, any part of it is useful; perhaps I should beg to be excused in offering it at all, as I do not understand Dutch, but in your hands it may throw some light on the question. The various information before and after make it appear the locality is the near neighbourhood of the Cape of Good Hope, and the extract given is the continuation of a passage mentioning plants growing in "De vlakke velden en dalen." I see "Tulpe" is a Tulip in Dutch, as well as German. Can the plant be some bulb, injurious, as the autumnal Crocus here. *E. A. O.*

Yellow-leaved Horse Radish.—I enclose a leaf of white Horse Radish for your inspection. It grows freely, and I think would make a very ornamental bedding plant. It came up in the centre of a bed of Leeks, 6 feet from the main bed of Horse Radish. *George Stark, Gr. to* ***A. J.*** *Binny, Esq., Seunowe Hall Guist, Norfolk.* [The leaf is perfectly blanched. We never saw one so completely so before, though we have often noticed a partial etiolation of the leaves of Horse Radish. We do not suppose it would be constant enough for bedding purposes; moreover, it would be too coarse. Eds.]

How Plants are Destroyed by Frost.—This is a subject of intense interest to horticulturists, and one that I have several times adverted to in your columns. About two years ago I was taken to task by Sir W. Thomson, of Glasgow, for affirming that dew assisted the cold in the work of destruction, and denying that winds, *per se*, were a protection to plants against cold. Experiment and experience still seem to justify the soundness of these views. Plants suffer more from frosts in valleys, where the air is moist, than in upland districts, where the air is drier. The depth of the frost-bite into the tissues of plants may almost be measured by the thickness of the dew-coat or amount of condensed vapour, though amateurs and others still seem to think the contrary. Doubtless heat is liberated when aqueous vapour is converted into water, but we have no proof whatever that such heat is imparted to the tree or plant. On the contrary it is certain that the plant is colder than the air, before the vapour can be condensed upon its leaves. And the question of absolute temperature afterwards must mainly turn upon the relative powers of radiation from wet or dry surfaces, and surfaces dewed over less or more thickly with condensed water. Into that I do not intend to enter at present, but rather to point out what seems like a discrepancy in your suggestive leader on the ravages of the frost among plants. You assure us that the injury wrought by cold is caused by drought, a drying up of juices or loss of water, and likewise that the more copious the dew falls in any given place, the greater the damage inflicted. Either of these theories may be true, but it seems hardly feasible that both can be so. They appear to us practicals contradictory, and we will most respectfully inquire with which theory you mean to win our confidence, the wet or the dry? The latter, or M. Mer's theory, differs little in its ultimate effects from the one generally received, that of a rupture of cells by the action of cold. It has long been well known to most cultivators, that actual frost has been by no means necessary to bring about destruction. The contraction of frost-bitten tissues has likewise been observed, and the bark often appears too large for succulent shoots that have been injured with cold, and it presents a shrivelled appearance in consequence. But M. Mer assures us that the cells are not ruptured, though how the contraction by cold can squeeze the liquid contents of the cells through the cell walls without rupturing them is not very obvious [If you squeeze a sponge you don't rupture it, if you filter a fluid you don't break the filter. Eds.], so that when freezing does take place it mostly happens in the intercellular passages. Well, suppose this is the true theory of plant freezing; it does not appear to prove that the injury is caused by drought, for further on you assure us that all this may happen without injuring the plant in the least. The cell juice squeezed through the side of the cells by contraction may be re-absorbed by the general action of heat, if time is allowed before the sun drains out the displaced juices, and all may again be well. We do not find, however, such to be the case if plants have been much frozen. Neither do they present the slightest symptoms of desiccation; on the contrary, the tissues are full of sap, but the character of the sap has undergone a change, and the structure seems ruptured, disorganised, and discoloured; indeed, according to M. Mer's theory, the rupture of structure—I use the term advisedly, as including cells and intercellular spaces,—seems as inevitable as on any other. Supposing the sap to be squeezed forth from the cells into the intercellular passages, would the frost not lay hold of it and freeze it there as readily or more so than in the cells [Yes.], and would not the sap expand on the instant of coagulation, and rupture of cell-sides ensue? [Separation of cells, but not rupture necessarily.] Practically it matters little whether an infinity of small vessels are rent asunder from the expansion of fluid from within, or scored or pierced through by innumerable fragments of ice from without. Either way the tissues would be injured, and not simply emptied of juice by the cold. But, again, the dry theory seems quite incompatible with the wet one. If the frost injures or kills vegetation by emptying it of sap, then whatever checks desiccation ought to moderate the power of the frost. The question then seems narrowed to this: Does a coating of dew on leaf, flower, or branch, help to husband or squander the sap within either? If the former, then the wet and dry theories of plant freezing are incompatible; if the latter, then they may be reconciled. To me it seems almost as clear as that twice two make four that if this injury by frost arise from drought, that moisture in the air or on the plant, or near to it, ought to prove a mitigator of damage. Experience declares they are not, and therefore I question the theory. I quite agree with you about the injury inflicted by the sun, shining suddenly and fiercely on chilled plants; but this would prove equally injurious on either hypothesis, the wet or the dry. But if both are held as compatible with truth, then may we also begin to doubt the testimony of our eyes, that fierce sunlight often finishes the work of destruction that the frost began. *D. T. Fish.* [Our correspondent seems to be mixing up several different conditions. We may advert again to the subject by-and-by. Eds.]

Bedding Pelargoniums.—I wish to supplement the remarks of the Rev. C. P. Peach, concerning the merits of the true Violet Hill Nosegay, by stating that last autumn I exhibited a very dwarf compact plant of that variety, not more than 20 inches in diameter, having upwards of 60 expanded and partially expanded trusses of flower upon it—literally a mass of bloom. It is one of the most free-flowering and short-jointed of all the Nosegay tribe; colour of the flower, purplish-rose; and makes a charming bed. When I left Shirley, I parted with this plant amongst others to Mr. Elcombe, of Romsey, who is a capital judge of bedding Pelargoniums, and who was particularly struck with its beauty. Certainly he has it true. I always grew my show bedding Pelargoniums in pots plunged in ashes in the open air, where they remained from the middle of May until the middle of August, when they were carried into the house, so as to secure the bloom in that state of finish so characteristic of Pelargoniums grown under glass. As our show always took place on the last day of August, a fortnight's housing just sufficed. I should have scorned to use those accessories to training plants that are so rife aroune London. The finger and thumb did all the business, neither tie nor stick of any kind being used; and, although plenty of larger plants have been shown, yet for size of plants, compared with size of pots they were grown in, dwarf compact habit and abundance of flower, I have never been beaten. *A. D.*

Fungus at the Roots.—We have here a good-sized Double Thorn bush (pink), which has rather suddenly died. Upon examination of the soil about the roots I found a large quantity of Fungus spawn. Can any of your numerous correspondents inform me if, in their experience, they have known Thorn bushes to be poisoned by such a Fungus growth? *William Parker, Derby.*

Dendrobium chrysanthum.—In the rich collection of Orchids at Ferniehurst, several plants of the above named Dendrobium are now clothed with magnificent golden-yellow flowers; but most worthy of our notice are two exceedingly strong growths, both of which have just cast off their gorgeous array. One of these measures 4 feet in length and bore 70 flowers; the other was 5 feet 6 inches and bore 80 flowers, forming two splendid strings of bloom. This is a plant which deserves more attention than it generally receives newer introductions having put it a little in the shade. But, although it has been in the country for upwards of 40 years, it is still one of the most lovely and attractve Dendrobes we have. D. chrysanthum is a plant in easy culture; it succeeds best when grown in a hanging pan or basket, filled with peat and Moss, good drainage being provided. It requires a moderate amount of heat and moisture during the growing season, after which it may be removed to a cooler house, where it will amply repay the cultivator by producing in profusion its rich golden flowers. In the Odontoglossum house here are half-a-dozen pans of the lovely Disa grandiflora superba, in excellent condition. Two of the pans measure 17 inches in diameter, bearing respectively 13 and 17 flowers, the remaining four pans, which are but small ones, bear together 18 flowers, making a total (for the six pans) of 48 flowers. Two of the growths, or rather flower-spikes, reach the height of 3 feet, and the other spikes average 2 feet 6 inches. Several of the blooms which are in a far advanced state appear, through insect agency, to be setting seed-pods freely. The plants are placed as near the glass as possible, by which means the colour of the flowers, which is of bright scarlet and crimson veined with pink, are brought to the highest perfection. There are not many, I think, who meet with great success in the cultivation of this lovely Orchid, but in the above mentioned house it appears to be quite at home, and better health could not be attained. Nor must I forget to mention some good specimens of Oncidium macranthum growing in the same house. It will be remembered that "F. W. B.," at p. 618, mentions one of these plants as having a spike 12 feet in length, bearing 44 flowers. He also treats on the well doing of the others, and it may be gratifying to know that these plants still retain that health and vigour as on the day he saw them. The other day I counted on five plants 100 of its rich flowers, forming quite a mass. Since then one spike has past its best, leaving at the present time 78 flowers fully expanded. Of all Oncidiums yet known, I think this the most lovely and interesting. *N. G. S.*

On Storing Fruit.—The scarcity of fruit for storing this year will add to the anxiety of storing it well, so as to prolong the supply as much as possible. A good deal has been written from time to time on this subject, but perhaps it would not be amiss for those who feel inclined, to state the mode which they may have found to answer best. The greatest secret, however, which has often been pointed out in your columns, is that the fruit must be picked at the proper time, not too soon, nor, in the case of some Pears, left too long. These matters cannot well be particularised without observation on the spot; as a rule, however, this may be known by cutting a fruit in twain, and noticing the pips—if they are brown all over they may be safely gathered. I generally choose a fruit not altogether exposed, but one which will give an idea of the state of those altogether shaded. If the fruit will easily part from the tree by gently raising it upwards, it is another sign of ripeness, or fitness for gathering. It is not necessary nor wise to gather all the fruit at once from large trees, where one-half are by exposure a week in advance of the rest. The same thing may be said of smaller pyramids, the fruit on the south side are ripe before those on the north, &c. When the fruit is gathered, the best should be placed by themselves, and so in the case of those having "spot, wrinkle, or any such thing." This will save much trouble afterwards. If the fruit be not gathered dry, it is necessary that it should be well dried before storing; the fruit room also should be well cleaned and aired. Where those rooms are heated it is easily managed, but where it is otherwise a little forethought is necessary. Now, the question is, what is best to rest the fruit upon? Perfect ventilation may be obtained, with the necessary twilight dulness, but if the air cannot play around the fruit when wanted, of what use are currents of air above them? I say, therefore, and I have proved it, that nothing besides the bars of the stage is best. Laying down paper or straw is of no use, but is, on the contrary, decidedly hurtful to the fruit. Stages of such a width and divisions of such a height as may be convenient to reach at the farther end, and no higher, are, in my opinion, the most useful. Bars with rounded tops and bottoms, placed half an inch apart, are the best, as the air freely finds its way between the fruit. Only one layer of fruit should be laid on, or else the increased weight will make indentations in the lower fruit. Currents of air continuously passing through the room are not needed. If the air is cold and drying, as we get it from the east sometimes, it is wise to shut it all out. Again, if the air is charged with moisture, as we get it very often from the south—if the room is previously dry—I should shut it all out; but if the fruit should "sweat," as it does in, and after, frosty weather, I should allow the air to pass freely, even under the above circumstances, until the fruit is dry. It will require the assistance of fire to keep the air in the room in most situations in a proper state. No frost should be allowed to enter. Although the outward appearance of the fruit may not be altered by it, yet the flesh will become spongy and flavourless. Attention to these matters, and a constant picking over, have as much to do with success as anything. A thermometer in the room is necessary. Whatever changes in the weather may occur outside, this room must—and can with a little attention—be kept in much the same temperature from October to March. *Henry Mills.*

Orchid Cultivation.—I have very great pleasure in supplying your correspondent "G. H." with the information he seems to desire. In my letter (p. 775) I spoke generally of the "mountain ranges of Southern India," and I think I said the temperatures were taken at an elevation of 7300 feet—an elevation seldom met with in Southern India, except on the plateau of the Neilgherries. *James MacPherson.*

Dwarf Apple Trees.—I read, p. 1069, "Apples have suffered much more on dwarf trees than on large orchard trees, the latter being much more, &c." I cannot quite understand the logic of Mr. Baines, but I do know some dwarf trees, now six years old, which are full of the finest fruit ever seen; while on a large number of standards, from 30 to 40 years old, there is not a peck. So much for the difference that site and soil make. The dwarf trees to which I allude are grafted on two or three kinds of what are called English Paradise stocks; all grow well, and bear well. They had their young shoots shortened in June and again this day (August 21). All the young shoots made since then have been pinched in to three or four leaves. There are eight rows, 18 trees in each row, of the following kinds, one row of each:—Winter Hawthornden, Lord Suffield, Small's Admirable, so like the Ecklinville and Stirling Castle Pippin as scarcely to be distinguished from them; Jolly Beggar, Duchess of Oldenburg, Dumelow's Seedling, Cox's Pomona, very beautiful and good, and Warner's King. It is interesting to observe the difference the stock makes on the growth of Apple trees. These trees, if grafted on the Crab stock, would be making shoots from 5 to 6 feet in length, and bearing but few fruit. The trees I have described are growing at Sawbridgeworth, and permission to see them will be granted to any one interested. *T. Rivers.*

Potato Grafting.—Whilst acknowledging Mr. Simpson's right to indulge in a little banter at my expense anent this subject, I shall not permit his harmless scratchings to irritate me into the penning just now of anything controversial upon a subject that is in danger of becoming hackneyed. If Mr. Simpson has really succeeded in changing the character of the Potato, or that of the Artichoke, by grafting, I shall not challenge his assertions, whatever I may think of the probable value of the results of his experiments. Potato grafting, so far as it has gone, has done next to nothing for Potatos yet that can be esteemed peculiarly advantageous (even Mr. Fenn does not deny that), although undoubted changes accrue. Should Mr. Simpson prove more fortunate in his operations on the Artichoke (and there is plenty of room for improvement there) no one will be more pleased to see his results than myself. As he has expressed his intention of displaying them at one of the September meetings at South Kensington, I trust he will select the 20th inst. for the purpose, as on that date Mr. Fenn fully expects to be there with a collection of his choice seedling Potatos, and which I hope to be enabled to supplement with a number of other varieties. To make Mr. Simpson's acquaintance on that occasion would be a pleasure. Perhaps some of our fellow Potato-growers will kindly take the hint, and assist in the promotion of a large Potato exhibition, without waiting for the stimulus of the small prizes for collections offered by the Society on November 1—although why November 1 should be chosen it would be perhaps difficult to say. I hope in a week or two I may be enabled to give the results of my Potato trials and experiences during the past summer, when I shall enter more largely into some of the points now under dispute. *Alex. Dean.*

Peaches.—There is something uncommonly tempting to the Peach grower in the announcement that Peaches are selling in Covent Garden Market at from 6*s.* to 12*s.* per dozen, but the most remarkable thing after that announcement consists in the fact that if he sells to the market he must be content to accept "next to nothing" for them. I am anxious to dispose of 50 dozen or more of fine rich fruit, but am told on every hand by frequenters of the market that Peaches are fetching "next to nothing." How to reconcile this statement with your quotation of latest prices is to me a mystery. I can but conclude that the fruit salesmen must be reaping enormous profits at the joint expense of both grower and consumer. It would really be a matter of interest if some of your London readers would take the trouble to inquire at fruiterers the price per dozen at which Peaches can be obtained [1*s.* to 12*s.* on Thursday last], as I have a notion (it may be an incorrect one) that the charge is almost prohibitory to all but the moneyed classes. If this is really the case, it would be well for growers if they could devise some other means by which their choice products should be brought within reach of the middle and lower classes more easily than they are at present. The costermonger is by no means a tempting specimen of humanity, or one with whom ladies would not desire to deal, still less would they care to partake of the contents of his barrow. In the matter of choice fruit a perambulating dealer who possessed a vehicle specially adapted for its conveyance, keeping it clean, cool, and free from dust, would be a great boon to the public, especially if he purchased direct from the grower, and was content with moderate profits. It does seem passing strange that there should be hundreds of thousands of persons in London who rarely, if ever, taste a Peach, and that at the same time the grower, who has hundreds to sell, should be told that "they are fetching next to nothing in the market." For some years past I have had nothing to do with the culture of Peaches, my horticultural travels having led in a different path; therefore, when I came here and found some 25 trees of varying sizes, the majority having been planted about nine years, and most of them in a rough state, I had but an indifferent anticipation of the fruiting results this year. As most of us like to put off an unpleasant job as long as possible, so in this case was the pleasanter duty of Potato planting performed before the trees were touched. When they were, the knife found plenty of employment. Last year the trees were permitted to produce an enormous crop of fruit, the wood being left in exceedingly thick. Much of this was dead, and much very weak and spindly, so I cut out a great heap of it, reducing the trees about one-third; nailing at once followed, and the trees were left to their own resources. Of course, had I been a "Peach cultivator," the first duty I should have performed on noting the state of the trees would have been to strip off the top soil, carefully lift all the roots, trench the border, add some fresh loam, and replace what was needed of the remaining soil. I did nothing of the sort. The border had grown early Potatos the previous year, the ground evidently having been manured for that purpose, and this was succeeded by a plantation of Strawberry runners. These not being in my line, were turned in roughly with a fork at Christmas, the border being lightly reforked after the nailing. I got a good show of bloom, and more set than I anticipated, but I did not give it the slightest protection, being, of course, a non-cultivator in this respect also. Being perfectly satisfied with the quantity of fruit set, I was more than satisfied with the admirable growth that the trees developed, and, with one or two exceptions, with the general freedom from blight. About the middle of July I had a fine lot of robust wood to lay in. Just before that a friend called in, and, noticing the appearance of the trees, remarked, "I see you have not yet laid in the summer's growth;" to which I replied, "No, it seems to luxuriate and enjoy itself so much in the wind, that I have been loth to do so hitherto;" but I got it laid in soon after, nevertheless. When this was accomplished the trees filled as much space as in the previous year, but with a much better lot of wood, and I had all laid in that possibly could be, in case I may desire to cut out more of the old wood next winter. Since then the trees have made a renewed growth, but this has been left untouched, as the fruit seems to be swelling and colouring to a high pitch of perfection. Perhaps I have altogether 100 dozen—not a bad lot, and most of them, I am told, are the finest fruit the trees have ever borne. Flies and wasps are not abundant, but where a fruit is tapped, I find it good policy to leave it, as the voracious insects will stick to that in preference to tapping another. The border meanwhile has not been idle, as it has borne a capital crop of Marigolds, Tropæolums, Stocks, &c., some of which, during the recent hot weather, were nearly roasted, yet without so much as a syringefull of water the trees never flagged for one instant. The exceptions to the general healthiness are two or three small-flowered Peaches, that early every year take a white blight or mildew. Next year I propose to try upon them Mr. Fenn's recipe, "hot sewage liquor," applied at night—I hope with success. *A. D.* [The prices of Peaches, retail, in Covent Garden varies, as we know from personal inquiries, from day to day, almost hour to hour, and often from shop to shop. Eds.

Fire Blight and Torch Pruning.—The phenomenon called fire blight may be described as the sudden appearance of withered twigs or boughs in the midst of summer upon trees or hedges (otherwise healthy and in full vigour), and is chiefly observable at the extremities of branches soon after thunder, or heavy sultry weather seeming to portend thunder. Though sometimes attributable to frost in the preceding winter, there is no reason to doubt that the sudden destruction of vitality of a bough at midsummer is oftener an effect of electric fluid, which in its passage (with or without detonation) has affected that portion of the tree or shrub with more intensity than the main body of it. The hint thus given by Nature may be taken up by the skilful arboriculturist in his forest craft. It may teach him how to apply the flame of a torch to the extremity of an encroaching branch, too lofty to be reached by the pruning-knife, or by any kind of shears or nippers that has been invented. By means of a Bamboo cane, or any long light rod, and a simple torch of rags moistened with oil, he can reach with ease a bough 30 feet above his head, or higher. He can cause its foliage to shrivel up and perish, without taking fire, and without the slightest danger to other branches, or to adjoining trees. This must of course be done with judgment and discretion, and only in situations where a blighted extremity will not offend the eye, as it would do upon a lawn. Let us suppose an encroaching Wych Elm, threatening to overhang an Oak. The two trees may stand too free and widely apart to justify our felling the Elm, if we can only check the progress of the invading branch. But its end may be 30 or 40 feet from the ground, and its direction horizontal, therefore the more inaccessible. With nothing but fire can we readily reach it. Let us, therefore, use that simple means. Take another case. The weeping spray of a lofty and beautiful Ash is descending over a public road. In another year it will interfere with the passage of hay-carts. The mutilation of one whole side of the tree is urged as absolutely necessary. But nothing more is really needed than a skilful application of flame to the lowest portions of the weeping foliage in order to check its descent and keep the headway quite clear. In three or four years the operation will have to be repeated, that is all. If we only cause the foliage to shrivel up when touched by the flame, the necessary check will be secured, whether the twigs vegetate feebly the following year or not. And in general it is quite possible to avoid even the causing of any temporary blemish, so small a quantity of foliage being brought under treatment that by ordinary eyes it is unnoticed. Other cases in which this simple process is available, to the great convenience of arboriculture, I will defer, rather than occupy your space further now. *Ralph Carr Ellison.* [A good hint in judicious hands. Eds.]

The Cool Treatment of Orchids.—During two years I made the cool treatment of Orchids my whole study. They are a class of plants most valuable for keeping up a succession of flowers all the year round, and as such at the present day I know of no other class more beautiful either for dining-room decoration or as cut flowers for bouquets. During the time mentioned I had a very good collection under my charge, consisting of about 40 species and varieties of Odontoglossum, 50 of Cattleyas, 20 of Oncidium, 30 of Dendrobium, &c. I found that some kinds of each of the genera mentioned required to be kept from 8° to 10° hotter than others, more especially the tender sorts of Dendrobiums; also that such as Lycaste and Cœlogyne require to be shifted into a house 10° hotter when they start into growth until their time of flowering, and then be brought back to their former place. I had Odontoglossum Alexandræ in flower in December, 1869, with a spike of ten flowers, and it kept in full beauty for ten weeks. This, too, was the second time for this plant to flower within the twelve months. One morning during the time that this plant was in flower, I found that the thermometer stood at 38°, the glass being covered with frost inside, and I was surprised to see that the flowers were not in the least affected, in fact they kept in full beauty for a month afterwards. There were about 8 inches from the glass. I had over 90 plants of Odontoglossum Alexandræ and O. Bluntii, and I never saw any that were healthier. I could not, however, get O. Phalænopsis to grow in this house to my satisfaction, so I shifted it to another house, which I kept from 10° to 15° hotter, and in two months I could see a great difference in the growth. It both grew and flowered well, and so also did O. Karwinskii, O. Cervantesii, and O. citrosmum. Out of the 40 kinds of Odontoglossum, these are the only four which I took out of the cool house, in which the remainder did well. The temperature of this cool house I kept as near as I could to 45° during the cold nights of winter, and from 55° to 65° by day. During the hot months of summer, I kept it as cool as possible. Some days when the thermometer out-of-doors registered from 80° to 90°, I kept this house from 65° to 75°. The only danger that I can foresee in the system of cool treatment, is in having too much dampness during the cold and frosty nights of winter, and to guard against this I was always very particular not to have any water thrown about the house, but merely a little to avoid too dry an atmosphere. I did my watering between 12 and 1 o'clock A.M. during the cold and frosty weather. There is no greater mistake made in Orchid growing than to either water a plant, or to syringe or damp the house until the regular heat is up, or to allow cold draughts. Morning and afternoon sun is of the greatest advantage up to a certain extent. The blinds must always be at command, to avoid sudden changes. I prefer using the blinds at certain times to giving much air. During the hot months of summer the houses can scarcely be kept too damp, so as to save over-watering the plants. I object to lean-to houses for Orchids for two reasons—first, because the plants require as much light as possible, by being kept close to the glass; and, secondly, because the plants in lean-to houses are subject to too much damp during the cold and frosty nights of winter, and they do not get the proper amount of either light or air, especially in winter; when the plants in the lean-to houses are losing their beautiful green hue, and changing to a brown unhealthy appearance, those in the span-roofed house are improving and getting into a vigorous growth. At Mr. Warner's, Broomfield, there is the best constructed house for cool Orchids I have ever seen. It is about 60 feet long and 16 feet wide, built at an angle of elevation of 35°; the centre stage is 5 feet, side stages 3 feet, and paths 2 feet 6 inches wide, with a tank in the centre that holds about 4000 gallons of water; it helps to keep the house cool during the hot months of summer, besides furnishing a good supply of water for the season. *M. M., Royal Vineyard Nursery, Hammersmith.*

The Golden Rust or Fungus.—I send you one or two more specimens of this pest. It swept over the Roses throughout the greater part of East Anglia as with the besom of destruction, and Roses were totally defoliated, and the wood of many was well nigh killed. We cut them back and clear any remaining leaves off, to reduce as far as possible the chance of infection on the young wood. But of course there were myriads of spores about, and how it is to end it is impossible to say. Unless some anti-fungoid atmospheric conditions set in, it seems as if this pest must kill the Roses. Many were so weakened by the attack that they have not opened half their flowers. It likewise threw some sorts, such as the Persian yellow, out of season. Many of the buds of this variety were arrested, as it were, in the grip of the Fungus, and only lately unfolded their blooms. I have observed one striking peculiarity, that the rougher the leaves the more virulent the attacks. Smooth-leaved Bourbons, Teas, Noisettes, have escaped, as nearly as may be. It is very singular to notice such varieties as Gloire de Dijon, Céline Forestier, Devoniensis, Maréchal Niel, and others interlacing those laden with and crippled by Fungus, while they continue clean. It seems as if a certain roughness was needful to arrest and fix the pest. Would that all our Rose leaves were smooth. If such diseases continue to prey upon our Roses the attention of hybridisers will have to be turned to this point. Even among Hybrid Perpetuals there is a wide range of finish and of smoothness among leaves, from the gloss and polish of Charles Lefebvre to the harsh scouring-paper like texture of Madame Cambacères. The latter bears one of the very heaviest coatings of this terrible Fungus. I don't think for a moment that this scourge enters the plant by means of the roots. If so, how can these partial or complete exemptions be accounted for?—unless, indeed, it be contended that the texture of smooth leaves is so close as to shut the Fungus in: that, however, is most improbable. It seems much more likely that the rough surface arrests, invites, or at least furnishes a suitable nidus for it. Its attacks are so sudden, its development so rapid, that it seems impossible to check or eradicate it. Every leaf, and almost every bud, was attacked, penetrated, destroyed. Even the wood seems pierced through, its stamina broken, its power of growth crippled. I wish the Scientific Committee would take this matter in hand, and try and help us to a remedy. I am sure they would thus earn the undying gratitude of Rosa and her myriad votaries. Since writing the above many of our Roses have died, and I hear of great mortality among the large growers. The effect of the disease runs down the wood to the base of the bud, and the plant dies—the wood, in most cases, becoming of a pale straw colour. *D. T. Fish.*

Societies.

METROPOLITAN FLORISTS' SOCIETY: *August* 30 *and* 31.—The second exhibition of this new society was held at the Crystal Palace on Wednesday and Thursday last. It is confirmed on all hands that the season has been a very adverse one for florists' flowers. Dahlias, owing to the excessively cold spring, are very late, though the plants have generally made a wonderful growth during the last two months; Gladioli are nearly withered up through drought, Asters are small and generally badly infested with fly, and the hot sun has taken nearly all the colour out of the Roses. These, with Hollyhocks, were the principal flowers represented, and which, from the causes above mentioned, reduced the general merits of the exhibition to a standard far below that attained at the Society's first venture last year. We have hope, however, for the future, and are sure that all will agree that, whether from such as the above, or any other causes, such a really useful institution should not be allowed to degenerate into mediocrity, it will be no fault of the Crystal Palace Company, who generously support the Society in the most handsome manner, as will be seen from the fact, that of the £165 12*s.* 6*d.* offered in the schedule, £101 is given by the company. Such substantial assistance as this is deserving of the highest commendation.

In the nurserymen's champion class for 48 Dahlias, which brought about such a capital contest last year, the competition for 1st honours was confined to Mr. H. May, The Hope Nursery, Bedale, Yorkshire, and Mr. J. Keynes, of Salisbury, who fought their battle over again, the North countryman this time having considerably the best of it. His flowers were admirable for size, symmetry, and colour, the following especially being remarkably well represented:—Miss Roberts, Toison d'Or, Memorial, Flambeau, James Bennett, Sir G. Smythe, Commander, Juliana, Miss Henshaw, Criterion, Royalty, Leah, &c. Mr. Keynes' best flowers were Golden Eagle, Annie Neville, Artemus Ward, Juno, Sir G. Smythe, Mrs. Wyndham, Mary Keynes, Lothair, Memorial, and Paradise Williams. Memorial is one of the finest shaped flowers in cultivation, and very constant, and so is Juliana, when well done, but, as an old florist of many years standing remarked, "it takes a lot of doing," and so do many of the others to get them in perfection. No 3d prize was awarded, the 4th being taken by Mr. J. Walker, Thame, Oxon. We should have liked to have seen the right which the judges have to withhold prizes, where the subjects are not worthy of them, carried out a little more vigorously and impartially than was the case on this occasion. Some of the exhibits in the Gladioli classes, in particular, much needed a little discretion of this kind. In the class for 36, Mr. Keynes came in 1st, Mr. H. May 2d, and Mr. J. Walker 3d, all showing excellent collections, in which James Hunter, Annie Creed, Victory, Vice President, and Miss Henshaw figured very conspicuously. Messrs. Draycott & Son, Humberstone Nursery, Leicester, had the best stand of 24, Messrs. Kelway & Son, Langport, coming in 2d, Mr. Mr. W. Seale, Sevenoaks, 3d, and Mr. H. Corydon 4th. The flowers most noticeable in the collections from these exhibitors were Criterion, Paul of Paisley, Imperial, Fanny Purchase, Vice-President, Edward Spary, Mrs. Boston, King of Sweden, and Lord Derby. In the corresponding class for amateurs, which was well contested, Mr. C. J. Perry, Castle Bromwich, was 1st; Mr. J. Burpitt, gr. to C. Lambert, Esq., Wandsworth Common, 2d; and Mr. Martin, Henfield, Hurstpierpoint, 3d. For 12, Mr. H. Glasscock, Bishop Stortford, was 1st; Mr. G. H. Tewkes, Birmingham, 2d; and Mr. W. Steer, Eltham, 3d. In the nurserymen's class for 24 Fancy Dahlias, the best came from Mr. Keynes, Mr. H. May coming in 2d, Mr. W. Seale 3d, and Mr. J. Walker 4th; whilst amongst amateurs, for 12, the best came from Mr. C. J. Perry, followed by Mr. J. Burpit, Mr. J. Beach, and Mr. F. J. Martin. The best flowers were John Sealy, Flora Wyatt, Butterfly, Miss Annie, John Salter, Hero of York, Miss Neilson, Leopardess, Sparkler, Galatea, Pauline, Fanny Sturt, Frank Tiffin, Polly Perkins, and Prince of Wales.

The number of Hollyhocks shown was very small, though the flowers were quite as fine as usual. Mr. Oats, gr. to the Rev. Lord Hawke, Gainsborough, took the 1st prizes in the open class for 9 spikes, and in the amateur class for 12 cut blooms, in the former with excellent examples of Alba superba, Midnight, Walden Primrose, Fair Ellen, Queen of the Yellows, and four very good unnamed seedlings. Mr. W. Chater was 2d with spikes not quite so large as the former, but very neat, those of Cygnet, Willingham Defiance, Carus Chater, being superbly finished. In the open class for 12 cut blooms, Mr. W. Chater was 1st, and Mr. G. Wheeler, Warminster, 2d. Amongst the several collections of cut blooms, the following varieties were well shown;—Prince Albert, Marvellous, Walden King, Purity, Sanspariel, Fanny, Nobilis, Lady Thynne, Eclipse, Alba superba, Leah, Archbishop, Leviathan, Exhibitor, Standard Bearer, Lord Napier, and Goldfinder. The special prizes, for 3 blooms of seedling Hollyhocks, given by the Rev. Lord Hawke, were taken by Messrs. Kelway & Son, Mr. G. W. Wheeler, and Mr. J. Chater, Cambridge, in the order named; and Mr. W. Chater's prize for the best seedling was won by Mr. Oats.

The Gladiolus classes were much more vigorously contested than was the case in those for Hollyhocks. Messrs. Kelway & Son had the best 36, Mr. G. Wheeler being 2d, and the Rev. H. H. Dombrain 3d. In Messrs. Kelway's group the following were very fine:—Victory, Madame Desportes, Eugène Scribe, Lord Poltimore, Lacepède, Lucius, Meyerbeer, Celebrity, Picciola, Nestor, Norma, Magnificent, Glow, Felix, and Victory, the latter four being awarded First-class Certificates. Mr. J. Douglas, gr. to F. Whitbourne, Esq., Loxford Hall, Ilford, took the 1st prizes in the open class for 24, in the amateurs' class for 12, and the Chapman's patent show case, offered by Messrs. Eassie & Co., Gloucester, for the best 6 spikes of Gladiolus of 1870. His flowers were quite up to his usual high standard, and included some fine seedlings, two of which, named Fairy Bells, salmon-pink, feathered purplish-maroon; and Sylvia, scarlet, lightly feathered with purple, were awarded First-class Certificates. The other exhibitors were Messrs. Paul & Son, Mr. Walker, Mr. Gold, Mr. Oats, Mr. Glasscock, and the Rev. H. H. Dombrain. Asters were capitally shown for the season, especially by Mr. G. Wheeler, Messrs. Kelway & Son, Mr. Walker, of Thame, and Mr. Matthews, Hoxton. Roses were rather poor, the best coming from Messrs. Paul & Son, and Mr. C. J. Perry. The last named exhibitor was also 1st for 24 cut blooms of Verbenas, a beautiful stand; Mr. G. H. Fewkes, Birmingham, being a good 2d. Amongst miscellaneous productions were a choice group of fine-foliaged plants from Messrs. Downie, Laird & Laing, to which an extra prize was awarded; a group of new hybrid bedding Violas (see p. 1129), from Messrs. Dickson & Co., Edinburgh; French Marigolds from Mr. Fewkes; a nice stand of seedling Verbenas from Mr. Eckford; a fine collection of Onions from Mr. Sarndell, Clapham Common; a new flat kidney seedling Potato from Mr. J. Burpitt; Roses and Dahlias from Mr. J. G. Woodlet, Caterham; two large specimen Hydrangeas from Mr. Edwards, Upper Norwood, a collection of Roses from Messrs. Paul & Son, and a stand of new bedding Dahlias from Messrs. Carter & Co. Mr. Chapman, Gloucester, exhibited specimens of his new cases, noticed at p. 1098, which, however, did not meet with such a favourable reception as his flower cases. In addition to the certificates above mentioned, First-class Certificates were also voted to Mr. G. Rawlings for Dahlia Maid of Essex, creamy white ground, tipped with purplish-crimson; and to Mr. Turner for Dahlias Mrs. Saunders, primrose ground, tipped with white, a fine flower, of a colour much wanted; and John Standish, very bright crimson scarlet, good in petal, and a fine shaped flower.

The subject of table decorations is productive of such a diversity of opinion, that it is a real pleasure to record anything like a unanimous verdict. Yet, thanks to the wholesome restriction of having a clear space of 15 inches around the margin of the tables, imposed by the Honorary Secretary, it was patent to all that on this occasion there was, especially on the part of the amateurs, who greatly outrivalled their professional brethren, such a combination of good qualities as has never been brought together at any former exhibition of the kind. In the amateurs' class the 1st prize was won by Mr W. L. Buster, and the 2d by Miss A. Hassard, both groups being equally light, graceful, and refined in arrangement, the former being the most decided in character. It consisted of three epergnes, tastefully filled with Roses, Liliums, Statices, Gypsophilas, &c., the colours of which were nicely subdued with Fern fronds; and four small glasses, in each of which were two or three fronds of the Maidenhair Fern and a truss of salmon-pink Pelargonium, which had a very delicate appearance. Miss Hassard's group, though a little weak, was much admired. It consisted of three pretty glass stands, filled at the top with the white Gypsophila, mixed with a few flowers of the blue Lobelia, pink Pelargoniums, and Fern fronds, and at the base with the blue flowers of Agapanthus umbellatus, Lilium lancifolium rubrum, and the common white Clematis, &c., backed up with Ferns. Here also were four narrow glasses, each of which contained a sprig of hardy Heath, a very chaste material for such a purpose; Mr. G. Buster, Goring, was 3d, and Miss Blair, Mr. J. Hudson, and the Rev. H. H. Dombrain were commended. For a vase or basket for drawing-room (shown on tables covered with white cloths!), Mr. Seale, Sevenoaks, was 1st, Miss Blair 2d, and Miss Hassard 3d, three others being commended. The exhibits in the professional decorator class were below mediocrity, call for no special comment.

SEVENOAKS HORTICULTURAL: *August* 24.—This flourishing Society held its annual exhibition in the picturesque grounds of Knole Park on the 24th ult. Plants and cut flowers were fairly shown, but in the matter of fruit and vegetables the display of each was very fine indeed. The best collection of eight dishes of the former was staged by Mr. R. Godbold, gr. to C. Candy, Esq., Chipstead Place, Sevenoaks, and consisted of capital Black Hamburgh and White Muscat Grapes, Bellegarde Peaches, Figs, Nectarines, Apricots, Jefferson's Plums, and Melons. Mr. Neighbour, gr. to — Wythens, Esq., Bromley, was a good 2d. A very worthy pair of Pine-apples, viz., Montserrat and Queen, came from Mr. Hopgood, gr. to J. Goldsmid, Esq., M.P., Tonbridge. The best three bunches of Black Hamburgh Grapes, fine in bunch, berry, bloom, and flavour, came from Mr. J. Burt, gr. to R. Mildmay, Esq., Shoreham Place, Mr. Hopgood being 2d. Some excellent Muscat Grapes were also shown. The best, and they showed a cultural skill of no mean order, came from Mr. R. Grant, gr. to J. Rodger, Esq., Hadlow Castle; Mr. Godbold being 2d. Mr. J. Burt had a capital collection of four varieties of Grapes, single bunches, consisting of Black Hamburgh, Muscat Hamburgh, Muscat of Alexandria, and Foster's Seedling. Mr. Sears was 2d, with Black Hamburgh, Alicante, Bowood Muscat, and Royal Vineyard. Peaches, Nectarines, Apricots, and Plums were grandly shown; in regard to the latter, Kent appears to be favoured beyond other southern counties, as in several places we have recently seen good crops of fine fruit. Such varieties as Washington, Kirke's Victoria, and Goliah, were particularly striking at the Sevenoaks show. Of Morello Cherries finer fruit could scarcely be desired.

In all the classes vegetables were in prime condition, and especially was this true of the cottagers' productions; in fact, the improvement witnessed in this respect since the first exhibition of the Society some four years ago, is such as to show most conclusively in how satisfactory and successful a manner the Society has accomplished the purpose for which it was more particularly established. A splendid example of Cyperus alternifolius variegatus was shown in fine condition by Mr. Godbold; large in size, stout in growth, and splendidly coloured. This gained the leading prize as a specimen plant. Achimenes were capitally shown, Mr. F. Thorne, gr. to K. D. Hodgson, Esq., M.P., Ashgrove, and Mr. W. Dodson, gr. to C. H. Mills, Esq., M.P., The Wilderness, being placed equal 1st. Very meritorious miscellaneous collections of plants and cut flowers were staged by Messrs. Downie, Laird & Laing, John Cattell, J. Searle, and E. Hollamby, that materially helped the exhibition. The weather was somewhat unfavourable; nevertheless, the show and the added attraction of the splendid band of the Grenadier Guards, brought together a numerous and influential company.

BANBURY HORTICULTURAL: *August* 29.—This is undoubtedly one of the most successful of the smaller exhibitions held in the provinces. It is a fortunate Society in many respects, chiefly in these, that the weather is invariably all that could be desired, and the show is always held in the charming grounds attached to the residence of William Munton, Esq., treasurer to the Society, at the left of the town. The visitors passed in at the principal entrance to Mr. Munton's residence, down the sunny slope of radiant green turf, on which is set down one of the prettiest flower gardens one can well wish to look upon, and so on to the show grounds. All parts of the grounds, as perfect in keeping as they are unique in design and arrangement, are always thrown open to the visitors, and are a show in themselves.

In the open class for 6 stove and greenhouse plants, Mr. W. Finlay, gr. to Col. North, M.P., Wroxton Abbey, was 1st, with a finely coloured Croton pictum, Rondeletia speciosa major, Alocasia metallica, Clerodendron fallax, Allamanda grandiflora, and Dipladenia amabilis. Mr. W. Bryant, nurseryman, Rugby, was 2d, having fine examples of Croton augustifolium, Latania borbonica, and Dicksonia antarctica, and, what is seldom exhibited now-a-days as a specimen plant—Mandevilla suaveolens. Mr. F. Perkins, of Leamington, exhibited in his group a specimen of the new Lasiandra macrantha, of good size, but it appears to be too woody to be an effective show plant. Mr. Finlay had a good group of 6 Ferns, consisting of Adiantum formosum, A. cuneatum, Asplenium fasciculatum, Hypolepis repens, Thamnopteris australasica, and Davallia repens. The best 6 ornamental foliaged plants were also staged by Mr. Finlay; and some examples of the purple Cockscomb, from the same exhibitor, were very finely grown indeed. The admirable manner in which Mr. Finlay cultivates Verbenas in pots, has already been referred to in detail in these columns. The six plants shown on this occasion, trained to a flat surface, were well grown, and literally covered with good trusses of flowers; they consisted of R. H. Vertegans, a fine plum-purple hue, very effective for show purposes; Wroxtoni, Princess of Wales, a pretty striped variety; Rising Sun, Blondin, and Isa Eckford. J. Gillett, Esq., was 2d, with some creditable plants.

Cut flowers are invariably numerous at Banbury, and well done. The collection of bunches of cut flowers staged by Messrs. E. & J. Perkins, Leamington, was a most attractive feature, and comprised a yellow Oncid, Lasiantha macrantha, Anemone Honorine Jobert, a pretty striped Phlox Drummondi, Magnolia grandiflora, Clerodendron fallax, Bougainvillea glabra, Stephanotis floribunda, Ixora coccinea, &c. The German Asters shown by Mr. E. Gunthorpe, and the French Asters by Mr. J. Betteridge, were of the first quality; a half-dozen spikes of large-flowering German Stocks, shown by Mr. E. Spencer, were finely developed; and the show of double and single Zinnias extensive and good. Mr. C. J. Perry's Verbenas and Dahlias were missed, the near proximity of the Crystal Palace show prevented him and others from exhibiting on this occasion.

There was a good show of fruit. The best collection came from Wroxton Abbey Gardens; so did the best three bunches of White Muscat Grapes, fine in bunch and berry; W. Munton, Esq., was 2d. The three bunches of Buckland's Sweetwater shown by Mr. W. Colegrave were magnificent examples, and the Black Hamburghs from the same exhibitor were of the same quality. Mr. Finlay had three very fine bunches of White Syrian, but unripe, and some very good Muscat Hamburghs in the class for other black Grapes. Mr. Colegrave had a bunch of Black Hambughs weighing 7½ lb.

The Onions were a little below the usual quality, still some fine bulbs were shown. In the sweepstakes class for 12 bulbs, in which 10 prizes were awarded, the best came from Mr. G. Ward, the second best from Mr. S. Taylor. The vegetables shown by cottagers were very good indeed, particularly the Potatos. The staple kinds were Early Emperor and Royal Albert among the rounds; and among kidneys, a fine Ashleaf type, and the Early American Rose—large and coarse. Early Emperor was shown both as a round and kidney; in each case the tubers were of fine quality. Sutton's Red-skinned Flourball was large in size, coarse, and very deep in the eyes, requiring much cutting to waste.

On the occasion of the show at Banbury, a room in Mr. Munton's house is always set apart for the judges, where an excellent luncheon is spread for them. The generous hospitality shown by Mr. Munton on such occasions is always highly appreciated by the judges, and is in marked contrast to the treatment received at some other exhibitions.

Notices of Books.

A Catalogue of the Plants of the Punjaub and Sindh, &c. By James E. Tierney Aitchison, M.D., &c. Taylor & Francis. 8vo. 1869. Pp. 204.

It is not very often in this country that practical men are compelled from force of circumstances to bethink themselves of what plants are best capable of enduring drought and heat. If, however, we had many repetitions of such a season as that of 1870, when the hay crop was almost a total failure, and other things suffered proportionately, we might then have to turn to the botanists to tell us what plants grow in the rainless regions of Peru, of Chili, or of Southern Africa. Then, perhaps, the value of Dr. Aitchison's Catalogue would come home to the practitioner; till then, the list in question will be more valued by the scientific than by the practical botanist. When we recall the fact that Sindh and the Punjaub are among the hottest, driest districts on the face of the globe, it is with some surprise that we find here a list of no less than 1458 species of flowering plants, together with a dozen Ferns (including Actiniopteris radiata) and a few other flowerless plants, the list of which latter, however, is obviously very incomplete. Dry and hot as is the general face of the country, the soil is described as being extremely fertile along the river-valley, or wherever irrigation can be practised. Towards the Himalayas, again, a moister climate prevails, and with it a more copious and luxuriant vegetation.

The flora of the dry desert region has much affinity with that of similar districts in Africa, stretching, it might almost be said, from the Canaries and Cape de Verd Islands, right across the African continent to Nubia and Egypt, on through Arabia, Persia, and Affghanistan to Sindh and the Punjaub. Various species of Capparis extend from Sindh westward to Senegal, Cocculus Leæba and C. villosus have a similarly wide distribution; Ochradenus baccatus, a relative of the Mignonette, extends equally far, so does the Tamarisk (T. articulata), and very many other instances of a like character might be cited. Great as is the distance, wide the distribution of these plants, the similarity of climatal conditions preclude surprise at the facts.

The catalogue which Dr. Aitchison has prepared with such evident care, will furnish valuable materials for those naturalists and geographers who are concerned with the geographical distribution of plants—a subject, the importance of which, as furnishing evidence on the present climatal condition, and on the past history of our globe is now becoming recognised. It is not to be expected but that a few omissions have been made from such a catalogue as that before us. We note among Mallows, for instance, the very singular Pavonia ceratocarpa (Dalzell), so different from any of its allies in its fruit, is omitted, as also P. arabica and Hibiscus intermedius (Richard). We may note also that No. 158, Hibiscus Gibsoni (Stocks), a very curious and well-marked species, is the same as H. pentaphyllus of Ferd. v. Mueller, a species found not only in Africa and Scindh, but also in Australia. This must not be confounded with Roxburgh's H. pentaphyllus, which is the Linnean H. Manihot.

Among plants of garden interest, we note in Dr. Aitchison's lists the Carambola, which is cultivated in gardens at Jhelum, the Wampi, the Indian Bael, various kinds of Orange, the Jujube, "raised by grafts always;" the Vine, cultivated and wild; the Mango, concerning which we are told that "an excess of moisture in the atmosphere seems to be necessary for the perfection of the fruit;" the Almond, Plum, Apricot, Peach, which, with the flat China Peach and the Nectarine are cultivated throughout the whole Himalaya; various Roses, Pears, Apples, Quince, Loquat, Guava, Pomegranates, numerous Curcurbits, Mimusops indica, of which the author says "it gives the best shade of any tree I know in India;" the Olive, various Jasmines, the Oleander, the Breadfruit which, under cultivation, bears fine large fruit; Populus euphratica, which, the author remarks, "should do well in England," and would be an interesting plant from the protean forms of its foliage.

Only a single Pine, P. longifolia, is marked as native, and only two or three other Conifers as being in cultivation. The four Orchids mentioned are Epipactis veratrifolia, Spiranthes australis, Zeuxine sulcata, and Z. membranacea. As to grasses, we were not prepared to find so many as 168 species enumerated, including Rice, Sugar-cane, Maize, various Millets, and species of Cenchrus and Pennisetum, useful as fodder grasses.

A pretty good idea of the capabilities of the district, when water is at hand, may be gleaned from the foregoing notes; those who wish further information on the useful plants of the Punjaub will find it desirable to consult, in addition to Dr. Aitchison's list, that of Dr. J. L. Stewart, published in 1869, under the title of "Punjaub Plants."

We must not conclude our notice of this unpretending catalogue without expressing our sense of the service to botany which Dr. Aitchison has rendered, a service the more acceptable and the more easily available from the existence of an excellent index. If we must make a complaint it is this, that cultivated plants are not sufficiently distinguished from native ones, either by any difference of numbering or of typography. In a list of this character the differences between native and cultivated plants should be so expressed as to catch the eye at once.

Kelly's Post Office Guide to London in 1871. Kelly & Co. Pp. 424.

This is intended, as its title denotes, as a visitor's handbook to the metropolis and companion to the Directory. It contains an immense amount of information of a character more likely to be useful to the stay-at-home traveller for reference on occasion than to the actual visitor. The work is divided into fifteen chapters, devoted to the history of London, its amusements, statistics, local Government offices, charities, colleges, art structures, exhibitions, military and naval depots, and commercial features. The information given under these heads is very varied and necessarily somewhat unequal, greater prominence being given to some matters than their importance would seem to warrant, and *vice versâ*; nevertheless, as a whole, we can recommend this volume to the notice of our readers as a good compendium of knowledge relating to our modern Babylon.

—— Those of our readers who can enjoy genuine humour should get hold of a little book lately issued, entitled *My Summer in a Garden*, by Charles Dudley Warner. The difficulties and delights of American gardening, the former comprising boys, birds, insects, and weeds, are amusingly depicted. The weeds which most exercised our author's patience are "Pussley" and "Snake-grass;" the former "a fat, ground-clinging, spreading, greasy thing, and the most propagatious plant I know,"—doubtless the Portulaca oleracea, an introduction from Europe; the latter probably our "Twitch," or "Couch" (Triticum repens), a grass with "a slender, beautiful stalk, and when you cut it down, or pull up a long root of it, you fancy it is got rid of; but in a day or two it will come up in the same spot in half-a-dozen vigorous blades. Cutting down and pulling up is what it thrives on. Extermination rather helps it. If you follow a slender white root, it will be found to run under the ground until it meets another slender white root; and you will soon unearth a network of them, with a knot somewhere, sending out dozens of sharp-pointed, healthy shoots, every joint prepared to be an independent life and plant."

Florists' Flowers.

A MOIST, mild, and, on the whole, favourable spring, has helped to bring out somewhat prominently the usefulness of bedding Tulips as decorative agents in the flower garden. Last year, Messrs. Veitch & Sons planted out at their Exotic Nurseries, Chelsea, several beds of Tulips, without attempting to mass them in colours, and with a view of acquiring some knowledge of their individual characters. This year, some of the leading varieties were massed in beds, and made a charming and effective display, as well as afforded an excellent idea of the adaptability of certain sorts for bedding purposes.

The red self-coloured Tulips give some excellent flowers for grouping in masses. Foremost is Brutus, having an orange-crimson base, and slight edge of yellow. Belle Alliance, brilliant scarlet-crimson, dwarf, and with a stiff, erect habit, early blooming, and a capital bedder; perhaps unsurpassed as an effective scarlet Tulip. Couronne Pourpre, rich dark crimson, and the darkest among the crimson shades; a very fine, high-coloured variety, that blooms at the same time as Belle Alliance, to which it affords an excellent contrast, because of its much greater depth of colour; Scarlet Van Thol, the earliest of all, and very finely coloured; Vermillon Brillant, very fine, and somewhat larger in size than the preceding; Couleur Cardinal, a very distinct and effective Tulip, with a short and unusually rigid habit, a little late in blooming, but valuable as affording a succession; and Paul Moreelse, cerise-crimson, a fine and striking hue of colour. Generally, the foregoing are cheap, or moderately so in price, and therefore to be had at a reasonable cost.

The two best yellow self flowers are unquestionably Chrysolora and Golden Prince, the first the earliest, and of a pleasing pale yellow hue; Golden or Yellow Prince has a stiff, upright habit, the flowers large, well coloured, and highly effective. A third yellow Tulip is found in Yellow Pottebakker, a fine bold, showy flower. Chrysolora, being rather new, is somewhat scarce, but the other two can be had at a moderate cost. Thomas Moore, buff yellow, is both distinct and good, and very useful for bedding.

In the way of white self flowers, nothing can be better than Princess Helena and White Pottebakker; the former has a dwarf, erect habit, the flowers are pure white, and of good size and build; this is deserving of very high commendation for bedding purposes or pot culture. The old White Proserpine, one of the finest built flowers of the section, is too well known to need description. Comte de Mirabeau, white tinged with pink, can be classed with the white flowers, and makes a very useful bed.

Among edged flowers Keizer Kroon is unapproachable for its superb beauty and great size. It is one of the most constant Tulips grown, and it is surprising how it will flourish even in poor soil. A bed of it is a grand picture in a spring garden. Duchesse de Parma is almost or quite as large, and has a narrow edge of yellow. Princesse d'Autriche is a broken form of Duchesse de Parma, and has the base striped with yellow; the unbroken is to be preferred to the broken form if the cultivator would have the most effective bed. Le Matelas, having a white ground with stripes and flushes of rose, is both a pretty and distinct flower; but the colour gets pale and muddy in hot weather. Rose Luisante, a lovely shade of pale pinkish-rose; the edges of the petals paler, is also a charming and effective bedder, as well as distinct in character.

The flowers having violet and purple shades are both novel and fine, and extremely effective as bedding plants. Foremost for size, build, and the peculiar delicacy of its lively hue of silken rosy-carmine, is Proserpine, one of the grandest of the early Tulips. Of a paler hue is Queen of Violets, of a pale violet colour, not so large as the foregoing, but it makes a charming bed. President Lincoln and this appear to be identical. Van der Neer, rich shaded violet, is large and very fine, and makes a striking bed: like Proserpine, this flower is of superb build. Wouverman is the darkest of all, and may be described as dark purple; it is not so large as Van der Neer, but valuable for its depth of colour. Molière is a good and useful pale violet bedding variety, and this, added to the foregoing, gives an admirable lot of violet-coloured flowers.

Two of the prettiest and most useful of the white and crimson striped flowers are Royal Standard and Bride of Haarlem; the latter is the finest, and has more colour; both are dwarf in growth, and are of good stiff habit. Roi Pepin is very pretty, but best suited for pot culture; besides, it is too high in price for bedding purposes. Cramoisie Royale, which is a broken form of Cramoisie Superbe, is very handsome also, and makes a gay and showy bed. Van Vondel is a grand Tulip, it is of a showy crimson-scarlet hue, is flushed with white, and occasionally striped with the same. This flower is of fine build, and very large. Fabiola and Globe de Rigaud, have violet and purple and white stripes, are distinct and novel, and make good showy beds.

The foregoing may be accepted as a select list of really suitable bedding Tulips. They are undoubtedly rising in popular estimation, for nothing can compare with them at the particular season when they are in flower. Those who use them for spring decoration cleave to them, and year by year work out charming floral pictures, that, while they brighten with a regal splendour the opening spring months, at the same time delight the eye and gladden the heart. *R. D.*

Garden Memoranda.

THE KNOLL, BAILDON, LEEDS, THE RESIDENCE OF C. STEAD, ESQ.—The traveller in passing from Leeds to Bradford by the Midland route will notice on his right—immediately before reaching Shipley station—a castle-like structure with a prominent tower and flag-staff, standing on a woody knoll, and by its position as well as its architectural features forming an imposing feature in the surrounding landscape. This is "The Knoll," and the residence of C. Stead, Esq., a staunch lover of Orchids and of horticulture generally. To the right of this, and at the farther extremity of the flat table-land, so to speak, which lies at the back, stands Ferniehurst, another Orchid establishment that has frequently been noticed in these columns. Looking to the left, the towers, spires and chimneys of one of the most thriving of England's manufacturing villages—Saltaire—are seen for a moment or two as the train rushes onward. The Knoll is reached by passing through the village of Shipley, and thence up the carriage drive as it winds gradually up the well wooded slope. In the early spring this drive is beautifully bordered by great patches of wild Hyacinths and wood Anemones, which are allowed to grow unmolested, and amply repay the privilege by thousands of sweetly-scented blossoms. During the spring months the place is quite gay with wild flowers, and the feathered songsters being protected in the grounds they repay this kindness by a grand chorus of song.

The Knoll is pretty well known as an Orchid establishment of no mean pretensions, and as such we would now more particularly speak of it. Here, collected together under a few hundred feet of crystal roofing, will be found some of the choicest gems known in the Orchid world—Vandas, Aerides, Phalænopsids and Dendrobes, remarkable alike for beauty and vigour. Here, growing in all the luxuriant freshness of Nature, will be found the finest plant in Europe of the beautiful and rare Vanda Cathcartii, this plant having several times flowered in Mr. Stead's collection, and was, besides, the first plant that flowered in this country. It has been already figured in these pages. Here also may be seen Dendrobium Devonianum with pseudobulbs upwards of 5 feet long! and thick in proportion. Fancy the splendid wreaths of purple-tipped, delicately perfumed blossoms afforded by growths like these! In one corner of the Indian house are upwards of 70 plants of Phalænopsis, doing well, including P. grandiflora—a peculiarly long leaved variety, with upwards of 20 leaves; this plant is growing on an oak block plunged in a pot with moss, and when we last saw it, it was one of the most healthy plants in the country; P. Parishii, a magnificent specimen, on a native block, just as lopped from the tree in its native habitat—doing well; P. amethystina, a remarkable and little known species figured and described last December in these columns; some fine plants of P. Schilleriana, and several nice specimens of P. amabilis, P. Luddemanniana, P. cornu-cervi, &c.

In this house is one of the finest examples we have seen of Vanda Batemanii, upwards of 6 feet high, with two fine breaks at its base. This plant annually produces splendid flower-spikes, and remains a long time in perfection as the flowers open gradually in succession. Amongst Angræcums are fine specimens of A. sesquipedale, A. eburneum, Lindl. (A. superbum, Du Pet. Th.), the old but extremely rare A. caudatum, a plant we very seldom either see or hear of now in collections; A. bilobum (A. apiculatum), A. pertusum, A. pellucidum, and the pretty little white-flowered A. falcatum, a native of Japan and probably Australia. One plant in particular of A. sesquipedale is worthy of notice, it having 36 fine leaves with two breaks, and is one of the finest specimens in cultivation. Aerides Schrœderi, 2 feet high, with 34 leaves and two breaks: this plant produces very fine branched spikes of large richly coloured flowers. Vanda gigantea (V. Lindleyana) is well represented by a fine vigorous plant, having 26 great, fleshy, gracefully recurved leaves. A fine healthy piece of Cypripedium Stonei had 20 leaves and three vigorous breaks: this bears large and deeply coloured flowers, and is a superb variety. Dendrobium crassinode, D. Bensoniæ, D. Parishii, D. macrophyllum, D. primulinum, D. formosum, D. Falconeri, D. triadenium, &c., are well represented by good examples, while D. crumenatum is worthy of special notice, its flowers lasting but a few hours; indeed, it is the most fugacious of all Dendrobes. It is an old plant, and peculiar on account of its bulbs being spindle-shaped at the base, and attenuate above; the flowers are delicately perfumed, and of the most crystalline whiteness, with a blotch of the faintest and purest lemon-yellow on the disc of the labellum.

In the Cattleya-house are some fresh and healthy specimens of Cypripedium caudatum, C. Lowii, and a very nice plant of the rare and highly curious Uropedium Lindeni. The rare old Epidendrum sceptrum here finds a congenial home along with the cooler Dendrobes and Oncids, together with the round-leaved Vanda teres, and the still more beautiful Vanda cœrulea. The majority of the Cattleyas grown in this house were imported from the Continent some time ago, and, unfortunately, suffered severely during the voyage, but they are now rapidly improving. Here are two or three good plants of Cattleya crispa, and one of its beautiful and distinct variety, C. crispa reflexa macrophylla. One or two plants of Lælia purpurata and L. Brysiana are doing well. A large and remarkably healthy specimen of Trichotosia ferox (Eria vestita?) is growing vigorously, its greenish flowers being highly curious, though far from beautiful from a florist's standpoint. Trichopilia crispa is represented by a splendid pan, which has borne more than 100 expanded flowers at one time—truly a glorious sight! this being, moreover, a fine variety, quite equal to the T. crispa marginata of "Warner's Select Orchids." In addition, there are plants of T. suavis, T. Galeottiana, T. tortilis, and several imported species, the names of which have not as yet been determined.

Amongst the winter-flowering Lælias are plants of L. autumnalis, L. furfuracea (true), L. anceps (several fine varieties), and L. albida. The lovely Flor de Maio, or L. majalis, has flowered here recently, and together with the others is doing well; while in the Indian house we noticed a splendid blooming pan of the rare Utricularia montana (U. alpina), which was figured and described at p. 1039.

Odontoglossums are quite a feature here, and we noticed the pretty little O. erosum (syn. O. stellatum), O. Phalænopsis, O. Pescatorei, several fine varieties of O. Alexandræ, O. luteo-purpureum, O. candelabrum (O. coronarium), O. læve, O. grande, O. Insleayi, and others. A fine plant of O. Schlimii attracted our attention from the peculiar dark markings on its leaves.

The houses which Mr. Stead has had erected for Orchids are neatly finished, and glazed with the best sheet glass, 14 inches wide, in order to admit a maximum quantity of light. Inside, the houses are fitted with slate benches, which are themselves supported by neat and ornamental iron pillars, the whole being neatly finished with stout wood beading. The advantage of iron over wood in the internal arrangement of Orchid-houses must be evident to all who consider the enormous moisture that is prevalent, and which speedily permeates and induces decay in wood fittings. Beneath the stage and side benches in the Indian house are shallow lead vats or tanks, and these being filled with water are useful in diffusing an equable moistness through the air of the house. Close to the wood beading that surrounds the central table, and passes along the side benches, are fitted small perforated copper tubes, and these being connected with the water supply the whole house can be damped in a few minutes by simply turning a tap at one end, while the whole of the waste water drips into the shallow tanks below.

In order to preclude the possibility of drip from the roof, the glass is cut diagonally, and a groove serves to conduct condensed moisture away. This plan serves the purpose intended very efficiently.

In the preceding account the best specimen plants only have been alluded to, and no mention made of the numerous duplicates that exist of most of the species named, excepting the most rare. For example, there are many plants of the commoner Vandas, as V. tricolor and V. suavis, including most of their best varieties; but these and many others are not alluded to particularly because common to all large collections. Again, no mention is made of a great many rare and beautiful species but recently imported.

The grounds are planted tastefully with choice Coniferæ and rare trees and shrubs, Rhododendrons especially doing well. The place is comparatively new, and was formed under the supervision of the proprietor and his gardener, Mr. G. Gilbert, who still retains charge. *F. W. B.*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, AUGUST 26, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth	76.2	52.8	23.4	74.8	54.4	20.4	63.0	0.02
Blackheath	78.7	50.6	28.1	73.6	54.9	18.7	63.0	0.09
Bristol	..	..	..	..	..	..	..	..
Birmingham	72.4	43.0	29.4	69.7	52.3	17.4	59.4	0.37
Wolverhampton	72.3	41.7	30.6	68.6	51.4	17.2	58.4	0.47
Leicester	77.5	42.0	35.5	71.0	49.9	21.1	58.8	0.36
Norwich	75.0	46.5	28.5	70.5	53.1	17.4	60.2	0.28
Nottingham	75.6	40.9	34.7	70.9	50.5	20.4	59.1	0.28
Sheffield	71.0	42.0	29.0	67.3	50.9	16.4	57.4	0.76
Liverpool	71.0	47.3	23.7	67.0	53.5	13.5	58.7	0.71
Manchester	..	..	..	..	..	..	..	..
Salford	71.5	40.4	31.1	67.3	49.2	18.1	56.6	1.12
Bradford	70.1	46.0	24.1	67.7	52.9	14.8	58.7	0.56
Leeds	71.0	44.0	27.0	68.1	52.9	15.2	58.9	0.45
Hull	72.0	40.0	32.0	68.9	50.3	18.6	58.0	0.37
Newcastle	67.0	52.0	15.0	64.3	52.3	12.0	56.7	0.39
Edinburgh	67.0	42.0	25.0	..	..	..	53.4	1.60
Glasgow	64.3	42.6	21.7	..	..	..	53.5	2.49
Dundee	65.0	44.0	21.0	..	..	..	54.1	1.35
Aberdeen	64.5	43.9	20.6	..	..	..	53.3	1.58
Paisley	..	..	..	..	..	..	..	..
Greenock	64.0	48.0	16.0	..	..	..	53.7	0.87
Leith	66.5	43.9	22.6	..	..	..	54.7	1.66
Perth	68.0	42.0	26.0	..	..	..	55.1	2.16
Dublin	73.7	40.0	33.7	..	..	..	57.2	0.28

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, AUGUST 30, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
August.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
24. Thurs. .	29.71	61.3	58.4	55.8	83	5.0
25. Friday .	29.74	65.7	58.8	53.3	64	4.5
26. Satur. .	29.97	63.4	54.6	46.8	56	3.6
27. Sunday.	30.28	66.8	56.5	48.3	52	3.7
28 Monday	30.31	63.7	58.4	53.6	71	4.7
29. Tues. .	30.07	67.0	58.5	51.7	58	4.2
30. Wednes	29.86	70.0	62.7	56.9	64	5.1

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
August.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
24. Thurs. .	67.9	56.0	11.9	60.9	+0.4	S.W	416	0.05
25. Friday .	75.9	54.8	21.1	62.8	+2.3	WSW	375	0.00
26. Satur. ..	71.7	50.8	20.9	60.6	+0.3	WSW: W.	391	0.00
27. Sunday.	71.0	47.6	23.4	57.7	−2.4	W by S: NNW	115	0.00
28. Monday	76.1	46.1	30.0	59.5	−0.4	Calm: NE: E	104	0.00
29. Tues. ..	76.0	51.0	25.0	61.9	+2.2	E.	229	0.00
30. Wednes	82.0	52.7	29.3	65.9	+6.5	ESE: S	177	0.00

August 24.—Generally overcast till night; rain fell occasionally in the afternoon, also a heavy gale. Aurora at night

— 25.—Cloudy till about 5 P.M.; a few light clouds prevalent afterwards.

— 26.—Generally cloudless.

— 27.—Light clouds and haze prevalent in the morning; fine afterwards.

— 28.—Generally cloudless.

— 29.—Cloudless. Very fine.

— 30.—Fine in the morning; generally cloudy afterwards.

JAMES GLAISHER.

Obituary.

We have to announce, with regret, the death of Walter Beck, Esq., on the 24th ult., at Worton Cottage, Isleworth, at the early age of 32. Mr. Beck was son of the late Edward Beck, whose name was so familiar, and so much endeared, to the florists of the past generation; and by whom the "Florist," now continued under the title of "The Florist and Pomologist," was established upwards of 20 years ago. Though Mr. W. Beck did not take an active part in the floricultural world, the gardens at Worton Cottage have kept up their character for high and successful cultivation, especially in the case of Cyclamens and Pelargoniums.

Miscellaneous.

GATHERED TREASURES.

I gathered Roses, I gathered gold,
  I am weary, but I can sing.
I gathered all in the times of old,
  When ev'ry day was Spring.

I treasure the Roses, but where is the gold?
  I have known sorrow, but I can sing.
Out and for shame on my wealth untold,
  For my riches all took wing.

Oh, treasured Roses! Oh, vanished gold!
  I am stout-hearted still, and still I sing.
For the Roses still I hold,
  Their perfume brings back Spring.

I gathered Roses! I gathered gold!
  I am needy, but I can sing.
And your little hands, that my hands enfold,
  Is the sole remaining thing. *Public Opinion.*

Entada scandens is a plant well known as producing the longest pod of any of the Leguminosæ, indeed the longest fruit known, some of them measuring even 6 or 8 feet. These woody pods contain hard, shiny, brown, circular seeds, each about 2 inches across and from half to three-quarters of an inch thick. They are largely used by the natives, where the plants grow, for making snuff-boxes, spoons, &c.; for this purpose the fleshy cotyledons are merely scooped out, leaving the hard woody shell. In the East Indies the seeds are used as weights, and the natives prepare a hair wash from them; they are also used in medicine as a febrifuge, but they are not used either in the East or West as food. In some parts of the interior of Africa, however, the natives regularly eat them. They first roast them for the purpose of removing the hard shell, they then cut the fleshy part up into slices, and cook it for some time in hot water; after being thus prepared it is washed in cold water, and is ready for eating. When so prepared it is said to have a very sweet taste.

Ixia crocata.—This charming little flower is so useful during the month of May and the early part of June, both for decorative purposes in the conservatory, and also as a never-failing source of cut flowers, that it is very much to be recommended, and only requires to be more generally grown to be duly appreciated. The culture is exceedingly simple; and, as the plant will flourish best without any kind of forcing, it is advisable that the bulbs should not be potted from the dry state too early in the autumn. A nice succession may be kept up by potting a portion of the stock early in September, and the remainder a month or five weeks later. The soil I use is about equal parts of loam, leaf-mould, and peat, with a little sharp silver sand. Four flowering bulbs are enough for a 5-inch pot, and six for a 6-inch pot. The small bulbs which are not likely to flower may be distributed amongst and planted with the flowering bulbs, where the plants are to be used for decorative purposes, as they help to produce a dense mass of green foliage; but when grown for cutting purposes this is not necessary, and in that case the surplus small bulbs may be sown rather thickly in seed-pans, and treated entirely with a view to the production of flowering bulbs another season. In potting, the soil should be used in a moderately moist state, but not wet; good drainage must be provided, and the pot filled firmly, without pressure. The bulbs are then to be placed on the top, and pressed down about an inch with the finger and thumb, and the soil pressed down gently, so as to leave it level a little below the margin of the pot. The pots should then be placed in a cold pit, or they may be set on coal ashes, and covered with a movable frame and lights; I prefer the latter until the approach of severe weather, when they are removed to a cool pit, kept moderately dry, and from which frost is entirely excluded. After the bulbs have started water may be applied, but in very moderate quantities through the winter. When, on the approach of spring, growth becomes active, they will require plenty of water; and at that time a portion may with advantage be placed close to the glass on the shelf of a greenhouse, which will accelerate their flowering. The remainder may be left in the pit until they throw up their flower-spikes, and may then be removed to the conservatory as occasion requires. Several other species and varieties of Ixia and Sparaxis are amenable to the same treatment, but I know of none more showy than Ixia crocata, nor one which increases more abundantly, coupled apparently with the great desideratum of a hardy constitution. *John Cox, in "Florist and Pomologist."*

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

Let all plants intended to flower late in the autumn and mid-winter, and which require a larger pot, be shifted without further delay. Give moderate shifts only, however, and pot with moderate firmness as compared with what would be necessary earlier in the season. The second, or other successional batch of *Cape Pelargoniums*, having been cut back and broken afresh, require potting, which must be done quickly. Remove as much soil as possible from the old balls, and then put them into as small-sized pots as the roots can be got into conveniently, without undue pressure, in an open, free admixture of fibrous yellow loam, leaf-mould, and sand. As the sun's rays, taking the day through, lessen in intensity, every advantage should be taken to duly expose all plants the more freely, by dispensing with shading more and more, if any be used, until it is removed altogether for the season. These remarks apply especially to *Orchids*, which have many of them now nearly or quite completed their growth. Give them less water as well as less shade, and, by admitting the sun more freely, ripen off the more fully the growth made. With a proper distribution of the plants, that is, the necessary removal of all such as have tender growing leaves into more shaded positions, the thermometer may be permitted to run up freely to 85° or 90° by sun-heat alone. By these means these plants can be induced to go to rest kindly. Those who have not yet placed their *Camellias* out-of-doors should now do so; also *Indian Azaleas*. They receive much benefit by a free contact with the buoyant air. The conservatory should now be gay with *Neriums*, *Balsams*, *Cockscombs*, *Fuchsias*, *Liliums*, *Zonal Pelargoniums*, *Vallotas*, &c., which in admixture with various foliaged plants will be as gay as need be. It will be well now, save during very bright fine weather, to give to all such a more limited supply of water, and to the *Liliums* especially, as these may be said to have perfected the major part of their growth by the time the blooms are fully expanded. Regulate the shoots upon *Climbing Plants*, pinch back the points of the grosser shoots, and so endeavour to equalise the sap more generally between them and the weaker ones. If the weather proves hot and dry, and the air searching and arid, be particular to defend the balls of all valuable plants against the fluctuations of extremes of moisture and dryness.

FORCING HOUSES.

Pine-apples must now have air freely during genial periods. Maintain around them an even temperature, averaging from 83° to 85°, with the customary increase after shutting up, and encourage by every possible means the newly potted plants to form fresh roots abundantly. Make the necessary arrangements to insure the usual supply of new tan by the time it will be wanted finally to make up the bark beds for the winter starting. Syringe the *Vines* and surroundings freely, whilst the Grapes are engaged in the swelling process, in very late vineries. Keep the foliage healthy, and so aim at assuring those conditions by the aid of which alone a good result is attained. Give to *Pot Figs*, now commencing the final swelling, copious waterings with wholesome liquid manure, and afford frequent surface sprinklings over all the internal surroundings within the structure. Attend well to all the *Peach* and *Nectarine houses* from which the fruit has been long gathered, and assist the roots, by means of a watering if necessary, to perfect efficiently both bloom and wood buds for another season. Those *Orchard-house Trees* which have just yielded their crops of ripened fruits should now be watered with clear soft water only. Already the roots no doubt have in the majority of instances been over-gorged with manure-water, the sedimentary remains of which existing in the pots will serve for all further purposes.

HARDY FRUIT GARDEN.

Remove the leaves somewhat from the fruit of late kinds of *Peaches* and *Nectarines*, and so encourage betimes the ripening process. Gather early kinds of fruit rather by anticipation than otherwise, and by laying them by in a dry, cool, airy situation, determine their safety against insect-pests, which, in some counties, are very abundant. Thin the leaves which surround bunches of outdoor Grapes a little, which may under more than usual favourable circumstances tend to ripen them somewhat by the advent of winter. Protect late varieties of *Plums*, such as the Blue Impératrice, &c.

HARDY FLOWER GARDEN.

Bedding plants will now need to be kept within proper bounds. This, and the removing of decayed blooms, the necessary mowing, sweeping, &c., will tend to afford a more beautiful aspect to the parterre than any of us could have looked forward to in the cold earlier summer months. Sow again if necessary, either in pots or boxes, or on the open sheltered border, such annuals as *Collinsia*, *Erysimum*, *Nemophila*, *Ten-week Stock*, &c. Place early *Mignonette* in pots in favourable aspects, to encourage a strong, sturdy growth. Old plants of *Pinks* and the like, from which "layers" have been taken, should, if two seasons old and a sufficient stock exists, be removed to the rubbish heap, or at the best pinned in somewhat closely and neatly, so as to enhance the beauty and size of the blooms of another season.

KITCHEN GARDEN.

Finally thin out the last sowing of *Turnips* fo winter use, and use the hoe freely between rows. Continue progressively to earth-up the earliest and successional *Celery*, freely supplying with water such as need it. The same remarks apply to *Cardoons*. Earth-up forward *Broccoli*, and finish planting late varieties. Transplant all *Lettuce* and *Endive Plants* sufficiently advanced for the purpose; make also another sowing of each upon a sheltered sunny aspect, and continue to blanch by the usual processes according to the demand. Make permanent plantings of *Cabbage*, planting them thickly in the rows, so that every other one may be pulled up for early consumption, and so increasing the supply as much as possible. There is never any danger of having an excess of this useful vegetable. That the sun may exert its beneficial influences, remove all young shoots frequently as they form upon *Tomatos*, and cut away any gross leaves which too greatly shade the fruits, as these are rather late this season. *W. E.*

TOWN GARDENING.

The *Chrysanthemums* will now begin to show their flower-buds, which should all be removed with the exception of the terminal one on each shoot, if large blooms are required. *Earwigs* will become troublesome to the plants, and should be trapped either by placing lobster-claws on the sticks [how ornamental!], or by twisting up a piece of greasy paper and placing it among the shoots, shaking out into hot water every morning all those which are thus trapped. As the *Annuals* and other plants are cleared off, *Pompons* should be removed to their places. These as well as the large Chrysanthemums should be kept well supplied with liquid manure, and be frequently syringed over the tops with clear water. *Carnations* and *Pinks* that are struck should be planted out into an open border, and be kept well watered; they will then make strong plants to stand the winter, and bloom freely next season. Now is the best time to increase the *Lily of the Valley*, which does well in town, if not disturbed after once planting. The method of propagation is to lift the old roots with a fork and divide them into as many separate pieces as may be required, planting them with a trowel about 3 inches below the surface. Most of the *Herbaceous Plants* will now have done flowering, and where an increase in the stock is required, they should be propagated by dividing the roots. *J. D.*

Notices to Correspondents.

Bananas: *E. N.* writes to know how long the Banana takes to ripen after the fruit has set. Will some correspondent who grows them kindly answer the question?

Bedding Verbenas: *M. H. R.* The following varieties have been tested for bedding purposes, and found to answer well:—Annie, carmine and white stripes; Crimson King, crimson with white eye; Countess of Radnor, pale ruby; Eclipse, brilliant reddish crimson, with a dark centre; Exquisite, delicate pink; Firefly, vivid scarlet, with lemon eye; James Birbeck, shaded pink, very effective; La Grande Boule de Neige, pure white; Leah, pink, with crimson centre; Lady of Langleybury, purple and white stripes, a sport from Purple King; Mrs. Mole, clear lavender; Mrs. Pochin, bright pink, with white eye; Pearl, pure white, a fine bedder; Richard Dean, bluish-purple, with large white eye; Princess of Wales, pink and white stripes; Sensation, bright carmine-rose, with large white eye; Shirley Hibberd, shaded plum-purple; and Triomphe de Massifs, pale blue, with dark centre.

Budding Hollies: *C. P.* Hollies may be budded either in spring or autumn. Now is a good time. If you are a skilful budder, a thin slice of the wood may go in with the bark, but it is better to remove the wood, taking care not to injure the bud in so doing. Keep the shoots of the stock pinched back in spring, so as to induce the dormant bud to break. It is unfortunate that your Maréchel Niel buds have broke into shoots, as they are more liable to be injured by the frost in winter than if they had lain dormant. Bud later next year.

Clematis: *J. Nelson.* Your Seedling No. 2 is a very handsome thing, no doubt, but is no improvement on, and does not seem to be distinct from, some of the varieties of Jackman's strain.

Diseased Larch: *J. Jeffries & Son.* We have had the same affection in Larch before. The condition was in that case owing to there being a cake of hard impenetrable conglomerate beneath the roots, in consequence of which the growth was slow, resin was discharged, and Peziza pulchella grew on the bark. It is scarcely probable that the Peziza is the cause. It is abundant everywhere on fallen Larch twigs. Anything which checks growth might produce the same effect as the conglomerate pan, which can scarcely exist in the damp and low ground where the disease is worst. We should rather expect in such a case the disease known under the name of frumping. *M. J. B.*

Grapes: *Enquirer, Belfast.* Having syringed your Vines with the lime water, you will be unable now to remove the white powder settled on the leaves, even hard spring water would have had the same effect.—*A Subscriber.* Your Grapes are attacked by a minute parasitic Fungus belonging to the genus Glæosporium, and closely allied to G. fructigenum, but with apparently shorter spores, which are however very variable in size. Species are figured in this journal in 1856 and 1859, the one on Apples the other on Peaches and Nectarines. All the six seeds of the three berries sent are diseased. In the diseased spot on those which are of a dark brown, we find abundance of raphides. *M. J. B.—A. R.* We are afraid that you have got some new noxious Fungus. The spots are full of mycelium, but in an early stage of growth. We have at present seen only a single spore, oblong with three septa, but with a single leaf only we cannot even determine the genus. Please to send two or three more leaves, and perhaps we may be able to give you a better opinion. *M. J. B.*

LEAFY FLOWERS OF CLOVER : *M. N. & Co.* The change in question is not uncommon, and is more frequent after a wet season than a dry one, leaf growth being favoured by the moisture. It is much more common in white Clover than in any other kind. A great deal has been written on the botany of the subject, a full summary of which is given in Dr. Masters' "Vegetable Teratology," p. 276.

MARECHAL NIEL ROSE : *X. Y.* Let the shoot or shoots of your Maréchal Niel Rose run till they reach the length you require them. This Rose should do very well in a late vinery. We will answer your other questions in our next.

MORELLO CHERRY TREE GUMMING : *Don Juan.* You can do but little. Cut away as much of the gummed portions as you can, and encourage the young shoots. Prune them back tolerably hard, and your tree may yet recover.

NAMES OF PLANTS : *E. C. C. D.* From the scrap sent apparently Verbascum Blattaria.—*Globe.* Flea Bane, Inula dysenterica, formerly used in dysentery.—*W. O. B.* Clerodendron Bungei.—*F. P. C.* Erigeron canadense. —*E. P.* The white variety of St. Dabeoc's Heath, Dabeocia polifolia, wild in Ireland.—*Mas.* Common Hart's-tongue, Scolopendrium vulgare.—*T. McKenzie & Sons.* Polypodium vulgare semilacerum ; it has been previously found in your country.

PEACHES WITHOUT FLAVOUR : *J. Wardle.* The fruits when received were smashed and quite rotten ; overcropping, with imperfect ripening of the wood, will produces the result you describe.

PEAT EARTH : *W. R.* You cannot do better than apply to Mr. Epps, of Lewisham, who supplies peat earth of excellent quality, specially selected for the growth of pot plants. We hear that he has just now been fortunate enough to meet with a new supply, of the very finest quality.

RAPHANUS CAUDATUS : *C. W. S.* Cook them like any ordinary vegetable, and serve with white sauce, *à la* Salsafy.

SELECTIONS OF PLANTS : *R. S. T.* Twelve Roses—Hybrid Perpetuals : Alfred Colomb, Baroness Rothschild, Comtesse d'Oxford, Duke of Edinburgh, Edward Morren, Louis Van Houtte, Marie Baumann, Sophie Coquarel, and Xavier Olibo ; Tea-scented Gloire de Dijon, Noisette, Maréchal Niel, and Triomphe de Rennes.—Six Nosegay Pelargoniums : Amy Hogg, purplish-rose ; Eclat, rich magenta, suffused with purple ; Le Grand, rosy-orange ; Lizzie, soft salmon, suffused with orange ; Pink May Queen, deep pink ; and Stanstead Rival, bright glowing crimson. Six Double Pelargoniums : Andrew Henderson, bright scarlet ; Emile Lemoine, deep pink ; Gloire de Nancy, deep rosy-pink ; Marie Lemoine, soft carmine ; Victor Lemoine, intense scarlet ; and Wilhelm Pfitzer, brilliant orange-scarlet. Six Zonal Pelargoniums : George Peabody, brilliant deep crimson ; Jean Sisley, fiery scarlet ; William Underwood, pale bright orange-scarlet ; Emile Licau, deep salmon ; Mrs. William Paul, soft rosy-pink ; and Bouquet Blanche, pure white. Six good useful Camellias : Alba plena, Dr. Boisduval, Jenny Lind, Lavinia Maggi, Mathotiana, and Valteverado.

VINES DISEASED : *D.* We have very carefully examined the various examples of the leaves and fruit sent, and can discover no disease to lead us to a solution of the question. There is no mildew as we expected. The Vines, as you state, have grown well, and got damaged quite suddenly. We must then look for the cause in the atmosphere of the house. Have you overheated your flues and had an escape of sulphurous gases ? We are inclined to think so. The leaves seem to have been rather flabby, through growing fast in a humid atmosphere and damp border ; then to have been scorched with something—not all at once, but to have been subjected to it for some time.

WASPS : *Mr. East* writes to recommend a preparation to destroy wasps. It partakes of the nature of an advertisement, and should be inserted as such. The most efficient wasp trap we know is the French trap figured at p. 461, 1870. With this we catch the wasps daily by scores.

WHITE PASSION-FLOWERS : *Subscriber.* P. alba, P. punctata, P. vespertilio, P. arborea, a white form of P. cœrulea, and many others.

CATALOGUES RECEIVED : Wm. Cutbush & Son's Descriptive Catalogue of Bulbs, &c.—Kelway & Son's 21st Annual Catalogue of Gladioli.—James Veitch & Sons' Catalogue of Hyacinths and other Bulbous Roots.—Haage & Schmidt (Erfurt), Catalogue of Dutch Hyacinths, Miscellaneous Bulbs, and Tuberous-rooted Plants, &c.—Sutton & Sons' Catalogue of Bulbous Flower Roots, Plants, Seeds, &c.—W. Paul's Bulb Catalogue.—Edmondson Brothers, Autumn Catalogue of Bulbs, &c.—Stephen Brown, Autumn Catalogue of Bulbs, Plants, Seeds, &c.—G. M. Kemp-Welch, a Select Catalogue of Dutch Flower Roots.—Milligan & Kerr, Catalogue of Dutch Flower Roots, &c.

ERRATA : At p. 1105, col. *c*, second line from the top, for the word emarginated read margined ; at p. 1106, col. *c*, for 1200 read 12,000.

COMMUNICATIONS RECEIVED : An Amateur.—T. T.—G. W.—G. H.—J. W.—R. P.—H. R. C.—E. N.—J. E.—H. L.—D. T. F.—G. S.—Subscriber.—H.—W. E.—Carter & Co.—Ed. A.

DIED.—On August 24, at Worton Cottage, Isleworth, WALTER BECK, aged 32 years.

Markets.

COVENT GARDEN.—*Aug. 1.*

We have very little alteration to notice this week, supplies being about equal to the demand, and trade continues very steady. Pines are not quite so plentiful as they have been, and prices have gone up a little. The Spanish and Portuguese Grapes, the first consignment of which arrived during the week, are realising but very low prices. We have good supplies of Potatos, at slightly advanced prices.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½ sieve ..		to 3 0	Nectarines, per doz.	2 0	to 8 0
Apricots, per dozen	0 6	— 2 0	Oranges, per 100 ..	8 0	—12 0
Figs	1 0	— 2 0	Peaches, per doz. ..	3 0	—12 0
Grapes, per lb. ..	1 6	— 5 0	Pears, per dozen ..	2 0	— 4 0
Lemons, per 100 ..	8 0	—12 0	Pine-apples, per lb.	2 6	— 6 0
Melons, each ..	2 0	— 5 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Beet, per doz. ..	1 0	— 2 0	Lettuces, per score ..	0 9	— 1 6
Cabbages, p. doz. ..	1 0	— 1 6	Mushrooms, p. pott.	2 0	— 3 0
Carrots, p. bunch ..	0 6	— 0 8	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	2 0	— 4 0
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, round, per bunch	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Shallots, per lb. ..	0 8	— ..
French Beans, p. lb.	0 4	— 0 6	Spinach, per bushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch ..	0 4	— 0 6
Horse Radish, p. bun.	3 0	to 5 0			

Potatos (good samples), New Round, 5*s.* to 6*s.* ; Kidneys, 5*s.* to 7*s.* per cwt.

THE ACME GARDEN FRAME and GROUND VINERY.
The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

One Penny per Square Yard.
TANNED GARDEN NETTING, for Garden purposes, such as Protecting Fruit from Birds, Blossom from light Frosts, &c. Widths, 1, 2, 3, and 4 yards. The Trade also supplied.
HOOPER AND CO., Covent Garden, London, W.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.
JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

Orchard House Lights.
WANTED, a number of the above, Second-hand, in good condition. Size of House, 120 ft. by 14 ft.
Apply, with particulars, to A. B., 196, Gresham House, Old Broad Street.

HEAD GARDENER.—D. P. C., near Droitwich, finding it impracticable to REPLY to the numerous Applicants, begs to inform them that he has made arrangements.

MESSRS. E. G. HENDERSON AND SON respectfully ACKNOWLEDGE the ANSWERS given to their Advertisement of August 19, for a GARDENER ; the appointment of whom, by an unavoidable delay, was made on the 25th inst.

WANTED, a WORKING HEAD GARDENER, where two or three Under Hands are kept. He must be well up in Grape Growing and ordinary Forcing, and thoroughly understand Flower, Fruit, and Kitchen Gardening. The Glass includes Vinery, Stove, Greenhouse, and small Conservatory. House found. The strictest testimonials as to trustworthiness, competency and moral character required. A middle-aged married Man, without incumbrance, preferred.—Address, stating age, wages required, where and how long in last situation, &c., to H. H., Post Office, Wallingford, Berks.

WANTED, as NURSERY FOREMAN, in a country Nursery, a good general Man, well up in Fruits, Roses, and with a knowledge of the other Stock generally met with in a good Nursery. Above all, he must know how to do his work, and to take the head of the other men employed.—Address, stating full particulars, B. S., Post Office, Ashford, Kent.

WANTED, a young MAN, who has some knowledge of Plants, Vines, Pines, Ventilation, Stoking, &c. To be active, obliging, and industrious.—Address, stating wages required, to FREDK. HUGHES, The Gardens, Overbury Court, Tewkesbury.

WANTED IMMEDIATELY, a young MAN accustomed to the Propagating and Planting of Bedding Plants on a large scale. One well acquainted with hardy Herbaceous Plants preferred. None need apply unless used to first-class establishments. Salary 21*s.* per week. Testimonials for sobriety, industry and honesty indispensable.—S. S., Raikes Hall, Blackpool, Lancashire.

WANTED, steady, good, active MEN, accustomed to Spade Work. Wages 20*s.* per week.—WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

WANTED, a TRAVELLER.—Send references and terms to Messrs. J. & C. LEE, Royal Vineyard Nursery, Hammersmith, London, W.

WANTED, by a leading New York House, a young MAN, thoroughly versed in the Seed Business. Must be well recommended.—Apply, stating age and experience, to W. C. H., Post Office, 290, Fulham Road, S.W.

WANTED, a respectable Man as PACKER ; preference given to one accustomed to pack plants. Wages 25*s.* per week.—Apply, personally if possible, BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

WANTED, AT ONCE, a smart, active young Man, as UNDER SHOPMAN.—DOWNIE, LAIRD, AND LAING, Nurseries, Forest Hill, S.E.

To Nurserymen and Florists.
WANTED, to place as PUPIL to the above, a highly respectable Youth, where he would be duly instructed in all branches of the profession.—Apply, per letter, to Mr. MILES, The Gardens, High Wycombe, Bucks.

WANTED, as PIGMAN, a steady, experienced Man, accustomed to tend Prize Stock and Exhibit.—Apply by letter, stating experience, wages expected, &c., to Mr. PARSONS, Hayes, Kent.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Age 26 ; practical. Understands all branches. Eight years' good character.—A. B. C., 155, London Road, Leicester.

GARDENER (HEAD), and ORCHID GROWER ; age 30, married.—F. NEWMAN begs to offer his services to any Nobleman or Gentleman, as above. Thoroughly understands the treatment of Hot and Cool Orchids, their natures, and their value. Eight years' character. Highest references.—2, Smallwood Road, Lower Tooting.

GARDENER (HEAD).—Age 30, married, no incumbrance : thoroughly understands the profession in all its branches. Character will bear the strictest investigation.—T. M., 5, Wellington Street, Slough, Bucks.

GARDENER (HEAD), married, one child.—LADY DE BLAGUERE wishes to recommend her Gardener as above. Thoroughly practical in all branches of the profession.—T. BALCOMBE, The Lawn, Whitchurch, Hants.

GARDENER (HEAD).—Age 36, married, no family ; thoroughly practical in all branches of the profession. Capable of Re-laying out or making Improvements. Good references.—F. T., Post Office, Ramsbury, Wilts.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Has had extensive experience in Early and Late Forcing, also the cultivation of Stove and Greenhouse Plants, Kitchen and Flower Gardening. Can be highly recommended. Nine years' character.—W. G., 54, North Street, Edgware Road, London, N.W.

GARDENER (HEAD).—Age 40, married, no incumbrance ; a first-class practical Man, fully competent in every branch of modern Horticulture, especially in Pines, Grapes, and choice Fruits under Glass, Early and Late Forcing, Kitchen Gardening, &c. Five years' good character.—HORTUS, 331, Vauxhall Bridge Road, London, S.W.

GARDENER (HEAD).—Is well up in Plant, Fruit, and Vegetable Culture ; Landscape Gardening, Dinner-table and Flower Garden Decoration ; has had considerable experience in Drawing and carrying out Plans of New Gardens and alterations to old ones. Five and a half years in last situation, with a Nobleman, and lately Manager of new and extensive Arboretum Works. Can be highly recommended.—ALPHA, Lilac Cottage, York Street, Harborne, Staffordshire.

GARDENER (HEAD), or GARDENER and FORESTER.—Has had great experience in the Formation of Plantations, and the Rearing of young Forest Trees ; is a first-class Pine and Vine Grower, also good Plantsman ; unsurpassed as a Kitchen Gardener. Would have no objection to look after Land and Stock. Ten years' excellent character from last employer.—J. G., 22, Seething Lane, City, E.C.

GARDENER (HEAD, WORKING), age 32.—Mr. CARLTON, Gardener to the Hon. Mrs. Howard, Ashtead Park, can with confidence recommend his Foreman as a thoroughly practical Man, having been Foreman in five of the principal establishments, where every branch of Gardening is carried out in the most efficient manner. No single-handed place accepted. Character will bear the strictest investigation.—G. COATES, Ashtead Park, Epsom, Surrey.

GARDENER (HEAD), where three or four are kept.—Age 25, single ; understands Forcing in its various branches, also Kitchen and Flower Gardening, &c. Satisfactory reasons for leaving.—X. Y. Z., 171, Malden Road, Haverstock Hill, N.W.

GARDENER (HEAD), where two or more are kept.—Age 24, married, no family ; thoroughly competent in Early and Late Forcing, also Kitchen and Flower Gardening.—A. B. TAYLOR, Stanmore, Middlesex.

GARDENER.—Age 45, married ; will be disengaged at Michaelmas, and is desirous of meeting with a re-engagement. Has had many years' experience in the various branches of Gardening, including Forcing of Fruits, Vegetables, and Salads, Specimen and Decorative Plant Growing, Flower, Hardy Fruit, and Kitchen Gardening, making Plans and carrying out Improvements and New Works, Planting and Management of Young Plantations, &c. Four and a-half years in present place, which he is leaving of his own accord. Wages expected, with house, £70 to £75 per annum.—H. H., 4, Prospect Terrace, Britannia Road, Fulham, S.W.

GARDENER (SINGLE-HANDED), in a small place, or under a Man in a Nobleman's or Gentleman's Establishment.—A young Man, married, one child ; understands the profession in all its branches. Five years' character.—H. S., Mr. Tuffery's, Southwood Lane, Highgate, N.

GARDENER (SECOND), in a Nobleman's or Gentleman's Garden.—Age 24, steady and industrious ; has had some years' experience both under Glass and in the Garden. Principally under Glass preferred. Good recommendations.—T. H., 10, Fawley, Bucks.

GARDENER (UNDER), or charge of Houses.—Five years' good character.—F. C. A., General Post Office, Norwich.

GARDENER (UNDER).—Young ; has not had much experience. A small Premium would be given.—H. A., Mr. W. Joye's, Stationer, Reigate.

GARDENER (UNDER).—Age 21 ; two and a half years' experience in the Houses. Good reference.—C. E. J., 8, Summer Row, Handsworth, near Birmingham.

FOREMAN.—Age 35, married ; well experienced in the Growth of Soft-wooded Plants in general, and Fruit for Covent Garden Market. Good references.—W. S., Rabley Gardens, near Barnet.

FOREMAN, in a Nobleman's or Gentleman's Establishment.—Age 26 ; thoroughly experienced in the profession. Eleven years' experience in good establishments. Good reference.—G. J., 47, James Street, Oxford Street, W.C.

FOREMAN and GROWER.—Age 36, married ; has had thorough practical experience in Plant and Cut Bloom Growing for London Markets for the last 16 years. Good references.—G. E., 2, Anthony Terrace, Plumstead, Kent, S.E.

BAILIFF, or FOREMAN, on a Gentleman's Estate.—Married, no family ; willing to make himself generally useful. Good references.—A. B., Post Office, Crowmarsh, near Wallingford, Berks.

BAILIFF, or BAILIFF and to SUPERINTEND a Gentleman's Garden and Grounds.—Age 35, married ; experienced, fully understands Farming in all its branches, both Heavy and Light Land ; also the Breeding, Grazing, Buying, and Selling of Stock. Many years on a large farm in Norfolk. 1¾ year in present situation. Satisfactory reasons for leaving. Good references as to character and capabilities.—R. S. C., Post Office, Croydon, Surrey.

BAILIFF (WORKING).—Understands Farming in all its branches, also Buying and Selling. Seven and a-half years' good character. Wife good Dairywoman.—C. S., 3, St. Albion's Cottage, Southgate, Middlesex.

FARM BAILIFF, on large Farm or Farms (disengaged in October).—Respectable ; understands the Management of both Heavy and Light Land ; great experience in Norfolk and Oxfordshire ; thoroughly understands the Farming business in all its branches, also Breeding, Rearing, Feeding, Purchasing, and disposing of all kinds of Stock, and Keeping Accounts. Wife understands Dairy and Poultry. Highest references from previous employers as to ability, trustworthiness, &c.—P. P. P., Post Office, Monmouth.

BOOK-KEEPER.—Age 22 ; an energetic Man, with six years' experience as Accountant Clerk, seeks an Engagement in a good General Nursery.—A. Z., Post Office, Solihull.

CLERK, and would like to give Assistance in the Shop.—Age 21 ; five years' experience with Messrs. Sutton & Sons, Reading. Highest references.—Z. A., Sutton & Sons, Reading.

TO the SEED TRADE.—Wanted by a young Man, age 23, a situation in a Wholesale or Retail Seed Establishment. Has been 7 years at the trade. Is strong, and would make himself useful in any branch of the business.—M. R., *Gardeners' Chronicle* Office, W.C.

To the Seed Trade.
SHOPMAN (ASSISTANT), or TRAVELLER.—Age 22 ; Six years' reference from present employer.—T. F., Mr. George Winfield, Gloucestershire Seed Warehouse, Gloucester.

To Seed Merchants.
ASSISTANT, in a Seed Warehouse, to assist in the light work.—Age 21 ; four years' experience in an extensive wholesale establishment.—B. H., 60, Micklegate, York.

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

ITALIAN ALP or LIGURIAN QUEEN BEES.—The autumn importations of these beautiful Bees having now commenced, GEO. NEIGHBOUR & SONS are offering QUEENS, warranted bred and fertilised in Italy, at the following low prices:—One Queen, 12s.; three, 33s.; six, 60s.

GEO. NEIGHBOUR AND SONS, 149, Regent Street, W.; or 127, High Holborn, London, W.C.

WANTED, THREE or FOUR ACRES, good holding soil, for Trial Ground, with Cottage or Small House for Gardener. Must be within half-an-hour by rail from Charing Cross, Waterloo, or Victoria Station. Apply, by letter, with full particulars, to Messrs. MINIER AND CO., 60, Strand, London, W.C.

WANTED to RENT, from FIVE to TEN ACRES of GOOD LAND, either established as, or suitable for, a Market Garden. No objection to a little Glass. Near Liverpool or Manchester preferred.

A. A., 107, Scotland Road, Liverpool.

To Nurserymen and Gardeners.

TO BE SOLD, in consequence of the death of the Proprietor, the LEASE and POSSESSION of a NURSERY and FERNERY, fronting to the Hagley Road, Edgbaston, Birmingham, excellently situated for business. There is a good Villa Residence on the ground, let off for a term.

J. LILLY SMITH, Solicitor, 19, Cannon Street, Birmingham.

FOR IMMEDIATE DISPOSAL, the entire STOCK and GOODWILL, or a PARTNERSHIP in a thoroughly prosperous NURSERY and SEED BUSINESS. The Nursery Grounds extend over about 12 acres, and more Land can be had if desired; and the Seed Business is extensive and increasing. This is a first-rate opportunity for one, two, or three really practical and business men, who can command a moderate amount of capital, as a large portion of the purchase money can be paid in instalments, extending over a series of years, by paying a moderate rate of interest.

Applications to be made to B. S., *Gardeners' Chronicle* Office, W.C.

Important to Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the LEASES, with possession, of the old established and well known CHISWICK NURSERIES, comprising a substantial 14-roomed Dwelling-house, with Seed Shop and Offices annexed, two Cottages in occupation, 12 Greenhouses and several ranges of Pits heated with hot-water piping, with the whole of the choice Stove and Greenhouse Plants; also about 12½ acres of rich and productive Land, cropped with first-class general Nursery Stock. Held under two Leases at low rentals. The whole to be sold at a fair valuation in the usual way.

For further particulars apply to Messrs. PROTHEROE AND MORRIS, Auctioneers and Valuers, Leytonstone, E.

SALES BY AUCTION.

SALE THIS DAY and MONDAY NEXT.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY and MONDAY, September 2 and 4, at half-past 12 o'Clock precisely each day, 25 Cases of first-class HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, and other Bulbs, just arrived from Holland.

On view the mornings of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 5, at half-past 12 o'Clock precisely, 220 pens of choice POULTRY and PIGEONS, from the yards and lofts of the Rev. A G Brooke, J. A. Fisher, Esq., Mrs. Evans, and other well-known Breeders and Exhibitors.

On view the morning of Sale, and Catalogues had

Choice Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, September 7, at half-past 12 o'Clock precisely, a large importation of PHALÆNOPSIS GRANDIFLORA, a consignment of choice ANGRÆCUMS, and other rare ORCHIDS from Africa; an importation of various ORCHIDS from the West Indies, and a large number of established plants of CYPRIPEDIUM NIVEUM, and healthy, well established plants of PHALÆNOPSIS of sorts.

On view the morning of Sale, and Catalogues had.

Holker Hall, Lancashire.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has the honour to announce for SALE by AUCTION, without reserve, on WEDNESDAY, September 6 next, a very choice Selection from the renowned Holker Herd, belonging to His Grace the Duke of Devonshire, which will consist of about FORTY HEAD of BULLS, COWS, and HEIFERS. Amongst them will be found some Oxfords, Wild Eyes, Blanche, Cleopatra, Asia, and other famed Kirklevington tribes. The young stock are chiefly by Grand Duke 10th (21,848), and Grand Duke 17th (24,064). Baron Oxford 4th (25,580), of the same line of blood, is now in service, and the whole will be found well worthy the attention of purchasers of first-class Shorthorns. Mr. Strafford can, therefore, with confidence strongly recommend gentlemen to avail themselves of the present favourable opportunity, such as may not occur again for some time.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London, N.W.; or of Mr. DREWRY, Holker House, Grange-in-Cartmel, Lancashire.

Beaumont Grange, Lancaster.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions to announce for SALE by AUCTION, without reserve, at Beaumont Grange, near Lancaster, on THURSDAY, September 7 next (the day following the Sale at Holker Hall), a choice selection of BULLS, COWS, and HEIFERS, from Mr. W. W. Slye's Herd, principally of Kirklevington and Fawsley descent. Amongst them will be found descendants of the Czarina, Duchess, Garland, Lady Spencer, Moss Rose, and Sweetheart families, also some very valuable specimens of Bates blood in Grand Duke of Kent 2d, Lady Tregunter Bates, and Barrington Duke; the whole of which can be strongly recommended to the favourable notice of purchasers.

Catalogues, with Pedigrees, may be had on application to Mr. SLYE, Beaumont Grange, Halton, near Lancaster; or, of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Killhow, near Wigton, Cumberland.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to intimate that he is instructed to announce for SALE by AUCTION, without reserve, on FRIDAY, September 8 next, at Killhow, about FIFTY HEAD of very superior SHORTHORNS, belonging to J. P. Foster, Esq., that have been selected and bred with the greatest care from some of the most fashionable and pure strains of blood, to which have been used Bulls of the first class. 17th Duke of Oxford (25,994), from the famed Holker Herd, is now in service, and the young stock are chiefly by him. The animals will be found on inspection to possess all the qualifications of high-bred Shorthorns; they have robust constitutions, are well grown, rich in colour, with good hair and quality of flesh, and are in a fine healthy breeding state; as such they are well worthy the attention of purchasers of first-class Shorthorns.

Catalogues, with Pedigrees, may be had on application to Mr. FOSTER, Killhow, near Wigton, Cumberland; or of Mr. STRAFFORD, 13, Euston Square, London, N.W.

Important to the Trade.

EXTENSIVE SALE of WINTER FLOWERING HEATHS, EPACRIS, CYCLAMENS, TREE CARNATIONS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to SELL by AUCTION, on the Premises, The Nursery, Lea Bridge Road, Leyton, Essex, on THURSDAY, September 21, at 11 for 12 o'Clock precisely, without reserve, about 25,000 winter-blooming HEATHS, in various sizes, and including the best varieties, viz.:—Hyemalis Wilmoreana, gracilis, and gracilis vernalis, grandinosa melanthera, regerminans, Sindriana, colorans, rubro-calyx, and others. 1000 EPACRIS, of the choicest kinds; 1000 AZALEA INDICA, by name; about 1000 CYCLAMENS, of the finest strain of persicum, profusely furnished with bloom-buds; CYTISSUS, ACACIA DRUMMONDII; 1000 Tea-scented ROSES, in pots; a quantity of SOLANUM CAPSICASTRUM, full of berries, TREE CARNATIONS, LAPAGERIA ROSEA, and a quantity of miscellaneous Greenhouse Plants.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers.

N.B.—Intending purchasers are respectfully invited to inspect the Stock, the whole of which is in the finest possible condition.

Tooting, S.W.

IMPORTANT SALE of EXTRA STOCK of STOVE and GREENHOUSE PLANTS, rare ORCHIDS, choice FERNS, selected PALMS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Exotic Nursery, Tooting, Surrey, on TUESDAY, September 26, at 11 for 12 o'Clock precisely, by order of Mr. R. Parker, without reserve, a large quantity of extra stock of STOVE and GREENHOUSE PLANTS, rare ORCHIDS, choice FERNS, selected PALMS, hardy HERBACEOUS PLANTS, &c. Full particulars next week.

LARGE SALE by AUCTION.—On account of the illness of the Proprietor the very extensive collection of STOVE and GREENHOUSE PLANTS, as well as the large general NURSERY STOCK of the Horticultural Establishment of Mr. H. LAURENTIUS, at Leipzig, Saxony, will be DISPOSED OF on SEPTEMBER 11, and following days.

Catalogues may be had on application at the above Nursery. In consequence of the Large Stock in all branches of Horticulture, the days of the Auction of each of the respective branches are fixed for the convenience of purchasers.

Dover.

NOTICE of SALE of the WELLINGTON NURSERY and Adjoining PRIVATE RESIDENCE.

MESSRS. WORSFOLD AND HAYWARD have received instructions from the representative of the late John D. Richardson, Esq., deceased, to offer for SALE by PUBLIC AUCTION, at the Royal Oak Hotel, Dover, on TUESDAY, September 5, at 2 for 3 o'Clock in the afternoon (immediately after another Sale of Property at Buckland and Charlton), the following valuable PRIVATE DWELLING-HOUSE and FREEHOLD LAND, situate on the London Road, Charlton, in Dover, in Two Lots, which will be numbered 12 and 13 in the Sale, viz.:—

Lot 12. All that conveniently arranged Private Residence, known as "Conservatory Cottage," and being No. 19, London Road, Dover, for many years in the occupation of John D. Richardson, Esq., deceased, but now in hand. The House, which is fitted up with every convenience and regard to comfort, contains Dining and Drawing-rooms, Five Bed-rooms, and capital Domestic accommodation, and has a pretty approach from the road under an enclosed Verandah, with Garden in front of the House.

This Lot is held under Lease from the Trustees of the Borough Charities, for the residue of a term of 99 years, from October 11, 1803, at an apportioned annual ground rent of £2 10s.

A small portion of the Ground held with this Lot is included in the hiring of the adjoining Freehold Land by Mr. Thomas Clark, and is Sold subject to the terms of that hiring except as to the rent payable by him, which will be entirely chargeable upon the said Freehold Land.

Lot 13. All that valuable Plot of Freehold Land, known as the "Wellington Nursery," adjoining Lot 12, now and for many years in the occupation of Mr. Thomas Clark, Nurseryman and Florist. This Lot, which has a frontage of about 128 feet to the London Road, is in a state of high cultivation, and from its first-rate position is admirably adapted for the successful carrying on of the Business of a Florist or for Building purposes.

The above property will first be offered in One Lot, and if not so Sold will be immediately put up in Two Lots as above. The House may be seen on application to the Auctioneers.

Further particulars and conditions of Sale may be obtained of Messrs. WORSFOLD AND HAYWARD, Auctioneers, Surveyors, and Estate Agents, New Bridge, Dover; or of Mr. THOMAS LEWIS, Solicitor, Dover.

Brockton House, Eccleshall, Staffordshire.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on TUESDAY, September 12, at Brockton House, Eccleshall, the ENTIRE HERD of PURE BRED SHORTHORNS, the property of Mr. Thomas Bell. It numbers about Fifty Head, which have been very carefully bred for the last thirty-two years from the far-famed Kirklevington blood, Mr. Bell's long association with the late Mr. Bates being the best guarantee for their excellence and purity of descent. Among them will be found several of the "Peach Blossom" (or Place), "Georgiana," and other fashionable tribes. The cows and heifers are in calf to Colonel Gunter's 8th Duke of York, and this celebrated young Bull will be offered at the Sale.

Catalogues, with Pedigrees, may be had of Mr. BELL, Brockton House, Eccleshall, or of JOHN THORNTON, 15, Langham Place, London, W.

Extensive Sale of Pure-bred Shorthorns in Lincolnshire

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on THURSDAY, September 14, at Panton House, Wragby, Lincolnshire, the celebrated HERD of PURE-BRED SHORTHORNS, numbering about 100 Head, belonging to Messrs. Dudding.

The success that has distinguished the Panton animals at the Royal, the Yorkshire, and County Shows, the old-established character of the Herd, and the first-class bulls of Booth blood which have been used—Mr. T. C. Booth's Manfred (26,801) and British Crown (21,322) being now in service—is the best evidence of the high standing and excellence of the stonk, which contains a large number of cows and heifers of great substance and quality, as well as several prize winners, including some choice young bulls.

Catalogues, with Pedigrees, may be had of JOHN THORNTON, 15, Langham Place, London, W.

NOTICE.—The SALE of the HERD of SHORTHORNS belonging to J. N. Beasley, Esq., of Chapel Brampton, Northampton, announced to take place on FRIDAY, September 22, is UNAVOIDABLY POSTPONED.

London, August 30, 1871. JOHN THORNTON.

Milcote, near Stratford-on-Avon.

HIGHLY IMPORTANT SALE of the MILCOTE DOWN SHEEP.

W. HUTCHINGS has been honoured with instructions from the Executors of the late J. C. Adkins, Esq, to SELL by AUCTION, at Milcote, near Stratford-on-Avon, on WEDNESDAY, September 13, at 2 o'Clock prompt (Luncheon at 12), the whole of the celebrated FLOCK of MILCOTE DOWNS, comprising 418 superb breeding Ewes and Theaves, 360 very superior Ewe and Wether Lambs, 22 grand symmetrical Shearling Rams, and 24 extraordinary Ram Lambs.

The great celebrity of this Flock demands a few words as to its formation. With Oxfordshire Downs as a foundation, the late Mr. Adkins, for many years, blended occasional strains of the best Cotswold and Hampshire Down blood, and with much judgment and careful selection succeeded in producing a distinct type of Down sheep. With great size, grand symmetry, good colour, and hardy constitutions, the Milcote Downs are remarkable for their heavy weight of lean meat and of wool, and for their early development and maturity. The rams will he brought forward in a natural and unforced condition. The Auctioneer can, with great confidence, call attention to this Sale; and can assure Flockmasters that an entire Flock of such high character is seldom offered to Unreserved Public Competition.

Catalogues will be circulated in due course, and may be had of the Auctioneer, 28, Bridge Street, Stratford-on-Avon.

Trains stop at Milcote Station as under:—From Paddington, Oxford, Banbury, Leamington, Warwick, and Birmingham, 8.49 and 11.18. From Paddington, Oxford, Moreton, Evesham, and Worcester, 8.25, 11.0, and 1.15.

Shropshire Sheep.

ELFORD PARK, TAMWORTH.

MR. MAY'S IMPORTANT ANNUAL SALE of PURE-BRED SHROPSHIRE RAMS and EWES.

MESSRS. LYTHALL AND CLARKE inform the Breeders and Feeders of Blackfaced Sheep that they will SELL by AUCTION, at 2 o'Clock, on TUESDAY, September 5, at Mr. May's, Elford Park (Luncheon at 1 o'Clock), about FORTY First-class RAMS, and ONE HUNDRED large-sized healthy EWES and THEAVES.

Elford Park is one mile from the Haselour and Croxall Stations on the Midland, and two miles from Alrewas Station on the South Staffordshire Railway.

An Omnibus will meet the 11.4 A.M. down train, and 12.10 and 12.18 P.M. trains at Tamworth.

The above are a genuine lot of Shropshire Sheep—pure in blood—very large in size—full of wool and mutton—and very suitable for improving the stamina of a Blackfaced flock, or for crossing with other breeds.

For Catalogues, apply to the Auctioneers, 39, New Street, Birmingham.

Shropshire Sheep.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, at New House, Sutton Maddock, Shifnal, on FRIDAY, September 8 next, at 1 o'Clock punctually (Luncheon at 12), the SUTTON MADDOCK FLOCK, consisting of SIXTY SUPERIOR SHROPSHIRE RAMS, and ONE HUNDRED SHEARLING and STOCK EWES, the property of Mr. Henry Smith.

The Sutton Maddock Flock has attained a reputation second to none among the Shropshires. It has secured the highest honours at the Royal Agricultural Society of England, the Birmingham, Smithfield Club, and numerous other important Shows, where no fewer than 130 prizes in plate, money, cups, and medals, have been awarded to it. The leading Flockmasters have acknowledged its superior merits, and the last three Royal meetings have amply confirmed its value, by the positions obtained by Lord Chesham's and Mrs. Beach's Rams and Ewes.

Conveyances will meet trains at Shifnal and Coalport Stations. An omnibus will also leave Shifnal at 11.30, and return after the Sale.

For Catalogues, apply to the Auctioneers, 39, New Street, Birmingham.

Holly Bank, near Burton-upon Trent.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, on TUESDAY and WEDNESDAY, September 12 and 13 next, the ENTIRE FLOCK of THREE HUNDRED SHROPSHIRE SHEEP, including FORTY RAMS; the HERD of FIFTY HEAD of SHORTHORN CATTLE, several of them being of pure Bates' blood; HORSES, PIGS, IMPLEMENTS, POULTRY, CHEESE, &c. (the property of Willoughby Wood, Esq., who has let his Home Farms).

Conveyances will meet the Trains at Barton and Walton Station, on the Midland Railway, and at Wichnor Junction, on the South Staffordshire Railway.

ORDER OF SALE.

TUESDAY, September 12, the entire Flock of Sheep.

WEDNESDAY, September 13, Implements, Cattle, Horses, Pigs, Poultry, Cheese, &c.

Luncheon on Tuesday at 11.30; Sale at 1 o'Clock.

Luncheon on Wednesday at 10.30; Sale at 12 o'Clock.

The Rams are of great size, excellent Wool Cutters, and possess plenty of muscle. The Ewes are remarkably true in character, with great scale, and very prolific. Among them will be found, in addition to the carefully bred ones belonging to the flock, many purchased at a high price from Messrs. Beach, Baker, Byrd, &c.

The Dairy Stock are remarkably well bred, many having three or four crosses of pure blood.

They are of great size, rich colour, and good milkers.

The Young Stock are well worthy the attention of gentlemen wishing to procure well bred stock.

The Auctioneers can confidently recommend this Sale as a first-rate opportunity to any one desirous of founding a high-class Flock of Shropshires or Shorthorn Herd. As Mr. Wood is giving up his farm, the whole of the lots will be sold without the slightest reserve, and it is seldom a better bred or more useful lot of Sheep and Cattle are disposed of

For Catalogues, apply to the Auctioneers, 39, New Street, Birmingham.

Shropshire Sheep.

The THIRTEENTH GREAT CENTRAL SALE, at BINGLEY HALL, BIRMINGHAM.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, on THURSDAY, September 14 next, at 11 o'Clock punctually, TWO HUNDRED PURE-BRED SHROPSHIRE RAMS, and SIX HUNDRED EWES, from the noted Flocks of

The Right Hon. the Earl of Bradford.
The Right Hon. Lord Wenlock.
The Right Hon. Lord Sudeley.
The Right Hon. Lord Willoughby de Broke.

Mrs. Beach.
W. C. Firmstone, Esq.
Mr. Glover.
W. Lort, Esq.
Mr. Lythall.
Mr. Nock.

Mr. S. C. Pilgrim.
H. J. Sheldon, Esq.
Mr. Dodds.
Thomas Walker, Esq.
C. Stubbs, Esq.
Mr. Yates.

And Others.

The above will include Prize Rams and Ewes at the Yorkshire and other important Shows.

Auctioneers' Offices, 39, New Street, Birmingham.

P.S.—Further entries should be sent to the Auctioneers before September 1.

ALTRINCHAM AGRICULTURAL SOCIETY.—The TENTH ANNUAL SHOW will be held on THURSDAY, September 28, when FIVE HUNDRED POUNDS and SILVER CUPS will be offered in PRIZES for Horned Cattle, Horses, Sheep, Pigs, Dogs, Poultry, Roots, Grain, Cheese, Butter, Implements, &c.

ENTRIES CLOSE SEPTEMBER 13. PRIZE LISTS, with FORMS of ENTRY, can be had on application to the Secretary,

28, Church Street, Altrincham. R. DAVENPORT.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AGRICULTURAL EDUCATION.

The Examination of Candidates for the Society's Prizes will take place in the WEEK COMMENCING TUESDAY, APRIL 16, 1872. The age of Candidates for the Society's Prizes must not be above 21 years on March 1; but Candidates, irrespective of age, may Compete for the Society's Certificates.

Copies of the Form required to be sent in by March 1 may be had on application to

H. M. JENKINS, Secretary.
12, Hanover Square, London, W.

The Agricultural Gazette.

SATURDAY, SEPTEMBER 2, 1871.

THERE are two ways of GROWING TURNIP and MANGEL SEEDS, a right and a wrong way, or, not to be dogmatical, there is a cheap and a more costly way. Seeds are grown for maket on the cheap plan, which, to say the least, we do not recommend. Good land is required for heavy crops, and the best for the purpose is deep, rich alluvial soil, with a subsoil that becomes good top soil as soon as it is exposed. There is a tract of this kind of land and of strong loam resting on free chalk between Gravesend and Cliffe, on the banks of the Thames, where 300 acres of Turnip seed are sometimes grown on a single farm. In the market garden districts of Bedfordshire, by Biggleswade, Sandy, and adjoining parishes, cheap seed growing is carried on, and there are small plots of Turnip and other seed, on all the little garden farms.

We will mention one other district, the most famous of all. About 25 years ago a farmer tried the experiment of ploughing up some turf in Romney Marsh, which is, as our readers know, a deep deposit of mud, well drained, and forming some of the richest pasturage in England. The experiment was extremely successful. The soil proved "inexhaustible," yielding enormous crops of Turnip and Mangel seeds, corn, Clover, and Potatos in constant succession, on the single condition that before corn could be grown, several crops of seeds should be taken to tame the soil.

Romney Marsh has become one of the most famous cheap seed-growing districts. The crops of Turnip and Swede seed frequently exceed 40 bush., and those of Mangel 30 cwt. per acre. At 2*d.* per lb., 40 bush. of Turnip and 1 ton of Mangel would give nearly £20 an acre in each case. Seeds, therefore, are grown wholesale at a very small cost; but unfortunately they are grown from imperfect roots; or rather they are not grown from roots at all, but from shreds of plants about the size of quills or radishes. In order to produce these parent plants, the seed is sown in seed-beds about the end of July; and in November the wretched little biennials are pricked out in the fields; except in the case of Mangel plants, which are more tender, though not too tender in the shred form to be wintered in sheltered seed-beds. They are pricked out in spring.

In both cases an iron dibble is used, about as broad as a carving knife, and somewhat thicker. This tool is driven into the ground, the shred is lipped into the crevice, and is fastened by closing it with the blade, shifting it so as to squeeze the soil tightly to the plant. The little modicums, which cannot be called roots, are planted in rows about 30 inches apart. On soils that are both friable and strong they branch vigorously, and should be hoed early in spring to encourage them to do so. On hard land of insufficient strength, they are inclined to "run" prematurely, and instead of the ground being covered with a dense mass of haulm, self-supporting, and covered with seed-bearing pods, it is only half covered, and the stalks are then liable to be broken by the wind; a weakly crop is also more liable to attacks of worm, and by the time the linnets and doves have taken their tithes, the grower's share is so small as to convince him by experience that the seeds cannot be profitably, grown from these little biennial shreds, except on suitable land.

The degeneracy consequent on breeding from starved sheds is remarkable, though not more so than might be anticipated as the result of such a complete setting at defiance of the physiological laws relating to the reproductive system in plants. Assuming that the starved shreds are the offspring of full-sized roots, we should not expect the degeneracy to be very great in the first generation, though one would certainly choose seed from robust, well-grown roots, in preference to that from starved shreds. But, unfortunately, it is only certain painstaking seedsmen who are so careful as to supply their growers uniformly with "stock" seed. A very large quantity of seed is grown for the general market that is of shred-parentage in the second or third generations. Let such seed be sown by the side of honest seed, and an extraordinary difference in the weight and quality of the roots will be observed. Clear-skinned, firm, and sweet-fleshed, shapely bulbs, with a single tap-root, and not too much neck and leaf, with very few stragglers running to seed, will contrast with rough bulbs, fanged, stringy, and coarse, and evidently reverting to the primitive form of the sea-side Beet—a stout-stemmed, sprawling plant, with a wiry tap-root fixed in the sand; or of the cliff Cabbage, or rather of some primeval Rape, from which the Turnip tribe may have descended.

We leave this branch of seed-growing, and the biennial shred system, to those who may be interested in it. It is unnecessary to go further into the question of "How not to do it?" Our readers are fortunate if they cannot appeal to their own experience, or to that of their neighbours, in confirmation of our view on the subject of cheap seed-growing. We will now give the details of a more approved practice, and endeavour to show how seeds ought to be grown.

Our first experience was with a Purple-topped Swede, originally selected by a friend more than 30 years ago. It may encourage young beginners, showing how attractive a fixed pursuit may become, if we mention that this gentleman, a large and very successful farmer, used sometimes to vanish from our side during the excitement of the chase, when the scent was warm and the game close at hand, for the purpose of marking a promising Swede that had caught his eye. Latterly there were comparatively few roots that wandered far from the selected type, but we never sow a field of Purple-tops that did not contain some green and otherwise undesirable roots, showing the necessity for constant selection to obtain pure types, and the large quantity of bad breed (blood) that there must have been when the process of elimination commenced.

With respect to the shape of roots we preferred them globular, or slightly wide shouldered without being flat at the crown, with half the bulb out of the ground and the other half buried, and good quality was indicated in the case of Swedes by firm, clear flesh, slightly tinged with pale yellow. Turnips for early folding may, however, be tankard shaped, standing far out of the ground, and Mangel may be long or oblong, instead of round. In the matter of shape the breeder should select good models and adhere to them. He can achieve any shape he pleases by a few years' selection.

The principle to be observed in selecting parent roots, whether of Swede, Mangel, or any other kind, is to choose perfect specimens. They should be neither small nor overgrown, but sound, hard-fleshed, keeping roots, grown without too much artificial manure, or any other kind of forcing which may be supposed to injure their powers of keeping, or to impair their vitality. Swedes should be set up to their necks in the best spot that can be found for them, furthest from the refuge of birds. The best way is to dig them in with a spade a yard apart. A large farmer may obviate all risk of losing the seed by birds, &c., and get rid of the whole of the care, except that of selection, by contracting with one of his cottagers, delivering the roots to him and paying a liberal price for the seed. Mangel and Swede seed will cost about 3*d.* per lb. in favourable years.

Mangels selected for seed must be kept through the winter without heating, and planted without blemish, early in March, in the same manner as the Swedes. Both should be set rather deeply, for protection, and they should be moulded up subsequently to support the haulm. Stakes and string may be used for the same purpose.

We could give many examples of the advantages of growing seeds at home; but it seems needless. We will only add that it is the only way to secure the best seed, inasmuch as the cost of cartage, &c., and two years' rent, prevents seeds "for market" from being grown from fair-sized roots.

—— THERE was a better supply of Wheat at Mark Lane on Monday than for some time past, but though the attendance was good, there was a slow sale, at the previous Monday's rates. On Wednesday the tone of the market was steady, the demand healthy, and prices well maintained.——At the Metropolitan Cattle Market on Monday a small supply of English beasts, and a good demand, sent up the average of prices; prime sheep also advanced, with a ready sale. On Wednesday only the very choicest lots could attain to Monday's figures, the average for all others being lower.

—— Referring to the POTATO DISEASE IN IRELAND, the *Irish Farmers' Gazette* of Saturday says:—

"In consequence of the conflicting reports which have appeared in different journals relative to the extent of disease in the Potato crop of this country, we addressed letters of inquiry to correspondents in various parts of Ireland. We may with safety say that, from the general tone of our reports, there is no reason at present to be apprehensive of what might be termed a failure of the crop. Very few reports speak despondingly, whilst the great majority are most favourable, and if the fine weather continue it will go far to check the disease where it has already appeared. We attribute the cause of alarm which has been widely circulated to the blighted appearance of the stalks, the state of the tubers not being taken into account, and this opinion is confirmed by most of our correspondents from every part of Ireland."

—— At the late Cheshire Quarter Sessions, at Knutsford, Sir HARRY MAINWARING, in his charge to the grand jury, said he was sorry to inform them that the FOOT and MOUTH DISEASE had increased in the county during the hot weather with great rapidity. At the July sessions there were only eight animals under treatment in the county. There were now 581 under treatment. Pleuro-pneumonia seemed to be at a standstill, and there were at present only 10 cases under treatment. Captain SMITH, the chief constable of the county, submitted to the court a return under the Contagious Diseases Acts, from which it appeared that from August 23, 1869, to August 5, 1871, there were attacked with foot and mouth disease in Cheshire 31,699 animals. Of that number 17 were killed for market, 30 for burial, 433 died, 30,637 recovered, and 582 remained under treatment.

OUR LIVE STOCK.

CATTLE.

AN eminent breeder of Bates cattle writes to us as follows:—

"While I yield to no one in my admiration for the genius which Mr. Bates displayed as a breeder, I cannot admit that no good blood existed outside his herd. Of the soundness of his general principles there can be no doubt, and the correctness of his judgment has been fully vindicated by the ever increasing value of the animals descended from his herd. He was, however, a man of strong prejudices, and doubtless not seldom viewed facts through a highly coloured lens. It appears to me most injudicious at this time of day to revive the bitterness of bygone controversies, and especially to throw aspersions which admit of no proof on the honour of such men as Mason, Coates, &c. It would do immense harm to the Shorthorn cause if, on the authority of individual assertion, doubts were thrown on the authenticity of our first established pedigrees. Of such detraction there is no need—who can tell but that some future writer may attack the pedigrees of Mr. Bates? In my opinion the sooner such useless gossip is forgotten the better. Let us take the animals and their pedigrees as they have been delivered to us, and use them to the best of our judgment."

—— The coming week will witness three important Shorthorn sales in the North of England. Space precludes a lengthy notice of each of the herds in question, but in as few words as possible we may state that 33 females and 12 bulls, the property of the Duke of Devonshire, will be sold at Holker on the 6th; that 19 females and 11 bulls, the property of Mr. W. W. Slye, will be disposed of on the 7th; and that 52 females and 4 bulls, from the Killhow herd, will be offered on the 8th inst. The Holker catalogue comprises 11 Wild Eyes, three Cleopatras, tracing from *Cleopatra* by EARL OF DUBLIN, and back to YOUNG WYNYARD (2859), two Asias, 10 Blanches, direct descendants of *Blanche* by BELVEDERE; eight Oxfords, going back to 2D DUKE OF NORTHUMBERLAND and SHORT TAIL; two representatives of *Lally* by EARL OF DERBY, and the Countess of Barrington strain, besides Elviras and Minstrels, going back to PHENOMENA and FAVOURITE and HUBBACK, which will give them grace, even in Mr. Bell's eyes. Sires inheriting the Kirklevington blood of the highest merit have been used, such as the pure Bates bull, LORD OXFORD (20,214), GRAND DUKE 10TH (21,848), and GRAND DUKE 17TH (24,064). The stock are chiefly by these bulls, and BARON OXFORD 4TH (25,580), a son of the celebrated prize-winner, *Lady Oxford 5th*. The Beaumont Grange catalogue opens with *Lady Spencer 2d*, by GRAND DUKE OF LANCASTER (19,883), of Chilton extraction, and further on we meet with her daughter by BARRINGTON OXFORD (25,607). The catalogue also contains some pedigrees of rare merit, including a few animals of Knightley descent crossed with Kirklevington bulls, resulting in that favourite strain Bates upon Knightley; others are closely allied to Royal winners, the dam of *Duchess 9th* (lot 8), and *Duchess 10th* (lot 16), being own sister to the dam of Colonel Towneley's BARON HUBBACK, a winner at the Royal at Oxford, and BARON HUBBACK 2D, the 1st prize yearling at Wolverhampton. Among these we notice several descendants of *Fair Francis* by SIR THOMAS FAIRFAX; Red Duchesses going back to HUBBACK; Duchesses descended from CLEVELAND LAD and DUKE OF NORFOLK; Charmers of Milcote extraction; *Lady Tregunter Bates* by the 2D DUKE OF TREGUNTER, and of the Lady Barrington blood; *Fawsley Duchess*, combining Bates and Knightley in perfection; and among the bulls a Grand Duke of Kent, a real Duchess bull, and PRINCE OF OXFORD, of the Gwynne blood.

With reference to the Killhow herd, we cannot do better than quote Mr. Strafford's remarks at the commencement of the catalogue, in which he informs us that the cattle are principally from the renowned herds of Lord Penrhyn, Sir Curtis Lampson, Bart., Messrs. Bowly, Howard, Leney, Rich, Slye, and other eminent breeders, and comprise specimens of the much-admired "Blanche," "Carolina," "Charmer," "Cleopatra," "Fillet," "Florentia," "Gwynne," "Surmise," "Sweetheart," and "Ursula" families, with other good and favourite sorts. The sires of these are of the highest breeding and character; six of the lots are by 7TH DUKE OF YORK (17,754), one of the most remarkable sires of modern days; the Duke of Devonshire's 10TH GRAND DUKE (21,848), 14TH DUKE OF OXFORD (21,605), bred at Holker, and ROYAL CAMBRIDGE (25,009), from *Moss*

Rose by 4th Grand Duke (19,874), are each the sire of four lots; whilst others are by 2d Duke of Collingham (23,730), 2d Duke of Claro (21,576), 3d Duke of Claro (23,729), 2d Duke oe Thorndale (17,748), Grand Duke 13th (21,850), Duke of Geneva (19,614), 9th Grand Duke (19,879), Lord Oxford 2d (20,215), May Duke (13,320), Touchstone (20,986), Knightley (22,051), and other valuable and well-known bulls. Several of the young stock are by 17th Duke of Oxford (25,994), bred by his Grace the Duke of Devonshire, and the cows and heifers are chiefly served by this very superior bull.

—— On the 25th ult. the well-known Castle Grove herd of Shorthorns, the property of J. G. Grove, Esq., was sold by Mr. John Thornton. We have previously noted the fact that the herd consisted of eight families—all of Booth origin: this told in the sale, for, though the company attending it was limited, the results were excellent, as will be seen by referring to the prices realised. The cattle were in good healthy condition, and had been running out night and day. The cows were of great substance, rich colour and fine hair; and throughout the herd there was great uniformity and evenness of character. Fourteen animals of the "Fame" tribe averaged £139 2*s*. 7*d*.; four of the "Lady Sarah" tribe averaged £143 6*s*. 6*d*.; and three of the "Campanula" tribe averaged £196. We have only space to particularise a few of the prices made: Thus, the very fine *Norman Lady* by Sir Roger (16,991), went to Mr. J. Downing for 200 gs., and the great milker and good breeder *Cinderella* by Sir James (16,980), went to Mr. J. Whyte for 270 gs. The Rev. T. Staniforth secured *Hyacinth* by British Crown (21,322), for 305 gs., *Gertrude* by Sir James (16,980), for 70 gs., and *Lady of the Manor* by British Crown, for 260 gs. Mr. H. Aylmer secured *Ringlet* by British Crown (21,322) for 280 gs.; and *Northern Lady*, by the same bull, became the property of Mr. R. Jefferson, at 170 gs. *Countess* and *Maid of the Mist*, both by The Sutler (23,061), fetched, the former 310 gs., and the latter 255 gs. *Cynosure*, a grand calf, by Great Hope (24,082), went to Mr. E. J. Smith for 110 gs. Among the bulls we note the acquisition by Messrs. Dangar, Grant & Co., of Commander by The Sutler (23,061), a very fine bull, of great character, for 93 gs.; Cato, a square, good calf, by Great Hope (24,082), went to the Rev. J. Micklethwait for 86 gs.; and another of Great Hope's progeny, Counseller (calved June 9), sold to Mr. G. Allen for 42 gs. But for the complete list we refer to the annexed Table:—

Name of Animal.	When Calved.	Price	Purchaser.
Cows and Heifers.		Gs.	
Coquette	1854	40	Mr. T. Rose.
Ciboulette	1859	60	Mr. J. Downing.
Colleenette	1860	70	Mr. R. Jefferson.
Rosalie	1862	46	Mr. R. M. Gumbleton
Nonsense	1862	30	Mr. T. Rose.
Norman Lady	1862	200	Mr. J. Downing.
Vanity	1863	..	Not offered.
Ruth	1863	40	Mr. T. Rose.
Lady Martha .. .	1863	75	Mr. W. Barnes.
Patience	1864	50	Mr. E. J. Smith.
Lady of the Lake	1865	150	Mr. W. Barnes.
Ruth 16th	1865	35	Major Folliott.
Gertrude	1865	70	Rev. T. Staniforth
Cinderella	1865	270	Mr. J. Whyte.
Vaudeville	1865	31	Mr. J. Carson.
Chemisette	1866	41	Mr. W. Scott.
Ruth 18th	1866	61	Mr. W. Fox.
Hyacinth	1866	305	Rev. T. Staniforth.
Gay Lass	1867	62	Mr. E. K. Cox.
Nicety	1867	63	ArchbishopBeresford.
Ruth 22d	1867	53	Mr. D. Mesham.
Northern Lady	1868	170	Mr. R. Jefferson.
Novelty	1868	50	Mr. T. Lindsay.
Ringlet	1868	280	Mr. H. Aylmer.
Purity	1868	49	Messrs. T. & J. McElderry.
Nepenthe	1869	125	Mr. W. Barnes.
Lady of the Manor ..	1869	260	Rev. T. Stainforth.
Ruth 24th	1869	55	Mr. J. J. Gaitskell.
Countess	1869	310	Mr. J. Downing.
Maid of the Mist	1869	255	Mr. J. J. Gaitskell.
Noteworthy	1870	30	Earl of Castlestuart.
Ruth 25th	1870	51	Mr. R. M. Gumbleton
Cantiniera	1870	180	Mr. A. Ashworth.
Cynosure	April, 1871	110	Mr. E. J. Smith.
Vanilla	April, 1871	26	Earl of Castlestuart.
Nemesis	June, 1871	25	Mr. R. M. Gumbleton
Lady of the Valley ..	June, 1871	61	Mr. W. Barnes.
Bulls.			
Commander	1870	93	Messrs. Dangar, Grant & Co.
Victor	Feb., 1871	38	Mr. S. Watt.
Rollo	Mar., 1871	31	Messrs. F. & J. McElderry.
Nestor	April, 1871	17	Mr. J. R. Boyd.
Reporter	May, 1871	18	Earl of Caledon.
Cato	May, 1871	86	Rev. J. Micklethwait.
Ganymede	June, 1871	17	Mr. D. Glen.
Counsellor	June, 1871	42	Mr. G. Allen.

Summary:—

36 cows at .. .. £111 12 5 = £4018 7 0
8 bulls at .. .. 44 17 9 = 359 2 0
—
44 animals averaged .. £99 9 9 = £4377 9 0

—— The sale of the late Mr. Barnes' Shorthorns took place at Westland, Kells, Ireland, on the 25th ult. The cattle were suffering from foot-and-mouth disease, and many of them were almost too lame to walk. They were consequently in poor condition, and yet such is the esteem in which the blood is held, that these serious drawbacks to the sale of ordinary stock did not appear to affect the spirit of bidders. The sale commenced with *Medora*, which was sold to Mr. T. Rose, of Wymondham, Norfolk, for 31 gs. The three daughters of *The Nun*, *Speranza* by British Flag, *Brilliant*, and *Bright Eyes* by Ravenspur (20,628), were sold for 58, 81, and 80 gs. respectively. *Grand Duchess 3d*, by Royal Sovereign, and out of *Grand Duchess* by Mr. Bolden's Grand Duke 3d, g.d. *Sylph*, of the Booth Mantalini tribe, was sold to Mr. E. J. Smith, Islanmore, co. Limerick, for 220 gs.; *Bracelet* by Royal Duke (25,014), and also of the Mantalini family, became Mr. J. Downing's at 310 gs.; *Necklace* by King Richard (26,523), and of the same Bates upon Booth cross, was sold for 325 gs. to Mr. G. Allan, for 325 gs.; *Brunette* by King Richard, and a daughter of *Brilliant*, lot 4, was sold to Mr. J. White, of Aberdeen, for 105 gs. Then came the crack of the day, in *Mantalini* by King Richard, g.dam *Alpine* by British Prince, g.d. *Sylph*, of the "Mantalini" tribe, by Hopewell. This pure Booth yearling heifer was sold at the extraordinary price of 750 gs. to Mr. W. Bolton, of The Island, Wexford. *Richard's Rose*, another of King Richard's stock, was bought by Mr. A. Ashworth, Bolton, Lancashire; and the remaining heifers sold, with one exception, at from 50 to 80 gs. In the bull sale White Duke was secured by Mr. George Atkinson, of Seaham, for 170 gs., and Favourite by Royal Prince, and a grandson of *Grand Duchess* by Grand Duke 3d (16,182), became Mr. H. C. P. Gell's property at 190 gs. A summary and price list is appended. In these sales it is curious to notice the much higher price given for the uncrossed Mantalini heifer than for *Necklace* with the Bates cross, but it is also worthy of attention that the union of the two families should be so highly valued as in the case of the last-named heifer. At this time, when we are being astonished by the statement that 99 out of the 100 entries in Coate's Herd Book should never have been made, and that the only Shorthorns are those with the Hubback blood in their veins, it is curious to find 750 gs. given for a heifer without such an "all essential" cross.

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Medora	1862	31	Mr. T. Rose, Norfolk.
Gift 5th	1863	..	Not offered.
Speranza	1864	58	Mr. R. Jeffreys, Whitehaven.
Brilliant	1865	81	Mr. H. Robinson, Leyburn.
Bright Eyes	1865	80	Mr. Cochrane (Canada).
Cherry	1865	61	Mr. T. Rose.
Grand Duchess 3d	1866	220	Mr. E. J. Smith, Islanmore.
Isabella Ravenspur ..	1866	71	Mr. R. M. Gumbleton, Cork.
Eye Bright	1867	61	Mr. Ashworth, Lancashire.
Minerva	1867	55	Mr. J. F. Bomford, Kells.
Roseleaf	1868	35	Hon. J. Massy.
Gift 7th	1868	80	Mr. M. H. Cochrane.
Bright Duchess	1868	42	Hon. J. Massy,
Royal Rose	1869	56	Mr. A. Mitchell, Alloa.
Cherry Blossom	1869	40	Mr. J. F. Bomford.
Charlotte	1869	62	Mr. R. Reynell.
Rosary	1869	46	Mr. H. Smith.
Bracelet	1869	310	Mr. J. Downing, Ashfield, Fermoy.
Isabella Royal	1869	67	Mr. A. S. Montgomery.
Gift 8th	1869	40	Mr. A. Metcalfe.
Necklace	1869	325	Mr. G. Allan, Co. Down.
Brunette	1869	105	Mr. J. White, Aberdeen,
Mantalini	Mar., 1870	750	Mr. W. Bolton, The Island.
Sweetment	Jan., 1870	38	Mr. D. Neasham, Darlington.
Richard's Blossom ..	Feb., 1870	97	Mr. E. J. Smith.
Richard's Rose	Feb., 1870	100	Mr. J. B. Booth.
Woodbine	Mar., 1870	82	Mr. A. Ashworth.
Richard's Maid	April, 1870	77	Mr. A. S. Montgomery.
Memnonia	April, 1870	53	Mr. E. J. Smith.
Richard's Gift	June, 1870	80	Mr. Humphry Smith.
Royal Princess	Jan., 1871	50	Mr. J. Sheane.
Royal Maiden	April, 1871	72	Mr W. Bolton.
Radiance	April, 1871	27	Mr. R. Reynell.
Maid of Westland ..	May, 1871	48	Mr. A. S. Montgomery.
Bulls.			
Lord Spencer	1868	71	Mr. A. Mitchell, Alloa.
White Duke	May, 1870	170	Mr. G. Atkinson, Seaham.
Cupid	June, 1870	40	Mr. R. Bradshaw.
Bright Duke	Aug., 1870	35	Mr. R. Reynell.
Pilot	Jan., 1871	30	Mr. H. Kerwan.
Favourite	Nov., 1870	190	Mr. H. P. Gell, Derbyshire.
Sovereign Prince ..	Mar., 1871	28	Mr. R. Reynell.
Brightness	Mar., 1871	25	Mr. O'Brien.
Lord Ross	April, 1871	43	Mr. R. G. Cosby.
Remus	April, 1871	64	Mr. R. Reynell.
Grand Prince	April, 1871	60	Mr. J. Doran.

Summary:—

33 cows at .. .. £110 10 8 = £3647 14 0
11 bulls at .. .. 71 4 2 = 783 6 0
—
44 animals at .. .. £100 14 1 = £4431 0 0

RAM SALES, &c.

Shropshires.—Mr. R. H. Masfen's sale of Shropshire sheep took place at Pendeford. The stock comprised 60 superb Shropshire rams, and about 100 Shropshire stock ewes, all in capital condition, and the auctioneer was Mr. W. G. Preece. Sufficient time having been allowed for an inspection of the stock, the visitors were invited to partake of luncheon, which had been provided, as usual, in first-class style, in a large marquee erected on the ground, over which Mr. Horley presided. At the conclusion of the repast, the company adjourned to the ring fence outside, where Mr. Preece briefly noticed the merits and special excellencies of the animals he had been entrusted to dispose of, relying chiefly upon the high reputation which this particular breed of sheep has maintained during a period of more than a quarter of a century. The selling of the rams was then commenced, the bidding for many of the larger animals being very spirited. The following are the names of the principal buyers, and the prices:—No. 1, Preserver, a magnificent animal, Mr. Coxon, 29 gs.; No. 3, Noble, 30 gs., Mr. Sanday, of Holm Pierrepoint; No. 4, Marcus, 28 gs., Mr. G. Wilkes, of Knowle; No. 5, Comus, 23 gs.; Mr. Horley; No. 7, My Lord, 25 gs., the agent of Sir John Chetwode; Nos. 9 and 24, the agent for Lord Hatherton, 13 gs. and 11 gs. respectively; No. 10, Chieftain, 23 gs., Mr. S. Leather, of Delamere Forest, Cheshire; No. 11, Rupert, 32 gs., Mr. Forrester, of High Ercall, Wellington; he also purchased a second ram, No. 50, for 9 gs.; Nos. 13 and 16 were purchased by Mr. Civis for 15 gs. and 7 gs. respectively; No. 14, shearling, and 7 2-shear, at 11 and 10 gs. each, Mr. Briggs, of Halford; No. 20, The Captain, 16 gs., agent for Mr. Jukes, of Cotwall, Wellington; the same purchaser also bought a second ram, No. 29, for 7 gs.; Nos. 26 and 27 at 20 gs. and 16 gs. respectively, were purchased by the agent of Mr. John Peel, of Middleton; No. 28, Nobleman, the Rev. B. Botfield, of Decker Hill, 16 gs.; No. 31 was bought for the Earl of Macclesfield; No. 33, Noble Boy, and No. 3, a 2-shear, were purchased for the Earl of Beresford's farm in Ireland, and three others were bought by the agent of Lord Wenlock, to be sent likewise to improve the breed in the sister country; No. 49, The Colonel, was let for 20 gs., to Mr. T. Mansell, of Adcott; No. 6, a 2-shear, was purchased by Mr. H. Rogers, of Wolgarstone, for 13 gs.; No. 8, The Baron, and 32, The Peer, bought for 20 gs., by the agent of Mr. H. C. Vernon, of Hilton; No. 46, a shearling, and No. 8, 2-shear, knocked down for 20 gs. to Mr. Webster, of Bishton Hall, near Albrighton. Of the other older rams, No. 1, Rob Roy, a 2-shear, was let to Mr. John Crane, of Shrewardine, for 30 gs.; No. 2, The Monarch, was purchased by the agent of Archdeacon Clyde, for 16 gs.; No. 4, Conqueror, bought by Mr. Booth, of Audley, for 12 gs.; No. 5, Cantab, let to Mr. Wall, of Shustock, near Coleshill, for 21 gs.; No. 47, was also let for 8 gs. to Mr. Bradburne, of Pipe Place, near Lichfield, who was likewise the purchaser of the highest priced ewes. The remaining rams were knocked down at prices varying from 13 to 5 gs., at which latter price four were sold, to the following purchasers:—Messrs. Taylor, Robinson, Gresty, Morrey, Croydon, Rotchell, Lowe, F. Keeling, Yates, H. Lovatt, Nock, Harris, G. Keeling, Bennett, Brown, Snaresdon, of Leicestershire; Nevett, and C. F. Clark. The ewes were next brought forward, and a most superb lot they all were. They were brought into the ring in lots of five. Lot 1 was purchased by Mr. Stubbs, of Preston Hill, for the remarkably good price of £5 each. Lot 2 was, however, superior both in form and build, and after some spirited bidding they were secured by Mr. Bradburne, of Pipe Place, near Lichfield, at the price of £6 5*s*. each. The remaining lots were disposed of as follows:—Lot 3, at 87*s*. 6*d*. each, Mr. Milward, of Thurgarton Priory, Nottingham; lot 4, 82*s*. 6*d*. each; lot 5, 80*s*. each; lot 6, 82*s*. 6*d*. each; lots 7 and 8, 75*s*. each; lots 9 and 13, 80*s*. each; lot 10 (H. Lovatt, Wolverhampton), 62*s*. 6*d*. each; lot 11 (E. Bradburne), 105*s*. each; lot 12 (the Rev. B. Botfield), 90*s*. each; lots 14 and 16 were purchased by Mr. Griffiths, of Tillington, for 65*s*. and 75*s*. each respectively; lot 15, Mr. Bennett, for 75*s*. each; and lots 17 and 18, by Mr. Gresty, for 65*s*. each. The average price realised by the rams was £13 7*s*. 5*d*. each, and for the ewes £4 1*s*. 10*d*.

—— Messrs. Oates, Perrens, and Woolridge held their annual sale of Shropshire sheep, on Monday week, at the Lyttleton Arms, Hagley. The first lot offered were six 1-shear rams, by Crane's No. 6, belonging to Mr. W. C. Firmstone. The first of them was purchased by Mr. R. Cox for 13 gs.; the second by Mr. Pitt for 5½ gs.; and the sixth by Mr. Lett for 5 gs. Nos. 3, 4, and 5 were not sold. The next lot were nine 1-shear rams, by Beach's No. 1. The first was not sold; the second was purchased by Mr. S. Mobberly for 10½ gs.; the third by Mr. B. Brooks for 7 gs.; the fourth by Mr. Mobberly for 7½ gs.; and the seventh by Mr. Birch for 7½ gs. Numbers 5, 6, 8, and 9 were not sold. Three shear rams, by Evans' No. 16, were not sold. A shear ram, by Paddy, was purchased by Mr. Lett for 8½ gs. A ditto by Mr. Simpson for 5 gs. A 3-shear ram, Evans' No. 16, by Nonpareil, dam by Chieftain, was sold to Mr. Millinchip, for 6 gs. The next lot, the property of Mr. J. Harward, included

16 1-shear rams, six of them being by Caractacus the 2d, nine by a ram of Mr. Crane's, and one by a Montford ram, and a 3-shear ram, Caractacus the 2d, by Caractacus. The six by Caractacus fetched 52 gs.; the nine 60⅔ gs.; and the Montford sheep, 7 gs. A sharp competition took place for Caractacus, which was knocked down to Messrs. Webb for 17½ gs. The next lot were from the flock of Messrs. E. Webb & Sons, of Kinver Hill. Two 1-shear rams by Son of Mainstay, went of for 11 gs. Four 1-shear rams by Beach's No. 1, realised 25 gs. Three 1-shear rams, by Son of Pride of Weston, fetched 19 gs. Forty ewes, belonging to Mr. W. C. Firmstone, realised £111 15*s.* A similar number, belonging to Mr. John Harward, were sold for £119 10*s.* The whole of the animals sold realised over £500.

—— Mr. William Baker's sale was held at Moor Barnes on the 23d ult. Messrs. Lythall & Clarke were the auctioneers, and some remarkably good prices were given. Forty rams were offered, and the average of £11 11*s.* 9*d.* was obtained. Ewes were offered to the number of 70, in pens of five, and realised the high average of £5 13*s.* each. The following are among the principal prices given:—No. 3, shear, Hero, 15 gs., Mr. W. Coundon; No. 5, 2-shear, Young Brevet, 14 gs., Messrs. Scriven, Newport Pagnell; Nos. 13 and 14, Twins, 13 gs., Mr. Vergette, Drayton; No. 20, 18 gs., Mr. Lucas, Rugby; No. 24, 17 gs., Mr. Watson, Gillson; No. 31, 18 gs., Mr. Spencer, Appleby. Ewes sold as under, in pens of five each:—Lot 1, for £34 7*s.* 6*d.* the pen, Mr. Walker, Odstone; 2, £23 15*s.*, Mr. T. Jowitt; 3, £25, Lord Polwarth; 4, £28 15*s.*, S. Ashton; 5, a pen of 6, £42, Mr. Jowitt; 6, a pen of 5, £25, Mr. G. Woodcock. Shearling ewes: 7, £26 5*s.*, Mr. Jowitt; 8, £24 7*s.* 6*d.*, Mr. T. Ashton; 9, £28 2*s.* 6*d.*, Mr. Woodcock, Coventry; 10, £31 5*s.*, Mr. Jowitt; 11, pen of four, £14, Mr. Pegge; 12, pen of four, £25, Mr. Jowitt, Hereford.

Southdowns.—Mr. Rigden's annual sale of Southdown ewes, and letting and sale of rams, took place on Wednesday week. Previous to the sale, the company partook of an excellent luncheon, over which Mr. Thomas Bushby presided. At the conclusion of the repast, the Chairman proposed the health of Mr. Rigden, and that gentleman, in returning thanks, said his ewes still felt the effects of last year's drought. They were in rather low condition, and not quite in their accustomed bloom. He had not kept his shearling rams high, to do which he considered was a mistake. The company then returned to the pens, and Mr. Edward Drawbridge, auctioneer, commenced business. The sale realised £600 10*s.* The ewes were put up in lots of five; the highest price obtained for full-mouthed ewes was £5 7*s.* 6*d.*; for shearling ewes the top price was £3 5*s.* A 3-year-old ram, by a grandson of Archbishop, was let to Mr. Smith for £16 16*s.*; a 2-year-old, which obtained the 2d prize at Wolverhampton, was let to Mr. Gorringe, Kingston, at £23 2*s.*; and a 1-year-old to Lord Newbury for £27 6*s.* Among the rams that were sold, a 2-year-old, by a son of Plenipo, went to Mr. Field, Ashurst Park, Tunbridge Wells, for £17 6*s.* 6*d.*; another for £11 11*s.* to Mr. J. Moon Stevens, Winscot, North Devon; and a 1-year-old for £22 1*s.* to Mr. Bradshawe, Belgrave, Leicester.

—— On Thursday week the Westdean Southdown flock, so long bred by the late J. A. Pinnix, Esq., was brought to the hammer by Messrs. E. Wyatt & Son, of Chichester. A large number of the leading flock-masters of Sussex and neighbouring counties, as well as others from greater distances, repaired to Westdean, in spite of the unfavourable weather. The following are among the principal prices given:—

Yearling Ewes.—Lots of five 2-tooth ewes were sold to Messrs. Heasman, at £6 10*s.*, 85*s.*, and 65*s.* per head; to Mr. Clark (for the Duke of Richmond), at £5 5*s.*; to Mr. Fowler (Whitchurch), at 84*s.*; to Mr. Harris (Donnington), at £5 and 75*s.*; and to Mr. Carew Gibson, at 75*s.* Lots of 10 ditto were sold to Mr. Green (of Herefordshire), for 80*s.*, 72*s.* 6*d.*, and 70*s.*; to Mr. Gorham (Cackham), at 67*s.* 6*d.*; Mr. J. Wyatt (Nutbourne), at 65*s.* and 60*s.*; Mr. Sparkes (Wittering), at 63*s.*; Mr. Gibson, at 60*s.*; Mr. Woodbridge (Goodwood), at 57*s.* 6*d.* and 67*s.* 6*d.*; and Mr. Disbury, at 65*s.*

Two-year-old Ewes.—Lots of five 4-tooth ewes were sold to Mr. Fookes at 90*s.* per head; Mr. Gibson, 84*s.*; Mr. Homer (Atthillhampton), 60*s.*; Mr. G. Pittis (Wymering), 75*s.*; Mr. Stone (Lancing), 67*s.* 6*d.*; and Mr. Whitcher (Stoughton), 65*s.* Lots of 10 were sold to Mr. Woodbridge at 62*s.* 6*d.*; to Mr. R. H. Ellman (Landport), 67*s.* 6*d.* and 62*s.* 6*d.*; Mr. Fookes, 72*s.*; Mr. S. Beard (Rottingdean), 75*s.* and 67*s.* 6*d.*; Mr. Green, 72*s.* 6*d.* Lots of 12 were bought by Mr. Gorham at 70*s.*, and Mr. Disbury, 67*s.* 6*d.*

Three-year-old Ewes.—Lots of five 6-tooth ewes were bought by Mr. Carew Gibson at 90*s.* and 77*s.* 6*d.*; Mr. Fowler, 85*s.*; Mr. Fookes, 80*s.*; Mr. Dearling (Dodsworth), 75*s.*; and Mr. Padwick (Thorney), 70*s.* Lots of 10 were bought by Mr. Homer at 70*s.*; Mr. T. Harris, 75*s.*; Mr. G. Drewitt (Oving), 77*s.* 6*d.*; Mr. Stone, 70*s.*; Mr. Green, 75*s.* and 70*s.*; Mr. Woodbridge, 67*s.* 9*d.*; Mr. J. Saxby (Northease), 70*s.*; Mr. Davis (for Lord Dacre), 67*s.* 6*d.*

Full-mouthed Ewes.—Lots of five were sold to Mr. Green at £7 10*s.*; Mr. Woods (Crows Hole), £6; Mr. Woodbridge, £5 5*s.*; Mr. Stone, 77*s.* 6*d.*; Mr. Disbury, 70*s.*; Mr. Carew Gibson, £5 5*s.* Lots of 10 were bought by Mr. Fookes at 72*s.* 6*d.*; Mr. Porter (Foxholt), 72*s.* 6*d.* and 70*s.*; Mr. Marshall (Godalming), at 72*s.* 6*d.*, 67*s.* 6*d.*, and 65*s.*; Mr. Dearling, 70*s.*; Mr. R. Lucas (East Marden), 67*s.* 6*d.* and 62*s.* 6*s.*; Mr. Davis (for Lord Dacre), 70*s.*; Mr. Woodbridge, 65*s.*; Mr. Stone, 67*s.* 6*d.*

Broken-mouthed Ewes.—Lots of six were bought by Mr. Bird (Sutton), at 77*s.* 6*d.*; and Mr. Dearling at 67*s.* 6*d.*

Yearling Rams.—Lot 1, a yearling ram, by a son of No. 10, a Goodwood sheep, Mr. T. Cooper, Norton, 32 gs.; 2, Mr. Barclay, Leatherhead, 21½ gs.; 3, by T. Elliman's No. 3, Mr. T. Harris, 23 gs.; 4, by a Westdean sheep, son of No. 10 from Goodwood, Mr. Tickner, Boreham Street, 15 gs.; 5, by a Westdean sheep, No. 6, son of No. 16 from Goodwood, Mr. Green, 14 gs.; 6, by No. 9, a grandson of T. Ellman's No. 16, Mr. Stone, 15½ gs.; 7, by No. 9, Mr. Styers, 17½ gs.; 11, by lot 79 in this sale, grandson of Mr. T. Ellman's No. 2, Mr. Richards, Wimbourne, 15 gs.; 13. by No. 6, a Westdean sheep, son of No. 10 from Goodwood, Mr. Hodson, West Blatchington, 21½ gs.; 14, by do., Mr. Ashby, Eastdean, near Lewes, 16 gs.; 15, by do., Mr. Elliot, Houghton, 13 gs.; 17, by do, Mr. Tickner, 20 gs.; 18, by lot 64, son of No. 10 from Goodwood, Mr. Hipkin, 15 gs.; 19, by No. 10, from Mr. J. Pinnix, Walderton, Mr. Homer, 28½ gs.; 20, by do., Mr. Fookes, 20 gs; 21, by do., Mr. Whicher, Stoughton, 15½ gs.; 24, by No. 10, a Goodwood sheep, Mr. Ashby, 23 gs.; 25, by do., Mr. Hodson, 14½ gs.; 26, by do., Mr. R. H. Ellman, 15 gs.; 27, by a Westdean sheep, Mr. Hodson, 19 gs.; 28, by do., Mr. Richards, 15 gs.; 29, by No. 10, a Walderton sheep, Mr. Richards, 16½ gs; 30, by No 8, a Westdean sheep, son of No. 10 from Goodwood, Mr. Ashby, 30 gs.; 31, by No. 3, a Westdean sheep, son of No. 10 from Goodwood, Mr. T. Harris, 11½ gs.; 33, by No. 10, a Walderton sheep, Mr. Fookes, 18 gs.; 36, by lot 64, son of No. 10 from Goodwood, Mr. Woods, 20 gs.

Two-year-old Rams.—Lot 37, by 64, son of No. 10 from Goodwood, Mr. Barclay, 44½ gs.; 38, son of lot 70, a Walderton sheep, Mr. Stenning Beard, 4 gs.; 39, son of No. 10 from Goodwood, Mr. Carew Gibson, 52½ gs.; 41, do., Mr. Wheeler, 17½ gs.; 42, do., Mr. Fookes, 20 gs.; 43, do., Mr. Parlett, Bury, 15 gs.; 44, do., Mr. King, Westburton, 18½ gs.; 45, do., Mr. J. Saxby, 20 gs.; 46, do., Mr. Tickner, 15½ gs.; 47, do., Mr. J. Saxby, 14½ gs.; 48, do., Mr. Ashby, 29 gs.; 49, by No. 4, a Westdean sheep. Mr. S. Beard, 21 gs.; 50, by lot 64, son of No. 10 from Goodwood, Mr. Tickner, 13 gs.; 53, do., Mr. Green, 20 gs.; 54, do., Mr. Wheeler, 18 gs.; 55, by No. 3, son of No. 10 from Goodwood, Mr. Woodbridge, 15½ gs.; 56, do., Mr. Woods, 21 gs.; 58, do., Mr. Saxby, 14 gs.; 63, by No. 10, a Walderton sheep, Mr. Davis, 13½ gs.; 64, by No. 10 from Goodwood, Mr. Clark, from the Duke of Richmond, 41 gs.; 65, do., Mr. Green, 24½ gs.; 66, by son of T. Ellman's No. 2, Mr. Barclay, 14 gs.

Lincolns.—The celebrated flock of longwool Lincoln rams, belonging to Mr. C. Clarke, of Scopwick, was submitted to public competition on Thursday week by the Messrs. Briggs. Notwithstanding the unfavourable weather, considerably more than a hundred of the leading ram-breeders and agriculturists of the county attended the sale, and numbers of buyers were also present from Yorkshire and Nottinghamshire. The sheep were not in show condition, but their quality and symmetry were undeniable. The pick of the lot was undoubtedly lot 39, a magnificent 2-shear, which, after a spirited competition, fell to the bid of Mr. T. Kirkham, of Biscathorpe (who used him last year), at 150 gs. There were 33 shearlings. Mr. Byron secured No. 7, for £38 17*s.*; Mr. Clarke, Ashby, No. 9, a grand sheep, with beautiful coat, and a splendid mover, for £63; and Mr. Lister, No. 22, for £49 7*s.* Mr. C. Clarke, Ashby, became the fortunate possessor of No. 43 (a magnificent 2-shear, with nice coat and beautiful flesh), for £65 2*s.*; the following lot was knocked down to Mr. Kemshall at £42; and Mr. Banyard secured lot 58, the last of the 2-shears, at a like figure. The 3-shear and aged sheep were wonderfully good, the best in a prime lot falling to the bid of Mr. J. H. Caswell at £89 5*s.* Mr. Paddison, of Ingleby, bought lot 61 for £67 4*s.*; Mr. Smith secured lot 59 for £46 4*s.*, and two others were each knocked down at £31 10*s.* each. Sixty-nine sheep were offered, and one was withdrawn, the 69 realising an aggregate of £1639 11*s.* 6*d.*, being an average of £23 15*s.* 1*d.* The 33 shearlings averaged £19 18*s.* 6*d.*; the 25 2-shears, £24 2*s.*; and the 11 3-shear and aged sheep reached the extraordinary average of £32 13*s.* 9*d.*

PARASITISM IN RUMINANTS.

[The following deeply interesting remarks upon our food-producing ruminants, and the parasites which reside in them, from a lecture delivered before the Society of Arts, by T. Spencer Cobbold, M.D., F.R.S., F.L.S., may not be unacceptable to our readers.]

In the further pursuance of our plan, I propose this evening to give you an account of the common liver fluke, which takes up its residence in the sheep. At the same time, we shall have an opportunity of incidentally referring to other allied forms.

I have already stated that the flukes constitute a distinct and natural group of entozoa, termed "trematodes," or flat-worms. For the most part they reside in the ruminants, but some of them attack other quadrupeds, and also man himself. The liver-ducts of the ox and sheep constitute their head-quarters, so to speak.

If you glance at this list, representing the entire parasitic fauna, in each case you will see that a considerable variety of flukes occupy these two hosts. The first entozoon, or Fasciola hepatica, is the form which we have to deal with especially, this species being common to the ovine and bovine quadrupeds. Fortunately, it is an extremely rare parasite in man, only 18 instances being on record of its having been found in the human host, but far otherwise is it with the ox and sheep. Now, what sort of a creature is this entozoon?

Without going into the anatomical details of the fluke itself, we must now glance at one of the most intricate points connected with the study of entozoology. The eggs of the fluke are large—very large indeed—when compared with those of other forms of parasites. The eggs of the common tapeworm measure no more than the 1-700th of an inch in diameter, and will, it has been said, pass through an ordinary charcoal filter. The eggs of the fluke, however, are so large that they measure as much as 1-180th of an inch lengthways. These eggs are scattered over the field by millions, passing from the hosts or bearers in a way which it is quite easy for you to understand without its being particularly described. When thus scattered, they require for their further development a certain amount of moisture. A good shower of rain is, of all agencies, the one thing needful in their favour; for the rain carries them down into ditches, and streams, and lakes, and into other artificial or natural collections of water, where the further development of their contents will be rapidly accomplished.

Consider, I pray you, what takes place when an egg is conditioned in a manner suitable to its further development. The egg is furnished with a lid, so that when moisture is supplied, this part forming the anterior pole of the shell, rises up and a locomotive animalcule immediately emerges from its interior. This little creature is furnished with a dense covering of vibratile cilia, and it swims about with extraordinary rapidity.

Let me tell you that I have frequently experimented with the eggs of certain flukes, and it is really a beautiful and instructive sight to watch the behaviour of these minute organisms as they disport themselves, darting across the field of the microscope with astonishing activity. But they do not long retain the simple ovoid form assumed within the shell. They change into a conical figure, the larvæ of the common fluke bearing a mark, in the shape of a cross, on its back. This pigment spot has been called an eye, but whether it sees or not with this organ is quite another matter. The spot consists of a number of minute granules collected together. I have not seen this spot in any of the other forms of trematode larvæ which I have examined.

What is the subsequent history of our fluke? For years past ento-zoologists—abroad and at home—have been trying to work out the genetic relations of the common species; but I fear we have not yet succeeded in fixing all the phases through which it passes. It is a difficult subject to make clear; nevertheless, by putting together the changes which obtain in other forms of fluke larvæ, we are enabled pretty accurately to determine the phases of life-changes which these creatures undergo.

At the risk of being a little tedious, I will now endeavour to open out the principal data by which our definitive conclusions have thus far been arrived at.

Speaking of flukes generally, the ciliated larva loses its cilia, and at the time of the decay or falling off of the cilia another small body is observed inside the original ciliated larva. This secondary body, or juvenile organism, grows rapidly at the expense of the primary larva. The little organism inside—you may call it the germ if you please—increases in size until it assumes a form similar to that of the original. The odd thing is, that it has no sooner arrived at this stage of development than another organism appears in its interior; so that we have the ciliated animalcule producing a germ in its interior, the germ itself increasing in size, until it becomes what we call a germ-sac. First a germ, and then a germ-sac. Now, the germ-sac developes within itself numerous other larvæ. These again, on emerging from the sac, become what is termed a redia, and the still stranger thing is, that these rediæ develope other larvæ inside themselves. This process is essentially a kind of budding, only, instead of being carried on outside, as in a plant, it is produced internally. We have, therefore, you perceive, two kinds of sacs, simple and organised, or, in other words, sporocysts and rediæ.

In many of the flukes those germ-sacs contain in their interior an enormous number of buds, and the buds again, in their turn, during certain favourable seasons, go on multiplying, practically speaking, *ad infinitum.* One cyst will thus form a series of new germ-sacs, and these also will multiply indefinitely. Notice, however, if you please, that in the case of the redia, which is only a more highly organised form of germ-sac, the larvæ developed in its interior have a different form from any of those proceeding from the simple, original, unorganised germ-sacs. They are furnished with tails, and are termed cercariæ. I must also tell you that all kinds of sacs, whether simple or compound in character, are collectively termed nurses. When, therefore, I use the term nurse, I mean some kind of sac which contains larval flukes in its interior. The redia has a structure something like the adult fluke, for there is a sucker and a mouth at its base, leading into the stomach, which is a simple unbranched tube or cavity.

In the history of the larval development of flukes, the cercariæ play a most conspicuous part, and it is they that are chiefly concerned in bringing about the epidemics of rot. You, doubtless, understand that the rot is an endemic disorder, produced entirely by the Fasciola hepatica. When this highly-developed form of nurse, termed the redia, bursts, the cercariæ are liberated, and, escaping into the water, they swim about with great rapidity. But my hearers will say, "You have not told us where the larvæ dwelt whilst all these changes took place?" My reply is, "They were for the most part ensconced in the bodies of water snails belonging to the well-known genera, Lymneus, Paludina, Planorbis, and their allies."

Some of the cercarian forms are very peculiar. The true cercariæ have no eyes, but the larvæ of certain kinds of flukes have visual organs. Thus, the larvæ of certain Polystomata, of Monostomata, and also of Tristomata have eyes. "But," you will say, "what is the meaning of all this?" I shall endeavour to explain the point immediately, but I have scarcely done with other matters, which I must make clear before proceeding further.

I have said that during certain seasons the larvæ are much more prevalent than at others. Atmospheric changes involve the reproduction of a greater number at one season than at another. In point of fact, not only does a favourable season increase the number of these larval forms, but it increases the degree of their organisation. It is a strange thing, but it is nevertheless perfectly true, that if the heat be excessive, and there be abundance of moisture, the number and character of the larvæ will be altered accordingly. Speaking generally, it may be said, in short, that under these atmospheric and other favourable and peculiar conditions, one germ-sac may become a thousand, and this thousand may produce other thousands; and all these collectively will finally involve, if the season is prolonged, the production of innumerable forms of cercariæ.

So extraordinary are some of these larvæ, that in the case of the form termed Bucephalus polymorphus, the creature is furnished with two tails. There is something yet more remarkable about this Bucephalus. The head and body will develope into a fluke like an ordinary cercarea, whilst the tail, which presents a beaded or jointed appearance, developes in its interior a large number of larvæ. Every joint, in fact, becomes, as it were, a nurse, developing in the interior new germ-sacs; these latter, again, in their turn, being capable of producing Bucephali. Thus the tail of the animal is a concatenation of germ-producing sacs, whose developmental phenomena are practically without a limit.

I dare say you may think I have made the subject appear sufficiently complicated, but what I have said is, in truth, not half the story, for not only do the larvæ of flukes undergo these various changes, but the nurses themselves will split up into several other nurses, and all these divisions will go through the same transformations, after the manner I have described.

Then you will say, "What of the snails?" Well, it is very difficult to generalise on so complicated a subject; but I think, with the aid of Dr. Pagenstecher, who has written a valuable monograph on this subject, one can advance a certain number of statements which are true, even though they may not embrace all the data we should like to collect before making definitive propositions. As a rule, one larval fluke will only select one molluscan host. You know the ultimate destiny of nearly all these larvæ of the common fluke is to arrive in the sheep or the ox, as the case may be. They have to pass a part of their time sojourning in the territory of snails. We call the snails the intermediary bearers, because they supply a habitat between the free condition, when the larvæ swam about, and the ultimate bearer, which is the sheep or ox.

It is usually the prerogative of the snail to have its own particular set of larvæ, belonging to one species; but that is not invariable, for some of the snails will harbour a limited number, two, three, four, or five, and, I think, as many as six in one case. However, at least three or four juvenile trematodes may be found in one kind of snail.

Having traced their development as far as the cercarian stage, what is the final outcome? The cercaria developed inside the snail makes its way out into the water, and swims about in a perfectly independent fashion. And here a slight difficulty presents itself, for some have supposed that they went back again into the snails, others maintaining that they remained in the water until they were swallowed by the sheep or ox drinking. It is quite clear that in many cases the flukes are conveyed to their hosts as actively swimming cercariæ; but it is also extremely probable that many forms of fluke larvæ are passively transferred to their ultimate bearers whilst occupying the bodies of molluscs or other aquatic intermediary bearers.

Our great desire has been to find out what particular species of snail plays the part of intermediary host to the larval form which developes into the common fluke. Manifestly, if you or I were in a position to say "that is the culprit," pointing out a particular Lymneus, Paludina, Planorbis, Succinea, or other species of mollusc, we might put a stop to outbreaks of rot by getting a number of children to collect and destroy all the snails of the particular species thus known to act in the capacity of intermediary bearers. But this is the very thing we have not deen able to find out. Statements, it is true, have been put forward by some persons to the effect that they have discovered the snail which harbours this larva; and they will tell you that it is the little mollusc called Succinea putris. This little mollusc is peculiar in many respects. In the first place, it cannot hide itself altogether within its shell. It is seldom seen in the water. It goes to the very brink of ditches, ponds and rivers, being an inhabitant of marshy grounds, where there is plenty of moisture. Never being away from such localities, it is exactly the kind of snail in which you would naturally expect to find the particular cercarian form we have so long been looking for. As regards epidemics of rot amongst sheep, it is notorious that they occur principally in the spring; and you may get a notion of the extraordinary amount of disease which is induced by this parasite, when I state that every year hundreds of sheep are destroyed by it. During certain years, indeed, tens and hundreds of thousands of sheep are cut off. Thus, in our own country, the injurious effects of this parasite were most clearly exhibited during the epidemic of 1830 and 1831, when between 1,000,000 and 2,000,000 sheep perished from the rot disorder. In the year 1812, in the neighbourhood of Arles, in France, 300,000 sheep perished; and, in 1824, an epidemic occurred in the Isle of Thanet. So severe was this local outbreak, that Mr. Cramp, a sheep farmer on a large scale, lost £3000 worth of sheep in less than three months.

It has been observed that cattle, sheep more particularly, are only affected when grazing in low pastures. And the reason of this is obvious; for since the larvæ can only get access to snails residing in such localities, the sheep in like manner can only be infected by devouring the snails and the parasitic larvæ frequenting these situations. Consequently, as is well known, when the slightest symptom of the disorder appears, if the sheep are removed from the marshes to high ground, the disorder is at once checked. The sheep soon recover, unless they happen to have swallowed a large number of the larvæ.

Everybody who has to do with cattle and sheep, is familiar with the appearances presented by animals thus affected. Even butchers' boys can tell a rotten sheep, as they call it. They examine the eye, and find that it has lost its lustre; whilst there is a peculiar paleness about the membrana nictitans. The conjunctiva loses its ordinary bright colour, and the vessels contain a fluid which, instead of being a bright red hue, is pale and watery. There are, also, many other characteristic indications. I have myself repeatedly tested sheep for flukes by simple manipulation. If you run your fingers or thumb down the spine of a rotten sheep, it winces when you come to the region of the loin.

Another matter of some interest is, as to how these animals should be treated. Not only should they be removed from moist localities and placed on high and dry ground, but they should also have cereals mixed with their ordinary food. Peas, Beans, and other seeds of that nutrient class, should be given with grass, taken from uninfected districts; whilst, speaking generally, the animals should be kept apart from all other influences calculated to promote the disorder.

ROASTED TURF.

WHERE any process has been found beneficial to the garden it is quite right that it should be turned over to the farm, and although the greater extent of the farm prevents many gardening processes from being applied, yet there are some of such immense importance that they should be handed over to the agricultural side at the earliest opportunity.

In large towns, such as Manchester, the sawdust formerly wasted is now economised by being used in stables to absorb urine, and thus convey in the solid form that richest part of the manure direct to the land, for the sawdust holds it with such a firm grasp that nothing less than the earth itself can get the filth out of it, and sawdust being a vegetable substance, the compost of sawdust and urine makes an excellent manure; but I need scarcely remark that the bulk of sawdust available bears no proportion to the need of it in this way in all the cow byres, pigsties, stables and privies where watery manure is made, and it becomes therefore necessary to get an absorbent material in bulk sufficient for the occasion. Gardeners and florists have their various compost heaps, and mix the ingredients with great precision — silver-sand, turfy loam, sandy peat, leaf-mould, stable dung well rotted, and the like. Many years ago one of the crack composts for the florists' Carnations was turfy loam roasted, and for small concerns a few sods could easily be roasted over an iron plate laid upon three brick props, having a fire of wood or of cinders underneath. During the process of roasting, wireworms and the like were destroyed, and the turves became more or less impregnated with the wood smoke, and this was more particularly the case when the turves were roasted on a large scale in circular hollow piles, about the size of haycocks, with a fire of faggot-wood inside; for, by means of this slow fire, turves containing rushes, and soured with stagnant water, became friable and sweet, and fit for immediate use in potting plants and the like, that otherwise would have taken months, if not years, to be available for the like purposes.

In the extreme West of Scotland, before the Potato disease appeared, it was the custom of the Islesman to strip his hut, for it was hardly worthy of the name of house, annually, and with the sooty thatch and still more sooty turves, called in the North "divets," that lay between the wood of the roof and the straw thatch, to manure his Potato land, and he usually got an excellent crop, as the land was seldom poor, having a good neighbour in the sea for wrack or seaweed as manure for grass, &c. Now, unless roasted turf is friable, as sand or sawdust, it is not cooked enough, and it must on no account be burnt like clay for bricks or pottery. When a gardener lets his Heaths and Epacrises potted in peat and sand get thoroughly dry, the usual phrase employed is that they will not take water, and we see the water run off the dry peat just as it would run off the back of a waterfowl; it is, therefore, clear that peat turves are not to be roasted when we want an ingredient to absorb water and hold it. The top spit of clay soil or loamy soil, about 4 inches deep, with the grass on it, will roast nicely, and as it roasts it will get full of open chinks, to let out smoke, in all directions, for as is well known the wet earth will shrink as it dries, and occupy less space than it did before; and therefore in roasting turves the kilns should be watched as one would watch wood when burning for charcoal, to regulate the openings on the windward side, by closing them with a patch of wet clay, to get the fire to act evenly and all round. Of all the agents employed by man there are none more powerful than fire, and few so variable in action. It was fire that forged for man in the olden time the murderous war weapons that terrified the unarmed into subjection, and prophets announced a blessed time of peace coming, when the deadly steel of the spear should glow on the anvil to form the harmless pruning-hook, whilst the weightier metal of the heavy sword should steel the harmless coulter, and help to till the land, or, as the poet hath so eloquently expressed it—

> "And the broad faulchion in a ploughshare end."

Passing over the strong arm of steam, which has caused the venerable flail, as an instrument of torture, to be consigned to oblivion, not only does fire plough the field and thresh and winnow the corn, but it carries away the produce by rail to market, and brings back manure, coal, and building materials. By force of fire in one shape or another, rocks are rent, stormy seas traversed, mines of all sorts made available, and their contents hauled to the surface. Almost all the food we eat is prepared by the agency of fire for our use, converting animal and vegetable substances into a state of tenderness, fitted for the use of men. Fire, therefore, in this case cannot be said to be a destroyer, for when human food has been well roasted, it is not to be confounded with being burnt, and it is this grand division that has to be kept in view in roasted turf.

Few will understand that the ingredients wanting in the soil must be supplied before any crop can be got, but the rain alone might give the answer for other ingredients as well as for water, and tough rushy sods, that are usually pared and burnt, might be given as an example of food in very great need of dressing, but certainly not of burning to ashes; but if it could only be cooked or roasted until it was friable, as if for Carnation culture, it would be available as food for plants, or to be used as an absorbent for watery manures as above stated. In cases where no turves can be had, loam, or even clay, can be roasted, but these require first to be well wetted before they are piled up for roasting; slightly puddled, any garden earth will bear piling up like sods or turves, and may be smoke-dried as above stated, and when pounded and riddled, will give solidity to watery manures.

Where is there a farm of the old *régime* where the duck pond, drinking pond, and general open cesspool draining the dunghill is not one of the most conspicuous institutions of the household? In Denbighshire, last year, a child, under two years of age, toddled into this pit of dirty water and was drowned; but the filth of the water gave the doctor no chance to resuscitate, for the little fellow was poisoned as well as drowned by the water of this deadly pit.

By the proper use of roasted soil manure would not run any more, and, therefore, the pond would only contain water, and the bulk of dry dung available for crops would get doubled. Burning the roots of weeds is certainly a very ready way of disposing of them, but it is the destructive principle; whereas, they being vegetable, like the sawdust, should not be destroyed, but converted into manure for growing crops: the very Dock roots can be smoke-dried until they are as dead as the Turkey Rhubarb of the druggist's shop, and Couch-grass roots, if only buried 1 foot deep, will die a natural death and yield vegetable mould,—the best known medium in which to grow plants, for it is said by cultivators of exotics that no plant refuses to grow if planted in vegetable mould. Loam smoke-dried and roasted is, moreover, the most practical disinfectant for the farm, as well as the cheapest; it is no foreign or costly article, coming by sea from foreign parts, and coming inland by railway; it is indigenous to every farm and holding, whether great or small, for any soil that will puddle will always stand up to be roasted, but nothing can be done with dry earth. A square hole, by way of ashpit, should be dug in the earth, and an iron grating or a few iron bars laid over it, on which to make the fire, and this ashpit should communicate with the outer air, and when rightly started the fire will burn with such a calm glow that it will be quite a pleasant sight to peep through at it. Long ridges of clay burning, or great stacks of turf pared with the floating spade to be reduced to ashes, have nothing to do with this kind of roasting, for who would pot a plant in the red ashes of burnt clay? or what plant could live in the alkaline ash of burnt turves? and whether for the garden or for the farm, the principles must ever be kept distinct. *Alex. Forsyth, Islington Square, Salford.*

HARVESTING CORN IN WET WEATHER.

As an addendum to our remarks on this important subject last week, we place before our readers some very practical suggestions from the *Yorkshire Post* for saving corn in wet weather by a system of protection from the weather in the field or in sheds. We would direct special attention to the ingenious plan of forming small stacks in the field, of such a form that while a current of air plays over all the heads of the sheaves, they are, at the same time, secured against rain :—

"There are many other ingenious modes of preventing injury to corn in an uncertain or wet season, which have been adopted by different experimenters. In the districts of Kent and Sussex, where Hop oasts or kilns are near enough to the Wheat fields to render the carting to and from practicable, wet Wheat in the straw has been dried in these buildings with some success. One trial showed that on a kiln floor, the area of which was 540 feet (less than 8 yards square), the produce of 9½ acres could be dried in six days, the average time required for each charge of sheaves being 24 hours. This would be rather slow work on a farm of any size, and can only be adopted in Hop-growing localities. A gentleman in Sussex some years ago had 30 acres of Wheat cut and placed under cover, using for that purpose every barn, hovel, cattle or implement shed on his farm, and setting the sheaves upright and closely packed together on the ground, each acre of sheaves occupying thus 400 superficial feet. This Wheat was cut whilst the weather was dry, and carried dry to its shelter, and he found that in 10 or 12 days it was ready to be threshed out. Afterwards, as an experiment, two waggonloads of Wheat, that had been cut and carried during heavy rain, were also brought in and placed under shelter in the same manner, and these were reported dry enough for threshing in 16 days. If these results have been verified by subsequent experience, they would seem to indicate a valuable and partially available means of saving at least some portion of a crop. Possibly the chief reason why this method has not been extensively adopted may be found in the fact that the large area of roofed-in space requisite for the purpose is not often to be found on a farm. To accommodate 30 acres, each acre of which needs 400 feet of standing room, a farmer must possess and be able to clear out 12,000 superficial feet of shelter, that is, equal to 30 sheds measuring 27 feet by 15 feet each. The different modes of carefully stooking and hooding Wheat used by English farmers are too well known to need description. They are none of them effectual preventatives of damage from rain. In continuous wet weather the sheaves grow at the bands and the ends of the stooks, and the top sheaves are liable to sprout in a few days of damp weather. With corn reaped by the sickle a good workman could so arrange the stook as to prevent injury to the four or six middle sheaves for some time. Mown corn is, however, soon wet and soon dry, but the tails of the sheaves sprout in damp seasons. Corn cut by the reaper is soon wet and soon dry, like that mown by scythe, but the sheaves stand better, and have no ears in the tail, and, consequently, if kept up in stook, it will bear much rain before it becomes sprouted. The very best men in the field should therefore follow the reaping hands, and 'set up' the sheaves in stook or 'haddock.' Good workmanship in this department of the reaping work is one of the most efficient auxiliaries we have in preventing damage to grain from wet ; and when thus stooked they should be carefully watched, and fallen sheaves immediately lifted up. In the west of Ireland, where the climate is wet and fickle, the cottier farmers put their Wheat as soon as cut, or when the clouds threaten, into pikelets, containing perhaps 50 or 60 sheaves. These are carefully built in a conical shape, and the top protected by being thatched with the last sheaf. They are secure from anything but extraordinary downfalls of rain. In Sweden the farmer avails himself of the abundant supply of wood to form, out of the thinnings of the forest, useful arrangements for partially securing the cereal crops from the inclemency of the climate. One mode is the staking into the ground at intervals poles 6 or 7 feet high, and on the sharpened points of these poles the sheaves are spiked, and slid down one after another like Normandy Pippins on a string. The top sheaf protects the remainder to a certain extent, but it will be evident that wind and rain will have free access to the sides of the sheaves. The merit of the system in such a country is the very short time in which they will become dry again after a shower. It is said that one man can set up 500 of these poles in a day. In Russia a species of rack with broadened roof is used, on which the grain is hung ; but this is simply applicable to where Wheat is scarce and wood abundant. The only mode of securing grain in rather a damp state, or as soon as it is cut, or before it is ready to stack in the ordinary manner, as a safe step in the prospect of wet weather, which we have found practicable, is the following. For many years we have tested its efficacy on a large scale, and secured Wheat in very difficult seasons without a sprout. In the centre of a field of Wheat place 100 hurdles or stack-bars parallel to each other, at 2 feet apart. The taller and stronger the hurdles are the better they will act. At the centre of each hurdle a stay may be put across to the opposite hurdle, or, what is better, a forkful of Thorns may be thrust into the passage, so as to be held by the top bars of the hurdles as in a vice. The heads of the parallel hurdles should not be placed opposite to each other, as, by so doing, one portion of the double fence would bear much more lateral pressure than the other. An old clipped hedge split will furnish the very best sort of Thorns for inserting between the bars at the intervals specified. A small bed of straw or Thorns, 4 feet wide on the outside of each of the parallel rows of hurdles, is made ; and upon this soft grain may be stacked, roofed, and secured from rain by two rows of thatch or of unthreshed Wheat. The *modus operandi* is as follows :—Stack the sheaves in rows with the heads to the hurdles, with a few sheaves to fill up placed longitudinally. After reaching a little higher than the top of the hurdles, the walls of sheaves may be carried up about a yard more, the sheaves being so placed that the 2 feet space is gradually closed up ; after which, the two rows of sheaves and the passage are to be roofed with sheaves, drawing in quickly, so that on the ridge a small quantity of short straw or rakings may be immediately placed, and the roof made secure against weather by opening out thatch and tying down with two rows of pegs and string. On each side of the parallel rows of hurdles 105 sheaves may be laid, viz., seven rows of 12 sheaves, at right angles, and three parallel to the bars ; five additional courses up to the roof, each being now a double row, will take 120 sheaves ; and the roof will swallow up 100 more ; so that, to complete the erection for the length of 9 feet we shall require $(105 + 120) \times 2 + 100 = 550$ sheaves, or about the produce of an acre of ground. Twenty hurdles only are thus required for 10 acres of Wheat ; and the length of the safety stook will be 30 yards in such a field. It will have a flue 2 feet wide through the whole length, through which the air will circulate, and as the sheaves are placed one row thick at right angles, the wind will pass through and between them, to the central flue, drying the corn thoroughly. Thus we have a stack with all the external surface necessary for drying, but without any solid inside, which becomes sodden and impenetrable to the air if stacked when damp or soft. It is, in fact, simply a straw wall without any 'filling,' through which the air can pass freely. On several occasions we have tested the method, and we have frequently recommended it. And we do so again, because we have not as yet met with a more successful mode of practice under such circumstances. The idea was suggested to us by the Roman poet's recommendation to stack the damp grain over a Quickthorn hedge."

MILK COOLERS.

From the article on American Butter Factories in vol. vii. of the Journal of the Royal Agricultural Society of England, we take the following description and illustrations of milk coolers and carrying cans. It is there stated that, for properly preserving milk in its transit from the farm to the factory, milk coolers have been introduced among the farmers to cool the milk at the farm as fast as it is drawn from the cow.

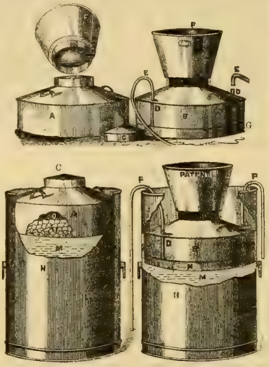

Fig. 261.—"National" milk-coolers.

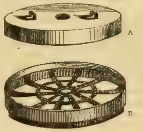

Fig. 262.—Cover and bottom for milk-can.

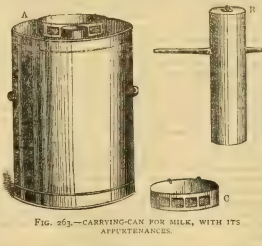

Fig. 263.—Carrying-can for milk, with its appurtenances.

We give figures of two devices which are used in the carrying cans hauling milk to the factory. Cold water or ice may be used for the purpose indicated.

In fig. 261 (the "National" milk cooler), A represents the cooler, for water (N), and ice (O). B shows the cooler arranged for introducing water by means of syphons E, E, fixing on tubes D, D ; and C, the cover. F, on both sections, is the strainer ; G, body of the cooler ; and H, H, the carrying cans with coolers floating on the milk (M).

In the next illustration (fig. 262), A represents the cover of the carrying can (fig. 263), and E the iron bottom.

Fig. 263 shows the carrying can for milk, with its appurtenances—A and B in fig. 262, forming part thereof. In the present illustration A shows the can with cooler and strainer set in place ; B, the cooler ; and C, the strainer. The illustrations are so clear as to render further description unnecessary.

INTERNATIONAL EXHIBITION.

Australian Meat Preservation and Importation.—Owing to the vessel with the Australian goods for the International Exhibition having been lost, only two meat-preserving companies exhibit, viz., Towns & Co., a Sydney company, and Whitehead & Co., also of New South Wales. In our report we shall notice in the first place, the statistics of meat imported into the United Kingdom during the past five years, which we take from Messrs. John McCall & Co.'s circular, with some remarks quoted from the *Melbourne Argus*, so as to bring up this head to the most recent date ; (2), the various methods of preserving meat ; (3), the Australian companies now represented in London ; (4), the dietetic value of this new branch of industry to the mother country ; and (5), the pecuniary influence of this new trade on the price of fat stock, home and colonial.

1. Statistics of meat imported into the United Kingdom from 1866 to 1870, from John McCall & Co.'s circular, viz. :—

1866.—	91 cwt. ;	declared value,	£321
1867.—	6,721 ,,	,,	18,820
1868.—	16,337 ,,	,,	45,740
1869.—	28,306 ,,	,,	80,385
1870.—	72,812 ,,	,,	203,874

It will be seen from this Table that the increase is progressive, and somewhat remarkable, and from the *Argus*, a Melbourne newspaper of the highest colonial authority, dated April 22, 1871, it appears that from the effects of the recent war between France and Prussia, the exports of preserved meats had increased tenfold. The *Argus* says : "Before the war broke out the market (London) was overstocked ; but since then the quantity exported from the colony had increased tenfold."

Referring, in its report under the head of "Meat Preserving" relative to the progress made by the Melbourne Meat Preserving Company (London agents, John McCall & Co.), it continues : "The number of sheep slaughtered by the company during the six months was shown" (at the seventh half-yearly meeting held on the 3d inst.—April 3, 1871) "to be 84,264 ; and of oxen 3115. The value of the meats consigned to London was £47,595, and of the tallow £34,425." It may be added that this company are enlarging their works.

"The Victoria Meat Preserving Co.," quoting the same paper, "who commenced operations in October last (1870), have been able to present a favourable report. Over 240,000 tins of meat were preserved up to the close of the half year ending March 24 last (1871), and the advices from London stated that very fair prices had been offered for the meat." "The capabilities of the plant were 1000 sheep a week ; the value of the shipments was £11,674."

An equally favourable report is given of the half-yearly meeting of the Warnambool Meat Preserving Company.

Besides the above and other companies at work the *Melbourne Argus* refers to the prospectuses of several new companies starting, viz., of "The Meat Preserving Company of Echuca," of "The Metropolitan Meat Preserving Company" (an old company with a new name), of "The Sydney Company," and of "The Central Queensland Meat Preserving Company." The first shipment of the Sydney company has been received by the agents, the Messrs. Crosse & Blackwell, of Soho Square. To this we shall return.

(2). The preservation of beef, mutton, pork, fowls, fish, &c., is an old affair, based no doubt on the experience of our ancestors, who slaughtered their cattle in autumn, and salted their flesh for consumption during the winter season. Fed for six long months on salt meat, a relish for something less salt was natural. Hence numerous patents were obtained. We shall quote the first on record, viz., No. 278, October 7, A.D. 1691, obtained by Thomas Porter and John White, as follows, viz. :—

"A grant unto them of the sole use, exercise, and bebefit of their new invention of keeping and preserving, by liquors, or otherwise, all sorts of flesh, fowls, and fish, and many other things, either in pieces or in whole bodies, at a cheap rate, for many years, in all climates, without changing the nature, quality, taste, smell, or colour thereof, as good, palatable, and wholesome, to be eaten and made use of for any intent and purpose whatever, as when first killed or put into such liquor; to hold and enjoy the same for 14 years, according to the statute."

No specification of this invention has been enrolled, so that some degree of mystery hangs about it. Since the above date about 650 applications for patents have been made for the preservation of animal and vegetable food. An abridgment from 1691 — 1866, covering 497 patents, has been published by the Commissioners of Patents, and may be had for 10*d*. Those for flesh may be divided into six classes, thus :—1. Freezing or preserving with ice; 2. Salting with various saline substances; 3. The introduction of gases into the meat; 4. The injection of gaseous or liquid substances into the blood of living animals, or immediately after they are slaughtered, so as to prevent decomposition; 5. The preservation of cooked or raw meat in hermetically sealed vessels or canisters, technically termed "cases" or "tins;" and, 6. The combination of the 2d and 5th.

Of the above methods the fifth is the only one that merits notice. True, one or two companies use a very small quantity of common salt, or some other saline substance, but the propriety of using any antiseptic is annually losing popularity, whilst the practice of the exclusion of air, is, on the contrary, daily gaining ground. It must be borne in mind that Australia is not in advance of the mother country in the art of preserving meat. The investigations of the Society of Arts —since 1810 (Durant's patent)—point the other way. And the *Melbourne Argus*, in its report on meat preserving, informs its readers that "some cases of meat from the establishment of Messrs. Forbes & Co., Aberdeen, preserved by Mr. Richard Jones' (a London merchant) vacuum process, and received from London, were, on being opened at Melbourne for inspection, found to be of very superior quality; and that a Mr. Brown, late of Forbes' establishment, Aberdeen, had gone to assist the Central Queensland Company in carrying out this method of preservation." Such facts prove that our Australian colonies appear determined to profit by practical information wherever they can find it, and to go a-head in the preserving of meat accordingly.

Mr. Jones' last process is under patent, sealed Sept. 25, and dated March 31, 1869. There is very little novelty in it, but into details of this kind our limits will not permit us to go. His claim, which we quote from his specification, No. 978, A.D. 1869, will give a general idea of his process :—

"I am aware that it has heretofore been proposed to operate on animal and vegetable matters for the preservation of them for food by the employment of exhausting means in connection with the heating means; but by such method the exhausting means was employed to act previously to the cooking process, and such, to the best of my belief, was not found to answer. I do not, therefore, claim the same when separately considered; but what I claim is the method of operating for the preservation of animal and vegetable substances to be used as food by exhausting the air and contained gases from the cases containing the food to be preserved during the operation of heating for the cooking, also after the desired cooking has been effected, and also the effecting of such cooking entirely under vacuum, substantially as described."

Prior to 1869, Mr. R. Jones had obtained three patents for preserving animal food in a raw state, viz., No. 1859, A.D. 1860; No. 1523, 1864; and No. 2952, 1865. This raw meat process met with considerable approbation from the Society of Arts about 1862. It belongs to the third class, or method of curing meat by means of gases; and the less said about the introduction of gaseous substances into raw meat the better. The fact that the patentee in his last patent, 1869, returns to the cooking process, leaves the practical conclusion manifest. True

"The Victoria Meat Preserving Company" have adopted an intermediate course. They first slightly cure the meat, which is then packed in the tins; the interstices are then filled up by melted fat, when the tins are hermetically sealed. But this is only an experiment, and, as the *Argus* reports, "Nothing further was to be done with the preserving of meat in fat until the result of the latest shipments of other companies had been ascertained." The principal shipments of this company consist of cooked food. In short, at the present time, there are numerous experiments on trial with the view of determining their respective merits. They are all based upon what is generally designated "M. Appert's" (a Frenchman) process, patented in England by Augustus De Heine, No. 3310, A.D. 1810, and Peter Durand, No. 3372, 1810; and as all three patents were anticipated in this country by prior examples, they were never acknowledged good. The following will give a general idea of the Australian practice.

The first start was evidently based upon the old practice of boiling down the meat for the sake of the fat and bones. The meat was boiled until it separated freely from the bones, no more water being used than was absolutely necessary. The lean, fat, and jelly were then put into the tins in proper proportions, a lid soldered on with a small hole. The tin was then placed in a hot-water bath to drive out the air. This done, the tin was hermetically sealed by closing the small hole with a drop of solder. (2.) Instead of boiling the meat (parboiling, as in some cases), it was stewed before it was put into the tins. Under this plan, when too little water was used without a hot-water bath, the meat was liable to scorch or singe, and we have had some tins taste accordingly. (3.) The next plan was to put the raw meat into tins, and to stew in the tins placed in a water-bath, and then hermetically seal when the surplus water and gases were driven off in the form of steam. (4.) The next may be termed the roast meat processes, *i.e.*, the meat is cooked in its own juice and fat, either before it is put into tins or after. According to the latter plan, the fresh meat has to be unboned; according to the former, it may be done in a cauldron until the meat separates from the bone, adding a little hot water at times, to supply what is carried off by evaporation, so as to prevent scorching; but with a close lid to the cauldron very little water is required with fat meat. As soon as the meat separates from the bone, the lean, fat, and jelly are proportioned into the tins, the tins are placed in a water bath, to drive off the air, which done they are hermetically sealed. (5.) When the raw, unboned meat is cooked in its own juice in tins in a bath of pure water, it is done without a pierced lid, in order to prevent evaporation, and when the meat is done to a certain degree the tops of the tins are pierced, to let off air and gases; they are then hermetically sealed, and again heated, to do the meat thoroughly. If the water bath consists of a solution of muriate of lime, or other liquid whose boiling point is different from that of water, the tins are sometimes placed in such a bath with holes in the lid. Mr. R. Jones, whose patent claim we have quoted, proposes not only to place the tins with the meat in a solution of muriate of lime, but also to exhaust the air in the tins, so as further to alter the boiling point. Under each of these practices there is considerable diversity, according as they are carried out.

3. "The Australian Meat Preserving Companies represented in London are :—

a. "The Melbourne Meat Preserving Company, Limited," Marybyrnony, Victoria; importers, Messrs. Robert Brooks & Co.; sole agents, John McCall & Co., 137, Houndsditch, London. (We have referred to this company already.)

b. "Australian Meat Preserving Company, Limited;" Charles Grant Tindal, manager, 52 and 53, Crutched Friars, London, E.C.; manufactory, Ramornie, New South Wales. The committee of the Society of Arts, 1867, speak very highly of the preserved meat of this company. This company have also introduced Ramornie extract of meat, prepared according to Baron Liebig's specification, which is very highly reported on by Dr. Parkes, Professor of Hygiene in the Army Medical School, and others.

c. "The Victoria Meat Preserving Company;" J. A. Huxtable, agent, 24, Laurence Pountney Lane, London, E.C. We have already referred to this company.

d. "Sydney Meat Preserving Company;" London agents, the Messrs. Crosse & Blackwall, Soho Square. "The site of the works," quoting the *Argus*, "is 8 miles from Sydney, on the Paramatta River, and constructed so as to permit of a 1000 sheep being tinned in a day." They exhibit beef and mutton in the International, and the first shipment has given very general satisfaction. We have had a trial of two tins, and both were excellent.

e and *f.* "The Ballarat and Warnambool Meat Preserving Companies" are represented by Kaltenbach & Schmitz, 1, Alderman Walk, London; and 12, Albert Buildings, Liverpool.

g. "Whitehead & Co., Broadwater, Clarence River, New South Wales," London office, 8 and 9, Lime Street Square, and Dod Street, Limehouse, exhibit in the International solid essence of beef, *extractum carnis*, in skins and in squares, or cakes in boxes. It obtained a prize medal at the International Exhibition in Victoria, 1866, and another at the Universal Exhibition, Paris, 1867, and since then it has met with an increasing sale.

h. "Central Queensland Meat Preserving Company;" factory, Rockhampton, on the Fitzroy River, Queensland; London office, 30, Palmerston Buildings, Old Broad Street, E.C.; secretary, C. H. Allan, Esq. We have only a prospectus of this company, in which we are told that "Queensland, with a population of about 100,000, possessed in March, 1868, 1,000,000 cattle and 9,000,000 sheep, with unlimited powers of increase." The district is doubtless one of the best grazings in Australia, being well watered all the year round; and as they are starting with a well-organised directorship and management, under Jones' patent, with all the improvements which experience may suggest, every success may reasonably be expected.

4. "The best proof of the pudding is in the eating," it is said, and the old maxim applies to the dietetic value of Australian beef and mutton. The increase in the consumption is a conclusive argument. Much has been said about its being "over done," "boiled to rags," and so on. But groundless prejudice can never stand out against the *£ s. d.* argument. So long as the Australian companies can send our hard-working meat-eating people cooked beef and mutton ready for use at 7*d.* per lb.—more than equal to 1½ lb. of butcher's meat with the bone and uncooked, at the present high prices of English meat—the consumption of Australian meat will go on increasing. As to prejudice against its cooking, What is overdone? If people would only look seriously at their own joints—fully 25 per cent. bone, from 20 to 30 per cent. sent up in the chimney in cooking, the outside burnt black, red at the bone, and neither one thing nor the other half way—they will find the Australian factory system of cooking in advance and not behind. That Englishmen get accustomed to their own modes of cooking is true enough, and that habit becomes a second nature is generally granted, and that is about the most that can be said in favour of English cooking and taste. But if meat cooking factories shall prove—as they doubtless will—what cheese factories have done, the sequel need not be told.

5. The *Argus*, and all the Australian newspapers we have seen, report that, great as the productive resources of the colonies are, better prices are being realised for fat stock; and as the companies improve in the manufacture, and as the consumption in the mother country increases, there is every reason to aver that the price of preserved meat will rise nearer to the English level. We do not therefore apprehend that the increase in the importations of Australian preserved meat will have much effect upon the price of English fat stock. On the contrary, the prosperity in this branch of trade will find a profitable source of employment and investment of capital for our surplus agricultural population, and thus relieve the over competition for farms at home. *W. B.*

ESTIMATION OF PHOSPHORIC ACID IN SUPERPHOSPHATES.

THE fact to which Mr. Purser has called attention in a recent number of the "Chemical News" (vol. xxiii., p. 178), is one only too well known to those concerned in the manure trade. There are, unfortunately, considerable discrepancies in the reports of analysts of superphosphates; a little ventilation of the subject connot but prove wholesome.

In the first place, are analysts agreed as to what they understand by soluble phosphates; do they understand phosphates soluble in hot or cold water?

Exhaustion of the superphosphate with hot water may give, according to circumstances, more or less soluble phosphate than exhaustion with cold water. If the superphosphate contain soluble compounds of alumina, it will yield less soluble phosphate when boiled with water than if the exhaustion is conducted in the cold, and the difference between these two modes of operating may be very considerable. A simple experiment will satisfy any one on this point. If a cold solution of superphosphate be treated with alum, or other soluble compound of aluminium, the solution appears unchanged. On applying heat turbidity commences, and when the boiling-point is nearly reached a copious precipitation of phosphate of aluminium takes place; on cooling, the precipitate, if not too considerable, entirely re-dissolves. This reaction is certainly remarkable, and the cause not very apparent: one is tempted to think that the aluminium is, in the case assumed, combined in the cold with sulphuric acid, and in the hot with phosphoric, and that a change of temperature effects a change in the degree of affinity of aluminium for these two acids. The practical result is, however, very plain: superphosphates containing aluminium in a soluble form will yield less soluble phosphate to hot water than to cold.

Most superphosphates yield solutions in the cold which contain traces of alumina; when, however, the superhosphate has been made from Navassa phosphate, or other of the native phosphates rich in alumina, the amount of aluminium salt soluble in the cold may be very considerable; the quantity depends, however, in great measure, on the manner in which the superphosphate has been manufactured. The presence of aluminium in the solution is, of course, at once indicated by the formation of a precipitate on boiling.

Before leaving this part of the subject, I may just mention, that the reaction of ferric salts with solution of superphosphate is wholly different from that described above. Soluble ferric salts produce an immediate precipitate in the cold, and are, consequently, never found, save as traces, in a solution of superphosphate.

From the above considerations, it seems evident that the removal of the soluble phosphate should always be effected with cold water. The maximum amount of phosphoric acid appears to be dissolved when, after thorough exhaustion with cold water, the residue is lastly boiled. In this case, the hot water probably effects a partial decomposition of the reduced phosphates. The increased amount of phosphate rendered soluble by the hot water is by no means considerable, and can hardly be fairly reckoned as soluble phosphate, which, in its character of a manure to field crops, must surely be understood as a phosphate soluble in rain water.

The best mode of extracting the soluble phosphate is, I believe, the following:*—10 grammes of the carefully mixed sample are placed in a mortar. A flask, marked to deliver 1 litre of water, is filled, and fitted as a wash-bottle. The superphosphate is moistened with some of the water, and rubbed smooth with the pestle; more water is added, the whole well stirred, and the solution and fine particles decanted into a bottle. The residual superphosphate is brought to a finer state of division by means of the pestle, and is again treated with water as before. This rubbing and washing are repeated until the whole of the manure has been transferred to the bottle in a fine state of division. The rest of the water is next added, and the bottle shaken at frequent intervals during three hours. 100 c.c. of the solution correspond to 1 grm. of the superphosphate.

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* This method is, I believe, of German origin: I became acquainted with it at Mr. Lawes' laboratory at Harpenden.

The estimation of the phosphoric acid in the watery solution may, of course, be effected by any of the trustworthy methods with which chemists are acquainted. The most usual plan is to precipitate the phosphoric acid as tricalcic phosphate by means of ammonia, with or without the addition of chloride of calcium, according to the proportion of lime present in the solution. The other methods which seem specially applicable, are precipitation by magnesia, and by uranium. * *

The usual plan of estimation as tricalcic phosphate, is of quite sufficient accuracy for commercial purposes when properly conducted, but lies open to several distinct sources of error. Thus the "high analyst," by precipitating with a considerable excess of ammonia from a solution containing excess of lime, obtains a phosphate containing notably more calcium than tricalcic phosphate, and his result is, consequently, above the truth. This error is met by some by re-dissolving the phosphate containing excess of lime, and re-precipitating it; the error may, however, be avoided in the first instance, by limiting the amount of ammonia employed. If ammonia is only used in just sufficient quantity to distinctly turn turmeric red, tricalcic phosphate may be successfully precipitated from cold dilute solutions containing much lime in excess. An error of a different kind arises from the difficulty of washing all the sulphates out of the gelatinous phosphate, and from the fact that the washing must not be pressed too far, as loss of phosphate occurs in the later stages of washing. Since success in this mode of analysis depends so much upon the conditions under which it is used, it is much to be desired that those commercial analysts who always estimate soluble phosphate by precipitation with ammonia, would test their results a few times by duplicate analyses executed by the magnesia method, and thus ascertain whether the conditions they habitually employ are consistent with accuracy.

The following results, obtained with two superphosphates, show the amount of agreement that may be expected from the different methods described :—

	Estimation as tricalcic phosphate.	Estimation as phosphate of magnesium.	Estimation as phosphate of uranium.
(1).	24.65 24.55	24.19	24.90
(2).	17.3	16.82	16.50

The determinations of insoluble phosphate in superphosphate are, I fear, more generally inaccurate than those of soluble phosphate; they are usually greatly in excess of the truth. The manufacturer can tell very nearly the total amount of phosphate present in his manure. Thus, if he makes superphosphate with equal weights of Cambridge coprolite and sulphuric acid, he knows that, allowing for the loss of weight in mixing, the product will contain almost exactly 32 per cent. of phosphate reckoned as tricalcic; and any nitrogenous matter he may have added to his materials will only diminish the percentage of phosphate. What, then, is his surprise, on receiving the report of the scientific chemist, to find that the soluble and insoluble phosphate added together, give a total of over 40 per cent. : a result not very uncommon. If commercial analysts would remember that only high-priced superphosphates, made entirely from Sombrerite or bone-ash, can possibly contain 40 per cent. of phosphate, they would save themselves from many mistakes.

The origin of this error is that less care is taken in determining insoluble phosphate than in the estimation of soluble: that the portion of the superphosphate undissolved by water is dissolved in acid, and the solution precipitated with a large excess of ammonia, without any attention to the nature of the substances precipitated.

It is best to determine the total phosphate present in the superphosphate by one operation, and then, by deducting the soluble phosphate, to find the insoluble. If the superphosphate has not been made from ferruginous or aluminous materials, the solution of the surperphosphate in hydrochloric acid, and the precipitation of the phosphates by the limited amount of ammonia already referred to, will give sufficiently accurate results. In all other cases, the hydrochloric solution of the superphosphate should be neutralised as far as possible without causing a precipitate, and then treated with excess of oxalate of ammonium, and subsequently with citric acid and magnesia mixture, as already described.

In conclusion, it must not be forgotten that the faulty processes in use by commercial analysts are to no small extent due to the pressure put on them by the public. When the fee given is reduced to the lowest possible point, the analyst is forced to regard the number of his analyses as of more importance than their quality, and to adopt methods, the main object of which is to enable him to snatch a result in the shortest possible time. *R. Warington, F.C.S., in the "Chemical News."*

Home Correspondence.

Carts versus Waggons.—It would be very unreasonable, and contrary to all evidence, to suppose that the public mind can be speedily removed from a rut in which it has travelled for ages. One of those ruts may be called "the waggon rut;" and yet if we test the question by the reliable expedient of comparative trial and self-interest, the agricultural mind ought to come out of that rut immediately; but I write this for the next or rising generation. This question was long ago settled in favour of the carts, as recorded in early numbers of the Royal Agricultural Society's Journal (vol. ii., p. 73; vol. vi., p. 156; vol. vii., p. 375. Every one interested should read Mr. Hannam's admirable paper, illustrated by diagrams, in vol ii., p. 73. I wonder how much is the annual loss inflicted on British agriculture by the use of waggons, for although the question was settled by comparative trial, very few farmers either knew about it or believed in it, for still waggons continue to be the order of the day, although a farmer seldom drives to market on four wheels. As there are 23,000,000 of acres of arable land in the United Kingdom, in addition to 23,000,000 of permanent pasture, there are probably many more than 500,000 waggons, costing (as an average proportion of road and harvest waggons) £30 each, or £15,000,000, whereas the best made harvest carts would cost less than half that amount, and thus effect a saving of capital of probably £7,500,000. Mr. Bowly, of Cirencester, in his prize essay, Royal Agricultural Society's Journal, vol. vi., p. 156, found his saving to be £40 out of every £100. But it is not alone in loss and interest of capital, but also in wear and tear of horseflesh, and loss of time in horse and manual labour. Let me give an instance of this, first observing that although some 25 years ago my men were all in favour of waggons, they would now look upon them as clumsy encumbrances, prolonging their labour, and thus causing deductions from their harvest earnings. We use long, wide, and low carts, about 12 feet long, 7 feet wide, and 3 feet 6 inches high; weight about 7 cwt. They are like that illustrated by Mr. Hannam in vol. ii., p. 73, of the Royal Agricultural Society's Journal. The cost varies from £13 to £15—they were formerly cheaper. We use one horse at harvest, and a boy to drive; they carry about 150 large Wheat sheaves. They carry to market 10 to 12 qr. of Wheat with two horses, half that quantity with one horse. They do not press upon the horse either up or down hill; they are convenient for coal, but cannot be tilted. Two good men will pitch and load from 60 to 80 qr. of Wheat in a long harvest day, and one man will unpitch them. Three carts and three horses will convey this quantity, with one boy to drive; but an extra cart and one more boy are required when the distance is greater. There is no binding the load. No such satisfactory practice could be done with waggons, and the cost would be in every way much greater. *J. J. Mechi, August*, 1871.

Legislation on Utilisation of Sewage. — Will you allow me space for a few remarks on the account given in your number for August 19 of the discussion held in Romford on the 2d inst. "on the subject of legislation on the utilisation of sewage." It is not that I in any way doubt, so far as it has gone, the full success of Mr. Hope's experiment. From all the accounts which I have read of it, the irrigation of his farm with the sewage of Romford reflects the greatest credit on that gentleman's spirit, skill, and intelligence. His effort is beyond question the most successful which has been made to overcome the enormous difficulty—created by the water drainage system—of disposing with advantage to the town itself and with safety both to it and to the neighbourhood, the sewage of that town, after it has been augmented in volume sixfold by water and the whole mass has been brought together into one body. Still neither the two years of the Romford experiment, nor the five years of that at Barking, will afford a safe ground for legislation, which should render such a mode of disposal of sewage compulsory on the town population of this country. For in the first place by whom has "this carrying away of the refuse of towns into rivers, and the pollution of those rivers, and the spreading disease amongst their neighbours, while only benefiting themselves and doing the country no service at all,"—by whom has all this been done but by the originators and abettors of the water sewerage system?—who also have been to a great extent the originators or supporters also of those 45 sanitary Acts, on which during the discussion such severe remarks were made. Twenty years ago sanitary inspectors and civil engineers either did not foresee or did not care about the pollution of rivers. They promised us "immense advantage in the introduction of waterclosets." There was to be no fever (nor small pox I suppose) in a town properly drained. What, however, does Mr. Bailey Denton say of Hitchin, sewered 20 years ago by Mr. Rawlinson? At the close of that period the death rate had been reduced to 23! The river had long been so polluted that, for some distance below the town, it was not safe for the cattle to drink of it; and the sewage, bayed back by the floods, had conveyed offensive and deleterious matter into the cellars of houses. And, now, can those gentlemen give us any guarantee against similar evils in the course of 20, 10, or even seven years, arising from the pollution of our fields by sewage irrigation? I am confident that they can give no such guarantee; nay, I can perceive strong misgivings on this point in their own minds. For instance, Mr. Bailey Denton, in proposing to relieve the evils arising from the sewage of Hitchin, by pouring that sewage over 60 acres of land, sees only one objection to a certain piece of ground, which is this—that it is within 1 mile of the town. And a remark, made at the discussion by so high an authority as Mr. Chadwick, in which he stated an advantage in Mr. Hope's system over the Edinburgh meadows ought carefully to be noticed. "Those meadows cost £30 an acre, while Mr. Hope's system, which was of course the most efficient—and not by any means so dangerous—cost from £8 to £12 an acre." Will the town population of England, then, consent to have a nuisance, and that probably of a dangerous character, established in their immediate neighbourhood? Will they not inquire first whether there be not some more effective and some safer remedy for this "great national evil" of the pollution of rivers, and some more effective mode of preventing the waste of that manure, the value of which is estimated by millions? I abstain from any remark on the just observation of Mr. Watlington, that the profit to be made by sewage irrigation must depend greatly on the position of a town. But, in illustration of it, I would adduce the case of this town of Dorchester, in which I write. We have below us several hundred acres, into which the sewage of 7000 persons, if we shall ever be compelled to withhold it from the little stream, would slowly gravitate: more than enough, according to recent calculations, to receive it all. But these acres are full of springs; they are underlaid, in fact, by a bed of water. Few of them could be used as arable land. The absorption by the soil, then, of the excrementitious and other corrupting matter would be very small, and the exhalations, especially in hot and sultry seasons, would soon of necessity be offensive and deleterious. Further, the owners and occupiers of the land could not be expected to give anything like its value for that which the Board of Health may find itself compelled to dispose of. On the other hand, there are within my parish some 2000 acres of arable land, either on a level with the town or considerably more elevated, which, if it could be conveyed to them, would entirely absorb, with vast profit both to the farmer and to the inhabitants, all the refuse of this town, especially if undiluted with five-sixths its volume of water. This, on the dry earth system, might be done without offence or injury to any one.* Not the slightest nuisance need be created—not an approach to anything dangerous. The occupiers of the land would require no compulsion to adopt the use of so valuable a manure. Extend this idea then from this one town to the whole country. Consider the high downs, the dry and light heaths, the lofty hills which crave this manure of the 15,000,000 of our town population, and say, while this is the case, and the farmers of those districts would gladly purchase such manure if at a fair price it could be conveyed there, is it philosophical, is it scientific, is it just to the country, under the misnomer in such cases of "the utilisation of sewage," to withhold it from such localities, and pour it over a limited space, that frequently has little need of it? I have observed with some attention the proceedings of associations and commissions; and as opportunity has presented itself I have followed out my own investigations on this subject; and I am now prepared, on the proper occasion, and under fair consideration, to convince any unprejudiced body of men that by the adoption of the dry earth system, and by the adoption of the principles laid down in "The Science of Manure as the Food of Plants,"† and of that mode of action set forth in "The Advantages of the Dry Earth System," any town, if all the refuse of every kind be given up to the board of management of the system, can from this refuse, rightly but easily used, manufacture a manure the market value of which shall be worth £1 a-head of the whole population. Allow me to add one or two words on the important communication in your issue of August 26 on the use of "Dry Earth in Pigstyes." The plan adopted by "J. M." is almost exactly the same with that which, in my pamphlet, entitled "The Science of Manure as the Food of Plants," I two years ago proposed for horses, cows, pigs, and fowls, and which is now about to be carried out, as to pigs and fowls, in 10 cottages, with the sixth of an acre attached to each, just erected by the Industrial Improvement Society, of which the Rev. J. Venn is, I believe, the president, in the city of Hereford. In my paper on "The Advantages of the Dry Earth System,"‡ read at the Social Science Congress at Newcastle, will be found the following passage :—

> "If horses and cows kept in the metropolis should be bedded on dry sifted clay, with a thin covering of chaft, five-sixths of the straw now used for litter, and an equal proportion of carriage, would be saved; the escape of ammonia being prevented, the animals would be kept in better health; the urine would be withheld from the sewers; and, being absorbed in the clay, would yield a vast amount of manure for fertilising the neighbouring heaths."

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* See Appendix to Twelfth Report of Public Health.

† Published by W. Macintosh; and by Cassell, Petter & Galpin, London.

‡ Mackintosh, publisher.

To this I would now add a remark, which is somewhat enlarged in "Science of Manure," that there is the opportunity here as in the earth closet, through the capability which the earth or clay possesses of repeated action, of condensing the manure so manufactured, and so of increasing its power by repeated use of the earth for the same purpose. Should this plan be adopted in the stables, cow-stalls, and pigstyes of farmers, five-sixths of the straw, now almost wasted as litter, would afford food to cattle, and admit of the keeping a much larger amount of stock; and if to the manure, which might thus be manufactured on every farm, some addition should be made through my proposed mode of utilisation of the refuse of towns, a ton of manure, equal in value to 19 or 20 tons of that which once in three years is commonly scattered over the land might, with vast increase of produce, be drilled in with every crop. *Henry Moule, Fordington Vicarage, August* 21.

Thinner Sowing.—I continue my comparative trials of thick and thin sowing, and send you this year's results. The field was drilled on November 10, 1870, with my usual quantity, 4 pecks per acre of Club-headed Rough Chaff White Wheat. Four lands in stetches towards the centre of the field were drilled with only 2 pecks per acre on the same day as the other portions of the field. It was on a Clover lea, first mowed for hay, and the second growth folded with sheep, eating cake, &c., as is my usual custom. In the early growth of the crop the thinner-sown was distinctly visible, but as the spring advanced the crops became equally thick, and no difference was perceptible, either during ripening, cutting, or in the stubble after cutting. This was the opinion of all those numerous farmers who inspected it during its growth. Two exact portions were measured off, cut and threshed, weighed and measured. There was an equal number of sheaves from each portion, and an equal weight of grain. The straw and grain were both brighter from the thinner sown, and this I have always found to be the case, with a single exception. The thin-sown sample would command 1*s.* or 2*s.* more per qr. than the thicker sown. Weight per bush: thick-sown, 60 lb.; thin-sown, 61 lb. Wheat this season does not weigh so well as in drier seasons. The name of the field is Ash Field; the comparative lands were opposite the stable door, which will be remembered by those who saw it. The whole field was estimated at from 6 to 7 qr. per acre—the trial square (16 roods) gives a return of 54 bush. per acre. When the whole field is threshed and dressed the quantity shall be accurately given. I sold some white Wheat yesterday at 57*s.* per qr. This field's produce is of rather better quality, and would probably command 58*s.* or 59*s.* The result of my long-continued experiments proves unmistakeably that where the farming is good on well-drained and deeply cultivated soil our usual quantity of seed is a very great and wasteful mistake. I lay down no particular rule, but recommend each farmer to satisfy his mind by comparative trials which quantity of seed is most profitable to him under his peculiar circumstances of soil, climate, and style of farming. By comparative trials I found that by putting in 1 bush. as against 2 it increased my return in Wheat 30*s.* per acre. The average of Great Britain is stated to be 3 bush. of seed Wheat per acre; this must be far too thick sowing: as a general rule, the higher you farm the less seed is required. Much Wheat this year was raised from the ground by winter's frost, and some was injured by wireworm. Although heavy land, I Crosskilled this field well. This not only re-bedded the roots of the Wheat, but also arrested wireworm. Salt on the lighter land after Crosskilling saved the plant, and gave me an abundant crop. I think it is wrong to go on sowing the same quantity of seed as our forefathers did when broadcasting, without taking into account the altered circumstances, such as the drill, drainage, and higher farming. Every farmer should make comparative trials. Two visitors from Liverpool assured me yesterday that as much as 4 and 5 bush. of Wheat are sown per acre in that neighbourhood, the return being only about 4 qr. per acre. The average of the kingdom is stated to be a return of 10 kernels for one; mine is an average of 40 for one. I sow 6 pecks of Barley and 8 pecks of Oats per acre. In many foreign countries, where the weeds are allowed to grow with the corn, the return is only five or six for one. My Wheats are always once or twice horse-hoed, and hand-hoed in the rows. If the land is loose we Crosskill once or twice before hoeing. Much corn gets diminished in crop and injured in quality by too thick sowing, which causes an early falling of the crop. *J. J. Mechi, Tiptree, September* 1.

Societies.

GLOUCESTERSHIRE.

THIS meeting was held at Pittville, Cheltenham, on Tuesday, Wednesday, and Thursday. The weather was fine, and large numbers of visitors, including many ladies, visited the ground. The number of entries in live stock were much below last year's show at Stroud. Then there were 206 entries of cattle, sheep, and pigs, and 104 horses and ponies, while on the present occasion there were in these sections respectively 123 entries of cattle, sheep, and pigs, and 112 horses. There was a more imposing show of implements than appeared last year. In the Shorthorn classes Mr. R. E. Oliver, of Sholebrook, took the 1st place with LORD OF THE FOREST (26,704), a large, nice-looking bull, not too wide over the crops, but with good thighs and flanks. Mr. F. Leybourne was placed 2d with a light-fleshed, leggy bull, of fair quality, but with very coarse shoulders. The executors of the late Mr. Stratton showed some good cattle from the Burderop herd, characterised by squareness, levelness, and other good points, but in too many cases hard to the touch. Bulls from this herd took prizes in the yearling class and bull calf class, also in the yearling heifer and heifer calf classes. The prize for the best bull, cow, and offspring, also went to Burderop; but we must say we greatly preferred the family group exhibited by Lord Fitzhardinge, consisting of LORD WILD EYES 5TH, *Rose of Gloucester*, and calf, all of which handled like velvet, and were in fact the only animals in the yard which entirely pleased us in this important point. In the class of breeding cows Mr. W. Bradburn was 1st with *Miss Chesterfield*, a level enough cow, and Miss Strickland's *Vote 10th*, a cow with a good deal of character, but hard, was placed 2d. The commended cow, also belonging to Miss Strickland, was patchy. In the class for 3-year-old heifers, Mr. W. Bradburn showed a wide, nice heifer, which was placed 2d, and the late Mr. Stratton's *Flower Girl*, a heavy good-looking square cow, which fulfils her early promise in these respects, was placed 1st. The show of Herefords was poor, and a prize was awarded to every animal exhibited. Messrs. John Walker, William Taylor, E. J. Morris, Thos. Cadle, and Thomas Hewer were the successful exhibitors. There was a fair show of long and short woolled sheep. In the former classes prizes were taken by the executors of the late Mr. Thomas Gillett, Kilkenny Farm, and Mr. Henry Cole, of Ashbrook. In the shortwoolled classes Mr. H. S. Waller, Farmington, Colonel Kingscote, Sir William Throckmorton, Mr. F. Gillett, and Mr. W. Playne, of Minchinhampton, divided the prizes; and in the classes for Oxfords, Mr. Hobbs and Mr. George Walter were successful. There was a good show of Berkshire pigs, and the prizes were divided among Mr. H. Humphry, Mr. R. Swanwick, of the College Farm, Cirencester, Lord Fitzhardinge, Messrs. Wheeler & Son, and Mr. Elwes, of Colesbourne. The horse show was fully equal in numbers to that of last year, and some good animals were shown.

A very agreeable feature of the show consisted in a loan collection of pictures, porcelain, and other works of art. A flower show also added fresh attraction to the scene.

The following is a list of the awards:—

CATTLE.

SHORTHORNS.

The best Bull above two years old.—Mr. R. E. Oliver, Towcester; 2d, Mr. F. L. Popham, Bristol.

The best Bull above one year and under two years old.—1st and 2d, Mr. R. Stratton, Swindon.

The best Bull Calf, bred by exhibitor, and under 12 months old.—Mr. R. Stratton; 2d, Mr. C. Hobbs, Maisey Hampton.

The best Bull, Cow, and their offspring.—Mr. R. Stratton.

The best Cow, in calf or in milk, having had a calf at its full time, within 12 months of the day of exhibition.—Mr. W. Bradburn, Wolverhampton; 2d, Miss F. Strickland, Tewkesbury.

The best breeding Heifer, in calf or in milk, under three years old, bred by exhibitor.—Mr. R. Stratton; 2d, Mr. W. Bradburn, Wolverhampton.

The best breeding Heifer, under two years old, bred by exhibitor.—1st and 2d, Mr. R. Stratton.

The best Heifer Calf, bred by exhibitor, and under 12 months old.—Mr. R. Stratton; 2d, Mr. T. Morris, Gloucester.

HEREFORDS.

For the best Bull, above two years old.—Mr. J. Walker, Hereford.

The best Bull Calf, bred by exhibitor, and under 12 months old.—1st and 2d, Mr. W. Taylor, Ledbury.

The best Bull, Cow, and their offspring.—Mr. E. J. Morris, Winchcomb.

The best Cow, in calf or in milk, having had a calf at its full time within 12 months of the day of exhibition.—Mr. E. J. Morris, Winchcomb.

The best Breeding Heifer under two years old, bred by exhibitor.—Mr. E. J. Morris.

The best Heifer Calf, bred by exhibitor, and under 12 months old.—Mr. T. Cadle, Westbury-on-Severn.

SHEEP.

LONGWOOLS.

The best 5 Breeding Theaves, not more than 23 months old.—Mr. S. W. D. Harris, Northampton.

The best Ram of any age.—1st and 2d, Executors of T. Gillett, Faringdon.

The best Shearling Ram.—1st and 2d, Executors of T. Gillett.

The best 5 Ewe Lambs of the Cotswold breed—Mr. H. Cole, Cirencester.

The best 5 Ram Lambs of the Cotswold breed.—Mr. Cole.

SHORTWOOLS.

The best 5 Breeding Theaves, not more than 23 months old—1st and 2d, Colonel Kingscote, M.P., Wotton-under-Edge.

The best Ram of any age.—Colonel Kingscote, M.P.; 2d, Mr. H. S. Waller, Farmington.

The best Shearling Ram.—Colonel Kingscote, M.P.; 2d, Mr. W. Playne, Minchinhampton.

The best 5 Ewe Lambs.—Mr. F. Gillett, Burford.

The best 5 Ram Lambs.—Sir W. Throckmorton, Bart., Farringdon.

OXFORDSHIRE AND SHROPSHIRE.

The best Ram of any age.—Mr. G. Wallis, Farringdon.

The best Shearling Ram.—Mr. G. Wallis.

PIGS.

The best Boar Pig under a year old.—Mr. R. Swanwick, Cirencester; 2d, Lord Fitzhardinge, Berkeley Castle.

The best Boar Pig more than a year old.—Mr. H. Humphrey, Shrivenham; 2d, Messrs. J. Wheeler & Son, Long Compton.

The best 3 Sow Pigs of the same litter, under 9 months old.—Mr. R. Swanwick, Cirencester; 2d, Mr. J. H. Elwes, Colesbourne.

The best Sow Pig for breeding purposes.—Mr. A. Stewart, Gloucester; 2d, Messrs. J. Wheeler & Sons.

The best Sow and Pigs (not less than six) her own produce, the Pigs under 12 weeks old.—Lord Fitzhardinge, Berkeley Castle; Mr. R. Swanwick.

HORSES.

The best Stallion for agricultural purposes, above two years old.—W. Wynn, Grafton; 2d, Mr. J. Manning, Orlingbury.

The best Mare and Foal, her own offspring, for agricultural purposes.—Lord Sudeley, Toddington; 2d, Duke of Beaufort, Badmington.

The best Gelding or Filly for agricultural purposes, under three years old.—Mr. S. Davis, Woolashill; 2d, Mr. J. Swill, Longford.

The best Stallion calculated to get Hunters or Hacks.—Mr. H. Brown, Swindon.

The best Hunting Mare or Gelding of any age.—Mr. J. B. Jones, Cheltenham; 2d, Mr. W. R. Holman, Cheltenham.

The best Hunting Mare or Gelding under 5 years old.—Mr. C. Cook, Toddington; 2d, Mr. C. Harland, Cheltenham.

The best Mare calculated to breed Hunters, with her foal at foot, got by a thoroughbred horse.—Mr. W. Slatter, jun., Cirencester.

The best Hack not exceeding 15 hands.—Mr. R. N. Hooper, Cowbridge; 2d, Major G. A. E. Quentin, Cheltenham.

The best Pony above 12 and under 14 hands.—1st and 2d, Major G. A. E. Quentin.

The best Pony not exceeding 12 hands.—Mr. E. Philimore, Cheltenham; 2d, Mr. G. Houghton, Tewkesbury.

WORCESTERSHIRE.

THIS society's annual meeting was held last week at Malvern, in close proximity to the railway station and the Imperial Hotel. Considerable dissatisfaction was expressed, exhibitors having to unload their animals from the trucks two miles from the yard, instead of on the spot; but, with this exception, the arrangements were good.

Cattle.—There were some well-known show animals brought together in the Shorthorn classes, among which appeared the Marquis of Exeter's TELEMACHUS, Mr. Outhwaite's ROYAL WINDSOR, and Mr. G. Game's ROYAL BUTTERFLY 20TH, who was regarded with much favour on account of his rare quality and good masculine head. These three bulls competed for Lord Sudeley's Toddington Challenge Cup and the Earl of Beauchamp's piece of plate, both of which, together with the 1st prize of his class, were awarded to TELEMACHUS.

In the next class MARMHULL DUKE was placed 1st, and Mr. Stratton's MASTER GLANVILLE 2d. We abridge the following notes from a contemporary:—

Mr. Outhwaite's *Vivandière* beat Mr. How's *Windsor Butterfly*. The latter gentleman's *Vesper Queen* easily disposed of the other competitors in the heifer class, in which Mr. Bradburne stood 2d, with a purchase at Mr. C. Stubb's sale. The beautiful coat of the Rev. Walter Sneyd's *Maid of the Mist* secured her the victory in a capital class of yearling heifers, in which Mr. How was 2d.

There were just about as many Herefords as there were prizes offered for the breed; but some of the best men were represented—notably Mr. P. Turner, who won 2d with his aged bull, and two 1sts with heifers, the 2-year-old being in high enough condition for a Christmas show, and also the President's prize for the best Hereford. Mr. W. Evans secured the 1st prize for bulls, with MONAUGHTY 3D. Mr. R. Tanner won both prizes for cows, and 2d for yearling heifers, with his three entries. The other honours fell to Messrs. Twinberrow, Rogers, and Morris. The prizes for dairy cattle were all given to highly descended Shorthorns of Earl Beauchamp.

Sheep.—The Shropshires were allowed precedence in the classes. In ewes, Mr. Firmstone's pen had been got into much better condition since Wolverhampton, and were placed before Mr. Baker's and Mrs. Beach's pens, which there occupied first and second positions. In the class for shearling ewes, Mr. Pulley's were placed 1st, and Mr. Baker's and Mr. Firmstone's highly commended pens at the Royal Agricultural Show 2d and 3d. Mrs. Beach won with a shearling ram, to which the extra prize as the best male animal in the sheep classes was also awarded. Mr. Pulley was 2d and 3d. In the aged ram class, Mr. Fenn's Bath and West of England winner was 1st, and Mr. Tanner's 2-shear 2d, though we prefer the sheep bred by the late Earl of Aylesford, and exhibited by Mr. W. Baker, which obtained a high position at Wolverhampton, to either prize winner. The longwoolled sheep were confined to a few pens of good Leicesters, from Mr. Harris, of Stoney Lane; some Lincoln Leicesters, from Mr. T. W. D. Harris, of Wootton; and a couple of Cotswolds from Messrs. Wheeler & Son, of Long Compton; amongst which the prizes were divided.

Horses.—A spacious ring was made to show the horses, with the usual arrangements for seats and fences. The Earl of Coventry's "Umpire" was considered the best thoroughbred stallion, with "The Mallard," bred by the late Lord Glasgow, 2d. Mr. Tomlinson's "Young Lofty," winner in the agricultural stallion class at Birmingham, added another to his numerous victories. Mr. Percival took the principal prize for hunters with his chestnut gelding "Melton," Mr. Cook's 4-year-old "Misfortune" being 2d.

Pigs.—Messrs. Duckering and Wheeler were almost the only competitors in the classes for white pigs; the former gentleman taking most of the honours. There was a good show of Berkshires, Messrs. Joseph Smith, Swanwick, Humfrey, and other well-known breeders putting in an appearance. Mr. Smith won the 1st prize and extra cup, with his only entry, a 4-year-old boar. Mr. Swanwick was the 1st for sows and gilts, and Mr. Humfrey, 2d for sows.

On Tuesday and Wednesday the weather was very fine; but on Thursday, the day for the people—the "shilling" day—the rain came down freely, accompanied by a hurricane, which blew directly across the field, and unfortunately carried off the canvass covering of several of the sheds. That was not all, for a sudden gust blew down the large tent in which were placed the plants and flowers exhibited at the horticultural show, and a portion of the dinner marquee shared the same fate.

The following is the list of awards in the several classes:—

CATTLE.

Shorthorns.

Best Bull in Shorthorn classes, £25.—The Marquis of Exeter. The Toddington Challenge Cup, of the value of 50 gs., given by the Right Hon. Lord Sudeley, was also awarded to this animal.

Best Bull, above 2 years old.—1st, Marquis of Exeter; 2d, J. Outhwaite.

Best Bull, above 1 and under 2 years old.—1st, H. Allsopp; 2d, R. Stratton; 3d, G. Garne.

Best Cow in milk or in calf.—1st, J. Outhwaite; 2d, J. How.

Best 2-year-old heifer in milk or in calf.—1st, J. How; 2d and 3d, W. Bradburne.

Best Yearling Heifer,—1st, Rev. W. Sneyd; 2d, J. How; 3d, R. Stratton.

Herefords.

Best animal in Hereford classes.—£20, Mr. W. Evans, Llandowlas, Usk.

Best Bull, above two years old.—1st, W. Evans; 2d, P. Turner.

Best Bull above one and under two years old.—J. Twinberrow; 2d and 3d not awarded.

Best Cow in milk or in calf.—1st and 2d, R. Tanner.

Best 2-year-old Heifer, in milk or in calf.—1st, P. Turner; 2d, J. Harding; 3d, T. Rogers

Best Yearling Heifer.—1st, P. Turner; 2d, R. Tanner; 3d, E. J. Morris.

Best three Dairy Cows in milk, any breed.—1st and 2d, Earl Beauchamp.

SHEEP.

Shropshire.

Five best Breeding Ewes, having had lambs in 1871.—1st, W. C. Firmstone; 2d, W. Baker.

Five best Theaves.—1st, J. Pulley; 2d, W. Baker; 3d, W. C. Firmstone.

Best Shearling Ram.—1st, Mrs. S. Beach; 2d and 3d, J. Pulley.

Best Ram of any age.—1st, T. Fenn; 2d, R. Tanner; 3d, W. Baker.

Longwoolled.

Five best Breeding Ewes, having had lambs in 1871.—1st and 2d, T. W. D. Harris; 3d, T. Harris.

Five best Theaves.—1st and 2d, T. W. D Harris; 3d, T. Harris.

Best Shearling Ram.—1st and 2d, T. W. D. Harris.

Best Ram of any age.—1st, T. Harris; 2d, J. Wheeler & Sons.

PIGS.

Best Boar Pig, of large breed—1st and 2d, R. E. Duckering.

Best Breeding Sow, of large breed—1st and 2d, R. E. Duckering.

Best Two Hilts, of large breed—1st, J. Wheeler & Sons; 2d, R. E. Duckering.

Best Boar Pig, of small breed—1st, R. E. Duckering; 2d, J. Wheeler & Sons.

Best Breeding Sow, of small breed—1st, J. Wheeler & Sons; 2d, R. E. Duckering.

Two best Hilts, of small breed—1st, R. E. Duckering.

Best Boar Pig, of the Berkshire Breed—1st, J. Smith, Henley-in-Arden; 2d, R. Swanwick.

Best Breeding Sow, of the Berkshire breed—1st, J. Swanwick; 2d, H. Humfrey.

Two best Gilts, Berkshire breed—1st and 2d, R. Swanwick.

HORSES.

Best Stallion Cart Horse, for agricultural purposes.—1st, H. Tomlinson; 2d, W. Wynn.

Best pair of Cart Geldings or Mares (or Gelding and Mare), above four years old, which have been regularly worked.—1st, J. Groves; 2d, S. Davis.

Best Cart Mare and Foal.—1st, S. Davis; 2d, T. Ballinger.

Best Cart Filly or Gelding, two and under three years old.—1st, S. Davis; 2d, J. Perry.

Best Thoroughbred Stallion.—1st, Earl Coventry; 2d, M. Biddulph.

Best Hunter, irrespective of weight.—1st, J. R. Cookes; 2d, C. Cook.

Best Hunter, that has been ridden in the past season with the Worcestershire, Herefordshire, Ledbury, Cotswold, Albrighton, Ludlow, North and South Staffordshire, or North Warwickshire hounds.—1st, Major Martin; 2d, W. Colman.

Best Hunter, the property of a tenant farmer resident in Worcestershire.—1st, W. S. Coucher (this was objected to on account of Mr. Coucher not being a farmer); 2d, G. C. Matthews.

Best Hunting Mare or Gelding, under five years old.—1st, C. Cook; 2d, Major G. A. F. Quentin.

Best Hack, not exceeding 15 hands.—W. Lee.

Best Pony, above 12 and under 14 hands.—W. Godsall.

Best brood Mare, for producing hunters.—G. B. Jones.

LEINTWARDINE, NORTH HEREFORDSHIRE.

The Condition of the Labourer.—We give this week a more extended account of Mr. Strange's address on this subject at the meeting of the Agricultural Labourers' Improvement Society. The following are extracts:—

If you really wish to have your condition bettered, you must act faithfully, honestly, temperately, and dare to be men. Be sure to do your employer no injustice, for he that does his employer an injustice does himself an injustice; while an honest man is a noble man, and belongs to the highest order of nobility. Now, speaking of the cottage question, I believe still that in all cases where practicable the cottage should be held direct of the landlord; for a commission before the House of Commons, when speaking on the question, said there was no doubt whatever that it was better for the cottager, because it placed him in a more independent position; and a thing which makes a man feel more independent I believe makes him more manly. Artemus Ward said we want female women; I maintain we want manly men. It may suit small men or tyrants to be surrounded by a cringing multitude, but servility is not courtesy, and it is not good, socially or morally. Now the thing has been fairly worked out concerning the cottage question by a gentleman, in the *Times* of last year, and has never yet been answered. He shows how cottage property can be made to pay a fair percentage with the rents at a low standard. I believe it is the wish of many to keep from being a burden to the parish, and I would say that he or she who needlessly throws him or herself on the industry of others, lowers himself in the scale of human beings, and acts dishonestly. I fear this is working an evil in the country at the present time. It is far more acted on in England than in Scotland. But perhaps you will say, "Yes; but the Scotch labourers are better paid." Yes; but when I tell you that it is far more acted on here than in Ireland, what think you of this? I have seen myself a man skulking about receiving parish pay because he had no work, he said, when he might have had work, and leaving his garden unplanted.

I know landlords in this neighbourhood who let their cottages at a low rental; this is what I call practical philanthropy. Now, many admit the wages' question to be right, but say, "Can the farmer afford to pay higher wages in the face of the dry seasons of the last two or three years?" With that, however much you may sympathise, you have nothing to do, because, after a continuation of dry seasons, there may be a continuation of wet ones, and where the hay is short now the grain may be short then. And how about the right time? Others charitably suppose for you that if you get more you will only be spending it on drink and tobacco. Of course this is shelving the question until the weather is made to bear and all have signed the temperance pledge. The last kindly argument does not say that a man earns no more, but finds fault with his way of spending it. One of our great writers says that the labourer is surely worthy of his hire; and the wages of the industrial labourer ought to be equal to all the decent wants and respectabilities of his position in life; and though political economists may say that the labour market is not regulated by considerations of this kind, let us stand on higher ground than this; let us say that such a portion or value of a commodity as is equal to his proper wants belongs to the producer, and that a landlord, merchant, &c., ought to be content with what remains after the producer has been provided for; whereas too often the reverse is the case, many of the producers having to be content with the crumbs which fall from the rich man's table. I would ask you how is the new Education Act to be carried on in its entirety if there is to be no advance of wages—every child to be at school, a longer time to be at school, and a higher standard to be passed? The men must have more wages, for I know too well that many of them are unable to pay with only a part of the children at school; for this will cause an increased expenditure in two ways—first, by more of a family being at school, and secondly, by being a longer time in school—no earnings because of no labour; and if the same ratio of wages is to prevail, how is that family to exist who now live principally on bread? We must look these things fairly in the face. One statement which was made at your first meeting I am prepared to modify a little, although I did not make it. They said the wages were lower in this neighbourhood than anywhere else. I know there are many places where they are higher, but there are places where they are lower. A few days ago I was through Gloucestershire and Wiltshire, and inquired the state of wages, and found them to be lower than here; but because there are others worse, it does not follow that you ought not to be better. This is where you deserve commendation, because you have not waited until your position grew worse or into as bad a state as theirs, but nobly, earnestly, and courteously you have begun the battle for the right. In this question I cannot, nor do I wish, to lay all the blame at the door of the farmer, for I wish to speak justly of all; but I believe the landlord is equally to blame with the farmer. When saying this I would make this remark, that there are many landlords and many farmers who pay justly, but there are many who do not. The answer to all solicitations is, the supply regulated by the demand. This may suffice for produce; but beyond a certain limit it ought not to be for human beings: you see the result—people starved to death. But we maintain that property has duties as well as rights; and if landed proprietors took more interest in the labourer it would be better for all. It is not a healthy state of things to see on large properties labourers without work, as at the present time there are. Why not all true-hearted landlords, when they find this to be the case, employ the surplus labour in the improvement of their estates?—for in consequence of these men being out of work it causes a reduction in the wages, and in consequence an increase of misery, pauperism, &c., whereas if employed this would be spared. How many of the landlords themselves are not giving their men the just value of their labour. If this be the case, is it a good example to set the farmer? For, after all, the farmer is only the tenant, while the landlord of course is owner. Were it not for the unusual and unhealthy competition for farms which we see, after all it would come back on the head of the landlord. Let this competition pass away, and it will do so. When was not neglect followed by evil consequences? The landlord may look with pleasure upon improved farms and estates of more value; but after all there is something more. If with the improvement of estates comes no bettering of the condition of the poor, but in consequence of an increase of population increasing squalor, pauperism, and degradation, I ask, is one a sufficient compensation for the other? Let us just look around us, and do we not know villages which are very beautiful, houses fit to live in, nice gardens, and men in a splendid physical condition; and do we not know of villages where quite the opposite is the case, where you see a degraded peasantry going home to their cabins? Why is this? One is cared for, the other not. We have heard some little objections brought forward against the men having a cow,—not that I have heard any one say it was a bad thing; on the contrary, I confess I do not see the slightest difficulty in the way, except getting the land. In the first place they say all cannot have it: we do not ask for all to have it. In the next place, they say that all men cannot buy a cow. Others say that the women are so ignorant it would be of no use for them to have a cow. Well, who are the women the men marry? Are they not domestic servants chiefly, and when in service does not one employer give a good character with the servant to go to another employer? How is it after being in service for some years and learning cheese and butter making—how comes it, after getting experienced, they all at once become so worthless and ignorant as not to be able to look after a cow directly they get married? Others say you will have no time to look after a cow with its belongings; in answer to these I would say that if many of the women have to be away from their homes now, from 8 until 6 working on the land, could not these said women if left at home so much as look after a cow? And then if there was something extra, hours being from 6 to 6, the man could do it before, or after. Others say that it is impossible for a labourer to have 4 acres and do his work, because out of that he would have some tillage land. To these we would say we do not stipulate for four acres, although we mentioned that quantity; but we merely mentioned that quantity as a standard to go by. What we want is land sufficient to keep a cow, quantity to be determined according to quality. Others say that it could be left to the farmer to allow the workman to run a cow with his own. I think that if the labourer had the land himself it would be preferable, because otherwise it would always affect the man's wages, which would make it a doubtful benefit. We have stated that it should be one in proportion to every hundred acres. We do not say do this all at once, but try two or three of the best men and worthy women who will be able to do it in each neighbourhood, and I am convinced it would do. If this could be done in the proportion we have stated, we should have some hundreds of thousands more cows in the country, and millions of pounds of butter brought into the market, for at present butter and cheese making seem at a discount in many places. These pounds of butter mean an increase of grocery to the butter-makers, an increase of business to the shopkeepers, and a little account at the savings bank for a rainy day and old age. I venture to hope that the landed proprietors and your employers have your cause too much at heart to lay it aside for a few rails or a cow shed, or some trifling inconvenience, which will only affect them for a few moments, but which will benefit you for life.

In regard to emigration, some are against it because they say it is not needed. In the first place, have we a surplus population or not? We have to buy food—that is grain, &c., to the amount of nearly £50,000,000 yearly, because it is not produced at home. I know there are millions of acres of waste land which may be made productive, but it is not. In the next place, have we not always a great number of people either out of work or earning such small earnings as scarcely to be able to live? This, I think, will prove that we have a surplus population. Then is it not better for a man, who is barely able to keep his family from want, to go to a country where he will be able to live, and have some comforts for himself and family? We know it is done among the families of the great. Fathers send their sons to India to live for years in order that they may escape poverty. Do you think that if a gentleman of high standing could get his son into a like position in England he would not much rather do it than to send him very likely to die in India? Well, if it be good for the sons of the great to go to India to acquire wealth, is it not equally good for the sons of the poor to go to America or elsewhere to acquire a competency, or at all events to live? If there should be a greater call for a trade at a town you will directly see tradesmen flocking to that town from other towns. I ask you what is the difference between going from one town to another, or from one country to another, excepting the question of distance, which, after all, is now a trivial affair. I believe the only obstacle is ignorance, because you have hitherto thought that you should do no better at one place than another.

I would say to those above us, not to think, because the surface is rugged and distasteful to the polished and refined mind, that nothing can be seen by stooping but ignorance, immorality and crime. If they would but stoop, they would discover something more—they would see suffering, patience, and heroic fortitude; they would see simplicity of life and nobility of character; they would see the lowly battle of life fought in a manner worthy of the Bayards of our philanthropists;

they would find beneath coats of coarse and ragged frieze, hearts beating as true as that of Sydney or Raleigh; struggling year after year to keep want from the door; watching with fond devotion over a sick wife and children; going forth to labour with a dry crust so that he may be able to pay his way, and, if able to do nothing more, to leave at least an honest name behind him. Stoop, and you shall find men like these in the homes of the lowly. Yet, though placed lowly on earth, they belong to the nobility of God. In conclusion, I ask, does not God will that humanity should be raised from its degradation? Then let God's will be your rallying cry, and God defend the right.

Clee, a labourer, said that the wages of an agricultural labourer ought not to be less than 15*s*. a-week. He maintained that if the golden rule of doing unto others as we would wish others to do unto us was universally observed, there would be no occasion for such a meeting as that. As to England's greatness, what did it consist of?—the Bible and the labourer. Take away the Bible, and the country would be dark indeed. Stop the plough and the spade, and where would the people be? Farmers called themselves the bone and sinew of the land, and so they were to a certain extent; but they could not be so without the labourer. He had heard it remarked that formerly the wages of an agricultural labourer were 7*s*. a-week; but in those times there was a different feeling between master and man to that which now existed. Then, besides the money, there were some victuals to be had—a dinner or a supper every now and then; but where were such things to be got now? He urged his fellow workmen not to be afraid of asking for an increase of wages; it was right that they should do so, and, though some little disturbance might at first arise, no permanent harm could result from doing that which was right. As to the cow question, he wished every labourer could have land enough to keep one. If his "woman" should be unwilling to look after the cow, he would try to make her, and if she failed he would do it himself; then his wife, seeing him doing this after his hard day's work, would perhaps be willing to do it herself.

Whitefoot argued in favour of farmers showing a kind feeling towards their men, being sure they would lose nothing by it. If one-third or one-half only of the labourers could have a cow, the rest would be much benefited, as there would be more butter and milk to be had than at present. As to milk, there were some farmers who would rather give it to their pigs than sell it to their labourers. The wages should be not less than 15*s*., with the best men getting 18*s*. or 20*s*. He got 20*s*. a-week, and they saw that he had a pretty good coat on his back; and he wished every man to have as good or better coat than himself.

Holland had not much to complain of himself, having but a small family, but he well knew of the hardships of many others. Labourers' wives were often much blamed; but he wished those who blamed them would take their positions for a short time, and show what they could do in properly feeding and keeping tidy a large family upon 9*s*. a-week. If they could manage better, the labourers' wives would be glad to have some leaves out of their books. But how could the labourer's wife manage properly if she had to be out at work all day, and then sit up till midnight mending her own and the children's clothes?

Kinsey contended that if the labourer had not been true to his employer, the latter could not have risen so high in the social scale as he had done; some getting from the donkey-cart to the gig, and others from the gig to the carriage and pair. It was their duty to ask for an increase of wages, no matter what the answer might be; and also for facilities to keep a cow.

Reeves congratulated the meeting upon the presence of Mr. Smythies, who set a noble example in the treatment of his labourers. Mr. Smythies' shepherd had this year received between £2 and £3 for the lambs, and was not that an encouragement?

Mr. **Smythies**, in answer to a call, said that owing to the lateness of the hour, he must defer speaking till another occasion. He congratulated them upon the fair and temperate way in which the meeting had been conducted, and on the efforts which had been made by Mr. Strange.

Watkins contended for the keeping of a cow, not only on a pecuniary ground in its advantage to the family, but in the advantage of the labourers' daughters learning to milk, their boys to know something of cattle, and thus be more valuable when they went out to service. He was opposed to large farms, considering that 300 acres was enough for any man to pick a living upon.

Two or three of the speakers dwelt strongly on the advantage to the farmer of an improved physical condition of his labourers. At present many had to go to work with only a dry crust and a weak cup of tea for breakfast.

KINGSCOTE.

The annual ploughing match, meeting, and dinner of this association took place at Kingscote on Wednesday, the 23d ult. The ploughing match (the principal event of the day), was held in a field in the occupation of Mr. J. Nicholls, Symondshall, close to Kingscote. It was a 41-acre piece of two-year-old Clover seed, and was in splendid condition. Sixty-one teams entered for competition—about an average number, but it was observable that there was no entry in the class for double ploughs, for which a prize was offered for the first time, and that in the champion class for farmers' sons there were only two entries, and as no start was allowed with less than three entries the match did not come off. The work done was of an unusually high class, and was universally praised, the boys' class being the best of all. There was a large gathering of agriculturists and other spectators, who took a profound interest in the operations of the day.

At the dinner, the Chairman, in proposing the toast of "Prosperity to the Kingscote Association," said: When they saw the number of ploughs that had started, it was obvious they were prospering. It was, however, a matter of great regret to him that two classes had failed to-day, although he did not think they had ever had a failure before. A prize was offered for the double plough for the first time, and he had certainly looked forward to seeing Ransomes & Sims, and some of the other makers present, but causes beyond their own control prevented their putting in an appearance. He had been told that 50 years ago or more the double plough was freely used in this part of the world, but since then it had been given up. It might be right or wrong, but he would have liked to have seen it tried again. He believed that, to be worked with advantage, it should be upon light lands. A double plough would certainly save one horse, if the work could be done as well, and did not kill the horses. Tried by means of the dynamometer, they said the draught was not more for three horses than for four. That remained to be proved; but he should like to have seen it tried that day. However, they must offer the prize again next year, and see if the entry filled then. It was also a matter of regret that the class for the sons of members did not fill. The sons of the tenant-farmers ought to compete in large numbers. In all farming matters, unless a man could show those under him how to do a thing he would derive very little advantage from being a farmer at all. He was certain of this, that if he had not an efficient steward to look after his farm it would do him no good; and when he saw a man mowing badly he longed to take off his coat and show him how to do it. He was glad to see that the Society was prospering. The gatherings they had around that table, and more particularly during the winter months in the room below, were a source of great pleasure and instruction to him. The more they could meet together and tell each other as practical men how such and such things had turned out, the more it would be for the advantage of each of them. Those societies did them all good by bringing them together to exchange ideas, and he sincerely trusted the Kingscote Agricultural Association might exist for many years to come, and be as prosperous and as practically working as he believed it was at present.

Notices of Books.

Journal of the Bath and West of England Society.

The seventh volume of the Journal of the Bath and West of England and Southern Counties Association is before us. It opens with a report of the Farming of Kent, Sussex, and Surrey, by H. Evershed, in which the agriculture of each district is illustrated by the description of a well-managed representative farm. The following note on wages, which ends this article, is of considerable interest:—

"12*s*. a week was the lowest wage for day men in any parts of the three counties that I visited last winter. Within a distance of 20 miles of London, as well as in the Hop district of Kent, day men were paid generally 15*s*. per week. *Surrey:* Guildford, 12*s*.; Dorking, 13*s*.; north of the hill, from 13*s*. to 14*s*. *Sussex:* Horsham and districts, 12*s*.; South Downs, 13*s*. or 14*s*.; cattle men 2*s*. extra, or perhaps 13*s*. and house rent and firing; under shepherd, 13*s*., and £2 a year extra; head shepherd, 16*s*., a house, £3 at lambing, and 30 stones of pork at 2*s*. 6*d*., flour at 1*s*. a gallon: a quart of beer a day and 30*s*. extra in harvest."

Next follows a long disquisition upon sheep in general, and especially Downs and their crosses, by Mr. Joseph Danby, in which considerable labour is expended upon the investigation of the origin of improved breeds.

Mr. Corbet contributes a paper on heads, in which the "character" of our various animals is discussed. Mr. Evershed again appears as a writer upon the Improvement of Cultivated Plants, in which Darwin's observations are freely quoted.

"Certain Enemies of our Cereals" are treated of by Mr. Peard; Mr. Tegetmeier contributes a paper on Poultry as profitable farm stock; next in order are some observations on Pleuro-pneumonia, by Professor Brown, in which we arrive, after evidence for and against, at the conclusion that the disease is communicable from sick to healthy cattle. "Sanitary Improvements at Broadclyst," by T. D. Acland, M.P.; Whitby on the drought of 1870, and the reports on the Guildford show conclude this portion of the volume. The "Note Book" contains interesting matter concerning the cultivation of Cabbages and Hops, upon the profitableness of peat, and a valuable note by Mr. Lawes upon the guano trade.

Farm Memoranda.

East Barns (*continued from p.* 1120).—5. *Potatos.*—Potatos are taken after seeds and after Oats. In the former case the lea is ploughed as for Oats, and, as a system, hitherto no manure has been applied on land that has been two years in seeds. Recently, however, Mr. Murray has applied a little artificial manure, and he thinks that the result justifies a continuation of this practice, although in former days manure was thought to render the tubers more liable to disease. The Oat stubble for Potatos receives a heavy dressing of either farmyard manure or town manure in the autumn, which is ploughed in sooner or later, as may be convenient, or as the season may require, sometimes not until after the lapse of several weeks. Whole Potatos are never planted, and those selected for the sets are of a medium size, neither too large nor too small. The sets are made by cutting slips off the tuber, each slip containing but one eye, or, if more than one, the superabundant ones are scooped out. The "rose-end" of the tuber is left until last; it is then split, and all the eyes but one scooped out of each part. The object is to have each Potato plant, if possible, with but one stalk, as the crop is then more even in size and almost wholly fit for the London market. There may not always be so great a weight of Potatos as under the other system, but the farmer naturally looks more to £ *s*. *d*. than to tons, cwts., and lb. The sorts usually grown are Walker's Regent and Victoria, about half a ton of Potatos being required to plant an acre under this system. Some time after planting the land is harrowed, when the annual weeds are well up; and as soon as the plants appear they are horse-hoed and cleaned with the hand-hoe once or twice, as may be required. When thoroughly clean and beginning to get bushy, they are earthed up by the double mouldboard-plough and two horses. When ready for lifting, which is generally from the middle to the end of October, but sometimes not until the first week in November, the double mouldboard-plough is again used, with an addition which throws the Potatos well out. The crop is pitted as soon as taken up, the Potatos being laid in long heaps on the surface of the land, about 5½ feet wide at the base, and not more than 3½ feet high. Great care is required to prevent "sweating;" it is therefore desirable to cover with straw first, and a light covering of earth, leaving chimneys at intervals of 3 feet, and finally, to keep out wet and frost, the covering of earth is increased as may be deemed necessary.

The largest Potatos go to the London market, the seconds are pitted anew and sold for seed, and the smalls are sold or used for cattle food, or are purchased by starch manufacturers. Last year the small Potatos sold for 35*s*. per ton on the spot for feeding purposes.

6. *Pulse.*—The Potatos after seeds are followed by Beans on the heavier land, and by a mixture of Beans and Peas where the land is not so strong. In either case the Potato land is ploughed during the winter from 7 to 9 inches deep; and in the spring, just before sowing time, the land is harrowed down and left for a day or two previous to ridging, which is done by six ploughs, in the same manner as for Turnips, 27 inches apart. The Bean-sowing machine deposits the seed in the intervals between the drills before the return ploughs, distributing from 2 to 2½ bush. of Beans per acre, or a mixture of 2 bush. of Beans and half a bushel of Peas. In two or three weeks annual weeds have got a good braird, and are then destroyed by thorough harrowing. Horse and hand hoeing is done when the Beans are well up, and the crop is cut with the hook.

7. *Wheat.*—This crop follows Potatos and pulse. In the former case no manure is applied to the land, but in the latter it receives a good dressing either of farmyard manure or of sea-ware. The whole of the break for Wheat is ploughed from 7 to 8 inches deep after the Potatos have been taken up, say the middle to end of November. The land is harrowed and the Wheat drilled at any time from November 22 until the end of December, according to the weather. Before drilling, the land will have at least one double and one single harrowing, and afterwards merely a single tine, to cover the seed and level the land. Rather less than 2 bush. of Woolly or Rough Chaft Wheat are sown per acre. The after-management consists of one horse-hoeing wherever annual weeds appear, and of a top-dressing to such portions of the Potato-land Wheat as may seem to require it, perhaps the whole; but no stimulant is applied to the manured Wheat. The top-dressing consists of a mixture of 1 cwt. each of nitrate of soda and guano, put on broadcast in April when the Wheat plant is fairly growing. Reaping generally begins about the middle of August, but this year it commenced on the 9th of the month.

The white crops are usually cut by machine; generally three machines are working together, but a fourth is kept on the farm as an adjunct, or in case of accident.

Until the last one or two years, however, the reaping-machine did not come into favour with Mr. Murray; his crops were very heavy, and overpowered the machines which he had tried; but recent improvements have nearly removed his objections, and he now uses machines for most, if not all, of his grain crop. Wheat is cut early, before it exhibits the "sere and yellow" leaf and stalk. A shorter or longer period, according to the season, is necessary to put the cut grain into proper order for stacking. Sometimes three or four days are sufficient; at other times 14 or 15 days are not too much. In carrying, four stackers are generally set to work, each having two carters, and they one forker; the stacker has a stout boy on the stack, to put the sheaves to the hands of the stacker, and otherwise assist him. A few extra hands are always required in harvest. Formerly, a great many Irish reapers were employed, but now the machines are in use a small number only are needed. Everything is done by day-work.

Seed.—The best Scotch farmers are very particular about their seed, and Mr. Murray's practice in this matter is by no means exceptional across the border. He gets Wheat generally every year from the South, as this crop does well coming from a slightly warmer climate. Seed Oats, on the contrary, are invariably obtained from a colder climate, as experience has shown this practice to yield the best results.

A few Cabbages and Carrots are grown; this year about half an acre of the former and less than 2 acres of the latter.

Produce.—In an article in *The Farmer*, for September 5, 1866, the following information is given on this subject:—"The produce of the Tartarian [Oat] is from 90 to 100 bush. per imperial acre, weighing from 40 to 41 lb. per bush.; and of the Potato variety, from 50 to 60 bush. per acre, weighing 45 lb. per bush. Barley is a more important crop than Oats at East Barns, the variety grown being the Chevalier, of which the produce ranges from 55 to 60 bush. per imperial acre, weighing from 57½ to 59½ lb. per bush." . . . "Last year [1865] the Wheat crop at East Barns produced 60 bush. per imperial acre, but this year [1866], from the influences of the season, it is much inferior, and probably will not yield more than 40 bushels. The average yield is from 48 to 50 bush., weighing from 64½ to 65 lb. per bush., and occasionally somewhat more." *Journal of Royal English Agricultural Society*, vol. vii.

The Week's Work.

SEPTEMBER 2.—*Scotch Harvest.*—September is still counted harvest month in Scotland, as August is termed harvest month in England, but the old calendar rules of harvest months and harvest moons are fast falling behind the progress of field practice, faster perhaps in the North than in the South; thorough drainage and improved cultivation, manuring and seeding, having shortened and advanced the period of harvest 14 days in some places, and fully a month in others.

Buckwheat harvest before it begins to shed its first ripe seeds. Owing to the manner in which the plant flowers and ripens the whole cannot be secured, and as a rule the first ripe is the best. Part of the plant being thus cut green, the small sheaves or bundles require to be left loose and exposed in the best manner for drying, and also to be turned once or twice; and in cutting and turning very great care is requisite to prevent shedding of the seed. Some thresh out in the field, and store the seed, which makes excellent food for poultry, and also for cattle, when ground into meal; others bind up and stack, as Turnip seed.

Aftermath Meadow and Clover Hay cut before the crops begin to rot at the bottom. Both crops are more liable to injury from wet weather and heavy night dews than the first crops, and therefore mowing should be deferred until settled weather sets in. In other respects, the work is similar to harvesting the first crops.

Grass Seeds, for hay or pasture after a corn crop, sow on a clean stubble, and chain-harrow in, as directed for August. The practice is preferable to sowing the seeds with the corn in spring, as a much closer and healthier bottom of young grass can be obtained before winter.

Hop Picking generally commences this month. When equally ripe, the flowers may be picked as one quality, but this is seldom the case in the best of seasons; and when they ripen unequally, they are divided into three qualities in the picking—the dark or over-ripe, the brown or ripe, and the green. The three qualities are then taken to the oast and kiln-dried separately, and when cool put into sacks, techically termed pockets. Fine weather is essential to the successful harvesting of this crop, as the slightest damp from rain or dew injures the flavour and strength of the bitter principle, thereby reducing the market value of the crop.

Cabbage Seed, if not already sown, sow in beds for spring planting. Advanced seedlings remove to a nursery in rows 6 or 9 inches apart. Transplanting them a second time by simply shifting will check over luxuriance of growth, and harden and fit them for standing the winter. By thus shifting the young plants will be more uniform in size, stronger in the stem and better rooted, and less liable to run to seed next summer, or to be attacked by insects, than when left in the seed-bed throughout the winter.

Autumn Fallows.—Continue to plough, dig, or smash up by steam as soon as the crops are removed from the ground, as directed last month. The advantage of breaking up stubble early with a deep trench-furrow has been known from time immemorial, but with horse-power this could seldom be done in the case of heavy clay soils until rain fell to soften the land; and when the weather breaks it frequently happens that clay land becomes too wet for profitable tillage. But with steam-power the land may be broken up immediately the harvest is over, and the drier the more effective the operation.

Farm Horses.—Autumn fallowing and stubble Turnips have greatly increased the labour of the teams at this season, rendering an extra allowance of corn necessary along with a cooling diet of green forage, as sewage grass, Clover, Tares, Lucerne, Sainfoin; or, in the absence of such, steamed food should be given. On no account allow farm horses to lose their sleek summer coat in Autumn.

Milch Cows are in too many instances neglected at this season, more especially in our northern counties, what they get in the pastures being insufficient to support them. They should have grass, Clover, Tares, Lucerne, or Sainfoin, and be housed at night whenever the cold weather sets in. In some places an early plot of Globe Turnips is grown for cows. The tops are objectionable, and the bulbs should be steamed along with chaff and bean meal. Old or worn-out cows may be allowed to run dry for fattening. In our southern counties early September is generally favourable for milch cows, the weather being mild, and the grass plentiful; but to this there are many exceptions, the weather either being wet, or the pastures burnt up, or the bite deficient naturally; and of the two, a cold wet bed at night is the most objectionable to an in-calf milch cow timed to calve about the close of the year. Cows should continue to have plenty of soft filtered water to drink. Very great improvements are now being made in some dairies for controlling the extremes of temperature during summer and winter, and it is just as necessary to attend to the temperature of the cow during the process of secreting the milk, as it is to the temperature of the dairy in the several processes that take place after the milk is withdrawn from the udder.

Notices to Correspondents.

DESTROYING THISTLES: *A. W.* writes:—Will you or any of your correspondents be so good as inform me the best plan for destroying Thistles on grass land where it is pastured by deer, a few Brittany sheep, and two or three cows, and about 5 acres in extent? [Spud them below the ground and drop a little salt upon the cut surface. Mow just before they flower.]

SEWAGE IRRIGATION. Communications on this subject have been received from "H. F. M." and "Waste-paper."

WORKS ON AGRICULTURE: *T. E. H.* Stephens' book having been revised and re-published during the present year is the most likely to answer your purpose; published by Blackwood in 10 parts at 5*s.* each. Mr. Mechi published a list of useful books some years ago. See also Catalogue of the Royal Agricultural Society Library, 12, Hanover Square, London.

Markets.

METROPOLITAN CATTLE MARKET.

MONDAY, Aug 28.

The number of Beasts is smaller than on Monday last, and the demand is good; consequently prices on the average are higher, and a fair clearance is effected. The supply of English Sheep is shorter than has been known for a very long time; we have a large number of foreign, but this does not make amends for the deficiency of English; prices for choicest qualities have advanced, with a ready sale. Trade is dull for Lambs, the season being far advanced. Calves are lower. Our foreign supply consists of 2650 Beasts, 14,360 Sheep, 355 Calves, and 10 Pigs; from Ireland there are 20 Beasts; from Norfolk and Suffolk, 30; and 1550 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 8to6 0	Best Long-wools	6 2to6 6
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—5 0	Ewes & 2d quality	5 0—5 6
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	6 8—7 8
		Calves	4 0—6 0
		Pigs	3 6—5 0

Beasts, 4250; Sheep and Lambs, 23,840; Calves, 393; Pigs, 50.

THURSDAY, Aug. 31.

We have a much larger supply of Beasts than on Thursday last, the increase being almost entirely in foreign; trade is very slow, and prices on the average are lower. The number of foreign Sheep is larger, and of English rather smaller, than last week; trade is not so active as of late, but there is not much reduction in price of choicest qualities. Choice Lambs and Calves are making nearly as much as of late, but it is difficult to dispose of inferior qualities. Our foreign supply consists of 800 Beasts, 7365 Sheep, and 400 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 6to5 8	Best Long-wools	6 0—6 4
Best Shorthorns ..	5 4—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 6—6 8	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	6 4—7 8
		Calves	3 8—5 8
		Pigs	3 6—5 0

Beasts, 1470; Sheep and Lambs, 12,860; Calves, 511; Pigs, 15.

METROPOLITAN MEAT MARKET, Aug. 31.

Best Fresh Butter	16*s.* per dozen lb.
Second do. do.	14*s.* ,,

Small Pork, 4*s.* 8*d.* to 5*s.* 0*d.*; Large Pork, 4*s.* 0*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

Business during the past week has been on a fair scale, at prices fully 4*d.* to 5*d.* per lb. above the opening prices of the clip, and everything appears in favour of rates being maintained. For the moment, however, owing to the very high rates asked, and to the fact that manufacturers have stocked themselves pretty freely, there is not the same excitement in buying that there was a fortnight ago.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Aug. 31.

Prime Meadow Hay,	100*s.* to	110*s.*	Clover, old	140*s.*	150*s.*
Inferior do.	70	80	Inferior do.	80	100
New Hay	80	95	Prime new do. ..	110	126
Inferior do.	50	70	Inferior do.	50	80
Straw	40	45			

MARK LANE.

MONDAY, Aug. 28.

There was a better supply of English Wheat from Essex and Kent to this morning's market than for some time past (including about 1500 qr. of new), which sold slowly at the prices of this day se'nnight. The attendance was good, but only a moderate demand, Russian and American bringing an advance of 1*s.* per qr. Beans and Peas were without change. Grinding Barley 1*s.* per qr. cheaper. Oats were a slow sale, at a decline of 6d. per qr. Flour was unaltered in value. There were a few samples of new white Mustard shown, but no business resulted.

PRICE PER IMPERIAL QUARTER.	*s. s.*		*s. s.*
WHEAT, Essex, Kent, Suffolk .. White	54—59	Red......	54—58
— fine selected runs .... do.	58—61	Red......	58—60
— Talavera	60—62		
— Norfolk	—	Red......	—
— Foreign	46—67		
BARLEY, grind & dist., 26*s* to 31*s* .Chev.	—	Malting ..	33—36
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire .. Potato	25—27	Feed	—
— Irish .... Potato	24—26	Feed	20—22
— Foreign ...... Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign			
BEANS, Mazagan .... —*s.* to —*s.* .. Tick	49—50	Harrow ..	49—50
— Pigeon .... 51*s.* to 59*s.* .. Winds	—	Longpod .	—
— Foreign .... Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent .. Boilers	—	Suffolk ..	—
— Maple, —*s.* to —*s.* .... Grey	—	Foreign ..	34—38
MAIZE	—	Foreign ..	29—30
FLOUR, best marks, delivered .. per sack	—		
— 2d ditto .... ditto	—	Country ..	—
— Foreign .... per barrel	24—28	Per sack ..	38—60

WEDNESDAY, Aug. 30.

A steady tone has been observable in the grain trade to-day. A moderate supply of new English Wheat has been on offer. There has been a healthy demand, and prices have been well maintained. Old samples of both home and foreign growth have been steady in value and inquiry. The supply of Barley has been good. The trade has been steady on former terms. Malt has been quiet, at late rates. Oats have been in large supply and moderate request, at the rates previously current. Beans have been quiet, at late currencies. For Peas the demand has been inactive, at about previous quotations. Flour has changed hands quietly, on former terms.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch ..	—	—	—	—
Irish ..	—	—	—	—
Foreign ..	45,580	9900	38,360	430 7310 brls.
	45,580	9900	38,360	

LIVERPOOL, Aug. 29.—To-day's market was fairly attended by buyers of all classes, and in Wheat there was a moderate business, at about Friday's improvement of 2*d.* for the finest red, 3*d.* for white descriptions, over last Tuesday's prices. Flour of all kinds, choice brands more especially, was in more request, and commanded rather higher figures. Fine old Oats scarce and firm; new English pressed, and tending downwards. Oatmeal dull, and new reduced 1*s.* per load. Egyption Beans and Canadian Peas both quiet, at previous rates. Malt slow, but not cheaper. Barley, no sound on offer; unsweet rather easier. Indian Corn met a fair consumptive demand, at the currencies of this day week. American white is quoted at 35*s.* 6*d.* to 36*s.* 6*d.* per 480 lb.

AVERAGES.

	Wheat.	Barley.	Oats.
July 22	58*s* 10*d*	35*s* 11*d*	27*s* 2*d*
— 29	58 0	34 3	28 3
Aug. 5	58 0	36 7	27 4
— 12	58 5	35 11	26 6
— 19	57 10	35 9	27 6
— 26	57 4	32 7	26 7
Average ..	58 1	35 2	27 3

SEED MARKET.

Our seed trade continues in a quiet state. In Clovers of all kinds there is but little passing. Trefoils are firm. Trifolium is in improved request, at the recent decline. New Rape seed is scarce, and must be quoted 3*s.* to 4*s.* per qr. dearer. New Mustard comes to hand at moderate quotations. Hemp and Canary are unchanged in value. Winter Tares do not at present come forward very freely. The chief characteristic of this years's produce is an abundance of haulm; this to a great extent is prejudicial, both to quantity and quality; hence many complaints are made of the yield of both cereals and seeds.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

HOPS.

BOROUGH MARKET, Aug. 31.

Messrs. Pattenden & Smith report that there is scarcely any inquiry for 1870 Hops, and prices are consequently merely nominal. A few pockets of the new growth have arrived at market, the quality of which is fairly good for early pickings, but they do not find a ready sale.

JAMES BOYD AND SONS, HORTICULTURAL BUILDERS and HEATING ENGINEERS, Paisley, N.B.

CONSERVATORIES, GREENHOUSES, VINERIES, FORCING HOUSES, PITS, and every description of Horticultural Building, manufactured in Wood or Iron by Steam-power Machinery, and erected in any part of the United Kingdom. Manufacturers of Hot-water Apparatus for Heating Churches, Mansions, Warehouses, &c.

Plans and estimates on application.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the SCORCHING RAYS of the SUN.

WOOL NETTING, 2 yards wide and 1s. 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1s. 9d. per yard.
Three yards wide	2s. 8d. per yard.
Four yards wide	3s. 6d. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.

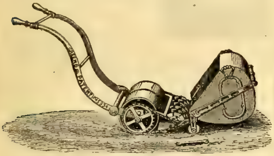
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.

NOTICE.—Removed from 7, Great Trinity Lane.

GREEN'S PATENT "SILENS MESSORS" or NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

The WINNER of EVERY PRIZE in ALL CASES of COMPETITION.



GREEN'S PATENT ROLLERS for LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,

Suitable for Hand or Horse-power.

Illustrated Price Lists free on application.

THOMAS GREEN AND SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.E.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

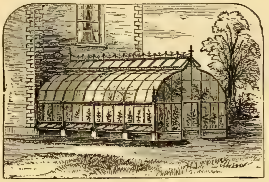
THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C

THE SILICATE ZOPISSA COMPOSITION To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

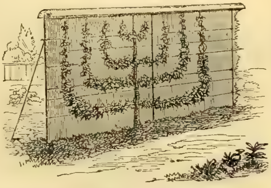
For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, E.C.

BEARD'S PATENT NON-CONDUCTING and VENTILATING METALLIC GLASS HOUSES will prove cheaper than wood.



All lovers of Wall Fruit and delicate Flowers should have a piece of

BEARD'S PATENT IRON-FRAMED GLASS or SLATE WALLS.

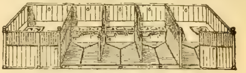


Full particulars of the above may be had for a stamped envelope, also Illustrated CATALOGUE, price 1s., of

CHARLES BEARD, Patentee, Horticultural Engineer, Victoria Works, Bury St. Edmund's.

By Appointment to H.R.H. The Prince of Wales.

BARTON'S PATENT STABLE and HARNESS ROOM FITTINGS, BRACKETS, &c.

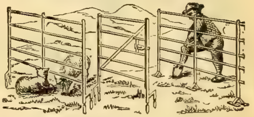


Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps

For ALTERATION of STABLES a competent person can be sent to any part, to inspect and give Estimates.

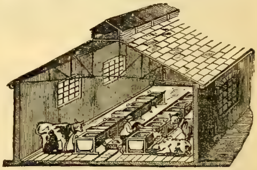
JAMES BARTON, Iron Works, 370, Oxford Street, W.

Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method. Illustrated Price Lists on application to COTTAM AND CO., Iron Works, 2, Winsley Street, Oxford Street, London, W.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS

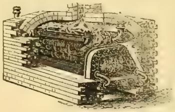


Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

T. G. MESSENGER, HOT-WATER ENGINEER, Loughborough, is delivering HOT-WATER PIPES, &c., free to any Station on Midland Railways, for cash, as under (nett):—

4-in. Hot-water Pipes, 2*s.* 2*d.* p. yard | 2-in Hot-water Pipes, 1*s.* 1*d.* p. yard
3-in. Hot-water Pipes, 1*s.* 9*d.* „ | Connections at proportionate rates.



The Heating of all kinds of Buildings, by hot water, direct or exhaust steam, undertaken by Contract, and satisfactorily completed, in any part of the country.

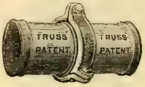
MESSENGER'S PATENT VALVES for Water, Gas, or Steam, shut off perfectly, are full bore, and cheaper than any other made. Form a cheap and excellent Chamber and Valve for Pumps. Thousands at work.

Prices:—4-inch, 21*s.*; 3-inch, 17*s.* 6*d.*; 2-inch, 15*s.*

MESSENGER'S PATENT HOT-WATER BOILER is more powerful and economic in fuel than any other Boiler.

Further prices and descriptions on application.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

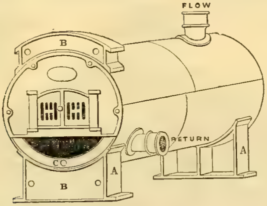
BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to

T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

STEVENS'

"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED,
FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

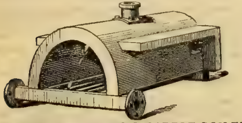
From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

GREENHOUSES, FORCING-HOUSES, VINERIES, and ORCHARD-HOUSES, made of the best Yellow Deal, Glazed with 15-oz. Sheet Glass, painted four times: 20 feet by 12 feet, £40; 30 feet by 12 feet, £60; 40 feet by 15 feet, £85; 50 feet by 18 feet, £110; 100 feet by 20 feet, £230.

The above prices include Brickwork, Staging, Delivery, and Fixing, within 50 miles of London. Plans and Estimates sent on receipt of size required to

R. STEVENS, Horticultural Builder, Simpson's Road, Bromley, Kent.

Simplicity, Efficiency, and Economy is Secured
BY USING



THE PATENT TERMINAL SADDLE BOILER. It is easily set, and very powerful. Illustrated Circulars post free.

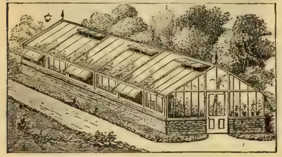
J. IRELAND, Edward Street, Broughton Lane, Manchester.

JAMES WATTS AND CO., HOTHOUSE BUILDERS
and HOT-WATER APPARATUS MANUFACTURERS,
353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

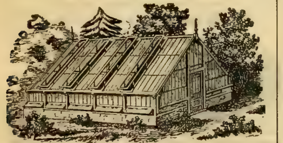
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

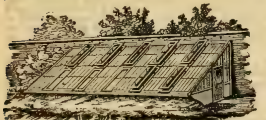
GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in. thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

Estimates given for Conservatories or Greenhouses to any Design.

RICHARDSON'S
PATENT HORTICULTURAL BUILDINGS





Are STRONG, DURABLE, ORNAMENTAL, and CHEAP. The MOST PERFECT SYSTEM OF VENTILATION, combined with COMPLETE PROTECTION FROM THE WEATHER. A free and copious circulation of air in any length of range obtainable instantaneously through every part, or at the top alone, by a single handle.

These Houses are PORTABLE, and most easily fixed, without the disturbing of any glass, the use of nails, or a screw-driver.

Improved Portable and other kinds of GREENHOUSES, CONSERVATORIES, &c., of the best construction, designed and supplied, carriage paid, to any part of the country.

Illustrated Price Lists free on application to the Makers, enclosing a stamp for postage.

Apply to W. RICHARDSON AND CO., Horticultural Builders, Darlington.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.

Portable Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

6. Bankside, Southwark, London, S.E.

Greenhouses and Conservatories.

H. FREEMAN AND SONS' HORTICULTURAL WORKS, 106, Mare Street, Hackney, E. Established 25 years.

Good substantially made GREENHOUSES, glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15; a handsome CONSERVATORY on hand, 35½ feet by 18 feet, £110; Nurserymen's LIGHTS, £25 per 1000 feet.

Latest Improvements
IN
HEATING by HOT WATER.

THE IMPROVED CONICAL BOILERS, for HEATING PINERIES, CONSERVATORIES, GREENHOUSES, MANSIONS, HALLS, WAREHOUSES, &c.,

Solely Manufactured by
POLLARD, JEPHSON, AND CO.
(late Bury & Pollard, Successors to John R. Peill, late Stephenson & Peill).

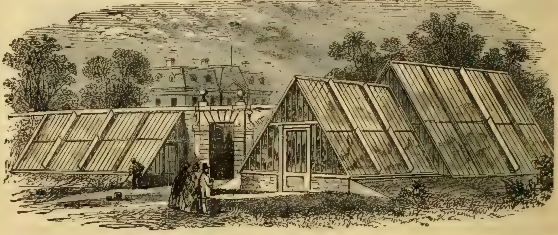
These BOILERS are adapted for setting in Brickwork, or as shown in sketch they require NO BRICKWORK.

Price Lists free by post.

Bear Garden, New Park Street, Southwark, London, S.E.

REDUCED PRICE LISTS FREE ON APPLICATION FOR
SIR JOSEPH PAXTON'S
PATENT HOTHOUSES FOR THE MILLION.

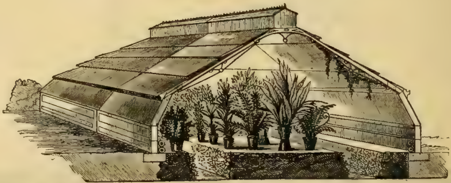
MANUFACTORIES:—LONDON, GLOUCESTER, COVENTRY, ABERDEEN, and PAISLEY, *only*.



A PAMPHLET, with Views of other Glass Houses, and Testimonials, &c., Post Free, 3*d*. Estimates given to Figured Plans or Rough Sketches, and for HEATING APPARATUS, fixed complete.

HEREMAN AND MORTON, HORTICULTURAL ENGINEERS,
14, TICHBORNE STREET, REGENT'S QUADRANT, LONDON, W.

BY ROYAL LETTERS PATENT.



THE PLANT STOVE, WITH STAGE WALLS IN ROCKWORK.

THE MOST PERFECT HORTICULTURAL STRUCTURE IS THE

IMPERISHABLE HOTHOUSE,

Perfectly portable, formed of Glass, Iron and Concrete. No Masonry, no Brickwork, no Putty, and little Paint.

Manufactured under the Patent of Mr. W. P. AYRES by the
IMPERISHABLE HOTHOUSE COMPANY,
NEWARK-UPON-TRENT, NOTTINGHAMSHIRE.

The Company are now in a position to execute orders to any extent, for Plant and Forcing Houses of all descriptions, Railway Stations, Market Halls, Workshops, and Glass Roofs of all kinds.

A BOOK of DESIGNS, with explanatory particulars, will be forwarded in exchange for six stamps, and Special Designs and Estimates will be supplied when required. HEATING by HOT WATER upon the most approved principles. Noblemen or Gentlemen waited upon in any part of the country.

MANAGER—WM. P. AYRES,
FOREST ROAD WEST, NOTTINGHAM.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.

CONSERVATORY and ORCHARD-HOUSE GLASS.

Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 " " ..	0	4½	13 " " ..	2	0
4 " " ..	0	5½	14 " " ..	2	6
5 " " ..	0	6½	15 " " ..	3	0
6 " " ..	0	8	16 " " ..	3	6
7 " " ..	0	10	17 " " ..	4	0
8 " " ..	1	0	18 " " ..	5	0
9 " " ..	1	2	19 " " ..	6	0
10 " " ..	1	4	20 " " ..	7	0
11 " " ..	1	6			

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter ..	0*s.* 6*d.*	9 inches in diameter .. 1*s.* 8*d.*
5 " " ..	0 8	10 " " .. 2 0
6 " " ..	0 10	11 " " .. 2 6
7 " " ..	1 1	12 " " ..
8 " " ..	1 4	

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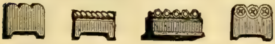

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4 do. extra large do. ..	do.	30 .	22 .	8 .
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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & CO., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, September 2, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 36.—1871.] SATURDAY, SEPTEMBER 9. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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SEEDLING RHODODENDRONS, from the best named varieties:—

2 to 4 inches high, twice transplanted, fine well-rooted plants
4 to 6 inches high, twice transplanted, fine well rooted plants.
6 to 9 inches high, thrice transplanted, fine well-rooted plants
10 to 12 inches high, four times transplanted, fine well-rooted plants, fit for grafting
PERISKIA, Stocks, strong
EPIPHYLLUMS, in variety, good

Prices on application to B. WHITHAM, The Nurseries, Reddish, near Stockport

Orchids.

JAMES BROOKE AND CO. beg to invite attention to their splendid stock of ORCHIDS, adapted for supplying a regular succession of the most exquisite cut flowers. The singular beauty, and the long continuance of cut Orchid blooms, recommend them as better suited than any others for high-class ornamental purposes, including use by ladies; and there is no reason why a skilful gardener should not have abundance of them almost always at command, and with little more trouble than is required for select Dutch Bulbs.

Messrs. BROOKE AND CO.'s stock includes all the best sorts for cutting, the Bulbs are well matured, and they are certain to yield plenty of blossom

16 and 18, Victoria Street, Manchester. Nurseries: Fairfield, near Manchester

JEAN VERSCHAFFELT begs to offer the following, in fine healthy plants, at the undermentioned low prices, viz.:—
CAMELLIAS, 1 to 1½ foot high, with buds, best sorts, all named varieties (selection left to J. V.), £7 per 100; larger, £10 per 100.
AZALEA INDICA, fine plants with buds, first rate varieties, £5 per 100; stronger, £6, £8, £12 and upwards per 100.
OTAHEITE ORANGES, with fruit, 30s. per dozen.
JASMINUM GRANDIFLORUM, fine grafted plants, flowering all through the winter, 24s. per dozen.

Early orders are respectfully solicited, especially as regards Camellias, which are a scarce article this year. Apply to

JEAN VERSCHAFFELT, Nurseryman, 134, Faubourg de Bruxelles, Ghent, Belgium.

New Bedding Plant, Thymus citriodorus aureus

MARGINATUS (Lemon-scented gold-edged Thyme).

MESSRS. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield, will send out during the present autumn an exceedingly pretty Thyme, of an erect-growing but much-branched habit, with large obovate leaves, which are of a very bright dark green in the centre, and with a broad rich golden-yellow margined variegation; is very handsome and attractive. It will prove very effective for edging flower beds, borders, or riband planting, and for growing in masses on banks, or in other varied forms; it may be grown as bushes or pyramids for winter bedding, having proved perfectly hardy. Altogether, it may be considered as one of the most charming bedding plants known, and with the additional delicious fragrance of the sweet-scented Lemon Thyme

It was exhibited at the Royal Horticultural Society on June 21, 1871, and received a First-class Certificate; also at the Royal Horticultural Show at Nottingham, a First-class Certificate.

PRICES:—

1 plant for 2s. 6d.	12 plants for 18s	50 plants for 63s.
6 plants for 10s. 6d.	25 plants for 33s.	100 plants for 105s.

Trade terms on application.

NEW and SELECT PLANTS.—The following are now offered at the prices annexed. No charge for package. On all orders of £1 the carriage will be paid to London:—

		s.	d.
12	fine varieties DOUBLE GERANIUMS	4	0
12	superb new varieties DOUBLE GERANIUMS of 1870 ..	8	0
12	varieties best selected FUCHSIAS	2	0
12	varieties new FUCHSIAS of 1871	4	0
12	varieties best selected VERBENAS	2	0
12	fine new varieties VERBENAS of 1871	2	6
12	varieties best selected COLEUS	2	0
12	fine new varieties COLEUS of 1871	2	6
12	varieties best selected CHRYSANTHEMUMS	2	6
12	fine varieties new CHRYSANTHEMUMS of 1871	3	0
12	fine new varieties PENTSTEMONS	4	0
12	fine varieties PERENNIAL PHLOXES	3	0
12	varieties selected ZONAL GERANIUMS	3	0
12	fine new varieties ZONAL GERANIUMS of 1870	6	0
12	fine var. GOLD and GOLDEN BICOLOR GERANIUMS	6	0
12	fine varieties JAPANESE AUCUBAS	12	0
12	new varieties Hardy CHILIAN MIMULUS	3	0
12	fine varieties ACHIMENES	2	6
12	fine varieties IRIS GERMANICA	4	0
12	fine varieties SEDUMS	3	0
12	fine varieties SEMPERVIVUMS	3	0
12	select varieties SAXIFRAGAS	3	0
12	fine varieties ANTIRRHINUMS	3	0
12	select varieties PANSIES	4	0
12	fine varieties JAPANESE EUONYMUS	6	0
12	fine varieties BOUVARDIAS	6	0
12	fine varieties MESEMBRYANTHEMUMS	4	0
12	select varieties HELIOTROPIUMS	3	0
12	select varieties LANTANAS	4	0
12	fine varieties PELARGONIUMS	6	0
12	fine varieties IVY-LEAF GERANIUMS	6	0
50	select varieties FUCHSIAS	8	0
50	select varieties CHRYSANTHEMUMS	8	0
50	select varieties HARDY HERBACEOUS PLANTS ..	14	0
100	select varieties HARDY HERBACEOUS PLANTS ..	25	0
12	fine varieties DOUBLE and SINGLE PETUNIAS	6	0
12	fine varieties TROPÆOLUMS	3	0
12	fine varieties HYDRANGEAS	6	0
12	fine varieties VIOLA ODORATA	6	0
6	fine varieties ECHEVERIAS	3	0
12	fine varieties GREENHOUSE CLIMBERS	8	0
12	select varieties GREENHOUSE SUCCULENTS ..	6s. to 12	2
12	select varieties GREENHOUSE PLANTS	6s. to 12	0
12	fine varieties select STOVE PLANTS	6s. to 12	0
4	new AGERATUMS, White Tom Thumb, White Imperial Dwarf; Tom Thumb's Bride, the whitest; Sultan, the darkest, for 1s 6d		
12	varieties AGERATUMS, including the above	3	6
12	fine varieties tall HERBACEOUS LOBELIAS	9	0
12	fine varieties VERONICAS	6	0

B. W. KNIGHT, Florist, Battle, Sussex.

Now Ready.

SUTTONS' AUTUMN CATALOGUE for 1871, profusely Illustrated, and containing full Cultural Instructions for the cultivation of:-

Hyacinths
Miniature ditto
Narcissus
Jonquils
Ranunculus
Anemones
Crocus
Tulips, early and late
Gladiolus
Lilies
Amaryllis
Iris

With all other kinds of Flower Roots. Price 1s., post free; gratis to customers.

SUTTON AND SONS, Seedsmen by Special Appointment to H.M. the Queen, and H.R.H. the Prince of Wales, Reading.

Exhibition Hyacinths.

SUTTONS' SUPERB DUTCH HYACINTHS, for Pots and Glasses, specially selected for Exhibition purposes.

25 splendid new varieties, 40s.
12 „ „ „ 20s.

CHEAPER COLLECTIONS, containing the best old varieties.

			£	s.	d.
100 Hyacinths in	100 very choice sorts		£4	4	0
100 „ „	50	„	3	10	0
50 „ „	50	„	2	2	0
50 „ „	25	„	1	15	0
25 „ „	25	„	1	1	0
12 „ „	12 extra fine	„	0	12	0
12 „ „	12 choice	„	0	9	0
12 „ „	12 good	„	0	6	0

MINIATURE HYACINTHS, finest named varieties, 4s. per dozen.

_ To secure the best Bulbs, early orders are solicited.

For complete Cultural Instructions, and list of Flower Roots, see SUTTONS' AUTUMN CATALOGUE for 1871, price 1s.; gratis to customers

SUTTONS' SELECT LIST of DUTCH FLOWER ROOTS, gratis and post free on application.

All Flower Roots carriage free.

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c, is now ready, and may be had gratis and post free on application

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

The Royal Seedsmen.

HER MAJESTY THE QUEEN. | H.R.H. THE PRINCE OF WALES.

JAMES CARTER AND CO.

CARTER'S choice strains of CALCEOLARIA, CINERARIA and PRIMULA.

INTERNATIONAL PRIZE CALCEOLARIA.

Per packet.—	s.	d.
CALCEOLARIA (International Prize). — The plants of this splendid strain received First Prizes at the Royal Botanic, Royal Horticultural, and other places	2	6
CALCEOLARIA, finest Hybrid, 2s. 6d.; smaller packets ..	1	6
„ finest Spotted, 2s. 6d.; smaller packets ..	1	6

Saved with the greatest care, and from one of the largest collections in the kingdom

CINERARIA, choicest Mixed; saved from a splendid collection of named varieties, and cannot be surpassed	2	6

PRIMULA, choicest Fringed varieties. — The varieties of Primula we offer can be grown with the utmost confidence, as they are saved with the greatest care, and from one of the finest strains in cultivation.

PRIMULA, choicest Mixed Fringed, 2s. 6d.; smaller packets ..	1	6
„ dark Carmine	2	6
„ new Scarlet	2	6
„ Rose Fringed	2	6
„ choicest White Fringed	2	6
„ choicest Fern-leaved Carmine	2	6
„ choicest Fern-leaved White	2	6

Forwarded immediately on receipt of Post-office Orders. Seeds carriage free.

JAMES CARTER AND CO., The Royal Seedsmen, 237 and 238, High Holborn, London, W.C.

Strawberries.

JAMES CARTER AND CO. having this season potted several hundred thousand of the finest varieties of STRAWBERRIES, which are now well established, and if planted early will produce a good crop next season, beg to inform their Patrons that a Descriptive LIST will be published in their BULB CATALOGUE, now in Press, a Copy of which will be posted as usual.

Runners, in pots, our selection,	25 of a sort ..	10s 6d per 100
„ „ „	100 „ ..	7s 6d „
Runners, out of pots, our selection,	25 of a sort.	5s 0d. „
„ „ „	100 „	3s. 6d. „

Black Prince
British Queen
Carolina Superba
Comte de Paris
General Havelock
Goliath
Keens' Seedling
Prince Arthur
Prince of Wales
Princess Alice Maude
Princess Royal
The Lady
Victoria
Wizard of the North
Wonderful

Runners, out of pots, per 100, 3s 6d; Runners, in pots, per 100, 10s. 6d.

Dr. Hogg
Duc de Malakoff
Premier
President
Rifleman
Sir Harry
Vicomtesse Hericart de Thury.

Runners, out of pots, per 100, 5s; Runners, in pots, per 100, 12s. 6d.

New kinds at a slight advance in price according to our stock. Newest sorts, such as The Amateur, Royalty, Brown's Wonder, and several French varieties of the late Dr. Nicaise's raising, at same prices as advertised by the firms distributing them.

JAMES CARTER AND CO, 237, High Holborn, W.C.; and Crystal Palace Nurseries, Forest Hill, S.E.

PRINCESS of WALES STRAWBERRY. — This superb variety is now fully proved to be the best early kind hitherto produced; it is the earliest, largest, and best flavoured of all the early kinds, and a sure cropper. Plants are now offered from the original stock, price 5s. per 100, package included. That this fine variety may now be thoroughly distributed from the true stock, 25 plants will be sent post free for 1s. 6d. from the raiser.

B. W. KNIGHT, Florist, Battle, Sussex.

CHEAP STRAWBERRY PLANTS.—The advertiser, having a large acreage, can supply strong plants of the following approved varieties, at 2s. per 100, or 11s. per 1000:—Keenes' Seedling, Prince Imperial, President, Sir Joseph Paxton, Sir Charles Napier, British Queen, John Powell, Carolina Superba, Frogmore Pine, and Dr. Hogg. Basket for 300, 6d. Unless with orders from Trade, postage stamps must be sent, or Post-office Order on Liverpool.

J. SHIELD, Strawberry Farm, Thorton Hough, Neston, Cheshire.

SEVERAL ORANGE TREES for SALE, 7 feet high, by 3 feet 6 inches wide; Two TANGERINE ORANGE TREES, 5 feet high, by 3 feet wide; the whole in Varnished Oak Boxes, with brass hinges for letting down the sides May be seen, or particulars will be sent, on application to the Gardener,

J. JONES, The Lodge, Bycliffes, Gravesend, Kent.

Russell's Pyramid Primula.

GEORGE CLARKE has this season secured a quantity of this very fine strain, in excellent condition, which he recommends, feeling assured that no other possesses such a robust character, with really splendid flowers. Mixed, Red and White, 2s 6d per pkt. Instructions for raising and growing sent if required

Nurseries: Streatham Place, Brixton Hill, London, S.W.; and Mottingham, Kent, S E

Winter Flowering Heaths.

E. G. HENDERSON AND SON respectfully invite inspection of their stock of the above, consisting of some thousands of plants, in fine health, well set for flower-buds, including E. HYEMALIS, GRACILIS, AUTUMNALIS, WILLMOREA, GRACILIS VERNALIS, LINNÆANA, SINDRIANA, COLORANS, REGERMINANS, &c.

E. G. HENDERSON AND SON'S NEW BULB CATALOGUE includes Descriptions of the beautiful new variegated HYDRANGEA SPECIOSA; also the finest double-flowered white Indian Azalea, PRINCESS LOUISE, and the best striped-flowered variety, PICTURATA ELEGANS, &c.

The CATALOGUE forwarded to Strangers on receipt of four postage stamps.

Wellington Nursery, St. John's Wood, London, N.W.

Gladioli, Amaryllis, New Roses, Pæonies, Iris,

LILIUMS, PHLOX, &c.

EUGENE VERDIER, FILS AINÉ, trusts that his Clients and Friends will again favour him with their orders, which he assures them will be executed in a manner that will give entire satisfaction.

CATALOGUES will be obtainable direct from him about Sept. 25.

EUGENE VERDIER, FILS AINE, Horticulteur, 3, Rue Dunois, Paris.

Gladioli, Gladioli.—To the Trade.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, 3, Rue Dunois, Paris, offers to his Friends a considerable stock of fine BULBS of his unrivalled collection of above; also the following New Varieties (the whole for £2 16s.):—Alcyone (Souchet), Antigone (S.), Antiope (S.), Ariane (S.), Arsinöe (S.), Beatrix (S.), Celimène (S.), Didon (S.), Jupiter (S.), Minerve (S.), Ossian (S.), Phœbus (S.), Virginalis (S.).

CATALOGUES, with description, will be obtainable about September 25, by addressing direct to E. V., fils ainé.

SUTTONS' NEW and CLEAN SEEDS FOR PRESENT SOWING.
Carriage Free.

SUTTONS' PERMANENT PASTURE MIXTURES, specially prepared for all soils.

SUTTONS' IMPROVED ITALIAN RYE-GRASS.

Trifolium incarnatum.
Trifolium, new late red.
Trifolium, new late white.
Bromus Schrœderi.
Mustard.
Rape.

Samples and lowest prices may be had on application.
All goods carriage free. 5 per cent. off for cash payment.

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

AT PRESENT, THE WINTER-GARDEN, AT
MR. WM. BULL'S ESTABLISHMENT
IS A MOST LOVELY SIGHT.

The GRAPE VINES, which are festooned over the building, are literally covered with Grapes. These are grown for the purpose of shading the specimen plants, which are alone worth a journey to see. Thousands of bunches of Grapes over-hanging magnificent plants of the grand ABYSSINIAN MUSA, matchless TREE FERNS, noble PALMS, picturesque ENCEPHALARTOS, graceful DRACÆNAS, and other Plants, present a *coup d'œil* unequalled in Europe, and perhaps in the World.

An inspection of the above, as also of the NEW PLANTS, which are the great speciality, is invited, and can always be made by application at the Office.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD,
CHELSEA, LONDON, S.W.

NEW CRIMSON PRIMROSE,
PRIMULA JAPONICA.

MR. WILLIAM BULL

Begs to announce that he is NOW SENDING OUT this NEW HARDY PRIMROSE. It has been recently figured in the "Florist and Pomologist," "Floral Magazine," and "Botanical Magazine;" and the opinion of every one who has seen it in blossom may be expressed in the one word, "lovely!" When exhibited before the Floral Committee of the Royal Horticultural Society, it was voted a First-class Certificate by acclamation.

The "Florist" says of it,—"Hail! Queen of the Primroses! for so its introducer designates the lovely flower we now figure, which is hardy as a peasant, resplendent as a princess. It is just ten years since Mr. Fortune met with it in Japan, a basketful of blooming plants having been brought to his door; they were, of course, secured, but the journey home was too much for them, and despite every care none reached England alive. Ever since that time endeavours have been made to introduce this lovely plant, but till now without success, the seeds having been found to lose their germinating power in the course of transmission to Europe. At last, however, perseverance has been rewarded, and from seeds imported by Mr Fortune plants have been raised in the establishment of Mr. W BULL, of Chelsea. Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely Primrose, one which is really valuable on account of its intrinsic beauty. Of the hardiness of the Primula japonica there can be no doubt, since plants which have been standing all the winter, fully exposed, in the trying atmosphere of London, are perfectly healthy, and came into bloom about the middle of May, some two or three weeks later than the plants which had been potted and flowered under glass."

The "Floral Magazine" remarks,—"Since the day when Lilium auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as that which we now figure, when Mr. W. BULL exhibited it on May 3 of the present year. Its history is now well known, and of its merits too much cannot be said. To Mr. Fortune, already so successful in enriching our gardens, are we indebted for it; and Mr. BULL may well congratulate himself on being the first to introduce it into Europe. A Primula a foot and a half high, bearing four or five separate whorls of flowers, each flower an inch in diameter, and of a splendid magenta colour, and the plant, moreover, perfectly hardy—can anything be added to this to indicate its value? We hardly think so, and everyone who saw it will fully bear out our assertion, that a more beautiful and more useful plant has not been for many years introduced into Europe. Of its hardiness there can be no doubt, as it has stood the ordeal of the last severe winter in the neighbourhood of London."

The Plants now offered are very strong and healthy, in 4-inch pots, and will be sure to bloom beautifully next Spring. Early Orders are respectfully solicited to insure having the strong Plants, for the demand is expected to be very large. Price **10s. 6d.** each, or **£4 10s.** per dozen. Coloured Plates can be supplied at 1*s.* 6*d.* each.

Those wishing to add this splendid Primula to their Gardens, are recommended to procure Plants, for even if imported Seed should be offered this season, it can scarcely be expected to grow. Mr. Fortune imported Seeds many times during a period of 10 years, but they always failed to vegetate, except in one instance, when sent to this country in a special manner.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA,
LONDON, S.W.

BEDFORDSHIRE SILVER SAND and PEAT, sold only by J. ARNOLD, 29, Clarendon Square, N.W. Acknowledged by the largest and most extensive Growers and Nurserymen to be the best Sand obtainable for growing Plants, &c., in the United Kingdom. Strongly recommended by all who have used it

Maiden Lane, and Kingsland Goods Depôt, N. L. Railway. By the truck-load to all parts; at the Wharf, 14*s.* per ton. Terms nett cash. All orders to be addressed,

J. ARNOLD, 29, Clarendon Square, N.W

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Wasps.—Davis's Improved Wasp Destroyer.

B. R. DAVIS (Sole Manager of Mr. Scott's Seed Business for the last 11 years), was the first to introduce the above celebrated article to the notice of the Public; and having made great improvements in it, is able to offer an article of vastly superior quality to the original, for the Destruction of Wasps, Hornets, Flies, and other Garden Pests, which, he is happy to say, from the numerous orders he receives, the Public are fully appreciating.

"....The present bottle is more effective than any I have had before....."—*Vide Testimonial.*

To be had genuine in bottles at 1*s.* 6*d.* and 2*s.* 6*d* each, from B. R. DAVIS, The Seed Warehouse, Yeovil, Somerset.

B. R D.'s BULB CATALOGUE may be had free on application.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

J. Scott's Seed Business.

PUBLIC NOTICE.—Having just been informed that MY LATE SHOPMAN, B R. DAVIS, has sent circulars to all, or nearly all, my customers, the impression has gone abroad that I was giving up my SEED BUSINESS AT YEOVIL. *This is not the case.* The same steady attention to the wants of the numerous Friends who have so kindly supported me during 20 years, will still be maintained, and, if possible, renewed exertions and attention to supply everything of the best quality only will be my aim

All letters and orders for SEEDS to be addressed to me, at the SEED STORES, YEOVIL; and all orders for TREES, SHRUBS, and PLANTS, to be sent to THE NURSERIES, MERRIOTT, SOMERSET.

JOHN SCOTT.

N.B.—SCOTT'S WASP DESTROYER can only be had genuine from the Proprietor of the recipe. All imitations are spurious.

B. R. Davis is no longer in my employment.

WILKIE'S CONDENSED COMPOSITION,
THE CHEAPEST AND ONLY EFFECTUAL
MEALY BUG, SCALE, and THRIP DESTROYER.

One trial will be sufficient to give it a pre-eminence over all other Insecticides.

Sold in bottles at 2*s.*, 3*s.* 6*d.*, and 6*s.* each.

May be had of all respectable Nurserymen and Seedsmen, and Wholesale of

ALEX. WILKIE,
Oak Lodge Gardens, Addison Road, Kensington, W.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

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Horticultural Buildings.

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TO BE DISPOSED OF, a well-constructed CONSERVATORY.—Length 40 feet, breadth 20 feet, and height 12 feet, with Heating Stove, Pipes, Stages, and Plants, complete. CHARLES F. ADAMS, Esq., 10, Coleman Street, London, E.C.

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WANTED, a number of the above, Second-hand, In good condition. Size of House, 120 ft by 14 ft.
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SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

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PROTECTION AGAINST the SCORCHING RAYS of the SUN.
WOOL NETTING, 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1*s.* 9*d.* per yard.
Three yards wide	2*s* 8*d* per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.

HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d* per yard.

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OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½*d.* per yard run.
No. 2.—54 inches wide	at 7*d.* per yard run.
No. 3.—54 inches wide	at 5½*d.* per yard run.
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In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15*s.* 0*d.*	19*s.* 6*d.*
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Seconds	18*s.* 6*d.*	26*s.* 0*d*
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The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.
Stock sizes, 16-oz., in 100 feet boxes, boxes included.
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				4ths	3rds.	2nds.
				s. *d*	*s.* *d.*	*s.* *d.*
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..	16 to 17 oz. to the foot.		
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12*s.* 6*d.*
by 6	8½ by 6⅝	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13*s.* 6*d.*

Boxes 2*s.* each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without, E.C.

PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.,

HAVE NOW READY FOR DELIVERY THEIR THIS SEASON'S SUPPLY OF

HYACINTHS, TULIPS, NARCISSI, CROCUS, AND OTHER DUTCH BULBS.

Being Imported from the leading Growers in Holland, no finer are to be obtained; and the prices are fixed as reasonable as possible, to meet the increasing demand for cheap Spring decorative materials.

Priced Descriptive CATALOGUES now ready, with appended LISTS of VINES and STRAWBERRIES for immediate planting.

"The Best Catalogue."—*Vide "Horticulturist," October*, 1870.

GRATIS and POST FREE, a CATALOGUE of

DUTCH BULBS,

Fruit Trees, Dried Flowers, and General Autumn Requirements.

DICK RADCLYFFE & CO.,
SEEDSMEN, HORTICULTURAL DECORATORS, and GARDEN FURNISHERS,
129, HIGH HOLBORN, W.C.
SEED GROUNDS, ERFURT, PRUSSIA.

PAUL'S HYACINTHS, TULIPS, &c.

"MR. WM. PAUL * * * * well maintained the high reputation he enjoys for the successful cultivation of this class of flowers."—*Journal of Horticulture*, 1871.

"A remarkably fine display of Hyacinths."—*Gardeners' Chronicle*.

WILLIAM PAUL

BEGS TO ANNOUNCE THAT HIS

HYACINTHS, TULIPS, CROCUSES, and other DUTCH FLOWER ROOTS

Have arrived in excellent condition, and he respectfully solicits early Orders.

PRICED DESCRIPTIVE CATALOGUE Free by Post.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR ANNUAL SUPPLY OF

HYACINTHS, AND OTHER BULBOUS ROOTS FROM HOLLAND,

And are pleased to say that they are in splendid condition.

J. V. & SONS were awarded the following Prizes at the London Exhibitions last spring—viz.,

First Prize for 18 Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First Prize for 18 White Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First Prize for 12 pots Tulips, in 6 varieties, Royal Horticultural Society, March 15, 1871.
Second Prize for 6 New Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
Extra Prize for Group of Hyacinths and Tulips, Royal Horticultural Society, March 15, 1871.
First Prize for 12 Hyacinths, distinct varieties, Royal Botanic Society, March 22, 1871.
First Prize for 12 pots Tulips, distinct varieties, Royal Botanic Society, March 22, 1871.
Extra Prize for Collection of Hyacinths, Royal Botanic Society, March 22, 1871.

JAMES VEITCH AND SONS also supplied to the Commissioners of Her Majesty's Works the TULIPS, HYACINTHS, and CROCUSES which made such a grand display last Spring in Hyde Park.

CATALOGUES are now ready, and will be forwarded Post Free on application.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

WELLINGTONIA GIGANTEA.

HUGH LOW & CO.

Offer healthy ONE-YEAR SEEDLING PLANTS, established in single pots, at **30s.** per 100, or **£12 10s.** per 1000. Special price for five or ten thousand.

CEDRUS DEODARA.

Fine TWO-YEAR SEEDLINGS, in store pots, **£10** per 1000.

CLAPTON NURSERY, LONDON, E.

To Her Majesty the Queen.

DUTCH FLOWER ROOTS,

To H.R.H. the Prince of Wales.

CARRIAGE FREE.

JAMES CARTER & CO.

Having received their Consignment of DUTCH FLOWER ROOTS, which have arrived in splendid condition, beg to offer the following COLLECTIONS of BULBS, which will be found to contain, in the best quality, all the sorts required for the purposes mentioned:—

CARTER'S COLLECTIONS of BULBS for CONSERVATORY and WINDOW DECORATION, including Basket and Packing, and Carriage Free. Price 10*s*. 6*d*., 21*s*., 42*s*., 63*s*., and 84*s*.

CARTER'S "GUINEA" COLLECTION of BULBS for CONSERVATORY and WINDOW DECORATION, including Box and Packing, and Carriage Free. Contains—

12 HYACINTHS, in 12 extra fine named sorts.
9 POLYANTHUS NARCISSUS, in 9 varieties.
12 JONQUILS, sweet scented.
50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 „ Rex rubrorum.
3 „ La Candeur.
3 „ Royal Standard.
6 „ Yellow Prince.
3 „ Rosa Mundi.
6 „ Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
6 IXIAS, finest mixed.
6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

CARTER'S COLLECTIONS of BULBS for CONSERVATORY and OUT-DOOR PLANTING, including Basket and Packing, and Carriage Free. Price 15*s*., 30*s*., 42*s*., 63*s*., and 84*s*.

CARTER'S COMPLETE COLLECTION of BULBS for CONSERVATORY and OUT-DOOR PLANTING, including Box and Packing, and Carriage Free. Price 30*s*. Contains—

12 HYACINTHS, in 12 extra fine named sorts for pots or glasses.
12 HYACINTHS, in 3 colours for bedding.
12 NARCISSUS, Double, white.
12 „ Poeticus or Pheasant-eye.
36 TULIPS, extra fine mixed.
6 „ Tournesol.
6 „ Duc Van Thol.
3 „ Royal Standard.
3 „ La Candeur.
3 „ Yellow Prince.
3 „ Rex rubrorum.
12 Double DAFFODILS.
12 STAR of BETHLEHEM.
12 SCILLA BELGICA, mixed.
75 CROCUS, blue.
75 „ striped.
75 „ large yellow.
75 „ white.
36 ANEMONES, extra fine mixed
8 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice mixed English.
12 „ extra fine mixed Spanish.
12 JONQUILS, Campernel.
36 RANUNCULUS, extra fine mixed.
50 SNOWDROPS.

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For full particulars of all the above, see

CARTER'S AUTUMN CATALOGUE

OF DUTCH BULBS, FRUIT TREES, ROSES, &c.,

Which may be had Gratis and Post Free on application.

5 per cent. Discount for Cash.

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

SHOW OF DAHLIAS, ASTERS, &c, SEPTEMBER 6, 1871.

AWARDS of the JUDGES.

CLASS 1.—24 DAHLIAS, cut blooms, distinct. (Open)
1st, Messrs. Kelway & Son, The Nurseries, Langport, Somerset, £1 5s.
2d, Mr. C. Turner, Royal Nursery, Slough, £1.
3d, Mr. C. J. Perry, The Cedars, Castle Bromwich, near Birmingham, 15s.

CLASS 2.—12 DAHLIAS, cut blooms, distinct. (Amateurs)
1st, Mr. C. J. Perry, 15s.
2d, Mr. R. Parsons, Waterstock, Oxford, 10s.
3d, Mr. J. Beach, Gr. to C. J. Herries, Esq., St. Julian's, Sevenoaks, Kent, 7s.

CLASS 3.—24 ASTERS, not quilled, cut blooms. (Open.)
1st, Mr. G. Wheeler, Warminster Nurseries, Wilts, £1.
2d, Messrs. Kelway & Son, The Nurseries, Langport, Somerset, 15s.
3d, Mr. J. J. Chater, Gonville Nurseries, Cambridge, 10s.

CLASS 4.—12 ASTERS, not quilled, cut blooms. (Open.)
1st, Mr. J. J. Chater, 10s.
2d, Mr. J. Walker, Nurseryman, Thame, Oxford, 7s.
3d, Mr. E. Rowe, The Rookery, Roehampton, 5s.

CLASS 5.—12 ASTERS, not quilled, cut blooms. (Amateurs.)
1st, Mr. E. Rowe, 15s.
2d, Mr. E. Farndell, Gr., Surrey County Asylum, Springfield Farm, Tooting, S.W., 10s.
3d, Mr. B. Porter, Gr. to Mrs. Benham, Sion Lodge, Isleworth, W., 7s.

CLASS 6.—6 ASTERS, not quilled, in 8-inch pots. (Open.)
1st, Mr. E. Rowe, £1. | 2d, Mr. B. Porter, 15s.

CLASS 7.—24 VERBENAS, distinct, 5 trusses of each. (Open.)
1st, Mr. C. J. Perry, £1 5s. | 2d, Mr. J. J. Chater, £1.

CLASS 8.—6 pots of LILIUM SPECIOSUM (LANCIFOLIUM), not fewer than 3 varieties. (Open.)
1st, Mr. W. Bull, Nurseryman, &c., King's Road, Chelsea, S.W., £3.

CLASS 9.—6 LILIUMS, distinct. (Open.)
1st, Mr. W. Bull, £3.

PRIZES OFFERED by MESSRS. JAMES CARTER AND CO.

CLASS 10.—Collection of ONIONS, to include New Giant Rocco of Naples, Giant White Tripoli, and New Neapolitan Marzagole.
1st, Mr. E. Farndell, £2 2s.
2d, Mr. J. Baverstock, Gr. to W. Hope, Esq., Parsloes, Barking, Essex, £1 1s.

ROYAL HORTICULTURAL SOCIETY.—HORTICULTURAL DEPARTMENT of the LONDON INTERNATIONAL EXHIBITION, 1871.

The following Awards to Foreign Exhibitors were made by the International Jury, September 6, 1871:—

FIRST-CLASS CERTIFICATES.

Agave Celsiana albida
Agave Toneliana
Agave Mescal nigrispinis
Agave dealbata compacta
} From M. Jean Vershaffelt, Ghent.

SECOND-CLASS CERTIFICATE.

Agave dealbata angustifolia, from M. Jean Verschaffelt, Ghent.

ROYAL HORTICULTURAL SOCIETY.—HORTICULTURAL DEPARTMENT of LONDON INTERNATIONAL EXHIBITION, 1871.

On OCTOBER 4, 1871, a great INTERNATIONAL EXHIBITION of FRUIT will be held at South Kensington, in which all Home and Foreign Growers of Fruit are invited to take part, and on which occasion the following PRIZES will be awarded:—

CLASS 1.—The most complete COLLECTION of APPLES, 3 fruits of each variety.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 2.—COLLECTION of DESSERT APPLES, 3 fruits of each variety.
1st, Silver Gilt Medal. | 2d, Large Silver Medal.
CLASS 3.—COLLECTION of CULINARY APPLES, 3 fruits of each variety.
1st, Silver Gilt Medal. | 2d, Large Silver Medal.
CLASS 4.—The most complete COLLECTION of PEARS, 3 fruits of each variety.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 5.—COLLECTION of DESSERT PEARS, 3 fruits of each variety.
1st, Silver Gilt Medal. | 2d, Large Silver Medal.
CLASS 6.—COLLECTION of KITCHEN PEARS, 3 fruits of each variety.
1st, Large Silver Medal. | 2d, Bronze Medal.
CLASS 7.—COLLECTION of GRAPES, 2 bunches of each variety.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 8.—The LARGEST BUNCH of GRAPES.
1st, Silver Medal | 2d, Bronze Medal.
CLASS 9.—COLLECTION of ORANGES, LEMONS, CITRONS, LIMES, &c.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 10.—MISCELLANEOUS FRUIT, not mentioned in either of the above classes.

By Order of the Council,
HENRY Y. D. SCOTT, C.B., Major General,
Secretary to the Royal Horticultural Society,
And to Her Majesty's Commissioners of the Exhibition of 1851.

The Gardeners' Chronicle

SATURDAY, SEPTEMBER 9, 1871.

A SEASON of unusual horticultural exertion and display is drawing to a close, and the thoughtful part of the outside public, as well as the originators of and contributors to the EXHIBITIONS, must naturally ask themselves how far the efforts of the latter are producing any permanent and real impression on the general mass of the people—whether the increase in the love of flowers, which is indicated by the number of exhibitions and the interest taken in them, belongs only to the upper classes, or is extending its way downwards and leavening the whole mass?

Jaded and exhausted by the summer's work, we anticipated the holiday of our legislators, and ere they had broken up had already spent a few weeks in visiting different parts of the country in search of ozone and health, and have thus had an opportunity of comparing the present state of things with what we remember 30 years ago in Kent, Berkshire, Derbyshire in its wilder parts, the south of Scotland and Perthshire, and, with the readers' good permission, we shall ask them to compare their impressions with ours, and see whether we have not arrived at a right conclusion in the matter.

So far as regards Kent and Berkshire, we would at once eliminate them, or rather put them in a special category peculiar to them and those parts of England which lie within villa-range, that is, the distance of a morning's railway ride from London or the great provincial capitals. The villa-range is expanding itself with marvellous rapidity, and wherever it reaches, there town influences, town capital, and town ideas make themselves felt, so that we cannot get at the natural and undirected bent of the mind of the people. If, in such a district, we see a cottage tastefully embowered in flowers, and with a gay, tidy and well kept garden, we cannot set that down to the taste and natural inclination of the inhabitant. No doubt it may be so, but much more probably it is due to his being employed by the master of the neighbouring villa, who likes beautiful surroundings, and has suggested the decorations, supplied the plants, and possibly lent his gardener, besides offering prizes or other artificial inducements to pay attention to his garden. It, therefore, tells us nothing as to the degree to which the love of flowers has penetrated into the heart of the people, nor how far, if left to itself and free from any artificial fostering, it would be developed, and show itself practically. We would also put aside, as a special and exceptional development, consequent on a peculiar condition of life, the love of flowers exhibited in the suburban districts of great cities, as at Spitalfields, Nottingham, &c. These do not concern our present inquiry.

Turning from such places to the less peopled regions, where the foot of the stranger may still find room to wander from the path unchecked, where each side of the highway is not preserved from intrusion by an 8-foot wall, and where thatched cottages with kailyards stand in lonely patches, or scattered at long distances, we shall have a better chance of seeing how far the natural genius of the people has been affected by the advent of Flora.

We happened last month to be present at the pretty little village of Dalbeattie, in the stewartry of Kirkcudbright, at the time when their local Horticultural Show was held, and had the honour of assisting at the *concours*. We were also not long since present at other country shows in similarly circumstanced places, and with the exception of trifling differences due to the greater or lesser size of the place, the greater or less number and wealth of the neighbouring country magnates, and the greater or less zeal, energy, and skill of the managers of the shows, the same features showed themselves in all. Unless where the place is of sufficient magnitude to have a nursery in the neighbourhood, the contents of the show all divide themselves into three well defined sections,—the contributions of the neighbouring gentry, those of the traders and townspeople, and those of the cottagers. At Dalbeattie, under favour of a deep crimson card, of the hue patronised from time to time by the Royal Horticultural Society, we penetrated into a good-sized apartment with tables round the walls, and three parallel tables running up the middle, all well loaded with plants. The central tables were principally filled by greenhouse and hothouse plants of good size and well cultured, clean, healthy, and vigorous, such as Screw-Pines, Palms, good varieties of Coleus, double Pelargoniums, &c. We did not need to ask, in order to know that these were the contributions of the neighbouring gentry, and accordingly, on inquiry, we found that they had been sent by Mr. WELWOOD MAXWELL, of Munches, the member for the county, and the nearest landed proprietor. Next we found a table devoted to cut Gladioli, Tricolor Pelargoniums, Petunias, Fuchsias, &c.; these represented the well-to-do tradesmen of the village. Then, *longo intervallo*, came the simplest and most common everyday flowers of the open border, such as Antirrhinum, Pyrethrum, French Marigold, &c. These were the product of the cottage garden, and many of them (most of them) could scarcely be called the product of care or attention, but must have been merely culled from old plants which happened to be growing in the kailyard of the house which the exhibitor chanced now to occupy. That these were exhibited at all was an indication of the fostering thought of some one above them who kindly sought to introduce a taste, but no indication whatever that the taste existed where it was sought to be planted.

No doubt if we knew all the outs and ins of the motives and state of mind of the exhibitors, we might see that we are doing them great injustice; but, judging from appearances, we should say that this little exhibition showed that, so far as regards the upper classes, horticulture stood here exactly at the same high level as in London and any other part of England. The same habits, tastes, knowledge, and modes of thought, pervade the upper stratum of society in every corner, chink, or cranny of the kingdom. Comparison with 50 years ago tells of little change in love of horticulture as regards them. Horticulture is more advanced; but, as then, they are still at its head. A much greater change has taken place in the middle classes, and especially the lower ranks of the middle class. Formerly contented with no gardens at all, or only with yards like those of the cottager, they are now not satisfied unless they have their trim beds, their choice plants, nay, their greenhouses and conservatories. The advance has been great in that rank of life. But with the cottager pure and simple—the country cottager unsupported by the presence, the aid, the promptings of his superiors, we are bound to say that we can see no advance; in places we could point out, it rather seems to us that there has been retrogression. We remember in our youth the luxuriant yard with its side beds edged with Chamomile, Hyssop, or Daisy, its Lily of the Valley in the shady corner, the large white Rose bush, the Valerian, the Campanula, and the big bush of Southernwood, which scented all the church on Sunday. When we have lately gone to refresh our memories with another sight of them, we have found their place occupied with a stack or a pigstye; and we are told by inhabitants of the rural districts of which we speak (beyond squirearchal influence) that the taste for flowers has rather diminished; that where formerly some old gardener or enthusiast could be pointed to who had a love for flowers, and a special collection of them, now-a-days there are none such: you must go to the towns for them.

In one respect, however, we must qualify the opinion we have expressed. If Flora is neglected, the cultivation of vegetables has made more progress. Any improvement in what is to gratify the lower appetites, or to put money in the purse, seems more readily to make its way; what is to improve the mind and gratify the higher and more delicate sensations stands still. This improvement in the cultivation, and especially in the sorts of vegetables, probably comes to the cottager through the farmer. Let us hope that as progress is being made in the more material aims of horticulture, its more refined influences may also follow to the class of which we have been speaking.

—— THE annual dinner of the MARKET GARDENERS, NURSERYMEN, and FARMERS' ASSOCIATION was held at the Fox and Hounds Hotel, Putney, on Monday last, when the President, Mr. HENRY MEYERS, occupied the chair, and was supported by nearly 100 of the leading agriculturists and market gardeners of the Home counties. After the usual routine business had been got through, the Chairman, in proposing "Prosperity to the Association," said that in the year 1828 a proposal was made by the then Duke of BEDFORD to rebuild Covent Garden Market, and as considerable doubts were raised in the minds of the producers as to what tolls would be asked, a few of them, himself included, formed themselves into a committee, which ultimately developed into a wealthy and influential society, to watch over the interests of the producers generally. There were not more than four of the original members now alive, for the society had been in existence 43 years, but now, rather than at any other time, was the influence of the society most felt. They wanted a new market, simply because no effort was made to give them accommodation at Covent Garden, and, aided by their strength and finances, they would have one. They would show, by their united action, that they were entitled to more consideration than had been shown them. Their interests were the interests of the whole metropolis, for not only did they stock the markets which supplied all London with vegetables, but they were also instrumental in upholding the health of the metropolis, by daily removing the refuse and filth, and utilising it in the production of further supplies of fruit and vegetables for the markets. Why had they not been more looked to, and their interests more studied? It was all very well for the people of London to set their faces against the removal of the market from Covent Garden; but did they know the shameful neglect of all accommodation and inducement for the grower to continue his supply to the market in question? Did they know that for hours in the bleak winter morning, in rain or snow, the market gardeners had to stand out in the open air, because a wealthy proprietor would not so much as cover in a market which was returning large profits? It was not his wish, or the wish of other producers, to remove Covent Garden Market; but what they asked for was a good central market, where they could send their produce if they thought proper, and not be entirely in the hands of a landlord who would do nothing to accommodate them.—Mr. D. CLARKE (another large grower) cited many instances of the injustice under which, he said, the producers were placed. Many of his men had had long illnesses through having had to stand with their waggons at Covent Garden exposed to all weathers. He also alluded to the fact of so many applications having been made to the Duke of BEDFORD to have the whole area of the market covered in, and the point-blank refusals on the part of his agent.—In response to the "Health of the Visitors," Messrs. BONTEMS and RUDKIN (members of the Market Committee of the Corporation of the City of London) returned thanks. The former explained that there was no desire on the part of the committee to bring about the removal of Covent Garden Market. A great want was felt in the City of a contiguous fruit and vegetable market, and as Farringdon Market was the most unsatisfactory of the City markets, the committee had resolved to improve it; and if by doing so they could meet a want felt by the market gardeners, their object would be materially assisted. The committee's province was to provide markets for the better accommodation of the City; and, next to that, their study would be to suit the convenience of the producers.

—— A correspondent writes, "Our Oaks have very few acorns, but are covered with growths like the enclosed. What are they? are they general this season?" We reply, they are ARTICHOKE GALLS, caused by the puncture of a female Cynipideous fly, called Aphilothrix gemmæ (Linné). These galls are, to the detriment of our Oaks, very abundant almost everywhere this season, and the idea of harvesting acorns must be abandoned wherever the fly has got a firm foothold. If our correspondent will gently remove the hop-bloom, or cone-like foliaceous covering, he will find a small stunted acorn within. Let him now take his penknife and remove a flat slice from the shell, he will then perceive a cavity, within which a fat, white, footless maggot is nestling, biding the autumnal time, when his "Diogenes' tub" will fall to the ground, remaining exposed to sunshine and showers till spring liberates the mature fly. We attribute the increase in the numbers of the fly to the reckless way in which our Oaks are often managed. Everywhere the fine timber is felled, giving place to unhealthy undergrowth, or upshots from the ancient roots remaining. Such copses are nurseries, from which issue swarms of these flies annually, whose oviposition in the buds of full-grown bearing Oaks destroys all hope of a harvest of acorns. We must give up "saving our bacon" so long as we encourage the wholesale felling of mature Oak timber, without taking care that its place is filled up by properly planted, healthy young trees. *Alb. M.*

—— We have received a copy of a circular announcing, in the names of His Grace the President and Council of the Royal Horticultural Society and of Her Majesty's Commissioners of the Exhibition of Industry of 1871, that a GREAT INTERNATIONAL EXHIBITION OF FRUIT, in which all home and foreign growers are invited to take part, will be held at South Kensington on October 4 next. Prizes, consisting of gold, silver-gilt, silver, and bronze medals will be awarded for the most complete collections of Apples, for collections of dessert Apples, for collections of culinary Apples, for the most complete collections of Pears, for collections of dessert Pears, for collections of kitchen Pears, for collections of Grapes, for the largest bunch of Grapes, for collections of Oranges, Lemons, Citrons, Limes, &c., and for miscellaneous fruit, not mentioned in either of the above classes. All packages of fruit for the exhibition are to be addressed to "The Secretary of Royal Horticultural Society, South Kensington, London," from whom schedules of prizes may be obtained. For further particulars see the advertisement in our present issue.

—— The MAXIMUM TEMPERATURES of the AIR for the week ending September 2, ranged from 82° at Blackheath, to 66° at Aberdeen, with a mean for all stations in England of 78°.5, and in Scotland of 72°.2. The MINIMUM TEMPERATURES of the AIR ranged from 52°.5 at Liverpool, to 44° at Hull. The mean for the northern country was higher than that for the southern; that for Scotland being 48°, and for England 47°.1. The MEAN TEMPERATURES ranged from 64° at Blackheath, to 56°.1 at Dundee, the mean for England being 61°.1, and for Scotland 57°.9. The greatest falls of rain were 0.55 inch at Leeds, and 0.56 at Bradford. The mean fall for England was 0.18 inch, and for Scotland 0.08 inch. (See Mr. GLAISHER's Tables, p. 1171).

—— Those who have experienced difficulty in planting the stronger-growing AQUATICS may find the following hint, which occurs in one of Mr. BUCKLEY's papers on Water Plants in the "Florist and Pomologist," useful to them, the more so, as he observes, that it is almost ludicrous to note some of the cumbrous modes recommended by persons who seem inclined to mystify the subject. Any urchin, he says, knows how to dispose of an old offending "grimalkin," by tying one end of a short string round a brick, and the other end round the neck of the nocturnal prowler. Behold in this simile all the mystery of planting Water Lilies! If the rhizomes are thrown into the water without some weight attached, they will certainly rise to the surface, and so float and perish; but when planted in this way, by the time the cord has decayed they will have taken root and become fixed. When the lake is large, it is best to use a boat, and just drop them where they are wanted to grow. If near the margin they can be thrown in. After this they will take care of themselves.

—— It is stated in Dr. LINDLEY's "Vegetable Kingdom," ed. 3, 1853, that the PLACENTA in CARYOPHYLLACEÆ is proved to be really central by a monstrous Cerastium figured in this Journal (1844, p. 557), (see fig. 265), in which the carpellary leaves are partially turned inwards without touching the placenta, which bears a cluster of ovules, and is perfectly clear of all connection with those partitions. In some normal species, however, the ovarium is furnished at the base with delicate septa, which soon vanish, and it does not appear that the argument in favour of free central placentation is much strengthened by Prof. BABINGTON's monstrosity.

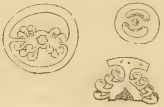

FIG. 264.—AXILE PLACENTA IN CARNATION.

Dr. LINDLEY had forgotten, however, that in 1850 some absolute evidence was published in this journal (p. 612), showing that in a monstrous Carnation really marginal placentæ were produced with ovules attached, while in other cases ovules were freely produced from the free margins of the carpellary leaves. We have now a monstrous salmon-coloured Clove, in every flower of which not only is the inflected margin of the carpels distinct from the base to the apex, but in an early stage of growth the connection between it and the two divisions of the axile placentation is perfectly distinct, as is the solution of continuity a little farther up. The case published in 1850 appeared to us quite decisive as to the point; but if any doubt could be raised as to its real bearing on the subject, that now before us is beyond all doubt. Our figure (fig. 264) represents a section from the base below the point where any ovules are produced, one higher up, showing the connection of the axile placenta with the carpels; above this point the connection is often broken off on one side, while it remains on the other; the lower figure merely shows the connection a little enlarged. *M. J. B.* [To our correspondent's remarks, we may add that a similar malformation was described and figured by Dr. MASTERS in "Saponaria," in the Journal of the Linnean Society, 1857, p. 161; and that other cases are cited, and references given to many other recorded instances of like nature, in the last-named writer's "Vegetable Teratology," pp. 96—100, 483. EDS.]

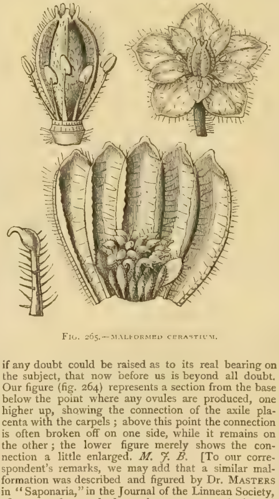

FIG. 265.—MALFORMED CERASTIUM.

—— We may note that one of the most interesting of formal subjects for summer conservatory, and terrace garden decoration is to be found in STANDARD LEMON-SCENTED VERBENAS (Aloysia citriodora). The plant is always a favourite for its gratefully-scented leaves, and trained up, with a well-balanced head, as a standard, it has a very good effect. In the noble gardens at Ashridge Park, the seat of Earl BROWNLOW, we lately saw a very fine set of plants of this character growing in tubs, and set out on the terrace walk in front of one of the conservatories. They were perfect in symmetry, and not only effective but novel in their appearance. These plants had clean stems of about 5 feet high, and bluntly conical heads, formed by careful and judicious pruning, some 3 feet deep and 2 feet or more in diameter at the base. In the same gardens we noticed a most valuable decorative Tropæolum with deep blood-crimson flowers, an accidental seedling, we believe, but evidently a cross between Tropæolum majus atrosanguineum, and some of the Lobbianum varieties, and combining much of the colour of the former, with the less coarse and nonexuberant foliage of the latter.

—— In reference to the late blooming plants of LILY OF THE VALLEY, referred to at p. 1041, Mr. FLEMING tells us that he has had many in the same state; indeed, he finds it a common occurrence with the patches of foreign origin. They are the plants first put in heat for Christmas, and from not being ripened, or from not having had sufficient rest, not one in a dozen of the patches will start; and if these are left in the houses, and are turned out in spring, they will then go on growing, and bloom late (July). Some illustrative examples sent us are quite like those referred to, as to their general appearance.

—— Lieut.-Colonel CORMACK, of Shawborough, Tewkesbury, writing recently in the *Field*, mentions a most extraordinary instance of ACORNS INCLOSED IN AN ELM TREE, and requests an explanation from those learned in dendrology. He writes:—

"Two years and a half ago I felled, amongst others, a large Elm tree 12 feet in girth, and allowed it to lie until last October, when I commenced cutting it up. On sawing off the butt we discovered a cavity in the very centre of the trunk about 6 inches in diameter, and running up about 15 inches, which the cross cut divided as nearly as possible in the middle. The parting was no sooner complete than about a pint of Acorns fell out of the cavity, which I immediately picked up. To my utter astonishment, in that instant of time, on exposure to light and air, each Acorn sprouted about a third of an inch (!), and on examination I found them in as perfect preservation as if they had just dropped from the parent tree, although they must, for reasons which I will presently detail, have been inclosed any time from 100 to 500 years in the hollow of the Elm. I took 25 of the Acorns up to the garden, and planted them in a bit of ground I inclosed for the purpose, and at this moment I have 25 as promising young Oak trees from them as are to be seen in the West of England. The Acorns were evidently a squirrel's winter hoard, for the marks of the little animal's rodents were quite fresh upon some of them. The cavity was an incipient decay, in which the Acorns had apparently been just stored, when, by some unaccountable occurrence, it must have become hermetically closed, and so remained for a period, over the length of which, from the following description, I should wish to ask the opinions of your scientific readers. As before stated, the tree was 12 feet in girth; the cavity was 6 inches wide, 15 inches high, and 3 feet from the ground; from the edge of the cavity to the bark, 2 feet 2 inches; and no less than 120 rings of wood had added to the bulk of the tree, and grown over the hollow, with its inclosure of Acorns, since both had become hermetically sealed up! Adopting even the usually accepted theory, that trees add one ring of wood annually, the Acorns must have remained with unimpaired vitality for 120 years; but I am inclined to think that an Elm tree, as it increases in size, requires several years to form a ring. This is, however, precisely the point on which I should feel obliged for information. The circumstance is anyhow worth noticing; but the problem I wish solved is, 'How long could the Acorns have remained in the tree, 120 rings of wood having grown over them since first inclosed?'"

—— On the 11th inst., the SALE of the NURSERY STOCK of Mr. H. LAURENTIUS, at Leipzig, will begin with the hardy Coniferæ. The catalogue contains 4125 lots, including something like 60,000 plants. Conifers, evergreens, and seedlings, 253 lots; hothouse plants, 483 lots; greenhouse plants, 221 lots, &c. Fine specimens of large Orange and Pomegranate trees, Tree Ferns, Palms, Camellias, Azaleas, Dracænas, Agaves, Yuccas, Pitcher-plants, Orchids, Amaryllises, &c., are amongst the numerous lots offered for sale.

—— On referring to some old correspondence with the *Gardeners' Chronicle*, we find that precisely the same affection in GRAPES was brought to our notice at the beginning of September, 1856, by a correspondent signing himself "A. M.," and dating "C. M., September 6," as that to which attention was drawn last week (p. 1139), as produced by a species of Glæosporium in Muscat of Alexandria. He does not mention what was the particular variety affected, but, after trying all sorts of remedies in vain, the disease spread over the whole house, and was very destructive. It was stated the following week that it was due to a species of Glæosporium, but without giving any specific name, and the specimens have remained ever since in the Herbarium, with the MSS. name Glæosporium uvicola. We are, however, now of opinion that it does not differ from G. læticolor, which is occasionally destructive to Peaches and Nectarines, and it is the more necessary that this identity should be recorded, as, where Grapes are grown in the same house with stone-fruit, the malady may spread upwards, especially as the pale, salmon-coloured spores ooze out in the form of little tendrils. Those Peaches and Nectarines which are affected should, of course, be removed at once. Both on Grapes and stone-fruit the spores of the Fungus are very variable in size, so that no stress can be laid on mere measurement. A figure of the closely allied species, G. fructigenum, will be found in "Cooke's Handbook," copied from this Journal, 1856, p. 245. *M. J. B.*

—— In the "Journal of Botany" for the present month we find the following note relating to ROSA GALLICA, gathered by Mr. WILSON SAUNDERS in a hedge near Charlwood, in Surrey. "Where it grows," says Mr. SAUNDERS, "it is as wild as Rosa canina, R. arvensis, and R. micrantha, all found in the same broad copse-like hedge so frequent in some parts of Surrey and Sussex. It grows on the west side of this hedge facing a cornfield, through which there is no footpath, There are two patches of the Rose, one about two or three yards in length, and containing only a few plants, the other many yards in length, and containing a considerable number of plants. The cornfield alluded to is situate about intermediate between two farms, which are nearly half a mile apart, and no buildings nearer. After diligent search, I cannot find the Rose in any other locality about Charlwood, either wild or in the gardens of the farms and cottages. It is a complete puzzle to me, the locality of this Rose. I cannot conceive it to be originally wild there, but how it could get so thoroughly naturalised where it is, is equally difficult to understand. It must, I think, have been very many years where it is." Can the Rose in question have been cultivated at any time in the locality for druggists' purposes?

—— We learn that the fourth and, we regret to say, concluding part of Mr. J. T. MOGGRIDGE'S FLORA OF MENTONE will be issued next month.

New Garden Plants.

ONCIDIUM BRACHYANDRUM, *Lindl.*

Pseudobulbus oblongus anceps prasinus superne gregarie atropurpureo punctulatus vix ultra sesquipollicem altus, unam latus, diphyllus. Folia gramineo-pergamenea, ligulata, acuminata, ad quatuor pollices longa, dimidium pollicem vix lata. Pedunculus gracilis, uni usque biflorus. Bracteæ hyalinæ triangulæ. Sepalum impar cuneato-oblongum acuminatum. Sepala lateralia lanceolata falcata acuminata. Tepala subæqualia, latiora; omnia cinnamomea, limbo externo flavido angulis quibusdam flavidis. Labellum cuneato-rhombeum obtusangulum antice retusum, flavum. Lamellæ supinæ geminæ lobulatæ in disco, lamella subæquali externa magis basilari utrinque addita. Columna trigona brachio ligulato obtuso cartilagineo utrinque supra buccas infrastigmaticas intus callum basilarem sc. unguem carinæ labelli excurrentem recipientes. Labelli cuneus nunc utrinque auricula obtusangula.—*Oncidium brachyandrum*, Lindl., Sert. sub. t. 25; Id. Folia, Oncid. 111.

A very delicate little plant, very near the well-known Oncidium graminifolium, Lindl., but totally different in the leaves (unknown to Dr. Lindley), and the column and the lip. It is a very delicate, tiny thing. It appeared some time ago in the collection of Messrs. Veitch. Just now it has flowered with J. Day, Esq., who kindly informs me it came from Mexico in company with Epidendrum vitellinum and Lælia majalis. *H. G. Rchb. fil.*

ODONTOGLOSSUM PLATYODON, *n. sp.*

Affine O. Lindeni, Lindl. Sepalis unguiculatis oblongis acutis; tepalis cuneato-ovatis obtuse acutis; labelli laciniis basilaribus obtusangulis, lacinia antica oblongo acuta; carinis geminis per basin, carinula una brevi mediana anteposita, utrinque addito dente lato prostrato et denticulo parvo; columna aptera arcuato ascendente.

A yellow-flowered species, perhaps not without interest when bearing a full panicle of hundreds of flowers, just as the Calanthes, Oncidia, &c., gain favour, not by the single flowers, but by the mass of them. It comes from New Grenada, and appears to be distinct in the calli of the lip from the very polymorphous O. Lindeni, Lindl. It is now also called Odontoglossum platyotum in gardens. The plant is very vigorous, and may prove easy to manage. I have got dry wild specimens from my invaluable correspondent, Stuart Low, Esq. *H. G. Rchb. fil.*

THE POTATO DISEASE.

DR. JULIUS KÜHN has devoted much time and attention during the past and several previous seasons to ascertain whether the Potato blight (Peronospora infestans), is really communicated from tuber to tuber, either in the ground or after they have been stored away; or, as some assert, whether it invariably proceeds through the haulm to the tubers. The cause of the blight in Potatos admits no longer of the least shadow of doubt, but few persons have the time and facilities for microscopical investigations to watch the progress and development of it. It is now quite certain that this blight is due to, and the effect of the attack of the above-named parasitical Fungus, whose spawn penetrates the substance of the tubers. Whence the germinating spores come—or rather what their exact nature and capabilities are—is still an unsolved problem. There is such an infinity of forms of these lower organisms, that even the researches of those who have devoted their best years to the study of this branch of natural history have produced little beyond negative results. The theory that many of these apparently different blights and moulds originate from the self same kind of spores is a very attractive one, and one which has long had its supporters, both in this country and on the Continent.

Indeed, it does seem probable that the spores of these Fungi, which pervade the air at some seasons of the year, are capable of accommodating themselves to circumstances, and also of assuming different forms under different conditions. At all events, some curious discoveries, bearing upon this point, have been reported, and next to nothing is known of the degree of variability these organisms are liable to; hence we must allow that this view possesses a certain amount of plausibility. The great variability of plants of more complex organisation is a fact patent to all, and recent researches have shown that many of the supposed genera and species, amongst the lower cryptogams, have been founded upon different stages of the same plants. Many parasitical Fungi are conveniently named after the nurse-plants upon whose tissues they prey, but it is possible [In some cases certain] that the same species preys upon different plants, and exhibits certain peculiarities according to the structure and properties of the nurse-plant.

But to return to Dr. Kühn's investigations into the possibility of the spread of the disease from infected to healthy tubers. It is pretty generally supposed that the Fungus does not come to maturity in or upon the infected tubers, and, consequently, that the disease is not conveyed from one tuber to another. Those Potatos afterwards found diseased in which no trace of it could be detected when stored away, are presumed to have had the germs of the disease in them before they were taken out of the ground. The mycelium continues to spread throughout the substance of the tuber, but as no zoospores were believed to be formed, and as the mycelium could not penetrate the skin of a sound tuber, it was naturally inferred that only those previously infected through the haulm perished. But from Kühn's numerous experiments and the examination of tubers in different seasons, it is shown that the Peronospora does increase and perfect its reproductive organs as freely underground, or when the tubers are stored away, as on the haulm above-ground. The ramifications of the mycelium bearing sporophores emerge from the skin of the tuber in any part, though chiefly from the cavities of the eyes. And as the zoospores are abundantly produced, the least dampness will cause the disease to continue to spread and commit its ravages.

There have been reports of cases of diseased tubers where no trace of blight had been observed on the haulm, but the probabilities are that it existed in small patches only, and thus it was overlooked.

This discovery naturally impresses upon us the importance of attention to draining heavy land, and providing dry storage for Potatos. They should if possible be harvested and stored during dry weather, and never placed in thick layers or large heaps, where they would be likely to heat or induce condensation of moisture, for, however slight our knowledge may be on this subject, we know that moisture is the most favourable agent for propagating the enemy.

[Since the appearance of Dr. Kühn's article, above alluded to, on the propagation of the Potato blight, a very interesting paper on the "Cause of the Potato Disease and its Remedy," by Herr von Schultzenstein, has been published in the "Wochenschrift," and we believe it to be sufficiently interesting to warrant us in giving it in full. The reader will perceive it is in direct opposition to the views of most physiologists of the present day.]

According to Dr. Kühn's communications, above alluded to, and the now widely-spread view, the cause of the Potato blight is wholly due to the parasitical Fungus, Peronospora infestans, and hence prevention is to be sought in the destruction of its spores. Since Von Martius first pointed out the presence of a Fungus, Fusisporium Solani tuberosi, in the Potato disease, and the publication of Unger's memoir on the exanthemata of plants, wherein he alludes to the distribution of parasitical Fungi, attention has been directed to the Potato Fungus, and the spread of the disease to the tubers has been attributed to infection from the haulm. And this view has been the more strongly insisted upon, because the spores have been developed upon sound tubers when cut asunder, and placed in moist air under a bell-glass; but still, the infection of large quantities of tubers under otherwise natural conditions has by no means been proved; and, although the presence and approach of moulds in diseased Potatos admits of no doubt, it has not been shown that the origin of the disease is to be ascribed to the attacks of the Fungus; and the opinion that the disease may be prevented or cured by the employment of means to destroy the Fungus, will deceive those who rely upon it as their safeguard. The Potato disease consists of a withering or dying-off of the cellular tissue, and the vessels with their contents, which is visible in the discoloration and separation of the cells long before the appearance of the Fungus. In the tubers this decay is first seen immediately under the epidermis, which causes the latter to peel off when touched, as is the case with a frozen or scalded tuber. Here no Fungus is to be found, and this state, in the course of the disease, cannot be brought about by infection with Fungus spores. The Fungus makes its appearance at a later stage of this decay, along with the chemical decomposition of the decayed parts, in a similar manner as it does upon all other putrifying and mouldering bodies, as upon mouldy bread or fruit. And then the supposition that only one species of Fungus, whether it be Peronospora or Fusisporium, originates upon rotten Potatos, is erroneous. The species are numerous according to the different conditions, a fact overlooked by previous observers. Especially I have remarked a great difference in the species of Fungi in the two different forms of Potato disease, the dry rot and the wet rot. When dry rot takes place the most diverse moulds are found belonging to the division of the Mucedines, not only Fusisporium and Peronospora, but also species of Botrytis, Aspergillus, Penicillium, and Sporotrichum; whilst in cases of wet rot—where, however, Fungi are much rarer—the species belong to the Mucorini, amongst which the common Mucor mucedo is the most abundant. Thus in regard to the species of mould which prey upon decaying Potatos, there is nothing different from what is found on any other decayed vegetable matters, and the mould on Potatos is as little the cause of their decay, as in the case in stale bread. [This theory seems hardly tenable, even when restricted to the Potato blight, and is in opposition to the opinion of our learned mycologist, "M. J. B.," and most scientific men when more generally applied. Plants and animals are not necessarily always unhealthy previous to the attacks of Fungi, and we should be inclined to consider them the cause of the disease or decay, as in the case of mildew on many plants, though doubtless in many instances they follow in the track or assist some organic disorder.] Hence we find the same Fungi growing upon frozen Potatos when left to themselves, as in blighted Potatos, but we certainly should not ascribe the decay of frozen tubers to the attacks of the Fungi. If, therefore, Fungi are not the first cause of the Potato disease their destruction will not help us much, even if we admit that the rapid spread of the Fungus can hasten or modify the course of decay.

Certainly, then, the real cause of the disease in Potatos must be sought elsewhere. The causes can be no other than the decay of the living tissues and beginning of their chemical decomposition, brought about by the sudden changes of temperature and moisture, under the influence of which the haulm and tubers may rot in the total absence of Fungi.

The Potato is a tropical, mountain plant, which enjoys in its native country a cool May temperature, with constant moisture at the root; thus during its growth it is neither exposed to heat nor cold, nor to the repeated changes from wet to dry which it is subject to with us. Here in Brandenburg we often have in seasons of Potato disease a dry heat whereby the ground becomes heated to 40° R., equal to 122° F., and naturally those tubers lying near the surface become more or less scorched in places, and if they do not decay at once the disease may break out at a later period. If we wish to meet the true cause of Potato disease, we must endeavour to give the Potato as near as we can the same conditions that it enjoys in its native country. But as we cannot control climate and weather, we must do what we can in choosing suitable soil and position. A light, loose, somewhat sandy soil that does not readily part with its moisture, and becomes little heated by the rays of the sun, is the best adapted for the purpose, because the changes are not so rapid in this as in a heavier, closer soil. *H.*

THE AMATEUR GARDENER.

Soil for Potting Plants.—This is a knotty subject with inexperienced gardeners, and often a perplexing and trying one for those of considerable experience. We have, we believe, lost at least a dozen Camellias, during the last 12 months, from using improper soil; and on turning out some fine Lilies, which had not done well, we found them sickly from the same cause. With us, the cause of these failures was, not ignorance, but the want of care in selecting our materials, for we used a kind of sand which hardened like burnt clay, and would not incorporate kindly with the other ingredients. Yet it has always been a favourite axiom of ours that one compost, with judicious additions or subtractions of certain items, may be made to serve for all the potting purposes which can come before ordinary gardeners. Such plants as Heaths, and many stove varieties, must have special soils, but the amateurs, for whom I write, will judiciously abstain from trying their hands on such delicate and touchy subjects.

When a plant is potted well, with suitable soil, it will let the water slip readily through on its being applied to the surface, instead of remaining for some time before it disappears. The pot will also feel light in proportion to its size, instead of heavy, like a lump of clay. The soil cannot be reckoned good which turns to fine dust when dry, but, on the contrary, it should be porous and lumpy rather than powdery, though, of course, the best soil will acquire the latter character by frequent watering if the surface is not occasionally renewed. When a plant potted in the right material is turned out for the purpose of inspecting the roots, they will be found to have run freely into it, while, in the contrary case, they will appear unnaturally confined by a clammy and cold surrounding material. It is clear, therefore, that an appropriate soil should be secured by the gardener before he can expect his collection of potted plants to flourish as they ought to do, and as by doing they can alone repay him for his labour.

We have just made up about a small cartload of such soil as we think we can use for most purposes, in the following manner:—A barrow-load of leaf-mould, made of leaves thrown in a heap last autumn, and subjected to all the weather of the winter. If left for two or three years, the mould will be too fine, for the stalks and other fibrous parts of the heap are necessary to keep the mould porous, and without them it is apt to become too close, and even tenacious. Next, the same quantity of a good hazel loam, taken from an old pasture, with the fibrous matter in it. The best plan is to take up some turves growing in such a loam, and pile them up for a year or two, when the whole being chopped up together will admirably answer the purpose. But anything clayey must not be mistaken for loam; the genuineness of the latter being known by its feeling, when squeezed in the hand, like sugar, not like soap. Thirdly, the same quantity of rotten frame manure of last year, which is thoroughly fermented and decomposed, but has not lost the fibrous character of its materials. Last of all, to the whole of this material add a peck of white sand, that known as silver sand being the best. Mix all these ingredients well together, but do not be too anxious to break up all the lumps, for these will be most serviceable in potting. The whole should then be piled up in the open air, if possible in the angle formed by two walls. When winter comes on, a sufficient quantity for all purposes during that season may be housed in a shed, so as to be ready for use at any time. If this is not done, frost and wet may now and then leave the gardener without the necessary soil when he wants it. This compost should never be sifted, as is the ignorant practice of some people, for the fibrous matter in it will be found most valuable, as securing the results which we have mentioned above.

We confess that to the compost now described we added a barrowful of peat, the refuse of a turf heap, which had been exposed all last winter, and which was thoroughly reduced to the condition of ordinary garden mould. Perhaps this was done without due consideration, for we feel a little doubtful of the result of the experiment. It may possibly make the compost too clayey and retentive of moisture, and therefore we advise our readers not to try it. The four other materials will, we think, make a useful soil for almost all purposes. *H. B.*

BOCCONIAS.

Bocconias are not so much seen in gardens as their striking appearance would lead us to expect. The foliage is bold, and with a peculiar glaucous bloom; the flowers elegant, and of a cream colour. The species best known is the old B. cordata, sometimes called Macleaya cordata, a perennial which is quite hardy in the country, at any rate in the south, and well suited for the front of shrubberies or borders. B. frutescens is of a shrubby habit, and more tender, but when sheltered it forms a fine plant for the subtropical garden.

Bocconia japonica, a recent introduction, is, as will be seen from the accompanying illustration (fig. 266), a fine bold plant, admirably suited to give effect on our lawns, but requiring to be grown in a sheltered situation, and to be removed to the greenhouse in winter. The culture of these plants is of the simplest. They prefer a rather compact moist soil, and should not be exposed to full sunshine.

It would hardly be supposed, at first sight, that the nearest relationship of these plants is with the Poppies; such, however, is the case. They are Poppies with a different habit, no petals, and a two-valved capsule.

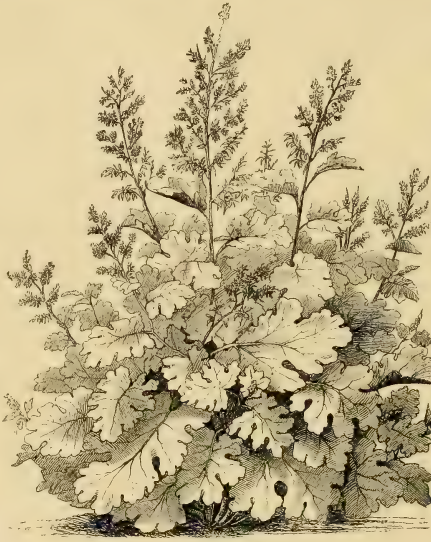

FIG. 266.—BOCCONIA JAPONICA.

A NEW SYNOPSIS OF ALL THE KNOWN LILIES.—VII.

Subgenus 2. LILIUM PROPER.—Bulbs squamose; stigma a thick head to the style, with three blunt lobes—(*Continued*).

Group 4: MARTAGON (Turk's-cap Lilies).—Perianth broadly bell-shaped, always drooping, its divisions lanceolate, broadest about the middle, not distinctly clawed, reflexed (usually from half or two-thirds of the way down) when fully expanded. Stamens diverging much on all sides from the central axis of the flower.

Like the Isolirions and Eulirions the Martagon Lilies fall conveniently into two sets, one with whorled and the other with entirely scattered leaves. As this is the largest group of the four I shall have to spread it over three papers, and will in this take first the species with verticillate leaves, which are as follows, viz.:—

Flowers purplish-red, casually white.	19. L. MARTAGON.
Flowers scarlet, passing into bright yellow.	
Whorls of leaves usually one; style 6—7 lines long.	20. L. MACULATUM.
Whorls of leaves usually 3—4; style 1—2 inches long.	21. L. CANADENSE.

19. *L. Martagon*, Linn. Sp. Plant., p. 435; Jacq. Austr. t. 351; Bot. Mag. t. 803 and 1634; Red. Lil. t. 146; Kunth, Enum. iv. 257; Eng. Bot. t. 279, 3d edit. t. 1518; Spae, Mon. p. 20; Reich. Icones, t. 451. Bulb ovoid, 1—1½ inch thick, the scales bright yellow. Stem 2—3 feet high, erect, terete, usually more or less densely clothed with fine grey pubescence. Leaves typically in three or four regular whorls of six to nine leaves each, with a few scattered ones placed usually between the uppermost and the inflorescence, oblanceolate-spathulate, the lower ones 3—5 inches long, 9—18 lines broad three-quarters of the way up, narrowed rather suddenly to an acute point, thinner than the average of the genus in texture, glabrous or inconspicuously downy below, spreading nearly horizontally, the two or three indistinct main veins spreading from the midrib at an acute angle, and not produced clearly to the point, the edge often seen with a lens to be ciliated. Flowers 3—12 in the wild plant, or as many as 20 under cultivation in a narrower and more regularly pyramidal raceme than in any other species, and which in fine specimens reaches a foot in length, and 4—5 inches in breadth in the lower part. Lower pedicels 1—3 inches long, drooping at the apex, not bracteolate, but furnished with a pair of lanceolate or linear bracts at the base. Perianth pendulous, 15—18 lines deep, typically a dull purplish-red, with copious spots of dark purple, the divisions oblong-lanceolate, cucullate and pubescent at the lip, distinctly pubescent down the back, soon much reflexed from three-quarters of the way down, 4—6 lines broad about the middle, not distinctly clawed, not papillose or pubescent down the groove. Ovary 5—6 lines long; style slender, 8—9 lines long, curved from the base; filaments 8—10 lines long, all much curved; anthers linear-oblong, 4—4½ lines long; pollen reddish; capsule turbinate, bluntly angled, an inch deep.

The commonest wild European species, stretching from Spain and France all through Central and Southern Europe, and in Asia far into Siberia, but in the extreme East and Japan appearing to be entirely replaced by maculatum, which is confused with it in Ledebour's "Flora Rossica." It is the old original Turk's-cap Lily of the gardens, and is mentioned in Gerarde's list of the plants cultivated in 1596, but it has now given way to a large extent, as a popular favourite, to its allies with brighter coloured flowers. It is a very well-marked plant, not likely to be confounded with any other species, and, though so widely spread, it is very little liable to variation in its characters. The principal forms which have been named are the L. hirsutum of Miller's "Garden Dictionary," No. 10 (L. Milleri, Schultes), a robust plant, with a densely puberulous stem; L. glabrum, Spreng. Syst. Veg. ii. 62, a more slender form, with white flowers, and subglabrous stem and leaves; and the two forms (dalmaticum of Maly and Catanii of Visiani), lately brought into notice by Herr Leichtlin, with very thick perianth segments of an exceedingly dark purple shade. L. Martagon is quite different from all other Lilies in the colour of its flowers. I have seen a single specimen gathered by Bourgeau in Piedmont, in which the whorls were entirely broken up, and the leaves scattered indiscriminately down the stem.

20. *L. maculatum*, Thunb. Linn. Trans. ii. 334; Kunth, Enum. iv. 258; Miquel in Ann. Mus. Lug. Bat. iii. 156; Spae, Mon. p. 30; *L. canadense*, Thunb. Fl. Jap. p. 135, non Linn.; *L. Martagon*, Led. Fl. Ross. iv. 149, ex parte; *L. avenaceum*, Fischer MSS., Maxim. in Regel, Gartenfl. 1865, p. 290, t. 485.—Bulb ovoid, an inch thick. Stem 1½—2 feet high, straight, terete, glabrous. Leaves arranged usually in a single whorl of about a dozen leaves near the middle of the stem, and a few scattered ones both above and below, the whorls rarely two, and sometimes, as in its allies, all scattered, 3-6 inches long, ½—1½ inch broad at or very near the middle, narrowed gradually upwards to a long acute point, and downwards very gradually to the base, quite as thin as those of Martagon in texture, glabrous or very faintly downy below, the two or three main nerves on each side of the midrib faint and indistinct. Flowers in the wild plant 2—6, but reaching up to 12 under cultivation, arranged in an irregular corymb, the erecto-patent slender pedicels cernuous at the apex, the lower ones reaching 3—4 inches long, and bracteolate at the middle. Perianth 15—18 lines deep, varying from bright yellow to bright scarlet, the divisions lanceolate, bluntish and faintly pubescent at the tip, 4—6 lines broad at the middle, not distinctly spathulate at the base, much reflexed from two-thirds of the way down when the flower expands, copiously spotted down the face with dark purple, not papillose or pubescent down the groove. Ovary 4—5 lines long; style 6—7 lines long, growing gradually thicker upwards; filaments 9—12 lines long; anthers linear-oblong, 3—4 lines long.

A native of Kamschatka, Manchuria, the Kurile Islands, Japan, and the shores of Russian America, in all which countries, I believe, but am not perfectly sure, it entirely replaces Martagon. It comes between Martagon and canadense, and, as will be seen from the synonyms given, has been confounded with both. I have never had the opportunity of studying it in a living state, and, indeed, am not aware that it has been grown in this country. It differs from Martagon by its glabrous stem, normally solitary whorl of leaves, irregularly corymbose not regularly racemose inflorescence, bright-coloured flowers, shorter ovary, style, and anthers, and, according to Maximowicz (who has studied the plant carefully in its native country, and gives an excellent account of it with the plate in Regel's "Gartenflora"), in the form, colour, and structure of the bulbs. He says that the Manchurian form has more orange, slightly fragrant flowers, whilst the Japanese plant is scarlet and inodorous. I hope that some of our English Lily cultivators will turn their attention to the species, and introduce it, for no doubt it is perfectly hardy. From all the forms of canadense it may be recognised easily by the size of the flowers, and thinner texture and indistinct veining of leaves, which only quite casually make more than a single whorl. It would seem that these three verticillate Martagons curiously supplement one another in their geographical distribution, not overlapping one another, but the three together stretching all round the world in the north temperate zone, one beginning directly another stops.

21. *L. canadense*, Linn. Sp. Plant. p. 435; Bot. Mag. t. 800 and 858; Kunth, Enum. iv. 258; Spae, Mon., p. 27; *L. penduliflorum*, Red. Lil. t. 105; *L. pendulum*, Spae, Mon., p. 28.—Bulb more or less obliquely rhizomatous. Stem 1½—3 feet high, erect, terete, glabrous. Leaves typically in four or five regular whorls 2—3 inches apart, of 6—15 oblanceolate leaves, spreading nearly horizontally, pale bright green

above, thicker than those of Martagon in texture, the lower ones 2—4 inches long, 6—9 lines broad a little above the middle, narrowed gradually to an acute point, indistinctly spathulate downwards, both sides quite glabrous, or the nerves below distinctly ciliated, the main veins stronger and more distinct than in Martagon, mostly three on each side of the midrib, the upper whorls especially liable to be broken up, and often a few scattered ones between the uppermost whorl and the inflorescence. Flowers 1—6 in the wild plant, corymbose, pendulous; pedicels 2—6 inches long, with usually one, or even two, linear bracteoles; perianth 2—2½ inches deep, the divisions spreading from about half way down when expanded, much less reflexed than in Martagon, varying in colour from bright yellow to pale bright red, with copious spots, especially in the lower two-thirds, of dark purplish-red, the divisions lanceolate, not distinctly clawed at the base, pubescent at the tip, not down the back, 7—9 lines broad at the middle, not papillose or pubescent down the groove. Ovary 7—9 lines long; style 1—1½ inch; filaments 1¼—1½ inch; anthers 5—6 lines; pollen bright crimson. Capsule 1½ inch deep, oblong, bluntly angled.

Common in Canada and the northern United States, stretching eastward as far as Lake Winnipeg, and southward to Georgia, along the Alleghanies. The typical form is quite hardy with us, and widely spread in cultivation. It appears to have been one of the first plants introduced to European gardens from America, and is figured in Parkinson's "Paradisus" in 1629. There are several allied forms on the western side of the American continent, which differ more or less conspicuously from the Eastern plant, of which the following are the principal with which I am acquainted. I am informed by M. Leichtlin that all the canadense Lilies that grow on the west side of the Rocky Mountains may invariably be separated from the eastern ones by their regular ovoid bulbs, and that several species have been recently described by Kellogg, in a Californian serial, which I have not had the opportunity of seeing. I hope that he may be induced soon to give an account of his observations on the group. The two extremes of the Eastern plant, as regards the colour of the flower, one with an entirely yellow groundwork (the variety flavum of Kunth), and the other with an entirely red groundwork (the variety coccineum of Kunth, and L. penduliflorum of Redouté), are given in the two plates quoted of the "Botanical Magazine." I have several times seen this Eastern form in gardens lately under the name of L. canadense occidentale, a designation which ought to be suppressed, as I do not think this form grows at all on the west side of the continent.

Var. 1, *parviflorum*, Hooker, Fl. Bor. Am. vol. ii., p. 281; var. *minus*, Wood, Proc. Acad. Phil. 1868, p. 166; *L. Sayii*, Nuttall, MSS.—Stem more slender than in the type, glabrous. Leaves varying from 3—4 regular whorls to most or all scattered, the lower ones 2½—3 inches long, ½—1 inch broad. Flowers generally 2—4, the lower pedicels reaching 4—6 inches long. Perianth 15—18 lines deep, the divisions rather more deeply reflexed in the expanded flower than in the type, the inner ones 4—6 lines, the outer 3—4 lines broad. Ovary with style 12—15 lines long; filaments 12—15 lines.

Stretches from Vancouver's Island and British Columbia to Oregon and California. The form of canadense that comes nearest to Martagon and maculatum.

Var. 2, *Humboldtii*. L. Humboldtii, Roezl in Hort. Leichtlin.—A robust form, reaching 4—5 feet high, with glabrous green stems, mottled with red. Leaves nearly all arranged in 4—5 regular whorls of 10—15 leaves each, 3—5 inches apart, the lower ones 3½—4 inches long, by an inch broad three-quarters of the way up. Flowers 4—6 in the specimens I have seen, but said to sometimes exceed 20. Perianth-segments 3—4 inches long, spreading from about three-quarters of the way down in the expanded flower, a very bright orange-yellow, spotted throughout with large claret-red dots. Bracts ovate, about an inch long. Inflorescence with more of a tendency to run out into a raceme than in the type; ovary, style, filaments and anthers longer in proportion.

A very fine form, found in California, and lately introduced and liberally distributed by Herr Leichtlin, who, I believe, considers it distinct, at least as a subspecies, and who has noted differences also in the bulb between this and the type which he will no doubt explain fully when his observations are committed to print. In several points, as will be noticed, it approximates to the eastern L. superbum, and these two are certainly the princes of the canadense set of forms. My notes above are taken from living specimens communicated by Leichtlin to the Kew collection. I believe Torrey's var. puberulum (Torrey, Bot. Whipple, p. 90), to be essentially the same form, differing only by its markedly puberulous stem. Two other striking forms, known to me only from dried specimens, are:—

Var. 3, *Walkeri*, Wood, Proc. Acad. Phil. 1868, p. 166.—Stem stout, glabrous, at least 3 feet high. Leaves narrower than in the type, not more than ¼—⅜ inch broad, arranged in distinct whorls of 8—12 leaves each, 6—7 inches apart. Flowers up to 12—15 in a narrow raceme a foot long, the slender much ascending pedicels reaching 2—2½ inches in length, the bracts linear. Perianth 12—15 lines deep, reflexed only towards the tip; the divisions not more than 2—3 lines broad. Ovary 4 lines long; style filiform, 7—8 lines long; filaments 9—12 lines; anthers 1½—2 lines.

Collected in California long ago by Bridges, and distributed as No. 268 of his collections, and described lately by Professor Wood from specimens gathered by Mr. Elkanor Walker. Will very likely prove to be quite a distinct species when brought into cultivation.

Var. 4, *Hartwegii*, Baker.—Leaves all scattered, linear, much ascending, quite glabrous, like the stem, the lowest 4—5 inches long, 3—4 lines broad. Flowers 1—2 in the specimens seen, on long bracteolate peduncles, 3 inches deep, the divisions lanceolate, half an inch broad, narrowed very gradually to the point, reflexed from more than three-quarters of the way down in the expanded flower. Ovary 8—9 lines long; style 15—16 lines; filaments 2—2¼ inches; anthers half an inch.

Gathered by Hartweg, in 1848, in the mountains of Santa Cruz, in California.

Turning to the East again we have the following, which is usually regarded as a distinct species, but which is scarcely worthy of the name in the sense in which I am using it.

Subspecies *superbum* = *L. superbum*, Linn. Sp. Plant. p. 434; Bot. Mag. t. 936; Redouté, Lil. t. 103; Kunth, Enum. iv. 258; Spae, Mon. p. 28; Flore des Serres, t. 1014-5.—A more robust plant than typical canadense, reaching 4—6 feet high, with the stem in the lower part half an inch thick. Whorls of leaves more numerous, often 5—6. Leaves longer, the lower 5—6 inches long, narrowed rather more gradually at the base. Flowers more numerous, often 6—12 (reaching in an extreme case up to 40 according to Dr. Asa Gray), the inflorescence in well-developed specimens a broad pyramidal raceme. Perianth 3—4 inches long, spreading from lower down than in typical canadense when expanded. Ovary, style, and anthers longer in proportion.

An exceedingly fine plant, spread from Georgia northward through the northern United States, where it is rather common in rich low ground. It is a plant which might be well cultivated in our gardens much more abundantly than it is at the present time. The following is intermediate between superbum and typical canadense.

Var. *carolinianum*, Gray; *L. carolinianum*, Michx., Flora, i. 199; Bot. Mag. t. 2280; Bot. Reg. t. 580; Kunth, Enum. iv. 258; Spae, Mon. p. 29; *L. Michauxii*, Poir, Enc. Suppl. iii. 457; *L. autumnale*, Lodd., Bot. Cab. t. 335.—Stem slender, 1—3 feet high. Leaves like those of canadense, shorter and more oblanceolate than those of superbum, and flowers like those of canadense, not more than 1—3 in the wild plant, smaller than those of superbum, but, as in that, with the divisions reflexed from much below the middle when expanded.

Similar to superbum and canadense in its geographical range, but said to flower later. *J. G. Baker.*

(*To be Continued.*)

Home Correspondence.

Challenged Censorship, &c.—"Best collection of 10 dishes of fruit, distinct varieties." I recently competed in a class thus defined, and was disqualified by the judges for showing two Pines—a smooth-leaved Cayenne, and a Queen—in the collection. I don't feel satisfied, mine being the best fruit shown. In a collection of outdoor fruit I showed two dishes of Plums, distinct, and got the 1st prize. *Exhibitor.* [The judges were certainly in error, the two Pine-apples being thoroughly "distinct varieties." Eds.]

—— At the B—— Horticultural Society's show Mr. M—— took the 1st prize in the open class, with the following 6 stove plants:—Allamanda neriifolia, worthless; A. grandiflora, very poor; Vinca rosea, nice plant; Alocasia metallica, very good; Coleus Queen Victoria, without shape or colour; Caladium Chantinii, good. Mr. B——, who was awarded 2d prize, had splendid plants of Allamanda grandiflora, well-flowered; A. Hendersoni, very good; Dipladenia boliviensis, very good; Bougainvillea glabra, well flowered; Vinca oculata, good; Anthurium Scherzerianum, very fine, the rest averaging about 3 feet 6 inches high by 2 feet 7 inches wide. Which of these two sets ought to have had the 1st prize? It would be well if country judges knew a little more of the nature of growing plants and their value, and then we should not be troubled with so many complaints. *Fairplay.* [According to this statement, B.'s plants should undoubtedly have been placed 1st, the very fine Anthurium outweighed nearly the entire collection shown by M., and was besides well backed up by other good plants, well grown. Eds.]

—— 1. Is it permitted to exhibit Tomatos in a "collection of fruit" for a prize given for "best collection of fruit?" 2. Are not Chasselas Musqué and Josling's St. Alban's one and the same Grape? *D. R. S. H.* [1. No, not in this country; they are here regarded as an esculent vegetable, falling into the same category as the Vegetable Marrow. 2. Yes. Eds.]

—— Were the judges right in awarding the 1st prize at a recent local flower show to a collection of "variegated plants" containing a specimen of Herrania palmata, which is strictly a greenhouse stove plant? I may add that the judges themselves admitted that the plant in question was not admissible, but that they were influenced by the size and greater rarity of the collection over that awarded the 2d prize, although the latter consisted of well grown and valuable plants. *W. G.* [Herrania palmata is not a variegated plant in any sense, and should, therefore, have disqualified the collection, if the class was defined as one of "variegated plants." There is no more frequent mistake made at country shows than in being influenced by the size of one collection as compared with another, or of certain individual specimens in a collection over those in competing collections. The first question, however, in all cases is, Is the schedule complied with? If not, the exhibition should be disqualified in the class in which it is entered, even if it has so much merit that a supplementary award is made to it. Eds.]

Lawn Mowers.—I see by the *Gardeners' Chronicle* of August 26 that we have yet another patent lawn-mower, upon the old system. Now the machines of all the different makers cut well enough; where we want improvement is in the grass-box. A box constructed to hold more grass is what we want. I should like to see such an one, that will go 100 yards without requiring to be emptied. This would be a sensible improvement. *J.*

Hardy Succulent Plants (see p. 1133).—The specimen of Cereus tubulosus was a bought example, and was, I fancy, grafted on C. rostratus, but I cannot speak with certainty. Some growers consider that C. tubulosus is much more vigorous and floriferous when worked on another species, but such is not my experience, nor was it the opinion of the late lamented Mr. Bruce, of Kingston. I find it strikes freely, the wood much thicker, its beautiful blossoms quite as abundant on its own roots; and, further, you save the trouble of grafting, and, as in my unhappy case, stand a better chance of saving your plants in the event of your water-pipes being frozen. *John Daniel, The Terrace, Epsom.*

—— I am of opinion that the note on the above subject at p. 1133 is likely to cause some disappointment, should any of your readers act on the experience of Mr. Daniel. I should be obliged if he would state the exact amount of exposure which the plants in question received—that is, were they in the open air?—and if so, on the level ground, or on rockwork? or were they under glass without any other protection? If the latter, the plants being perfectly dry would assist them. It is known that Echinopsis oxygonus, multiplex, Eyresii, and Zuccariniana will pass the winter in a cool frame; Opuntia Rafinesquiana vulgaris, O. corrugata (O. humilis, Engl.), Mammillaria vetula, and two sp. novæ, found by Dr. Parry on the Rocky Mountains, are quite hardy; but Agave americana and variegata seldom stand the winter even in a cool shed, though covered with hay or straw. *J. Croucher, Gr., Sudbury House, Hammersmith.*

Yachting Shoes.—Those who, like myself, find great difficulty in mounting grassy hills in summer, or in cutting trees in dry woods, should buy a pair of 3*s.* 6*d.* yachting shoes. For most persons they are better even than the expensive cricket shoe for cricket, as they give you a much firmer grasp of the ground. *Somerset.*

Lightning-Struck Oak.—Half-an-hour since I was sitting at an open window observing a storm, when a flash of lightning struck a brave old Oak, in the middle of the "great meadow" here. A very superficial examination since leads me to believe that the trunk is split down the middle from top to bottom. An opening in the bark extends all down one side; on the other there appears to be a ribbon of bark, about 1 foot wide, completely stripped from the tree, but neither at the top or bottom; in fact, if removed it must be cut at each end, and then it will fall away at once. Being most desirous of doing all I can for the old favourite, I would like to have an opinion whether this strip of bark had better be removed, or whether it can be fastened in any way so as to again be of benefit to the trunk. A sheep lying beneath was struck dead, and some of the arms are completely denuded of bark and smashed. *A. C. M., Lorrenden, Ospringe.* [There is not much chance of saving the tree. Pare the edges of the wound as well as you can, replace the bark, and cover the denuded surface with tar and cowdung. Eds.]

Pruning Yew Trees.—I have recently moved 14 large plants of Yew, 12 to 14 feet high, and some of them as much through. They were moved with good balls, and have been well replanted in good soil and well watered and syringed overhead. They are intended to form part of a Yew hedge, and must be cut in for that purpose. Would it be better to cut them in at once or leave them till next year? My own feeling is in favour of cutting them in on one side at once, and leaving the other side till next year, a little later than this. My idea is, as the roots have been cut, if I reduce the heads I give the roots less to do; at the same time may not the leaves and branches assist in the production of fresh roots, and so do more good than they do harm, by affording a larger surface for evaporation? *C. F. P., The Grange, Kingston, near Taunton.* [Cut them in, in a few weeks' time. Eds.]

Parsons' Mignonette.—I, too, have grown this new Mignonette during the past summer, and can disinterestedly vouch that it has no lack of odoriferous qualities, nor is it deficient in strength of hab My
packet of seed was sown in a box in the greer
March, and the plants when two inches in he
pricked out about 6 inches apart in a single
open ground, and in very moderate soil.
owing to the prevalence of cold winds, th
rapidly became "small by degrees, and
less;" but when once a start was made,

was rapid indeed, until the row finally covered a space 3 feet in width, and dense from end to end. It was the strongest development in the Mignonette under ordinary culture that I have ever seen; the plants were generally true to character, and the size and length of spike unusually large, whilst the perfume was exceedingly powerful, not a visitor came but remarked it. The most disappointing feature about it was the discovery that the colour of the flower differed in no degree from that of the old variety, and required rather a stretch of the imagination to term it white. That it may come purer in colour under glass, there can be no doubt, but the same might be said of the old variety. Reseda odorata ameliorata is less striking in colour and flower, and has a shorter spike; but it is also more short jointed, and stiffer in habit, and very robust. Indeed, could a pure white variety, having the habit of the latter, be secured, we should then possess almost a perfect form of the Mignonette. *A. D.*

Preserving Tomatos.—Can any of your contributors inform me of the way that Tomatos are preserved in America? I believe that they are pickled in brine in some way or the other, but, whether the seeds are taken out, or whether they are simmered over a fire, I do not know. *Old Charlie.*

Fruit of the Mountain Ash, Preserving of.—I understand that the fruit of the Mountain Ash, or Rowan tree (Pyrus Aucuparia), is made in a preserve or conserve in Scotland which is highly esteemed. Will some of your Scotch readers kindly give us southrons the benefit of one or more recipes for converting them into sweetmeats? They are plentiful this year, when other fruit is not. *W. Marshall, Ely, September* 6.

Fertilisation of Leschenaultia.—As "F. W. B." inquires, in your number of August 26, about the seeding of Leschenaultia, I will give my small experience. During 1860 and 1862, I was led to make some observations on the fertilisation of L. formosa and biloba, from having read that with these flowers self-fertilisation was an inevitable contingency; and this, from what I had seen during many years, seemed to me highly improbable. I found, as "F. W. B." states, that before the flower expands, the anthers open and the pollen is shed. This occurs in a considerable number of plants, as in most Leguminosæ, Fumariaceæ, &c.; but it can be clearly shown that this by no means necessarily leads to self-fertilisation. In Leschenaultia the pollen, when shed, is neatly collected in a cup-shaped indusium, the mouth of which is at first widely open, but soon closes. Thus far I can follow "F. W. B.;" but he will, I think, find, on further examination, that the pollen must, in order that the flower should be fertilised, be subsequently removed from the indusium, and then placed on an exterior stigmatic surface. This no doubt is effected by insects, tempted to visit the flowers by the copious supply of nectar. On the outside of the indusium there is a viscid surface, and when on two occasions I placed some pollen-grains on the surface, I found, after an interval of about 20 hours, that it was deeply penetrated by numerous pollen-tubes. I was so much surprised at this position of the stigma, that I asked Dr. Hooker to dissect some flowers, which he did with care, and he confirmed my conclusion with respect to L. formosa. He also examined two other species, and found no trace of a stigma within the indusium. I should here add that Mr. Bentham has subsequently described the structure of the parts in this genus, but I cannot at the present moment lay my hand on his paper. When the flower is fully expanded the lips of the indusium fit closely, and cannot be very easily opened. If, however, a finely-pointed, small camel-hair brush be held parallel to the pistil, and be gently inserted into the flower, so as to imitate the entry of an insect, the tip of the brush, by pressing against the slightly projecting lower lip of the indusium, opens it; and some of the hairs enter and become smeared with pollen. If the same brush be now successively inserted into several flowers, pollen-grains will be found left on the exterior viscid stigma. During the early part of the summer I treated in this manner several flowers, but with no result. Towards the end of July, however, five flowers were thus treated, and the germens of all soon became much enlarged. Two of them, after a time, shanked off, but three remained on till the autumn, and each contained about 25 seeds. My plant produced hundreds of flowers during two or three summers, but the germens of none spontaneously swelled, with the exception of two growing close together, which I imagined had been visited by some insect. These two produced some seeds, but fewer in number than in the above case. All the seeds were in external appearance good, but when sown they did not germinate. The flowers were necessarily fertilised with pollen from the same plant, but it would have been incomparably better if pollen from a distinct seedling plant could have been employed. This would have been all the more advisable, as the late Mr. Drummond, of Swan River, in Australia, to whom I wrote, asking him to observe in the proper season what insects visited the Leschenaultias, informed me that the species growing there in a state of Nature very rarely produce seed. It appears at first sight a surprising circumstance that in this genus and in some allied genera, the pollen, whilst the flowers are still in bud, should be scooped out of the anthers, in which it might have remained ready for use, and then be immediately enclosed in a specially contrived receptacle, from which it has afterwards to be removed, so as to be placed on the stigma. But he who believes in the principle of gradual evolution, and looks at each structure as the summing up of a long series of adaptations to past and changing conditions—each successive modification being retained as far as that is possible through the force of inheritance—will not feel surprise at the above complex and apparently superfluous arrangement, or the other still more complex arrangements, though they may all serve for one and the same general purpose. Any one desiring to learn how diversified are the means for preventing self-fertilisation, even within the limits of the same family of plants, should study Mr. Bentham's short but extremely curious paper, just published [in the Journal of the Linnean Society], on the styles of the Australian Proteaceæ. I cannot resist specifying one of the remarkable contrivances described by Mr. Bentham. In Synaphea the upper anther does not subserve its proper function of producing pollen, but has been converted into a short broad strap, firmly fixed to the edge of the stigmatic disc. By this means the stigma is held in such a position that it cannot receive pollen from the fertile anthers of the same flower; or, as Mr. Bentham puts the case, "the stigma thus held by the eunuch (*i. e.*, the barren anther) is safe from all pollution from her brother anthers, and is preserved intact from any pollen that may be inserted * * by insects or other agencies." *Charles Darwin.* [In order to render this matter more clear we reproduce the woodcut from p. 1103. Eds.]

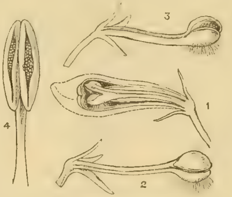

Fig. 267.—Leschenaultia formosa.

Malformed Pear.—By this post we send you a Pear fruit grown on a Jargonelle Pear, and which appears to us to be peculiar. *J. Dickson & Sons, Chester.*—[The change in question is not uncommon, and is explained by the circumstance that the core or true fruit is not produced, but in its place the stem grows out, assuming the same succulent form as in the normal Pear. The accompanying cut (fig. 268) shows an analogous instance. The edible portion of an Apple or Pear is now well known to be an expansion of the flower-stalk, the true fruit, in the botanical sense, being the "core" containing the seeds, and which in course of growth becomes imbedded in the succulent flower-stalk. Eds.]

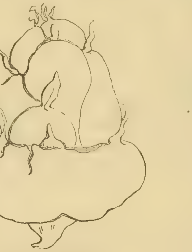

Fig. 268.—Malformed Pear.

Thujopsis dolabrata.—On looking over my *Gardeners' Chronicle* this morning (September 3), the first thing I read was your account of that interesting Conifer, Thujopsis dolabrata, growing in the pleasure-grounds at Ashridge, and until doing so I was vain enough to think I had the finest specimen of it in England, but I find now I must content myself with saying mine is one of the finest, not the finest plant in England, for the Ashridge plant beats mine. You say it is 5 feet 6 inches in height, and fully as much through at the base. My specimen is only 5 feet 1 inch high, and the same, or may be an inch or two more, through the base; and, as to health, to all appearance it could not be more healthy or robust; but I have had it 12 years, and I fancy it is a very slow grower. Five feet is not much in 12 years. Perhaps it may go on better in the future, as it must be tolerably well established by this time. If any of your correspondents have a finer plant, will they kindly publish particulars of it? I have also a smaller specimen, which has the "abrupt unfinished appearance" you mention. I am thinking of making a rough open fence of branches of some kind round it, and leaving it there for a year or two, to see if it will draw it up. There is a wonderful difference in the date of growth of many of our exotic Conifers; my Thujopsis dolabrata is growing within 30 yards of two fine specimens of Pinus Benthamiana, which came to me at the same time (the early spring of 1859), done up in a brown paper parcel—seedlings drawn out of the seed bed in which they were raised—root, top and all not more than six or seven inches, tied together with four others with a piece of bast, and then wrapped up in brown paper; they are now 21 feet 6 inches, and 25 feet 10 inches in height respectively, and as robust and handsome as they can be. *C. F. P., The Grange, Kingston, near Taunton.*

Faults in Dinner-table Decoration.—In a very able letter to the *Times*, on the 1st inst., Mr. E. B. Denison discusses some of the faults in modern architecture; and his opinions on this subject so exactly accord with mine on the subject of dinner-table decoration, that I venture to ask for space for the following extracts:—"The idea of making buildings handsome by their proportions seems to have perished out of the earth." "Contempt of proportions and symmetry, and an accumulation of ornaments, seem to be the leading characteristics of what may be called the Victorian style." "The ancients, of all styles, had ideas of proportion, and an eye for it; they did not fancy that they could produce effects by height, out of all proportion to length or width." (I commend the foregoing extract in particular to some worthy and excellent friends of mine, who advocate the flat style of table decoration.) "Mediæval architects were not afraid of making 12 or 13 bays of a long building all alike, except sometimes in minor details; while many architects of the present day cannot give us three or four in succession without some startling variation to avoid their great bug-bear 'monotony.' And yet their buildings are monotonous, in having but one tone of fussiness and overdoing and want of repose everywhere." "Everything that is permanently pleasing, both in art and mankind, must have that undefinable quality called repose, which involves (though it does not mean) simplicity. And our architecture will go on getting worse and worse, more and more vulgar, if this passion for over-decoration is not stopped, and old principles restored." *W. T.*

Water Weeds.—I beg to thank Mr. Campbell for his reply to my water weed question, but beg further to ask him what was the extent of the lakes he speaks of, and the number of swans that were introduced on to them. Swans were recommended here for the purpose of keeping the weed under. Accordingly, in the winter of 1869, nine swans were procured, which have this year increased their number to 13, but unfortunately they have not had the desired effect, as the lake has never been known to be so full of weeds as it has been this summer. So dense is the Myriophyllum that I think no reasonable number of swans would be able to keep it under, the size of the lake being about 30 acres. *W. E.*

The Potato Disease.—Although agreeing with what has lately been advanced in your columns relative to the propriety of planting Potatos wider apart than has hitherto been customary, as a means of rendering them less liable to the attacks of the dire epidemic, by allowing the "tops" more space for development and exposure to the sun and air, I still consider that the innate constitution of the variety has as much as anything to do with its ability to resist the attack of the disease [No doubt]; in exemplification of which I may remark that a case in point has recently presented itself to my notice in the shape of a few rows of Bresee's Peerless and Prolific Potatos, which I planted on March 30, single eyes alone being planted, in rich soil, in a somewhat shady part of the garden, in rows about 30 inches apart; which distance proved insufficient, as the tops of both kinds grew vigorously, and soon became interlaced, resulting, however, in a heavy crop of handsome tubers. And although the "tops" of both varieties were alike severely affected by the disease, the Prolific had but three or four of its tubers affected, whereas the Peerless was diseased to the extent of about a third of its crop; hence, I think, conclusively proving that the natural constitution of the variety is as much to be taken into consideration as are other conditions. In further substantiation of this view, I may add that in a reserve garden here, but in a more elevated position, and less rich soil, several other varieties of Potatos, planted somewhat earlier than the foregoing, were more or less diseased, notably so Ne Plus Ultra (kidney), which was planted about a yard apart every way, by way of experiment, but which was badly affected; whereas such as the Gloucestershire Kidney, Ashleaf Seedling, Mona's Pride, and Veitch's Ashleaf, were comparatively free from the disease, though considerably separated by intervening rows of Broccoli.

The reverse, however, occurred to Early Coldstream, Princess Dagmar, Early Emperor, Prince of Wales, and Edgecote Seedling, all of which were more or less shaded by intervening beds of the Brassica tribe. I may add that I have invariably found that early kinds early planted prove infinitely less liable to the influence of the disease than either early or late varieties late planted. *William Gardiner.*

Grape Growing at Kingston Hall.—As the temperature of the border may be readily ascertained from the outside surface, the fact of its being heated cannot be disputed. The bar to the circulation pointed out by Mr. Cruikshank, simply proves that each set of pipes has its special duty to perform. The narrow passage which contains the pipes under the front of the house is for the border heat, and the heat circulates in the chamber under the border, in the manner customary in Mr. Sylvester's arrangements, viz., through pigeon-holes in the outer wall. This is the identical mode of heating originally adopted for surface heat, and it was made to serve two purposes, for when it was not wanted in the house the valves could be closed, and the waste, or spare heat, was forced into the border chamber. Mr. Cruikshank says there are no ventilators to be seen in the front wall. Certainly not, why should there be? The object was to force the heat into the border chamber, and that could only be accomplished by preventing its escape in any other direction. As I have before stated, the only alteration made in the inside wall was that of stopping the ventilators, so as to confine the heat to its proper object—that of heating the border. "F." frankly admits his inability to speak positively upon this point; but from where he made his observations—the inside chamber—not one particle of heat goes into the border chamber, except what passes through the solid brick wall. You will thus perceive that my previous statement is substantially correct. As for the crops of my predecessor, not having seen them I cannot speak of their quality. Report says that enormous crops had been produced. At the time the Vines passed into my charge many of them had 70 to 80 bunches upon them; and the fact that the crop had coloured badly for years, furnished unmistakable evidence that fast life in their youth had bent if not broken their backs. Add to this the ravages of insect pests, and it may be readily perceived they were only the shadows of their former selves. If there is any doubt upon this question, Mr. Sowray, now the gardener at Highnam Court, Gloucester, who was foreman for years to Mr. Mackay, can settle it. *Geo. Westland.* [We think enough has been said on this question. Eds.]

Covent Garden Prices.—Three or four letters have appeared on the above subject. Being an old Covent Garden man I may, perhaps, be allowed to state my opinion. I begin with Pine-apples, which, at certain seasons of the year, are not worth growing; at other times, namely, from October to July, few things pay better. Queens are very good, but none realise so much hard cash as Black Jamaica. Then as to Grapes: the most suitable are Black Hamburgh, White Muscat, Lady Downes' Seedling; for very late, Muscat is the favourite, and none of the other varieties command so good a price. Grapes should be laid in baskets, holding 12 lb. each, in precisely the same way as put up for exhibition. Send your own man to the railway station, and let him give them into the guard's hands; let your salesman know, in order that his man may meet them in London. In this way, literally speaking, they go out of the grower's hands into the salesman's. Never forget to shake hands with the guard, and your fruit will always go right. I may mention, if the bloom is not perfect it is of little use sending them, so particular are the great buyers on this point. Peaches and Nectarines also command a good price, but few gardeners send them to please the salesman; for this reason, they pack all together—little and big. The proper way is to gather just before they are ripe, sorting them over to make firsts, seconds, thirds, and even fourths, packing each sort by itself in Peach punnets—label each basket with the number of fruit, and its quality, first or second, as the case may be. Strawberries (forced ones) sell well, almost always. My favourite is Sir Charles Napier for the market, still Keenes' Seedling and President are very good; but when good old British Queens are done well, they realise more money than any other I know off. They should also be packed in punnets, with a leaf between each fruit, and sorted over the same as Peaches, not forgetting to let the same man take them to the station on all occasions. I am happy to say I generally get good prices for all I send, my salesman being John Black; nevertheless, I know others equally good—Walter Davis, Solomon. I venture to say, if your correspondent grows good stuff, and packs it in the way described, he will find prices remunerative. *R. G., Stamford.*

Price of Peaches.—When I read in your paper such remarks as those of "A. D." at p. 1135, about Peaches, I wonder that advertisements are not more resorted to by those who have articles to part with. I have no doubt that if "A. D." had put in an advertisement that he had 50 dozen Peaches at, say 3*s.* per dozen, and that he would send them packed—so many per week or half week—that he would have found customers at once. The fact is, as he states, that we fathers of families never think of buying Peaches, because of the very high price charged at the shops for them; but there are thousands of us who would gladly supply our families with Peaches and other fruit, if we could do so at a fair price, from the growers. I have sold many things by advertisement, and scarcely ever put one in that I did not meet with purchasers immediately. *W. D. F.*

The Crystal Palace Show.—Every one who visited the show held at the Crystal Palace a few days since in connection with the Metropolitan Floral Society will bear witness to the correctness of your remark, that the right of the judges "to withhold the prize where they consider the subjects not worthy of it" would have been well exercised in the classes for Gladioli. Some of the spikes were certainly not worthy to be sent to an exhibition, and, on the other hand, some of the exhibits were of a very high character. I am induced to write to you upon one or two other points in connection with the Gladioli shown there. To my surprise, one stand of 36 had not a single flower named, and moreover it was made up so irregularly, that for some time I took the centre 12 to be an exhibit of itself, the other 12 on either side looking different, and standing a few inches away from the centre lot. Of all flowers the Gladiolus should be named, as you require to examine it for comparison with others. Another stand had two spikes of the same flower. Both these stands had prizes awarded. Where was the committee of the Society? Do let us have placed fairly before us the *Gladiolus.*

Marigolds.—The accompanying Marigold blooms represent several types of habit as well as shades of colour, and are being selected in the hope that their respective forms may become permanent. The blooms marked No. 1 are African Marigolds, showing the varied shades that exist amongst them, comprising rich orange to bright yellow and lemon. The mixed flowers marked No. 2 are gathered from a number of French Marigolds having a very stocky, bushy, free-blooming habit, the height, including flowers, averaging 18 inches. In respect of habit they are very superior to the tall rank-growing French kinds, producing a much denser mass of bloom, as well as greater capacity to resist drought. No. 3 is a Ranunculus-flowered variety, the flowers being exceedingly double, and of the most pleasing appearance when growing on the plant, which has also a very dwarf dense character, rising in height about 14 inches. No. 4 comprises a mixed lot of flowers of a very dwarf section, consisting of plants varying from 6 inches to 12 inches in height, including flowers. No. 5 are flowers gathered from our selected Dwarf Orange French, for bedding, averaging 10 inches in height; and No. 6 is a yellow variety, of the same habit. These are both very dwarf and continuous bloomers, standing drought well. *A. Dean.* [Very good examples of different types of Marigold. No. 2, with fine large flowers, is particularly handsome; and Nos. 5 and 6 are pure-coloured, and likely to be useful for massing. The mixed Verbenas and Pentstemons sent with them indicate good strains of seed. The white Lobelia speciosa is very pure and good. You should send it to Chiswick, to be grown with other sorts in the next year's trials. Eds.]

Utricularia montana.—I have to thank "Ebor" for kindly furnishing us with some useful particulars as to the climatic conditions under which this peculiar plant flourishes in one locality. We as cultivators ought to be extremely thankful to real travellers when they give us their experience, which unfortunately is but seldom. The flowers of this plant (see fig. 233, p. 1039) are pure white, with a blotch of orange-yellow on the bigibbous portion of the limb of the corolla, and two streaks of the same colour extend down the throat. The manner in which it propagates itself I took the precaution of illustrating in my sketch. The plant would seem to be common enough in the tropics, and also somewhat widely distributed. Would "Ebor" oblige by stating whether it is constantly epiphytal in Trinidad. We have three species of Utricularia or "Bladderworts" in Britain, viz., U. vulgaris, U. intermedia, and U. minor, all being aquatic, or submerged plants. Those who have access to the "English Botany" will find them figured or described in that valuable work. *F. W. B.* [A coloured plate of this Utricularia is given in the "Botanical Magazine" for the present month. Eds.]

Tabulated Lists of Flowers.—I remember, when the late Mr. Beck took the "Florist" in hand, he gave, from time to time, tabulated lists of the best Pelargoniums given in by all the best growers in the kingdom. And I well remember the interest and confidence that used to be felt in them by us country readers, and how much we missed them when they ceased to be given. Is it impossible for the *Gardeners' Chronicle* to adopt the same plan? Surely not. What information could be more useful, more interesting, more to the taste of your general readers, than lists so made up—of Roses especially—say the best 12, then the best 24, 36, and 50, given in by 12 of the best growers in the kingdom, eight of them being nurserymen, and four amateur growers. It is the combination of such effectual efforts which I look to, if such can be brought to bear. For instance, if all 12 agreed in recommending one Rose as the best of its kind, who could have any doubts of its being so? The same of the rest. Let those Roses which have the greatest number of votes stand in the first rank till they are beaten by others. The same with bedding Pelargoniums, for they seem to have local propensities, one kind doing best here, and another there, while others seem to have no particular taste. I look upon the trial of bedding Pelargoniums at Chiswick as of the first importance, as all fight upon the same terms—a fair field, and no favour—a very important feature in my estimation. To those who visit the great flower shows of London and other places, such information is not so necessary, though not wholly useless to them, but to the general stick-at-home it is most important, and of all mundane information has the best share of his heart. *R. J.* [We will endeavour to comply with your wishes. Eds.]

Potato and Artichoke Grafting.—Be good enough to allow me to state, in reply to Mr. Dean at p. 1135, that I had intended to exhibit my experimental tubers at South Kensington on the 6th inst. (expecting to be away from home on the 20th), but as both Mr. Dean and Mr. Fenn are expecting to put in an appearance on the 20th, I shall have much pleasure in deferring my exhibition until that date. I lifted my tubers on the 1st inst., chiefly because the disease was so virulent on all sides; but, happily, these have nearly escaped its ravages. Whatever may be the ultimate results of my experiments time will prove, but an hypothesis of my own is that by intermixing the properties of the Artichoke and the Potato, the latter must necessarily be hardened in constitution, and consequently better able to resist the disastrous effects of the Potato murrain, although it may be deteriorated in quality. These anticipations may in the end prove fruitless, but one thing is at least certain, viz., that the union of the Artichoke and Potato (Helianthus and Solanum) is a *fait accompli* [in our correspondent's opinion]. Next spring I propose to re-graft these tubers into the Artichoke, when I anticipate a further development of the characteristics and properties of the Artichoke; and by repeated grafting in this way I am of opinion that the properties of the two genera will be so commingled as to defy even the worthy and talented authorities at 41, Wellington Street, to prove which genus it [the tubers] originally belonged to. More at the time of exhibition. *Thos. Simpson, Broomfield, Sept.* 5. [We shall certainly be surprised if we cannot tell a Potato from an Artichoke. Eds.]

Asparagus Disease.—The whole of 21 acres of Asparagus—seedlings of various growths, young Asparagus which was expected to be cut from for the first time next spring, and beds which have yielded well for two seasons, have been attacked by a Fungus, and the consequences cannot fail to be very serious. The Fungus first appears in small brown patches on the stem, gradually spreading until the whole plant is covered with an envelope, which seems to ripen and then break, showing a black furry substance, which is the last stage of the disease. The land is of various qualities, some of it wet and other parts dry, the disease being the same in all. The seedlings and the young Asparagus were attacked early in July, and, until the last ten days, had apparently died away, presenting to the eye the appearance which is usual at the end of November; the seedlings are now apparently recovering, and looking green again, and the stems of the young Asparagus, which was expected to give a first crop next spring, are putting forth green sprigs, and shoots, although puny miserable things, are beginning to spring from below-ground; these young shoots are also attacked in the same way, but apparently in a milder form. The beds which were cropped this year were attacked much later, and at the present time have the appearance of bare brown poles, all seed having disappeared, and no fresh shoots being formed. Underground the plants have a very unhealthy appearance; the roots have in some cases rotted, and emit a very unpleasant smell. Many of the old shoots, which a few weeks ago were in a strong healthy condition, have now perished, and the others are putting forth a few feeble sprigs. I wish to learn whether this has ever occurred before, and what can be done for the plants. *G. Hester, M.A., Ringmore, Teignmouth, Devon.*

Pinus pygmæa: Case of Reversion.—I send you a branch, evidently of Pinus orientalis [?], cut from a nice little plant of Pinus pygmæa growing at Chadacre Hall, the seat of Miss Halifax, about 8 miles from Bury St. Edmund's. The soil is a very strong loam resting upon clay, but many of the Pinus and Piceas, such as Pinsapo, orientalis, and cephalonica, do well, and form nice trees. The present intelligent gardener, Mr. Foulger, has cleared a good many shrubs away that were used for shelter, which has shown off the plants to more advantage by placing them on the clear turf. This tiny tree was one of those so cleared, and I gathered the branch sent, which was only a portion of the sport, a few days since. Such sports among Conifers are rare, as far as my observation extends. Last year a gold sport, true, came on a common Yew of great age, here. *D. T. F.* [The Clanbrasilian Fir not unfrequently reverts to its original form in the same way. Eds.]

Foreign Correspondence.

PARIS IN 1871.—It was with strangely mingled feelings that I found myself, one morning in last month, after a night's travelling from Brussels, at the station of the Northern Railway in Paris. One's thoughts had been for months so full of the miseries and sufferings of its people, of the terrible war with Germany, and the famine consequent thereon, and the still more terrible war of the Commune, of the devastations and burnings that the wretches who held sway under the *régime* of the latter had occasioned, that one questioned whether the fair city of the Seine would be recognised as the same. Some said, "Paris can never be herself again; her beauty is so marred, her peculiar charm so disfigured that no amount of money can ever restore her to her pristine glory." Others, on the other hand, said, "The change is really very little; a few houses here and there—some of the fine buildings, indeed—are gone; but, after all, it is not much." And here was I to judge for myself. The truth, as usual, lies about midway. Get into a *fiacre*, drive from the Northern Station down the Rue Lafayette, the Rue Poissonière, on to the boulevards, then along by the Madeleine (you will miss the Vendôme Column, but, in an artistic point of view, this would be no great loss), up the Boulevard Malesherbes, to the Parc de Monceau; then on to the Arc de Triomphe, then again down the Champs Elysées to the Place de la Concorde, and you will say, "I do not see the least change." But if, instead of taking this route, you had done as I did, driven down the Rue Richelieu, by the Louvre, across the Place de Carrousel, over the Seine, to my hotel, in the Faubourg St. Germain, your estimate would have been different. You would have seen the blackened ruins of the Tuileries, of the Ministère de Finance, of the Chancellerie of the Legion of Honour—you would have wondered what had become of the Hôtel de Ville and of the Palais de Justice, and you would have been able to form some idea of the dreadful scenes that must have been enacted in the month of May. Inside Paris the Germans have hardly left any mark. All this is the work of the Commune—of wretches gathered out of every nationality, with, let us be thankful, the exception of England—marshalled by Poles, Russians, and Italians, but derided by Frenchmen, by those who have painted or carved on every public building "Liberté, Egalité, Fraternité," and then set fire to them, as an illustration of their meaning of the legend. From every Frenchman I met with—from English friends, who, like that gallant soldier of the Cross, the Rev. Dr. Smyth, of St. Germain, remained within all through both sieges—I heard but one story. Had the Commune had three days more, not a stone of Paris would have been left. But the readers of the *Gardeners' Chronicle*, to many of whom Paris is well known, and to most of whom its parks, &c., are familiar, whether through the splendid work of Alphand, the popular pages of Robinson, or the columns of this journal, will want to know, horticulturally speaking, what is the present aspect of Paris—how fare its public gardens and promenades, its flower markets, and its *halles*. Well, it was with this end I took my course, and, without going into any questions connected with its political or social aspects, shall just detail what I saw in connection with these parts.

The inner boulevards, that cheering line of tree-bordered streets, which give such a peculiar charm to Paris, are untouched. Whether it was respect for their city, or because the green wood would not burn, certain it is that they have been left untouched, and in the month of August were all in their leafy beauty. Outside the city it is different—the larger trees have been cut down, many battered to pieces by the shells of Mont Valerien; but inside the city it is happily different. During the Commune fuel was not scarce; supplies had entered of all kinds, and there was no necessity for the destruction of the trees, so that those who have been wont to enjoy their *café* under the shade of the Ailantus and Planes on the boulevards can still do so.

On entering the public gardens, while you wonder at the order into which they have been brought, you at once see that they are very different to what they used to be. How could it be otherwise? When the Commune took possession of Paris, they cashiered M. Alphand, who had been the director of all the public gardens, and placed in his stead a man of the name of Carlier, who went by the nickname of "Pape-en-bois," and who cared as little for flower-beds as for the cleanliness of his own person. M. Alphand happily now occupies his former place, and if France remains at peace with herself, another year will see things such as they used to be. But what could be done? La Muette, the great nursery of the city, which supplied the parks with plants, was nearly battered to pieces; and hence you will find—as for instance, in the Parc de Monceau, where the beautiful beds and the splendid tropical plants made such a scene of beauty—that annuals, and Petunias, and such plants as can be rapidly raised from seed, have had to take their place. It is the same way in the Champs Elysées; beds of flowers there are, but they are comparatively few; the only exception to this is the garden of the Luxembourg, where, dependent on his own resources, M. Rivière has been able to keep a supply of bedding plants sufficient almost for his purposes; but he has lost fine collections of Bromeliads and other plants, owing to the failure of fuel to heat the houses. The Jardin des Plantes is a wreck of its former self, though that I never thought much of; it always seemed to me a place utterly unworthy of French science, and of the illustrious names that have been associated with it, ending in the present able director, M. Decaisne. As a botanic garden, it was poor, while the collection of Orchids and other plants was utterly inadequate to represent the state of French scientific horticulture, so that I do not wonder that French *savans* think so highly of Kew. Although I have seen enough of German desolation, I do not believe that the damage they did to the houses here was intentional. If they had battered them down, and the Government had rebuilt them, it would have been a gain to all concerned. The houses are now comparatively empty, although, doubtless, ere long, the various establishments of Europe will help M. Decaisne in his endeavours to refill them; the garden is still occupied by soldiery. I thought to pass down the avenue on to the quai, but was stopped, the "tentes d'abri" filled the avenue, and the red-trousered soldiers ("quantum mutatus ab illo"—the "illo" being the spruce dapper soldier of the Second Empire); and so I was compelled to retrace my steps. The Buttes Chaumont, which were beginning to take their place as the most original of all the Paris parks, is a scene of desolation, but it is being rapidly rearranged. The remarks that I have made with regard to these larger parks and gardens will apply equally to the smaller spaces, as the Square de Montholon, the garden of the Tour de St. Jacques, Place Louvois, &c., all, to one who has seen Paris before, much inferior to their former state; to one who had not seen it before, wonderfully neat and pretty; to every one, a matter of astonishment how in so short a time so much could have been done.

One of my earliest visits in Paris is always to the grand Halles Centrales, it was the first place I went to this time; here thought I, I shall see whether French market gardening is recovering itself. Where the things came from I do not pretend to know, but there they were fresh as ever,—the stalls outside with their fresh looking vegetables and their little neat assortment of cut legumes for the potage, and inside the benches filled with Apricots, Peaches, and Grapes. The fine Peaches of Montreuil, and the yellow good-for-nothings of the South, rich, luscious fruit, at 6 sous each, the very best; and Grapes (the Chasselas de Fontainebleau), both grown in the South of France, at 6 sous the pound. There, too, were the *bouquetièristes*, making their nosegays as of old, and the crowns of *immortelles* (alas! poor France has need of many of these); while, passing on to the fish departments, there were still the same crawling masses of escargots, the crayfish in the running streams, salmon (which had perhaps come over from London), and other things as usual,—nay, I detected some of my old friends in the stalls, who seemed to have passed through the ordeal of two sieges tolerably well. And while speaking of the markets, let me say that the market gardeners in the neighbourhood of Paris have expressed much gratitude for the supplies sent to them, especially of Potatos. Myatt's Ashleaf had been sent in considerable quantities; they have found its superiority to their own, and it will be largely planted another season.

But, I thought, doubtless the flower markets and the bouquet shops will show the difference; there can be little money to spend on such luxuries now, and few people who would care to buy them. What was my surprise, then, on going to the flower market at the Madeleine, to see it almost identically as it used to be!—there the stalls had sprung up again, there were the same plants, the Roses, Lilies, Vincas, Pomegranates, arranged in their paper envelopes; while at Madame Fillul's, Borujon's, Privort's, and other well known *bouquetièristes*, there were the same daintily and tastefully arranged bouquets, and people entering the shops buying and carrying off their fragrant burdens. So then, after all, some may say, things are not so bad as it was reported, and the French Horticulturists' Relief Fund was not needed. "Aisy," as Paddy says. Have you ever, my friend, visited a country parson of your acquaintance, located in some quiet peaceful nook? Around his vicarage lies the little village, with its quaint old cottages and neat gardens, the Ivy-mantled church is close by—the schoolhouse, with its Roses and Honeysuckled porch, at hand; it is a fine autumn evening, there is not a breath to move the air, the harvestmen are bringing home their last load for the day, and you involuntarily exclaim, Ah! what a happy scene; peace must surely reign here, and contentment be the rule of every heart. Ah!—alas for human nature! your country parson will tell you his little village is but the epitome of the larger world in which you move; and beneath this apparent calm that reigns you would find that envy and strife, tales of shame and of sorrow, are to be found concealed within many a house there, as well as in the larger houses of a city. All is not gold that glitters; and so with Paris. Beneath the apparent restoration of everything to its former state, there is a mass of unrest and disquiet, of gloomy anticipation, of depressing feeling, which shows that all is not as it was. And so of horticulture. In my next communication I shall have to draw a very different picture—to tell of devastation and miseries, that make one's heart sick to think of, and which will show, I am constrained to think, that all the aid and sympathy that we can give would be but as a drop in the ocean to that which is required. But I have thought it well to show what Paris is, and that those who have never visited it may yet hope to see it in its former beauty—the fairest city of the world. *D., Deal.*

Societies.

ROYAL HORTICULTURAL: *Sept.* 6.—Major Trevor Clarke in the chair. The usual preliminary announcements having been made, the Chairman said that to him the most interesting feature of the meeting was the excellent display of Onions, which had been gathered together after many years of selection and cultivation, and which had suggested to him how easy it would be to cross such plants by planting distinct kinds of such things close together. He had tried this method in the case of the Onion some years ago, and the result was the production of some beautiful varieties. He recommended this plan strongly to experimenters, and suggested that the plants to be so experimented upon, with the view to improvement, should be Onions, Cabbages, Radishes, Carrots, &c.

Floral Committee.—Dr. Denny in the chair. The display on this occasion was confined to the Council-room, and consisted mainly of an excellent lot of Dahlias, Asters, &c. The best 24 cut blooms of Dahlias, in the open class, were contributed by Messrs. Kelway & Son, Langport, and so fine was the collection that we give the names of all the varieties shown, as a guide to our amateur friends:—Julia Wyatt, Mrs. Dix, Miss Henshaw, Volunteer, Flag of Truce, Lord Derby, Lady G. Herbert, Yellow Boy, Hugh Miller, Sydney Herbert, Ellen Potter, Lord Shaftesbury, Charlotte Dorling, Vice-President, Master of Arts, Pandora, King of Primroses, King of Sweden, Jenny Austen, Lord Napier, Yellow Perfection, Andrew Dodd, Princess of Wales, and Mrs. Boston. All the above were represented by capital specimens, and formed the finest stand that we have seen this season. Mr. Turner was 2d, with a stand of seedlings which comprised some very fine flowers; and Mr. C. J. Perry, Castle Bromwich, was 3d. This collection contained superb blooms of James Cocker, Miss Roberts, High Sheriff, Mary Keynes, Queen of Beauties, and several of the abovenamed. The last named exhibitor was also 1st in the amateurs' class for 12. The best 24 Asters, not quilled—and an excellent lot too for the season—came from Mr. G. Wheeler, Warminster, Messrs. Kelway & Son being 2d, and Mr. J. J. Chater, Cambridge, 3d. For 12, not quilled, amateurs, Mr. Rowe, Roehampton, was 1st; Mr. E. Farndell, gr., Surrey County Asylum, 2d; and Mr. B. Porter, Isleworth, 3d. In the open class for 12, the best came from Mr. J. J. Chater, with Mr. J. Walker, Thame, Oxford, 2d, and Mr. E. Rowe 3d, all very good flowers. Mr. Perry sent the best stand of 24 Verbenas, distinct, five trusses of each, and Mr. J. J. Chater was 2d. For 12 Asters, not quilled, Mr. Rowe was 1st and Mr. B. Porter 2d, both collections being rather poor. The only exhibitor of Liliums was Mr. W. Bull, who took 1st prizes in the class for six distinct, and of L. speciosum (lancifolium), not less than three varieties, with very well-grown plants of L. speciosum, roseum, rubrum, rubrum superbum, punctatum, and speciosum album, tigrinum, auratum, &c. Messrs. Veitch & Son exhibited a small group of new plants, including a pretty new Masdevallia (amabilis?) which received a First-class Certificate; and the finest new annual of the season, Amaranthus salicifolius, an introduction from Manilla, which grows in a beautiful pyramidal form to the height of about 3 feet, with long narrow leaves, the predominating colour being orange-red, which varies to a deep bronze. The plant had been lifted from the open ground, thus establishing its character as a first-class bedding plant, and for conservatory decoration at this time of year; a First-class Certificate was awarded. Mr. Bull also sent a nice group of new plants, including a new dwarf, prettily marked, free growing Aroidaceous plant from Central America, named Syngonium albo-lineatum; Saurauja nepalensis, a fine bold-leaved foliaged plant; Dracæna metallica and elegans, two of the best of the dark-leaved section, and D. splendens, a dwarf, stiff-growing form from the South Sea Islands, which received a First-class Certificate. From Mr. Croucher, gr. to J. T. Peacock, Esq., Sudbury House, Hammersmith, came a very interesting group of a dozen new Cactaceous plants, including the very curious Echinocactus myriostigma, E. Kochii, E. californicus, E. Mourvillei, and E. Wisczlenii, Mammillaria bicolor cristata, M. sphærocephala, and M. rhodacantha, &c.; a Special Certificate was voted. Mr. Parker, Tooting, had some nicely-flowered specimens of Ixora amabilis; and from Messrs. E. G. Henderson came a nice group of variegated foliaged bedding plants in the International Department. M. Jean Verschaffelt again contributed a fine group of new Agaves, of which the following were selected for first-class awards:—A. Celsiana albida, A. Toneliana (Ghiesbreghtii?), A. Mescal nigrispinis, A. dealbata compacta; and A. dealbata compacta angustifolia had one of the 2d class. These, we hear, have all passed into the hands of Mr. J. T. Peacock, whose collection of these plants is now one of the richest in the country. First-class Certificates were also voted to Mr. Turner, for Dahlias John Standish, Mr. Saunders, Souvenir d'Herbert Turner, a fine white; and Kate Haslam, delicate pink, fine in shape; to Mr. G. Rawlings, for Dahlia Maid of Essex; to Mr. G. Parker, Maiden's Green, Winkfield, for Dahlia Old Port, well described by its name; to Mr. W. Tillery, Welbeck, for Gladiolus Celestial, white margined with bright scarlet; to Mr. D. Mackellar, gr. to C. Magniac, Esq., Colworth, Beds, for seedling Hollyhocks—Jeanie, white, and Rose of Sharon, crimson, large, and fine in shape; to Mr. J. J. Chater, for seeding Hollyhock Peerless, buff; to Mr. Keynes, for Seedling Dahlia Dolly Varden, fancy, pinkish white, tinged with crimson; William Laird, purplish blush; William Keynes, orange-red, very fine; and Marchioness of Lorne, creamy-yellow, tipped with crimson, which received one of the second class. Special Certificates were awarded to Messrs. Veitch & Sons for a fine collection of Asters, and to Messrs. Ponsford & Son for cut specimens of Clerodendron Bungei, and Mr. Eckford, Coleshill, had a first-class award for Verbenas Lady Edith, very fine white, and Pluto, very deep scarlet, white eye.

Respecting the Chiswick trials of flowers, it has been suggested that the best plan of making up the collections at Chiswick would be for the various growers to contribute at this (autumn) season of the year, when they can be so much more conveniently looked out and dispatched, such kinds as they can spare of those already sent out. To further this object, it was also suggested that catalogues should be sent to Mr. Barron, for him to mark in them the names of those kinds which the Society already possessed. Mr. Barron is quite prepared to carry out this suggestion, with a view to making the next season's trials as complete as possible, and would be glad to receive at once any varieties of the undernamed flowers which are not already at Chiswick. In addition to the bedding Pelargoniums, which always form the principal group of trial plants, it is proposed to form also as complete sets as possible of Phloxes, Pentstemons, bedding Lobelias, and bedding Violas for outdoor culture, and of Fuchsias for culture in pots. Address: Mr. A. F. Barron, Superintendent, Royal Horticultural Society, Chiswick, W.

Fruit Committee.—G. E. Blenkins, Esq., in the chair. This was a very interesting meeting. Mr. Pearson, Chilwell, again sent several seedling Grapes, amongst which was a fine white one, which will supersede Foster's White Seedling, and named Dr. Hogg, which received a First-class Certificate. Two other black varieties were requested to be shown again. Special Certificates were voted to Mr. J. Reid, gr. to the Earl of Crawford, Haigh Hall, Wigan, for very fine fruits of Passiflora quadrangularis [?]; to Mr. Perkins, gr., Thornham Hall, Suffolk, for nice specimens of Queen Emma Melon; to Mr. W. Paul, Waltham Cross, for a large collection of Apples; to the Rev. C. Ellison, Bracebridge Vicarage, Lincoln, for excellent specimens of Veitch's Autumn Giant Cauliflower; and to Mr. G. W. Pragnell, Castle Gardens, Sherbourne, for a magnificent collection of Onions, 21 varieties, including the new Giant White Tripoli, Giant Rocco, White Lisbon, Bedfordshire Champion, Reading, Danver's Yellow, White Moscera, Italian Red Tripoli, Giant Madeira, &c. Examples of seedling Melons, one of which, a green-fleshed variety, was of very good quality, came from Mr. Cadger, Luton Hoo, and a green-fleshed variety, named Ne Plus Ultra, from Mr. J. J. Chater, who received it from San Francisco. It was rather past its best, but good in flavour, melting up to the rind; Mr. W. Armstrong, gr. to T. D'Eath, Esq., Woodstock House, Hendon, sent a Queen Pine, weighing 4 lb. 3 oz., and Mr. Turner had a dish of the seedling Plum, Bonne Bouche, which received a First-class Certificate some three or four years ago, a variety much larger than the Green Gage, and quite equal to it in flavour. Messrs. E. G. Henderson & Son sent examples of a seedling White Grape, which ripens three weeks earlier than White Muscadine, but which it strongly resembles. Mr. Perkins, Thornham Hall, also sent a specmen of the Sooly Qua Cucumber, over 5 feet long; and from Mr. C. Osman, South Metropolitan Schools, Sutton, came a nice collection of vegetables. Mr. Turner also sent specimens of Bluegown and the Wizard Cucumber, which in the case of the first-named fully bore out its high character. Messrs. Carter & Co. offered prizes for the best collections of Onions, of which the 1st was taken by Mr. E. Farndell, the Surrey County Asylum; the 2d by Mr. J. Baverstock, gr. to W. Hope, Esq., Parsloes, Barking; and the 3d by Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, who contributed excellent specimens. Mr. J. Garland, gr., Killerton, Devon, and Messrs. Barr & Sugden, were also exhibitors of Onions; and Messrs. Carter & Co. sent examples a Runner Bean, named Canada Express, which appears to be a very free bearer.

DEAL AND WALMER: *Aug.* 31.—The show this year was very successful, owing in great measure to the efforts of E. Banks, Esq. For Achimenes the 1st prize was awarded to E. Banks, Esq., and the 2d to G. Gardner, Esq. The show of Pelargoniums was very large, and the display excellent. The double-flowered Geraniums do not appear to have made their way yet sufficiently to displace the single kinds. The Dahlias, which were in great variety, were never finer. The Gladioli were numerous and beautiful, and the Verbenas in much better condition than are sometimes exhibited. The Zinnias fell far short in number and excellence. The prizes for flowers arranged in vases were awarded to E. Banks, Esq., W. J. Banks, Esq., and Mr. Street; and for bouquets, to W. J. Banks, Esq., Mr. Street, and Mrs. Coode. Messrs. Masters and Kinmont, of Canterbury, exhibited, but not for competition, and their exhibits attracted much attention. Among them were a seedling Verbena, the Catherine, and cut flowers, of which the 12 Hollyhocks were good specimens; and scarcely less to be admired were their 24 Dahlias and 12 Asters. Among the cut flowers, Mr. Bunyard's 48 Roses were noteworthy. On no previous occasion were the selected baskets of vegetables so numerous and so well supplied; Red Cabbage was shown very good, and Onions were of immense size.

Notices of Books.

Notes on the Food of Plants. By Cuthbert C. Grundy, F.C.S. Simpkin, Marshall & Co. Pp. 126. 8vo.

This is a plain and brief account of the process of nutrition in plants—trustworthy so far as it goes. As the relation of plants to nitrogen has lately been under discussion in our columns, we quote what Mr. Grundy, who adopts the orthodox view, has to say on the subject:—

"According to some physiologists—Priestley, Ingenhouss, Ville, and others—plants make use of the free nitrogen of the air for the formation of their nitrogenous compounds; but the experiments of De Saussure, Boussingault, Woodhouse, Senebier, Lawes, and others, lead to an opposite conclusion; and it is now generally admitted that vegetation has not this power. Apart from what experiments demonstrate, the former opinion seems unlikely to be correct, for although the free oxygen of the atmosphere is employed by plants in the formation of their compounds, and notwithstanding their marvellous powers of synthesis, it is hard to believe that they are able to overcome the remarkable antipathy to direct combination which characterises nitrogen. Moreover, were the imbibition and assimilation of the free nitrogen of the air actually in operation, would it not be in opposition to the economy of Nature, so far as we understand it? The presence of a large volume of nitrogen in the atmosphere is necessary for the continuance of life, and if vegetation were day by day assimilating this gas, the normal and necessary composition of the atmosphere would (no natural supply of free nitrogen having been provided), be quickly and for ever destroyed, and, as a consequence, man would cease to exist. Vegetation then, the destroyer, instead of as now the supporter of life, would degenerate, and quickly pass away, and the earth would become a barren wild. There can be little doubt that this important element is received in a state of combination; and the observations alike of chemist and agriculturist point to ammonia as, at all events, the chief source whence plants obtain their nitrogen."

This extract will suffice to show the author's style and mode of treating his subject. Formulæ and technical terms are as much as possible avoided.

—— The second part of the new edition of *Yarrell's British Birds*, by Prof. Newton (Van Voorst), has lately been issued. It includes the history of the hawks, kites, buzzards, and in part of the owls. Every one interested in birds, who has the means of so doing, must procure this new edition. The only regret is that already the Editor finds that the revision of the work will occupy more time than he anticipated, and that in consequence it will be impossible for the parts to appear monthly.—Another charming book is that of Brehm, of which the first part is now before us in an English dress, under the title of *Bird Life* (Van Voorst), translated from the German by H. M. Labouchere and W. Jesse. This is a popular book in the best sense, full of information, accurately recorded, well kept in hand, and free from technicalities. The translation is easy and fluent.

—— The recently issued number (65) of the *Journal of the Linnean Society*, contains several interesting papers, including those of Dr. Hance and Mr. Hanbury on the smaller Galangal of commerce, referred by the former to Alpinia officinarum, the characters of which are given at length. Adverting to the Chinese silkworm Oaks, Dr. Hance repeats his conviction that "all circumstances would seem to conspire to render the culture of the Oak silkworm in Europe a sure matter of success, if properly set on foot and fostered." The rearing of silkworms on Oaks is, it appears, carried on both in the south-west and the north-east of China, and it will be a matter of great interest to ascertain whether any Oak is employed for the same purpose in northern Birma or Assam, in both of which the genus Quercus is a characteristic type of vegetation, and from which Kweichow is only separated by the province of Yunnan. Dr. Masters contributes a short paper on the floral conformation of Byrsanthus, the Rev. S. Mateer one on the popular names of plants in Travancore, the MM. Tulasne publish a technical memoir on the Tremellineous Fungi, remarkable for the different forms assumed by their basidia and the multiplicity of their reproductive apparatus. MM. Tulasne are doing excellent service in co-relating the various forms assumed by the diverse reproductive organs of Fungi. From the pen of Mr. Mansel Weale are two or three short papers on the fertilisation of sundry South African Orchids and Asclepiads. The number is closed with a communication from the President on the styles of Australian Proteaceæ, and detailing the modifications of structure and the methods by which the pollen is prevented from obtaining access to the true stigmatic surface of the style, even though it be collected and deposited on other portions of the style. With the number of the Journal containing the above papers are issued some sheets of "Proceedings,"—a record of the work of the society during the session 1870-71, lists of donations, a very useful list of papers published in various journals, &c., on biological subjects, and the admirable presidential address from which we have already made some extracts.

—— Mr. Alfred Smee has published, under the sanction of the Accident Insurance Company, a capital little pamphlet of *Instructions for the Prompt Treatment of Accidents* (7, Bank Buildings, Lothbury), illustrated by woodcuts. The directions given are simple, intelligible, and judicious. One or two more might have been given to the bystanders, such as "Don't lose your heads." Much mischief is often done from the want of presence of mind, leading to unreasoning terror, and this results either in unfortunate meddling, or in the loss of a valuable opportunity of doing service. Another direction very necessary to be observed is "Stand clear." Too often curiosity brings a gaping crowd, whose room would be better than their company, around an unfortunate sufferer.

—— Mr. Rowell has reissued an abstract of several of his papers on the *Cause of Rain, Storms, the Aurora, and Terrestrial Magnetism* (Williams & Norgate). Mr. Rowell is a thoroughly honest enthusiast and a man of genius. For years he has laboured to convince the world that his hypothesis is the right one, and he now writes in the spirit of a disappointed man, complaining that those with means and opportunity have not tested the validity of his theories. It is not for us to enter upon the discussion of Mr. Rowell's views, which we are disposed to think would have been taken up had they seemed more feasible, but we may say, that in our opinion his gravest cause of complaint, though it may not appear so to himself, is that no one has placed Mr. Rowell in such a position that he could work out for himself, and, so far as possible, by himself, by actual experiment, the truth or falsity of his hypothesis. Had Mr. Rowell's studies been in the department of classical literature it is possible that the university within whose bounds he has passed his life would in some way or another have recognised his talent, and given him the opportunity he has sought for so long in vain. Physical science was thought till lately quite unworthy a place in Oxford's learned curriculum, and hence a man who might, under proper direction, have conferred lustre on Oxford, and on himself, has been flattered by the sympathy of individuals, and left to his hard fate to follow an uncongenial occupation.

The Apiary.

THE HIVE, OR WHAT SHOULD HOLD THE BEES.—Messrs. Kirby and Spence think it probable that eggs which produce females are generally larger than male eggs, with the exception of the hive bee, in which the reverse takes places. Huber found the eggs of ants of different sizes, from which he was led to discover that they increase in size after being deposited. Thus, then, there is a difference between the drone egg and the worker (which is also, of course, the queen egg). Some other authority—I believe Swammerdam, and Latreille and Stephens besides, go into many details of the eggs of insects, with one great fact, the specific gravity of eggs of insects; and in making experiments upon them, it should be remembered that no infertile or unimpregnated eggs will sink!—that they uniformly float. This will greatly assist in solving the difficulty of the proofs required whether the drone eggs are deposited fertilised or not, which seems the great theory of the German school of bee-masters; and care must be taken in examining the late deposited drone eggs and those laid in the summer: and should any bee-keeper be inclined to test any of those more delicate operations of microscopic examinations upon the fertility of the egg, I recommend Swammerdam's test of boiling. In the case of bee eggs, I advise that the eggs be put into a test-tube, in liquid coloured with madder, and that then this tube be dipped in boiling water for a few minutes. The outer corion and the spermatozoa will be more easily detected by division. This also is a good test and process to follow out in the larva stages, to discover the future imago of the bee: but these fine dissections and distinctions require great watching as to the periods or ages of the eggs, the larvæ, the pupæ, and the imago, which are peculiarly rapid in the stages of the queen's life, whilst the drone is uniformly the same (weather or temperature admitted being equal). I must, then, again defer the question of the best hive for the bee-egg to be deposited in; whilst I am quite aware the question will be asked, What does it matter, when the queen bee deposits her eggs in the centre of the combs, and at the bottom of each cell; and that, too, by an insect that only breeds in the warmer season and flower-producing periods of the year? *W. A. Munn.*

Garden Memoranda.

HYDE PARK.—The management of this Park passed into the hands of Mr. Gibson, on the death of the late respected Mr. Mann, just early enough in the season to allow of his introducing such changes and improvements in the bedding-out as his long and varied experience suggested; and this has been done so well that we can freely aver that we never saw the floral decorations in better trim than they are just at the present time. The flower gardening proper is principally carried out on the long strip of land running parallel with Park Lane, from the Marble Arch to the Stanhope Gate, whilst the subtropical gardening is carried out on a nicely timbered, gently undulating piece of ground, lying between the Drive and Rotten Row, in a line from Hyde Park Corner to Albert Gate, and again to the north of this, in a line with and terminating near to the east end of the Serpentine. This portion not being so plainly seen from the main drives as the former, is rather apt to be passed unnoticed by the visitor, though here are to be seen some of the finest beds in the Park, especially of Cannas, Polymnia, and Aralias, &c.

Entering the Park at the Marble Arch it will be seen that nearly up to the Grosvenor Gate the beds on either side of the well kept walk are for the most part situated immediately under the shade of large Plane trees, a condition anything but favourable, but still, with due attention to watering, &c., a very creditable display is made. It is worthy of mention that many of these trees are of large size, and were moved some two years since, but are thriving well. The first prominent object to strike one's attention is a large bed of the Nosegay Pelargonium, Waltham Seedling, a very neat compact grower, and exceedingly floriferous variety; and the next thing will perhaps be the splendid masses of yellow Calceolarias, amongst which there is scarcely an unhealthy plant to be seen. For effective bedding this plant is indispensable where it does well, and it will be a good thing indeed that will entirely supersede it. There is no doubt that certain varieties thrive better in some situations and soils than others, and the only one grown here is Gaines' dwarf, Mr. Gibson having discarded all others of the same colour. It is very robust, a tolerably vigorous grower, and very free flowerer, and certainly one which is deserving of a trial where others have failed. Some of these large masses of Calceolarias are edged with the new Ageratum, Tom Thumb, which cuts a very poor figure indeed, growing very unevenly in size, the strong ones flowering not at all so freely as desirable, and the small ones look stained and dirty from the splashings of the water and rain. It does not at all impress one as the *beau ideal* of a bedding plant. Anything of its colour, with only decent credentials even, would be a decided gain. Pelargonium Comet, scarlet, too, is a very poor bedder, and as such will not be called upon to do duty here any more.

Approaching nearer to the Grosvenor Gate, the bedding assumes its proper character, and on the left-hand side of that entrance will be found a capital bed of Pelargonium Lucius, still one of the best, with a mixed edging of blue Lobelia, Dactylis glomerata variegata, and some yellow seedling Violas — not the happiest of combinations it is true, though it points to a moral of great service, and illustrates how well the Violas of the cornuta and lutea type thrive when planted amongst dwarf things which give a little shade to the roots. In this way some very pleasing combinations of colour may be had. It may be interesting to mention here that, in the London parks especially, there is a growing taste in favour of these mixed beds, which both Mr. Gibson, and his successor at Battersea, Mr. Rogers, find are to a certain extent more admired by the general public than those beds which contain only one primary colour. An example of this style is to be seen near the above gate, where there is a long bed of Pelargonium Crystal Palace Gem, amongst which the Viola cornuta is planted thinly and regularly, the blue flowers of the latter rising just above, and in pleasing contrast with the golden self-coloured foliage of the Pelargonium. The beauty of this bed is enhanced by having an inner line of Iresine Lindeni, and an outer one of Cineraria maritima, around it, as a frame.

From this point to the Mount Street Gate the style of planting is altered, to afford variety. The whole of the beds on the right are edged with a bold outer line of the Golden Feather Pyrethrum, and an inner one of either blue Lobelia or Purple King Verbena. The best of these are filled in with Pelargoniums, Chieftain, scarlet, good; Rev. J. Dix, scarlet, first-rate; Culford Rose, also first-rate; Model, dwarf and good; Duchess of Sutherland, very fine; and Madame Rudersdorff, salmon-pink, also a good bedder. Pelargonium Forget-me-not, pink, it is to be hoped, will soon be forgotten; its flowers are small, only two or three on a truss being open at a time, and altogether it has a very poor appearance. It is not deserving of such a prominent position as it has here. In the strip nearest to Park Lane is a mixed bed, which, on account of its chaste appearance, and the unique character and great variety of the plants employed, is very much admired. It consists of small groups and single specimens, generally planted in pairs, of Solanum marginatum, Dracæna nutans, Palm-grass, Panicum sulcatum, Tradescantia discolor, and Centaurea candidissima, carpeted underneath, to throw up the above, with such plants as Alternanthera magnifica, A. versicolor, Iresine Lindeni, and Mesembryanthemum cordifolium variegatum, one of the very best plants of its kind of recent introduction, and one which is destined to become as useful and as common as the Golden Feather Pyrethrum, and which for forming edgings in steep or unlevel places it will entirely supersede. It was, we believe, sent out but a short time ago by Mr. W. Bull, to whom we owe thanks for its introduction, though, if we mistake not, it has been entirely ignored by the Floral Committee. Another Mesembryanthemum is also used here with very good effect, *i.e.*, the very quaint M. linguum, a thick, fleshy-leaved, prostrate-growing species, with yellow flowers, which are kept pinched off. It is used as an outer edging to some heart-shaped beds, next to which is a line of Golden Feather Pyrethrum, the centre being filled with a carpet of Alternanthera magnifica. These beds, which are situated near to Mount Street Gate, are raised about 6 inches above the level of the grass, and have a capital effect. It is a very pretty style of bed for employing to finish off the triangular junctions of walks, &c.

From the Mount Street Gate, for about 50 yards, we experience another change in style, the long beds on the left all being edged with Iresine Herbstii, with an inner line of Purple King Verbena, and filled in with such subjects as Gaines' dwarf Calceolaria, Heliotrope Miss Nightingale, a fine bed; Pelargoniums Waltham Seedling, Cybister, and Annie, &c., the latter silver-edged variety being mixed with that good old bedding Verbena, Ariosto Improved, a very effective combination. Then, on the right, all the edgings are composed of Gnaphalium lanatum, backed up with a line of Alternanthera, and filled in with two distinct contrasting colours, as Pelargonium Artemus Ward and Ariosto Improved Verbena, Pelargonium Variegated Stella and Verbena Purple King, which are exceedingly effective. At the termination of this series we come upon a group of beds in which fine-foliage plants only are used, which again terminates at the South Street Gate. The edgings to these beds—five in number—are alike: an outer row of Echeveria secunda glauca, then a line of the Golden Feather Pyrethrum, and an inner one of Centaurea candidissima, the centre and two outer beds being filled in with Coleus Verschaffeltii, and the intermediate ones with Abutilon Thomsoni, carpeted with Coleus nigricans. The Abutilon, owing to the lateness of the season, has hardly got up enough to bring out its full effect, though they are pretty enough to please fastidious people in their present condition.

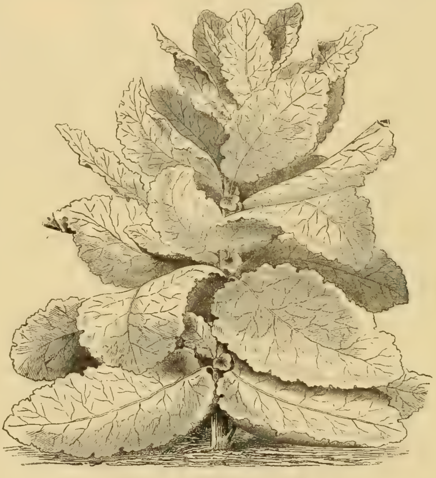

FIG. 269.—WIGANDIA CARACASSANA.

We have yet another change, and this interesting series is brought to an end at the Stanhope Gate, the pretty little lodges of which are covered with the Virginian creeper, and amongst which Clematis Jackmanii will hereafter be seen in all its beauty. The long beds in the last-mentioned group have on the left an outer margin of Cerastium tomentosum, and an inner line of the Golden Feather Pyrethrum, whilst those on the right have an outer edging of Dactylis glomerata variegata alternating with blue Lobelia, and an inner line of Iresine Lindeni. In the first named will be found distinct masses of most of the best of the bedding Pelargoniums, as Lord Palmerston, Mrs. Laing, Lucius, Amy Hogg, Waltham Seedling, &c.; and the latter are composed of silver-edged Pelargoniums mixed with Purple King Verbenas, the alternate ones being filled in with cross lines of Pelargonium Culford Rose, the long sides of Mrs. Pollock, and the ends of Crystal Palace Gem. The same varieties are not used all through, though the general appearance of all are alike.

In the subtropical department proper, in which a number of nice specimen plants of Palms, Musas, &c., are freely sprinkled about, the principal features are the beds of dwarf Rhododendrons, edged with Sempervivum repens and Echeveria secunda glauca; a long scroll-shaped bed of Cannas, principally C. Bihorelli,—one of the best, having broad coppery leaves, and orange-scarlet flowers—carpeted with a dark-leaved Coleus, like Murrayi, and edged with a dark bronze-leaved Beet, dwarf and compact, and apparently a well selected strain. The next to challenge attention is a very effective oval bed of Centaurea candidissima intermixed with Coleus Verschaffeltii, around which is a line of the beautiful Euonymus japonicus aureo-variegatus, and an outer one of Echeveria secunda glauca. Another one, of equal interest on account of its boldness, though sombre in colour, is filled with Caladium esculentum, carpeted with Tradescentia zebrina and edged with Farfugium grande. Passing some pretty designs worked out in Pelargoniums, we come to a large heart-shaped bed composed of tall plants of Ficus elastica, alternate with equal sized specimens of Eucalyptus globulus, and dwarfer examples of Musa superba; the whole being completed with Coleus Verschaffeltii, and edged with a row of Salvia argentea, and an outer one of Echeveria metallica. This has a very imposing appearance. Medium-sized plants of the Musa superba have a noble appearance when stood out singly by themselves, or when used as the centre attraction for small beds, as is the case here, the plant being surrounded with Coleus Baroness Rothschild, with a line around that of Golden Feather Pyrethrum, and finished off with a margin of Echeveria secunda glauca. The last design to notice in this portion of the Park, though not the last by any means to claim attention, is a large circular bed of Fuchsias, planted in circles of different colours, next to which comes a row of Iresine Herbstii, then one of Golden Feather Pyrethrum, and an outer one of large-flowering plants of Echeveria glauco-metallica, which has the character of varying in its habit, some plants being almost distinct enough to be reserved for separate use. For furnishing a little variety in winter, this portion of the park is planted with single specimens of bushy-headed standard Rhododendrons, pyramidal bushes of different varieties of Hollies, Conifers, and Box trees, which are now effectively grouped with such elegant Palms, Dracænas, Aralias, Strelitzias, and Musas as Mr. Gibson had at command.

Experience teaches us to believe that tall specimen plants of Musas will soon be discarded for this work, except for the most sheltered of positions, as, no matter how handsome they may be when put out, the first good gale of wind that comes rends their leaves into shreds, and transforms them like magic from objects of beauty into something like monuments of unsightliness; not so, however, those specimens which range to the height of 3 or 4 feet—they to a great extent escape the more violent gusts of wind, and carry a noble appearance throughout the season. For the most exposed position in the subtropical garden we have no more useful or more elegant plant than Seaforthia elegans, the pinnate leaves of which stand the wind in the most satisfactory manner. Indeed, at the present time no Palms have come through this precarious season so well, or look better, than Seaforthias, Latanias, and Phœnix; the stiff wiry habit of the latter genus renders them invaluable, so well does it enable them to withstand the effects of wind-storms. Jotting down the names of such plants as we found here doing excellent service, we have the Monstera deliciosa, Strelitzia Nicolai, Seaforthia robusta, Phœnix reclinata and P. dactylifera, and Aralia reticulata. These are all well adapted for standing about singly. Mr. Gibson says that, when so treated, their only requirements are to be plunged in their pots on a well-prepared bed of rubble to secure good drainage, and to be carefully attended to in the matter of watering.

In the kept grounds, on the north side of Rotten Row, some of the largest and most striking beds are to be seen, principally large masses of Ficus, Solanums, Cannas, Wigandia caracassana (fig. 269), Paulownias, Ferdinandas, Aralias, &c., all edged with the most suitable plants for contrasting, and doing well. In concluding our notice of the floral decorations in this Park we have only to say that the bedding-out at "the Temple," the Sunday resort of the well dressed multitudes, is this year as attractive as ever; and that, thanks to the worthy and estimable superintendent, the lodges at the principal gates have received a touch from the master-hand in the shape of a suitable amount of much needed floral embellishment.

Obituary.

In the obituary of the week we regret to have to record the death, at a comparatively early age, of Dr. Hyde Salter, F.R.S., physician to Charing Cross Hospital, and well known in scientific circles for his extensive attainments in physiological science. Dr. Salter early gained a prominent place as a physiologist and anatomist at King's College, and subsequently, as a practising physician, more than maintained his reputation. As a teacher, he was always ready to render aid and counsel where science was in question; as a kind, earnest friend, he was no less helpful, so that his loss will be severely felt, even beyond the limits of his immediate friends and associates.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, Sept 2, 1871.

Names of Stations.	Temperature of the Air.							Fall of Rain.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	78.2	47 2	31.0	75 3	51.4	23.9	61.8	0.06
Blackheath ..	82.0	46.1	35 9	77 7	52.4	25.3	64.0	0.02
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	80.7	46 8	33.9	73.9	52.1	21.8	61.5	0 00
Wolverhampton	78 9	45.2	33.7	72.4	51.5	20 9	60.4	0.01
Leicester ..	80.2	45.2	35.0	75.4	52.3	23.1	62.2	0.03
Norwich ..	77.5	47.0	30.5	72.7	51.0	21.7	60.3	0.00
Nottingham ..	81 3	46.4	34.9	75.1	51.8	23.3	61.9	0.00
Sheffield ..	79.0	46.0	33.0	71.9	51.4	20.5	60 4	0.12
Liverpool ..	77.6	52.5	25.1	70.7	53.9	16.8	60.9	0.24
Manchester ..	81.8	46.0	35.0	75.8	51.8	24 0	62.3	0 48
Salford	81.1	47.0	34.1	74.1	53.0	21.1	62.0	0 37
Bradford ..	76.5	51.1	25 4	71.8	54.8	17.0	61.8	0.56
Leeds	78.0	48.0	30.0	71.7	52 6	19.1	60.6	0.55
Hull	74.0	44.0	30.0	70.0	50.7	19 3	57 4	0.06
Newcastle ..	71.0	48.0	23.0	67.0	53.4	13 6	58.7	0.13
Edinburgh ..	76.0	45 0	31.0	..	..	..	58 6	0.00
Glasgow ..	75.2	46.5	28.7	..	..	..	57.8	0.00
Dundee.. ..	68.0	47.0	21.0	..	..	..	56 1	0.00
Aberdeen ..	66 0	48.5	17.5	..	..	..	56.5	0.10
Paisley	..	..	..	..	..	..	..	..
Greenock ..	71.0	51.0	20 0	..	..	..	58.3	0 40
Leith	75.5	49.7	25 8	..	..	..	59 8	0.07
Perth	74.0	48.0	26.0	..	..	..	58.4	0.00
Dublin	75.9	41.3	34.6	..	..	..	58.9	0.13

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, Sept. 6, 1871.

1871. Month and Day.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
August and Sept.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
31. Thurs. .	29.88	63.8	59.7	56.0	77	5.0
1. Friday .	29.94	67.8	63.6	60.2	77	5.7
2. Satur. .	29.89	71.6	67.1	63.5	76	6.4
3. Sunday.	29.72	64.9	59.5	55.2	67	4.7
4 Monday	29.66	66.3	58.8	52.8	62	4.4
5. Tues. .	29.92	61.4	57.6	54.2	78	4.7
6. Wednes	29 91	61.8	59.2	56 9	84	5.1

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
August and Sept.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg	Deg.	Deg.		Miles	
31. Thurs. .	79.7	57.3	22.4	05.4	+ 6.2	S	270	0.00
1. Friday .	82.0	54.1	27.9	66.6	+ 7 6	S.E. : N.E.	100	0.00
2. Satur. . .	76.9	57.8	19 1	67.1	+ 8.4	N.N E.	82	0 02
3. Sunday.	73.2	59.0	14.2	64.6	+ 6 2	S.W	255	0.01
4. Monday	72.0	54.8	17.2	61 9	+ 3 7	S.S.W.	280	0.10
5. Tues. . .	75.6	50.9	24.7	61.7	+ 3 7	S.W.	165	0.00
6. Wednes	76.3	46.6	29.7	59.9	+ 2.0	variable	190	0.01

August 31.—Very fine The clouds gradually cleared off as the day advanced.

Sept. 1.—Hazy and misty in morning. Variable amounts of cloud prevalent. Fine.

— 2.—Gloomy in morning. Generally cloudy till night. Rain fell between 9 and 10 A.M, and again between 1 and 3 P.M. Distant thunder in afternoon. Lightning at night.

— 3.—Generally cloudy A little rain fell in the afternoon.

— 4.—Generally cloudless till 9 A.M. Overcast afterwards. Rain fell almost continuously from noon till 9 P.M.

— 5.—Light clouds till night, then cloudless. Very fine day.

— 6.—Foggy in early morning. Generally cloudy throughout. Frequent flashes of lightning in the evening. Rain fell occasionally at night.

JAMES GLAISHER.

Miscellaneous.

Nettles for Food.—One of the most neglected, and certainly one of the most common of our British plants, is the Stinging Nettle (Urtica dioica); three species are known in this country, but the one mentioned is, perhaps, the most common. Many country people believe in Nettle-tea as a useful spring medicine, and not a few boil and eat them as a green vegetable; they were, in former times, grown in Scotland as a pot-herb, and if forced and blanched by earthing up in a similar manner to Asparagus and Seakale, the young tops make a very good dish. In Belgium, Germany, and other parts of Continental Europe, Nettles are much more generally used as food than they are with us. *Food Journal.*

Cricket.—A match was played at Battersea Park on Thursday, August 10, between two elevens chosen from the nursery establishments of Mr. Wm. Bull and Mr. J. W. Wimsett, Chelsea, when the latter were victorious by one innings and 66 runs.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

As we have to some extent entered upon the autumn period, it will become necessary to husband our resources to the utmost in the matter of providing flowers for an early future. *Vallotas* which are late in showing for flower may be placed in a cool, shady situation out-of-doors, so as to retard them to the utmost. The earliest *Primulas* and *Cinerarias* should be encouraged to form good heads of bloom by liberal exposure to the sun. Many of the beautiful *Amaryllis* may also be pushed along by placing a batch into a rather close and warm atmosphere. *Ixia conica* and *I. flexuosa*, too, may, where planted at a proper time, be brought in very usefully for flowering in October and November. These and many other like plants help materially to brighten up Chrysanthemums, as well as to extend the display. Every possible assistance should now be rendered to *Poinsettias*, to enable them to perfect a strong luxuriant growth. This must be done by frequent applications of liquid manure to the roots and by surface sprinklings overhead, which they enjoy very greatly and turn to good account. It is not advisable to shift Poinsettias after this period, except in the case of late-struck cuttings, which may receive a very small shift. *Chrysanthemums* must now receive unremitting attention in regard to protecting them from earwigs, which do much mischief to the tender young shoots and flower-buds. The only safe way to get rid of the pests is to trap them in flower-pots containing dry Moss, or, what is better still, with old Broad Bean stalks cut into lengths and stuck about amongst the foliage. *Zonal Pelargoniums* should now be encouraged to grow freely in all instances where they are required for conservatory decoration late in the season, by giving them weak manure water and by sprinkling them overhead morning and afternoon. Keep them fully exposed to the sun, and encourage well ripened wood to form. *Lachenalias* should now be transferred to a moderately exposed position out-of-doors, where a strong sturdy growth can be made. *Cyclamens* which have been grown on quickly from seedlings in bottom-heat, may now, if they are early and flowers are forming freely, be kept somewhat cooler and more airy. This will tend to increase the strength and general vigour of the blooms, as well as heighten their colour. Do not delay the removal of all kinds of Orchids, such as *Dendrobiums, Epidendrums, Cattleyas*, &c., which have finished their growth, into a cooler, more airy and sunny house, where they will perfect their pseudobulbs more quickly and better. Such Orchids as are still growing freely should be hurried on as quickly as circumstances will permit. I refer to such plants as *Sobralias, Huntleyas*, &c., which have not yet completed their season's growth. *Indian Azaleas* and *Camellias*, such as are required in bloom very early and which have perfected their flower-buds out-of-doors, may now be removed into any cool structure having a sunny aspect. Push forward the potting of late *Cape Pelargoniums* that a strong healthy young growth be assured before the adverse winter weather sets in. Make a strong effort now to destroy every kind of insect pest which may exist in any structure. A determined effort made at this time will be the means of destroying many, and will prevent much uneasiness and cause for dissatisfaction at a late date.

FORCING HOUSES.

Most late *Vineries* should now have the assistance of a little fire-heat, not only to ripen the fruit, but also to insure the wood being thoroughly matured, without which no lasting success can be expected. Let the sashes be placed upon *Peach* and *Nectarine houses* intended for the earliest forcing, to ward off the autumn rains. See that there is no red spider upon any of the trees. It is not enough to surmise that the trees, having perfected their growth, will be safe from such injury. The beds containing *Cucumber* and *Melon plants* must, now that the cold nights increase in length, have additional assistance in the form of an occasional renewal of the linings. Though artificial aid is thus desirable, do not dispense with the giving of air freely at all proper times.

HARDY FRUIT GARDEN.

Owing to the peculiarity of the present season, many hardy fruit trees, *Apples, Pears*, &c., will exhibit an unusual tendency to grow. Even those carrying good crops of fruit, which are few and far between this season, exhibit like symptoms. It will be necessary to pinch these young growths back determinedly as they continue to push, and so endeavour to centre the tree's whole effort in the production of flower-buds. Such fruit as are good ought to be watched regularly, so as to pick them at the earliest possible moment, so scarce is good fruit likely to be this season. I observe that some kinds of *Pear trees* are suffering greatly for want of root moisture, notably so the variety named Dr. Nelis. It will be desirable, therefore, to water young trees showing such signs, especially if they have a crop of fruit which is swelling off indifferently. All Apples and Pears, when gathered, should be placed on shelves in an airy room, where they will finish the ripening process. It is not at all advisable to let any kinds remain until they are what is called "dead ripe;" they do not keep any better, and only afford a greater temptation to insects. Especially should such early Pears as Jargonelle, Beurré d'Amanlis, Louise Bonne of Jersey—the two latter being very fine in this neighbourhood this season—be picked somewhat by anticipation, not only because of the facts above stated, but because they suffer greatly by dispersion from the branches during wind storms, which may prevail at any moment; so also does Fondante d'Automne, a somewhat later sort.

HARDY FLOWER GARDEN.

Should the present dry weather continue, it will be necessary to give more frequent root waterings to *Tritomas, Pampas-grass, Cannas*, and large foliage plants in particular. Prick out seedling *Perennials* into neat nursery beds, where they can stand the winter through. Immediately another rainy period comes round it will be necessary to transplant into their permanent winter quarters any *Perennial Plants* which have been struck from cuttings, such as *Crimson Thrift*, &c. These make very beautiful edgings, and should be more extensively grown. Summer flower-beds will now require a larger share of attention than usual in picking off the dead leaves, removing decaying seedy blossoms, and shortening neatly any gross shoots which attain to too great an altitude above their fellows. Proceed vigorously with propagation, as every week counts for much between now and winter, at the earliest advent of which most kinds should have formed roots, and become tolerably well established. Immediately the tenderer kinds have made sufficient roots, let them be fully exposed to the full sun and air.

KITCHEN GARDEN.

The water-pot will have become the vegetable grower's chief tool during the last week or two, and it must continue to be so if we have not a change soon. Especially will this be needful in connection with salads of all sorts, and more especially *Radishes, Lettuce*, &c. In connection with *Peas*, late *Cauliflowers*, and the like, do not be constantly slopping about, but rather give a good watering about twice a week. Attend to the hoeing over of the surface of all artificially watered soil as soon as it gets dry enough to work upon. This tends to retain the moisture by breaking up the surface and neutralising the excessive action of the sun's rays. Further sowings should be made of *Radishes, Golden* or *Australian Cress, Lamb's Lettuce*, and *Onions*, to use young for future winter salads. Take up and harvest *Onions* of the main summer crops, preparing the beds subsequently for winter *Cabbages* to stand for spring use. Collect a further supply of the necessary materials for successional *Mushroom beds*, bearing in mind that these materials must be so dried as to preclude any possibility of becoming excessively heated in process of fermentation. *W. E.*

Notices to Correspondents.

Ants: *Q. Y.* writes for a remedy for black ants in sandy soil. Watson's sand for destroying Daisies in lawns is advertised in our columns.

Arbor-vitæ: *E. J. P.* We should be inclined to refer the withering of the ends of the branches in question to electricity. Perhaps our correspondent may remember whether there was any great thunderstorm on the day when the damage was done; there certainly was about that time in others parts of England.

Australian Pea: Messrs. Kennedy of Dumfries send us samples of this Pea, which seems a good late cropper, and a continuous bearer. The Peas are when cooked of a good colour and flavour, considering the season. The pods are studded with curious cellular excrescences or warts.

Black Bryony (Tamus communis): *W. E.* The point of the leaf has apparently been injured at a very early stage of growth, hence the deformity.

Books: *Paul Edwards.* Hoopes' "Book of Evergreens," an American book, to be had of Trübner & Co., will perhaps answer your purpose; or, Grigor's "Arboriculture" (Edmonston & Douglas).

Cauliflower Excrescence of Pelargonium: *R. P.* A swelling or hypertrophy of the tissues, accompanied with the production of a number of adventitious buds, is not a very unusual occurrence. A case of the kind was figured in our columns, p. 725, 1855.

Dracænas: *W. G.* By a specimen of such plants as the Dracæna is meant a single plant originating from a single stem—not two or three plants put into one pot, which would be a fair reason for disqualification. A plant with suckers is altogether different.

Dwarf Box: *J. W. B.* We never heard of this producing flowers. Inquire of Charlwood & Cummins, Covent Garden. The Alpine Strawberry should be procured from any respectable firm.

Fruit Growing: *Hampshire.* A letter addressed to the gardener, C. Beard, Esq., Bury St. Edmund's, would probably secure the information you require.

GRAPES: *S. A. H. F.* Your Grapes and Vines are literally eaten up with thrip. The leaves you sent were swarming with the insects; we scarcely ever saw a worse case. It is all produced by mismanagement and neglect, and it will be years before your Vines recover. As your Grapes of this season are worthless, cut them off and throw them away at once, as well as all the worst of the leaves, then fumigate with strong tobacco and syringe copiously and repeatedly every leaf and stem, and, indeed, every part of the house; at the same time you will have to give abundance of air, so as to ripen the wood thoroughly. When the Vines are at rest, paint the stems with a good coating of soft soap, soot, and sulphur, and clean the house thoroughly. If even only air and more water had been given—*i. e.*, had a more genial atmosphere been maintained—your Vines would not have been as they are now.

GREENHOUSE PLANTS: *R. S. Jones.* It is very doubtful if any of the plants named would succeed in a greenhouse, even though it were kept "warm." Some of them might live on if kept dry, close, and at rest in winter, but their life would be but a lingering death at the best.

GOAT MOTH: Several correspondents have this week sent specimens of this destructive pest, an illustration of which we reproduce from a former volume. They may be destroyed by blowing tobacco smoke up the holes in the trees,—that is, if you blow hard enough!

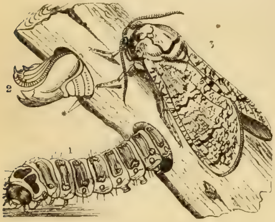

FIG. 270.—THE GOAT MOTH.

MUSHROOMS: *H. Y.* Any sulphurous gas which would prove injurious to plants in general, should not be encouraged in your Mushroom-house. The only thing we advise is a little more ventilation at the top, as in other respects your house appears to be a fitting one for the purpose—all other conditions being equal.

NAMES OF FRUIT: *J. C., Bromley.* Your Fig was quite rotten when received. It is impossible to say what it is.

NAMES OF PLANTS: *J. E.* Hydrangea quercifolia, a fine old neglected plant, and we should think well adapted for a trellis against the house, such as you describe; the large panicles of white flowers are very beautiful, as are those of H. paniculata grandiflora.—*N. C.* You have made some mistake, the plant enclosed is a Pinus of some kind, not a Spiræa.—*F. Stokes.* One of the varieties of the African Marigold, Tagetes erecta.—*J. C., Bromley.* The Gesnera is one of the varieties of the G. zebrina type, of which there are too many garden forms to admit of their being recognised in the cut state. The Begonia not recognised without flowers.—*A. W.* Daucus Carota, wild Carrot. One of the specimens has all the flowers of a purple colour.

RENEWING PEACH-BORDER: *H. Y.* Though we agree with you in the matter of adding as much new soil as you propose, we certainly cannot recommend clay as an artificial basis. Rather procure good stiff loam, and with the addition of a moderate amount of good manure form your border thoroughly throughout. Peaches like stiff loam, but clay would act adversely during wet summers and in winter.

THE KEEPING OF A GARDEN: *G. S.* Given the extent of a garden, how much labour is required to keep it? The question here put to us is extremely difficult to answer, so much depends upon style. One garden of two acres may require just double the labour that another of the same size may do, and still not look or even be much better. As a general rule, the market gardeners reckon upon one man to every acre of land. You would thus require three men to keep your kitchen garden of 3 acres, with the fruit trees, &c. They ought, however, to keep it well, and keep up a thorough good supply of vegetables all the year round. We would, therefore, consider three men, with the working head gardener and a boy, about the proper staff to keep your place.

CATALOGUES RECEIVED: Hooper & Co., General Catalogue of Dutch, Cape, and other Flowering Bulbs.—James Carter & Co., Catalogue of Flower Roots, Fruit Trees, and Roses.—Dicksons & Co., Descriptive Catalogue of Dutch Flower Roots, New Pansies, Violas, Fuchsias, &c.—Robert Parker, Catalogue of Bulbous Roots, Fruit Trees, and Miscellaneous Plants.—Thomas Sampson, Catalogue of Bulbous Flower Roots.—Barr & Sugden's Autumnal Descriptive Catalogue of Bulbs and Plants, for Winter, Spring, and Summer Flowering.—Charles H. Dickson, Autumn Catalogue of Choice Dutch Flower Roots.—Thomas Sampson, A List of Bulbous Flower Roots.—Butler, McCulloch & Co., Autumn Catalogue of Dutch and Cape Bulbs.—E. P. Francis & Co., Descriptive Catalogue of Roses.

COMMUNICATIONS RECEIVED: Inquirer (Sir Harry Road, Edgbaston, Birmingham).—A B.—R. A. D—R C E.—S W. B.—A. C. Van Eden & Co W. E.—R & J. P.—R. D.—H. S. H.—J. F.—J. S.—W. H. P.—A D.—W. G.

Markets.

COVENT GARDEN.—*Sept.* 8.

Business here is very quiet, though there is a very fair demand for good fruit and vegetables. Peaches and Nectarines are more plentiful, and of better quality. We are receiving large consignments of foreign produce, but of home-grown goods the supply is about equal to the demand. In the Potato market we have no alteration to report.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve	..	to 3 0	Nectarines, per doz.	2 0	to 8 0
Apricots, per dozen	0 6	— 2 0	Oranges, per 100 ..	8 0	—12 0
Figs	1 0	— 2 0	Peaches, per doz. ..	2 0	—10 0
Grapes, per lb. ..	1 6	— 5 0	Pears, per dozen ..	2 0	— 4 0
Lemons, per 100 ..	8 0	—12 0	Pine-apples, per lb.	2 6	— 6 0
Melons, each ..	2 0	— 5 0			

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Artichokes, per doz.	2 0	to 4 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz. ..	1 0	— 2 0	Lettuces, per score..	0 9	— 1 6
Cabbages, p. doz. ..	1 0	— 1 6	Mushrooms, p. pott.	1 0	— 2 6
Carrots, p. bunch ..	0 6	— 0 8	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	2 0	— 4 0
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, per bunch	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Shallots, per lb. ..	0 8	— ..
French Beans, p. lb.	0 4	— 0 6	Spinach, perbushel	2 6	— 3 0
Herbs, per bunch ..	0 2	— 0 4	Turnips, p. bunch..	0 4	— 0 6

Potatos (good samples, New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

Enfield Burial Board.

To LANDSCAPE GARDENERS, NURSERYMEN, and OTHERS.

THE BURIAL BOARD of this PARISH OFFER a PREMIUM of TEN POUNDS for the best or approved PLAN of Laying-Out, Forming, and Planting the Ornamental Portions of the Cemetery at Brigadier Hill, Enfield, at a cost not exceeding £300 (not including the making the Roads or Drainage).

A Plan of the Ground, with Conditions, can be had at the Office of Mr. T. J. HILL, the Architect, 32, City Road, E.C.

By Order of the Board,
Enfield, Sept. 6. JOHN PURDEY, Clerk.

WANTED, a HEAD GARDENER, at the country residence of a Gentleman in New England, U.S., about January 1, 1872, who can give the most undoubted recommendations as to honesty and integrity of character, to sobriety and industry, and who is thoroughly experienced in the care of all Stove, Hot, and Greenhouse Plants. There are five Glasshouses, the grounds are extensive, and the situation a very desirable one. Wages £20 per calendar month, with a house rent free, and vegetables. Application, by letter, giving references and full particulars, may be made to Mr JOHN T. McARTHUR, 24, St. Vincent Place, Glasgow

WANTED, in a Nursery near London, a young Man to act as FOREMAN, Grow for Market, and a good Propagator Character unexceptionable—J. R., *Gardeners' Chronicle* Office, W.C.

WANTED, as NURSERY FOREMAN, in a country Nursery, a good general Man, well up in Fruits, Roses, and with a knowledge of the other Stock generally met with in a good Nursery. Above all, he must know how to do his work, and to take the head of the other men employed.—Address, stating full particulars, B S, Post Office, Ashford, Kent.

WANTED, a General NURSERY FOREMAN.—Must be well up to the business in all its branches, especially indoor, and have a thorough knowledge of the value of Plants. Good address indispensable. None need apply whose character will not bear the strictest investigation for honesty, industry, and sobriety.—Apply, in own handwriting, stating age, wages expected, whether married or single, and where at present or last employed, to JOHN KELLETT, Wellington Nursery, Heaton Chapel, Stockport.

WANTED, a GARDENER, without family, and of middle age preferred; the Wife to take the Laundry. One accustomed to an Orchard-house. A good cottage found. A cow is kept. A good character for steadiness and sobriety indispensable.—Mr. W. THORNTON, Old Bank, Reigate.

WANTED, in a short time, a GARDENER—a good Plantsman, to Manage a small Vinery, small Conservatory, and a large Greenhouse. No Kitchen or Flower Garden. Wages 25s per week. In a town where Children can have constant employment.—ALFRED PAGE, Nottingham.

WANTED, in a Nursery, an energetic MAN, for the Houses. Must be well acquainted with Potting, Growing, and Tying Plants, and handy at Packing. None need apply who are not well up in such work, and strictly sober and honest—Apply, in own handwriting, stating wages required, P. C, Post Office, Richmond, Surrey.

WANTED, a good PROPAGATOR of Soft-wooded Stuff, Florist Flowers, Roses, and general Outdoor Stock. Good references as to ability and sobriety indispensable—Apply, stating age and wages wanted, to WM. CLIBRAN AND SON, Millbank Nursery, near Warrington

To the Seed Trade.

WANTED, a WAREHOUSEMAN, an ASSISTANT, and a CLERK.—One of the largest establishments in the North of England has openings for a thorough WAREHOUSEMAN, capable of the execution of agricultural seed orders with carefulness and despatch. He may have to take short journeys occasionally. Also an ASSISTANT for the Counter. One who has just finished his apprenticeship would find this a suitable opening for improvement. Also a CLERK. He must be an expert penman, and correct in accounts. A knowledge of the seed trade indispensable. Character and abilities of each must bear strict investigation—Address, with full particulars, where employed, age, and wages required, to D. V. T., Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

SCOTCHMEN-GARDENERS.—MILLIGAN & KERR, Nurserymen, Dumfries, can at present recommend several excellent Men. Particulars on application.

GARDENER (HEAD), in a large establishment, where a Man of trust and experience is required in the culture of Pines, Grapes, all Fruits and Vegetables, Plant Houses, Ornamental Trees and Grounds.—Age 35, no incumbrance. First-class testimonials and references from the Noblemen and Gentlemen he has lived with.—G. SCOTT, Royal Horticultural Gardens, South Kensington, London, S W.

To Noblemen and Gentlemen.

GARDENER (HEAD).—Age 39, married, no family, Scotch; a first-rate Gardener; thoroughly understands the profession in all its branches. Most successful Grape Grower, Rearer of Flowers, and Trainer of Wall Trees, &c.; very active and industrious Five and a-half years in present situation First-class testimonials.—A B., Messrs. Milligan & Kerr, Nurserymen and Seedsmen, Dumfries.

GARDENER (HEAD).—Age 37, married, no incumbrance; well skilled in all branches of the profession Good reference—C M, 3, Standard Road, Bexley Heath, Kent, S E.

GARDENER (HEAD).—Age 30, married, two children; thoroughly understands all classes of Plants, Forcing, &c. Seven years in last place.—J. NICHOLLS, Sunninghill, Berks.

GARDENER (HEAD).—Age 26; practical. Understands all branches. Eight years' good character.—A. B. C., 155, London Road, Leicester.

GARDENER (HEAD).—Age 29; understands Vines, Pines, Early and Late Forcing, and Laying-out Gardens and Plantations Fifteen years' experience.—Address, stating wages, J. S., Post Office, Bishopstoke, Hants.

GARDENER (HEAD).—Age 31, married; experienced. Has served 16 years in Noblemen's and Gentlemen's Gardens. Good references.—E. WEST, Gardener, Pentreheylin Hall, Llanymynech, Oswestry.

GARDENER (HEAD).—Age 30, married, no incumbrance; thoroughly understands Early and Late Forcing, Vines, Pines, Cucumbers, Kitchen Gardening, &c. Excellent character.—J. M, 5, Wellington Place, Chandos Street, Slough, Bucks.

GARDENER (HEAD), married, one child.—LADY DE BLAQUIERE wishes to recommend her Gardener as above. Thoroughly practical in all branches of the profession.—T. BALCOMBE, The Lawn, Whitchurch, Hants.

To Noblemen and Gentlemen.

GARDENER (HEAD).—Middle-aged, married, no incumbrance: fully understands every branch of the profession. No single-handed place accepted. First-class testimonials.—W. W., Post Office, Faringdon, Berks.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Has had extensive experience in Early and Late Forcing, also the cultivation of Stove and Greenhouse Plants, Kitchen and Flower Gardening. Can be highly recommended. Nine years' character.—W. G., 54, North Street, Edgware Road, London, N.W.

GARDENER (HEAD), where two or more are kept.—Age 30, married, one child; experienced. Three years' good character from last situation—A. B, Mr. George Wheeler, The Nurseries, Warminster.

GARDENER (HEAD, or good SINGLE-HANDED).—Age 34, single; understands the Management of Vines, Pits, Frames, Wall Trees, Flower and Kitchen Gardening, &c.—W. PEACOCK, Gardener, Glentworth Hall, Lincoln.

GARDENER (SINGLE-HANDED).—A Lady wishes to recommend her Under Gardener for a single-handed place, in a small family Has lived with her four years.—G. B, Bearhurst, Dorking, Surrey.

GARDENER (SINGLE-HANDED, or SECOND), where two or more are kept—Age 22; understands Stove and Greenhouse Plants, Vines, Melons, Cucumbers, and Flower and Kitchen Gardening. Two years' good character.—T. J., The Gardens, Birstall Hall, near Leicester.

GARDENER (SECOND), in a Nobleman's or Gentleman's Garden—Age 24, steady and industrious; has had some years' experience both under Glass and in the Garden. Principally under Glass preferred. Good recommendations.—T. H, 10, Fawley, Bucks.

GARDENER (UNDER), or to take charge of Houses.—Five years' good character.—Address, stating terms, F. C. A, General Post Office, Norwich.

GARDENER (UNDER), age 19.—A Gentleman wishes to recommend a young Man, to whom he can give a good character of over two years.—Mr. COCKELL, 62, Forest Road, Dalston, N.E

GARDENER (UNDER), in a good Establishment.—Age 23; accustomed to the principal work of a Gentleman's Garden. Two and a-half years in present situation. Good character.—E. D., Manor House Gardens, Sutton, Surrey.

GARDENER and BAILIFF.—A Lady wishes to recommend a married couple—Man as above, Wife to take charge of Dairy and Poultry. No children; ages, both 40; very respectable and active Four years' character, five years' previous.—W S, Post Office, Westerham, Kent.

To Florists, &c.

FOREMAN.—Wife as Bouquet Maker. Good characters—W. B., 9, Queen's Road, Bayswater, W.

LANDSCAPE FOREMAN, where first-class work is required—High references in Modern Landscape and General Gardening.—B. Z. M., Clark's Library, Sydenham, S E.

FOREMAN, in a Nobleman's or Gentleman's Establishment.—Age 26; thoroughly experienced in the profession. Eleven years' experience in good establishments. Good reference.—G. J., 47, James Street, Oxford Street, W.C.

PROPAGATOR, or FOREMAN and PROPAGATOR (GENERAL).—Age 30, married. Good references.—T. S., The Nurseries, Blisworth, Northampton.

ESTATE AGENT, or STEWARD and GARDENER.—Age 39; now leaving a situation where he has Managed with success a Home Farm of 500 Acres, large Gardens, Timber and Plantations, and the general Repairs of a considerable landed Estate. Is a first-class Accountant, Correspondent, &c. References to present employer.—J. H. DENNIS, White Horse Hotel, Guildford.

To Noblemen and Gentlemen.

STEWARD or BAILIFF.—The Advertiser, having had extensive practical experience in the Management of Land and Stock, and being thoroughly acquainted with the various duties required on a Home Farm, and Estate, Woods and Repairs, desires a re-engagement as above. Good Accountant and Salesman of Stock and Crops, and would be found thoroughly useful in carrying out Plans of a Proprietor Twelve years' unexceptionable references, will be given.—A. B., Mr. Burgiss, Brown's *Advertiser* Office, Andover.

To Noblemen and Gentlemen.

FARM BAILIFF, or ESTATE MANAGER.—Age 39, Scotch; good practical experience.—R. W., Mr. Taylor, Stationer, Great Stanmore, Middlesex.

BAILIFF (WORKING).—Middle-aged; understands Farming in all its branches, Heavy and Light Land, keeping Accounts, &c.; Wife Dairy and Poultry. Well recommended by present employer. Disengaged at Michaelmas.—G. A, Cross Ways Farm, Gatton, Red Hill, Surrey

IMPROVER, in a Nobleman's or Gentleman's Garden.—Age 19; no objection to give a small Premium.—P. W., Post Office, Lower Norwood, S.E.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

TRAVELLER or FOREIGN CORRESPONDENT.—Well acquainted with the English, German and French Seed Trade, and speaks and writes these languages fluently. Has already travelled successfully on the Continent for the Seed Trade. Unexceptionable references.—P. W. Y., 28, Fenelow Road, Warwick Road, Kensington, W.

CONFIDENTIAL CLERK, or MANAGER and SALESMAN.—Good knowledge of the Nursery and Seed Business. Many years' experience in first-class establishments. Unexceptionable character.—Q. Z., Mr Goodman, News Agent, Commercial Street, London, N.E.

BOOK-KEEPER, and would like to give Assistance in the Shop.—Age 21; five years' experience with Messrs. Sutton & Sons, Reading. Highest references.—Z. A., Sutton & Sons, Reading.

SHOPMAN, SHOPMAN and CLERK, Warehouse Foreman, or to Manage Country Shop or Branch.—Married; 18 years' experience in the Trade. Highest testimonials—T. W. B., Messrs. Thos. Gibbs & Co., corner of Half-moon Street, Piccadilly, W

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds."

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

ITALIAN ALP or LIGURIAN QUEEN BEES.—The autumn importations of these beautiful Bees having now commenced, GEO. NEIGHBOUR & SONS are offering QUEENS, warranted bred and fertilised in Italy, at the following low prices:—One Queen, 12s.; three, 33s.; six, 60s.

GEO. NEIGHBOUR AND SONS, 149, Regent Street, W.; or 127, High Holborn, London, W.C.

CHANNEL ISLAND BULLS.—Two Guernsey, 18 months old, of the purest breed; from the Islands. Very fine animals, price 15 guineas each. If not approved can be returned.

WM. ATTRILL, Herdsman to W. A. Glynn, Esq, Fairy Hill, near Ryde.

TO BE SOLD, the BUSINESS of a SEEDSMAN and FLORIST, with Jobbing Business, in a first-rate position, and doing a good trade. This is an excellent opportunity for any person in want of the above. To be Sold Cheap, and part of purchase money may remain.

C. E., 2, Milford Place, Vassall Road, Brixton, S.W.

Joyning's Nursery, Enfield Highway.

TO BE LET, with Possession, the above OLD ESTABLISHED NURSERY, in consequence of the death of the late proprietor. It comprises about 9 Acres of General Nursery Stock and 3 Acres of Orchard Land, Dwelling House, Cottage and Seed Shop, Greenhouses, Pits, Stabling, and Sheds.

For full particulars apply to Messrs. PROTHEROE AND MORRIS, American Nurseries, Leytonstone, E.

SALES BY AUCTION.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 12, at half-past 12 o'Clock precisely, established ORCHIDS, rare varieties, in good condition; and several importations of ORCHIDS from the West Indies and other parts.

On view the morning of Sale, and Catalogues had.

Highly Important Sale

Of the CELEBRATED COLLECTION of ORCHIDS formed by S. RUCKER, Esq., at WANDSWORTH.

MR. J. C. STEVENS has received instructions from Messrs. Veitch & Sons, who have purchased the entire COLLECTION, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY and FRIDAY, September 21 and 22, at half past 12 o'Clock precisely each day, the final portion of the above magnificent lot of Plants, amongst which will be found—

CYMBIDIUM EBURNEUM
MASDEVALLIA TOVARENSE, finest plant in the country
DENDROBIUM WARDIANUM
„ FALCONERI
SACCOLABIUM HOLDFORDII
„ GUTTATUM
DENDROCHILUM FILIFORME
CATTLEYA EXONIENSIS
„ DOWIANA
„ LABIATA (autumn-flowering variety)
ODONTOGLOSSUM NÆVIUM MAJUS
„ ALEXANDRÆ
„ PULCHELLUM MAJUS
PHALÆNOPSIS GRANDIFLORA
„ AMABILIS
„ SCHILLERIANA, &c.

All the Plants are in fine condition, and many are in bud, or blooming.

On view the mornings of Sale, and Catalogues had.

Highly Important to the Trade.

EXTENSIVE SALE of WINTER FLOWERING HEATHS, EPACRIS, CYCLAMENS, TREE CARNATIONS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to SELL by AUCTION, on the Premises, The Nursery, Lea Bridge Road, Leyton, Essex, on THURSDAY and FRIDAY, September 21 and 22, at 11 for 12 o'Clock precisely, each day, without reserve, about 25,000 winter-blooming HEATHS, remarkably well grown, and including 12,000 Hyemalis, 3000 gracilis, 1500 Wilmoreana, 1500 grandinosa; also large quantities of gracilis vernalis, melanthera, regerminens, Sindriana, colorans, rubro-calyx, and others. 800 EPACRIS, of the choicest kinds; 600 AZALEA INDICA, by name, some of which are handsome half specimens; about 600 large CYCLAMENS, of the finest strain of persicum, and profusely furnished with bloom-buds; CYTISSUS, ACACIA DRUMMONDII; a large stock of TEA ROSES, in pots; SOLANUM CAPSICASTRUM, in berry; TREE CARNATIONS, LAPAGERIA ROSEA, and a quantity of miscellaneous Greenhouse Plants.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

N.B.—Intending purchasers are respectfully invited to inspect the Stock, the whole of which is in the finest possible condition.

Tooting, S.W.

IMPORTANT SALE of EXTRA STOCK of STOVE and GREENHOUSE PLANTS, rare ORCHIDS, choice FERNS, selected PALMS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, on TUESDAY, September 26, at 11 for 12 o'Clock precisely, thousands of extra stock of STOVE and GREENHOUSE PLANTS, the whole of which are in a very healthy and thriving condition, comprising quantities of Ananassa sativa variegata, Anthurium Scherzerianum, Dracænas, Phormium tenax variegatum, Ficus, Epiphyllums, in splendid variety; Greenhouse Rhododendrons, choice double Camellias and Azalea indica, and numerous others. Also a large quantity of choice ORCHIDS, including Vanda suavis (Veitch's variety), Aerides maculosum and Lobbii, Lælia prestans (true), Angræcum sesquipedale, Cypripedium Veitchii, Thunia Bensoniæ; and hundreds of exotic FERNS, fine greenhouse and stove PALMS, likewise a selected assortment of SUCCULENT PLANTS, hardy HERBACEOUS PLANTS, choice TULIPS, &c.

May be viewed the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

4000 Araucaria imbricata.

To GENTLEMEN, NURSERYMEN, and OTHERS.
HILLFIELDS, BURGHFIELD, near READING.

MESSRS. HASLAM AND SON have received insructions from J. B. Garland, Esq., to SELL by AUCTION, without reserve, in a Field adjoining the Gardens of Hillfields, Burghfield, on TUESDAY, September 26, at 3 o'Clock in the afternoon punctually, in suitable Lots, 4000 ARAUCARIA IMBRICATA, raised from choice seed, and specially imported by Horatio Bland, Esq., direct from Aranco.

Note.—The Auctioneers desire to draw special attention to this Rare and Choice Lot. They have been transplanted several times, and are now strong, healthy, and well-rooted, varying from 1 to 4 feet in height, and in the best possible condition for immediate removal. The whole will be sold without the slightest reserve

May be viewed one week prior to the Sale on application to the GARDENER at Hillfields; and Catalogues had at the Office of the Auctioneers 17, Friar Street, Reading.

LARGE SALE by AUCTION.—On account of the illness of the Proprietor the very extensive collection of STOVE and GREENHOUSE PLANTS, as well as the large general NURSERY STOCK of the Horticultural Establishment of Mr. H. LAURENTIUS, at Leipzig, Saxony, will be DISPOSED OF on SEPTEMBER 11, and following days.

Catalogues may be had on application at the above Nursery. In consequence of the Large Stock in all branches of Horticulture, the days of the Auction of each of the respective branches are fixed for the convenience of purchasers.

Re Mr. R. Glendinning, Deceased.

PRELIMINARY NOTICE of ABSOLUTE SALE.
To NURSERYMEN, FLORISTS, and OTHERS.

High Road, Turnham Green, nearly opposite the Duke of Devonshire's Avenue to Devonshire House, the present residence of H.R.H. the Prince of Wales, near the Toll Gate, and known as Chiswick Nursery, and The Nursery, Chiswick Lane, Chiswick.

MR. J. A. SMITH is instructed by the Executrix to SELL by PUBLIC AUCTION, at the Roebuck Inn, close to the Toll Gate, on TUESDAY, October 10, at 3 for 4 o'Clock precisely, in TWO LOTS, the valuable LEASES, GOODWILL, &c., of the important Business and Residential Property, established nearly 30 years in the name of Glendinning, extending over about Eleven Acres of rich Land, in trading cultivation, and each held at very low rents:—The Home Nursery at £84, cottage adjoining at £13, and now underlet; Chiswick Lane at £90, cottage underlet to Dr. Tuke, at £30; nett rental £60 only. Frontage to the High Western Road, about 325 feet, and 387 feet frontage in Chiswick Lane.

Auction Offices, 58, King Street East, Hammersmith, W.

Elvaston Nurseries, Borrowash.

PRELIMINARY NOTICE of a HIGHLY IMPORTANT and EXTENSIVE SALE of FIRST-CLASS NURSERY STOCK.

MESSRS. POTT AND NEALE have received instructions from Messrs. Barron & Son to OFFER for SALE by AUCTION, on the Premises, at Borrowash, on OCTOBER 11 and 12, a considerable portion of their most valuable NURSERY STOCK, consisting of rare Coniferæ, Evergreen and Deciduous Shrubs, Golden Hollies and Yews, Roses, Rhododendrons, &c.

May be viewed any day prior to the Sale (except Sundays) after October 1.

Full particulars will appear in future Advertisements.

Brockton House, Eccleshall, Staffordshire.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on TUESDAY, September 12, at Brockton House, Eccleshall, the ENTIRE HERD of PURE BRED SHORTHORNS, the property of Mr. Thomas Bell. It numbers about Fifty Head, which have been very carefully bred for the last thirty-two years from the far-famed Kirklevington blood, Mr. Bell's long association with the late Mr. Bates being the best guarantee for their excellence and purity of descent. Among them will be found several of the "Peach Blossom" (or Place), "Georgiana," and other fashionable tribes. The cows and heifers are in calf to Colonel Gunter's 8th Duke of York, and this celebrated young Bull will be offered at the Sale.

Catalogues, with Pedigrees, may be had of Mr. BELL, Brockton House, Eccleshall, or of JOHN THORNTON, 15, Langham Place, London, W.

Extensive Sale of Pure-bred Shorthorns in Lincolnshire

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on THURSDAY, September 14, at Panton House, Wragby, Lincolnshire, the celebrated HERD of PURE-BRED SHORTHORNS, numbering about 100 Head, belonging to Messrs. Dudding

The success that has distinguished the Panton animals at the Royal, the Yorkshire, and County Shows, the old-established character of the Herd, and the first-class bulls of Booth blood which have been used—Mr. T. C. Booth's Manfred (26,801) and British Crown (21,322) being now in service—is the best evidence of the high standing and excellence of the stock, which contains a large number of cows and heifers of great substance and quality, as well as several prize-winners, including some choice young bulls.

Catalogues, with Pedigrees, may be had of JOHN THORNTON, 15, Langham Place, London, W.

Holly Bank, near Burton-upon-Trent.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, on TUESDAY and WEDNESDAY, September 12 and 13 next, the ENTIRE FLOCK of THREE HUNDRED SHROPSHIRE SHEEP, including FORTY RAMS; the HERD of FIFTY HEAD of SHORTHORN CATTLE, several of them being of pure Bates' blood; HORSES, PIGS, IMPLEMENTS, POULTRY, CHEESE, &c. (the property of Willoughby Wood, Esq., who has let his Home Farms).

Conveyances will meet the Trains at Barton and Walton Station, on the Midland Railway, and at Wichnor Junction, on the South Staffordshire Railway.

ORDER OF SALE.

TUESDAY, September 12, the entire Flock of Sheep.

WEDNESDAY, September 13, Implements, Cattle, Horses, Pigs, Poultry, Cheese, &c.

Luncheon on Tuesday at 11.30; Sale at 1 o'Clock.

Luncheon on Wednesday at 10.30; Sale at 12 o'Clock.

The Rams are of great size, excellent Wool Cutters, and possess plenty of muscle. The Ewes are remarkably true in character, with great scale, and very prolific. Among them will be found, in addition to the carefully bred ones belonging to the flock, many purchased at a high price from Messrs. Beach, Baker, Byrd, &c

The Dairy Stock are remarkably well bred, many having three or four crosses of pure blood.

They are of great size, rich colour, and good milkers.

The Young Stock are well worthy the attention of gentlemen wishing to procure well bred stock.

The Auctioneers can confidently recommend this Sale as a first-rate opportunity to any one desirous of founding a high-class Flock of Shropshires or Shorthorn Herd. As Mr. Wood is giving up his farm, the whole of the lots will be sold without the slightest reserve, and it is seldom a better bred or more useful lot of Sheep and Cattle are disposed of

For Catalogues, apply to the Auctioneers, 39, New Street, Birmingham.

Bingley Hall, Birmingham.

IMPORTANT SALE of 1000 SHROPSHIRE SHEEP.

MESSRS. LYTHALL AND CLARKE will SELL by AUCTION, at Bingley Hall, Broad Street, Birmingham, on THURSDAY NEXT, September 14, at 11 o'Clock punctually, 250 SHROPSHIRE RAMS, and 750 EWES and THEAVES, the property of Lord Wenlock, Lord Sudeley, Mrs. Beach, Mr. Nock, Mr. Yates, and other most eminent Breeders, and including many Show Sheep at the Royal Agricultural Show at Wolverhampton, and other important Exhibitions.

For Catalogues, apply at the Auctioneers' Offices, 39, New Street, Birmingham.

Milcote, near Stratford-on-Avon.

HIGHLY IMPORTANT SALE of the MILCOTE DOWN SHEEP.

W. HUTCHINGS has been honoured with instructions from the Executors of the late J. C. Adkins, Esq., to SELL by AUCTION, at Milcote, near Stratford-on-Avon, on WEDNESDAY, September 13, at 2 o'Clock prompt (Luncheon at 12), the whole of the celebrated FLOCK of MILCOTE DOWNS, comprising 418 superb breeding Ewes and Theaves, 360 very superior Ewe and Wether Lambs, 22 grand symmetrical Shearling Rams, and 24 extraordinary Ram Lambs.

The great celebrity of this Flock demands a few words as to its formation. With Oxfordshire Downs as a foundation, the late Mr. Adkins, for many years, blended occasional strains of the best Cotswold and Hampshire Down blood, and with much judgment and careful selection succeeded in producing a distinct type of Down sheep. With great size, grand symmetry, good colour, and hardy constitutions, the Milcote Downs are remarkable for their heavy weight of lean meat and of wool, and for their early development and maturity. The rams will he brought forward in a natural and unforced condition. The Auctioneer can, with great confidence, call attention to this Sale; and can assure Flockmasters that an entire Flock of such high character is seldom offered to Unreserved Public Competition.

Catalogues will be circulated in due course, and may be had of the Auctioneer, 28, Bridge Street, Stratford on-Avon.

Trains stop at Milcote Station as under:—From Paddington, Oxford, Banbury, Leamington, Warwick, and Birmingham, 8.49 and 11.18. From Paddington, Oxford, Moreton, Evesham, and Worcester, 8.25, 11.0, and 1.15.

ALTRINCHAM AGRICULTURAL SOCIETY.—The TENTH ANNUAL SHOW will be held on THURSDAY, September 28, when FIVE HUNDRED POUNDS and SILVER CUPS will be offered in PRIZES for Horned Cattle, Horses, Sheep, Pigs, Dogs, Poultry, Roots, Grain, Cheese, Butter, Implements, &c.

ENTRIES CLOSE SEPTEMBER 13 PRIZE LISTS, with FORMS of ENTRY, can be had on application to the Secretary,
28, Church Street, Altrincham. R. DAVENPORT.

SMITHFIELD CLUB SHOW, AGRICULTURAL HALL, ISLINGTON, DECEMBER 4 to 8.

IMPLEMENT DEPARTMENT.

The LAST DAY for receiving APPLICATIONS for SPACE for IMPLEMENTS and MACHINERY, &c., is OCTOBER 2.

Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID PULLEN, Assistant-Secretary, corner of Half-Moon Street, Piccadilly, London, W. All communications should bear outside the words "Smithfield Club."

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS. will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A. For an OX or STEER (in any Class).
„ B. For a COW or HEIFER (in any Class).
„ C. For a BEAST in extra Stock.
SHEEP. „ D. For a Pen of three WETHERS.
„ E. For a Pen of three EWES.
„ F. For a SINGLE WETHER SHEEP in Extra Stock.
PIGS. „ G. For a Pen of three PIGS (in any Class).
„ H. For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 9, 1871.

WE have found a mine of WEALTH in GOOD OLD PASTURES, by ploughing them up and taking repeated crops of corn. It is like breaking up the prairie, or turning up the virgin soil of the forest; the land is full of the raw material of crops, which costs so dear to buy in the form of manure, and which sells at such a high price when worked up into marketable produce.

A certain amount of fertility arises from the decay of the old turf and its roots and fibres, but this is only a shallow supply, which is soon exhausted. We then fall back on the natural powers of the soil. How much available food does it contain? In other words, how many crops will it yield before it will require manures, solvents, tillages, and the usual round of operations and treatment necessary for exhausted soils?

Ploughing up old turf is a heresy; and the answers to these questions will decide whether repentance is likely to follow. There is always a sacrifice in ploughing up old turf, because so good a pasture cannot be obtained again for several years. You sacrifice the time it takes for superior pasture grasses to establish themselves, and if the land contains only a shallow supply of the raw materials, so that you may expect to have to resort, in two or three years, to the accustomed routine in order to obtain a crop; it must have been wrong to disturb the old turf; but if you can rely on getting a succession of first-rate crops of corn, seeds, Potatos, &c., by merely ploughing and sowing, it is evident you have opened a mine of wealth.

This discovery has been made on some of the most famous pastures in the country. Plaistow Level, and other Thames-side marshes,* have yielded to the plough of late years, and the splendid pasturage of Romney Marsh has been attacked. A celebrated tourist, 100 years ago, observed "the vast flocks of sheep" in Romney Marsh, and remarked on the beef, "the largest in England," fed in that part of the country: but LELAND, whose antiquated orthography we must modernise, says, "It is a marvellous rank ground for feeding cattle, by the reason that the grass groweth plentifully upon the ooze, some time cast up by the sea." But even this is recent evidence compared to the antiquity of Romney Marsh. The Saxons called it *merseware*, and its inhabitants marsh-men. They, or some earlier improvers, fenced it from the sea and drained it; and the conservation of the sea-wall and of the dykes was provided for by local laws and observances, termed "ancient and approved customs," so long ago as HENRY III.

It had its own ancient breed of sheep, which were, and are, able to withstand the humid air and such winter breath of old Neptune as would "melt" or "dissolve into dew" any other breed that clips 8 lb. of wool, and weighs 12 stones. The old breed, too, had acquired the habit of avoiding the ditches under circumstances that would result in *felo de se* or accidental death in the case of any other sheep.

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* See page 389.

One would suppose that the whole of this rich level of 44,000 acres—the ooze of the sea—would prove of similar and uniform agricultural value or quality. But this is not the case, and adjoining fields differ so much that they may be worth £80, £100, or £120 per acre respectively. These are actual values, for there are no fancy purchasers. It is found that the worst land is that which bears the mark of having been ploughed for the purpose of crop growing some years since, and subsequently laid down again. So it would appear that a portion of the fee simple was exported in the crops. This is the view of present proprietors, who allow turf to be broken up only on condition of receiving an increased rent. Thirty shillings an acre is the annual addition usually charged for the privilege of breaking up the old turf and taking crops without restriction. As the sheep get no cake on the marsh, and no stock is kept to yield manure, except four horses for every 60 acres of ploughed land, and as a marsh farmer despises artificial manure, and disbelieves alike the nitrogen and the mineral theory, it is evident that the store of plant food contained in the "ooze of the sea" must be very great.

The land must be tamed before it will bear corn, and a succession of such crops as Potatos, Mangel and other seeds, Carrots, &c., is taken before the usual course commences of—1, Turnip seed; 2, Wheat; 3, Beans; 4, Wheat; 5, Clover; 6, Turnip seed or Wheat. The land has never yet tired of Wheat or any other crop; it must, therefore, contain an inexhaustible supply of nitrogen as well as of mineral constituents,—unless, indeed, cultivated plants, like wild plants, are able to obtain sufficient ammoniacal food from the air when the soil contains an excess of their ash constituents. However this may be, we never knew a richer mine of agricultural wealth than Romney Marsh, and it will be unfortunate for occupier and owner — who are often one and the same person—when the weakest link of its fertility fails, and they have to fall back on salts of ammonia and superphosphate, like those of their countrymen who do not farm in what may truly be described as England *Felix*. That such a time will come is indicated by the mark left by the ancient ploughing.

The system of non-restoration, though a present success, may be a future loss, but exhaustion is a very slow process. An excellent authority, it is true, informs us that the cropping in the Isle of Thanet has been too fast, and that corn has become less productive than it was 40 years ago in cases where it has received only the manure arising from a seven-course rotation. The marshes above Sandwich have undoubtedly been reduced from their former quality, but a little cake soon restores them; and Romney Marsh 1800 years under grass has not yet failed.

There is a wide difference, however, between the "ooze of the sea" and ordinary land, for while it seems impossible to injure the one it is very easy to do violence to the other; and if we accept the authority of the common farm lease, there are several crops so exhausting that they ought never to be grown. Our usual rotations, so different from the above, prove that no inexhaustible wealth exists in the soil. If our readers can find a few acres of really fat turf-land they may perhaps safely plough it up, but we do not think the food supply is likely to be much increased by such discoveries. Romney Marsh itself is only a plot on the coast of Kent, and does not include a twentieth part of that productive county. One-half of Kent lies on chalk, far above the ooze, and, admitting there is something in site and subsoil, its character is imparted to it, a great measure, by the sheepfold and the despised "artificials." These are the aids on which we must rely, and the prosperity of agriculture and of the country requires that steps should be taken to increase the raw material of crops.

—— A SHORT supply of English Wheat at Mark Lane on Monday was cleared off at 1*s*. advance on the prices of that day se'nnight. Monday's prices obtained on Wednesday: trade steady.——At the Metropolitan Cattle Market on Monday prices for beasts were lower, without effecting a clearance. Sheep made high rates, and calves a good price. Choice beasts, at Wednesday's market, sold dearer than on Monday, and there was a further improvement in calves.——Trade in the Seed Market was quiet, owing chiefly to the want of rain.

—— Mr. J. ALGERNON CLARKE, of Long Sutton is endeavouring to promote the establishment of a BEET-SUGAR FACTORY near Long Sutton. It appears that Mr. ARNOLD BARUCHSON, Mr. G. MARTINEAU, and Mr. H. TATE (sugar refiners of Liverpool and London), with other gentlemen, have visited that district with a view of ascertaining its suitability for the purpose of establishing a Beetroot sugar factory. It is believed that the soil, water supply, facilities of transport, and labour supply, are adequate in every respect; and occupiers have already promised (conditionally) very nearly the requisite acreage of roots. The crops will not altogether take the place of highly-manured Potatos and Mangels, but be an additional source of profit to the grower; and as the natural yield per acre is two-thirds the weight of Mangels under similar treatment, the return may be stated at about 20 tons (ranging from somewhat less up to 25 tons or more) per acre, which the proposed company will purchase at 20*s*. per ton delivered at the works. The total cost of production, including rent, may be stated at £12 per acre. Owners of land have signified their consent to the growing of the new crop, under proper limitations as to acreage, manuring, or consumption of the "pulp," which is equivalent to one-fifth of the crop in weight, but contains the major part of the constituents supplied from the soil. Mr. CLARKE accordingly endeavours, by a personal canvas to induce his neighbours to accept the proposal which these gentlemen have made, that £5000 out of the £30,000, or more, which will be needed as the capital of the company, shall be furnished by the growers of the locality, as some guarantee of continued local support, without which condition they could not prudently erect costly works and plant. The favourable promise of the desired investment appears from the fact that this proposal is guided by the commercial success of Mr. JAMES DUNCAN'S Beetroot sugar works at Lavenham, in Suffolk, now in their fourth year of operation. In a recently published letter, Mr. DUNCAN declares that after writing off 15 per cent. for wear and tear of buildings, plant, &c., he made a nett profit last year of 15 per cent., which would have been very much greater had he obtained a supply of roots equal to the capacity of his works; and he further says, from his practical acquaintance with sugar factories, that profits of 20, 30, and even more per cent. are frequently realised.

—— From various parts of the country we receive such reports concerning CATTLE DISEASES as to lead us to the conviction that these are now unusually rife. The *Yorkshire Post* of the 29th ult. gives the following confirmatory evidence on the subject:—

> "If we have fortunately kept out the rinderpest, pleuro-pneumonia has done much mischief in this country, and in Ireland also. In France, rinderpest continues to commit ravages in the department of the Ardennes. It has just shown itself at Rivoli-lez-Givet, on the right bank of the Meuse. The Belgian frontier is infected for the whole length of this department as far as towards Longwy. Precautionary measures are thus more requisite than ever. The foot-and-mouth disease is the disease most prevalent at the present time. Since the warm weather commenced it has from a few centres spread throughout the country. The cattle markets are now full of infected cattle, and in nearly every village and hamlet the complaint has made its appearance. In the grazing districts the reports are becoming appalling. Herds of animals nearly ready for the knife are now panting in pain, and wasting beef daily under the combined influence of the burning sun and the fever arising from the inflammatory suffering in the mouth and feet. To whatever cause this visitation of the disease is due, our own cattle traffic now unquestionably diffuses the infection daily over new areas. Severe restrictions against moving cattle from infected herds must, therefore, again be put in force, and farmers must not leave it to policemen to see the law carried into effect. They must inform the authorities of all infractions of regulations, and endeavour to bring fine and punishment upon those stupid, self-willed owners of stock who care nothing for their neighbours' interests, and bring, incautiously or ignorantly, infected cattle into fresh districts. In a noble pasture, in which are annually fed upwards of 100 head of cattle, the present occupier has now upwards of 30 animals down in the disease, and possibly the whole herd will go through the complaint. This national waste of food is a gigantic and crying evil, aggravating to the consuming public, but ruinous to the producing grazier. In the above case the disease originated from the careless but highly reprehensible conduct of an adjoining occupier, who brought a few fresh-bought animals into his pasture. Had he only suffered, his want of caution at this season of the year would have been properly punished, but unfortunately in this, as in most cases, ignorance not only injures its possessor, but others who are affected by its consequences. From every county the same reports come of a sudden and unaccountable increase of outbreaks of the disease. In Cheshire the cases are augmented a hundredfold in a fortnight. In Lancashire and Yorkshire the disease is spreading equally rapidly; and in Cheshire and Derbyshire the centres of infection are nearly equally numerous. Now that the enemy has got in amongst us we must take care that it spreads no further, keep our fat stock in their own quarters till they go to the butcher, and put lean stock on a long quarantine in a separate and detached pasture."

—— At the BARNET CATTLE FAIR, during the past week, the usual immense gathering of farmers, graziers, and others interested in cattle, has taken place. Dealers have obtained advanced prices for all descriptions of store cattle, owing to the favourable prospects of the Turnip crops and the abundance of grass feed and straw fodder. Welsh black cattle met an eager demand, well-grown steers, at £9 to £11 a head; large promising ditto, £13 to £14. Scotch cattle for stalling made £16 to £18; ditto in forward condition, £20 to £23; Highland steers, £13 to £16. Well-bred Devon steers realised £16 to £18. Large Shorthorn steers, £17 to £21; and large, weighty ditto, £25. Promising Hereford store steers made £16 to £21, and heavy beasts £24. There was a large field of well-bred milch cows disposed of, and the London dairymen were large buyers. Large-framed Shorthorn-bred cows in full milk made £20 to £26 each; second-rate ditto, £16 to £19; Durham, Ayrshire, and Alderney cows, £15 to £18; well-bred in-calf heifers, £12 to £14, and cows to calve down, £10 to £17; Dutch milking cows, £14 to £16. The horse show is large, and the pony droves occupy a large section of land

—— Our Belfast correspondent writes, under date August 29, respecting the exaggerated rumours of disease in the IRISH POTATO CROP:—

> "Rumours having been industriously circulated that the mysterious disease incidental to the growth of the Potato has broken out with all the virulence of former years, and that the crop is almost a failure, I wish to state that I have reason to believe, from personal observation, that the statements which have appeared are exaggerated, and that there is but faint warrant for existing fears. Certainly in the province of Ulster no signs of failure are apparent, and a good average yield may be expected. The season is well advanced, the tubers are maturing rapidly, and, so far, there is no such percentage of disease in the roots turned out as to justify any general alarm. In many districts, blackened and withered stalks are to be seen in the Potato fields; but in no years, for the last quarter of a century, have there been wanting these indications of something wrong. 'Misses,' and 'blights,' have always been seen in the Potato lands of Ireland; and at one time they attracted but little notice; but since the great failure, and the great famine which resulted from it, every withered stalk in a 'lazy-bed' seems to strike terror into the farmer's mind, and every missed drill at once fills him with alarm of the dreaded disease. If people who happen to find blackened stalks and ugly appearances would have the patience and the prudence to examine the state of the tubers, they would, in all probability, find them sound in ninety-nine cases out of a hundred. No reasonable man need expect to turn out his whole root crop without finding some bad specimens. When it is known that the yield of Potatos is reported to be this year unusually large, that we have got almost over the month of August, it is but right to state that the chances preponderate in favour of our having a fair average Potato crop in Ireland this season."

—— "G. A. H." objects to our recommending CABBAGE as a SNATCH CROP, that it will not stand a severe winter. He states: "If you plant out Cabbages in November, the chances are that you lose three out of four." "G. A. H." is mistaken: thousands of acres of Cabbage are planted in the fields in November in the neighbourhood of Barking, in Essex, and they seldom suffer from frost, though the district is not particularly sheltered, and the varieties are the East Ham, or Enfield, Cabbages, which are early but not particularly hardy. The crop is in perfection in May and June. There are also Savoy Cabbages, which are far less liable to injury by frost when grown large than other sorts.

—— In our notice of Mr. RIGDEN'S sale, Lord NORBURY'S name, as that of one of the leading purchasers, was unfortunately mis-spelt. His lordship hired one of the highest priced rams at the sale.

OUR LIVE STOCK.

CATTLE.

THE Holly Bank cattle, which will be disposed of by Messrs. Lythall & Clarke on the 12th and 13th inst., comprise 36 Shorthorn dairy cattle, many of which are remarkably well-bred, having three or four crosses of pure blood. They are of great size, rich colour, and good milkers. The pure-bred Shorthorns consist of 12 animals, two of which are descendants of *Annette* by HORROX (11,591), two are descendants from *Isabella* by ACCORDION (5708), two are from *Flounce* by CHILTON (10,054); *Zeal 11th*, a descendant of *Zeal* by ROMAN, forms an attraction; lot 133 is BONNY DUKE by 6TH GRAND DUKE, and of the "Wild Eyes" tribe: and among the remainder we notice LORD DORKING by EARL OF BARRINGTON, and of the "Certainty" tribe, and OXFORD LAD, also by EARL OF BARRINGTON, and out of *6th Duchess of Oxford*.

—— Brailes House on the 21st, and Ellington, near Kimbolton, on the 28th inst. Such are the two important announcements which will now occupy the attention of Shorthorn breeders, after the excitement of the past week down in the North. The Brailes House event is the fourth biennial sale which Mr. Strafford has held there, and from the pedigrees in the catalogue we should expect the cattle to be fully equal to those shown on former occasions. *America* by MARMADUKE, and her five daughters and descendants, constitute a group representing *Acomb* by BELVEDERE (1706). *Clarence* by GRAND SULTAN 2D (17,999), is the first of half-a-dozen of the "Craggs" tribe; *Lady Emily 2d*, lot 3, by 7TH DUKE OF YORK, and her son, EARL OF WARWICK-

SHIRE by 18TH DUKE OF OXFORD, are good instances of Bates upon Knightley; the four representatives of *Countess of Barrington* by 3D DUKE OF GLOUCESTER need no recommendation, and the same may be said of the Furbelow, Cathleen, Pintail, Walnut, Foggathorpe, and Annette heifers and bulls, all of Knightley origin, which will be offered. *Darlington 12th* by DUKE OF GENEVA, *Woman in Red*, of the "Blanche" tribe, and LORD OF THE BORDER by 18TH DUKE OF OXFORD, and of the "Fillet" tribe, will be among the other attractions.

—— Mr. Ladds' sale takes place on Thursday, the 28th. The principal features of the catalogue are a large assortment of Red Duchesses, and numbers of the Farewell, Verbena, "J," Flirt, and Picotee tribes. For many years Bates sires have been used, such as CAMBRIDGE BARRINGTON 1ST (14,223) by DUKE OF CAMBRIDGE (12,742), out of *Lady Barrington 8th*, a winner at the Royal Society's meeting at Lincoln in 1854; DUKE OF CAMBRIDGE (15,919), of the "Cambridge Rose" tribe, now so fashionable; the Barrington bull SIR JOSEPH BANKS (20,836), by the renowned the 7TH DUKE OF YORK (17,754); LORD ROYSTON (24,463), of the "Blanche" tribe; and, more recently, the grand Waterloo bull WELLESLEY (25,421), bred by Lord Penrhyn, a son of his 600 gs. DUKE OF GENEVA (19,614), and EARL OF BARRINGTON 2D, a first-class sire, bred by Mr. Sheldon, of Brailes. Fifty-nine of the lots are by WELLESLEY; the cows and heifers are chiefly served by this bull or by the EARL OF BARRINGTON 2D.

—— Mr. Thornton has issued a catalogue of 72 cows and 12 bulls, constituting the entire herd so long bred by the Messrs. Dudding, of Panton. This grand lot of animals will be sold at Wragby on Thursday. The reputation of the Panton herd has been maintained by the use of such well-bred sires as Mr. Foljambe's ROBIN (24,968), Mr. Jonathan Peel's STUART (27,630), and Mr. Booth's Warlaby bulls MANFRED (26,801) and BRITISH CROWN (21,322). Previously, among other famous bulls, we notice the names of RAVENSWOOD (22,682) and ROYAL BUCKINGHAM (20,718), both of the "Bonnet" family, and celebrated stock-getters. These, allied to cows by VANGUARD, SIR ROGER, PRINCE ALFRED, and other first-rate bulls, have left a "grand lot" of stock, characterised by size and uniformity.

—— The Brockton House herd will be sold by Mr. Thornton on Tuesday. It comprises about 50 head of the famous Kirklevington blood, which Mr. Bell obtained directly from Mr. Bates. The catalogue contains representatives of the "Peach Blossom," "Georgiana," and other tribes. The cows and heifers are in calf to Colonel Gunter's 8TH DUKE OF YORK, which will be offered for sale.

—— The Chapel Brampton sale of Shorthorns has been unavoidably postponed.

SHEEP.

Mr. LANE, of The Cottage, Northleach, who has so long been known as a breeder of Cotswold sheep, disposed of his flock on Wednesday week, Messrs. Acock & Hawk acting as auctioneers. The flock consisted of 115 ewes, 51 theaves, 85 ram lambs, 87 ewe lambs, and two shearling rams. The average of the whole 338 sheep was £5 12*s.* each; the ewes and theaves averaged £5 2*s.*; the ram lambs, including two shearlings, made £8 8*s.* each; and the ewe lambs £3 3*s.* each. The most extraordinary feature of the sale was the competition for theaves. Very high prices were given, which culminated in Mr. Swanwick purchasing a pen of five for the unprecedented price of 17 gs. per head. These sheep were the cause of a brisk competition, in which Mr. Brown, of Marham, and Mr. Swanwick bid against each other, until they were secured for the College Farm, at the high price just mentioned.

—— Mr. Willoughby Wood, of Holly Bank, who has for so many years occupied a leading position as an agriculturist and Shorthorn breeder, has let his home farms, and advertised his stock for sale. Messrs. Lythall and Clarke have issued a catalogue of Shropshire sheep, some useful dairy cattle, and the remaining pedigree Shorthorns which remain over from the last sale. The catalogue opens with a list of 28 shearling rams; 38 ram lambs, 130 shearling and young ewes, and 70 ewe lambs. The sheep are by well known rams, such as Forester, bred by Mr. Keeling, Lord Uffington, Stockley by the Nugget, 2d Lord Kinver by Lord Kinver, Baronet by Valiant 2d, Monarch by Old Norton, Holly Bank by Baronet, and Horley's No. 14 by Evans' No. 10. These excellent sires have been allied to ewes by Pride of Freeford of the Patentee blood, Lease Farm Ewe, Holly Branch, Hannibal, and many are by the rams already named as sires of rams.

THERE are four species of llamas and alpacas, and only four of the animal known by the generic term *llama*, viz., the alpaca, llama, guanaco, and vicuna. The two former are domesticated, and vary in colour; the two latter are wild, and are always of one colour. The most valuable of all these animals is the alpaca, called *pococha* by the Indians of the country. It is smaller than the llama proper, has the raised croup, droops towards the fore legs, and is covered with a long silky wool. They feed in large herds, only on the highest plains of the Andes, on the grass growing on marshes. They are owned by Indians, who cut the fleece every three years, and bring it to this city for sale. Each fleece is divided into two, being the wool taken from each side of the animal as it hangs down from a parting down the back, and the half fleece is called a *bellon*, and weighs on an average 3 lb. There are five distinct colours; jet black, pure white, grey, coffee, and light fawn. The llama proper is a larger animal, with a straight back and clumsier head. It has coarse wool mixed with hair, which is never shorn off, as it is valueless. The animal has been used by the Indians from time immemorial as a beast of burden, and is so now, large herds entering the city daily, loaded with alpaca wool, and returning to the interior with bags of flour or small cases of English beer. A llama carries only about 100 lb.; thus two cases of a dozen bottles of Bass' pale ale form a load, and are conveyed as far as Cuzco, a distance of 100 leagues, at the rate of about 4 leagues per diem, the animal travelling for several days without water. As the alpaca and llama pasture together, there is a well-known cross-breed between them called a *huarizo*; and it is much to be regretted that, from the carelessness of the Indians, this crossing is allowed, as the wool of the cross-bred is much inferior, and the animal is mostly useless as a beast of burden. The llama also is of various colours, the same as the alpaca. The two wild species, the vicuna and guanaco, are much alike in colour, being a light fawn: but the vicuna yields a wool, while the guanaco, like the llama, has a coat of hair. The guanaco is a larger animal, and is found from Cape Horn to the northernmost parts of Peru. The vicuna is most abundant in Peru and Bolivia, where immense herds are found; and many are killed yearly for the wool, which is very short, but silky. The average annual export from Callao for the last 20 years has been about 6500 lb., and as each animal only yields about half a pound, 13,000 of these animals must be killed annually to supply this export, independently of the considerable quantity of this wool used by the Indians in their own manufacture. Both the guanaco and vicuna can easily be domesticated, but domestication is not carried to any extent. A cross has been known between the alpaca and vicuna, but it is excessively rare; the guanaco and vicuna in their wild state never cross with each other. Specimens of the alpaca, llama, and guanaco exist in the Zoological Gardens, Regent's Park.

RAM SALES.

Lincolns.—The Panton ram show and letting took place on Tuesday, the 29th ult., under the direction of Mr. Calthrop, auctioneer. Messrs. Dudding's shearlings this year are chiefly by the two Manchester and Lincoln prize sheep in 1869, by a celebrated ram, Old Topper, the line of the Oxford and Sleaford prize two-shears, and by an old sheep hired at 66 gs. The first eight shearlings were let for 131 gs., being an average of 16⅝. No. 3, a grand ram, was taken by Mr. Robinson, of Huttoft, for 20 gs., and No. 5, one of the best sheep of the flock, fell to the lot of Mr. Parish, of Toynton, for 30 gs. Of 2-shear sheep six let for 137 gs. No. 72, a noted show sheep, was knocked down to Mr. Needham, of Huttoft, for 31 gs., and lot 74, a magnificent well-fleeced ram, was taken by Mr. Garfitt, of Scothern, for 38 gs. No. 22, a ram of enormous width, by a sheep of Mr. Kirkham's, was bought by Mr. M'Viker for 20 gs. No. 24, a splendid ram by Champion, 3d at York, was bought by Mr. Garfitt, of Scothern, for 40 gs. There were 73 rams, most of which were sharlings, and the prices for the rams sold ranged from 6 gs. to 40 gs., the whole flock showing an average of £14 6*s.* 4*d.*

—— Mr. Vessey, of Halton Holgate, who has for a quarter of a century been noted for improving the breed of the fine old Lincolnshire sheep of the marsh district, let his rams on Monday, the 28th ult. They were a very regular uniform lot. Shearlings let at from 12 to 40 gs., the 2-shear, 62 in number, at from 10 to 30, and the 3-shear, 40 in number, at from 15 to 40. No. 44, one of the choicest rams penned, if not the flower of the shearling flock, was hired at a high figure by Mr. J. L. Needham, of Huttoft, a gentleman distinguished for his judgment and success as a breeder of rams.

—— On Thursday, August 31, the annual letting at Biscathorpe took place, and a large company, many of whom were themselves ram breeders, assembled to do honour to the occasion. Of the 100 sheep penned, 40 were shearlings. We have seen Mr. Kirkham's shearlings in better condition, and some of them were scarcely up to the mark of previous years, the 40 realising an average of only £13 14*s.* 3*d.* No. 7, a very symmetrical and well fleeced animal, was let to Mr. Woolhouse, of Willingham, for £47. No. 10 was taken by Mr. Needham, of Huttoft, for £27; No. 8, by Mr. Mackinder, of Langton, for £21; but in no instance was anything like a fancy price realised. The 2-shear sheep, 37 in number, were as fine and perfect a pen as could be produced, and it would have been difficult to find a bad one amongst them. They were let at an average of £16 3*s.* 9½*d.* No. 45 was taken by Mr. Marshall, of Branston, for £42; No. 48 fell to the lot of Mr. Clarke, of Scopwick, for £50; No. 53 was taken by the same ram breeder for £53; No. 65 (the best shear of 1870) was secured by Mr. Isaac Sharpley, of Boswell, for £31. The 3-shear sheep, 23 in number, were let at an average of £15 10*s.* 5*d.*, No. 81 fetching the highest figure, being taken at £50 by Mr. J. Clarke, of Welton. Mr. Vessey, of Holton Holgate, got No. 82 for £30, and 83 fell to the lot of Mr. Grime, of Holton Holgate, for £33. Considering the very superior character of the flock the average on the whole of £15 1*s.* was not so much as had been anticipated by many persons present.

Shropshires.—Messrs. Lythall & Clarke, of Birmingham, held their third sale in the Smithfield, Shrewsbury, on the 29th ult. There was only a small attendance of buyers, owing to the harvest, but anything of really good quality sold remarkably well. The first lot of rams (Mr. T. S. Meire's four grass-fed shearlings) made £8 2*s.* 9*d.* each, which, as they were only in store condition, must be considered a fair average. Mr. Matthew's 20 ranged from 4½ to 9 gs., the latter price being given by Mr. Lythall, of Radford, for the 4-shear ram, Rejected. Many of the breeders present thought him too fat to be of use, or he would certainly have made considerably more. There being no demand for Messrs. Morris's rams, they were withdrawn. Mr. Yates' made from 6½ to 7 gs.; Lord Willoughby de Broke's shearlings from 5 to 7 gs.; one good 2-shear making 14½ gs. Mr. H. J. Sheldon's, which came next, were sheep of remarkably good quality, with good heads, but rather small. The nine made an average of nearly 8 gs., one fetching 11 gs. and another 12 gs. W. O. Foster, Esq., sent 10 shearlings as good as any one could wish to turn out. Mr. Peake bought the first at 24 gs.; Mr. Rogers the next, at 15 gs.; the third was let to Mr. Jarvis, of Upton Magna, at 12 gs.; Mr. Trevor gave 18 gs. for No. 4; Mr. Bright 20 gs. for No. 8. The rest made from 11 to 7 gs.; the average for the 10 being £15 4*s.* 6*d.* Mr. Tanner's fetched from 6 to 7 gs., Mr. Picken's 5 to 5½ gs., and Mr. Ashton's 4½ to 7 gs. The ewes sold much more freely, making from 55*s.* to 110*s.* each.

Leicesters.—Mr. Robert Boulton held the annual ram letting at Great Givendale on August 25. The day was a very favourable one, and a goodly company, for the most part ram breeders and farmers, assembled. The sheep were offered in their natural condition as driven up from the fields. Mr. Knapton, of Kelk, led off by taking the three first sheep offered, after which the first race among the ram breeders began, Mr. Stamper and Mr. Thompson competing for No. 4, which was at last knocked down for the Anlaby flock at £15. No. 6 had especial favour from the breeders, five of whom were in the field, but at last the sheep also went to the Anlaby flock for £30 5*s.* Mr. S. Staveley, of Ayton, Pocklington, took No. 7 for £18 5*s.*, and Mr. Jordan, of Eastburn, No. 8 for £15 5*s.* No. 12 went to the Kiplingcoates flock at £16 10*s.*, and Mr. Staveley took No. 17 for £11, and Mr. Beal No. 18 for £12 5*s.* The average price of the yearlings was over £9 11*s.* Although the shearlings were admitted to have been the best lot ever shown at Givendale, the 2-shear sheep were almost as successful, in some cases going to the same flocks as they did as shearlings. The notable sheep were No. 10, to Mr. Megginson, of Towthorpe, for £10; No. 35 to Mr. Brown, for £13; No. 39 to Mr. Walmsley, for £20; and No. 40 to Mr. Jewison, of Raisthorpe, for £10. The average was about 9 gs. There was a remarkable competition for the 3-shear sheep, of which No. 44 went to the Holme flock at £15 5*s.*, No. 47 to the Raisthorpe flock at £15 15*s.*, No. 50 to the Highfield flock at £20, No. 53 to the Ness flock at £10 5*s.*, and No. 55 to the Holme flock at £11 10*s.* No. 45, however, had the honours of the day, jumps of £5 occurring in the bidding, "all among the breeders." Eventually a settler came from Mr. Skelton Jefferson, of Whitehaven, and for the Cumbrian flock the sheep was knocked down, at £35. The average of the 3-shears reached £11 15*s.* Among the aged sheep Mr. Jewison took No. 58 for £12. The average was about £8, and the takers were Mr. Jewison, Mr. Hotham, and Mr. Horsley.

FREE TRADE IN LAND.

WE do not pledge ourselves to the views expressed in the following excerpts from a forcibly written pamphlet, from the pen of Mr. Arthur Arnold, author of "The History of the Cotton Famine," &c., and assistant commissioner 1863-66, in the cotton manufacturing districts. The questions discussed by Mr. Arnold are unquestionably important, and bear directly on the cultivation of the land. Neither can they long escape attention at a period when every institution is subjected to searching criticism. The writer is an enthusiastic admirer of Cobden, an enemy of entails and conveyancing, and a friend of land registration, actual ownership, and security for the tenant as well as the landlord. After eulogizing Mr. Cobden, our author proceeds as follows:—

"I really do not believe that any one possessed of great influence in the Legislature questions the beneficial influence which a free exchange of land would exert. 'We Englishmen,' as Mr. Gladstone said last year at

Greenwich, 'who have received from Mr. Cobden a special commission and a special charge,' have strangely neglected our calling. Believing in their utterances, it can only be supposed that the conscientious men who direct the powers of the State have been waiting long years for a favourable breath of public opinion and for a clear channel. The present head of the legal profession has said that in 1815 he read Adam Smith, and that the study of the works of that great economist was the cause of his taking up the principles to which he has ever since adhered. In 1859 the present Lord Chancellor—a man possessing, perhaps beyond any of his predecessors, the respect and confidence of his countrymen—spoke scornfully of the law, of which he was even then a pillar, so far as it related to land. He said: 'Look how the limitations of your law affect the transfer of your land. It is only on account of these that you have difficulties as to title; because, if it were not for the complexity of limitations, a system of registration would long since have been established, which so far as fraud and rapidity of transfer was concerned would have freed us from any difficulty of title whatever. You have now the combined effect of fraud and the complicated investigation of title, which operate in the most serious manner to prevent the free transfer of the land in our community. What I wish, and have long wished for, is a free transfer of land'—in other words, free trade in land. The Sir Page Wood who uttered these words has quitted the atmosphere of commonalty—so much more free on this subject than the air of the gilded chamber in which he now presides—yet I do not doubt that Lord Hatherley holds the same opinion. But it is not statesmen alone who have been indifferent to this great question. The people have permitted the monopoly of land to become more and more restricted, without interference. This surprised Mr. Cobden. He said: 'It is astonishing that the people are so tacit in their submission to the perpetuation of the feudal system in this country as it affects property in land, so long after it has been shattered to pieces in every other country.' But he knew the reason why; he declared the cause of this languid acquiescence to be that 'the great increase of our manufacturing system has given such an expansive field of employment to the population, that the want of land as a field for investment and employment of labour has been comparatively little felt.' 'So long,' he predicted, 'as this prosperity of our manufactures continues, there will be no great outcry against the landed monopoly.'

"I say the time has come when this tacit submission exists no longer; when the maintainers of the present land system must accept reform, or risk the rude chances of revolution. Slowly but surely the people are mastering this question. Every wind that blows brings to the shores of England testimony to her matchless wealth and to her unequalled poverty. Englishmen know, as a rule, very little of other countries; but they are aware that our land system, so far as it is known abroad, excites the wonder rather than the admiration of the world. There is nothing like it. There are countries of peasant proprietors, like France, Switzerland, and Belgium; there are other lands with a class analogous to our landed aristocracy; but there is no other portion of the earth where the land is for the most part owned by one class, farmed by another, and tilled by a third. I anticipate the criticism of the opponents of reform, who at this point will exclaim triumphantly that such an exceptional position is the cause of that stability of order which the institutions of this country have preserved, and that therefore, the maintenance of the existing law is desirable. It will surprise those only who are ignorant that free trade in land is both a truly Liberal proposition and also a thoroughly Conservative measure, that I should frankly admit this."

The writer next proceeds, with much candour, to render plain certain political advantages of the English system of land economy.

In glancing at our "land system," Mr. Arnold in the first place directs attention to the small and decreasing number of landed proprietors, who have been estimated at about 30,000 persons in all. The causes which tend to decrease the number of landowners, next claim attention in the following passage:—

"What are the chief of these causes? I should say, the increase of capital, and the cost, together with the uncertainty of the cost, of conveyance. The wealth resulting from manufacturing industry has tended to this result, for the overflow of these riches has narrowed the land market, because it has passed into the hands of men who are content to sacrifice a large portion of the ordinary profits of capital to purchase the social distinction which acres confer, and upon whose large purchases the cost of conveyance is not a heavy charge.

* * * * *

"Our manufacturing prosperity has done more than this to strengthen the land monopoly. Some of the princes of manufacture have become successful accumulators of the soil, and of many more the fair daughters have carried in their hands the gains of industry to expand the ring-fence of the landowner.

* * * * *

"The monopoly of land is directly fostered by the cost of transfer. The landlord is willing to invest his money with a return of 2½ or 3 per cent., and the lawyer does all he can to keep the small capitalist from competition. Among the most industrious nations of the Continent, the cost of the conveyance of land is a percentage on the purchase-money, which passes to the coffers of the State, so that while the expense on a purchase of £100 would be £5, that of the conveyance of property worth £100,000 would be £5000. But here the operation of the law imposes a system precisely the reverse; it practically forbids the purchase of small properties by imposing legal charges, the percentage of which invariably declines with the increase of the purchase-money. A well-known land agent asserts—and the experience of hundreds will be similar—that he has often signed deeds for the purchase of property of small value, when the legal expenses have equalled one-third of the purchase-money. Yet, perhaps, the uncertainty of the cost of conveyance exerts a more powerful influence in the limitation of the number of agricultural landowners. The charge is unduly magnified to the prejudice of the small capitalist. An example of this occurred within my own knowledge the other day. Solicitors now permit themselves to charge by a percentage for the costs of a mortgage, and an owner of land valued at £7000, anxious for certainty, agreed to pay 2 per cent., or £140. The lawyer told me the title was so simple that he could not, if he had made out a bill, have charged more than £40; so that this unfortunate person needlessly paid £100, merely from fear of the uncertainty of the amount of law charges. It is not necessary to explain how even more strongly the same motives would operate upon the man whose entire property consisted of land valued at £200 or £300. I do not hesitate to express a confident opinion that the soil of England, speaking of the country generally, is reduced in selling value to the extent of from two to four years' purchase by the incubus of this system of conveyancing."

The grave evil resulting from encumbered entailed estates is shown in its bearings both upon farmers and labourers, the first being necessarily thwarted in their endeavours at improvement, and the second degraded and demoralized by insufficient house accommodation. Regarding the labouring population Mr. Arnold says:—

"I wish carefully to avoid invidious dealing with any class: the fault is in the system rather than in the men. Disgraceful and immoral overcrowding has been the result of the nominal owner's indisposition or inability to build new cottages, and hundreds of parishes will furnish such a scene as I will briefly describe from official records. In the thatch-covered roof of a single-roomed cottage—a loft 10 feet square—three beds contained ten people; there were no curtains or divisions of any kind; one bed held the father, mother, and infant son; the centre bed was occupied by three daughters, of whom two were upwards of 20 years of age; and in the third bed lay the four sons, aged respectively 17, 15, 14, and 10. Take 'S. G. O.'s' testimony as to cottage beds in a room of 13 feet square. 'On the first lay the mother, a widow, dying of consumption; on the second, two unmarried daughters 18 and 12 years of age; on the third, a young married couple, whom I myself had married two days before.' Looking on these things, can we wonder that the English peasantry is the most immoral in the world? The statistics on this point are shocking, yet they conceal the whole truth, because our population is so largely manufacturing, and these marry and have generally excellent cottages. I blush to record the evidence of an English clergyman, who said:—'I never recollect an instance of my having married a woman who was not either pregnant at the time of her marriage, or had had one or more children before her marriage.' I lay this frightful immorality, which every country clergyman can confirm, to the charge of the system of entails, which reduces the landowner to the position of a tenant, and, not unfrequently, of a helpless tenant. And as with the peasantry of this kingdom, so it is with the farmers. In many cases, the estate is mortgaged to the fullest possible extent, and the nominal owner cannot obtain the means of draining the land and improving the homestead."

As to tenants, he continues—

"Often have I seen poor thrifty tenants imperfectly doing the work of draining by filling trenches with stones or bushes. Though the nominal owner has under various statutes a power of borrowing on the estate, why should he in this way diminish his income—from which alone he can provide something for his younger children—to improve the property of his eldest son? Before the passing of Mr. Locke King's Act, if he had saved a little money, this would have been liable for the payment of the mortgage-debt in the event of his death, in spite of any testament by which he sought to bequeath it to his otherwise penniless daughters. But, then, the tenant may have money? Yes, he may; though more often he has scarcely half enough for the most efficient cultivation of the soil. And if he execute the works of improvement he will want some consideration. He will demand a long lease at the old rent, or he will ask a deduction from his rent, to repay, in so many years, the cost of the permanent improvements; and neither of these things is the nominal owner disposed to grant. If landowners could be compelled to grant leases on equitable conditions, and for a sufficient term of years, then the evils consequent upon the system of entails would be mitigated. But they dislike leases; and if ever they do contemplate such an instrument, it is often as full of vexatious limitations and restrictions as the deeds by which they hold the nominal ownership of the land. The signal and peculiar misfortune of agricultural England is that for the most part it is 'no man's land'—it is held in perpetual mortmain—the landlord is a life-tenant, and the farmer a dependent. There are exceptions; I record most notable words to the contrary with peculiar pleasure. The present Lord Derby said, in 1864:—'I think every good tenant, who is expected to stay permanently on the farm he holds, is entitled to ask for a lease from the proprietor. It is a very simple alternative; if a man is not fit to settle on an estate with a lease, he is not fit to settle without one; if he cannot be trusted with a lease, he cannot be trusted with the land. . . . I say this—and in what I am saying I am rather, in my own mind, addressing landlords than tenants—I say, if a tenant is to be expected to lay out capital on his farm, it implies no distrust of the landlord—it is simply an ordinary and proper business precaution that he should insist on having some lease. . . . I believe that these two things—one, the making the giving of a lease a general rule, and the other, having leases drawn more simply than as a rule they are at present—would go very far to settle that question of land-ownership of which we have heard something of late.'"

Further remarks follow upon the evils attendant upon the law of "settlement," in which the author shows how energy on the part of the nominal owners is thereby stultified; and also what a gigantic field there is for the investment of capital, could the land only be released from these legal trammels. Finally,

"In order to establish free trade in land—of which in these preliminary remarks I have endeavoured to establish the need—I shall suggest legislation directed to the following points:—

"1. The devolution of real property in cases of intestacy in the same manner which the law directs in regard to personal property.

"2. The abolition of copyhold and customary tenures.

"3. The establishment of a Landed Estates Court, for the disposal of encumbered settled property.

"4. A completion of the Ordnance survey of the United Kingdom upon a sufficient scale.

"5. A system of registration of title, which shall be compulsory upon the sale of property, the fees upon registration—sufficient at least to defray all official expenses—being a percentage on the purchase-money; the same percentage for all sums. A certificate of title would be given free of all costs in respect of any freehold lands, of which the reputed owner could prove undisturbed possession for 30 years. Any title could be registered in the Land Registry Office upon evidence of title for 30 years; the fees being the same as in case of sale, when the registration would be compulsory.

"6. That, preserving intact the power of owners of land to bequeath it undivided or in shares, no gift, or bequest or settlement of life estate in land, nor any trust establishing such an estate, should hereafter be lawful; the exceptions being in the case of trusts for the widow or the infant children (until they attain majority) of the testator, or for the benefit of a child born within due time after the death of the testator.

"In this work I would ask, and I expect to obtain, the co-operation of the landowners. They are most largely interested in promoting this reform. By the abolition of the law of primogeniture—by which I mean the gift by the State to the eldest son of all the real property in cases of intestacy—when the State ceased to inculcate primogeniture, parents would gain that proper authority which they never possess over the 'heir.' This scheme would leave intact their power to bestow their possessions in the customary manner, but in that important national as well as family work—the training of the masters of great property—the law would have put into the hands of parents a power for which those who are most sensible of their responsibilities would surely be grateful. Insolvent landowners would be relieved of the millstone about their necks—restored to a natural position; not seeming rich and being unutterably poor. They would be real owners of their property. A large proportion of the 30,000 families who mainly possess the agricultural land of the country could give, without trouble or expense, satisfactory evidence of acts of ownership for 30 years, and they might then burn those mouldy parchments, each reference to which at present costs £100, or, much better, preserve them as curiosities and part of the family history. The registration of their property would supply an indefeasible title in the place of these cumbrous muniments, and would give an increased value to their land. When registration became general, as it would by this plan, and being made compulsory on sale, we should see estates advertised for sale as 'registered' land, and for such the price would be higher than for unregistered land, probably by two to four years' purchase upon all but the most extensive or costly properties."

THE WHEAT CROP OF 1871.

A VERY severe winter, a cold spring, and a great excess of rain in June and July are not conditions of season favourable for an abundant crop of Wheat. In the "Meteorological Journal" for January last Mr. Glaisher states that such a period of cold weather as occurred between December 21, 1870, and January 13, 1871, has only been exceeded twice during the previous 27 years. It unfortunately happened, too, that during a considerable portion of the period of intense cold comparatively little snow fell; while, of that which did fall, much was swept into the furrows, hollows, and hedges by the high east winds which prevailed. In many fields the Wheat plant, thus deprived of the protection of the snow, was either killed or very much injured. In some of my fields the injury was strikingly apparent on the side of the lands sloping towards the north and east. Tooke, in his "History of Prices," mentions the same thing as occurring in other severe winters. A cold spring and summer frequently follow a severe winter. The mean temperatures of May, June, and July were below the average this year, and June and July were both very wet months. At Rothamsted the rainfall amounted to 3.86 inches in June, and to 4 inches in July, giving a total of 7.86 inches for the two months, which is 3 inches more than the total which fell during those months in the three preceding years taken together. Heavy storms of wind and rain occurred in July, beating down the crop, and twisting it about in all directions. The reaping machine has been useless on much of the land on which it would otherwise have been employed, and hand labour has been unusually scarce. The brilliant weather which prevailed throughout the month of August has, however, been of immense service in drying the soil, drying and ripening the crop, and arresting blight and mildew. Although coming too late for the production of a full crop, the favourable change has enabled farmers generally to secure what there was in good condition.

The following Table shows the produce of Wheat by different manures in 1871, obtained in a field which has now grown Wheat for 28 years in succession. It also gives the produce on the same plots in each of the eight preceding years, there having been no change in the condition of the different plots as to manure during the last 20 years :—

BUSHELS OF DRESSED CORN PER ACRE.

Harvests.	Without Manure, Plot 3.	Farmyard Manure, Plot 2.	Artificial Manure.			Means of Plots, 7, 8, and 9.	Means of Plots, 3, 2, and 7, 8 and 9.
			Plot 7.	Plot 8.	Plot 9.		
1863 ..	17¼	44	53⅝	55⅝	55⅓	54⅞	38¾
1864 ..	16½	40	45¾	49⅞	51	49	35⅛
1865 ..	13¼	37⅛	40¼	43⅝	44	42⅝	31
1866 ..	12⅛	32⅜	30	32⅛	32⅓	31½	25½
1867 ..	8⅞	27⅛	22¼	30½	29⅝	27½	21¼
1868 ..	16⅝	41¾	39⅞	46½	47¾	44¾	34⅜
1869 ..	14¼	38¼	28½	34¾	39	34⅛	28⅞
1870 .	15	36½	40½	45¼	45½	43¾	31¾
1871 ..	9¼	39	22¼	27⅝	34⅜	28⅛	*25½
Aver. of 20 years, 1852 —1871 ..	14⅝	35⅞	35¼	38⅔	36⅞	36¾	†29⅛

WEIGHT PER BUSHEL OF DRESSED CORN (LB.).

Harvests.	Without Manure, Plot 3.	Farmyard Manure, Plot 2.	Plot 7.	Plot 8.	Plot 9.	Means of Plots, 7, 8, and 9.	Means of Plots, 3, 2, and 7, 8 and 9.
1863 ..	62.7	63.1	62.5	62.3	62.1	62.3	62.7
1864 ..	62.0	62.5	63.1	63.5	62.6	63.1	62.5
1865 ..	60.6	61.5	61.6	61.4	61.1	61.4	61.2
1866 ..	61.3	61.7	61 0	60.1	60 6	60 6	61.2
1867 ..	56.1	61.4	61.0	60.7	59.9	60 5	59.4
1868 ..	61 0	61 6	61.1	62.0	61.1	61.4	61.3
1869 ..	56.1	56.9	57.4	57.2	57.1	67 2	56.8
1870 ..	61.7	63 4	63.3	63.7	62.7	63.2	62 8
1871 ..	54.8	60.0	56.6	57.7	58.6	57.6	57.5
Aver. of 20 years, 1852 —1871	57 6	60 0	59.3	59.0	58.4	58.9	58.8

* Equal 24 bush., at 61 lb. per bush. † Equal 28 bush., at 61 lb.

It is seen that, in 1871, the produce by farmyard manure is considerably above, and that without manure, or from artificial manures, much below the average over 20 years under the same conditions as to manure. The characters of the season appear to have a far more marked influence, both for good and for evil, on the crops grown by artificial than on those grown by ordinary manure. Plot 2, with farmyard manure, and plot 7, with artificial manure, give nearly the same average produce over 20 years. But, while the difference between the highest and lowest produce obtained over that period is with farmyard manure only 25 bush., it is with the artificial manure 31½ bush.; and, taking only the nine years referred to in the Table, the difference is with farmyard manure only 16½ bush., and with the artificial manure 31½ bush.

Taking, as in former years, the mean of the produce without manure, of that by farmyard manure, and of the three artificial manures taken as one, we get an average produce for 1871 of 25½ bush. This is more than 6 bush. less than last year, and nearly 4 bush. less than the average of 20 years. As shown in the lower part of the Table, the average weight per bushel fluctuates very much from year to year. In order, therefore, to make the comparison more correct, it is necessary to assume a uniform weight per bushel. Adopting 61 lb. per bush. as the standard, the 25½ bush. at 57½ lb. per bush. will be reduced to 24 bush. of 61 lb. This is 4 bush. below the average produce of the last 20 years' calculated in the same way; and the deficiency is equal to rather more than 14 per cent.

Before accepting the above result as indicating the probable average yield of the crop of 1871 throughout the United Kingdom, it will be well to take into consideration the amount of produce obtained in some cases of ordinary cultivation, and to compare them with the results obtained somewhat similarly in former years. The best portion of a field which had been summer-fallowed, and folded with sheep, has given 37¼ bush. per acre, and another 33¼ bush. Again, during the last two years, a number of well-known varieties of Wheat have been grown at Rothamsted, the field and manure selected each year being such as it is considered should grow the fullest crop of the season. The following are the results obtained during the last three years with six of the varieties in question :—

BUSHELS OF DRESSED CORN, PER ACRE.

Harvests.	No. 1. Red Wonder	No. 2. Old Red Lammas	No. 3. Bristol Red.	No. 4. Red Nursery	No. 5. Woolly-Ear White.	No. 6. White Chiddam.	Average.
1869	54¾	48⅛	54¾	49¼	52⅜	49⅝	51½
1870	51	48⅜	50	45	47¾	45⅝	48
1871	31¼	31⅛	29⅜	34⅛	31¼	26⅞	30⅝

WEIGHT PER BUSHEL OF DRESSED CORN (LB.).

Harvests.	No. 1. Red Wonder	No. 2. Old Red Lammas	No. 3. Bristol Red.	No. 4. Red Nursery	No. 5. Woolly-Ear White.	No. 6. White Chiddam.	Average.
1869	60½	63	61	65	61½	60½	61⅞
1870	64¾	65¾	65¼	66⅞	64⅞	66⅜	65⅝
1871	59	62	60⅞	63	61⅛	62¼	61⅜

The deficiency of the produce of 1871, compared with that of the two preceding years, is, upon the whole, considerably greater in these cases than in those in which Wheat has been grown for so many years in succession on the same land. In the latter the crops stood up comparatively well against the storms of wind and rain in July, while every one of the 20 varieties grown together in an adjoining field was more or less laid, and some of them very much so.

In my letter on the Wheat crop of 1870, published in your journal of August 26 last year, I estimated the average produce of the United Kingdom at 30 bush. per acre, and that it would require an importation of rather more than 7½ million quarters to supply an average of 5½ bush. of Wheat per head of the population. The actual quantity of imports, less exports, from September 1, 1870, to August, 31, 1871, is, according to the returns, a little over 8,000,000 qr. My estimate was founded upon the assumption that the average population of the United Kingdom requiring to be fed would amount to only 31,000,000, whereas the recent census returns show that this figure was probably about half a million too low. Again, I took the number of acres under Wheat in 1870 to be somewhat less than in 1869, but equal to that in 1868—namely, 3,937,275 acres; but according to the agricultural statistics since published, this estimate of acreage for 1870 was too high by 163,612 acres, the actual number returned being 3,773,663. Adopting for the harvest year, September 1, 1870, to August 31, 1871, the increased number of the population and the reduced area thus indicated, the amount of Wheat required to be imported for the supply of the period would be rather over 8½ million quarters.

Calculated according to the census returns of 1871, the average number to be fed in the British Islands during the next 12 months will be 31,843,970; and, assuming the average consumption to be 5½ bush. per head, the quantity of Wheat required will be little short of 22 million qr. Taking the home produce at 24 bush. per acre (of 61 lb. per bush.), and the area under Wheat to be the same as returned for 1870—namely, 3,773,663 acres—the gross produce of the United Kingdom will amount to about 11½ million qr. Deducting from this 2¼ bush. per acre for seed, we have left for consumption as food about 10¼ million qr., leaving a requirement of over 11½ million qr. to be supplied from foreign sources. How far this estimate is well founded time will show. It may be that the Wheat crop has suffered more in this than in the average of districts; but there can be little doubt that, at any rate, in many districts the yield will be below the estimate formed of it, and that disappointment will follow the test of threshing. There are several circumstances pointing to a large consumption of bread during the coming harvest year. Meat is exceedingly dear; labour is in great demand, and full wages are paid. The Potato disease has appeared in various districts, and, although it is too early to form any estimate of its ravages, it is certain that the crop will not be so plentiful nor so cheap as it was during the past year. The information at present at command leaves no reason to fear that there will be any deficiency of foreign corn to supply our wants. But those wants will undoubtedly be large; and as France will require considerable quantities to supplement her own deficient crop, it is probable that the price of Wheat will advance considerably before the spring of next year. In conclusion, I may remark that although my Wheat crop is so deficient, both Barley and Oats are, on the same farm, unusually abundant. *J. B. Lawes, Rothamsted, Herts, September* 2 (*in the* "*Times*").

UNCULTIVATED PLANTS.

THE question of utilising our railway banks and waste spots of land by the growth of plants requiring little or no care in their cultivation, which might be made available for paper materials, has been from time to time advocated and discussed without any satisfactory result being arrived at. Considering the great demand for paper-making substances, it appears to us the price they would command would quite compensate for the small outlay necessary for their production on comparatively worthless sites. There are many also that might be made to yield returns in more ways than one, for, besides materials for paper-making, some of the produce might be utilised for the manufacture of brooms. Nearly all our broom materials at present are brought from the Continent or other foreign countries, and realise such prices as pay for their production and freight; the stems of Sorghum vulgare, and other species of Millet, which are largely imported for the manufacture of carpet-brooms, may be instanced as among the most important. These Millets are cultivated all over the South of Europe for the sake of their seeds, which form an important food crop, not only for the use of man, but also for horses, cattle, poultry, &c. The flour is very white, and makes excellent bread. The cultivation of S. vulgare has been more than once attempted in this country as a grain crop, but the climate has been found too cold or damp for the seeds to ripen properly, so as to prove a remunerative crop, and consequently its growth has not been persevered in. As a cereal crop, cultivated only for its seed, experience, then, has shown it to be unsuited; but we do not recollect whether the market value of the stalks, after the removal of the grain, has ever been taken into consideration, either as a paper or a broom material.

Another well-known plant, having a wide distribution over Central and Southern Europe and temperate Asia, is the Gold of Pleasure (Camelina sativa). Though it is often found growing with corn and Flax in this country and in Ireland, it is supposed not to be a native, nor even capable of assuming the title of a naturalised plant, but is no doubt largely introduced with foreign seeds. The plant is an annual, about 2 feet high, with a branching stem and lance-shaped leaves. It has long loose racemes of yellow flowers, which are succeeded by small fruits or pods about a quarter inch long, and containing a quantity of small seeds. In many parts of Continental Europe the plant is even cultivated for the sake of the oil which is expressed from the seeds, and which is used for a variety of domestic purposes. It is of a clear yellow colour, and has a smell somewhat similar to linseed oil. It is sometimes used for lamps, and is said to burn slower than olive oil. Its chief consumption is by soap makers. The cake or "must" left after the expression of the oil is used to feed cattle; but though it contains a great deal of nutritious matter, its acrid and pungent properties cause it to be more or less dangerous, and consequently not much sought after. Birds, however, are very fond of the seeds, readily pecking them out of the fields, and so are also geese and other poultry, who readily fatten on them. The plant has been grown as green fodder for sheep, and if sown early may be so fed off, and then allowed to run to seed. In the southern States of North America the plant is cultivated, and highly valued by agriculturists. In some parts of the Continent where its cultivation has been introduced, the seed is sown either in rows about a foot apart or else broadcast. This is done in March or April; during its growth it needs little attention but weeding. The seeds ripen about July, and the crop is harvested either by pulling or mowing. It is estimated that from four to six pounds of seed is required to sow an acre of land, and this yields from 18 to 24 bush. The stems contain a large proportion of fibre, and are commonly used in the districts where cultivated for making brooms.

Another cruciferous plant is the well-known garden Cress (Lepidium sativum), which, though not a native of this country, has been cultivated since 1548. The plant is too well known to need any description. With us its only use is for salads or for the purpose of garnishing dishes, but in Russia the branching stems are collected after the seeds have ripened, and are made into excellent brooms. At one time the Dittander, or Poor Man's Pepper (Lepidium latifolium), a plant common on many parts of our coast, was cultivated in cottage gardens as a culinary vegetable, but it is now seldom seen. The much-branched stem of this, like those of the garden Cress, might, however, be made useful for brooms or for paper-making, as might, also, those of L. draba.

The wild Mignonette (Reseda luteola) is a common plant on waste places, more especially on clay or chalky soils. It has been used from very early times for producing a yellow dye, which is prepared by making a decoction of the whole plant. At one time it was largely used by dyers and paperstainers, and it is said that the colour called Dutch pink is still prepared from it. It is a plant that grows without any care or attention, and besides the colouring matter yielded by it, a quantity of fibre is contained in the stems, which we should think might be made available both for brooms and paper-making, though we are not aware of their ever having been tried.

Amongst leguminous plants the Broom (Cytisus scoparius) deserves a first place. It is a well-known shrubby plant, usually from 2 to 5 or 6 feet high, and found growing on heaths and commons. The plant has been used in medicine as a diuretic, and had at one time a place in our Materia Medica. It was given in the form of a decoction made from the tops of the twigs, or a tincture prepared from the seeds. In days long gone by, before the introduction of Hops, Broom tops were used to impart a better flavour to beer, and even now it is said they are sometimes put in ale to increase its apparent strength. The flower-buds in a very young state are occasionally gathered in country places and pickled as capers, and the ripe seeds have been used as a substitute for Coffee. Besides these applications the stem contains a quantity of excellent fibre, which is easily extracted after maceration. The twigs are used in many parts of the country for making brooms and baskets, and they have been before advocated for, if not actually applied to, the manufacture of paper; and as they contain a quantity of tannin, they might even be used, if other materials failed, for tanning leather. The plant is tolerably hardy, but sometimes suffers by very severe frosts.

Amongst other common fibrous plants, we may may mention the Nettle (Urtica dioica), and Hop (Humulus lupulus). The first of these, though so exceedingly common, and so repulsive to us on account of its stinging properties, might be made a very useful plant. In many parts of England young Nettles are collected, boiled, and eaten by the peasantry. Though cattle refuse to eat the full-grown plants, they will feed upon them when they are young, and do not object to them when dried and mixed with hay, showing that it is the poisonous matter of the sting which alone prevents their more general use. Though Nettles might be made use of in various ways, it is more particularly as fibre-yielding plants that we now wish to draw attention to them. It has been proved that they will produce 5 per cent. of a very beautiful and easily bleached fibre. The order to which they belong is essentially a fibrous one, the China Grass (Bœhmeria nivea), and some of the Indian species of Urtica, being noted for the large quantity and very excellent quality of the fibres contained in their stems. Nettle fibre has been used in England and Scotland as a substitute for Flax; and an old writer quaintly remarks, "In Scotland I have eaten Nettles, I have slept in Nettle sheets, and I have dined off a Nettle table-cloth. The young and tender Nettle is an excellent pot-herb; the stalks of the old Nettles are as good as Flax for making cloth. I have heard my mother say that she thought Nettle cloth more durable than any other species of linen." In France and Germany paper of the finest quality has been made from Nettles. One objection that has been urged against their growth in this country for commercial purposes is, that land suitable or their cultivation might be sown with Flax, which would yield a more profitable return. This may be true, but as Nettles will grow without cultivation, and do grow in immense quantities on almost every spot of uncultivated ground, why are they not collected and made use of? The Hop is another plant abounding in strong fibre, which may be extracted by macerating the stems in water; when properly prepared the fibre is equal in appearance to Hemp, though it is not so strong. In Sweden it is used for weaving into a coarse kind of cloth. Hop-bines have been used, both by themselves and conjointly with other materials, in the manufacture of paper, and, considering the quantity annually produced under cultivation, it seems high time something was done towards their more general utilisation. Amongst oil-yielding plants, which have been recommended for cultivation in this country, is the Madia sativa, a Composite plant, native of Chili and North California, where it is also cultivated. It is an annual, and grows from 1 to 2 feet high. "From its valuable property of enduring winter and spring frosts, the Madia may either be sown in autumn or spring, the ground being previously well pulverised. Four pounds of seed will suffice for sowing an acre in drills, and about 6 lb. for the same space broadcast. The young plants should be thinned out, so as to stand at least 4 or 5 inches apart. The crops should be reaped when the earlier seeds acquire a grey colour, and disposed in handfuls to facilitate drying; after which it should be immediately threshed out, as if stacked in the haulm the viscid matter which adheres to the foliage would cause fermentation. The seeds should afterwards be washed in warm water, to clean them of the same viscid or glutinous and strong smelling substance." The oil is said to be of a very fine kind, superior even to olive oil.

The Ling (Calluna vulgaris), the Heath (Erica tetralix and E. cinerea), the Marsh Mallow (Althæa officinalis), and many other plants of easy or certain growth, might be mentioned as illustrating the importance of utilising waste land and plants of spontaneous growth. But we will content ourselves by quoting a paragraph on the use of Thistles which, though it appeared in an Australian paper some few years back, is quite as appropriate at the present time.

"It is so customary to think and speak of the Thistle only as a nuisance to be extirpated, that the settler is slow to believe this much-despised plant can be of any value. It is a fact, however, worth noting, that horses and cattle are exceedingly fond of the Thistle. It is true they will not crop it as it grows from the ground; but this is simply because the sharp spines, or prickles, with which the plant is studded injure the animal s lips and mouth, and prevent him from chewing it. But let the Thistles be cut down or rooted up, and allowed to lie exposed for a day or two, the spines will then droop, and become quite soft, and in this state horses or cattle will prefer the Thistle to almost any kind of green food. Within these few days past, we have seen horses, rejecting rich grass-feed, indulge themselves on Thistles which had been rooted up a few days before, and had become soft, and there was no mistaking the relish with which the animals were feeding. A gentleman in this neighbourhood, who had noticed the fondness of the horse for the Thistle in this state, and observed the fattening qualities of the plant, is accustomed to have a quantity growing in his paddock, which he cuts when young, for use. Both horses and cattle, with an exercise of instinct which almost amounts to reasoning, have been known to trample on the Thistle when growing in the ground, for the purpose of crushing the spines, after which they will eagerly eat the plant. It may be observed that the Thistle which abounds in these districts is of the variety known as the Pampas Thistle, and was originally introduced from South America, the seeds having been probably conveyed entangled in the manes of imported horses. The plant is of a very succulent nature, and since it seems almost impossible to extirpate it, it would be good policy, at all events, to turn it to some useful account, as may easily be done by any one who will be at the trouble to try the experiment."

J. R. J.

AGRICULTURE AND THE LAND QUESTION.

[THE following admirable speech was made last Tuesday at the annual meeting of the Manchester and Liverpool Agricultural Society, which has been held during the past week. It is 12 years since this Society has had a show in Liverpool. The entries number 4400, being enormously in excess of previous shows. The amount of prizes is also very large, being £3000, the amount subscribed on the former occasion having been but £696. The entries of implements, machinery, and miscellaneous articles number 1574. There are 200 entries of cattle, all the principal breeds being represented. The number of horses is exceedingly large, being 546, the roadsters and hunters numbering about 150. In this department considerable interest is created by a special prize of £50 for the best hunter. The entries of sheep number about 160, the largest representation being among the Shropshire Southdowns. The Leicesters and Southdowns are also well represented. The show of pigs is proportionately large.]

The Earl of DERBY, in proposing the toast of the evening, said,—I rise to propose "Prosperity to the Manchester and Liverpool Agricultural Society," and fortunately the figures in my hand enable me to assure you that that prosperity is not merely a wish in your mind or in mine, but an accomplished fact. The society has existed now in its present form for nearly a quarter of a century, and its history is one of steady rapid growth. In 1850 the number of persons who paid for admission to the showyard was 3300, in 1860 it was over 20,000, and three years ago at Manchester it was 33,000, or just tenfold the number of 17 years before. The entries of live stock, produce, and of implements stand higher than in any former year, and in implements especially the increase has been enormous. In that department the entries at the present meeting are 2600, which, I am told, is 1600 more than at any previous show. We have 750 members, of whom 150 were admitted within the last 12 months. We have £1000 laid by for a rainy day; we have an income which was last year over £3000, not including the balance from the year before. Our yearly subscribers are 20 per cent. more in number than they were in 1870, and an extra fund of more than £2000 has been raised by the local committee in aid of this exhibition. I think you will want no further proof that the society is doing its work and holding its own. Nor is it necessary that I should stop to argue the question as to the usefulness of societies of this kind. Experience has decided that matter for us. There is hardly a parish in England which does not help to support one, and in these parts, so far from their falling off, the tendency is rather to multiply them to excess. Their object is, in one word, to show the farmer how to make the most of his land.

Now, if there is one thing more certain than another, it is this, that where farming has to be applied to a limited area like that of England, where an acre costs more than a square mile in some countries, it can only be made to answer. Foreign competition, and home competition, too, can only be met by the combination of chemical and mechanical appliances, requiring some capital to attain them and some knowledge to manage them. Of course a man may go on after the fashion of the Irish cottiers, scratching the earth for a bare subsistence—but that is not farming; and I am only repeating an opinion which I have expressed before, and which I hold very strongly when I say that the cottier, the peasant cultivator—honest and industrious and frugal as he may be—has just as much chance of holding his own against the combination of capital and science as bows and arrows have of superseding breech-loading rifles, or hand-loom weaving of driving the power loom out of the field. And do not let any one imagine that this question of skilled or unskilled farming is a small one. It may very well be that the enormous wealth due to manufactures and commerce, the wealth which is represented by 200 millions yearly of British exports, the wealth for which we lay the whole world under contribution, should make us comparatively indifferent to what we get out of the soil; and, apart from that, there is a claim which may be put forward, and which, within fair limits, is a very reasonable claim, for the preservation of a moderate proportion of our little island for purposes of beauty and enjoyment, whether to the owners or to the public. High farming is apt not to be picturesque, and some sacrifices of profit may reasonably be made in the interest of that kind of taste which we all desire to see more and more extended. But, after setting apart all that can be required for that purpose on a liberal allowance, the fact still remains that we do not get, as yet, out of English earth one-half of what we probably might with advantage if all our present resources were brought to bear on the soil. Mr. Mechi, who, as most of you know, is rather enthusiastic in this matter, puts the estimate much higher, but I don't want to overstate my case. No doubt there has been, and there is great improvement.

We hear talk now and then about the reclamation of waste lands, and it is endeavoured to raise a cry on that subject. Why, ever since I can remember, we have been reclaiming our waste lands in Lancashire, without any fuss or noise about it; and in half a century we have pretty well succeeded in changing the face of the country: and if any one complains that this process of improvement does not go on fast enough, they must remember that in the nature of the case where tenant-farmers are concerned it must be a gradual one. There are other besides economical considerations which affect us. We may wish that all our tenants had capital and science and energy, but I think that very few landlords would choose to lay it down as a principle that any one not possessing these qualifications should be turned off from a farm on which he and his fathers before him may have lived. We want to move on, but we want also, if possible, to move on together—to live and let live—not for a few to make fortunes and the rest go to the dogs; and I will add that if this work of agricultural improvement is to be carried on as it should be, it is the landlord, quite as much as the farmer, who must put his shoulder to the wheel. It may be said that he has not very often the capital required. Well, I believe that what is wanted from the landlord is much less that he should put a large amount of capital of his own on to the soil—though, of course, that is desirable—than that he should offer no obstacle to its being put on by the tenant. Security is the first requisite, and I hold that any tenant good enough to be kept permanently on the land ought to have a lease, if he wants one. I say "kept permanently," because there are, of course, cases where tenants are retained from kindly feelings, though not very fit to do justice to their farms, and in such cases the landlord may reasonably desire some check upon mismanagement. As to conditions of letting, they would vary in different places, but I have not altered the opinion which I expressed some years ago, that, as a rule, they ought to be few and simple. If a man is not able or willing to do the work, he is in the wrong place, and would be better away, though I admit that in practice you cannot always act upon that view. If he is fit for his business, he will probably do it best in his own way.

Then there is that ticklish question of game—a word I am almost afraid of uttering on such an occasion, though I do not think I shall have anything to say upon it that can provoke controversy. I have always thought it a question which, with moderation and good sense on both sides, ought not to give trouble. Nobody can doubt that there is a great deal of over-preserving in England, and that in some places it has been carried so far as to amount to a public nuisance; and when that is the case I hold that what is in fault is, not the love of sport, but a love of ostentation and display, and it can hardly assume a more objectionable shape. We are told that there is to be some legislation on the subject. Now, personally, I am not a very keen sportsman, and I shall acquiesce heartily in whatever Parliament may decide; but I would just point out that it is possible for you to go so far as to defeat your own object. The absolute sweeping away of the power of keeping game on farms, however brought about, would, of course, imply, under their changed conditions, a general revaluation for rents, and by that operation the tenant would certainly not be a gainer; while in other cases it might probably lead to this,—the rich men, fond of their sport, and willing to make sacrifices in order to keep it, would take more and more of their estates into their own hands in order to enjoy their amusement undisturbed. That would not be an arrangement, I think, for the benefit of any party. One thing, I think, the tenant really has in many cases to complain of, and that is the difficulty of making a fair bargain with his landlord where game is concerned; because, not knowing what the quantity of it will be, he cannot form an estimate beforehand as to the probability of loss. If that can be remedied—and I do not see why it should not be—I cannot see that there is any injustice or grievance remaining so far as that is concerned.

I ought to apologise for the length at which I am detaining you, but there is a far wider and graver question which many have for years past been discussing at public meetings, and which I do not like to leave entirely untouched—I mean the question of ownership of the soil. I have but little to trouble you with in regard to it, and I shall carefully avoid touching on anything that can be considered political ground. What I most wish to point out is the curious uncertainty as to the facts of the case in which we are, and the expediency of doing something to have that uncertainty removed. I have seen it repeated again and again, that the whole soil of these islands is in the hands of less than 30,000 persons, but it is perfectly well known to every one much interested in such matters that that assertion rests on a mere mistake—on the misreading of a statement made in the Census of 1861. In that Census only about 30,000 persons returned themselves under the head of landowners, the great majority who hold land having entered themselves, as they were free to do, under other designations; and the best proof of the fallacy of the figures is this,—that 15,000 out of the whole so returned were women. Now, we know that half the land is not in female hands, and that probably not one-tenth of our landowners, if so many, are women. I won't set guess against guess, but if I were compelled to do so I should say you might multiply the figure I have given of 30,000 by ten at least, and still be below the mark. Another fallacy constantly repeated, and which I can with similar confidence contradict, even from my own limited experience, is that it is a very difficult matter for any one to buy a landed estate, that land is so locked up that it cannot be brought into the market. Now, inasmuch as people having estates to sell are fond of pressing them on the notice of those whom they suppose may wish to buy, I have some personal knowledge of that matter, and I affirm with confidence that there is at this moment hardly a county in England where a man looking for a landed investment cannot find what he wants. If it were otherwise, we should have plenty of complaints from the capitalists of these parts; but the fact is, I believe, that at the present time there are, of the two, more sellers than buyers. We live in days of change. There are a great many people who prefer to have their property where they can, at a few hours' notice, move it to any part of the world, and that is a feeling more likely to increase than diminish. It may be the fact—I believe it is—that a man who wants only a few acres does not always find it easy to buy them, but if there is any real demand for small freeholds, surely it would be worth the while of speculators to buy up large estates as they come into the market and to sell them again piecemeal. If that is not done, the only reason can be that it does not pay. Then there is another notion afloat—that estates are constantly tending to become fewer in number and bigger in size. That is the point on which no man's observation can be wide enough to enable him to speak with certainty; but I greatly doubt whether the fact is so. Some large estates, no doubt, are growing, but many, alas! break up, and the one process probably balances the other. Near great towns, especially near London, there is certainly, as a rule, more of disruption than of accumulation. My belief is—though I give it only as a thing which seems to me probable, not as a thing proved—that both very great and very small properties are becoming fewer, and those of a middle size more numerous. Poor landowners prefer 10 per cent. in trade to 2 per cent. from land—they sell and go into business; and, on the other hand, there is a limit beyond which most men do not desire to extend their holding of what is essentially an unremunerative investment. But why should we be left on this subject to mere speculation? Is it impossible to get at the facts? Is a Domesday Book more difficult now than in the days of the Conqueror? If what is called the Land Question is to come to the front, as I suppose it will, surely we ought to discuss it with as much positive knowledge as we can bring to bear? I am not insensible—no man who keeps his eyes open can be so—to the value, in a social point of view, of having a numerous body of men concerned in landowning. My contention is only this, that the supply of land in the market fully equals the present demand,

and that the popular theory, that it is so locked up that nobody can buy, rests on no solid foundation.—The noble lord resumed his seat amid great applause.

THE HOP HARVEST.

[We abridge the following Hop reports from the *Maidstone and Kentish Journal* of the 28th ult.]

The reports with which we have been favoured, through the kindness of numerous correspondents, accurately represent the position of the Hop crop. Mid Kent is evidently this season a favoured district, but after carefully analysing the reports, we find that even here an average of not more than 3 to 3½ cwt. per acre is to be calculated upon. Of course the average of the country will not come up to this, as it is well known that in East and West Kent the growth is almost a total failure. Where picking of the Prolifics and early sorts has commenced, we are invariably told that—as they have done with the Wheat crop—growers have been over sanguine, and their estimate of the produce has been much too high. The Rochester district is most unfortunate. In many grounds, we are told, a bin will scarcely be placed; and around Maidstone there are gardens where the cost of picking cannot be recouped to the grower. The late high winds have done much damage, and as the season is getting late, there is a danger of their recurrence. Mould, although it has appeared in several grounds, is, fortunately, not at all general, and the samples, therefore, we may hope, will be bright and marketable.

Ashford.—The past fortnight's fine weather has been very favourable for the growth of the Hops. In the grounds where there was any bine, from 3 to 5 cwt. per acre will be grown.

Boughton Blean, Selling, Chilham, Hernhill, Goodnestone, and Graveney.—In this immediate district the following classification would give an estimate as near the truth as possible under present circumstances—a destructive wind is raging while we are writing. Dividing the acreage into fifths—say 1, 1 cwt. per acre; 2, 2 cwt. per acre; 3, 4 cwt. per acre; 4, 5 cwt. per acre; 5, 8 cwt. per acre; 5-20, say 4 cwt. per acre. A late improvement is now likely to be seriously checked by winds and cold rains, to be followed by mould. The above may be less, but more is very doubtful.

Boughton Monchelsea.—Here and there a small piece will produce 15 cwt. per acre, more 7, many 5, a few 1. The average in the district we mention may be taken at 6 or 7 cwt. per acre, but directly the visitor gets away from this line it is a very sorry affair indeed—from nothing up to 4 cwt.

Brenchley.—The Hops in this immediate locality are about an average of the plantations. Should warm weather continue, the best grounds will grow from 8 to 12 cwt. to the acre.

Canterbury.—The Wincheap grounds (close to this city) are still very bad. Some few have made a little improvement, but others are almost a blank. We should not think they would average 2 cwt. per acre.

The average expectancies in other parishes are as follows:—Capel, not 4 cwt. per acre; Collier Street, 2½ to 5 and 6 cwt.; Cranbrook, a good yield; East Farleigh, a good crop; East Lenham, 2 to 3 cwt. per acre; Eynsford, not 1 cwt. per acre; Frittenden, very light—say 2 or 3 cwt. per acre; Hadlow, about 4 cwt.; Hartfield, a small crop.

Headcorn.—About 5 cwt. per acre.

Hunton.—5 cwt. if the weather continues favourable; should it prove unfavourable it will not realise so much. The quality of the Goldings here will be remarkably fine.

Ifield.—Very short. Some few may grow 2 or 3 cwt. per acre.

Langley.—This parish is expected to yield from 6 to 7 cwt.

Lenham.—Our Hops will, I think, average 4 to 5 cwt. per acre.

Mereworth.—7 cwt. per acre is quite the full quantity, and rather a high set. The plantations are improving a little.

Northiam.—The Hops are going on well, and we expect the growth will be larger than a month ago could have been anticipated.

Otford.—There is an unexpected change for the better in some grounds here. The crop, however, will be very small indeed.

Pembury.—The crop will be generally good, especially where there has been high farming.

Rochester and Hundred of Hoo.—The Hops near Rochester and all through the Hundred of Hoo district are very bad. In many gardens there is a total blight, and they will not have a bin put into them.

Shorne, near Gravesend.—The crop in this district will be exceedingly short.

Speldhurst.—The Hops in the parish promise to yield about 4 cwt. per acre.

Staplehurst, August 28.—The high winds and cold nights are much against the full development of the Hop, which is closing up, and consequently, the crop must be short, even of my last week's report. The gale on Thursday battered most grounds severely, and will very materially affect the colour of samples of the few Hops we shall grow in this neighbourhood.

Teston.—Our prospects are pretty favourable, but the crop will not be so good as in some of the neighbouring parishes.

Tenterden.—Our Hops, where the blight did not stop the heads of the bines, are doing all they can, but, taking the parish as a whole, we shall not produce quite a third of last year's crop.

The Holmesdale Valley, near Sevenoaks. — The Holmesdale Valley will not produce more than a pocket per acre, if it reaches that. The fearful wind now blowing must damage and prevent backward burr, and will seriously bruise the better and forward Hops.

Tonbridge.—The heat of the weather which prevailed from the first up to the middle of this month, combined with the recent rains, have improved the condition of the Hops. Many farmers have hopes of a small crop.

Tudely.—The Hops in this parish rest with two or three of the largest growers, who will grow from 8 to 9 cwt. per acre; the rest of the parish will not grow more than 2 cwt. per acre.

Ticehurst and Neighbourhood, August 27.—In our opinion the quality will be very fine, much better than last year, but as to quantity not one-third shall we average; and if we set it at 5 cwt. per acre, taking a radius of 4 or 5 miles, with Ticehurst as the centre, we shall be putting them at the very top of the tree.

Uckfield.—In some of the best grounds it is estimated that 12 cwt. an acre will be grown, while in others the average is calculated to be about 5 cwt. The plant has improved wonderfully the past few weeks.

Wadhurst.—Prospects are very encouraging, and we shall have a better crop than ever could have been expected. In some places picking is talked of to commence this week.

Wateringbury.—Our estimates of the growth per acre of Hops in the undermentioned parishes is as follows:—Wateringbury, 6½ cwt.; Offham, 3½ cwt.; West Malling, 2½ cwt.; East Malling, 2 cwt.

Whatlington.—In our most favoured grounds we hope to realise 8 cwt. per acre, while others will produce 2 to 3 cwt. per acre. This estimate is, however, subject to favourable weather and other contingencies.

SHORTHORNS IN AMERICA.

[The following extract from Mr. Thornton's "Circular" for July, concludes an interesting series of papers on this subject.]

Shorthorns are not confined to the Southern and Eastern States; they have been imported of late years into California, Washington Territory, and Oregon, extreme Western States, whose shores are washed by the Pacific Ocean; into Colorado in the centre; and into Minnesota and Wisconsin in the North. Col. W. S. King has recently purchased land bordering on two charming lakes near Minneapolis, 1500 miles from New York, where he has erected splendid farm buildings and purchased several of those animals which Mr. Cochrane recently imported from this country. He also bought some fine cattle from Mr. Sheldon and Messrs. Wallcot & Campbell. I went to see this new country and the Shorthorns under the adverse circumstances of food and climate. After leaving Chicago, one of the most wonderful and rising cities on the whole continent, the railway takes a perfectly straight course, and for 200 or 300 miles passes through a fine rolling country, said to be good corn land, and growing prairie grass and a few scrub Oaks; it is as yet comparatively a wilderness, with 5 and 6 feet of good black soil. The Indians had a custom, which in some degree accounts for the absence of timber, of burning a portion of the prairie grass every other year, considering that it improves and sweetens the next year's growth for the buffaloes. Near a river or watercourse, magnificent trees flourish. Col. King's buildings are so arranged that calf boxes are behind each cow stall. They are very lofty, and the hay and corn is stored away in spacious lofts. An enormous vat is also filled with water, and protected against the severe frosts. The cold is very severe here, but being a dry fine climate, it is not so keenly felt, though the thermometer, during my visit, stood at 22° below zero. The cows are turned out every morning; they blow the hoar frost and snow away before it becomes too deep, and graze the scanty grass that is to be found; icicles hang to their nostrils and eyelids, and after an hour or two out, they are put in and well fed. Lady Pigot's celebrated cow *Rosedale* was here as fat and as hale as any; her heifer also, *Rosedale's Duchess* by the 11TH DUKE OF THORNDALE, is very thick and good, though hardly so handsome as her dam, Also Messrs. Mitchell's *Blue Bell*. The prize heifers, *Countess of Yarborough*, *Queen of Diamonds*, *Lady Solway*, *Ruberta*, and Booth's *Lancaster*, with old *Rosedale*, form a group, as they stand in the snow, with a bright sun and brilliantly blue sky, that would be hard to match at home. *Duchess 97th*, in a comfortable box, looked very elegant, but, milking heavily, was thin. Mr. Harvey's *Wild Eyes 26th* has grown into a large good cow, and *Weal Bliss*, *Flower of Warlaby*, and GENERAL NAPIER are fine representatives of the Aylesby herd. Two very good Oxford heifers are also here and breeding; they were purchased as the two best from the Geneva herd previous to Mr. Sheldon giving it up; also 6TH DUKE OF GENEVA, a pure 2-year-old Duke bull of great size and growth. On the broad back of *Constance of Lyndale*, a roan yearling heifer bred from Mr. Fawkes' stock, the hair waves 3 inches long, and OLD SAM (Mr. Crabb's prize bull at the Essex show) seems to have grown and done well in his new home. It has since transpired that Mr. Cochrane has repurchased *Duchess 97th*, the two Oxford heifers, *Wild Eyes 26th*, with 6TH DUKE OF GENEVA, from Col. King, who in the present unopened state of the country prefers to breed from animals of not such extreme value; indeed, great credit is due to him for the spirit and enterprise with which he has invested a large fortune in farm buildings and fine stock, both of horses, Shorthorns, Ayrshires, Lincoln sheep, and pigs, in a country where scarcely a quarter of a century ago the Indian built his wigwam and the buffalo grazed, and where even yet a few hours' ride will convey one without the bounds of civilisation.

Another new herd has been recently started in that district by Mr. Geo. Murray, at Racine, Wisconsin. Most of the animals have been purchased at auction or privately. Among them are many remarkably good animals, which have been extremely well selected as to type and blood. *Louan 21st*, an 8-year-old cow, was bought at Mr. McMillan's sale, Ohio, for about 720 gs.; *6th Louan of Oakland*, a yearling, for 400 gs.; and *Forest Queen*, descended from *Aylesby Lady* by BARON OF WARLABY (7813) for 560 gs. Some very fine Mazurkas are among the number, also an Airdrie Duchess, from Mr. Alexander's and some of Mr. Sheldon's herd. Two Duke bulls, 11TH DUKE OF AIRDRIE, red, and 13TH DUKE OF THORNDALE, roan, both large, fine animals, are the sires. Messrs. Parks, at Waukegan, in the same neighbourhood, are also establishing a herd.

Ontario, or as it was formerly called Western or Upper Canada, more particularly in the neighbourhoods of Brantford and Toronto, has long had fine Shorthorns. The Messrs. Miller of Pickering were among the earliest importers. Mr. George Miller, who emigrated about 1832, took out Galloways, Leicester sheep, white pigs, poultry, and pigeons, and had a good stock, but the Galloways have given way to Shorthorns, chiefly from Mr. Syme's stock of Annan, N.B., the Leicester to the Cotswold, and the white to the black or Berkshire pig. Mr. John Miller made several purchases in this country last year, chiefly from Mr. J. B. Booth, Mr. Currie, and Mr. Marshall. His herd contains many fine animals, especially some of the Atha tribe, descended from Robert Colling's GOLDEN PIPPIN, and of Messrs. Crofton's "Elvira" tribe, the same family as the well-known prize bull EDGAR (19,680). OXFORD MAZURKA, by ROYAL OXFORD from *Mazurka*, Mr. Torr's FAWSLEY CHIEF (26,143), and Mr. G. Bedford's KOSCIUSKO are the bulls in use. The Provincial Agricultural Society endeavour to encourage the importation of stock by giving additional premiums at their shows; three times the amount of the prizes being awarded to bulls and twice the sum to cows if imported 1st-prize animals. At the Toronto show last year there were 188 entries, and Mr. J. Miller won the 1st, 2d, and 3d prizes for cows, the 1st prizes for 4-year-old, 2-year-old, and yearling bulls, and the diploma with FAWSLEY CHIEF for the best bull of any age. Mr. John Bell, of Pickering, has also a good even herd, all bred from Mr. Syme's cow *Jane*; and it is considered in that part of America that calves are best reared by drinking from a pail and giving them gruel of oat and other meals; opinions, however, differ as to this plan. The farming is very fine in this district, and the land well laid out in squares of about 400 acres, the roads running at right angles, those east and west extending a mile and a quarter, and those north and south half a mile. Upwards of 40 tons of Swedes are grown to the acre; Peas and Barley are generally splendid crops, and Indian Corn cut green for fodder will often stand 12 feet high and yield about 36 tons to the acre. It is chiefly peopled by Scotch settlers, who have by their own energy, perseverance, and frugal industry raised themselves to wealth and position. The necessities of the country and want of appliances develope the faculty of invention, and ingenious contrivances for lessening labour may frequently be observed. A simple apparatus at Mr. Cochrane's farm for lifting the heaviest animals by means of a leathern apron and straps attached to a beam and windlass, would be particularly useful on any breeder's establishment. Among the other good herds in Western Canada are those of Mr. F. W. Stone, of Guelph, who has been a large importer both of cattle and sheep for many years, and has greatly improved the stock of his district; the Hon. David Christie, who imported from Mr. Douglas; the Hon. Geo. Brown, Mr. John Snell, Mr. Thomson, and others, but time would not permit me to visit them. Herefords have also been imported into this territory, but experience has shown that the stock of the country assimilates better with the Shorthorn than with the Hereford.

The United States and Canada have been mutually benefited by imported cattle. Before the civil war broke out the Canadians gave great prices at the Southern shows, and encouraged American breeders. During the war prices declined, and breeders in the troubled districts were not only glad to realise at low figures, but many sent their cattle away for safety into the quieter States. When peace was restored the demand for good cattle arose, and a duty of 20 per cent. on the declared value was charged on all animals going from Canada to the States; yet Mr. Cochrane's great importations, in the teeth of this restriction, commenced soon after; and the celebrity of the cattle was so great that the public in great numbers came many miles, during the summer and autumn, to see them

Many drove long distances, brought provisions, and after inspecting the stock, begged hot water and picniced beneath the Plane and Maple trees that encircle the homestead at Hillhurst. Notwithstanding the duty a large trade was done with the Americans, and the high prices given by them have, doubtless, had a great influence during the last three years on prices in this country. This duty was withdrawn during the present spring, and all cattle for breeding purposes are now imported into America free.

In the New England States great attention is paid to the dairy properties of Shorthorns, though the barren nature of much of the soil, and the exhaustion that even that has undergone, renders breeding a difficult and uphill course. Mr. Augustus Whitman, of Fitchburg, Massachusetts, has a large herd of pedigree Shorthorns kept especially for milk. Some are of the "Knightley Rosy" tribe, and others of the "Sockburn" and "Princess" families, which have been much esteemed in the district on account of their dairy properties, though they have become somewhat light fleshed. They are nearly all heavy milkers. 6TH DUKE OF THORNDALE, a fine light roan bull, was here. The food is steamed, and a mixture of chaff and shorts, with corn and oil meals, are given daily with 5 lb. of long hay; it is all carefully weighed before being served out, the quantity of milk given by each cow measured, and every animal is weighed the first of each month. The calves get new milk for three or four weeks, and afterwards porridge of meals and milk. The milk is sent into Boston, and sold at 1½*d.* a quart in summer, and 2½*d.* in winter.

The Herd Book is published by Mr. Lewis F. Allen, of Buffalo, and the 10th volume has just appeared. It is prepared very nearly on the same plan as the English book, but more profusely illustrated. The first volume, with which is given a history of the breed, was brought out, partially through the instigation of Mr. Clay, in 1846, but there was little support on account of the low prices and general depression in agriculture, and the second volume did not appear until nine years afterwards. In 1857, the third volume was issued, in which several errors that had inadvertently crept into the previous volumes were corrected. The volumes during the war were small, and the sixth contains the least number of pedigrees. Since then the trade increased, and the entries were returned so fast that the volumes are now issued almost annually. Vol. ix. is in two parts, and contains over 5000 pedigrees, but, unlike the English book, many of the contributors are not subscribers, and the work is not pecuniarily successful, althought about 4*s.* are charged for each pedigree, and two guineas for the volume. Continuous numbers are given to the bulls, but the English volumes are necessary to thoroughly investigate a pedigree. Breeders in America, like those in this country, are greatly indebted to those who undertake a laborious, tedious work, requiring the utmost vigilance and care.

A stranger, accustomed to the "roast beef of old England," will possibly notice in the States the absence of fat and flavour in the beef, and often it is both lean and tough. There are several causes for this. An Australian, having large herds in New South Wales, remarked that the large droves of cattle which he saw travelling on the roads in the Western States to market were not near so fat as those on the runs in his native country. The natural prairie grasses being somewhat long and coarse, have, probably, not great fattening properties; and the leanness of the buffalo meat, which when young is uncommonly good, in a degree corroborates this. The "quality" or "handle," so greatly considered by our old-established breeders here, is not so closely studied on the other side, where many of the animals are thin handlers. Moreover, the great distances that many cattle travel before they are slaughtered somewhat affects both the quantity and the quality of the meat. Beef and pork are chiefly eaten, and fetch almost the same market value, namely from 7*d.* to 9*d.* per lb., and they are generally under the English price. Mutton is not so much consumed, and Americans when in England frequently remark that our lamb and mutton are fuller of flavour than their own.

Many bulls are now being sold to cross the Texas cattle, which are brought up from that immense State to graze in the better districts of Kansas, whence they are sent off at five to six years old. These cattle are mostly yellow in colour, with black noses and long horns; they are deep in the body but rather narrow, and not large in size; the crops are good, loins broad, and quarters rough and uneven; one bull calf is saved to every 10 heifers, and they are generally marked on the ear, and branded. The best cows weigh about 800 to 1000 lb., and fetch from 1¼*d.* to 2*d.* per lb. live weight, in Chicago market. From their appearance a good thick Shorthorn bull, with fine quality, would make a wonderful improvement among them, and a few of the more enlightened are beginning this plan; if pursued, it will open out a wonderful bull trade among the breeders in the Western States, where two or three good herds, Mr. Pickerell's, Mr. Isles', and others are already established. The railway truck system is not good, and this was borne in forcibly upon me by a ride of several hours in a cattle train in the entire absence of any other conveyance. After travelling about 150 miles, or about every 24 hours, the cattle are unloaded at certain stations, fed, watered, and rested, but they usually lose 100 lb. or more in weight before reaching their destination. A "cattle palace car" has been invented, like the improved trucks recently exhibited at the Highland Society's Dumfries meeting, but as yet neither have come into general use. The stock-yards at Chicago are of immense size and laid out in large square wooden pens, where the cattle are placed untied. Thirteen railway companies have sidings into them. In 1869, 403,000 head of cattle was received, and 5246 was the largest number in one day. Mr. Griffiths publishes an annual report of the live stock trade of Chicago. It is now the great emporium for the packing of beef and pork, and about 2000 pigs are killed and dressed daily, and by a great division of labour, in a very quick time.

The market price of beef generally rules the prices of Shorthorns, which have been very variable in America. From 1833 to 1838, prices were high and colour not so much considered, even whites would sell well, but during the next 10 years they declined, and good heifers could be bought at 12 to 15 gs. each. In 1853 prices rose, and at one of the Kentucky importation sales, Lord Feversham's bull DIAMOND (11,357), sold for 6001 dols. (about 1200 gs.); another bull, CHALLENGER, went for 4850 dols. (about 970 gs.); and the celebrated cow *Mazurka* realised 3050 dols. or about 610 gs. 1857 was a year of commercial disasters; prices fell, and the war breaking out soon afterwards they were as low as in 1850. Since 1867 they have greatly risen, and a young bull, the 11TH DUKE OF GENEVA, has just been sold to two Kentuckian breeders, from the New York Mills herd, for 6000 dols. (1200 gs.) Mr. Cochrane, of Canada, has also paid and received large sums. A fine red bull calf, the produce of *Duchess* 97*th*, for which he gave Capt. Gunter 1000 gs., has been sold to Col. Kingscote, an English breeder, for 800 gs., and two heifer calves, the produce of *Duchesses* 101*st* and 103*d*, for which 2500 gs. were paid, have been sold to the Earl of Dunmore to come back to England for the same sums that the dams cost; with them are also purchased two heifers of the "Oxford" tribe, and two of the "Red Rose" tribe, at equally high prices. Mr. Cheney, of Gaddesby, also imported in 1869, two Duchess heifers and a bull calf for 2500 gs., and has recently completed the purchase of three Oxford heifers from Messrs. Wallcot & Campbell. These prices indicate the demand there is both in England and America for animals of fashionable blood; though they doubtless stimulate and encourage Shorthorn breeding as well as show the abundant wealth and great interest taken in good cattle by some of the leading men in each country, yet they have a tendency by their extreme value to hinder selection and prevent that fine judgment, by which the earlier breeders brought the best tribes to such great excellence. It is likewise thought that the taste of rich Americans is now tending more to country life and farming, as in England, and that consequently, for some time to come, the demand for Shorthorn and other cattle is likely to be great, especially too, as the railway system is bringing into direct communication immense grazing districts in the Western States, and vast tracts of country are coming daily into cultivation.

In these papers, which are at the utmost but a mere sketch, I have set down fairly and honestly, and without prejudice or favour of any knd, such facts as I observed and such information as I gleaned from reliable sources; mis-statements may have unknowingly crept in, and I trust that those who may discover them will acquaint me, that they may be corrected.

And here, in conclusion, let me bear testimony to the warm reception I received, and also express my sincere thanks for the hearty welcome given me by every one whom I met both in the States and Canada. I felt this deeply, and sincerely regretted that my business would not permit me to accept many other invitations, or stay longer with those upon whom I called. Good feeling and a hearty welcome were extended on every side, and more frequent intercourse between our own people and those across the Atlantic would, I am convinced, not only mutually enlighten and instruct, but be the means of removing prejudice and uniting more firmly the bonds of friendship between the two countries.

Home Correspondence.

Sewage Irrigation.—Mr. Hope has chosen to re-open a controversy which you thought proper to close many weeks back, and has chosen to do so on the plea that "I will not let him alone," whereas it is he who will not let me alone, for I have not addressed the public on matters in difference between us since you cried "Hold! enough." Mr. Hope neglects the fact that my challenge anticipated his, for I had already invited the attendance at the Lodge Farm of any scientific gentlemen, practically acquainted with farming, to examine into the system pursued there. That invitation has been accepted, at times in small, and recently in greater numbers. The opinions of those gentlemen who made an inspection of the farm on August 3 (notice of which appeared in your journal of August 12), were communicated to the public by gentlemen who attended on behalf of the Essex press, and by Mr. Mechi, who recently addressed a letter to the *Times*. These reports, and the comments on the "broad beds," the facility of their irrigation, and the evenness of the crops on them, have, it seems, led to Mr. Hope's renewed attack on me—not because I was the inventor of them any more than he was the originator of the narrow beds, but because, in rejection of his *dictum*, I have continued to avail myself of the advantages they afford. I must again repeat that until Mr. Hope succeeds in growing crops as fine (and of course as even) as those raised on the Lodge Farm, and can show that they have been produced, other circumstances being similar, with a substantial reduction both in sewage and labour, I cannot be expected to accept "the principles" which it amuses him to "lay down." *Henry J. Morgan, Lodge Farm, Barking, August* 28.

Spoiling the Beauty of the Country.—I am told, and not unfrequently, by my fair friends, "Oh, Mr. Mechi, you are spoiling the beauty of the country by causing the removal of trees, pollards, and fences." Now I must entirely disagree with my censors, for I am thus unveiling the beauties of the country, and permitting a more enlarged view of British agriculture in the literal sense of the word; and this is the feeling of my labourers as well as myself; for we were discussing the subject, and we are all agreed that the removal of trees and fences by myself and my neighbours has given to us very pleasant and extensive views—a vast improvement on the old plan, where it was impossible to see beyond the fence in small fields of 4 to 10 acres. No horizontal outlines gradually swelling in the distance were then to be seen. It was like being walled in by an impenetrable green fence, studded with some ugly pollards, the farmers' robbers. Now we become conscious that we have, in the pleasant distance, neighbours of various dignity. The church spire, the chapel roof, the old Layer Marney Tower, a glimpse of high tide in the Blackwater, are great improvements on the dull and depressing seclusion of a very limited vision. In fact, on the old plan one can't see the country, except in hilly districts; now the lovely pattern-card of variegated crops, just at harvest time, is visible and delightful. I don't believe that I was ever intended for a hermit. In a sanitary point of view, a close surrounding of the house with great trees is the cause of much physical damage; and we know that the farmers' pockets are considerably benefited by the absence of so many hungry intruders. *J. J. Mechi.*

Sewage Skirmishes.—I have been following the passages of arms on "sewage irrigation," which have of late been so freely scattered over your sheets, and I fully agree with you that we have had enough of them, unless considerably more of useful information and rather fewer empty challenges be infused into them. I elicit that Mr. Hope knows more about sewage irrigation than anybody else; I would therefore suggest that he should write for the public—who are not a tithe of them able to examine his Breton's Farm, or to judge of its merits if they did so—a little guide-book on sewage irrigation, suited to small minds, setting forth "mathematically and practically" all the merits of those methods by which he claims to be possessed. By this means he would raise himself a tower of strength, against which his critics and adversaries would naturally dash themselves helplessly to pieces, like butterflies against a window-pane. If he lacks time, inclination, or perhaps power to do so, I submit that in future it will be as well for all parties to lack time, inclination, and power for such bootless personal encounters as have recently graced your columns. Of their being utterly uncalled for, no better proof can be given than the exalted treatment of the virulent attacks he is at times subjected to by one of your most valued correspondents. Having thus myself entered the lists I condemn, I await, Mr. Editor, to see whether your sentence on my inconsistent expressions be—*Waste Paper.*

Protection of Corn in the Field.—When resident in Somerset, in 1840, I noticed a mode of protecting corn in the field from the effects of wet weather on the ridge of the Mendip range of hills, which are liable to heavy and continuous fogs in the autumn, that may be serviceable elsewhere in wet seasons. Three Fir poles, about 8 or 9 feet long, were fastened together in the form of a triangle by cross pieces nailed to them when placed 3 feet 8 inches apart at the bottom (say 1 foot above the ground), and 1 foot apart at the top, intermediate cross-pieces being added to strengthen the tripod and bear the weight of the sheaves. The heads of the sheaves being laid inwards, and resting upon the bottom cross bar, and their butts outside, a pike of sheaves, containing about a good harvest cartload, was built up, which, with a cap of thatch on the top, was effectually protected from the rain, whilst at the same time the grain hardened, and it was fit to be carted to the stackyard as soon as the weather permitted. By placing the tripod across a furrow, the air can be admitted, if desirable, at the bottom. *Clericus.*

Reports of the Crops:—I do not for one moment question the accuracy of the reports provided by your correspondents, but if we are to judge of other counties, which I do not know, from the reports of Kent, which I do know, then they are not much to be valued. Your three correspondents hail from Dover, Isle of Thanet, and Wingham, all situate in the extreme south-eastern part of the county. Whatever can they give us of the general state of the crops in a county which runs 60 miles in length by 40 in breadth? Let any one take a map of the county in his hand, see the district compared in their reports, and the absurdity of calling it a statement of the state of the crops in the county will be patent. Nothing is said of the Weald, of the marsh district, of the valley of the Medway; and yet people at a distance will regard it as a report of the county. I do not say it may not be true of the whole, all I maintain is, that the report of so narrow an area ought not to be dignified with the title of a report of the crops of the entire county. *D., Deal.* [Our harvest reports, almost without an exception for a quarter of a century, have been justified by the result. Compare the conclusions to which they have this year led us with the letter of Mr. Lawes in another page.]

Condimental and Aromatic Cattle Food.—I am a believer in this: we have Nature as our guide and example. See what she does on our good pastures. How various the plants and their qualities! A handful of well-made hay is a nosegay; make it into hay-tea, how good it is! I wish that some of our learned contributors would define the peculiar properties of each of the various grasses, and enlighten us on this interesting subject. My lawn is naturally well planted with wild Chamomile. Are not condiments as good for our animals as for ourselves? Has any herbalistic book treated of hay-tea and its effects on the human as well as animal frame? Our pepper and mustard, mint, sugar, parsley, thyme, canary and coriander, all come from Mother Earth, and so do most of our medicines or medicinal herbs. The various productions of our fruit and flower and vegetable gardens, as well as from our fields, all coming from the same dirty earth, may well fill us with wonder and admiration. The other day, when changing our lambs from Italian Rye-grass to red Clover, notwithstanding all our care, such as giving them only a little with other dry food, they began to scour, and we had to kill one. I ordered 1 lb. of Simpson's cattle spice—cost 6*d.*—to the 120 lambs, and they went on comfortably, and continue to do so. Most farmers know that green Clover is very dangerous for lambs, especially if previously cake-fed. We give a portion of Beach's condimental food to our fattening cattle with decided advantage. I shall endeavour to satisfy my mind which is the cheaper mode—using the spices or buying the spiced food. I incline to the former. I believe that many of the heavy losses in cattle and sheep, by "blowing" and "scouring," might be prevented by condiments, spices, or stimulants. The Down mutton, fed on the downs, where there is wild Thyme, is delicious. *J. J. Mechi, September.*

Freehold Tenure.—The advantages to the public of the general prevalence of absolute estates in land in preference to life tenancies, have of late been prominently brought forward, and some have gone so far as to wish to extinguish the right of creating a life estate. But it must be remembered that the power of creating an estate tail is very limited, that upon each change of trustees (for such estates generally are so vested), the public gain a stamp duty, and upon each death a succession duty. I am surprised, therefore, that no notice has been attracted to properties, which present all the objectionable features of life tenancies, without the collateral advantages which the public derive from the latter. I allude to the real estates belonging to corporations. I heard the other day that the revenue of one hospital alone was £50,000 a year. The total real estate belonging to similar bodies, and to the universities, must be of vast amount. Now the power of possessing these estates for ever is quite exceptional, for the common law, which is common sense, abhors a perpetuity. And if it be desirable, both for political and for agricultural reasons, that the number of freeholders should increase, it is obvious that the locking up of so large a portion of the land in perpetuity, without the remotest possibility of its being divided by some spendthrift heir, is a public evil. Even if it were thought too strong a measure to compel such bodies to sell, within a certain number of years, all land not required for their own use and occupation, there surely ought to be no objection to a law forbidding them to acquire another acre, unless for the purposes aforesaid. *G. S.*

Rugby Sewage Farm.—The cereal crops standing on this farm were recently sold by auction. They consisted of 14 acres of Wheat and 7 acres of Oats. The Wheat realised an average of £13 18*s.* per acre, and the Oats £10 10*s.* per acre; the purchasers to cut and harvest them. The Wheat land was last year in Oats, and after that crop was removed the land was irrigated for three weeks, and afterwards ploughed and sowed, without any other manure or dressing. The Oats followed Italian Rye-grass, and the land had a similar dressing to the Wheat. The Italian Rye-grass this year has been in great abundance, but, grass being very plentiful in the neighbourhood, the demand has not been so great as in former years. The price has therefore not exceeded 15*s.* per ton, and now and for some time past has been 10*s.* per ton. A considerable quantity has been made into hay, the greater part of excellent quality, and haymaking still goes on favourably. The root crops look very promising for a heavy crop. *T. E. Palmer, August* 29.

Turnip Seed Growing.—Permit us to reply to some of the remarks in your leading article on the cultivation of crops of Mangel, Turnips, and Swede for seed, which appeared in last week's issue. We think that your strictures as to the careless manner in which seed growing is practised in the present day, are rather too severe. We claim to have some little experience in the matter of seed growing, and we fearlessly state that at no time was the culture of seeds more carefully attended to than at the present; and we also assert that the care and attention bestowed on the cultivation of Mangels, Turnips, and Swede, is at the present time very different to what it was 10 or 15 years ago: therefore we think your sweeping condemnation of the present method of seed growing somewhat unmerited. We have been through most of the Turnip-growing districts, and are prepared to say that, in a large number of instances, the roots left for seed are sufficiently large to distinguish the sort, and are, for all purposes of selection, large enough. We don't mean to say that all the seed sold is saved from large roots, otherwise one man's reputation would be as good as another's; but we do say that selection and careful cultivation is practised by so many people that the worst quality seed now sold is a very great advance upon a similar class seed that would have been sold 15 years ago. Practical observation will bear us out in this assertion, as it is a rare thing now to see a bad stock of Mangel, Swede, or Turnip growing on any one's farm. Again, it is not fair to condemn seed that is grown from roots of scarcely any size. We saw this summer, in Romney Marsh, 20 acres of Swede in seed for a firm who sell "home-grown seeds," and the plants were like walking-sticks, with scarcely any evidence of bulb whatever. Now, we have special reasons to believe that this crop was grown from stock seed saved from very large and fine roots; and, as practical agriculturists, we are prepared to maintain that the produce of this would produce fine roots. Again, if you will allow us to speak for ourselves, we had a large acreage of Swede this year, where the bulbs averaged from 12 to 15 inches in circumference. Thinking probably the stumps had yet remained on the ground, we wrote to the farmer, asking him to send up a hamper of them; unfortunately, by his reply (which we enclose, but not for publication) we learn they have been burnt. However, the same gentleman is growing 12 acres Mammoth Long Red Mangel for us, of a very select stock, and he has sent up a few of the stumps of these, by which you will see that all the seed offered to the public is not cultivated in the careless manner you suggest in your article. After all, this matter becomes a question of pounds, shillings, and pence. Those who will have cheap seeds must be content with inferior quality, but those who are prepared to give a reasonable price can be supplied by most respectable seedsmen with an article that will in every way please them, at less cost and at half the trouble of saving their own seed. *James Carter & Co., 237 and 238, High Holborn.*

—— In your leading article, p. 1141, you give an interesting account of how to grow seeds, but omit one very important point; you say, "Swedes (selected roots) should be set in up to their necks;" also, "The best way is to dig them in with a spade a yard apart." Now, the question I want an answer to is "When?" Swedes with me finish growing about the middle or end of November. Should they be taken up then, and immediately be replanted with a spade? Also, how about the frost? Swedes left in the ground without being pitted are simply a skin full of rotten pulp in the middle March. Will burying them up to the neck prevent this? *G. A. H.* [Yes.]

Foreign Correspondence.

STETTIN: *August 22.—Some Particulars about the Liernur System.*—It will, I hope, be agreeable to your readers to have some particulars about the adoption of the Liernur system in different places, as I have been happy enough to receive them, by the kindness of one of the Berlin magistrates. These particulars will, at the same time, serve to justify me in my having dwelt upon the subject as one of importance. For it may be said that an invention, so new and novel as M. Liernur's, could not so soon find its way if it were not rational and convincing of success, in a country so conservative as Germany.

Liernur's system is being executed in Olmütz, Prague, Brünn, Leiden, Amsterdam, and Hanau. In Vienna the patent is bought and paid for by a rich company; in Berlin it is being tried.

In Olmütz they are about to get it up in all the military barracks, and in Prague it is executed in most of them, as well as in some manufactories. In Brünn the system has been fairly carried out in some barracks and manufactories, and projected in others.

In all these towns there has been only question of large isolated buildings, and not of whole streets and blocks of houses. This, however, will not stand with the Northerns, who want summarily to get rid of the question of water-carriage and cesspools by a rational system of organised scavenging, the dead weight and ugliest part of which is spared to the inhabitants and the scavengers by the Liernur pneumatic-canalisation machine, as it may be called.

Berlin is, after the precedent of some Dutch cities, I believe, going to give the system a fair chance, as the sewerage and irrigation matter in the south of Berlin has been condemned as totally impracticable. The plans have been drawn up, the money will be voted at one of the next sessions. Nevertheless, there is a deal of opposition to be overcome, many of the magistrates being somehow or other enamoured of great subterraneous buildings, and, it is said, the 20,000,000 dollars which the sewerage of Berlin would cost; whilst Liernur's system would virtually cost nothing, as the proceeds for the manure more than pay the whole.

The Dutch precedents are as follows:—In Leiden there are three streets with 114 houses being drained by means of only two reservoirs. In Amsterdam there are two streets with 52 and 68 houses respectively, the one drained with two reservoirs, the other by one only. In both the works will be adopted for the whole town.

In Hanau a trial has been recently made in one building, a hospital. The works are just completed, and of course answer well.

In Prague and Brünn I hear there has been a row, as the Beller company, the undertakers, are Germans, while the town authorities are Panslavonians and Czechs. For all the formalities and difficulties raised in the face of the urgent necessity of Liernur's system being executed as soon as possible, the result will be that common sense will be victorious, and the Czechs will give in. The company, sure of this, endeavour to secure beforehand a good market for the manure, the sale of which must pay the interest on the capital invested. Hence the suspicions of some inconsiderate persons, that the Liernur system consists in emptying cesspools by means of evacuated tenders, which error has even found its way into your columns.

Another reason of wrong notions about good things is said to be this—commissioners, magistrates, &c., set out to have a look at a whale and find a sardine, never inquiring into the matter, never looking at the science of it, but altogether contented with their eyes, their own healthy prejudices, and other people's blunders. *O. Beta.*

Societies.

ABERDEEN.

The Aberdeen Game Law Conference.—At a recent meeting of proprietors and tenant-farmer representatives held in Aberdeen, Sheriff Comrie Thomson presiding, the following recommendation of the sub-committee was read:—

The committee recommend that the following queries be addressed by the conference to each proprietor in the county who has a rental of £500 and upwards, in the hope that there will be no objections to furnish the information required, with any particulars bearing thereon:—

1. What are the covenants in regard to game contained in the leases or in the general regulations of your property? It is requested that you furnish copies of the clauses to the conference.
2. What is the actual practice (apart from such covenants) which obtains on your property in regard to game?
3. Have complaints, or claims of damages, in respect of alleged injury by game and rabbits, been made by any of your tenants to you, or to any one on your behalf, within the last five years?
4. If so, by how many tenants? what were the sums claimed? and how were the claims settled?
5. Do you preserve game and rabbits? and if so, what arrangements do you make to protect the crops adjoining your premises?
6. Do you let any part of the shooting on agricultural lands on your estate? If so, what arrangements are made for the protection of the agricultural tenant?

It was also recommended that the tenant representatives be invited to communicate to the conference, in writing, the views held by them as a body in regard to the matters under consideration of the conference.

Mr. JOHN HUTCHEON said that he still held to the opinion that, if they wished to elicit facts, they must go direct to the men who suffered, and who were best able to explain to them what they suffered from. He was clearly of opinion that it was immaterial what the answers by the proprietors were, unless they were to supplement them by sending similar schedules to the tenants. He thought that both parties, being interested parties in the matter, should be dealt with at once and direct, and that the farmers should not be asked to contradict their landlords after their landlord's answers had been on the table. He would ask "Who is your proprietor?" "Is the game reserved in your lease?" "Is the game let, or does the proprietor shoot over the farm himself?" "Have you ever suffered from game or rabbits, and if so, have you been compensated for same?" What sort of game or wild animals do you suffer from?" "Would your interest be sufficiently protected by the removal of the restrictions as to hares and rabbits?"

Mr. LESLIE (Warthill) would ask Mr. Hutcheon to limit the inquiry to proprietors to those whose rentals were £500 and upwards, and to tenants whose rents were over £20. He thought one of the questions Mr. Hutcheon proposed to put was, "Who is your proprietor?" and the second was, "What is the covenant in your lease?" Well, the covenants in leases were not in many cases carried out, and he suggested to Mr. Hutcheon to adopt their second question, "What is the actual practice apart from such covenants?" That would qualify it, because many of the proprietors reserved the game in their leases, but did not practically reserve it. He would put the same question both to proprietor and tenant, "What are the covenants in regard to game in your lease?" and then followed the question, "What is the actual practice apart from such covenants?" He had found there were 5937 occupiers of land at £20 and upwards, and that there were 6769 over £15. Now, he was quite willing to take the £15 rental in sending out schedules to the tenants.

Mr. Edmonds suggested whether they should not postpone these questions to the tenants, because, when they got the answers to the queries from the landlords, they would be in a better position to apply to the tenants. It might not, indeed, be necessary to apply to the tenants when the landlords' answers were received, and in that way they would save a great deal of expense, and a great deal of time.

Sheriff Thomson said it was the view of the majority of the sub-committee.

Mr. Edmonds said the question applying to the tenants could be easily put afterwards.

Colonel Innes said he would be quite willing to concur in the suggestion that the question to the tenants be reserved; but he wished to let it be understood that the landlords had no desire to quash any inquiry.

Mr. Hutcheon said the country gentlemen who had appointed the committee did so on the understanding that there were complaints on the subject. Who was complaining? Not the proprietors; they were not complaining. It was the tenants who were complaining, and who could better state their complaints than themselves? The information given by the proprietors must be of a very general nature indeed, as it was generally believed that the great body of the proprietors in Aberdeenshire, whose tenants suffer from game, were in complete ignorance that such was the case. It was assumed that, in the great majority of cases, the proprietors did not themselves know what their tenants suffered in respect of game. How then could they exhaust the question by asking of the proprietors only the state of matters in regard to game? No doubt there would be some expense in sending out these schedules, but it did not appear to him that the question of expense was any good reason for the postponement of the schedules to farmers. He did not see how the matter of £40 or £50 should stand in the way of such a great agricultural county like Aberdeenshire, or such a body of men, when the object was to elicit such important information. Then suppose they took a £14 rental as the basis in sending out schedules to the farmers; that he thought was a fair proposal. He presumed they would not require to fee a competent person to collect the statements, and he did not think the expense would exceed £50. They could send out the schedules under the halfpenny postage, or, if they wanted secrecy, they could put a penny stamp upon them for return from the parties to whom they were sent. He took it for granted that they had already settled that the schedule on the table should be amended, and if they affirmed the principle which he had taken the liberty to propose, they should proceed to settle as to the nature of the questions to be put.

Major Ross said he thought Mr. Hutcheon was going on the ground that the proprietors thought no cause of complaint existed. He thought that was admitted, and being admitted, the extent was the question. Some made it more, some made it less; and, therefore, he agreed with what Mr. Edmonds had said, that much time might be saved and considerable expense by getting answers to the queries now adopted by the meeting, because he thought it very likely, from the information they obtained in answer to these questions, that they would be in a position to go at once to the general question before them without going into details, because the grievance was clearly before them. The answers being received, the proprietors might say they admitted the grievance so far. They would then have the statements of the representatives of the tenant-farmers as to what they thought would be the best way to remove the grievances.

Mr. Skinner could assure them that there was not one tenant in fifty that suffered who wished to complain to the proprietors. He was quite convinced that a large number of the proprietors in Aberdeenshire were not aware of the damage done by game. If they were, he was sure they would give their tenants liberty to shoot them down. They had a high respect for their proprietors, and he thought if these gentlemen saw and understood properly the cause of complaint, they would, as reasonable men, agree that they would put them down. As to the valuation of the crops, no man could value damages on a field of Oats or Barley or pasture grass. A number of tenants had said to him that they would be under the necessity of complaining, but they never did.

Sir John Clark said he thought the question of expense a minor affair, and if Mr. Hutcheon would propose those questions, he would be very happy, from the landlord's side, to second the proposal that the schedules be issued to the tenants at the same time as to the proprietors.

Mr. Leslie (Warthill) said he thought the grievance was all on the side of the tenants, and he did not think they could arrive at a satisfactory conclusion unless they put categorical questions to the tenant in the same manner as they did to the proprietors. The question, he repeated, should undoubtedly be put to the tenants as well as to the proprietors. Whether they were to be addressed to tenants over £20 or over £15, mattered very little. If they had the answers, then they would be able to come to some fair and just opinion as to the extent of the damage and the grievance.

Mr. Edmonds inquired how they were to proceed when they got the returns? It was like examining 7000 witnesses in a case. Who, he said, is to condense the evidence? Will you, Mr. Sheriff? I have no hesitation in saying it will take 12 months to make up a report. I think the thing is impossible.

Mr. Hutcheon said he saw no difficulty about the matter whatever, and the longer he thought about it it seemed to him the more reasonable. There could be no doubt whatever that gentlemen would be found who could read all these answers, and who could tabulate them all, so that they could be submitted to the joint committee, and form a basis of indisputable facts. He did not think it would take 12 days or 12 hours to do that, instead of 12 months. There was a way of doing business which, as it had been expressed in the newspapers, was, "How not to do it." But there were parties connected with business who would have no difficulty in going over the tables that were submitted to them. He presumed that there would not be more difficulty in collecting the 7000 schedules than there would be in collecting the agricultural returns sent to the whole of the United Kingdom, of which he had no doubt that, in a very short time, there would be an abstract before the public. Surely, in the matter of game, it would not be more difficult to put in a tabulated form the answers to the questions submitted. He thought, if the meeting affirmed the principle which he advocated, of sending schedules to the tenant-farmers, as to the proprietors, he would be disposed to leave to the sub-committee the form of schedule to be drawn up. He begged leave further to say in regard to the expense, that if the sum was within reasonable limits, such as he had hinted at, he would guarantee to find, on the part of his agricultural friends, half the amount. He did not think the question of expense ought to warrant them to override the consideration of the matter. If it were admitted that there was a game grievance, they should not hesitate about full inquiry. He moved:—"That the report of the sub-committee be approved of, and that these queries, as amended, be issued to the proprietors, and further remit to the sub-committee to prepare a series of queries to be sent to all tenants in the county who pay a rental of £14 and upwards; and that it be expressly mentioned that the answers will be kept strictly secret, and that no names will be made public. The schedules to be sent to the sub-committee, and the members of that committee be authorised to open them and prepare a Table for the conference."

After the adhesion of many other gentlemen to Mr. Hutcheon's proposal, Mr. Walker (Bithnie) said he was very much pleased to see so many of the proprietors willing to have the matter fully investigated. He thought it would be a pity when they had begun, not to elicit the whole of the facts; it would also be a pity if the matter of the expense would in any way deter them from going into the question. He hoped the gentlemen would agree to the motion made by Mr. Hutcheon.

Mr. Leslie said of course the answers would not be made public in any form, or made known beyond the committee.

Mr. Barclay said the sub-committee should be custodiers of the papers, and it should be the business of the sub-committee to see that the matter was kept secret. He presumed the conference would have confidence in the committee in stating the returns, and he proposed the matter be delegated to them.

The report as amended, was then approved as follows:—

I. That the following queries be addressed by the conference to each proprietor in the county who has a rental of £500 and upwards, in the hope that he will have no objections to furnish the information required, with any particulars bearing on the question, viz.:—1. What are the covenants in regard to game contained in the leases or in the general regulations of your property? You are requested to furnish copies of the clauses. 2. What is the actual practice (apart from such covenants) which obtains on your property in regard to game? 3. Have complaints, or claims of damages in respect of alleged injury by game, deer, and rabbits been made by any of your tenants to you, or to any one on your behalf, within the last five years? 4. If so, how many complaints or claims, and by how many tenants were they made, what were the sums claimed, and how were the claims settled? 5. Do you preserve game and rabbits, and, if so, what arrangements do you make to protect the crops adjoining your preserves? 6. Do you let any part of the shooting on agricultural lands on your estate, if so, what arrangements are made for the protection of the agricultural tenants?

II.—That the tenant-representatives be invited to communicate to the conference in writing the views held by them as a body in regard to the matters under the consideration of the conference.

A meeting of the Tenants' Committee was held at the close of the above meeting, Mr. M'Combie in the chair.

After a good deal of desultory conversation, the clerk read the following as a statement of the conclusions arrived at by the meeting of the Farmers' Committee held in the Corn Exchange on June 23:—

I. That, on many estates in the county, the tenants have just cause for complaint with respect to game and other wild animals, the principal grounds being—1. Damage to crops by hares and rabbits; 2. Damage by deer in the neighbourhood of deer forests, &c.; 3. Damage to crops by semi-domesticated pheasants in the immediate vicinity of pheasant preserves; 4. The practice of gamekeepers on certain estates shooting, trapping, or poisoning dogs and domestic cats.

II. That the best remedy for the existing grievance between landlords and tenants would be to give the tenants absolute and unrestricted right to kill, either by their own hands or any one employed by them, hares and rabbits on the lands they occupy, the landlord's right of shooting remaining as at present.

The committee believe that this remedy would be effectual, except as to deer and semi-domesticated pheasants.

III. That to confer such right as a gift, revocable at the pleasure of the landlord, would not be satisfactory, and that no remedy based on compensation for damage to crops would settle the grievance.

Mr. Douglas (Culsh) did not quite agree with those conclusions, thinking that the farmer should have power to protect his crops from all kinds of wild animals, and he was under the impression that that was the feeling of the meeting at the time.

Mr. Copland said the report read was a very good summary of the views expressed at the last meeting, but he thought the committee should not transmit it to the proprietors until they had received the returns from the various districts of the county, when additional information might necessitate some alterations.

Mr. Walker (Bithnie) again urged delay in sending the conclusions to the proprietors. He thought the right to kill hares and rabbits would not be satisfactory. They should have power to defend their crops from all kinds of game, &c.

Mr. M'Combie, M.P., said: The question now under consideration is, what remedy would remove the grievance and bad feeling between landlords and tenants? I believe that the giving up of hares and rabbits would do a good deal to mitigate the grievance, and that it would be accepted by a majority of the tenant-farmers as such, except as regards deer and pheasants; but I hold in the general interests of the nation the Game Laws ought to be abolished.

Mr. Copland moved that the meeting do not proceed to an expression of opinion in the meantime till the returns be received from the various districts of the county.

Mr. Hutcheon moved as an amendment that the meeting proceed.

The amendment was carried, and the clerk was instructed to forward a copy of the report to the sub-committee of the conference.

A vote of thanks having been passed to Mr. M'Combie for presiding, the meeting terminated.

Farm Memoranda.

Mr. Offin's Farm at Hutton.—We (*Chelmsford Chronicle*) wrote to Mr. Offin, asking if one of our representatives might go over some of his farms and make observations and inquiries pertinent to the subject under discussion, and the permission having been readily and cordially granted, the visit was paid on Tuesday last. Now, when we repeat the statement which Mr. Offin made in one of his letters, that he farms more than 5000 acres, and when we add that these 5000 acres are intersected by numerous farms held by other people; that from the extreme point of one of the off-hand farms in East Ham to the extreme point of another at Latchingdon the distance is no less than 36 miles, and that this goodly number of holdings touches no fewer than 26 different parishes, it will be sufficiently obvious, we think, that it was only a very moderate portion of the ground that we could go over in the half day at our disposal. We were assured, however, that, to use a plain phrase, Mr. Offin does not make fish of one farm and flesh of another, and that what we saw was only a sample of what we should have continued to see if it had been possible to cover the whole 5000 acres. But, if we had a very big loaf to test, we took care that the slice by which we tested it should be correspondingly large. We are not quite familiar with the boundaries of the parishes about Mr. Offin's house, but we certainly went into two or three different parishes, and on to many different farms, stretching in an unbroken line of 3 miles from Hutton Park on one side, and of one mile on the other. It was to the condition of the labouring population, and to what concerned them, that we paid primary attention, but, as will be seen from what follows, we were naturally induced to make notes also upon points of general interest, having, perhaps, only a remote affinity to that subject. First of all, we had a good view of Mr. Offin's own residence and grounds. On sallying forth into the village of Hutton, we were delighted to find that, while dwelling in a "ceiled house" himself, Mr. Offin had not forgotten the claims of his poorer neighbours, but had provided them also with decent and convenient homes. Instead of that squalid poverty which we have heard so much of lately, and which undoubtedly does exist more or less in some neighbourhoods, the village of Hutton seemed to be dozing from an absolute excess of comfort. The population, we believe, is about 400 all told, and we saw no fewer than from 20 to 30 cottages, all of which have been erected within the past few years—some of them, indeed, have not long been finished. Generally, the cottages are in pairs, but the first block we came upon consisted of four, standing, by the way, upon the site of an old "Tom and Jerry," which institution has now no representative in the parish. Very neat are these, and all the other dwellings, in their outward appearance. Some have cemented fronts and blue slates; others—and these were the more recently erected—are of red and white brick, with the tiles common to the county. There is a piece of land both at the front and back of each house, sufficient for any man to keep in good cultivation in addition to doing his ordinary work. The land in front, we observed, was in most cases devoted to flowers and ornament, and was in all cases kept with great neatness, and even taste; in that behind, fruit trees and vegetables were the rule, and there was every indication that these ministered considerably to the comforts, and in diminishing the expenses, of the house. . . .

From the houses of the people we passed to the school where their children are taught. It is a pleasant-looking building, in dark red brick, entered by an ornamental porch, and having large pointed windows. . . . We next entered the church, which, small and old-fashioned, it is proposed to rebuild, from £1500 to £1600 having already been promised, we understand, in aid of the work. On the panels of a small west gallery we observed an inscription, setting forth the benefactions to the parish of Hutton. The last recorded was a bequest of £500 Consolidated 3 per cent. Annuities, by John Offin, gentleman, of Brentwood, uncle of the present Mr. John Offin, for the benefit of the National School of which we have just been speaking. This bequest was made in 1841. . . . So much for the homes of the labourers and the provision made for the training of their children. Next comes the question of their wages. On this point we cannot do better than quote, with one or two supplementary observations, a sentence from Mr. Offin's first letter to the *Chelmsford Chronicle.* "The average wages of the majority of my men throughout the year," he said, "upon all my occupations, are from 15*s.* to 16*s.* per week." Some of the men, Mr. Offin told us, have done even better than this, for he was anxious that his statement should be under rather than over the mark. It must be remembered, too, in connection with the subject of wages, that the men have only to pay nominal rents for the cottages we have described,—that is to say, the cottages are let, free of all rates and extra charges, some at £4 and some at £4 10*s.* per annum, 2*s.* being returned to one class of tenants, and 2*s.* 6*d.* to the other, when the rent is paid punctually, as it invariably is. The cottages, with the land adjoining, are worth, we should say, nearly double what is charged. In addition to all this, the labourer gets his children taught for a mere bagatelle, so that he cannot by any means be said to be badly off. Just the same state of things prevails in the parish of Ingrave, where we saw some excellent cottages that have been erected by Lord Petre. Those standing in odd places about the parish have a piece of garden ground attached, as at Hutton, while the tenants of those forming the village have allotments close at hand. Regarding the number of labourers employed by Mr. Offin—for that was a point to which "Observer" directed special attention in his strictures upon off-hand farming—we questioned two or three persons likely to be informed upon the subject. One man, who has known the whole district for many years, told us that there were at least twice, if not three times, as many men employed on many of the farms which Mr. Offin has acquired as there were when they formed separate holdings, and that the grand total of men was something considerably more than it was formerly. The way in which this large consolidation of farms is managed is somewhat after this fashion. Every separate farm is visited at least once a week either by Mr. Offin personally or by one of his sons, while, except in one or two cases, where they are let to tenants, the old farmhouses are divided into two tenements, one occupied by a horsekeeper, the other by a stockman or looker, and it is the business of these persons to see that all goes on as it should. The horse-keepers and lookers have between them the same amount of garden ground as sufficed for the old tenants, and, in addition to his wage, each has an allowance of 1*s.* per week for firing. In all there are nine lookers, and generally each has a horse to himself. Several horses are also kept for the use of Mr. Offin and his sons.

And now for a word on Mr. Offin's system of farming. Nearly all the land he holds is heavy, and the average depth of his drainage is about 3 feet. He uses the steam-plough, but only goes a moderate depth. In almost every grass field we observed a large herd of bullocks or a flock of sheep, so that he makes a good deal of his own manure, and what he uses besides are chiefly, if not entirely, Peruvian guano and superphosphate of lime—the home-made manure being applied to the grain crops, and the artificial to the green crops. He is what we should call a thin seeder, sowing 1½ bush. of Wheat to the acre, of Barley 2 bush., and of Oats 3 bush. Harvest had been commenced at Hutton the day before our visit; at Latchingdon, as is usually the case, it was commenced a week earlier. We thought, from what we saw at Hutton, there would be a good average crop of Wheat, and perhaps something above an average of the other grain crops and of roots. To his late uncle, Mr. Abraham Offin, the present Mr. Offin ascribes the seed of his success. The uncle died in 1855, at which time Mr. John Offin practically became his own master. He has, since that time, considerably augmented his holdings, many farms having come into his hands under circumstances which he described in one of his letters, viz., by reason of their having been impoverished by resident tenants who had not capital enough to do fairly by them, and thus rendered worthless to other small tenants and a source of little but anxiety to the landlords. The amount Mr. Offin pays in tithes, rates, and other charges, must be something enormous; and if one only heard it named, we should doubtless be ready to exclaim, truly property has its duties—and duties which it performs—as well as its rights. We have nothing to do, here, with the question of "off-hand" farming in the abstract. It is Mr. Offin's case that has been particularly brought forward in the discussion, and it is with Mr. Offin's case alone that we have felt called upon to deal; and we must say, alike from what we have read and seen, that we are quite satisfied he comes out of the controversy without shame and without reproach.

TIPPERTY, NEAR ABERDEEN. — Aberdeenshire farmers keep a very large quantity of stock in proportion to the size of their farms, as will be seen by the following sketch of the method of the stock-farming pursued by Mr. William Murray on his farm known as Tipperty, near Aberdeen. This farm is 500 acres in extent, including roads and fences; it is all arable land, and is worked on the usual five-course system. Not less than 170 head of cattle of every description are kept on it every year, and the seeds are let from November until February for wintering 500 hoggs. The tenant was formerly a successful butcher, and exporter of fat stock and dead meat. The annexed ground-plan of the steading (fig. 271), which was designed by Mr. Beattie, will give a good idea of the arrangements on a modern Aberdeenshire farm, specially devoted to the breeding and feeding of cattle.

Seventy feeding beasts are bought, as 10-quarters-old steers, in February, and kept on until the next winter. About 20 queys are also bought every year, and after one calf has been taken from them they are fed off with the steers. Six dairy cows are kept, and their calves, as well as the others, are kept on until they are fattened for the butcher at three years old. Calves begin to drop in January, but some are as late as May. The calves from the dairy cows are brought up by hand, the others suck their dams for about eight months, and are then weaned on oilcake and straw, but are not setoned. The young beasts are fed in winter on pulped Turnips and chaff, the calves getting 2 lb. of cake in the morning for about two months. The first feeding beasts go into the byres about the middle of August, and get Tares three-fourths ripe with straw until the Turnips are ready, when they get whole Turnips, with their "shaws" on, and straw three times a day, and at night a feed of mashed grain and Potatos. For the last two months they get oilcake, beginning with 2 lb. each per day, and increasing to 4 lb. at the finish. The following rules for the guidance of the horsemen and cattlemen will give further details on this subject, and also show the careful manner in which matters are regulated on this farm:—

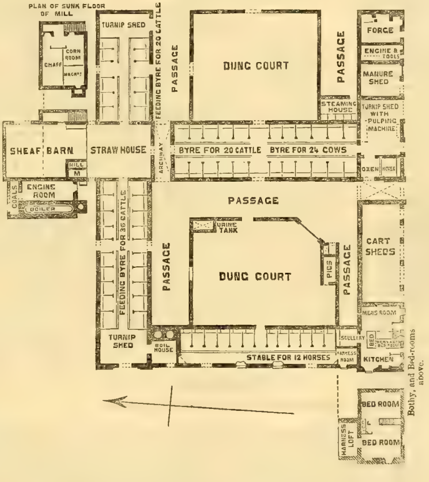


FIG. 271.—GROUND-PLAN OF THE FARM-STEADING AT TIPPERTY.

Rules for Cattlemen on the Farm of Tipperty.

		A.M.
1. Clean out the stalls ..	until	6.10
2. Turnip the cattle	,,	6.40
3. Clean out the byres ..	,,	7.10
4. Clean down the rumps of cattle	,,	7.30
5. Straw the cattle	,,	7.45
6. Bed up the cattle	,,	8.
1. Pull Turnips	,,	11.
2. Turnip the cattle	,,	11.30
3. Bed up the cattle	,,	11.45
4. Straw the cattle	,,	12.
		P.M.
5. Interval	,,	2.
1. Clean the cattle thoroughly	,,	3.30
2. Clean stalls and Turnip ..	,,	4.
3. Clean out the byres ..	,,	4.30
4. Straw the cattle	,,	4.45
5. Bed up the cattle	,,	5.
6. Interval	,,	7.
1. Give the cattle oilcake or bruised Oats, &c. ..	,,	7.30
2. Bed up the cattle	,,	8.

P.S. Each cattleman to wash his cattle once a fortnight, and to keep the dung pit well levelled down, and to turn out his cattle every 14 days, and also to attend the threshing-mill when working after 8 o'clock A.M.

Rules for the Horsemen on Tipperty.—1. Each horseman on entering on his services at Tipperty, will have his horses handed to him with cart and plough harness, comb and brushes, carts, shelvings and frame, plough, shovel, graip, and key of press and corn chest, all complete; and he will have to hand the same over on leaving.

2. All horsemen to enter the stable at 4.45 A.M.; stable clean out, dung-pit well levelled down, and horses led to the water, fed, and cleaned until half-past 5; breakfast from half-past 5 until 6 A.M.; and when horses are not working from 6 to 6, barn work, &c., until yoking time.

3. Horses returning from the yoke to be well rubbed down for 15 minutes, and fed; dinner until 12.15; horses receive Oats on entering the stable, and cleaned.

4. Horses on returning at 6 o'clock P.M., are cleaned down for 15 minutes, afterwards, being watered and fed, a few Swedish Turnips given.

5. Stable entered at 7 P.M.; horses cleaned well down, afterwards watered, receive Oats or bait, and suppered up; stable closed at 8 P.M. No horses to be allowed to leave the stable without a stall collar on.

Rules for Sabbath.—All horsemen to attend in the morning and evening on their horses, and in no case to be absent without appointing a substitute approved by the manager, and one horseman to have charge all day by turns, commencing with the foreman.

These rules are pasted up in the bothy at Tipperty—an institution which is intimately connected with the condition of the agricultural labourer in Aberdeenshire. This subject has been very much discussed, and the mere name of a "bothy" has been made almost sufficient to conjure up visions of dirty ploughmen and ill-clad women. One result is, that Scotch farmers—who thoroughly appreciate the result of giving a dog a bad name—now designate as "barracks" those bothies which are used as bed-rooms, and as "kitchens" those in which the labourers get their food and spend their evenings. Whatever want of orthodoxy my opinion may possess, I cannot help thinking that the faults in the bothy system which are held up to public reprobation are to be seen as frequently in the cottages of East Lothian as in the bothies of Aberdeenshire. Therefore, it seems more just to lay these faults at the door of the labourer himself than at that of the system under which he is housed and fed. The Aberdeenshire system is to have a "kitchen" for the unmarried ploughmen in a convenient position attached to the steading, or situated near it. This is a room furnished with a long table, three or four benches, some stools, and a separate locker for each labourer, in which he keeps his "household gods." It is generally the duty of an old woman to cook the food for the labourers, and to keep the room and furniture in a condition that is supposed to be clean. As a rule, the labourers sleep in attics over the byres and stables, and spend their evenings in the "kitchen." So far as the "kitchen" itself is concerned, I look upon it very much as a humble kind of club. The system of constructing dormitories over byres and stables is not æsthetically defensible; but, practically, it is liked by the men, especially in the winter, when it is piercingly cold outside and comfortably warm within. *Journal of the English Agricultural Society*, vol. vii.

The Week's Work.

SEPTEMBER 9.—*Trifolium incarnatum.*—Sow 4 bush. of the rough seed in the husk, or 20 lb. of clean seed per acre, and bush or chain harrow in on a clean stubble. Some give the land a stroke of the harrows before the seed is sown, purposely to raise a fine mould; others roll or clod-crush, when the soil is crusty; but a very fine mould is not desirable at this season. The cultivation of the crop is exceedingly simple. It follows Wheat, Barley, and Oats, and is sown from August to the close of the current month.

Liming in Autumn, for winter Beans, Vetches, Clover, &c., is preferable to liming the land at the removal of these crops for Wheat or other cereals; pulse crops being greater consumers of lime, and hence profiting more by its application than the succeeding white crops. It should be thoroughly incorporated with the surface soil, purposely to prevent its sinking to the bottom of the staple, which it is very liable to do. From 30 to 300 bush. of shells from the kiln are applied per acre; 100 bush. being a common dose. The quantity depends upon the nature of the land, the quality of the manures used, and the length of time between the limings. Some prefer frequent limings, others give large doses at a time, with long intervals between. Lime is also applied to grass land, either alone or in the form of lime-compost, and to land being laid down permanently to grass.

Winter Vetches.—Sow for soiling or folding in spring. Some make two sowings this month, for the purpose of successive soiling and folding, one early and the other late—the last of the season; others prefer the last sowing in October. The crop is partial to a rich clay soil, but will grow on friable land in good condition. If the land is foul, scuffle and clean it. Some manure on the flat—15 to 20 loads of farm dung per acre—ploughing in shallow, and then drilling 3 bush. of Tares, and 1 bush. of Rye per acre. Others smash up and drill in the above quantity of seed, with from 3 to 5 cwt. of guano per acre.

Laying down Land to permanent meadow and pasture.—The old rule, "fill the land with seed and manure," still applies; but modern systems of cultivation differ from those of the olden time. Thorough drainage and deep tillage are primary operations, that must never be neglected; and should the land require lime, chalk, marl, or clay, these should be applied before the manure and the seed. The seeding and management afterwards are similar to what is given above on renovating grass land. The quantity and kind of seed will depend upon the soil and climate. The quantity varies from 30 to 70 lb. per acre, so that 50 lb. is perhaps not far from an average.

Rye.—Sow, on land adapted for it, 2½ to 3 bush. per acre. There are large tracts of poor sandy soil capable of growing Rye, which will not grow anything else, and on such it should be grown. If kept clean such land is very easily cultivated, and being generally dry, there is no obstacle in the way of carting. Where there is a command of clay, 80 loads per acre—*i. e.*, half a load to a pole—will change, and greatly improve the texture of the soil.

Newly-weaned Calves, are liable to be infested with lice on the skin, and worms in the windpipe, &c.; our improved breeds more so than the older races. The former (lice) are easily seen behind the ears, and along the neck and back. Harsh, frequent, dry, husky coughing indicates worms in the air passages—the malady being termed "hoose" or "hack," from the peculiar sound of the cough. "It follows," says one of our best authorities, Spooner, "bare pasture, with a bad supply of water. Cows are sometimes affected." Both lice and worms may be prevented by a liberal diet, with plenty of soft, filtered water to drink, so as to keep the calf growing sleek, and without losing its milk-flesh at the time of weaning. Keep other beasts in equally good heart. As for cure, consult your veterinary surgeon.

Rye-grass and *Clover leas* intended for Wheat should now be ready for seed. Some rib or rafter plough the lighter class of soils with the view of rotting the sward, and at the same time getting a proper seed-bed with the desired clod. If this was done shortly after the removal of the hay crop, the land, after lying a month, is coup-ribbed, or cross-ploughed, or scarified, as circumstances may direct; and when ploughed for the seed furrow an inch of fresh soil is brought to the surface, which forms an excellent seed-bed. In this way the grassy sward is broken and incorporated with the soil, thereby insuring its decomposition, with the destruction of insect life, more successfully than when ploughed with a single furrow. Others turn the green sward, by means of a skim-coulter, into the bottom of the furrow, to rot under the furrow slice, the land being thus left at one operation ready for the seed-drill. When Rye-grass and Clover lea lies one or two years in pasture the sward is thicker and more liable to be infested with wireworm. Insects seldom deposit their eggs in healthy pastures, but the presence of much effete matter is always to be suspected, and to rot such sufficiently for the safety of the Wheat a top-dressing of lime compost, artificial manure, or (far better) liquid manure is applied before ploughing on either of the above plans, so as to set up the rotting process, effectually decomposing the green sward under the furrow-slice, thereby depriving the young insects of food in the spring-time when they first make their appearance in the grub form, and *per contra* supplying food for the Wheat plant. Another plan is to plough early, and to compress the furrow-slice with a heavy presser, and then by harrowing and rolling, at intervals of a fortnight or three weeks, the green sward is effectually rotted, and a sufficiently solid seed-bed secured for the Wheat plant to stand and ripen without becoming "root-fallen." But this plan requires the land to be in tolerably good heart, otherwise compression will not rot the effete sward of a poor soil without some top-dressing.

Notices to Correspondents.

ARTIFICIAL MANURES: *Yorkshireman*, who wrote on this subject some time ago, should give us his name and address.

RAPE CAKE AND BEAN MEAL: *G. M.* The following is a comparison of rape cake and bean meal in the experience of a cow-keeping correspondent:—Having seen rape cake strongly recommended for cows, I was induced to try it, but the results are unsatisfactory; several of my cows will not eat it at all. The cow I put on trial liked the rape cake, had calved about three months, and is an average cow. She gave on rape cake 3 lb. 12 oz. of butter. When 4 lb. of bean meal was substituted for 4 lb. of rape cake, she gave 5 lb. 4 oz. of butter, and 4 quarts 1 pint more milk. In addition to the cake or meal, I gave the cows 50 lb. a day of Turnips pulped up and mixed with hay and straw chaff; it is allowed to heat for 24 hours, and then given to the cows, who relish it extremely.

ERRATUM: *The Agricultural Labourer.* The Editor wishes, however late, to correct a misprint on p. 1078, at the third line from the bottom of col. *c.* It is there desired, for the benefit of the labourer, that he should have full liberty to do the best he can for himself, without any tie, actual or implied, to farm or "parents." The word written was "parish," and the thing objected to was that local "settlement," with the habit growing out of it, which hinders the labourer from migrating to localities where labour is in demand.

Markets.

METROPOLITAN CATTLE MARKET.

MONDAY, Sept. 4.

We have an unusually large supply of Beasts, but they are chiefly foreign. Prices are lower for all kinds, and a clearance cannot be effected. There are a few more Sheep than last Monday; good English are very scarce, and make high rates. We cease to quote Lambs, the season being over. Choice Calves are making a good price. Our foreign supply consists of 3360 Beasts, 15,800 Sheep, 424 Calves, and 20 Pigs; from Ireland there are 150 Beasts; from Norfolk and Suffolk, 20; and 1620 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c.	5 6 to 5 8	Best Long wools	6 4 to 6 8
Best Shorthorns ..	5 4—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	5 0—5 6
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. - ..	Lambs ..	.. — ..
		Calves ..	4 0—6 4
		Pigs ..	3 6 5 0

Beasts, 5150; Sheep and Lambs, 25,500; Calves, 438; Pigs, 65.

THURSDAY, Sept. 7.

The number of Beasts is much smaller than on Thursday last, the falling off being principally in foreign. There are very few choice qualities on offer, and they are sold rather dearer than on Monday. The supply of Sheep is very little altered, either of foreign or English. The trade is not quite so active as on Monday, yet prices are not much lower. Trade is brisk for Calves, at higher rates. Our foreign supply consists of 450 Beasts, 7490 Sheep, 367 Calves, and 20 Pigs.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 6 to 5 10	Best Long-wools	6 4—6 8
Best Shorthorns ..	5 4—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	5 0—5 6
Best Downs and Half-breds ..	6 8—6 10	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs ..	.. — ..
		Calves ..	4 4—6 8
		Pigs ..	3 6—5 0

Beasts, 1050; Sheep and Lambs, 13,560; Calves, 486; Pigs, 45.

METROPOLITAN MEAT MARKET, Sept. 7.

Best Fresh Butter	16s. per dozen lb.
Second do. do.	14s. ,,

Small Pork, 4s. 8d. to 5s. 4d.; Large Pork, 4s. 0d. to 4s. 4d. per 8 lb.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Sept. 7.

Prime Meadow Hay,	95s. to	110s.	Clover, old	135s.	150s.
Inferior do.	50	70	Inferior do.	60	100
New Hay	—	—	Prime new do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	36	45			

CUMBERLAND MARKET, Thursday, Sept. 7.

Sup. Meadow Hay	110s. to	130s.	Inferior Clover ..	90s. to	140s.
Inferior do.	70	98	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	160	172			

JOSHUA BAKER.

MARK LANE.

MONDAY, Sept. 4.

The supply of English Wheat from Essex and Kent to this morning's market was very small for the season, and was cleared off at 1s. per qr. advance upon the prices of this day se'nnight. There was a good attendance, and a fair demand for all descriptions of foreign, at a similar improvement. Barley, Beans, and Peas are without change. Oats are in rather better demand, with the turn against the buyer. Flour was unaltered.

PRICE PER IMPERIAL QUARTER.	s. s		s. s.
WHEAT, Essex, Kent, Suffolk..White	55—60	Red......	55—59
— fine selected runs ....do.	59—62	Red	57—59
— Talavera	61—63		
— Norfolk	—	Red......	—
— Foreign	48—67		
BARLEY, grind. & dist., 26s to 31s..Chev.	—	Malting ..	33—36
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....—s. to —s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent. Boilers	—	Suffolk ..	—
— Maple, —s. to s. ....Grey	-	Foreign ..	34—38
MAIZE	—	Foreign ..	29—30
FLOUR, best marks, delivered..per sack	—		
— 2d ditto ....ditto	—	Country ..	—
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Sept. 6.

The grain trade at Mark Lane to-day has been devoid of any feature of especial interest. There has been a moderate supply of English Wheat on offer, and the arrivals from abroad have been on a fair average scale; the trade has been steady, at Monday's prices. The supply of Barley has been moderate; the demand has been inactive, but prices have been steady. Malt has been dull, on former terms. The show of Oats has been good; the trade has been quiet, but no change has taken place in value. Beans and Peas have been disposed of at the rates previously current. Flour has been fair, at late rates.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	880	10	—	—
Irish ..	—	—	—	—
Foreign ..	12,570	1170	12,440	560 — brls.
	13,450	1180	12,440	

LIVERPOOL, Sept. 5.—There was a full attendance at to-day's market. A large business was done in Wheat, at 1d. to 2d. per cental advance on Friday's prices on both red and white sorts. Flour held for extreme prices. Beans 6d. higher. Oats and Oatmeal steady. Indian Corn in good demand, at the full prices of Friday last. Mixed American, 30s.

AVERAGES.

	Wheat.	Barley.	Oats.
July 22	58s 0d	34s 3d	28s 3d
Aug. 5	58 0	36 7	27 4
— 12	58 5	35 11	26 6
— 19	57 10	35 9	27 6
— 26	57 4	32 7	26 7
Sept. 2	57 2	35 0	26 4
Average ..	57 10	35 0	27 1

SEED MARKET.

Owing chiefly to the want of rain, and to the consequent absence of a consumptive demand, the seed trade still continues in the quiet state noted in our last. Neither white nor red Clover meet at present with any attention whatever. In new Trefoil seed a few transactions have been passing, at full prices. Trifolium moves off in retail, at late rates. Winter Tares are in fair demand, at recent currencies. White Mustard seed comes to market more freely; many of the samples, however, appear to be in poor condition. Rye-grasses are advancing in price. New Rape seed is in improved supply; it meets with a brisk demand. Bird seeds are unchanged in value.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

COALS.—Sept. 6.

Holywell Main, 17s.; Walls End Hartlepool, 17s.; Walls End Kelloe, 16s. 9d.; Walls End East Hartlepool, 17s. 9d.; Walls End Original Hartlepool, 18s. 6d.—Ships at market, 9; sold, 9; at sea, 30.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

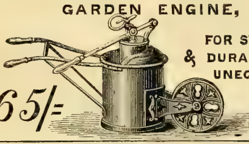
Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

BAMFORD'S "MODEL"
GARDEN ENGINE,



FOR STRENGTH & DURABILITY UNEQUALLED.

65/=

PRICE LISTS & TESTIMONIALS SENT POST FREE
BAMFORD & SONS, UTTOXETER,

THE STEAM-ENGINE TRIALS
OF THE
ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz. :—
First Prize for Horizontal Fixed Engine of 10 H.P. ; First Prize for Steam Engine, with Boiler combined.

At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N.B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.

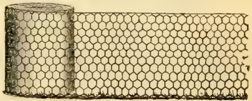
GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN;
78, LOMBARD STREET, LONDON, E.C.; and TARLETON STREET, LIVERPOOL.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size. Prices from 16s. 6d.
MANGERS, easily kept clean, non-absorbent, and not liable to rust. [Prices from 35s.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

GALVANISED WIRE NETTING. — First-class Certificate Royal Horticultural Society, and "Mention Extra-ordinaire" Amsterdam Exhibition, 1869.

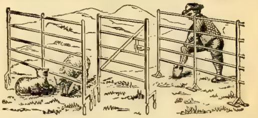


PRICES PER LINEAL YARD, 24 INCHES HIGH.

Mesh.	Mostly used for	No. 19.	No. 18.	No. 17.	No. 16.
2 inch	Dogs or Poultry	3¾d.	4½d.	5¾d.	7d.
1⅝ ,,	Small Rabbits, &c. ..	4¼d.	5¼d.	6¼d.	8d.
1½ ,,	Smallest Rabbits ..	5¼d.	6¼d	8d.	10d.
	Pheasantries, &c. ..	10d.	1s. ½d.	1s. 4d.	1s. 10d.

J. B. BROWN AND CO., 90, Cannon Street, London, E C.

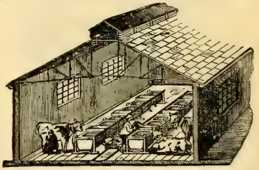
Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM'S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

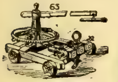
Illustrated Price Lists on application to COTTAM AND CO , Iron Works, 2, Winsley Street, Oxford Street, London, W.

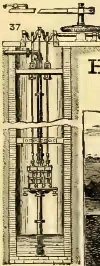
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS

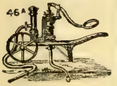


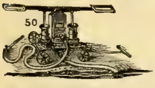
Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.





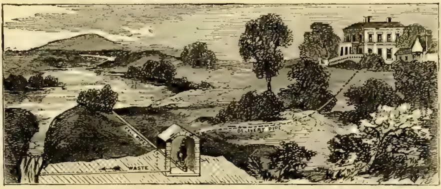


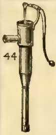


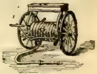
S. OWENS & Co.,

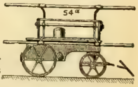
HYDRAULIC ENGINEERS,

WHITEFRIARS STREET, LONDON, E.C.









THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

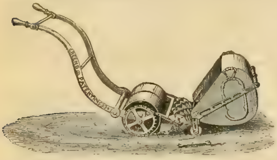
No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
No. 63. PORTABLE IRRIGATORS with Double or Treble Barrels for Horse or Steam Power.
No. 46a. IMPROVED DOUBLE ACTION PUMPS on BARROW for Watering Gardens, &c.
No. 49a. GALVANIZED SWING WATER CARRIERS, for Garden use.
No. 50 and 54a. FARM and MANSION FIRE ENGINES of every description.
No. 38. PORTABLE LIQUID MANURE PUMPS, on Legs, with Flexible Suction.
No. 49. GARDEN ENGINES, of all sizes, in Oak or Galvanized Iron Tubs.
No. 54b. THE CASSIOBURY FIRE EXTINGUISHER, as designed for the Right Hon. the Earl of Essex.
No. 44. WROUGHT-IRON PORTABLE PUMPS of all sizes.
No. 4. CAST-IRON GARDEN, YARD, or STABLE PUMPS.
No. 39b. IMPROVED HOSE REELS for Coiling up Long Lengths of Hose for Garden use.

S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GAS WORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c. *Particulars taken in any part of the Country. Plans and Estimates furnished.*

ILLUSTRATED CATALOGUES CAN BE HAD ON APPLICATION.

GREEN'S PATENT "SILENS MESSORS" or NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

The WINNER of EVERY PRIZE in ALL CASES of COMPETITION.

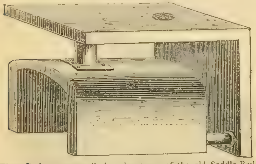


GREEN'S PATENT ROLLERS for LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,

Suitable for Hand or Horse power.

Illustrated Price Lists free on application.
THOMAS GREEN AND SON, Smithfield Iron Works, Leeds;
54 and 55, Blackfriars Road, London, S.E.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.

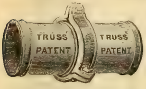


These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes: –

Sizes.			To heat of 4-in. Pipe.	Price.
High	Wide	Long	Feet	£ s. d
20 in.	18 in.	18 in.	300	5 0 0
20 "	18 "	24 "	450	6 0 0
20 "	18 "	30 "	600	7 0 0
24 "	24 "	24 "	700	8 0 0
24 "	24 "	30 "	850	10 0 0
24 "	24 "	36 "	1,000	12 0 0
24 "	24 "	48 "	1,400	15 0 0
28 "	28 "	60 "	1,800	20 0 0
30 "	30 "	72 "	2,600	30 0 0
36 "	36 "	96 "	4,500	50 0 0
48 "	48 "	108 "	7,000	75 0 0
48 "	48 "	144 "	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees,
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems;' facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

Greenhouses and Conservatories.

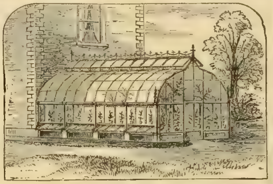
H. FREEMAN AND SONS' HORTICULTURAL WORKS, 106, Mare Street, Hackney, E. Established 25 years. Good substantially made GREENHOUSES, glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15; a handsome CONSERVATORY on hand, 35½ feet by 18 feet, £110; Nurserymen's LIGHTS, £25 per 1000 feet.

The Patent Imperishable Hothouse.

AYRES'S PATENT.
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the
IMPERISHABLE HOTHOUSE COMPANY,
Newark-upon-Trent, Notts.
MANAGER—W. P. AYRES, C.M.R.H.S.,
Forest Road West, Nottingham.
Plans, Specifications and Estimates supplied upon the shortest notice.

BEARD'S PATENT NON-CONDUCTING and VENTILATING METALLIC GLASS HOUSES will prove cheaper than wood.



All lovers of Wall Fruit and delicate Flowers should have a piece of

BEARD'S PATENT IRON-FRAMED GLASS or SLATE WALLS.

Full particulars of the above may be had for a stamped envelope, also Illustrated CATALOGUE, price 1s., of
CHARLES BEARD, Patentee, Horticultural Engineer, Victoria Works, Bury St. Edmund's.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

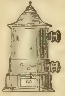
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s. each.

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s. 6d. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60s. each.

Portable Boiler.



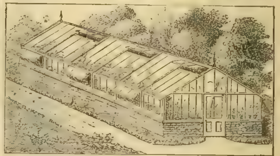
Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

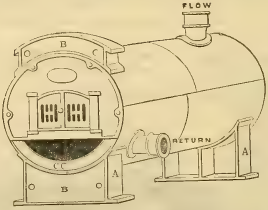
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
" " glazed, 16-oz. good sheet glass	6s. "
6 ft. " " 2 in. thick, unglazed	5s. "
" " glazed, 16 oz. good sheet glass ..	11s. "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. "
Portable box containing two ditto, 6 ft. by 8 ft.	55s. "

Estimates given for Conservatories or Greenhouses to any Design.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

NOTICE.—ROYAL SCHOOL of MINES, Jermyn Street, London.—The TWENTY-FIRST SESSION will BEGIN on MONDAY, October 2. Prospectuses may be had on application. TRENHAM REEKS, Registrar.

CANCER HOSPITAL, Brompton, and 167, Piccadilly, W.—In consequence of a considerable increase in the number of Indoor Patients in this Hospital, which now exceeds Sixty, great additional expenses have been incurred. The Board earnestly solicit further SUPPORT,, to enable them to continue to afford Relief to that portion of the Sick Poor suffering from this terrible malady.

Treasurer—Geo. T. Hertslet, Esq., St. James' Palace, S.W.
Bankers—Messrs. Coutts & Co., Strand.
Office and Out-patients' Establishment, 167, Piccadilly, W.
By Order, H. J. JUPP, Secretary.

N.B.—One Guinea Annual constitutes a Governor; and a Donation of Ten Guineas a Life Governor.

THE LANDS IMPROVEMENT COMPANY.
(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT.)
DRAINAGE, RECLAMATION, FARM BUILDINGS, LABOURERS' COTTAGES, TRAMWAYS, RAILWAYS, &c.
DIRECTORS.

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Frederick L. Dashwood, Esq.
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John Horatio Lloyd, Esq.
Granville R. Ryder, Esq.
GranvilleR H.Somerset,Esq ,Q.C.
Henry W. West, Esq., M.P.
Charles Watkin Williams Wynn, Esq., M.P. (Chairman).

The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

UTILISATION of SEWAGE.—The Company also advances money for the purpose of Works of Sewage Irrigation.

The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

No investigation of title is required.

For Forms and further information, apply to GRANVILLE R. RYDER, Esq., Managing Director, No, 1, Great George Street, Storey's Gate, Westminster, S. W

Agricultural Land Improvements.
DRAINAGE, SEWAGE IRRIGATION, FARM BUILDINGS, LABOURERS' COTTAGES, &c.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY.
(Incorporated by Act of Parliament in 1849.)
DIRECTORS.

T. Chapman, Esq., F.R.S.
George Thomas Clark, Esq.
John C. Cobbold, Esq.
Henry William Currie, Esq.
The Right Hon. Viscount Combermere.
Edward John Hutchins, Esq.
Sir William Tite, M.P., C.B.

Principal Engineer, Mr. J. BAILEY DENTON.

Agricultural Improvements of every kind are executed by the Company, or the outlay thereon repaid to Landowners who prefer carrying out the works by their own agents.

Tenant Farmers may also, by agreement with their Landlords, procure the execution of such Improvements.

The outlay, with all official expenses, may be charged upon the Estate, and paid off by a Rent-charge of about 6 per cent., in 31 years, or at the option of the Landowners in a shorter term.

No investigation of title necessary, and no legal expenses incurred.

UTILISATION of SEWAGE.

Special arrangements will be made with Boards of Health, Sewer Authorities, and others, for undertaking Works of Sewage Irrigation, together with all Works incidental thereto. The outlay in respect thereof may be repaid either by a sum in gross, or by a terminable yearly payment, discharging in a fixed period the principal amount with interest thereon.

Application to be made to ARTHUR MILMAN, Esq., the Secretary, at the Offices of the Company, 22, Whitehall Place, S.W.

CENTRAL ARGENTINE LAND COMPANY, LIMITED.
Chairman—JOHN HEGAN, Esq.
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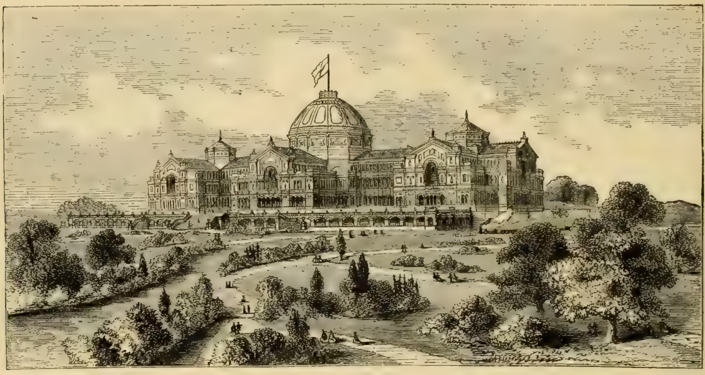

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Seed, Bulb, and Plant Establishment, Weston-super-Mare.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received from the most celebrated growers in Holland their First large Importation of the above, and have the satisfaction to say that the BULBS are large, sound, and well ripened.

Early orders respectfully solicited.

Descriptive Priced CATALOGUE post free on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

DUTCH FLOWER ROOTS.—Descriptive Priced LIST, with Cultural Hints to Amateurs, will be sent free, on application to DRUMMOND BROTHERS, Seedsmen, &c., 52, George Street, Edinburgh.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

WANTED IMMEDIATELY, CUTTINGS of MRS. POLLOCK GERANIUM. Please furnish price per 100 or 1000 to GEO. CLARKE, Nurseries, Brixton Hill, S.W.

WANTED, MANETTI STOCKS.—State price per 1000 or 10,000 to

ROSE, Post Office, Warwick.

WANTED, SPECIMEN PLANTS of the following, to complete a Collection:—

AGAVE
ALOE
CEREUS
ECHINOCACTUS
ECHINOPSIS
EUPHORBIA
GASTERIA
OPUNTIA
PHYLLOCACTUS, and
MAMMILLARIA generally.

Apply by letter to J. CROUCHER, Gr. to Mr. J. T. Peacock, Sudbury House, Hammersmith, W.

Amateur growers and lovers of this neglected, interesting, but beautiful tribe, may obtain information of their culture, &c., and an order to view the collection of 6000 Plants, by letter to J. CROUCHER, Gr., late of Kew Gardens, as above.

EVERY GARDEN REQUISITE KEPT in STOCK at CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

RUSSELL'S PYRAMIDAL PRIMULA.—Strong healthy plants, in thumbs and 60's, requiring an immediate shift, 4s. per dozen.

GEO. CLARKE, Nurseries, Brixton Hill, London, S.W.

Tropæolum Minnie Warren.

JOHN CATTELL begs to announce that he is now prepared to supply the above beautiful variegated plant at greatly reduced prices, viz., 3s. 6d. each, or 36s. per dozen. Trade price on application. The Nurseries, Westerham, Kent.

Cinerarias, from one of the very finest Strains of TRICOLORS in ENGLAND.

JOHN STANDISH AND CO. are now able to offer fine strong healthy plants of the above, to flower early in the winter, at 1s. each, 9s. per dozen, £3 per 100; also seed of the same at 2s. 6d. and 5s. per packet.

Royal Nurseries, Ascot, Berks.

Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants. CATALOGUES gratis on application.

HUNT'S superb SWEET WILLIAMS, in 24 varieties, seed or plants, as per former Advertisement.

Crown Nursery, Reading.

The Royal Norfolk Nurseries, Norwich.

EWING AND CO. respectfully invite inspection of their extensive NURSERY STOCK. Fifty acres of FRUIT TREES, ROSES, CONIFERS, ORNAMENTAL TREES, &c., in the finest possible health and condition for removal next autumn.

TO EXHIBITORS.—About Sixty large Specimen STOVE and GREENHOUSE PLANTS to be SOLD, such as Ixoras, Allamandas, Dipladenias, Phœnocomas, Crotons Verschaffeltia, splendida, &c., the property of a Gentleman giving up exhibiting. For size and price, apply to

W. JACKSON, Blakedown, Kidderminster.

Herbaceous and Alpine Plants, Hardy Bulbs, &c.

THOS. S. WARE has much pleasure in announcing that his PERENNIAL LIST for 1871 is ready, and may be had on application.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Succulents.

THOS. S. WARE'S New Priced LIST of SUCCULENTS, containing selections from Twenty of the principal Families, is now ready, and may be had an application.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Leptosiphon roseus for Spring Bedding.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, respectfully calls the attention of Amateurs to the great value of this charming NEW ANNUAL, introduced by him last spring, for spring bedding, for which it has no rival of the same colour. New seed, for immediate sowing, price 1s. per packet.

To the Trade.—Passiflora cœrulea.

A. HENDERSON has about 20,000 of the above, strong and healthy, height 2½ to 3 feet, in large 60's, 40s. per 100, or £17 10s. per 1000.

A. HENDERSON, Sion Nursery, Thornton Heath, White Horse Road, Croydon.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALCEOLARIA; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1s. 6d. 2s. 6d., 3s. 6d., and 5s. per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., begs to advise his SPECIAL LIST of GARDEN and AGRICULTURAL SEEDS for the present year (of Seeds all the growth of 1871) is now ready, and can be had on application. Samples and stocks are very fine, and prices very low.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.

Forwarders to all parts of the World.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

FARMERS and SEED GROWERS having good ENGLISH RAPE to offer, are requested to send samples, prices and quantity, addressed

BOX 44, Plymouth Post Office, Plymouth.

WINTER TARES, 12s.; RAPE, 16s.; FLAX SEED, 10s; ITALIAN RYE-GRASS, 5s. per bushel. Fine samples.

JOSEPH TREMBLE AND SONS, Penrith.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.

Bardney Manor, Lincoln.—July 6.

NOTICE to the TRADE.—In last week's *Gardeners' Chronicle*, I perceive 200 bushels MUSHROOM SPAWN advertised at 6d. per bushel. I beg to say the Person advertising is in no way connected with me. HENRY TYLER.

Mushroom Grounds, Child's Hill, Hampstead, N.W.—Sept. 12.

To Market Gardeners and Others.

CABBAGE PLANTS for SALE, by the rod or more. The Fulham, Enfield Market, and Curcuit's Early East Ham Cabbage; all selected stocks from the best growers.

Elms Farm, Barnes, Surrey, S.W.

Autumn-sown Cabbage Plants.

W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts.—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3s. per 1000; do. RED PICKLING, 5s. per 1000.

The Nurseries, Wonersh, Guildford, Surrey.

CHEAP FERNS, FUCHSIAS, &c.
MUST BE SOLD, for WANT of ROOM.

FERNS.—Lomaria gibba, Pteris serulata, Gymnogramma Laucheana, Polypodium trichodes, all strong, healthy plants, in 60-sized pots, 4*s.* per dozen; 30*s.* per 100. Dicksonia antarctica, strong plants, in 48-sized pots, 1*s.* 6*d.* each; 12*s.* per dozen.

SELAGINELLAS.—Martensii, spoda, denticulata, and serpens, very strong, in 60 pots, 3*s.* per dozen.

FUCHSIAS.—First-class sorts, strong plants, coming into bloom, 2*s.* 6*d.* per dozen; 16*s.* per 100.

Double GERANIUMS, strong scarlets, in bloom, 12*s.* per 100.

Terms, cash. Remittance or reference must accompany all orders from unknown correspondents. Post-office Orders payable at Huntingdon. All package free for cash with order.

KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Wanted, Seeds of Choice Strains.

MR. WILLIAM BULL will require NEW SEEDS, when ripe, of the following:—

Hollyhock, in separate colours
Polyanthus
Lobelia, herbaceous
Pentstemon
Pink
Petunia

And Seeds of other choice Florist Flowers.

State quantities and prices per ounce. Satisfactory proof must be given that the strains of the above seeds are all of the first quality.

Apply to WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Rhododendron and Periskia Stocks, and Epiphyllums.

SEEDLING RHODODENDRONS, from the best named varieties:—

2 to 4 inches high, twice transplanted, fine well-rooted plants.
4 to 6 inches high, twice transplanted, fine well-rooted plants.
6 to 9 inches high, thrice transplanted, fine well-rooted plants.
10 to 12 inches high, four times transplanted, fine well-rooted plants, fit for grafting.

PERISKIA, Stocks, strong.
EPIPHYLLUMS, in variety, good.

Prices on application to B. WHITHAM, The Nurseries, Reddish, near Stockport.

WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now booking orders for forward delivery of WILLOW PLANTS and CUTTINGS for TIMBER and ORNAMENTAL TREES for HEDGES and GAME COVERTS, and for BASKET-MAKING purposes. CATALOGUES free upon application as above. In the Press, and will shortly be published,

The SALIX, or WILLOW, a revised and enlarged Edition, containing Instructions for its Planting and Culture, with Observations upon its value and adaptability for the Formation of Hedges and Game Coverts. Post free, 1*s.*

Roses.—New Roses, Gladioli, Camellias, Azaleas,

PÆONIES, &c., from PARIS.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital, Paris), beg to inform their Customers and Friends that their STOCK of the above is unusually large and of first quality this year. Price LISTS on application. Fifteen per cent discount on the New Roses for 1872.

Gladioli, Amaryllis, New Roses, Pæonies, Iris,

LILIUMS, PHLOX, &c.

EUGENE VERDIER, FILS AINÉ, trusts that his Clients and Friends will again favour him with their orders, which he assures them will be executed in a manner that will give entire satisfaction.

CATALOGUES will be obtainable direct from him about Sept. 25; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

EUGENE VERDIER, FILS AINE, Horticulteur, 3, Rue Dunois, Paris.

Gladioli, Gladioli.—To the Trade.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, 3, Rue Dunois, Paris, offers to his Friends a considerable stock of fine BULBS of his unrivalled collection of above; also the following New Varieties (the whole for £2 16*s.*):—Alcyone (Souchet), Antigone (S.), Antiope (S.), Ariane (S.), Arsinöe (S.), Beatrix (S.), Celimène (S.), Didon (S.), Jupiter (S.), Minerve (S.), Ossian (S.), Phœbus (S.), Virginalis (S.).

CATALOGUES, with description, will be obtainable about September 25, by addressing direct to E. V., fils ainé; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, E.C.

JEAN VERSCHAFFELT begs to offer the following, in fine healthy plants, at the undermentioned low prices, viz.:—

CAMELLIAS, 1 to 1½ foot high, with buds, best sorts, all named varieties (selection left to J. V.), £7 per 100; larger, £10 per 100.

AZALEA INDICA, fine plants with buds, first-rate varieties, £5 per 100; stronger, £6, £8, £12 and upwards per 100.

OTAHEITE ORANGES, with fruit, 30*s.* per dozen.

JASMINUM GRANDIFLORUM, fine grafted plants, flowering all through the winter, 24*s.* per dozen.

Early orders are respectfully solicited, especially as regards Camellias, which are a scarce article this year. Apply to

JEAN VERSCHAFFELT, Nurseryman, 134, Faubourg de Bruxelles, Ghent, Belgium.

NEW and SELECT PLANTS.—The following are now offered at the prices annexed. No charge for package. On all orders of £1 the carriage will be paid to London:—

12	fine varieties DOUBLE GERANIUMS	4	0
12	superb new varieties DOUBLE GERANIUMS of 1870	8	0
12	varieties best selected FUCHSIAS	2	0
12	varieties new FUCHSIAS of 1871	4	0
12	varieties best selected VERBENAS	2	0
12	fine new varieties VERBENAS of 1871	2	6
12	varieties best selected COLEUS	2	0
12	fine new varieties COLEUS of 1871	2	6
12	varieties best selected CHRYSANTHEMUMS	2	6
12	fine varieties new CHRYSANTHEMUMS of 1871	3	0
12	fine new varieties PENTSTEMONS	4	0
12	fine varieties PERENNIAL PHLOXES	3	0
12	varieties selected ZONAL GERANIUMS	3	0
12	fine new varieties ZONAL GERANIUMS of 1870	6	0
12	fine var. GOLD and GOLDEN BICOLOR GERANIUMS	6	0
12	fine varieties JAPANESE AUCUBAS	12	0
12	new varieties Hardy CHILIAN MIMULUS	3	0
12	fine varieties ACHIMENES	2	6
12	fine varieties IRIS GERMANICA	4	0
12	fine varieties SEDUMS	3	0
12	fine varieties SEMPERVIVUMS	3	0
12	select varieties SAXIFRAGAS	3	0
12	fine varieties ANTIRRHINUMS	3	0
12	select varieties PANSIES	4	0
12	fine varieties JAPANESE EUONYMUS	6	0
12	fine varieties BOUVARDIAS	6	0
12	fine varieties MESEMBRYANTHEMUMS	4	0
12	select varieties HELIOTROPIUMS	3	0
12	select varieties LANTANAS	4	0
12	fine varieties PELARGONIUMS	6	0
12	fine varieties IVY-LEAF GERANIUMS	6	0
50	select varieties FUCHSIAS	8	0
50	select varieties CHRYSANTHEMUMS	8	0
50	select varieties HARDY HERBACEOUS PLANTS	14	0
100	select varieties HARDY HERBACEOUS PLANTS	25	0
12	fine varieties DOUBLE and SINGLE PETUNIAS	6	0
12	fine varieties TROPÆOLUMS	3	0
12	fine varieties HYDRANGEAS	6	0
12	fine varieties VIOLA ODORATA	6	0
6	fine varieties ECHEVERIAS	3	0
12	fine varieties GREENHOUSE CLIMBERS	8	0
12	select varieties GREENHOUSE SUCCULENTS	6*s.* to 12	2
12	select varieties GREENHOUSE PLANTS	6*s.* to 12	0
12	fine varieties select STOVE PLANTS	6*s.* to 12	0
4	new AGERATUMS, White Tom Thumb, White Imperial Dwarf; Tom Thumb's Bride, the whitest; Sultan, the darkest, for 1*s.* 6*d.*		
12	varieties AGERATUMS, including the above	3	6
12	fine varieties tall HERBACEOUS LOBELIAS	9	0
12	fine varieties VERONICAS	6	0

B. W. KNIGHT, Florist, Battle, Sussex.

Dutch Flower Roots.

DOWNIE, LAIRD, AND LAING have now received their annual importations of FLOWER ROOTS, consisting of Hyacinths, Polyanthus, Narcissus, Double Narcissus, Crocus, Tulips, Jonquils, Ranunculus, Anemones, Snowdrops, &c., which have all been carefully selected from the most celebrated establishments in Holland.

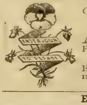
The Bulbs this season are well ripened, unusually large, and very heavy, and have arrived in splendid condition.

Descriptive CATALOGUES forwarded post free.
Nurseries: Forest Hill, S.E.; and Edinburgh, N.B.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c., is now ready, and may be had gratis and post free on application

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.



"The best Catalogue"—*Vide "Horticulturist," October*, 1870.

Gratis and post free,

A CATALOGUE of DUTCH BULBS, FRUIT TREES, DRIED FLOWERS, and general Autumn Requirements.

DICK RADCLYFFE AND CO., Seedsmen, Horticultural Decorators and Garden Furnishers, 129, High Holborn, W.C.

Seed Grounds, Erfurt, Prussia.

Exhibition Hyacinths.

SUTTONS' SUPERB DUTCH HYACINTHS, for Pots and Glasses, specially selected for Exhibition purposes.

25 splendid new varieties, 40*s.*
12 ,, ,, ,, 20*s.*

CHEAPER COLLECTIONS,
containing the best old varieties.

	£	s.	d.
100 Hyacinths in 100 very choice sorts	£1	4	0
100 ,, ,, 50 ,,	3	10	0
50 ,, ,, 50 ,,	2	2	0
50 ,, ,, 25 ,,	1	15	0
25 ,, ,, 25 ,,	1	1	0
12 ,, ,, 12 extra fine ,,	0	12	0
12 ,, ,, 12 choice ,,	0	9	0
12 ,, ,, 12 good ,,	0	6	0

MINIATURE HYACINTHS, finest named varieties, 4*s.* per dozen.

⁂ To secure the best Bulbs, early orders are solicited.

For complete Cultural Instructions, and list of Flower Roots, see SUTTONS' AUTUMN CATALOGUE for 1871, price 1*s.*; gratis to customers.

SUTTONS' SELECT LIST of DUTCH FLOWER ROOTS, gratis and post free on application.

☞ *All Flower Roots carriage free.*

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns). of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

New Bedding Plant, Thymus citriodorus aureus

MARGINATUS (Lemon-scented gold-edged Thyme).

MESSRS. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield, are now sending out an exceedingly pretty Thyme, of an erect-growing but much-branched habit, with large obovate leaves, which are of a very bright dark green in the centre, and with a broad rich golden-yellow margined variegation; is very handsome and attractive. It will prove very effective for edging flower beds, borders, or riband planting, and for growing in masses on banks, or in other varied forms; it may be grown as bushes or pyramids for winter bedding, having proved perfectly hardy. Altogether, it may be considered as one of the most charming bedding plants known, and with the additional delicious fragrance of the sweet-scented Lemon Thyme.

It was exhibited at the Royal Horticultural Society on June 21, 1871, and received a First-class Certificate; also at the Royal Horticultural Show at Nottingham, a First-class Certificate.

PRICES.—

1 plant for 2*s.* 6*d.*
6 plants for 10*s.* 6*d.*
12 plants for 18*s.*
25 plants for 33*s.*
50 plants for 63*s.*
100 plants for 105*s.*

Trade terms on application.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30*s.* per cwt.; 36-lb tins, 10*s.* Directions and testimonials on application

Principal Agent:—W. D. BARBOUR, 3, Park Row, Leeds.

Wheat Sowing.

DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wire-worm. A 9*d.* packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.

Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.

Full directions for use are given with each packet.
Prepared at the Manufactory, Woburn, Beds.

CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.

Agents in every Town throughout England, Scotland, and Ireland.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

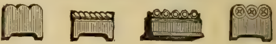
"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

THE LONDON MANURE COMPANY (ESTABLISHED 1840), have now ready for delivery, in fine dry condition—

PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE.
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

Rosher's Garden Edging Tiles.



THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

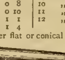
Notice of Removal.

PHILIP PALMER has REMOVED from his old-established WINDOW and HORTICULTURAL GLASS WAREHOUSE, 118, St. Martin's Lane, W.C., to more extensvie premises, at 36, ST. MARTIN'S LANE, nearly opposite.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.



	Each.—*s.*	*d.*		Each.—*s.*	*d.*
2 inches in diameter	0	3½	12 inches in diameter	1	9
3 ,, ,,	0	4½	13 ,, ,,	2	0
4 ,, ,,	0	5½	14 ,, ,,	2	6
5 ,, ,,	0	6½	15 ,, ,,	3	0
6 ,, ,,	0	8	16 ,, ,,	3	6
7 ,, ,,	0	10	17 ,, ,,	4	0
8 ,, ,,	1	0	18 ,, ,,	5	0
9 ,, ,,	1	2	19 ,, ,,	6	0
10 ,, ,,	1	4	20 ,, ,,	7	0
11 ,, ,,	1	6			

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter	0*s.*	6*d.*	9 inches in diameter	1*s.*	8*d.*
5 ,, ,,	0	8	10 ,, ,,	2	0
6 ,, ,,	0	10	11 ,, ,,	2	6
7 ,, ,,	1	1	12 ,, ,,		
8 ,, ,,	1	4			

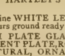
Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2*s.*	0*d.*	16 inches long	1*s.*	4*d.*
22 ,,	1	10	14 ,,	1	2
20 ,,	1	8	12 ,,		
18 ,,	1	6			

WASP TRAPS, 3*s.* 6*d.* per dozen.

HAND GLASSES, WITH OPEN TOPS.



	Each.—*s.*	*d.*		Each.—*s.*	*d.*
12 inches	6	6	20 inches	10	6
14 ,,	7	6	22 ,,	11	6
16 ,,	8	6	24 ,,	12	6
18 ,,	9	6			

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without, E.C.

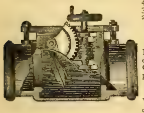
SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

Horticultural Buildings.

A. SHANKS AND SONS' CATALOGUE of HORTICULTURAL BUILDINGS in IRON and WOOD, including DESIGN of GRAND WINTER GARDEN recently erected by them in Edinburgh, will be forwarded on receipt of 30 postage stamps

Dens Iron Works, Arbroath, Forfarshire; and 27, Leadenhall Street, London, E.C.

T. G. MESSENGER, HOT-WATER ENGINEER, Loughborough, is delivering HOT-WATER PIPES, &c., free to any Station on Midland Railways, for cash, as under (nett):—



4-in. Hot-water Pipe,	2*s.* 2*d.* p. yard
3-in. Hot-water Pipe,	1*s* 9*d.* ,,
2-in. Hot-water Pipe,	1*s.* 1*d.* ,,

Connections at proportionate rates.

The Heating of all kinds of Buildings by hot water, direct or exhaust steam, undertaken by Contract, and satisfactorily completed, in any part of the country.

MESSENGER'S PATENT VALVES for Water, Gas, or Steam, shut off perfectly, are full bore, and cheaper than any other made. Form a cheap and excellent Chamber and Valve for Pumps. Thousands at work.

Prices:—4-inch, 21*s.*; 3-inch, 17*s.* 6*d.*; 2-inch, 15*s.*

MESSENGER'S PATENT HOT-WATER BOILER is more powerful and economical in fuel than any other Boiler.

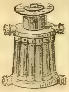
Further prices and descriptions on application.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

Improved Conical.

Tubular Boiler.



HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

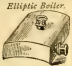
CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.

Portable Boiler.

Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.



Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
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The Patent Imperishable Hothouse.

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GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the

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Plans, Specifications and Estimates supplied upon the shortest notice.

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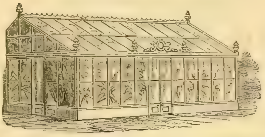
353, Old Kent Road, London, S.E.



200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

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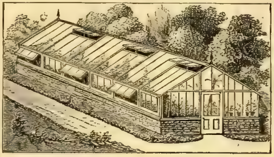

GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
,, ,, glazed, 16-oz. good sheet glass	6*s.* ,,
6 ft. ,, ,, 2 in thick, unglazed	5*s.* ,,
,, ,, glazed, 16 oz. good sheet glass ..	11*s.* ,,
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* ,,
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* ,,

Estimates given for Conservatories or Greenhouses to any Design.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

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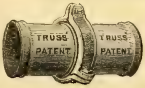
H. FREEMAN AND SONS' HORTICULTURAL WORKS, 106, Mare Street, Hackney, E. Established 25 years.

Good substantially made GREENHOUSES, glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15; a handsome CONSERVATORY on hand, 35½ feet by 18 feet, £110; Nurserymen's LIGHTS, £25 per 1000 feet.

Portable and Fixed Hot-water Apparatus



FOR
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TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
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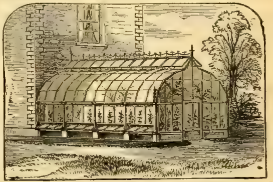
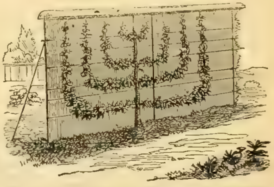
BEARD'S PATENT NON-CONDUCTING and VENTILATING METALLIC GLASS HOUSES will prove cheaper than wood



All lovers of Wall Fruit and delicate Flowers should have a piece of

BEARD'S PATENT IRON-FRAMED GLASS
or SLATE WALLS.



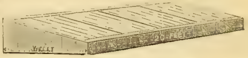
Full particulars of the above may be had for a stamped envelope, also Illustrated CATALOGUE, price 1*s.*, of

CHARLES BEARD, Patentee, Horticultural Engineer, Victoria Works, Bury St Edmund's.

W. S. BOULTON AND CO., Norwich, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES.—Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

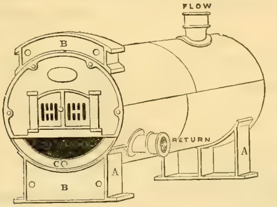
8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
17½ feet long by 6 feet wide..	£5 0	31½ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.
PLANT PRESERVERS.
Illustrated Catalogues free on application.
Rose Lane Works, Norwich.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

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"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

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"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED,
FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

WM. PAUL'S ROSES are NOW in BLOOM, inspection respectfully invited. Amongst Novelties are the beautiful Hybrid Perpetual PRINCESS CHRISTIAN, PRINCESS BEATRICE, PRINCE LEOPOLD, and a number of other English and Foreign Seedlings.

Trains from Bishopsgate Station, Great Eastern Railway, and St Pancras Station, Midland Railway, to WALTHAM Station, in about half an hour. Entrance ftom the platform, Waltham Station.

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SUTTONS' AUTUMN CATALOGUE for 1871, profusely Illustrated, and containing full Cultural Instructions for the cultivation of—

Hyacinths
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Narcissus
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Tulips, early and late
Gladiolus
Lilies
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With all other kinds of Flower Roots. Price 1*s.*, post free; gratis to customers.

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INVITE INSPECTION OF THEIR VERY EXTENSIVE STOCK OF

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AND OTHER WINTER AND SPRING-BLOOMING PLANTS,

All of excellent quality.

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Have arrived in excellent condition, and he respectfully solicits early Orders.

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AT PRESENT, THE WINTER-GARDEN, AT

MR. WM. BULL'S ESTABLISHMENT

IS A MOST LOVELY SIGHT.

The GRAPE VINES, which are festooned over the building, are literally covered with Grapes. These are grown for the purpose of shading the specimen plants, which are alone worth a journey to see. Thousands of bunches of Grapes over-hanging magnificent plants of the grand ABYSSINIAN MUSA, matchless TREE FERNS, noble PALMS, picturesque ENCEPHALARTOS, graceful DRACÆNAS, and other Plants, present a *coup d'œil* unequalled in Europe, and perhaps in the World.

An inspection of the above, as also of the NEW PLANTS, which are the great speciality, is invited, and can always be made by application at the Office.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD,
CHELSEA, LONDON, S.W.

NEW CRIMSON PRIMROSE,
PRIMULA JAPONICA.

MR. WILLIAM BULL

Begs to announce that he is NOW SENDING OUT this NEW HARDY PRIMROSE. It has been recently figured in the "Florist and Pomologist," "Floral Magazine," and "Botanical Magazine;" and the opinion of every one who has seen it in blossom may be expressed in the one word, "lovely!" When exhibited before the Floral Committee of the Royal Horticultural Society, it was voted a First-class Certificate by acclamation.

The "Florist" says of it,—"Hail! Queen of the Primroses! for so its introducer designates the lovely flower we now figure, which is hardy as a peasant, resplendent as a princess. It is just ten years since Mr. Fortune met with it in Japan, a basketful of blooming plants having been brought to his door; they were, of course, secured, but the journey home was too much for them, and despite every care none reached England alive. Ever since that time endeavours have been made to introduce this lovely plant, but till now without success, the seeds having been found to lose their germinating power in the course of transmission to Europe At last, however, perseverance has been rewarded, and from seeds imported by Mr. Fortune plants have been raised in the establishment of Mr. W BULL, of Chelsea. Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely Primrose, one which is really valuable on account of its intrinsic beauty. Of the hardiness of the Primula japonica there can be no doubt, since plants which have been standing all the winter, fully exposed, in the trying atmosphere of London, are perfectly healthy, and came into bloom about the middle of May, some two or three weeks later than the plants which had been potted and flowered under glass"

The "Floral Magazine" remarks,—"Since the day when Lilium auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as that which we now figure, when Mr. W. BULL exhibited it on May 3 of the present year. Its history is now well known, and of its merits too much cannot be said. To Mr. Fortune, already so successful in enriching our gardens, are we indebted for it; and Mr. BULL may well congratulate himself on being the first to introduce it into Europe. A Primula a foot and a half high, bearing four or five separate whorls of flowers, each flower an inch in diameter, and of a splendid magenta colour, and the plant, moreover, perfectly hardy—can anything be added to this to indicate its value? We hardly think so, and everyone who saw it will fully bear out our assertion, that a more beautiful and more useful plant has not been for many years introduced into Europe. Of its hardiness there can be no doubt, as it has stood the ordeal of the last severe winter in the neighbourhood of London."

The Plants now offered are very strong and healthy, in 4-inch pots, and will be sure to bloom beautifully next Spring. Early Orders are respectfully solicited to insure having the strong Plants, for the demand is expected to be very large. Price **10s. 6d.** each, or **£4 10s.** per dozen. Coloured Plates can be supplied at 1*s.* 6*d.* each.

Those wishing to add this splendid Primula to their Gardens, are recommended to procure Plants, for even if imported Seed should be offered this season, it can scarcely be expected to grow. Mr. Fortune imported Seeds many times during a period of 10 years, but they always failed to vegetate, except in one instance, when sent to this country in a special manner.

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LONDON, S.W.

To Her Majesty the Queen.

DUTCH FLOWER ROOTS,

To H.R.H. the Prince of Wales.

CARRIAGE FREE.

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Having received their Consignment of DUTCH FLOWER ROOTS, which have arrived in splendid condition, beg to offer the following COLLECTIONS of BULBS, which will be found to contain, in the best quality, all the sorts required for the purposes mentioned:—

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12 HYACINTHS, in 12 extra fine named sorts.
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50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 ,, Rex rubrorum.
3 ,, La Candeur.
3 ,, Royal Standard.
6 ,, Yellow Prince.
3 ,, Rosa Mundi.
6 ,, Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
6 IXIAS, finest mixed.
6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

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BULBS for CONSERVATORY and OUT-DOOR PLANTING, including Basket and Packing, and Carriage Free. Price 15*s.*, 30*s.*, 42*s.*, 63*s.*, and 84*s.*

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of BULBS for CONSERVATORY and OUT-DOOR PLANTING, including Box and Packing, and Carriage Free. Price 30*s.* Contains—

12 HYACINTHS, in 12 extra fine named sorts for pots or glasses
12 HYACINTHS, in 3 colours for bedding.
12 NARCISSUS, Double, white.
12 ,, Poeticus or Pheasant-eye.
36 TULIPS, extra fine mixed.
6 ,, Tournesol
6 ,, Duc Van Thol.
3 ,, Royal Standard.
3 ,, La Candeur.
3 ,, Yellow Prince.
3 ,, Rex rubrorum.
12 Double DAFFODILS.
12 STAR of BETHLEHEM.
12 SCILLA BELGICA, mixed.
75 CROCUS, blue.
75 ,, striped
75 ,, large yellow.
75 ,, white.
36 ANEMONES, extra fine mixed
8 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice mixed English.
12 ,, extra fine mixed Spanish.
12 JONQUILS, Campernel.
36 RANUNCULUS, extra fine mixed.
50 SNOWDROPS.

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WM. BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

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Sir R. Napier
Phœbus
Sunbeam
Miss Burdett Coutts
Italian Beauty
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ROYAL HORTICULTURAL SOCIETY. — HORTICULTURAL DEPARTMENT of LONDON INTERNATIONAL EXHIBITION, 1871. On OCTOBER 4, 1871, a great INTERNATIONAL EXHIBITION of FRUIT will be held at South Kensington, in which all Home and Foreign Growers of Fruit are invited to take part, and on which occasion the following PRIZES will be awarded:—

CLASS 1.—The most complete COLLECTION of APPLES, 3 fruits of each variety.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 2.—COLLECTION of DESSERT APPLES, 3 fruits of each variety.
1st, Silver Gilt Medal. | 2d, Large Silver Medal.
CLASS 3.—COLLECTION of CULINARY APPLES, 3 fruits of each variety.
1st, Silver Gilt Medal. | 2d, Large Silver Medal.
CLASS 4.—The most complete COLLECTION of PEARS, 3 fruits of each variety.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 5.—COLLECTION of DESSERT PEARS, 3 fruits of each variety.
1st, Silver Gilt Medal. | 2d, Large Silver Medal.
CLASS 6.—COLLECTION of KITCHEN PEARS, 3 fruits of each variety.
1st, Large Silver Medal. | 2d, Bronze Medal.
CLASS 7.—COLLECTION of GRAPES, 2 bunches of each variety.
1st, Gold Medal. | 2d, Silver Gilt Medal.
CLASS 8.—The LARGEST BUNCH of GRAPES.
1st, Silver Medal. | 2d, Bronze Medal.
CLASS 9.—COLLECTION of ORANGES, LEMONS, CITRONS, LIMES, &c.
1st, Gold Medal. | 2d, Silver Gilt Medal
CLASS 10.—MISCELLANEOUS FRUIT, not mentioned in either of the above classes.

By Order of the Council,
HENRY Y. D. SCOTT, C.B., Major General,
Secretary to the Royal Horticultural Society,
And to Her Majesty's Commissioners of the Exhibition of 1851.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Professor REICHENBACH, of Hamburgh
Dr. MOORE, of Glasnevin
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden W C

The Gardeners' Chronicle

SATURDAY, SEPTEMBER 16, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Sept. 20 { Royal Horticultural (Fruit and Floral Committees), at S. Kensington .. 11 A.M.
Ditto (General Meeting) .. .. 3 P.M.

◆

WITHOUT attaching undue importance to what is sometimes facetiously termed "kid-glove gardening," and without in the slightest degree depreciating the value to practical men of the free and unrestricted use of their digits, it may, nevertheless, be maintained, that there are, in the PRACTICE of GARDENING, many little MECHANICAL CONTRIVANCES, introduced frequently by amateur cultivators to facilitate the performance of certain operations, and which, while they may be safely recommended to their brother garden amateurs, are by no means to be despised by the practical professors of horticultural science. In this way is not unfrequently introduced some simple expedient by which to facilitate the performance of an operation otherwise requiring rather dexterous manipulation, and it is to one or two of these that we are now about to invite attention.

Among the many operations of gardening there are perhaps none more tedious than the thinning of Grapes, and the tying-out of the shoulders of large bunches. They are just the operations one can well imagine unpractised hands would find to be irksome; and yet they are operations, the former especially, which must be honestly faced, and that at the proper time, unless the crop is to be suffered to go to ruin. The experienced practical man takes his Grape scissors, and with this implement, aided by the thumb and finger of his left hand, he manipulates the clusters with more or less of expertness; but it is next to impossible even for him to avoid rubbing and touching the remaining berries to some extent—and to rub or to touch them does them no good, and may possibly do them harm, even though it may not, as some hold it does, tend to create rust. There is certainly the risk of damaging the outer coating of bloom, on the perfect condition of which the beauty of the fruit mainly depends.

A very ingenious mode of avoiding all necessity for handling the Grapes at all whilst thinning them has been practised, for his own convenience, by Mr. W. CHAPMAN, of Nottingham, and it is so simple and so perfect in its working, and so greatly facilitates the operation of Grape thinning, that, with his permission, we proceed to explain in what his "Grape holdfast" consists. It is merely a thin narrow strip of deal, Elder, or any other light wood cut off to a convenient length, one end of which is bluntly pointed, and a few irregular and unequal notches are cut near the pointed end, as shown in fig. 272, A. All the sharp edges are then pared off, and the implement is complete. When in use it is taken in the left hand, the point introduced amongst the ramifications of the cluster, which one by one are lifted out clear from the remainder, being caught by one or other of the notches, and that without touching a berry, or injuring the fruit in the slightest degree. While the shoulder or branch of the cluster is thus held lightly but securely, the supernumerary berries are cut away according to the judgment of the operator, the holdfast is gently unhooked, and passed on to the stalk of another branch, and this is repeated until the whole cluster has been gone over. There is hence no fingering of the bunches or berries in any way, and the operation of thinning can be carried on quite as rapidly and as easily as if the fingers alone were in requisition.

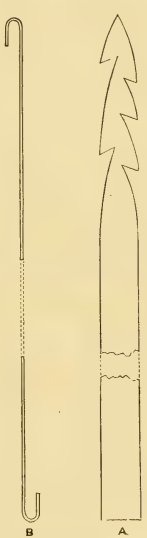

FIG. 272.

A, Holdfast for Grapes while being thinned; B, Wire Hook for supporting shoulders of clusters.

Mr. CHAPMAN has another contrivance, equally facile, for supporting the shoulders of the Grape clusters. Usually these are held apart during the swelling and ripening processes either by inserting thin forked sticks across the bunches, or by tying up the shoulders by means of fine strands of bast matting. In either way the berries are very liable to be rubbed and thus disfigured. To avoid this Mr. CHAPMAN takes some of the very fine wire used for wiring the corks of lemonade and seltzer-water bottles, cuts it into convenient lengths, turns a small hook at each end, as in fig. 272, B, and by this means momentarily, and without handling the bunch at all, hooks up the shoulders, one by one, and supports them in the required position by catching with the hook at the opposite end an adjacent branch or wire, whichever may be most conveniently placed. In this way the thing is done in less time than it takes to describe the operation; and, of course, when the Grapes are gathered, instead of having to take out the forked sticks, or to cut down the strands of bast, all that is necessary is gently to unhook the wires. Their great advantage lies in the facility with which they can be used, and in the fact that they afford no harbour for insects.

These two simple contrivances, which greatly facilitate the thinning of Grapes and the opening up of the bunches during the swelling process, both of which have been devised and brought into use by an intelligent amateur, will, if we mistake not, recommend themselves to the notice of our practical brethren—certainly to non-professional gardeners.

—— THE following correspondence, on the subject of COVENT GARDEN MARKET, recently appeared in the columns of the *Times*:—

"Sir,—Several statements have recently appeared in the public press reflecting upon the Duke of BEDFORD's disregard of the interests of his Covent Garden Market tenants, in omitting to cover in, and protect from the weather, the open spaces appropriated for business purposes in the market.

"It does not appear to be generally understood that the widest diversity of opinion prevails in the market upon this question, and that a large and influential section of the tenants, whose interests entitle them to the most attentive consideration, have always been adverse to any proposal to extend the covered area of the market.

"In the year 1858, when such a proposal was under consideration, a memorial upon the subject, numerously and influentially signed by the Duke of BEDFORD's tenants in the market, was addressed to Mr. HARDY, who was at that time his Grace's steward.

"I have enclosed a copy of this memorial, and have to request that you will kindly allow it to appear in your columns at an early date.

"I should add that, whenever a reconsideration of the question has been urged upon the Duke by the Market Gardeners' Association, counter-memorials and protests, similar to that below, have always been received by his Grace, and that his Grace has always been desirous of dealing with the subject in the manner most conducive to the general welfare of the whole body of his tenants having interest in Covent Garden Market.

"Possibly an opportunity may yet be afforded for reconciling conflicting views, and I am instructed by the Duke of BEDFORD to say he would gladly assist any effort which may be made in this direction.

"I am, Sir, your most obedient servant,
"THOMAS J. R. DAVIDSON.
"Bedford Office, Bloomsbury, Sept. 5."

"Sir,—We, the undersigned, beg leave to acknowledge the receipt of the correspondence between the market gardeners and yourself on the subject of covering in the market, and your letter of March 9, and to tender our respectful thanks for your courtesy in furnishing the same.

"After carefully perusing this correspondence, it appears to us to admit of but one conclusion, and that is, if the market gardeners choose to accept the terms and conditions proposed from the Bedford Office, the said proposition must be carried out to the imperilling of the interests of the parish and neighbourhood, and, consequently, as we believe, the interests of his Grace the Duke of BEDFORD himself; and we feel assured from the mass of evidence already obtained bearing on the subject from inspectors, salesmen, and others connected with the other markets, that the sanitary condition of your memorialists will be seriously affected thereby.

"It, therefore, appears to us necessary to trespass a little more on your time by stating that we cannot help thinking our views, as set forth in the memorial to his Grace dated February 4, on this subject, have not received that due consideration to which we feel them entitled, as your memorialists represent fully three-fourths of the income which his Grace derives from the market, and who represent, when compared with the market-gardeners, or 'Landed Association,' as they are pleased to style themselves, the principal agency by which Covent Garden market is rendered what it is in its attraction and its popularity, for we have no hesitation in saying, and we are prepared with evidence to prove it, that without the energy shown by the shopkeepers and salesmen, who have opened up remote markets, and who maintain constant communication with all parts of the United Kingdom, that not unfrequently a considerable portion of their produce would remain unsold; and in this matter the market gardeners have never to our knowledge interested themselves, but maintain much about the same stationary opinions they held 20 years since—always assuming the market to have been exclusively intended for them, and that salesmen and shopkeepers alike are interlopers. And if we place it in another light, we shall find it easy to show you that were all the 'Landed Association' to quit their stands in a month's time, plenty of other growers are to be found ready to avail themselves of the facilities offered here under existing conditions, and we are quite satisfied no difficulty would be experienced in indemnifying his Grace for all loss occasioned by the change.

"However, setting aside all reasoning and the comparisons we have reluctantly ventured to draw, for the purpose of proving that we are, as a body, equally as important and deserving as much consideration as the 'Landed Association' in connection with the market, we beg leave to state that we are prepared, with the co-operation of the parochial authorities and our fellow parishioners, to take the matter up with them on public grounds; and, however much it may be opposed to our desires and inclinations to raise any unpleasantness among our neighbours, we feel it to be due to your courtesy and patience, and an act of justice to ourselves, to signify our intention of opposing the Supplementary Act of Parliament whenever it is applied for, for the purpose of carrying the before-named proposition, by all legal means, and in all its stages, not in any spirit of coercion, or selfish opposition, but that the question may be set at rest once and for all.

"Trusting that some final decision may soon be arrived at in the matter, we venture again to solicit the earliest notice of such decision that may be compatible with your convenience."

—— The Disease in Asparagus which is noticed by Mr. G. Hester is by no means uncommon, and is known in some districts under the name of the Copper Web. It is not confined to Asparagus, but attacks Potatos, and either the same Fungus or one closely allied is destructive to Saffron, Lucerne, and Mint. Rhizoctonia violacea on the two former is beautifully figured in Tulasne's "Fungi Hypogæi," but no perfect fruit was detected. Mr. Broome, however, found fructification on the Rhizoctonia of Mint, which is described in "Annals of Natural History," June, 1861. It is of a tawny tint at first, but the tips of the threads acquire a violet tint and produce subglobose spores, about $\frac{1}{3500}$ of an inch in diameter. The tufts of threads gradually become compact, and are converted into granular bodies about the size of Mustard seed, which are connected by a violet web. These bodies are in general quite smooth, but occasionally they retain about them little tawny patches still showing traces of the original threads. There is no distinct nipple-like tip, as in R. violacea (crocorum). They resemble more nearly the granular bodies on the plant when growing on Lucerne. It is probable that the perfect fruit has not yet been discovered, and the bodies discovered by Mr. Broome at present can be only regarded as a secondary form of fruit (conidia). *M. J. B.*

—— In a paper on the Fossil Plants of the coal measures, recently read before the Royal Society by Prof. Williamson, the common relationship of the Lepidendron and Sigillaria was insisted on, and the separation of the latter from the former as a group of Gymnosperms, suggested by Brongniart, was held to be untenable. The remarkable development of exogenous woody structure in most members of the entire family was considered to indicate the necessity of ceasing to apply to either of them, or to their living representatives, the term Acrogenous. Hence the Professor proposed a Division of the Vascular Cryptogams into an exogenous group, containing Lycopodiaceæ, Equisetaceæ, and the fossil Calamitaceæ; and an endogenous group, containing the Ferns; the former uniting the Cryptogams with the Exogens through the Cycads and other Gymnosperms, and the latter linking them with the Endogens through the Palms.

—— At a recent meeting of the French Academy of Sciences, it was remarked, in connection with the Extraordinary Cold experienced on May 18 and June 3, 1871, that in 1802 hoar frost was observed as late as the month of July. This appears to have been the worst year known for low temperatures in the summer months.

—— The Maximum Temperatures of the Air during the week ending September 7, ranged from 76°.3 at Blackheath, to 64° at Greenock, with a mean for all English stations of 72°.1, and of all Scotch of 67°. The Minimum Temperatures of the Air ranged from 48°.2 at Bradford and Portsmouth, to 40° at Perth. The mean for England was 46°, and for Scotland 48°.8. The Mean Temperatures ranged from 60°.5 at Blackheath, to 54° at Perth, with a mean for the southern country of 58°.1, and for the northern of 56°.4. Rain was recorded as having fallen at all stations, and at three places falls of 2 inches or more occurred, viz., Portsmouth, 2.15 inches; Birmingham, 2 inches; and Wolverhampton, 2.52 inches. The mean fall for England was 1.42 inch, and for Scotland 0.44 inch. (See Mr. Glaisher's Tables in present issue, p. 1203.)

—— It is curious that we have now before us another case, quite different from those previously noticed (p. 1162), of plants attacked by Glæosporium læticolor. A large Cucumber, arrived at its full growth, and in consequence turned yellow, has been forwarded to us by Mr. Thos. Thornton, which is clearly attacked by the same Fungus. We have not detected it on the leaves, though very possibly, had they arrived in better condition, we might have detected its presence there. The Fungus in question is different from Myxosporium orbiculare, which is very common on decaying Gourds, and which is believed by Messrs. Tulasne to be merely the pycnidia of one of the commonest of Fungi, Sphæria herbarum. It indeed resembles it at first sight, but the spores are very much smaller, and equal in size. In the Glæosporium they are frequently $\frac{1}{1000}$ of an inch long, whereas in the Myxosporium they do not exceed $\frac{1}{2500}$. There are three other species found on Gourds, in all of which the spores are different. *M. J. B.*

—— The Botanic Garden in connection with Clifton College is now fairly established, and contains over 1000 hardy herbaceous plants, arranged according to the natural system. The arrangement is similar to that adopted in the herbaceous ground at Kew, consisting of long narrow beds, with grass paths between. A rockery has been built for alpine plants, and there is a collection of the common ornamental trees and shrubs. We learn from the last "Marlborough Report" that the Botanic Garden there has "fully realised the hopes of its originators;" and special subscriptions are solicited towards the expenses incurred by its formation. In both schools the herbarium receives many additions, that at Marlborough being already of very considerable extent.

—— Dr. George Bennett has published an interesting paper "On the Introduction, Cultivation, and Economic Uses of the Orange, and others of the Citron tribe, in New South Wales." A full account of the introduction and cultivation is given, founded on the author's own observation, and the practical experience of some of the extensive Orange growers in the colony, and the establishment of farms for the cultivation of the Orange for its commercial value in the art of perfumery, is advocated. The paper is full of information on Orange culture, and Dr. Bennett considers, from his own experience, that the Orange may, with proper care and attention, be rendered the most profitable of all the fruits grown in New South Wales.

—— It may be useful at this propagating season to recall Mr. Webster's observations on the Hardiness of Centaurea candidissima, published in one of our monthly contemporaries, and in which he says it is in reality perfectly hardy:—

"I have had it tested through the last winter (1869) in different situations; one of them was behind a north wall, where the sun's rays could not reach from September till March, and another at the base of a south wall, with full open exposure. The frost was long and severe, and a better trial of its power of endurance could scarcely have been had, as we had little or no snow to cover the ground. In some open and exposed places the frost penetrated a foot or more into the ground. Notwithstanding all this, the Centaureas stood unscathed. It was interesting to observe, when a thaw came, that while a quarter of Globe Artichokes quite adjacent was killed to the surface, the Centaureas stood up quite erect and firm. As a proof that it is not necessary to coddle up these plants under glass, I may add that we obtained our best batch of spring cuttings from those at the bottom of the south wall, for although we have had some six or seven dozen pots under glass, the cuttings from them were not so sturdy and firm as the outdoor ones. It will be an important matter to many to be able to save the winter room these plants occupy."

This was written from Gordon Castle, in the North of Scotland.

—— The energetic Dr. Ferdinand Mueller has lately delivered at Melbourne a "Popular Discourse on the Application of Phytology to the Industrial Purposes of Life," which is admirably calculated to direct attention to the subject, and contains, in a small compass, a vast number of suggestive facts. He advises the extensive introduction of foreign plants, especially such as could readily be naturalised, and are of practical importance; and advocates the permanent exhibition in the rooms of the Industrial Museum of "instructive portraits of all the edible and noxious plants likely to come within the colonist's reach." The subject is treated in a light and simple style, but is none the less likely on that account to be impressed upon the hearers of Dr. Mueller's lecture.

—— In our answers to correspondents, May 27, 1871, is one relative to Spot in a Double Pelargonium sent by "W. C. B." After stating our opinion that spot arises from bad cultivation, we added, "we shall endeavour to strike the specimen, and if it becomes healthy we shall then believe that it is a local affection." We have now three perfectly healthy plants, confirming our opinion. As regards the white patches on the stem, we have since seen a similar case, and are pretty sure that they are merely an exaggerated form of spot. The condition is probably uncommon, as we have not found any experienced cultivator who has met with precisely the same form of spot. *M. J. B.*

—— The French Government offers a prize of 20,000 f. to any one who discovers an effectual means of prevention or cure for the New Vine Disease caused by the Phylloxera vastatrix (Peritymbia Vitisana of Westwood).

—— The current volume of the Woolhope Club contains an interesting translation of Prof. Fries' Autobiographical Sketch of his Studies in Mycology. He thus describes the happy chance which induced him to devote himself to the subject which was to render his name illustrious among botanists:—

"By the time I had completed my twelfth year I was acquainted with all the principal plants of the district, and even now, at the distance of more than 50 years, most gratefully do I recall how I was walking with my mother in search of Strawberries through a wood partially burned, when it was my fortune to light upon a noble specimen of Hydnum coralloides. This discovery first incited me to make the tribe of Funguses my study; but, on turning over Liljeblad's 'Svensk Flora,' my only scientific book, I was annoyed to find myself ignorant of the word 'lamella,' there so frequently recurring. So, shortly after, walking with my father, I said to him: 'Dic, pater, quid est lamella?' for my father never suffered me to speak to him except in Latin, so that I picked up Latin even before my native Swedish. 'A lamella,' he replied, 'is a thin plate.' With this explanation, the phrase seemed to me to describe so happily the fructification of Agarics, that by the next day I knew all the genera contained in that excellent work."

A photograph of Fries accompanies the sketch.

—— Mr. Graham Dunlop, the British Consul-General at Havana, in his report for the year 1870-1, observes that the papermakers of England, who are in lack of materials for carrying on their craft, should give attention to the enormous quantities of Fibrous Tropical Plants and trees which abound in Cuba. Successful experiments have been made by local papermakers on the fibre of the Bamboo cane, and on some of the creeping parasitic plants indigenous to Cuba. The Consul hears that attention is being given in Jamaica to the preparation of the fibre of the Bamboo for the papermakers in America. This beautiful plant grows abundantly in Cuba, and could be purchased and crushed at very cheap rates. It is said to excel for paper all the fibrous grasses of late used by our papermakers, and to mix easily with the linen rag pulp and other more ordinary materials.

—— A notice issued by the Postmaster-General states that on October 5 next the following Reduced Rates of Postage for inland letters will come into operation:—For a letter not exceeding 1 oz., 1*d.*; for a letter exceeding 1 oz., but not exceeding 2 oz., 1½*d.*; from 2 oz. to 4 oz., 2*d.*; from 4 oz. to 6 oz., 2½*d.*; from 6 oz. to 8 oz., 3*d.*; from 8 oz. to 10 oz., 3½*d.*; from 10 oz. to 12 oz., 4*d.* Any letter exceeding the weight of 12 oz. will be liable to the postage of 1*d.* for every ounce, or fraction of an ounce, beginning with the first ounce. A letter, for example, weighing between 14 and 15 oz. must be prepaid 1*s.* 3*d.* A letter posted unpaid will be charged with double postage, and a letter posted insufficiently paid will be charged with double the deficiency. An inland letter must not exceed the dimensions of 1 foot 6 inches in length, 9 inches in width, and 6 inches in depth. Concurrently with the reduction of postage on inland letters, the inland sample post will be abolished. From the same date inland book packets will be limited to the same dimensions as inland letters, viz., 1 foot 6 inches in length, 9 inches in width, and 6 inches in depth, and to a maximum weight of 5 lb. Any book packet which may be found to contain a letter, or communication of the nature of a letter, not being a circular letter or not wholly printed, or any enclosure sealed or in any way closed against inspection, or any other enclosure not allowed by the regulations of the book post, will be treated as a letter, and charged with double the deficiency of the letter postage. Any newspaper which may be found to contain an enclosure will be charged as a letter. In other respects the regulations affecting inland book packets and newspapers will remain unaltered.

—— In the "Florist and Pomologist" for the present month, Mr. Bennett, of Enville, has the following seasonable remarks on Storing Potatos:—

"Potatos should always be stored away in as dry a state as possible; and should any disease be discovered among them, I would recommend that but small quantities should be pitted together, certainly not more than a cartload in each clamp. In the centre of this clamp should be placed a lump of lime about the size of a man's head, and before covering them in, they should receive a good dusting of quicklime. The lime absorbs the moisture during the time the Potatos sweat, and by so doing prevents the tubers from overheating, whilst its application also greatly improves the quality of the Potatos; no doubt it absorbs much of the water from the tubers, and consequently they boil more floury than if pitted without lime. After the tubers have laid in small pits for at least one month, they should then be carefully looked over, and may be placed together in one or more large clamps, in the centre of which should be placed a large basket of hard lumps of lime; or should the clamps be long, it will be found beneficial to insert other baskets at about 12 feet apart. The whole heap should also be sprinkled well over with lime before covering it up. I always prefer to have my clamps made low and narrow, for they are then less liable to heat than those which are made up wide and high."

New Garden Plants.

Epidendrum bicameratum, *Rchb. f.*—Epidendrum squalidum, *Lindl.* non Lex.; E. Karwinskii, *Rchb. f.*, supra, p. 710, 1869.

When I proposed to name this plant Epidendrum Karwinskii, I overlooked the fact that there was already a species bearing that name—a terete leaved one. I hasten to correct the mistake, and to give a new name, in allusion to the two hollows on the lip. *H. G. Rchb. fil.*

Bolbophyllum chloroglossum, *Rchb. f., et Warm.*

Affine Bolbophyllo recurvo, Lindl. Labello basi utrinque unidentato.

Bolbophyllum chloroglossum, *Rchb. f., et Warm., Orchid. Lag. Sant. ined.*

Pseudobulbus conicus angulatus et sulcatus. Folium cuneato oblongum acutum. Pedunculus deflexus paucivaginatus apice longius racemosus. Bracteæ paleaceæ ligulatæ obtuse acutæ ovaria pedicellata subæquantes, uninerviæ. Mentum bene rectangulum, Sepala ligulata, lateralia paulo latiora. Tepala linearia acuta. Labellum oblongo-ligulatum, ante basin utrinque dente exsiliente. Columna apice tridentata.

A small species in the way of B. recurvum, but quite different in the lip. It has small whitish or rosy flowers, often with some purplish dots and a green lip. It was found at Lagoa Santa by Dr. Eugene Warming, the Danish botanist, and has been introduced from Rio Janeiro by A. D. Berrington, Esq., with whom it first was flowered. *H. G. Rchb. fil.*

SOPHORA JAPONICA PENDULA.

The accompanying portrait of this beautiful tree forms one of a series of several beautifully executed plates, prepared by Messrs. Letts and Co., from photographs of specimen trees in the Knap Hill Nursery, and used to illustrate Mr. A. Waterer's admirable catalogue. To praise the beauty of the tree is superfluous; the portrait speaks for itself, and being exactly copied from a photograph, it tells no false tales.

Sophora japonica was sent by Father d'Incarville, in 1747, from China to Paris, whence it was distributed by Bernard De Jussieu. It is a handsome, fast-growing, deciduous tree, and yields a fine, hard, handsome wood. Loudon notes one remarkable property of its foliage, namely, that in the very hottest and driest seasons it does not turn yellow or drop off, as does that of most other pinnate-leaved Leguminous trees, its deep-rooting habit being the probable cause of this retention of verdure, a property shared by the pendulous variety which forms our present subject.

We find no mention as to how, when, and where the weeping variety of the Sophora originated, but MM. Decaisne et Naudin, in their "Manuel de l'Amateur des Jardins," state that it has been obtained by cultivation, and is preserved by grafting. Among weeping trees, they observe, there are few so characteristic as the Sophora. Grafted on the stem of an ordinary Sophora some few yards high, and pruned so as to form a regular head, this drooping variety forms a tree which, in aspect, is at once strange and graceful, and whose pendulous branches are not tardy in reaching the soil. It is noted by Loudon as one of the most ornamental of pendulous trees, a description which it thoroughly justifies; nevertheless it seems but partially and imperfectly known to the general public. Mr. Mongredien, in his recent book on Ornamental Trees, does not appear to be even aware that it is a distinct variety, as he says, when treating of S. japonica, "when grafted on a standard, so as to assume a pendulous habit, it produces a most charming effect." We trust, therefore, that this notice and the accompanying illustration may help to bring it into greater prominence, since it certainly stands in the very front rank of pendulous-habited trees. In the catalogue above referred to, it is mentioned as "one of the most characteristic of all weeping trees, and one of the greatest elegance and beauty. It is so thoroughly pendulous in habit that the branches seem to fall sheer down in tufts or bundles, like the spray of an interrupted but perpendicular waterfall. The pinnate leaves have also a drooping character, being too long to sustain their own weight, and hence they fall down in the same lines as the branches." The peculiar manner in which the branches spray out in successional tufts is noteworthy, and it gives a very marked and characteristic appearance to the tree during the winter, when devoid of leaves. We have here one of those elegant arboreal objects of moderate stature, which can be pointed out as appropriate for the decoration of any garden or pleasure ground, sure to meet a fitting place, however large, and not the least out of place, however small it may be. *T. M.*

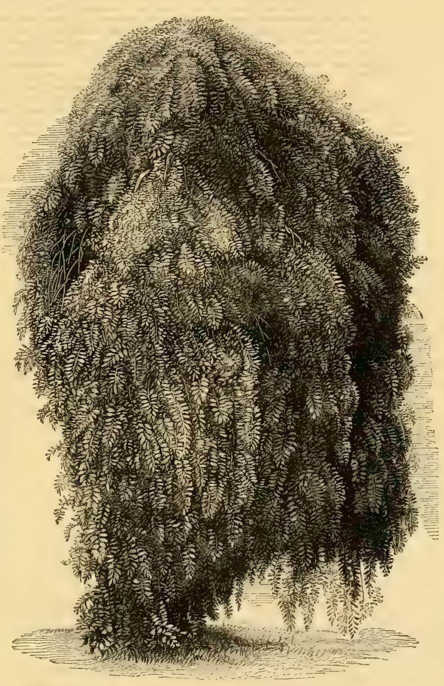

FIG. 273.—SOPHORA JAPONICA PENDULA.

PRACTICE AND SCIENCE.

[The following remarks *apropos* of this subject were made by Prof. Liebig at the anniversary of the Royal Bavarian Academy of Science, Munich, on March 28.]

We celebrate to-day the one hundred and twelfth anniversary of our academy. Great historic events have taken place since last year's festival; a new Germany has arisen; the dreams of our youth have become reality, and Germany has ceased to be a mere geographical expression. The English people have nicknamed Germany the Fatherland; but this byword has now assumed, in their mind, a respectable meaning, giving rise to serious reflection, for it is so unexpectedly great that it cannot yet be quite comprehended. In trying to define the true causes of success of our German armies, we shall discover them to be the very same as those which have shaped our progress in medicine and agriculture.

Eminent physicians and advanced agriculturists have been known at all times, and renowned military leaders in like manner. For centuries the fixed idea has therefore prevailed that in the so-called practical avocations practice and experience were all-sufficient, and that theory was not to be depended upon; and why? simply because true theory was not known.

Practical knowledge and aptness are indispensable in following agriculture, and not less so in medicine; but we are now aware that absolutely certain results depend upon the knowledge of causes, and intimate acquaintance with all the active principles by which phenomena are influenced; we know that this knowledge is real theory, and that genuine practice is the art of bringing these principles into play at the proper time and of assisting in their reactions. The old practice, based upon uncertain rules, gave way to scientific practice, which is founded on unalterable truths,—the happy inspirations of a genius who grasped a certain law without being able to account for its causes, are resolved into principles, and can be worked out and applied by others. The exclusive property of the genius which constituted his superiority, could, by scientific application, be owned by all.

The foundation of the German empire and the German victories steadily following one another have the closest connection with those military events which, 66 years ago, overthrew and shattered into fragments the State of Frederick the Great,—a State antiquated and ossified in red-tapeism. One way only existed to heal the wounds of the State and to impart fresh vigour, and this way Prussia followed to the salvation of Germany; by the foundation of the University at Berlin in 1810, the year of the death of the high-minded Queen Louisa, the road had become visible and had been sketched out; the inexhaustible vigour of the mind succeeded where the limited and worn-out material forces were wanting.

German science was destined to become the source of a new and youthfully fresh political life.

Thus we observe the Prussian people labour perseveringly to acquire that power which science alone can give, and all have witnessed the result to which this long and stern struggle has led. The incidents of a war, such as a siege or a defeat, are owing to causes which may be traced as clearly as those of natural phenomena; and the real secret of the superiority of Prussian strategics consists in the study of military sciences upon the basis of exact methods of natural sciences, and in the thorough investigation of, and acquaintance with the principles ensuring success or defeat.

Among the branches of instruction at the military academy at Berlin, those natural sciences are most carefully studied which may be utilised for warfare, and the discoveries of the last half-century have been made available for military purposes. And just as the philosopher, in order to solve a problem in exact sciences, must commence with the small, apparently trifling subjects, before he understands and masters the greater one, so we Germans had to pass through a long course of schooling and training, while other so-called eminently practical nations named us dreamers; but it was science which, in 1866 as well as in 1870-71, defeated unsound practice; knowledge that imparted strength and stability to force, and created in our adversaries a fear akin to horror of the German system of spies.

Our colleague, Professor von Giesebrecht, in his address as rector of the university, has dwelt upon the part which the German universities had in fostering the national idea of unity among the German races; he showed how the national feeling, long a glowing spark, kept alive in legends, and then roused and reared by German poets, at last ripened at the centres of German science.

We are proud that our king was the first German prince to give expression to the national idea of a German empire, and this deed will remain a brilliant monument for him in history.

It may not be out of place to state publicly, on behalf of our academy, that a hatred of races between the German and Latin nations does not and cannot exist. We look upon the heavy misery which Germany has suffered in former times from the French as upon an illness, the pains of which are soon forgotten on recovery.

The peculiar disposition of the German, his knowledge of languages, his reading of foreign characters, the culture of his mind, render him just to other nations, often to the extreme of being unjust to himself; and thus we do not forget how much we owe the great French philosophers, mathematicians and workers in natural sciences, who have been in many branches our teachers and our prototypes.

Forty years ago, when I went to Paris to study chemistry, accident drew Alexander von Humboldt's attention upon me, and a recommending word of his induced Gay-Lussac, one of the greatest chemists and physicists of his time, to propose to me, a youth of twenty, to continue and to complete, under his assistance, an investigation of mine; he placed me in his private laboratory as pupil and assistant; the whole course of my life was thereby decided.

Never shall I forget the kindness with which Arago, Dulong and Thenard met the German student; and how many of my German compatriots might I name who, like myself, thankfully recollect the active assistance in the pursuit of their scientific studies, given to them by French *savants!* Warm sympathy for everything great and noble, and disinterested hospitality are among the finest traits of the French character; they will revive and become active again on the neutral ground of science on which the best minds of both nations must meet in the pursuit of the high common object, and thus the indissoluble fraternisation, on scientific ground, will assist in softening the bitterness which animates the French national feeling towards Germany, the consequence of a war forced upon us.

POTATOS.

I PRESUME it will generally be accepted as an undeniable axiom, that as long as we eat Potatos so long shall we strive to improve upon the respective characters of our existing stocks. The wonder, therefore, is, where shall we finally get to! We seem likely to continue eating Potatos, as long as we have to rely upon food for subsistence. What, then, will be the Perfections, Kings, and Queens, of future generations? Doubtless, marvellous indeed. Hitherto our efforts in the direction of Potato improvement have mainly been devoted to the respective features of earliness, quality, quantity, and shape; and in these features, during recent years, no inconsiderable progress has been made. The Potato disease has now brought to the front another demand upon the esculent, namely, a combination of early ripening with late keeping; a combination that is at present both anomalous and non-existent. It is true that for certain kinds the opinion has been pronounced that they largely possess these qualities already, but the assumption is too vague, and only based on partial testimony. As far as my experience has hitherto gone, it has led to these conclusions,—first, that just in proportion as a Potato ripens early, so will it commence to form an early growth in the succeeding year; and second, that the keeping qualities of Potatos, whether early or late, depend more upon the temperature of the place where they are stored than is generally acknowledged.

I am not aware as to whether the subject has been scientifically considered (although there can be little doubt that the matter has engaged the attention of scientific men ere now), but I have an impression that from the time it is ripe for lifting until the time that it is ready for planting, a chemical change is going on within the tuber, and that that process of change is accelerated or retarded just as the conditions under which the tuber is placed are favourable or otherwise. In a few cases, where specially cool stores or cellars are available, the growth of Potatos may be retarded, but in the majority of cases Potatos have to be stored where the temperature materially depends upon that of the external atmosphere, and too frequently under conditions that make the warmth greater rather than less. Here no late keeping qualities will avail, except those that have resulted from very late ripening. The very best keepers I have yet met with are Yorkshire Hero, Lapstone, Yorkshire Hybrid, and Paterson's Alexandra, and these are all late ripening Potatos. I shall not be surprised to find it to be generally acknowledged that an early ripening Potato cannot be converted into a long keeper.

A far more likely improvement to be realised is that which shall bring large crops of good-sized tubers in conjunction with haulm of very moderate growth. A coarse, rampant growth of haulm is an evil at any season, but especially so when the disease rages. Take that largely grown variety, the Regent, for instance, and note to what a height the growth has extended during the past summer. Not only has it made the disease worse than it otherwise would have been, but where in market or other gardens a green crop was put out between the rows of Potatos early, the strong growth of haulm has almost strangled it, and in many cases the plants are not larger than when first put out. To rectify this evil I should commend the culture of the American Early Goodrich Potato instead of the Regent, as it is rather earlier, is quite as heavy a cropper, tubers as good in quality, and the haulm is much shorter, and of a dwarf robust habit of growth that would not interfere with the growth of winter greens. If any beneficial results to the Potato are likely to grow out of the grafting process it will probably be in the direction of shortening the growth of the haulm. Where the cross has really proved effective, this result has invariably been attained; and the lesson that Mr. Fenn has now learnt from his experiments hitherto, comes to this, that his grafts in the future must be sorts that produce heavy crops of good quality, but are burdened with far too much top growth. The stocks will be selected from kinds that produce short haulm, but lack that prolificacy that is so essential to the production of a first-rate Potato. Onwards grafted into Yorkshire Hero produced haulm just half the height of the parent, and with tubers proportionally small. Hero grafted into Onwards produced haulm about one-third less in height than the parent, with a fair average crop of the very handsomest kidneys. Next year the strong growing Excelsior Kidney will be the graft, and one of Mr. Fenn's new early kidneys the parent stock, a combination from which good results may be looked for. A heavy cropping kidney Potato of first-rate quality, producing a short stubby haulm of from about 12 inches to 18 inches in height and speedy in its results, would prove valuable.

I fear after all that speculation as to the probable character of the Potato disease will lead to far less practical results than will discussion on the best remedial or palliative measures that should be adopted. And I am not at all sure that we shall find in "early ripeners" one of the most effective. I have seen this year the very worst forms of the disease that have come under my notice developed in Myatt's Ashleaf, certainly an early ripener, thus showing that even the early kinds cannot escape the disease. And I have seen enough this season also to convince me that just in proportion as the soil is enriched with application of raw manures at planting, so is the disease found to exist in the crop. This fact has often been urged upon the attention of growers, but its lessons seem to be easily forgotten. To put in a dressing of raw manure with a crop of Potatos is positively to court the disease in its worst form. I have enjoyed comparative immunity from its ravages in the tuber in the whole of my stocks this year, and attribute it entirely to an absence of any form of dressing but superphosphoguano. The worst features were developed where a few barrowloads of decomposed vegetable refuse was dug in with the crop. The wisest form of cultivation consists in manuring for a previous crop of some other vegetable; but where that plan cannot be adopted, then the manure should be worked in early in the winter, the soil being bastard trenched, and the manure placed below the top spit. Another prolific promoter of the disease is close planting. We are too anxious to clutch a heavy crop, and thus sometimes over-reach ourselves. It is better at all times to give 6 inches too much room between the rows than 6 inches too little.

Coming now to the special purpose for which this paper is written, I wish to say a little with reference to my Potato trials here during the past summer. It is no small comfort to know that the soil seems to suit the Potato admirably, and developes not so much huge samples as nice, clean, moderately-sized tubers, that suit both my purpose and taste completely. My trials, in consequence, have been very satisfactory so far as a fair test of respective qualities are concerned, and fully bear out the opinions formed of the respective kinds in previous years. But I feel a mild kind of objection this year to entering very fully into the various merits or demerits of the kinds I have grown, for the simple reason that we are in view of a public trial of Potatos at Chiswick next year; from whence not simply one person but a hundred or more may directly draw their own conclusions. To limit a trial of such a character to kinds of recent introduction would be absurd. It will be necessary to grow in large variety the best old kinds, not only for test purposes, but also to synonymise the various classes into which all new kinds must be placed. Thus, in the matter of early kidneys, it will be found very difficult to decide wherein lies the difference between Royal Ashtop, Veitch's Improved Ashleaf, Harry Kidney, and several others, all of which are of the true Ashtop type. One of the very best of all this batch is Alma, a first-rate early kidney, and one I hope that will not be overlooked at Chiswick. The only real Walnutleaf kinds that I have or know of are the Early Walnutleaf Kidney and the Burlington Prolific *alias* Sandringham Early; but neither seem equal to the Ashtop varieties. As a second early, the Waterloo Kidney still holds its place as one of the very best and most distinct, but several kinds of recent introduction are so essentially Lapstone in character, that I venture at once to name a batch, that, should representatives of them come under Mr. Barron's hands next spring, I hope he will plant them all in a lump—Cobbler's Lapstone, Haigh's Lapstone, Pebble White, Huntingdon Kidney, Lady Paget, Yorkshire Hero, Rixton Pippin, Daintree's Kidney, Beaconfield, and Headley's Nonpareil. All of these have the true Lapstone blood in them, and have about the same difference in the appearance of haulm as exists between the famous "tweedledum and tweedledee." Of course I do not imply therefrom that relative differences of merit may not exist in the root produce, but I now simply point out the striking family likeness. The Lapstone family all produce good Potatos, but there is a lack of stamina about them that makes them liable to disease.

Another large batch possesses special features that compel me to put them into what I may term the Webb's Imperial, *alias* Dawes' Matchless, group. These are all strong growers, differing in character of haulm only in a minor degree, resembling each other closely in appearance of tuber—a long flattish white kidney, and differing only in relative differences of quality and crop. They consist of Webb's Imperial, Emsworth Kidney, Wormsley Kidney, Excelsior, Coombes' Favourite, England's Fair Beauty, Cumberland Bangers, Chagford's, and Bryanstone Kidney, several of which are positively alike. The best and most distinct forms I take to be Webb's Imperial, Wormsley Kidney, and Excelsior. Closely allied in character is Milky White, Prince of Wales, and Berkshire Kidney, and these should be planted in close company to the others. One of my favourites still stands in a good position—the King of Potatos, sent out by the Messrs. Sutton, and the best of all their stock. It is a good clean second early kind, tubers always smooth and handsome, and a good cropper; the flesh unfortunately is yellow, but the flavour is good. It is a capital companion variety to the Waterloo Kidney, but lacks the whiteness of the latter kind. To lovers of the Fluke I can fully commend King of Flukes as a first-rate cropper and moderately early, and one of the best of its tribe. Mr. Taylor's new graft kidney, Yorkshire Hybrid, bears a close resemblance in the tuber to Golden Blossom, being of the old-fashioned type, large at one end and small at the other. The haulm is robust and it ripens late, but it is so highly commended by Mr. Radclyffe as a good keeper that I shall offer no further opinion upon its merits, preferring to leave that point to the Fruit Committee next year.

Coloured kidneys are becoming more abundant, and where prizes are offered for them, as is the case at many provincial shows, it becomes a matter of importance to the grower to have a good selection from which to choose his sorts. Fortunately colour is not their only recommendation, as there is no deficiency of other good qualities also. Of purple kinds, the two best are the old Purple Ashleaf for early showing, and Paterson's Blue Kidney, a really excellent white-fleshed and productive kind for later exhibitions. The old Red Ashleaf sometimes yields handsome tubers, but is not so certain as is the wonderful Red Kidney, a handsome high-coloured variety. Somewhat alike in colour to the Early Rose, but generally handsome and more refined in appearance, is Mr. Allen's Eureka, a really fine Potato. For a red kidney for cottagers' growth none can beat the Cottager's Red, a high-coloured Potato, that is an immense cropper, of robust habit, and, though yellow in the flesh, is of most excellent quality, and having no deep eyes does not cut to waste. It keeps very late.

Round Potatos at present offer no very special features of novelty. Mr. Turner's Union is one of the best early white kinds, and will be largely grown. Fenn's Onwards is a first-rate second early, both in crop and quality. Early Emperor is still the very handsomest red kind, of the highest quality, and Paterson's Scotch Blue, as a pebble-shaped purple, is not excelled; this latter variety is a capital one for small gardens, as it produces so small an amount of haulm, and is yet a good early cropper, while the flesh is very white and good. Two very handsome later red kinds are Wellington, a white tuber, heavily blotched with red; and Red Diamond, with roughish red skin; both of these should be grown for late showing. Magpie has a tuber coloured nearly black and white, more novel than taking; whilst the finest purple-skinned kind is Alexandra, a fine late-keeping Potato, having very white flesh and of first-rate quality. These are just a picking from three times the number that I have grown of round kinds. The American kinds have also come under notice, and include American Rose, King of the Earlies, Climax, Peerless, Prolific, Early Goodrich, Early Calico, Callao, Gleason's Late, and Mr. W. Robinson's Mormon Potato. King of the Earlies and Climax have far too many eyes for my notions of beauty, but I like Peerless better, and Prolific best of all. Putting aside cooking quality, in which respect all these kinds are much alike, I put Prolific as the very best of all the Transatlantic introductions. It would be all the more valuable were the colour of its skin pure white instead of being tinted with brown. Early Calico is the only purple variety, but it has very white flesh. Callao is a good cropper, producing tubers of a delicate flesh colour. The most singularly marked of all the kinds is Gleason's Late, a flattish late round, having a white coat heavily banded with red; when grown in light open soil it produces very handsome tubers.

I have grown here also this year some 40 or more of Mr. Fenn's more recent batch of seedlings, amongst which are some of exceedingly high promise. In the front rank comes his new Rector of Woodstock, the handsomest white round kind I have yet seen; it is a first-class Potato in all respects, and has been so acknowledged at South Kensington. Eliza Fenn and Goldfinder are also handsome kinds, of special merit; and as a hotel chop Potato, to cook quickly and good, Mr. Fenn specially commends the Mayor of Woodstock, so named in compliment to a respected hotel-keeper, the holder of that important office a year since. Cricket Ball and Cottager's Blush are two very handsome red kinds, and Betsy's Favourite is a handsome tuber blotched with purple.

Of the kidneys none can exceed in beauty Bountiful, a beautiful red kind and very productive. English Rose somewhat resembles its American *confrère*, but with more colour and fewer eyes; whilst of the white kinds, Mary Bowers will carry the sway for beauty. These, however, are but a few of the number selected for further trial next year, and of which Mr. Fenn will show samples at Kensington on the 20th.* He is devoting his energies to the production of kinds of sterling merit, and in the promotion of that object will not hesitate to destroy all that do not come up to his high standard. Out of his well known small-growth section two most excellent early kidneys have been selected as likely to be suitable for forcing in pots, and are named Little Gem and Multum in Parvo. Perhaps Mr. Barron would not object to test a few of each kind in that way at Chiswick.

In concluding this paper, I would add that I am satisfied that no really useful trial of a large variety of Potatos can take place unless there is in the planting such an arrangement of sorts as shall throw all those kinds that have similar qualities into immediate growing contact to each other. In this way the work of censors is not only greatly simplified, but the labour of testing the merits of new kinds against older sorts of a similar character is rendered much easier. The process of synonymising is also materially aided, and if from 200 to 300 kinds are grown, it will be surprising what a "slaughter of the innocents" in this one respect only will take place. In all these respective matters I shall be only too happy to afford Mr. Barron the benefit of any small experience I may possess, and none will watch the proposed Potato trials at Chiswick next year with greater interest than *Alex. Dean, Bedfont.*

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* We understand that the Messrs. Sutton & Sons, of Reading, also propose to exhibit a large collection—some 50 varieties or more, including all the American sorts, as well as Suttons' Red-skin Flourball—on the same occasion. Eds.]

BOTANY FOR BEGINNERS.—XIV.

In the preceding articles we have endeavoured to put before the reader descriptions of some of our commonest flowers. We began with those having the smallest number of parts and the simplest structure, and proceeded from these to others of more complicated construction. Moreover, we have endeavoured to explain the reasons for the increased complexity, so that the pupil who has followed us so far should be able, when he meets with any flower, no matter what its lineage may be, to form a pretty accurate opinion as to the points in which it differs from the simplest form of flower, and how those diversities may be explained, whether by addition of parts, their imperfect separation one from the other, their union one with another, their irregular growth, or what not. Incidentally we have called attention to the other parts of the plant, but, in the main, we have confined our attention to the flower. It is, however, absolutely essential to any one who wishes to know something of botany that he pay heed to the mode of growth, and to the forms of roots, stem, or leaf. These points are too often neglected by the beginner and the amateur, owing, perhaps, to the superior attractiveness of the flower over the other parts of the plant. No one with a real love of his subject will allow of such a plea; moreover, a very little study will show that the lessons to be learnt from these less gaily bedight organs are to the full as important as those taught by the flower. Moreover, they are of cardinal importance to the right understanding of the flower; and, again, they can be studied at all times and seasons.

As we are now about to deal mainly with the form assumed by the stem, and with the arrangement of the branches and leaves, it is as well to begin at the beginning, and to cast a glance at the baby plants as they emerge from the seed. Our countryman, John Ray, was one of the first to discover and make known the great importance of attending to seedling plants.

Some things, like a tropical Orchid of great price, are important from their rarity; other things, like the humbler Cabbage, are important from their frequency. It is in this latter sense that seedling plants are valuable to the botanist, and John Ray had the sagacity to see that, so far as constancy is concerned, there was no better mode of grouping the entire mass of flowering plants of all sorts and descriptions known to him than that furnished by the seedling plants. Speaking broadly, and disregarding for the moment exceptions too few in number to affect the general result, all flowering plants may be ranged under two categories, those whose seedling plants have one seed-leaf, and those which have two of equal age. These seed-leaves are known as *cotyledons;* and plants with one seed-leaf are called *monocotyledons*; those with two, *dicotyledons*.

The importance of this distinction is shown not only by its very general—almost universal—application, by its constancy as a botanist would say, but by the fact that this arrangement is almost invariably associated with other marks of difference between the two groups; and so we have cumulative evidence as to the distinctness of the two. For instance, Dicotyledons have almost invariably net-veined leaves, and the parts of their flower arranged in fours or fives, or some multiple of those numbers—their wood, when they have any, is arranged in annual zones, zone over zone, from the centre outwardly; while Monocotyledons have—barring a very few exceptions—straight-veined leaves, the parts of their flowers are in threes, and their wood is not arranged in zones, not to speak of other characteristics. This is enough to show the importance of paying some attention to the seedling, and there is this consolation, when a seedling cannot be got, its general characteristics can be pretty safely inferred from the leaves, or flowers, or wood, as just mentioned.

To illustrate the two forms of seedling, our artist has delineated a seedling Oak (fig. 274) and a seedling plant of Wheat, and we will advert to the more important features of each, premising that the beginner need not experience much difficulty in seeing these things for himself.

Grains of Wheat are easily procurable just now, and acorns soon will be, or, failing them, a Broad Bean or a Pea will serve the purpose equally well. Let some of these be sown in moist earth or sand in a flower-pot, or in damp moss or sand, and kept in a moderately warm place, and soon the life within the seed, at first not obvious, will make itself seen. It is a capital plan to suspend an acorn or other large seed in a bottle half filled with soft water; so that the seed just touches the surface of the water, put the bottle into a dark cupboard for a few days; for the exposure to full sun is not propitious to the first stages of plant growth; and when the shell cracks open and a root makes its appearance through the rent, then the bottle may be brought out from its obscure retreat, and the whole further process of germination witnessed.

The shell of the acorn is the true fruit—the ovary arrived at maturity, and greatly changed in appearance from what it was when it nestled like a tiny egg in the nest-like cup then bigger than itself, but since by comparison dwarfed. Within the shell of the acorn is the seed proper, whose structure we have now to explain. If an acorn be not at hand, a Bean or an Almond will answer the purpose as well, especially if previously soaked for a few hours in water.

The great mass of the acorn consists of two thick fleshy lobes, rounded on one surface, but flat where they come into contact one with the other; these are the two seed-leaves, the cotyledons, thick and fleshy, because they are the store-houses of food whence the young plant may derive its supplies before the root and leaves are able to supply its requirements (fig. 274, A, A). The seed-leaves are not always like those of the Oak. In other cases they are thin and green, soon pushed up above ground to fight for themselves, and differing but little, save in contour, from the ordinary leaves of the plant, indeed, fulfilling the same office as they do. Now, supposing that there is but little nourishment stored up within the tissue of the seedling plant, or within the seed investing it, it stands to reason that the seedling must quickly shift for itself, or succumb for want of proper nourishment. This is one reason for the quicker germination of some seeds than others; for instance, the common Mustard germinates very quickly, as every one knows. It sends its roundish, notched seed-leaves up above ground into the light and air with all possible despatch, to get food for the young plant. These are the leaves eaten as Mustard, with the corresponding leaves of the Cress, as salad. Reverting to our acorns, we see closely packed, between the two seed-leaves, a little oblong mass, at one end of which rudimentary leaves are readily seen, while at the opposite extremity is a root.

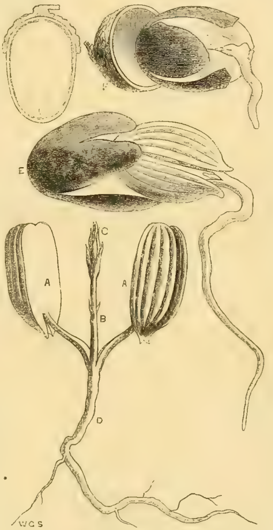


FIG. 274.—ACORN IN VARIOUS STAGES OF GROWTH.

The upper left-hand figure shows an acorn *in situ*, cut through the middle; at F, is shown the cup of the acorn and the radicle protruding from the acorn, the outer shell of which is the fruit proper. At E, the seed is shown detached from the fruit, with the radicle still further developed. The lower figure shows, at A, A, the seed-leaves; at B, the portion of stem above the seed-leaves; at C, the young bud or plumule; above D, is the portion of the stem below the seed-leaves (caulicle); and below D is the radicle, or primary root.

When the seedling Oak begins to grow, as also in all other plants, the first to break loose from the investing seed is the root. Given a sufficiently high temperature, a sufficient supply of air and water becomes a prime necessity; and in order to get and appropriate it, the root descends—always descends—it may ascend for a time if put out of its course by any obstacle, but left to itself down it goes—a pretty good mark of a root: and note, it goes down continuously (provided there be no obstacle) as long as there is any necessity for it to do so, it is not arrested in its course, but continues to go on in the same direction as that in which it started—this is continuous growth. In other instances, as we shall see by-and-by, growth proceeds in one direction for a time, and then, from some cause or another, growth is checked; and if renewed, it goes on in another direction, at an angle to the former line of growth, perhaps in an altogether different place. Here we have illustrated two facts never to be lost sight of in studying plant growth—the continuous or indefinite mode of growth, as contrasted with the arrested or definite mode of growth.

The root of the acorn, under natural circumstances, and if not interfered with, developes into a tap-root, a valuable form for anchoring a plant in the soil, but not so desirable in the eyes of the nurseryman, who has occasion to shift the young plants, and hopes ultimately to transfer them altogether to fresh fields and pastures new; for this purpose a tuft or leash of roots is better than a single one. In transplanting there is less chance of cutting off the supplies when there is a tuft of fine feeders than when there is but one; hence it is a not unfrequent practice to pinch or cut off the end of the tap-root, after a little while, when a number of fibres or thread-like roots are developed, to carry on the work heretofore conducted by the one tap-root.

At the opposite extremity of the seedling plant are, as already said, the rudimentary leaves (fig. 274, C), packed in what is virtually the first bud. As this grows it lengthens upwards in a direction precisely opposite to that of the roots; the latter want water, and go down in search of it; light and air are essential requisites for the leaves, and they are thrust up to seek these life-giving elements. We know the fact, we know the object of this upward and downward growth respectively, but the way in which it is done is still, despite many curious experiments and much hazy speculation, obscure. Now it is a canon in botanical science that whatever bears leaves and buds is a stem, or a part of a stem, a branch, and that, per contra, a root never bears leaves and buds (always making allowance for occasional and very rare exceptions); hence in our seedling Oak that portion to which the seed leaves are attached, and which bears the young bud, is to be accounted stem, and that portion which bears neither leaf nor semblance of leaf and goes down is root. Thus, in our illustration (fig. 274), the space from D to B is to be considered as stem, bearing two seed-leaves, A, A, and a terminal bud, C, sometimes called the *plumule.* The portion below D is the *radicle*, or true root. It will be noticed that the portion from D to B tapers upwards, while below B the tapering is from above downwards. This outward difference of appearance corresponds with an inward difference of structure. Here we must leave our seedling Oak for the present, and defer the consideration of the seedling Wheat till another opportunity.

Home Correspondence.

The Potato Disease.—I was pleased when I had read your leading article on the improvement and cultivation of the Potato. It will prove a great means of drawing public attention to the esculent, which forms so important a part of our national food. I should require quite another seven years of life to meet the writer's views. By that time, if I am spared, I have hopes of being enabled to fulfil the requisitions there put forth. In order to do so, we must work to get white-fleshed early Potatos, with a smooth outline and few eyes, and which must also have good keeping and non-sporting qualities. I believe I have varieties which come as near to those requirements as any up to the present time. But my cropping desires are not satisfied. How nearly they are likely to become so, I propose to show next year in the rare old garden at Chiswick, under the care of Mr. Barron. I intend also to give the judges and critics on Potatos an opportunity again to try and discern for themselves the qualities of my improved and latest selected seedlings and crosses, at South Kensington, on the 20th inst. Mr. R. Dean's paragraph answered at once the chief request of Mr. Fish. I must beg, nevertheless, to thank Mr. Fish for having referred to me personally in so kind a manner; but I fear that the "gold medal in bas-relief" would prove too uncomfortable for a civilian to wear. I am proud, however, to inform him that my cabinet already holds gold and silver medals, won by the sweat of my brow, and in fair competition; but honours of this sort are not thought proper for such as us to make a display of. "Emblazoned" medals can only be proudly and conscientiously "worn" by the destroyers of our species, so that my "best taters" can never be represented on my breast, though I trust in time that the worthy defenders of our country will feel the benefit of them in the way of "sticking to their ribs." Practically, as regards myself, I can happily say that I have grown better Potatos since than I ever did before the advent of the disease. I remember well how the barbarous "good old plan" used to play pranks in the form of dry rot, bobbin-jones, gappy-plots, &c. For the how and "wherefore of all this," I would refer Mr. Fish to the pages of a contemporary for many consecutive years, only I feel that it would be a work of supererogation, as in every probability he has been as familiar with those columns as myself. I may mention, however, that I have never laid special claims for my practice over that of my fellows. What I have done and written has been for the sheer love of the thing, and to try and impress upon Potato growers to do likewise for their own good. In answer to "A. D.," I stated that the Potato was not a special victim to electricity. I think my critics have read my paper hastily. I said it was subject to be stricken by electricity, more so at the particular stage of growth which I pointed out, and this is still my conviction. The circumstance has become too familiar to my senses to allow me to "guess" about it. How to prevent it is what I also "want to know," and in this way critics do not help me in the least. Suppose I was to propose encircling our Potato grounds with galvanic wires as lightning conductors! Well, that is certainly no new idea of mine, so I take heart of grace, and feel to tread the earth firmly. But how about my new seedling crops, now growing in the orchard-house under glass? In lieu of "disproving the agency of electricity," it rather appears to confirm it; at any rate, some discovery is lurking anent the glass, either as proving it to be a non-conducting or repellent power, so far as the seedling Potatos are concerned, or why should they there remain scatheless? The glass certainly "robs" them somehow of the "disease originating force." An enthusiastic Potato lover, and a very good neighbour of mine, "steps in" occasionally to "smell the old Potato smell" given off from their green and flourishing tops, and to witness the yellow dying off of the foliage of the precocious ones, as he "used to smell and see them when a boy!" I believe I shall eventually take up every tuber of them free from the least sign of disease, and I am keeping them constantly watered, both tops and bottoms, longer than is at all necessary, on purpose to test the wet theory, if it be a producer of the murrain, to the uttermost, and, in this case, to allay the uprisings of any afterdoubts of criticism. Per contra, those seedlings which I transplanted into the open yard, I took up, what remained of them, three weeks since. The haulm was black with disease, the greater part of it quite rotted away, and the young tubers also. Of the remainder the murrain had attacked the mmore or less; they "keep going" to this very day, and I shall not be able to preserve one-third of them. The tempests proved too much for their voyage, and if it was not owing to electricity in connection with the "white rain," I pray my critics to convince me otherwise, for these seedlings were as healthy and promising before the lightning, thunder, and the rain came as their prototypes under the glass close by. Why did they not remain so, if my theory is incorrect? Again, in the open ground in this garden I have some tubers planted later than my general crop, which took the place of a bed of blind Strawberries. On August 9 they were in midgrowth, green and flourishing, with scarcely a fault upon their foliage. On the 13th I was walking in the evening, in the county of Middlesex, with he of Bedfont, and before us, and afar off, we became witnesses to the quick uprising of a magnificent outline of dark clouds. Nature's artillery was there, though silent for us. I said, "If that tempest is breaking in its full force over the rectory in Oxfordshire, and it pass away at once, my late planted Potatos will take no harm in their greenery, otherwise than by becoming stricken with the 'spot.' Should the storm linger thereabouts, for only one day, the spots will become surrounded in their margins by Fungus mould; and should damp muggy weather continue upon the tail of that storm for two or three days, the 'zoospores' that Mr. Berkeley told us of would, as an effect, and not as a first cause, become generated in continuation of the deadly work begun in the first instance by electricity or 'fire blight' (see p. 1135) upon the leaves; and the more glazed and firm of texture the leaves are, the more resistance they offer to the above destroying powers." I have one seedling Potato now in its fourth year of trial, having leaves of peculiarly firm texture, and remarkably glazed. This has stood throughout the season's ordeal triumphantly; all my other sorts have been spotted more or less, but that, I am happy to say, has been the chief harm. I never had better crops of Potatos, taking them altogether, and they are all of my own originating. Well, I returned to Woodstock on the 15th, and soon inquired if they had experienced a thunder-storm on Sunday night. "No," my wife said; "it lightened very sharp, but we had tempest with rain, slightly, all yesterday." I hastened to inspect the healthy foliage I left behind me, and upon it, sure enough, was impressed the fatal spot, and its accompanying Fungus mould, though the splendid after weather completely stopped it from doing further harm. The Potatos are ripe, and still in the ground, without, I believe, a single trace of the rot to be found upon them. I would ask your correspondent, Mr. Taylor, is there any other esculent under the sun that has suffered the neglect which the Potato has, in contravention of Nature's intentions? Then pray do not let us go back; let us begin again, and try by good cultivation and care of the noble tuber to bring back that sound pristine health and primeval constitution, now lost to it through supineness and neglect. Useless retorts can do no good; the evil stares us in the face. In conclusion, allow me to relate how that I planted more Potatos in this garden on August 8, for the furtherance of the electrical test if possible; how they are now flourishing in full greenery of haulm; how they experienced rain for the first time on their foliage last Saturday the 2d inst., also on Sunday again. Yesterday (Wednesday) we had 12 hours of downpour, to-day it has been splendid weather. I have minutely examined the foliage, and not a single "spot" is visible upon it. We had no tempest with the rain; the air is not charged with electricity, but feels cool and refreshing, and the rain was not what is termed "white rain." *Ex nihilo nihil fit. Robt. Fenn, Rectory, Woodstock, Sept.* 7.

Propagation of Oaks.—Having what is believed to be a valuable golden variegated form of the Turkey Oak, which I believe is quite new, will you kindly advise me as to the best means of increasing it—inarching cannot in this case be practised. If budding be practised, should it be done in the open ground, or would it be better to procure a few stocks in pots, and work it in a frame? or will grafting, if properly done, be pretty certain? *R. A. D.* [We referred this letter to Mr. Charles Lee, of Hammersmith, who kindly furnishes us with the following reply:—"After several years' experience in propagating Oaks, I find that the only safe method is by inarching. A very experienced grafter may get one in four or six to take, but it often results in the success of one in ten. Grafting on established plants in pots, under close handlights, may be more successful, but it wants much experience."]

Peach Culture at Madresfield Court.—The kitchen garden at Madresfield is a comparatively new one, and the site chosen is well adapted to the growth of fruit trees in general, the soil being of a calcareous nature. The Peach wall is about 10 feet in height, and the trees have been planted five years. They are for the most part trained horizontally from an upright shoot, a mode of training which we seldom employ, although a favourite system with the French, and one which has, no doubt, some advantages, one of which is that a wall can be covered with wood in the shortest possible time. And by this form of training Mr. Cox has in five years succeeded in covering the whole surface with the fresh green of the Peach tree, while the growth has been perfectly regulated, presenting an elegant appearance, reflecting the highest credit on the cultural skill displayed by the gardener. It is the finest display of Peaches and Nectarines I ever beheld. To those who in despair announce their intention of giving up Peach culture on open walls, I would say, go and see for yourselves what is done at Madresfield, and judge whether such results are not worthy of great endeavours to imitate. The wall coping projects about 6 inches. This Mr. Cox considers of great advantage. When wide, permanent copings are objected to, it is best to have brackets permanently fixed into the wall, to receive temporary copings, for there is not a doubt that, with wider copings, we should suffer less from the vicissitudes of our climate; and protection from spring frost is of first importance, for without this necessary precaution not only the blossom-buds, but the trees at times, suffer irreparable injury, and this without a doubt is the precursor of those bare-limbed, unsightly-looking objects one sometimes sees, and which are a disgrace to gardens. The Madresfield Court Black Muscat, which originated in these gardens, is planted in several of the houses, and from its distinct and bold characteristics is at once discernible amongst the others, and is well deserving of the high encomiums passed on it. *George Westland.*

Influence of Scion upon the Stock.—I have not seen the following quoted amongst the illustrations of this which have been collected:—"'Tis by the descent of the particles from the graft, and their reascent, that the variegations appear in the other parts of the shrub: a pregnant example of which happened to Mr. Bridgman, gardiner at Hertford, who engrafting a Hedgehog slip into a Holly, the graft dy'd, but another variegation appear'd afterwards below it, upon the same stock." (Blair's "Botanick Essays (1720), p. 386.) *W. T. Thiselton Dyer.*

Acer Negundo variegatum.—I am not quite sure that this very pretty hardy deciduous shrub is so well known as it deserves to be. I have been much pleased this summer with the effect which some standards planted in the shrubbery border here produce. In looking through a conservatory in a large establishment lately, I was agreeably surprised to see it used in the shape of low bushy plants for decorating; and well it looked, intermixed with other plants. I presume it was growing on its own roots, as the standards bought in are worked upon a green variety. I consider this one of the most "telling" variegated plants we have, either for use indoors or out. *T. Wynne, Holbrook, Suffolk.*

Polemonium cœruleum variegatum as an Edging Plant.—Having failed to observe in the various reports on bedding plants which have from time to time appeared in your pages any notice of this comparatively scarce hardy herbaceous perennial as a bedding plant, I am induced, for the benefit of some of your readers, to remark that as an edging plant in particular it is entitled to prominent position, and especially in combination with Coleus Verschaffeltii its charms are eminently conspicuous, the rich crimson-purple coloured foliage of the Coleus contrasting so charmingly with the unique and elegant variegated Fern-like leaves of the Polemonium, as is exemplified by an example in one of the flower gardens here, which signally eclipses contemporaneous beds of Coleus and Iresine Lindeni, respectively edged with Geraniums Golden Fleece, Crystal Palace Gem, and Cloth of Gold—all of which are in a flourishing condition, lacking, however, the compact habit and elegance of the Polemonium. Apart from its excellent bedding quality, it possesses the property of comparative hardiness, requiring merely the protection of any cold glass structure throughout the winter, and if placed in a little heat early in the spring a quantity of side shoots is soon afforded, which if slipped off and inserted in small pots speedily become established plants. For indoor decorative purposes it is also invaluable, especially for table decoration. Amongst other novelties allow me to notice Mesembryanthemum cordifolium variegatum, which is also a charming edging plant, especially for small beds. At the present time I have it doing duty as an effective edging, in association with blue Lobelia, to a bed of Lady Constance Grosvenor Nosegay Geranium, and it is much admired alike for its pretty diminutive purple flowers as for its neat heart-shaped foliage. *William Gardiner, Lower Eatington Park.*

Blue Apron.—Is it possible to get the true stuff for making gardeners' aprons anywhere? if so, where? For many years now I have had the greatest difficulty in getting anything like the stuff that we used to be able to get quite commonly. Possibly the reason is, that the young gardener of the period is too much of a dandy to wear such a thing as an apron (if so, small credit to him), and that consequently there is no demand for gardeners' apron stuff. May I throw out a suggestion to the nurserymen: could not they add it to the list of things that they keep for the accommodation of the gardener; and thus every gardener, when he ordered his seeds or plants or bulbs, could also order his apron stuff at the same time. *N. H. P.*

Thujopsis dolabrata.—In answer to the request of a correspondent in your last, I send you the dimensions of a Thujopsis dolabrata that we planted here in 1863. It is 6 feet 6 inches in height, 5 feet 6 inches through the base, and 16 feet round the base. It was covered with cones this year for the first time. *T. C. Richardson, Gardener, Perryfield, Godston, Sept.* 11.

Moving Large Hollies.—It may be interesting to some of your readers, and those who attended the large sale by Mr. Stevens at the Royal Horticultural Gardens at Chiswick in November last, to hear that the whole of the large Hollies, 16 to 20 feet high, considered by many too large and unsafe to move, are all "alive and growing," breaking like Furze bushes, notwithstanding the severity of the weather just afterwards, and the accident they met with at the railway arches between here and Chiswick: several had 4 to 5 feet of their tops crushed, and others had to be shifted, in consequence of their being too high for the arches to admit them through. This was no easy task, as they were on ordinary stone trucks, and their weight from 1 to 2 tons each. *W. James Epps, Landscape Gardener, Lewisham.*

Extension of the Peach Season.—Much has been written in the gardening journals at different times, during the last few years, upon the prolonging of the Peach season, and too much cannot be said in praise of such men as Mr. Rivers and Mr. Pearson, who, to attain this end, have directed their energies and great experience to producing early and late varieties of the Peach and other fruits. Little had previously been done towards the production of early Peaches, though, it is true, we have long had what were called "late October Peaches;" these were, for the most part, very insipid in flavour, but this is not the case with some of the new late Peaches—Rivers' Princess of Wales, for instance, which I have myself retarded till November, and found excellent. Those who have not gone to the expense of a series of glass houses are ever complaining of a glut of Peaches—all coming in at once, with a dearth of fruit before and after. The efforts that have been made by our great nurserymen (as before stated) have slightly obviated this evil, and the orchard-house has helped still further to the same end; for instead of boasting of 50 or 60 dozen Peaches on one tree, the owner of the orchard-house can show as much fruit in the same space as this tree occupies, and that, too, separated into little divisions of different sorts, early and late, each containing their three or four dishes of fruit. But we want to extend the season far beyond these limits, and I have no hesitation in saying that it may be done, and with very little trouble. There is still considerable difficulty in persuading many gardeners that my "new method of growing fruit, &c.," is not a substitute for succession houses only, for no amount of succession houses would give the advantages claimed for it, and which are thus entirely overlooked. The high terms, however, in which it has been spoken of by some of our best gardening authorities, who have looked fairly into it without solicitation on my part, emboldens me to lay before your readers a process of extending the Peach season far beyond the limits which the new varieties command, and the pot system of the orchard-house further advances. I am, of course, not speaking of early forcing houses. It is unnecessary to do more than touch upon the "new method" itself, as it is now pretty well known, being simply a combination vinery constructed with movable platforms for trees and flowers, to be moved in and out of the house at will, and that at a moment's notice. Suppose a vinery so arranged with five platforms: let the first be filled with the best early Peaches, Belle Beauce, Rivers' Early, Early York, &c., and let this platform be kept in the house as much as possible, except for an occasional warm shower in the early stage of the growth of the fruit, to keep the trees in good health; and let its occupants be subject to such warmth throughout their growth as the Vines have, till about a week before ripening, when they may be moved out, weather permitting, to flavour and colour the fruit. These Peaches being early sorts, and forced besides, will come in very early. Let the next platform contain early Peaches under mixed treatment; then would come mid-season Peaches, and, lastly, the best late Peaches, such as Walburton Admirable, Princess of Wales, Lord Palmerston, &c., and these should be kept entirely out of the house, as far as spring frosts and subsequent storms will allow, and, where practicable, shunted behind a north wall, to be retarded as much as possible, and then finally brought into the house in November for the fruit to be ripened and finished off by fire-heat. This excessive retarding will, no doubt, affect the flavour of the fruit in some measure, according to the season, but it will produce Peaches when you cannot have them ripe at all by any other process that I know of, and also at a much less expense, for one house will do the whole under the direction of a good gardener. *John Fountaine, Southacre Rectory, Brandon.*

Hardiness of Niphobolus Lingua. — It will interest many of your readers to know that what appears to have been an accident resulting from the disastrous siege of Paris, in the discovery of the hardiness of Niphobolus Lingua (as mentioned at p. 1098), may be new so far as our French brethren are concerned, but I may say that for the last 12 years I have planted this Fern in ordinary outdoor ferneries. Just 12 years since I was called in to enlarge and otherwise improve an outdoor fernery in this neighbourhood, and I was surprised to find a large patch of this singular Fern growing at an elevation of a yard from the gravel walk adjoining. It was in the most robust health, a round patch 18 inches through, made up of closely-packed foliage, as fine as any I ever saw grown under glass, and I was assured it had withstood the cold of several winters with perfect impunity. Since then, I have introduced the plant into hardy ferneries whenever opportunity has offered, and always have had reason to be satisfied with its hardiness. To insure quick and vigorous growth this Fern should be planted in lumpy, fibrous peat, and be liberally supplied with water till it is established. Under proper treatment, the wiry, mousetail-like rhizomes of this plant will push rapidly in all directions, and soon form fine specimens. Its dissimilarity to any other of the usual denizens of the outdoor fernery will render it an acceptable and interesting addition. *William Chitty, Stamford Hill.*

Taxodium distichum.—This superb ornamental tree is so little planted now, that I wish to draw attention to a very handsome specimen at Cadlands, near Southampton, the seat of E. A. Drummond, Esq. It is about 90 feet high, and the trunk is fully 12 feet in circumference at 6 feet from the ground, and bare to the height of 18 feet. It is growing close to a large ornamental pond, and is in luxuriant foliage. Such a situation appears always to suit this tree, and both it and the pendulous form ought to be more generally planted. It is also known as Cupressus disticha, the deciduous Cypress. Close by were fine specimens of Hydrangea japonica and Magnolia grandiflora in flower, the latter shrub being extensively planted in the open borders and on lawns along the south coast. Figs also luxuriate in this district, and it is a common occurrence to meet with large trees 10 and 12 feet high with an abundance of fruits equal to that obtained under glass. *D. H.*

Diseased Asparagus.—Enclosed are portions of Asparagus stems and branches, which, I fear, strongly approximate the state of your correspondent's plants (see No. 36), whose description caused me to examine more minutely my own plants, some of which I have latterly observed had assumed an unusually brown and unhealthy appearance, including in some instances complete defoliation of the plants, but which I attributed to the ravages of the larvæ of the beetle (Crioceris asparagi), or some unseasonable influence. I have, however, as yet failed to discover that the disease—if disease it really be—had penetrated to the roots of the plants. Neither are the stems—that is, the portion nearer the soil—much affected, excepting in 1-year-old plants, nor are the whole of our plantations affected alike, the less vigorous ones having been most severely affected. I may add that concurrently with your correspondent's remarks there is an account in the *Globe*, by a large grower in the west of England, stating that the majority of his large plantations of Asparagus are badly diseased, so much so that even the roots of many of the plants emit an offensive smell. A similar account was also this morning received by me from a neighbouring gardener, namely, that he has also latterly observed that his plants presented an unusually brown appearance, and that recent inspection had disclosed the presence of a Fungus. Hence I fear we shall learn that these are not isolated cases, though I trust the disease may prove to be of a casual and not an epidemical character. *William Gardiner, Lower Eatington Park, Stratford-on-Avon, Sept.* 11. [See p. 1194. EDS.]

Wasps' Nests.—This year we have been plagued hereabouts with a perfect cloud of wasps, and the quantity of nests taken within a radius of a quarter of a mile circle is nearly 50. I have myself taken ten this week, and my neighbour has taken the same number; and he took eight the week before, and I four the same week. The damage they have done to the fruit is almost incalculable; one gentleman told me that they had taken all his Apricots, and they had begun at his Pears; but what I want to say is about taking wasps' nests. There is a general notion afloat that it is rather a difficult business to take a wasps' nest. Now, nothing could be more simple. Get a small watering-can filled with gas tar, find out your nests in the day time, either by following your wasps home or getting the country people to tell you when they know of any, but mark the nest in the daytime by a piece of white stick or lath, so that you can easily see it at night, and as soon as it is dark take your pan of gas tar and pour about a quarter to half a pint of tar into the hole of the nest, close the opening with a little sod, and all will be right. You can go next night and dig the combs out if you like, or if you have a friend a fisherman he will save you the trouble. If you are near a town where fishermen live you can get something for the combs of grub by taking them to the fishing-tackle shops. However, let there be no more difficulty with wasps' nests now. I grant that the old way of taking them with fuzes of gunpowder and sulphur was an awkward one, and not always safe and certain, but I guarantee gas tar to be both safe and sure. *N. H. P.*

Plums.—The enclosed Plums are sent to show how exceptional the season has been in some instances. Generally we have a good crop of these—about 50 sorts. Those sent will show you how some of the trees are loaded. My experience here this season has been that all fruit trees—and, in fact, cone-bearing kinds, Thujas and Cupressus in particular—escaped the frost and cutting hailstorms that we had in April and May. The Plums blossomed early, and escaped; the Pears were in all their beauty when the hailstorm in the night of May 10 spread desolation amongst them, and only a few sorts escaped. How six or seven sorts should do so out of more than 1000 kinds I cannot divine, unless there were something peculiarly hardy in their natures. Those that escaped are Belle et Bonne, Beurré de Capiaumont, Beurré Goubalt, loaded with nice clean fruit; Peach Pear, some of which I sent yesterday; Anna Audusson, and a few others. The Myrobalan Plums flowered in the end of February and beginning of March, and escaped entirely—leaves, fruit, and branches—in the most healthy condition. I intended to have sent you some fruit to show you in what fine condition they were, but I went from home, and the fruit was gone on my return. It is only occasionally we get this sort to fruit, although it is generally clothed with a sheet of bloom every March. How it escaped with other Plums in this neighbourhood, I am at a loss to know. It is certainly strange that nearly all trees that blossomed early for the most part escaped, and that those which blossomed in April, May, and June, were cut off. One curious thing that happened here this season was that there was no male blossom on any of the Cupressinæ, yet they are loaded with cones, and I am curious to see whether any fertile seed follows; at present there is an appearance of it, but whether it will germinate or not remains to be seen. The Amentaceæ are, like the Cupressinæ, loaded with fruit, and the seeds are, in their case, good. Nuts of all kinds are abundant in this locality; and here again is another instance of an escape from the destruction that befel later flowering trees. There is an evil that is likely to follow the stagnation and rest induced in many kinds of trees, especially Pears: these are now starting into young growth, and some trees are entirely covered with young branches and leaves, as if this were the beginning of spring instead of the fall of the leaf. I am afraid that in all cases, where the trees will grow in the manner described, that it will be at the expense of the fruit-buds. However, all trees that were transplanted in the spring have done well, and grown in the usual way, and therefore will escape the weakening process of growing a second time. I think of commencing root-pruning in all those that show an inclination to grow, and may thus stop them, and perhaps save them from the weak condition they will be sure to be in if left unchecked. *J. Scott, Merriott.*

Veitch's Autumn Giant Cauliflower. — With the view of testing the merits of this Cauliflower I made a sowing of it on April 17 last, planting out a good batch of it, along with the winter Broccoli. We cut the first heads about the end of August, and at the present time (September 7) there is a grand lot coming on, some of the most forward heads are nearly a foot across, firm, compact, and beautifully white. Whether it is cut small or large the flavour and colour are most excellent. I have a lot of Walcheren coming in, but the heads open before they attain half the size of the Giant Autumn Cauliflower, the colour is bad also, being a greenish yellow. However well the old sorts of Cauliflower do in spring and early summer, they seldom turn out so well in autumn. By making two sowings of Veitch's Autumn Cauliflower, one in the beginning of April and another the beginning of May, I am confident a good supply of Cauliflower may, with proper cultivation, be ensured from the middle of August to the end of December. *D. Melville, Oteley Gardens.*

Mimicry.—Your correspondent "J." mentions an instance of a Convolvulus which had become entwined with Lonicera aureo-reticulata, and produced leaves similarly reticulated. I do not myself think that the Japanese Honeysuckle had anything to do with this change of colour in the leaves of its neighbour. In this neighbourhood I not unfrequently find plants of Convolvulus arvensis and Bellis perennis growing wild, with beautiful aureo-reticulated leaves, which certainly never had the honour of growing near a Japanese Honeysuckle or any other variegated plant. *H. Harpur-Crewe, The Rectory, Drayton-Beauchamp, Tring.* [We quite agree with you. EDS.]

On Fruiting the Banana.—In reply to the inquiry of your correspondent, "E. N.," as to how long the Banana takes to ripen after the fruit is set, I may state the experience I have had with it here. In March, 1870, we planted a bed 28 feet square, in the centre of a house 40 feet square, with Musa Cavendishii, most of which showed fruit in August, September, and October, and these were cut in February, March, April, May, June, and July. About the middle of May of the same year, we planted two specimens of Musa sapientum in the centre of the bed: they both showed fruit in March and were cut in August. The heaviest fruit we had was from one of the plants of M. sapientum, which weighed about 75 lb. Several of them weighed between 60 and 70 lb., and the remainder between 50 and 60 lb. *J. N.*

Parsons' Mignonette.—In February last I obtained, direct from Mr. Parsons, a small packet of what he called his "new Reseda odorata alba eximia, or white Mignonette," for which I was charged 2*s.* 6*d.* This I sowed in a pan placed under the shelter of a cold frame, and towards the end of April transferred the plants to an open bed, putting them in singly a foot apart every way. After they had made some progress, the tops were pinched out of the leading centre shoots, and the laterals pegged down. These shortly filled up the bed completely, producing a profusion of bloom. Previous to planting the top soil was removed from the bed to the depth of 8 or 9 inches, some decomposed dung from an old hotbed dug in, and a compost that had lain heaped up during the winter, consisting of fibrous yellow loam three parts, rotted dung one part, and sand one part, well mixed together and sifted, substituted in the same proportion as what had been taken away. In another bed there sprang up a number of self-sown common Mignonette plants from last year's crop, which were allowed to remain just as they stood, being otherwise treated in the same way as the preceding. These also grew luxuriantly, and displayed a mass of blossom. On comparing the two kinds together, I could not discover any difference between them, either in colour or size of flower. The habit of Mr. Parsons', however, I admit, was more robust, but that was all, and such may have arisen from the superiority of soil in which it was cultivated. Some of my neighbours, who also tried it, fully concur in what I have here adduced, and several of my fair sex acquaintance to whom I presented bouquets, culled from both beds, unanimously agreed they could see no dissimilarity. Why, therefore, the kind in question should be designated "white," any more than the common large flowering variety, I confess puzzles me to know. In your editorial remarks, p. 1134, you say,—"Our own proved to be a very mixed and uneven example. The selected specimens now sent are fine." It is a very simple matter for a person to pick out from a bed or pots, two or three heads of the best flowers; but may I be allowed to ask, were the latter, or your own, in reality whiter? That I should like to learn, and in what respect they differed from Mignonette, except, as I have before observed, in rankness of growth—which may or may not be an improvement, according to fancy. I also obtained from one of the leading London seedsmen a small quantity of seed of what was called "new crimson-flowered Mignonette," which, in like manner, has turned out identically the same as the old sort. *A Subscriber, September* 7. [There has with us been no appreciable difference of colour, except in the "crimson," in which the anthers were of a darker chestnut, giving the mass a somewhat redder hue—but certainly not crimson. Mr. Parsons' pot plants, as shown last spring, were paler than the common sort, but whether naturally so or from indoor culture we cannot say. EDS.]

Swans and Water Weeds.—Judging from the very effective way my swans have done their work, I should say that one pair of swans to an acre would certainly not be too much. By simply leaving the 13 alone this summer, and feeding them in winter, another year ought to give your correspondent, "W. E.," enough swans to effectually clear his pond. *Somerset.*

Foreign Correspondence.

The Winter of 1870-71 at Montpellier.—M. Charles Martins, the active professor of botany at Montpellier, has published his observations upon the winter of 1870-71, so far as it affected the Jardin des Plantes of that place, and the environs of the city. Some of the details noticed in his report are so interesting, that we translate them for the benefit of our readers.

Among the plants entirely destroyed in the garden are three Date Palms, three dwarf Palms, and an old Eriobotrya japonica, all of which endured the severe cold of January, 1855. Others, which perished in that year, and since then have not been affected until last winter, are Benthamia fragifera, Schinus Mulli, and Opuntia Ficus-indica. A longer list is that of plants which do not suffer in ordinary seasons, but were unable to stand the excessive cold of the beginning of the year, and were killed down to the ground, although retaining their vitality; among these the Laurels have been much affected, both the old and young plants, although Prof. Martins says that he has observed with astonishment that the latter have relatively resisted better than the former. The largest Laurel in Montpellier is almost entirely dead, as are also those of the Jardin des Plantes. A third class is of plants which were injured in their leaves and branches, but which are usually unaffected by winter, and, in many cases, resisted the cold of 1855.

A second portion of the paper treats of the effects of the cold on the cultivated or spontaneous plants of the environs of Montpellier, to which the following remarks, by no means unimportant, are attached: "I cannot help directing attention to the fact that among all the plants the sensibility of which to cold we have mentioned, the greater number of those which are considered as indigenous (because they propagate themselves spontaneously in the country, where they have existed from time immemorial), belong really to exotic groups, of which they are the sole representatives in Central France; such are the Olive, the Bay Laurel, the Pomegranate, the Myrtle, Pistacia Terebinthus, and the Caper. * * By the philosophic botanist, all these plants ought to be regarded in reality as exotics in this sense, that their congeners are so, and that they contrast as types with those of the Mediterranean flora. Several have been found in the miocene formation, and have remained in the existing flora, after having passed through the glacial epoch without disappearing altogether; but their rarity and their sensibility to cold, as well as their forms and botanical affinities, betray a paleontological origin, and show that they originated at a time when the climate of Languedoc was warmer than it is at present. I may be permitted by a comparison to show that this induction is logical and legitimate.

"Supposing for an instant that we did not know the date of the introduction to Languedoc of Agave americana, Aponogeton distachyon, Jussiæa grandiflora, Onopordon tauricum, and Opuntia inermis—all naturalised species. There is no botanist who would not be struck by their foreign appearance, and feel astonished at finding them mingled with the indigenous flora. Tradition teaches us that they have been introduced by man, and all is explained. As to the other plants cited above, history is silent; we only know that they have existed in Central France from time immemorial; but the same signs indicate to us a foreign origin, differing from those of the Mediterranean and northern floras, which, united, embrace the whole of the plants which now occupy the European shores of the Mediterranean."

Societies.

Glasgow and West of Scotland Horticultural: *Sept.* 6.—The concluding show of the season was a crowded one. There were 1580 entries in the respective classes of plants, fruits, cut flowers, and vegetables; many of the articles exhibiting good cultivation, and at no former meeting had there been so magnificent a display of fruit. The dinner-table decorations from Colonel Buchanan of Drumpellier, and Colonel Campbell of Blythswood, were unquestionably the chief objects of attraction. The arrangement of both these designs was wonderfully good, the premier one being the most elegantly put up, although lacking the quality of fruit of the second. Mr. Lewin arranged his table with three crystal designs as centre-pieces, after the elegant Marsh design that finds so much favour in the metropolis. These were elegantly decorated with Maiden-hair Ferns, variegated Panicum, Passion-flowers, and Bouvardia. The centre-piece had twisted appendages of glass, from which Ferns, &c., sprang, and the ground-work had a geometrical line of colour in Pansies, set upon golden Pelargonium leaves, with little sprigs of scented Geranium dotted in, making a most effective border. As corner dishes there were nice lots of Grapes, Melons, and Peaches and Nectarines, and between these again were little glasses filled with Ferns and the Bouvardia, stylish but easy. The whole was in a dessert service of burnished gold. Mr. Methven's style was a little different. His centre-pieces were not so elegant, and his design was more crowded. He studied the comforts of the table by giving ample space round the margin more than his fellow-competitor, and his dishes of fruit were beyond question much more luxurious, comprising, besides the fruits named above, a fine Cayenne Pine-apple, Bananas, and some of the commoner fruits. The collections of plants on longitudinal tables, three on the one side and three on the other, added immensely to the general effect of the transverse table of fruit. Here were Palms, Tree Ferns, and Screw Pines, towering high above their fellows, enlivened with the gorgeous Lilies from Japan, the beautiful Ixoras and Periwinkles from the East Indies, and the waxy-flowered Heaths from the Cape. The Fuchsias seemed to look their very best, and the variegated Pelargoniums, always effective, gave a glow of colouring to the normal green, so largely represented in Ferns and Club Mosses. There were some of the best Ferns we have seen exhibited, the fine depending fronds of Adiantum assimile making up a beautiful plant, such as any lady would select for window adornment. Gold and silver Ferns make suitable furnishing for introducing among flowering plants, and it is almost a pity that subjects so admirable should be grouped together in classes instead of being interspersed among flowering plants of less elegant habit. Pansies were, as usual, well exhibited, and the spikes of the Gladioli were in splendid form. The line of Cockscombs, that formed the boundary between the exhibits of fruit, were in the best style of cultivation. The bouquets, both table and hand, were far too stiff and formal, and although they presented a neat outline, still they did not exhibit the very fine flowers, of which many of them were composed, to the best advantage. Roses were good—some of the stands better than might have been expected from the untoward summer. Hollyhocks were deficient in numbers and in quality; while Dahlias—the regal Dahlia of the florist, that is so soon destroyed by the least breath of frost—were in fair character. The table of fruit above noticed was of a very excellent character. Dozens of competitors entered for Black and White Grapes, the palm of honour falling respectively to Mr. D. Y. Stewart, Barassie, and Sir James Lumsden, Arden, both being hardly pressed in their classes by Mr. Collins, Maryhill, and Sir James Colquhoun of Luss. We have seldom, indeed, seen better samples exhibited. The tables groaned with excellent fruit, Grapes, Peaches and Nectarines, Plums, Pears, and Apples. These classes were fully contested. Vegetables are generally much better shown in the West of Scotland than in any place in the kingdom, the climate being favourable and the gardeners put on their mettle. Mr. M'Lachlan of Greenock, showed a "verge cutter" that will economise time and labour to all who employ it in their gardens.

Enfield Horticultural: *Sept.* 7.—The chief features of this pretty local show—one of the best we have seen for some time—consisted of foliage plants, Lilies, Ferns, and Asters, together with a good display of fruit, much of which was of a very high quality. The show, which was held in the grounds of Mrs. Adams, took place in a spacious tent, supplemented by two smaller ones, and owed much of its effectiveness to the tasteful arrangement secured by the indefatigable exertions of the honorary secretary, Mr. W. Marshall. Amongst the foliage plants staged were conspicuous examples of the handsome Seaforthia elegans, from Mr. Anderson, gr. to D. Henry, Esq., and the grand Yucca-like Cordyline australis from Mr. Brockwell, gr. to P. Twells, Esq. Mr. Wilson, gr. to W. Marshall, Esq., had one of the finest masses of Alocasia metallica ever shown, and which must have borne as many as 60 or more well-developed leaves. There were some finely grown Crotons from Mr. Wilson, Mr. Shaw, gr. to J. Muir, Esq., and others. Amongst the flowering plants was an exceedingly well managed specimen of the now seldom seen Clerodendron fallax, from Mr. Cuthbert, gr. to Mrs. Adams, a plant about 3 feet high, bearing 14 panicles of its brilliant scarlet flowers. Mr. Brockwell had a grand specimen of Allamanda Hendersoni, exceedingly well-flowered, and which might well dispute with Mr. Marshall's Alocasia the premier place in the exhibition. There was a grand display of Lilium speciosum, no fewer than five collections competing, the best coming from Mr. Cuthbert, who had a fine plant of the true high-coloured original L. speciosum. Asters in pots were a pretty feature, but as it was a rule that they should have been grown in the pots, the choicest lot was disqualified; the best of those grown according to the schedule came from Mr. Mills, gr. to W. R. Arbuthnot, Esq. Ferns were shown in considerable numbers, and comprised many remarkably well grown specimens. There was a grand plant of Balantium Culcita, and several good examples of the Bird's-nest Fern, Thamnopteris Nidus; besides which, we noted a magnificent example of Pleopeltis musæfolia, and good plants of Todea superba, Adiantum farleyense, as well as a luxuriant mass of Asplenium marinum, the latter all from Mr. Marshall's collection. There was a fair display of cut flowers, amongst which some double Zinnias from Mr. W. Paul, and some Tiger and other Lilies from Messrs. Paul & Son, neither of them competing, were conspicuous. In the competition for a device in cut flowers, which here meant a stand of flowers for the table, Mrs. Marshall was placed first with one of the Marsh stands tastefully filled; a very pretty stand from Miss Adams, rather weak in the filling, being placed second. The fruit was exceedingly good for a local show, and occupied a considerable space on the tables. Some of the more noteworthy examples, were—Black Grapes (Hamburghs), from Mr. Anderson; White Grapes (Buckland Sweetwater), from Mr. Shaw; Peaches (Bellegarde), an excellent sample, from Mr. Wilson; Nectarines (Violette Hâtive), from Mr. Mills; Pears (Marie Louise and Williams' Bon Chrétien), from Mr. Shaw; Cherries (Morello), from Mr. Anderson; and collections of 12 dishes from Mr. Cuthbert, and of 6 dishes from Mr. Anderson. The vegetables and cottagers' productions were very creditable.

Brighton Floricultural and Horticultural: *Sept.* 13 *and* 14.—This was perhaps the most successful autumn show held in Brighton for many years; indeed, it would be difficult to find a competitor for it at this season. Though the Pavilion buildings are not eminently suited for floral displays, it may be said, that for some things they are preferable to canvass marquees. The stove and greenhouse plants and Pelargoniums—which always form one of the most conspicuous features of the Brighton show—were in a large marquee on the lawn, and, with a few other plants, such as Fuchsias, cut Dahlias, Begonias, &c., constituted a very effective exhibition. The fruits, foliage plants, Ferns, and cut flowers, were in the saloons of the building.

The Railway Cup was this year offered for 48 Dahlias, and the veteran grower Keynes worthily carried it off—thus both cups went to Salisbury. Cockscombs in the county division were well represented. Begonias were well-flowered, especially B. weltoniensis. Kelway and Parsons had fine collections of Gladioli, the former taking the 1st prize. Of Pelargoniums there was a wonderful display, Parsons holding his own as usual. Fuchsias were by no means good, although large. Indeed, cut flowers, taken altogether, were quite equal to the general run. Roses, of course, were poor, the well-known Sussex man, Mitchell, standing 1st in 48 varieties.

The competition for the Ashbury Cup was keen, and the judges must have had some trouble in deciding the claims of the numerous competitors. The first on the list left little to be desired, and there were many others very tastefully designed. The too prevalent fault of over-crowding and massing the flowers was here, however, as apparent as it has been elsewhere, and we can only recommend the managers of provincial and metropolitan shows to continue to encourage this branch of floriculture. Stove and greenhouse plants were very good, notably Bougainvillea glabra, Allamanda Hendersoni, Vinca, Ixora amboinensis, &c. A few good Orchids were exhibited, but were so badly placed in one of the rooms that they were passed by almost unnoticed.

There were two or three good collections of wild flowers, including most of the rarities of the South.

Amongst fruits, Pines were poorly represented, an unripe though large Smooth Cayenne taking 1st prize. Black Grapes, especially the Hamburgh, were remarkably fine; and the collections of 10 dishes of different fruits were good. Melons were numerous, Plums fine, and Apples and Pears inferior.

The wax and paper flowers exhibited by Miss Weekes and Mrs. Snelling were so good as to require close inspection to convince one that they were not natural. A small basket by the former lady, containing Primroses, Forget-me-nots, &c., was excellent, and the same might be said of many other artificial productions, including some wool-work Passifloras!

Cripps, of Tunbridge Wells, exhibited a beautiful set of new seedling and named Clematises, and Messrs. Veitch their remarkable crimson-leaved Amaranthus, named salicifolius, resembling somewhat the narrow-leaved pendant Crotons. Mr. Ward, gr. to J. N. Miller, Esq., of Bishop Stortford, was very successful with his fruit, taking 1st for White and Black Grapes, and a collection of 10 dishes of different fruits. Mr. Chard, gr. to Sir F. Bathurst, of Salisbury, gained the Ashbury Cup for dinner-table decoration, comprising three stands. Altogether, the arrangements, under the superintendence of Mr. Spary, were admirable, and the attendance sufficient to justify the hope that the Society will revive.

South of Scotland Horticultural: *Sept.* 5.—The fifty-ninth annual exhibition of this Society was held in the Mechanics' Hall, Dumfries, under favourable auspices. Upon the whole the show was one of the most successful that has ever been held in connection with the Society, either as regards the number or the quality of the products exhibited. Amongst other exhibitors were Messrs. Milligan & Kerr, who sent a beautiful collection of Geraniums, comprising about 60 new varieties—such as Sir Robert Napier, Princess Louise, and Sparkler. Messrs. Kennedy & Co. exhibited a beautiful collection of Asters, Dahlias, Fuchsias, Stocks, Liliums, &c. The various departments of the show were well represented. Amongst other plants much admired were some Ferns standing on one of the centre tables. The 1st prize plant, exhibited by Mr. Farquharson, was especially noticeable on account of its great size and beauty, while the second prize taker, belonging to Messrs. Milligan & Kerr, was little inferior. The exhibition of fruit and vegetables was good.

Notices of Books.

Catalogo Poliglotto delle Piante. Compilato dalla Contessa de San Georgio. Firenze, 1870.

Deutsche Pflanzennamen. Von Hermann Grassmann, Professor am Marienstiftsgymnasium zu Stettin. Stettin, 1870. (Plant names.)

It is now 20 years since Dr. Seemann published his pamphlet "On the Popular Nomenclature of the American Flora," in which a polyglot dictionary of popular plant names was referred to, and a hint given that, at some future time, such a work might be accomplished by the same author. Since then Dr. Seemann has been steadily accumulating material, and as, from his extensive knowledge both of languages and countries, it would be difficult to find any one better qualified for the task, we may hope that at some time or other the work may be forthcoming. Meanwhile, in England, as on the Continent, the subject of plant names has attracted considerable attention, and we have, from time to time, referred to works bearing more or less upon the matter, and in more than one instance entirely devoted to it, The two, the names of which stand above, are the most recent contributions to the literature of this subject.

The project of a polyglot dictionary of plant names is by no means a new one. In 1682 was published a folio volume by Mentzelius, entitled "Index nominum plantarum universalis," which is very good in its way, although now-a-days of little use, owing to its ante-Linnean nomenclature. A similar dictionary was compiled by Gærtner during his residence at St. Petersburg, but was never published. Indeed, when we take into consideration the nature of such a work, and reflect upon the incompleteness which it must of necessity manifest, however much care may have been bestowed upon its compilation, we shall not wonder that the death of the author has preceded the completion of the task. It is to this feeling that we must attribute the non-publication of the "Dictionnaire des Noms Vulgaires des Plantes" in 67 languages, which was compiled by Moritzi under the direction and with the assistance of the elder De Candolle, and which occupies in MS. four folio volumes. The objections urged against vernacular names may be freely admitted, and the uncertainty which sometimes attaches to their use may be granted; but apart from this, there can be no doubt that, if a comprehensive catalogue could be compiled, even of the names of garden plants alone, it would be useful to many, as our "Answers to Correspondents" often show. There are many plants well known in our gardens by English names to which it is not always easy offhand to assign their Latin equivalents; and many which, although grouped together under one English name, used generically, belong to many different genera when scientifically considered. To take an example from a recent bulb catalogue, we find, besides the true "Lilies" of the genus Lilium, the following, to which the scientific equivalents are wisely added:—African Lily, Agapanthus; Atamasco Lily, Zephyranthes; Australian Gigantic Lily, Doryanthes excelsa; Belladonna Lily, Amaryllis Belladonna; Black Lily, Sarana kamschatika; Cuba Lily, Scilla peruviana; Day Lily, Hemerocallis; Guernsey Lily, Nerine sarniensis; Jacobœa Lily, Sprekelia formosissima; St. Bruno's Lily, Anthericum Liliastrum; Scarborough Lily, Vallota purpurea; Lily of the Valley, Convallaria. Besides these, the following, which occur to us as we write, may be added: Lily of the Nile, or Trumpet Lily, Richardia africana; Rockwood Lily, Ranunculus Lyalli; Barbadoes Lily, Hippeastrum equestre; Mexican Lily, H. reginæ; Wood Lily, Convallaria and Trillium; Lent Lily, Narcissus Pseudo-Narcissus; Flame Lily, Pyrolirion; Brisbane Lily, Eurycles australasica; Rock Lily, Dendrobium speciosum; Checkered Lily, Fritillaria; Hedge Lily, Convolvulus sepium; to say nothing of the various Water Lilies and many more which might be added to the list.

Even judging by this example, the first book on our list appears in no favourable light—only six names are in the index under "Lily," of which two are genuine species of Lilium, and two do not appear in our enumeration. Indeed, viewed from whatever point we may choose, this polyglot catalogue is, to say the least, unsatisfactory. The list of authors consulted demonstrates this. None of the works which should be indispensable, such as Dr. Prior's volume, are enumerated; English names are taken from Bentham and Baxter; the "Botanical Magazine," and "Register," and Johnson's "Chemistry of Common Life" (!) with similar works; and for French and German names equally unsatisfactory authorities are quoted. Thus a large number of the English names can only be so called by courtesy, as they would never be used out of books, and are often mere adaptations, such as "Euphorbia bush, medicinal," for E. officinarum; "Guyana Centaury," for Exacum guyanensis; "Barton's flower, golden yellow," for Bartonia aurea; "Nitre plant, Russian," for Nitraria Schoberi, and so on. Nor do genuine English names fare better, inasmuch as they are too often misapplied: thus Galeopsis Tetrahit is given as the "common dead Nettle;" the name "Buttercup" is limited to Ranunculus repens and acris; and, worse still, misprints are so abundant on almost every page, that the meaning is obscure. Thus Medicago echinus is called the "Sea Egg-medick plant;" M. scutellata is the "Swain Shell;" while one page in the index gives us the "Macquarie Habour-Grappe plant," "Lords and Laclies," "Litimus plant," &c. Some such mistakes are perhaps to be expected in the English of a book printed abroad, but here they are so numerous that this excuse will hardly avail. The most satisfactory part of the book is the relation between the contents and the index; the plants are arranged alphabetically under their Latin names, and numbered consecutively, the synonyms in each language being given. We have then a separate index for each language, the number of the plants being given after the name, so that reference is easy. The work, however, is far from satisfactory as a whole, and will be of little use, so that a polyglot dictionary still remains a desideratum.

Prof. Grassmann's little volume is much more useful, as it contains not only the German vernacular names, but their Swedish, Danish, and other European synonyms, with notes on derivations, and copious references to previous writers on the subject. The chief fault we have to find with it, is in the invention of vernacular names—a system which has been proposed among ourselves, and carried out more or less fully in Mr. Bentham's "Handbook." Prof. Grassmann's plan is to take some common name of a well-known plant, and to render it generic, coining, as it were, specific names for each member of the genus. Thus, Cytisus Laburnum is generally known as "Golden-rain" (Gold-regen); the word Regen is then taken for the genus, and adapted to each species:—C. alpinus, Alpen-regen; C. argenteus, Silber-regen; C. austriacus, Oester-regen; C. capitatus, Kopf-regen; and so on through about 20 species. This example, taken at random, shows the unsuitableness of the system: the idea of rain is appropriate enough to the Laburnum, and is embodied also in the Swedish guldregn, but is quite out of place in connection with the majority of the other species, notably such as C. capitatus. The work is, however, on the whole of value, and will not be overlooked when a comprehensive polyglot dictionary of plant names shall be in progress.

Florists' Flowers.

THERE is much reason to fear that year by year the area of the cultivation of the TULIP as a florist's flower is becoming more and more circumscribed, especially when it is true that men who, because of their long connection with the Tulip, can worthily be termed veteran cultivators, are one by one falling aside from the beaten track, and are found offering their collections for sale. Many have learned with unfeigned regret of these acts of withdrawal, mainly carried out, be it stated, because of growing physical infirmities which interfere with that active supervision so necessary to a grower who would succeed. In the case of the retirement of Mr. George Lightbody, of Falkirk, who has been a florist since 1817, and of Mr. John Read, of Market Raisen, so well known to the floral brotherhood, through their various periodicals, under the pseudonym of "Dera," and who has enjoyed a long and honourable career as a cultivator of the Tulip also, there is cause for much regret among Tulip fanciers. To them it is like the passing away of the renowned commanders in the times of a country's greatest emergencies. It must not be supposed, however, that others are not stepping forward to supply the vacant places. Tulip growers are yet a numerous body; one occasionally stumbles on them in various places, tending their flowers with all that ardour that enters so strongly into the composition of an enthusiastic florist, and reaping the pleasant reward of much real gratification. No doubt the cultivation of the Tulip has much died out in the southern districts of England; in the north it is still pursued with much ardour.

At the National Tulip Exhibition, held at Cambridge in May last, the northern growers appeared in strong force, and their ardour and enthusiasm were manifested in a remarkable degree. It was a rare study of human nature to stand by a group of these men, gathering their opinions of the flowers staged, of the estimation in which certain points were held—and in this respect there was much difference of opinion, as well as in the estimate which had been formed by the judges and their decisions. The popular regard, also, went out largely after the Tulips—perhaps because of the novelty of their appearance, and the tent in which they were shown was crowded with visitors during the day.

The Tulip, to be certain of securing some approach to desired quality, must be grown under favourable conditions, and these are not incompatible with its perfect hardihood. Mr. Richard Headly has declared that the Tulip is a much hardier bulb than the Swedish Turnip. Experienced growers hold the opinion that it is not possible for "either wet or frost to injure them materially, although submerged in a flood for days, or bound up by frost for weeks;" still there is scarcely a cultivator who would care willingly to expose his bed to such great risks. An undrained soil, which from its inability to pass away quickly the rain that falls on the bed must keep the earth about the bulbs soddened and cold, is a thing to be particularly avoided; and it is no doubt owing to this that beds are invariably raised above the ground level. Some attempts are frequently made to protect the beds from frost and heavy winter rains, and this is generally done by means of a set of low iron hoops, with a line of laths passing along the top to keep them together; and over these Russian mats are thrown when requisite. One eminent cultivator has stated, and his words contain a warning worthy of note, especially in cold and keen localities—that the greatest harm from frost is likely to arise when it follows with some severity on the heels of heavy rain; when the foliage is often filled with water, and that water is suddenly congealed to ice. The stems are thus nipped, and although the consequences are not immediately visible, future disappointments may be predicted with certainty. They may stand apparently all right till nearly in full bloom, but at every visit to the bed the probability is that the florist will find some of his favourites lying prostrate, their stems being tainted half through. To obviate this misfortune, the foliage should be kept as dry as possible from the time when it first opens to the period of full bloom, and this can only be effected by having a top cloth on during all wet weather.

With Tulip growers it is a kind of tradition (with some of them at least) to plant on November 9. It is best to plant in dry weather, and not at a time when the soil is excessively wet through heavy rains. Generally the bed ranges from east to west, probably to get as much as possible the full action of the sun. The soil recommended is a good sandy turfy loam, applied to the depth of 6 inches, and well mixed with the soil in the bed, and left for three or four weeks before planting is done. The beds are invariably formed with turf sides and ends, about 9 to 12 inches in depth; and when planted the soil is levelled to the surface of the edging, or just below it, and the bulbs placed on it in regular positions, according to thei height of growth, in seven lines: a little white sand i placed about each bulb, and they are then covered with soil to the depth of 5 inches in the middle, and three at the sides. This gives a kind of sloping or bevelled surface, and helps to throw off the rain.

The following list includes some of the best flowers shown at Cambridge in May last, together with others not seen on that occasion:—Bizarres: Dr. Horner, feathered, Everard, Richard Headly, Henry Groom, and Mr. F. Perkins, flamed, all first row flowers; Vivid, feathered, Caliph and Dr. Hardy, flamed, second-row flowers; George Hayward and Pactolus, feathered, Sir J. Paxton, J. R. Scrivener, and Polyphemus, flamed, third-row flowers; Royal Sovereign, Glory of Abingdon, feathered, Owen Glendower, King (Delaforce), and Lord Raglan, flamed, fourth-row flowers. Of these the following were specially fine—Sir J. Paxton, which deservedly obtained the premium prize as the best flower in the exhibition; Polyphemus, in superb style; Dr. Hardy, very fine; George Hayward, a grand flower; also a feathered form of Sir J. Paxton. Byblœmens: Queen of the North, Purple Perfection, and Wood's Rembrandt, flamed, first-row flowers; Victoria Regina, Storer's Clara, Battersby's Chancellor, and Violet Amiable, feathered, Walker's Duchess of Sutherland, and John Kemble, flamed, second-row flowers; Lord Denman and Maid of Orleans, feathered, Queen Charlotte, Thalia, Nora Creina, and Claude, flamed, third-row flowers; Adonis, feathered, Alexander Magnus, and Princess Royal, flamed, fourth-row flowers. Of these Duchess of Sutherland, Queen of the North, Alexander Magnus (finely marked, but rather long in the petals), and John Kemble, were in fine condition at the National Tulip Show. Of Roses, the following form a good selection: Sarah Headly and Arlette, feathered, Lady Stanley, Naomi, Goldham's Gem, and Countess of Blessington, flamed, first-row flowers; Heroine, feathered, Rose Celestial, flamed, second-row flowers; Mary Headly, Aglaia, Triomphe Royale, and Maid of Falaise, flamed, third-row flowers; Vicar of Radford, Gibbon's Duchess of Sutherland, and Claudiana, feathered, Emily, Elizabeth (Jeffrey's), and Anastasia, flamed, fourth-row flowers. Roses were very fine indeed at Cambridge, and especially the following in the foregoing list: Aglaia, very finely marked; Heroine, very fine, and the premier rose; Rose Celestial, and Triomphe Royale.

This gives a list of 54 good reliable varieties, 18 of each section, arranged according to their height of growth. Of other good flowers not included in the foregoing lists, but shown finely at Cambridge, are Talisman (Hardy), a very fine feathered byblœmen; W. E. Gladstone (Headly), do., shown in fine condition by Mr. R. Headly; Circe, flamed rose, very pretty; Prince of Wales (Headly), flamed bizarre,—this was very fine, large, and beautifully marked, but hardly strong enough in colour; Mrs. Pickerell, feathered byblœmen, and the premier feathered flower of the exhibition; Jacomb's Perfection, feathered bizarre, a variety little known but rightly named, one of the best of its class, and perhaps the richest coloured of any bizarre in cultivation; Nepaulese Prince, flamed byblœmen, finely coloured; Henry Steward, feathered bizarre, very fine; Captivator, flamed rose; Arethusa, feathered rose; and Sarah Leach, flamed byblœmen. *R. D.*

Garden Memoranda.

BATTERSEA PARK.—The bedding-out here will be found in excellent order just now. Mr. Roger has to a certain extent struck out a new line for himself, which is at once seen on going to those snug nooks and corners where we always expect to find something good, and which we shall take the opportunity of noticing as we come to them. Of course the change which is found in the open style of planting which Mr. Roger has adopted is not radical enough to entirely alter the whole character of the place, though this appears to have been adopted in every case where bold, striking foliaged plants are in question, and the results appear eminently satisfactory. Our provincial friends, we know, take exception to the great number of plants which are crammed into the flower-beds of the public parks and private grounds in the metropolis, but then we have a reason for it, and a very substantial one, inasmuch as here, when the plants are put in, we must have a show at once, which can only be gained by thick planting in the case of the ordinary run of bedding plants, whilst it is quite probable that the gardens attached to the palatial and baronial mansions in the shires are never seen by the proprietors until the commencement of the shooting, or the termination of the so-called London season, when a full blaze of beauty is of course expected to be found. Here, then, thick planting would not answer, nor is it attempted. The plants are put in moderately thin, they have plenty of time to "get up," as the expression goes in gardening phraseology, and are found "in a blaze of bloom" when wanted. In the case, therefore, of ordinary bedding plants, Mr. Roger has adhered to the usual system, but with the large, fine-foliaged plants proper to the subtropical garden, he has adopted a bolder course, as, instead of reproducing large massive beds of a single species, or variety, as the case may be, of any popular plant, such as we have so much admired from the hands of his predecessor, Mr. Gibson, he has cut up these beds into sections, and planted them with two or three kinds, chosen for their general distinctness of character and adaptability for forming agreeable contrasts. Here is a case in point. The extreme ends and centre of a long bed situated at the bend of the walk, taken to the right on entering from the cricket ground, are planted with the noble-foliaged Wigandia caracassana (see fig. 269, p. 1170), 4 feet apart in the rows, and 3 feet from row to row, the two intervening sections being filled in, thinly in proportion, with Solanum marginatum. Under the Wigandias is a carpet of the fiery spined Solanum pyracantha, whilst under the Solanum marginatum is the cut-leaved Geranium anemonifolium, the whole being finished off with a line of the last-named Geranium alternating with Tussilago Farfara variegata, and an outer margin of Sedum virescens. The Wigandias have made a capital growth, and being allowed plenty of room, they stand out boldly and well in their noble proportions, whilst the silvery leaved Solanum, though it, too, has made good use of its time, is in the very nature of things considerably dwarfer. In this lies the great feature of the arrangement: it breaks up the mass, as it were, into small groups, and opens up any characteristic feature in the rear, which, in this instance, consists of a pair of fine Musas, and which are seen to the greatest advantage through the openings so made. Besides being a capital illustration of an excellent style of arrangement, this bed has another feature of originality, deserving of the attention of those seeking good useful plants for furnishing bold effective edgings, or for carpeting under tall-growing plants—we mean that it fully bears out Mr. Roger's high opinion of the merits of the many beautiful cut-leaved and sweet-scented Pelargoniums for the purposes above mentioned. He has employed several of these charming old plants to a considerable extent, and we believe intends doing o more extensively, as his stock increases; and that they will do him good service we have ample evidence in the illustrations before us. A very bold and effective design, in the style above alluded to, is also to be seen on the opposite side, in which the ends and centre are planted with Solanum Warscewiczoides, and the intervening spaces with the New Zealand Flax, Phormium tenax, carpeted with a deeply cut leaved sweet-scented Pelargonium, and edged with variegated Ivy. In the same neighbourhood we notice that the fine bed of the prettily variegated Vitis heterophylla is this season rendered even more beautiful by its being made to do duty as carpeting to those really elegant plants Acacia lophantha and Grevillea robusta, which are planted thinly amongst it, with a very good effect. Other examples of tasteful bedding which we noticed in our stroll round, and think worthy of record, are a circular one of Coleus Verschaffeltii, with a tuft of Centaurea candidissima in the centre, and a line around of the same plant, next to which comes one of mixed succulent plants, and then a margin about 12 inches deep of Mesembryanthemum cordifolium variegatum, which here, as well as at Hyde Park, is regarded as one of the best plants for such a purpose in cultivation. For edgings, which are made almost perpendicular with cow-dung and loam—a plan largely followed in the metropolis, to lighten the labour of watering, every drop of water going to the roots of the plants, instead of running over the surface, and caking it, as is too often the case when the convex form of surface is employed—we have nothing to equal it, in a similar colour—bright orange-yellow. The next is composed of Vallota purpurea, mixed with Agapanthus umbellata and Imantophyllum miniatum, around which is a line of Wills' golden-self Pelargonium Gem of Brilliants, with rich magenta flowers, which Mr. Roger speaks very highly of. The three first named plants are flowering very freely, but the Imantophyllum is scarcely decided enough in colour to warrant a more free use of it; besides, its flowers look washy, and in any case it should not be planted in the same bed with Vallotas, the intense scarlet flowers of which entirely kill it. A mixed bed of Vallotas and Agapanthus would have a capital effect. Another plant which, when in flower, commands considerable attention—Erythrina Crista-galli—is flowering unusually freely this year. Some round beds of this, edged with dwarf plants of Aralia papyrifera, have an exceedingly good appearance, the outline being easily and sufficiently defined, without the severely formal character produced by dwarf and more compact-growing plants. The latter style finds little favour with Mr. Roger, who employs the former and more graceful method much more freely with tall plants, and with excellent results. The large beds of Cannas are looking and doing well, especially those which are left in the ground undisturbed. These grow much stronger than those planted out annually; but the latter plan is the best where it is desirable that the beds should not exceed a certain height to fall in agreeably with their surroundings. The former, too, are liable from exhaustion to make a spindly growth; and, to obviate this, Mr. Roger, we believe, intends to take them up every three or four years, divide, thin out, and replant in renewed soil; and this will, no doubt, have a very beneficial effect in giving breadth and substance to the foliage. The Palms and Musas, which owing to the severity of the weather were put out late, are doing very well, especially Chamærops humilis, Seaforthia, and Phœnix sylvestris. The experience here is that any Palms in habit approaching in character to the above, are the best for subtropical work, and that Musas of the height of 3 or 4 feet are more serviceable than taller specimens, and in this we entirely agree. The tropical vistas, near to the Peninsula, are as attractive as usual. It was a happy thought that suggested the formation of these un-English nooks to Mr. Gibson, for in them we find a great variety of very interesting tropical subjects which cannot be trusted out in the open, and which we should otherwise miss from this thoroughly enjoyable place. The long geometrical beds, of which we gave plans last year, at p. 1158, are this season planted in the Grecian key pattern, the plants used being Alternanthera and the Golden Feather Pyrethrum; whilst the two round ones are planted with succulents, with a view to subdue the colour of the others. This is decidedly a change for the worse, as the design, though a pretty one in certain positions, is unworthy of the place now occupied by it.

The mass of Acer Negundo variegatum, which forms such an attractive feature in this portion of the park, now that the plants are getting up in height, well illustrates the exceeding valuable character of the plant (of which we give an illustration, fig. 275) for ornamental planting.

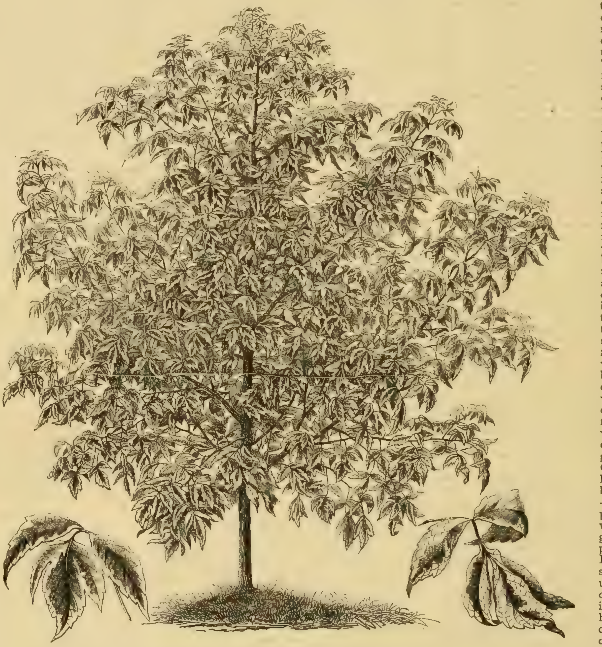


FIG. 275.—ACER NEGUNDO VARIEGATUM.

We have also a change to notice in the style of bedding carried out around the refreshment rooms, on the north side of the park, facing the Thames, which, in former seasons, consisted of ribbon borders and beds of distinct varieties of Pelargoniums, but which now—that is, the half circular border—is most effectively carpet-bedded in a design resembling a well executed piece of cornice work around the ceiling of a room, and very well indeed it suits the position. The ray beds on the left, near to the West Gate, are rather weak and dull, but this, it must be observed, is due to the circumstance that the plants first put in suffered so severely from the effects of the weather that it had to be nearly all replanted, and that, too, when nearly all the other bedding was finished — when the work could only be carried out at a very great disadvantage. Opposite to the above, however, is one of the best beds in the Park—of Aralias, openly planted and edged with the emerald green - leaved and peppermint - scented Pelargonium tomentosum. Space forbids us from noticing any other of the many interesting things to be seen here, but we cannot conclude without remarking that Mr. Roger has discarded Calceolaria floribunda, and relies mostly on the good old Kayi; and that he has in a Verbena named Sportsman, bright pink, one of the best bedders ever sent out. It is exceedingly telling in rows, and has a capital effect here blended with Œnothera macrocarpa.

Obituary.

EVERY frequenter of the meeting-room of the Royal Horticultural Society will have missed of late the kindly, genial face of the chairman of the Floral Committee. Every member of that Committee—we may say every horticulturist, who came in contact with him, will grieve to read this announcement of the death of the Rev. JOSHUA DIX, M.A. (on the 12th inst., at Langley, near Slough). He may fairly be said to have died in harness, for we cannot forget how he, ever mindful of his allegiance to horticulture and horticulturists, contracted what has proved to have been his last illness on an occasion when he bore witness of the faith that was in him by performing the last sad rites over poor John Veitch. It was fitting that a clergyman who had so greatly identified himself with the progress of horticulture should be the one to utter the solemn words of our burial service over the grave of one who may himself be reckoned among the martyrs to horticulture. It is sad to recall that in the exercise of that duty our friend was stricken with that sickness from which he had never thoroughly recovered, and in consequence of which we now have to lament his decease. The Rev. Joshua Dix was a graduate of Oxford, and officiated, we believe, as curate and *de facto* incumbent of a country parish in Kent for several years in the absence of the rector. There he gained the respect and love of his parishioners; there he contracted that love for Nature and Nature's handiworks which never forsook him. We, whose duty it is to pen these lines can look back for nearly a quarter of a century, and recall our friend hot in the eager search for the "Purple Emperor," as he flitted over the top of a spreading Oak. We remember his exulting cry as he proclaimed that he had found the Royal Fern (Osmunda). We call to mind how he showed us, then less than a stripling, the first Oxlip (so called) we had ever seen. This idyll was destined to be but as a dream. The curacy in Kent had to be given up, and our friend was promoted—save the word—to a small living in the heart of the city of London. Here amid "wholesale houses" and commercial emporiums, the lot of a true-hearted clergyman was cast. There was literally no field for his sympathies. His parish was, so to speak, one in name only. In the evenings and on the Sundays it was almost entirely deserted. His congregation may be described literally as where "two or three were gathered together." It was under these circumstances that Mr. Dix devoted himself heart and soul to the concerns of the Royal Horticultural Society, or rather of the Floral Committee. Free from prejudice or bias, either towards or against the Council or the exhibitors, Mr. Dix presided for some years over the deliberations of the Floral Committee, with an impartiality, a geniality, and tact which secured for him the cordial goodwill and respect of a large and somewhat heterogeneous body. Their respect was testified some short time since, at a time when it was felt that some mark of their esteem should be presented to their chairman—their sorrow at his loss will be shared by every one who knew him. *Requiescat in pace.*

We have to record the early death of Mr. FRED. PARSONS, son and successor of the well-known nurseryman and florist, of Brighton. The deceased succeeded to the business less than two years ago upon the retirement of his father, and for some months has been suffering from dropsy, to which he succumbed early in the morning of the 7th inst.

We deeply regret to have to record, on the authority of the foreign scientific journals, the death of Dr. MILDE, who has made many important contributions to crytogamic botany, and whose valuable "Filices Europæ et Atlantidis," was noticed in our volume for 1867 (1174). Dr. Milde had also published some important observations on new Ferns, entitled Reliquiæ Mettenianæ, in recent volumes of the "Linnæa" (see vols. xxxv., p. 385; and xxxvi., p. 43).

We have to record the death, at a very advanced age, of JAMES DE CARLE SOWERBY, the first Secretary of the Royal Botanic Gardens, Regent's Park, an office which he held till last year, when he resigned it in favour of his son. Mr. Sowerby belonged to a family, many members of which have distinguished themselves by their devotion to various branches of science, and to the pictorial illustration of natural objects.

On Tuesday, September 12, at Chatsworth, after a few days' illness, Sarah, widow of Sir Joseph Paxton, M.P.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, SEPT. 9, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg	Deg	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	75.2	48.2	27.0	70.6	52.3	18.3	60.0	2.15
Blackheath ..	76.3	46.6	29.7	72.6	52.7	19.9	60.5	0.66
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	72.0	44.4	27.6	66.7	51.2	15.5	57.6	2.00
Wolverhampton	71.2	44.9	26.3	66.8	50.5	16.3	57.3	2.52
Leicester ..	..	..	..	..	..	..	..	..
Norwich ..	75.5	46.0	29.5	69.9	53.4	16.5	60.3	0.84
Nottingham ..	74.0	45.5	28.5	70.6	50.1	20.5	58.9	1.46
Sheffield ..	71.0	44.0	27.0	68.0	50.3	17.7	57.8	1.95
Liverpool ..	68.8	47.7	21.1	65.8	41.6	14.2	57.3	0.82
Manchester ..	73.0	46.0	27.0	68.4	49.9	18.5	57.7	1.10
Salford	70.8	45.8	25.0	66.9	49.1	17.8	56.5	0.99
Bradford ..	70.0	48.2	21.8	66.5	51.7	14.8	57.7	0.88
Leeds	71.0	45.0	26.0	66.6	50.0	16.6	56.9	1.39
Hull	74.0	44.0	30.0	68.9	51.4	17.5	58.7	1.97
Newcastle ..	66.0	48.0	18.0	63.5	51.2	12.3	55.9	1.08
Edinburgh ..	68.0	48.0	20.0	..	..	..	57.1	0.60
Glasgow ..	66.0	50.5	15.5	..	..	..	56.3	0.05
Dundee.. ..	68.0	50.0	18.0	..	..	..	56.9	0.25
Aberdeen ..	66.8	49.5	17.3	..	..	..	56.8	0.30
Paisley	..	..	..	..	..	..	..	..
Greenock ..	64.0	52.0	12.0	..	..	..	56.2	1.15
Leith	67.2	51.5	15.7	..	..	..	57.6	0.17
Perth	69.0	40.0	29.0	..	..	..	54.0	0.58
Dublin	71.9	43.2	27.7	..	..	..	56.0	1.61

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, SEPT. 13, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
Sept.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
7. Thurs. .	29.84	64.5	59.4	55.3	72	4.8
8. Friday .	29.75	58.8	58.2	57.7	97	5.3
9. Satur. .	29.50	57.4	57.2	57.0	99	4.8
10. Sunday.	29.75	69.3	59.7	52.0	54	4.3
11 Monday	29.77	66.0	64.2	62.8	89	6.3
12. Tues. .	29.97	60.4	62.2	58.8	77	5.5
13. Wednes	30.08	61.5	56.8	52.6	73	4.4

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
Sept.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
7. Thurs. .	75.0	55.3	19.7	62.5	+ 4.7	S.W.	260	0.01
8. Friday .	68.0	51.1	16.9	58.4	+ 0.6	E.S.E. : N.W.	110	0.25
9. Satur. ..	67.8	51.0	16.8	56.6	— 1.1	S.S.W. : S.E.	240	0.28
10. Sunday.	73.8	51.0	22.8	61.0	+ 3.3	E.S.E. : E.	265	0.00
11. Monday	78.6	60.0	18.6	67.9	+ 10.3	N.E.	195	0.00
12 Tues. ..	78.3	57.0	21.3	66.4	+ 8.9	N.E.	270	0.00
13. Wednes	69.4	56.0	13.4	61.4	+ 4.1	N.E.	325	0.00

Sept. 7.—Small amounts of cloud prevalent during the day; cloudless at night. Aurora and lightning at night. A little rain fell in the early morning.
— 8.—Rain fell in the morning and heavily from 7 P.M. till midnight. Generally overcast
— 9.—Rain fell from 6 A.M. till 10 A.M. Cloudy till 3 P.M. Generally cloudless after that time.
— 10—A very fine day. Light clouds generally present.
— 11—Overcast till 10 A.M. The clouds diminished towards night, and the sky became cloudless about 6 P.M
— 12.—Small amounts of cloud prevalent throughout. A fine day
— 13.—Generally cloudy throughout. JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

MAKE every preparation now for getting all plant structures ready at the earliest moment for the reception of their winter inmates, as it will be necessary to house all hard-wooded plants of any value immediately a decided change in the weather is perceptible. As it will be necessary also to house such cool greenhouse plants as may be "standing out," all stove plants which may have been used in greenhouses for a time must be returned to their proper quarters. Not to overlook smaller though generally important matters, the amateur should also have his flues cleaned out and set in order, ready for work in the incoming season. Many kinds of plants should now be introduced into a somewhat moist heat, where a good early autumn display is of importance. These include perpetual flowering *Carnations*, Neapolitan *Violets*, Anne Boleyn *Pinks*, Tea *Roses*, having young growth now forming, such as would be likely to bloom in pots if hurried on somewhat, and some kinds of bulbous plants, &c. Gradually reduce the amount of atmospheric moisture in stoves and Orchid-houses proper, and so aid the plants to divest themselves of some of the watery matter contained in their system, and thereby harden them to better withstand the effects of the winter. In removing all plants that have been placed out-of-doors for a period into their proper structures, take care to wash the pots thoroughly clean, to remove any green mossy formations from the surface of the balls, and to look carefully to the drainage, to ascertain if in this respect any of them may require remedial measures. Look out for mildew amongst *Heaths*, as this pest not unfrequently makes sad havoc amongst them at or about the time they are taken in and housed for the winter. The best preventive of mildew at this season of the year is the freest possible admission of air. Freely should air also be given to cool plant structures subsequently to the housing of the plants—in the first place, to keep the temperature down, and to assimilate their present position to their past; and, in the second, to secure the ripening of the wood, which, under such conditions, is more effectually carried on. Each individual grower must now treat his forward stock of plants for winter decoration according to the date that he is desirous of having them in flower. These comprise *Heliotropes*, *Salvias*, *Begonias*, *Mignonette*, and the like. Those who require an early bloom must not pinch any back after this date, whilst it is desirable that those intended to bloom later should be once more stopped; but the sooner this is done the better, that time may be afforded them again to break and grow.

HARDY FRUIT GARDEN.

Gathering the slight crop of *Apples* and *Pears* should now be proceeded with, and, considering what a limited supply exists, all possible care should be taken of every single fruit. Do not rub off the bloom, as even this beautiful covering has, we doubt not, within itself highly conservative properties; and take care to lay each upon a shelf in such a manner that it be not bruised in the least degree. Still continue to go over *Peach* and *Nectarine trees*, and divest them of all superfluous gross lateral shoots, and so aid and encourage the ripening of those shoots which have been laid in for a permanency.

KITCHEN GARDEN.

When finally earthing up *Celery* endeavour to give all the freedom possible to those leaves which it is possible to maintain above ground. By destroying such, or indeed bundling them up so closely together that their proper functions cannot be performed, we countenance the very means which is likely to increase the propensity, caused already by earthing up, to form weakly drawn growth more than is necessary or proper. A small bed of late *Broccoli* may now be planted, if strong plants exist. There is just a chance that they will form a small head late in spring, though it is too late to expect in any reason to get proper Broccoli. Hereabout they plant the Purple Sprouting variety late, and if it does not head it goes into market as a green, stalks and all, by weight, at the poor Londoner's expense. Cut down now all *Herbs*, such as *Mint*, *Marjoram*, *Tarragon*, &c., that the stools may become better prepared to withstand the hardships of the incoming winter. Where *Chervil* has come up very thickly in the seed-bed, hoe it out more thinly, and if stock sufficient does not then exist in the bed forming, transplant another bed from amongst the thickest of the plants. This is a herb much in demand in the kitchen during the winter months. Hoe well amongst the young growing crop of *Spinach*, thinning it out well betimes, that a strong young plant be formed for winter. Make just another small "chance" sowing of *Lettuce*. Cut off the old bloom-stalks from stools of *Globe Artichokes* immediately they cease to be useful. Transplant permanently the autumn-sown *Spring Cabbages*. I strongly recommend planting these upon the old Onion bed, without any attempt at digging it up. Hoe the surface well, draw the drill rows, and plant forthwith. Tie up *Endive* for blanching. Draw the Onion crop wholly, and give all the subsequent attention necessary to harvest them efficiently. Weeds should now be hoed, and killed outright before the sunless days and long dewy nights of late autumn arrive, when their eradication, save by removal, will become impossible. *W. E.*

Notices to Correspondents.

ACHIMENES: *A Subscriber.* Yes. They should be covered with a thin layer of fine soil.

ARBORETUM: *B. C.* One of the most recently established that we know of is in the University Park at Oxford. The entire extent is, we believe, about 100 acres, but we do not know how much of this is devoted to the growth of trees, though we think the collection numbers nearly 1000 species and varieties.

ARTICHOKE AND POTATO GRAFTING: *W. M. E.* We are greatly obliged for your hint, and value any suggestion of yours. You cannot, however, have been a very diligent reader on this subject, else you would know that our opinion has been expressed pretty decidedly on this matter.

BOOKS: *E. C. M.* Thompson's "Gardener's Assistant" *was* written by Robert Thompson, of Chiswick—*Salve magne nomen!—J. Dixon.* "Indoor Gardening" (Journal of Horticulture Office), and "The Greenhouse as a Winter Garden" (S. Low, Son & Co.).

CATERPILLAR: *G. McG.* You ask us to name a caterpillar from your description: that is beyond our power. Send us a specimen, and we will try to accommodate you.

FERNS: *Jay Aye.* Peg down one of the proliferous fronds of the Polystichum, and run a little silver sand in amongst the bulblets. The spring is the best time to do this, but if the plant is in a house, and growing, it may be done at any time.—*C. Lawton.* Trichomanes radicans is a British Fern in the usual sense of that expression,—that is, it grows wild in the British isles. Therefore it should not be shown as an exotic, unless in the form of some distinct variety. Not of British growth.

INSECTS: *L. B.* The small objects on the stem of the grass sent (Cynosurus cristatus) are an accumulation of the minute eggs of some species of insect. They are beautiful objects for the microscope, and were probably deposited by some small moth. *I. O. W.*

EDUCATION OF GARDENERS: *D. B.* Apply to the Secretary of the Royal Horticultural Society, South Kensington, and of the Society of Arts, Adelphi, London, respectively. You will find Oliver's "Lessons in Elementary Botany" (MacMillan) suit your purpose, or the articles on Botany for Beginners in our columns. We shall be glad to assist you if we can.

ENGAGEMENT: *Quiz.* Three months' notice is all you are legally entitled to.

FRENCH WASP TRAP: *Inquirer.* No doubt they can be procured from any of the large seedsmen or garden "sundry" establishments. They may be had of various sizes.

FUNGUS ON ALDER-WOOD: *W. G.* The green tint on Alder-wood is produced by the spawn of Peziza æruginosa. The tinted wood is much prized at Tunbridge, where it is used for inlaying and other ornamental work. *M. J. B.*

GALLON ROSE: *D. M.* "Robin's Pincushion,"—the work of an insect. Very common.

NAMES OF PLANTS: *W. T.* If the leaves are keeled at the base, the plant is Sparganium simplex; if flat, S. natans. The Labiate is Savory, Satureia hortensis. The Orchid next week.—*B.* Cornus mas., the Cornelian Cherry. The pulp around the seeds of Tacsonia Van Volxemii is pleasantly flavoured.—*H. H. C.* Gentiana germanica, with many thanks.—*P. S. D., Slingsby.*

Melilotus officinalis; common Melilot. The caterpillars on the Pear leaf were smashed. They may have been the larva of the saw-fly.—*An Old Subscriber.* Clethra alnifolia, L.; native of North America.

NEW EDIBLE PEA: *G. H.* It is the old, long known Chick Pea, Cicer arietinum—too tender for general use in this country. It is here only worth growing as a curiosity, but is largely grown for food in the South of Europe.

PASSION-FLOWER: *J. R.* Many thanks. We suspected when we saw the fruit that it was P. macrocarpa, and not P. quadrangularis, and we are confirmed in our opinion by the leaves you send; but without seeing the flower we cannot be absolutely certain.

PLUM TREES INFESTED WITH APHIS: *A Subscriber.* There is no better remedy than that recommended by Mr. Rivers in his "Miniature Fruit Garden:"—Boil 4 oz. of quassia chips in a gallon of soft water, 10 minutes, dissolving in it, as it cools, 4 ounces of soft soap. It should be stirred, and the trees syringed with it twice or thrice. The trees should be syringed next day with clean water.

PRESERVING FILBERTS AND WALNUTS: *A Gardener.* See pp. 1314, 1347, of our last year's volume.

SPOT IN PELARGONIUMS: *P. Q.* We have examined your Pelargonium leaves, and find no Fungus on them. It seems to be a common case of spotting, which arises from a bad condition of the roots, induced by bad draining and marked alternations of drought and drenching. *M. J. B.*

TROPÆOLUM: *W. G.* The materials sent are insufficient. It does not, however, appear to have any special merit beyond others already in cultivation.

VIOLAS: *T. C.* Much like other seedlings of Viola lutea. The numbers were disarranged when they reached us, but the large yellow without the spot in the eye is the best, so far as the blossoms are concerned, though much of their merit depends upon habit and profuseness of flowers.

ERRATA: *H. H. D.* We would gladly insert your errata if we could read them!

COMMUNICATIONS RECEIVED.—W. H.—C. J. W.—T. B.—C. W. M.—H. H.—G. W.—R. S.—A. B. C.—R. G.—G. K.—W. M.—G. H.—C. F. P.—G. McG.—S. & Sons.—D. M.—A. B.—T. W.—A. H.—A. B.—E. J. W.—O. O., King's Langley (box received without any communication). A. F.

Markets.

COVENT GARDEN.—Sept. 15.

Business here still continues very steady. Late wall fruit is coming in very good, and prices rule a trifle lower. The market is badly supplied with Apples and Pears.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½ sieve ..		to 3 0	Nectarines, per doz.	2 0	to 6 0
Apricots, per dozen	0 6	— 2 0	Oranges, per 100 ..	8 0	—12 0
Figs	1 0	— 2 0	Peaches, per doz. ..	2 0	— 8 0
Grapes, per lb. ..	1 6	— 5 0	Pears, per dozen ..	2 0	— 4 0
Lemons, per 100 ..	8 0	—12 0	Pine-apples, per lb.	2 6	— 6 0
Melons, each ..	2 0	— 5 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	2 0	to 4 0	Herbs, per bunch ..	0 2	to 0 4
Beet, per doz. ..	1 0	— 2 0	Horse Radish, p. bun.	3 0	— 5 0
Brussels Sprouts, p. half sieve	3 6	— 4 0	Lettuces, per score ..	0 9	— 1 6
Cabbages, p. doz. ..	1 0	— 1 6	Mushrooms, p. pott.	1 0	— 2 6
Carrots, p. bunch ..	0 6	— 0 8	Onions, per bunch ..	0 4	— 0 9
Cauliflowers, p. doz.	2 0	— 6 0	Parsley, p. bunch ..	2 0	— 4 0
Celery, red, p. bun.	1 6	— 2 0	Peas, per quart ..	10	— 1 0
— white, do. ..	1 0	— 1 6	Radishes, per bunch	0 2	— ..
Cucumbers, each ..	0 9	— 1 0	Shallots, per lb. ..	0 8	— ..
French Beans, p. lb.	0 4	— 0 6	Spinach, per bushel	2 6	— 3 0
			Turnips, p. bunch ..	0 4	— 0 6

Potatos (good samples). New Round, 5s. to 6s.; Kidneys, 5s. to 7s. per cwt.

WANTED, a PARTNER, with £300, to Manage One of Two Nurseries, situated near the Crystal Palace, doing a good business in Florists' Flower Seeds, Fruit, and Vegetables; also a good Jobbing Trade.—A. B., Post Office, Gipsy Hill, Upper Norwood, S.

PARTNER.—By the retirement of one of the Firm, an opportunity occurs for an active Working Gardener to become PARTNER in a small Nursery and Jobbing Business, on long lease, in Islington, on very moderate terms.—Mr. GEORGE ROE, 25, William Street, New North Road, Islington, London, N.

WANTED, a HEAD GARDENER, at the country residence of a Gentleman in New England, U.S., about January 1, 1872, who can give the most undoubted recommendations as to honesty and integrity of character, to sobriety and industry, and who is thoroughly experienced in the care of all Stove, Hot, and Greenhouse Plants. There are five Glasshouses, the grounds are extensive, and the situation a very desirable one. Wages £20 per calendar month, with a house rent free, and vegetables. Application, by letter, giving references and full particulars, may be made to Mr. JOHN I. McARTHUR, 24, St. Vincent Place, Glasgow.

WANTED, as NURSERY FOREMAN, in a country Nursery, a good general Man, well up in Fruits, Roses, and with a knowledge of the other Stock generally met with in a good Nursery. Above all, he must know how to do his work, and to take the head of the other men employed.—Address, stating full particulars, B. S., Post Office, Ashford, Kent.

General Foreman.

WANTED, as FOREMAN, a Man who can be well recommended for growing Plants and Cut Flowers for Sale in a rising Nursery and Florist Business. Must have a general knowledge of the value of Plants, so as to act as Salesman. None need apply who cannot furnish testimonials for being sober, honest, energetic, obliging, and of good address—the situation being strictly confidential.—Apply by letter, stating wages required, to F. WHITE, Bournemouth Nursery, Hants.

WANTED, an experienced GARDENER.—One who can Lay-out Ornamental and Pleasure Grounds preferred. The Wife to take charge of Dairy, &c. Good character as to skill, sobriety, and integrity required. Liberal wages, with a cottage.—Messrs. BLUNDELL AND PALMER, Estate Agents, &c., 24, Portland Street, Southampton.

WANTED, as GARDENER, a good Kitchen Hand, whose Wife would undertake the Laundry for a small family. A few miles from town. A good four-roomed cottage rent free.—Apply, at once, by letter, to J. C., Mr. G. Street, 30, Cornhill, London, E.C.

WANTED, a steady active MAN for the Shrub Department, and to act as Salesman, and take charge in the absence of the Foreman. Apply, stating wages expected, &c., to T. EVES, Gravesend Nurseries.

WANTED, an industrious, active MAN, for the Houses, in a Nursery, near London, where the Foreman attends to the Propagating. Azaleas, Pelargoniums, other Greenhouse Plants, Bedding Plants, and Pot Vines, are largely grown. Must be well up in such work, handy at Tying, and be able to Pack occasionally.—Apply, in own handwriting, stating age, previous experience, wages required, and references, to R. Y., Post Office, Mortlake, S.W.

Isle of Man.—General Lunatic Asylum.

WANTED, as GARDENER ATTENDANT, a strong, active, willing Man. Wages to commence at £24 per annum, with uniform, and board and residence in the Asylum.—Application, with testimonials, to be made to Dr. HARRISON, Union Mills, Isle of Man.

WANTED, a steady, active, young MAN (SECOND), with knowledge of general Nursery Work. Good Budder, Grafter, and Propagator.—Apply, stating wages, &c., to G. J. WOOLETT, Nurseries, Caterham, Surrey.

WANTED IMMEDIATELY, as SECOND GARDENER, a middle aged married Man, without children, to live on the premises. The Man to understand Vines, Kitchen Gardening, and Nailing and Pruning of Wall Fruit; the Wife to assist in the Dairy. Must be thoroughly respectable, sober, honest, and good tempered. House, coals, milk, and vegetables when any. Wages 18s. per week.—Apply, in first place, to J. G., Mr. Wm. Paul, Waltham Cross, N.

Bailiff, or Land Steward and Forester.

WANTED, for one of the Midland Counties of Ireland, an experienced LAND STEWARD. Must have a thorough knowledge of the Buying, Selling, and Management of Stock, as well as being an experienced Tillage Farmer; he must also have a knowledge of Forest Work. One whose ideas are not extravagant either as regards the expenditure of the Farm or for salary. Also two FARM LABOURERS. All must be Englishmen.—W. TAIT AND CO., Seedsmen, 45, Capel Street, Dublin.

Land Manager and Farm Building Resident Agent.

WANTED, in Devonshire, an active, intelligent Person, between 30 and 45 years of age, having a practical knowledge of Stock, and of the Value and Management of Light Land, including Measuring, Fencing, Planting, &c.; fully competent to prepare Plans, Specifications, and Estimates for, and to Superintend the Erection and Repair of Farm Buildings. Respectability and sobriety, with practical experience acquired in a similar situation indispensable. Salary £200 per annum, with a residence, and £50 per annum to provide and keep a horse.—Full particulars, stating age, family (if any), and references, to be addressed to R. M., 21, Arundel Street, Strand, London, W.C.

WANTED, at Michaelmas next, on a Farm of 800 Acres, mostly Grass Land, a good WORKING BAILIFF. The Wife to do the Washing for a small Family.—A. B., Post Office, Corfe Castle, Dorset.

To the Seed Trade.

WANTED, a WAREHOUSEMAN, an ASSISTANT, and a CLERK.—One of the largest establishments in the North of England has openings for a thorough WAREHOUSEMAN, capable of the execution of agricultural seed orders with carefulness and despatch. He may have to take short journeys occasionally. Also an ASSISTANT for the Counter. One who has just finished his apprenticeship would find this a suitable opening for improvement. Also a CLERK. He must be an expert penman, and correct in accounts. A knowledge of the seed trade indispensable. Character and abilities of each must bear strict investigation.—Address, with full particulars, where employed, age, and wages required, to D. V. T., Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.

Seed Trade.

WANTED, for a Dublin House, a HEAD SHOPMAN; must be thoroughly qualified and experienced. Also, a SECOND SHOPMAN, who has a good knowledge of the Seed Trade. First-class testimonials and references indispensable.—J. W. MACKEY, Dublin.

PAUL AND SON REQUIRE the services of a JUNIOR CLERK, with a knowledge of putting up seeds neatly and with care. Wages, 20s. per week.—Apply, by letter, to PAUL AND SON, Cheshunt, N.

WANTED, a young Man, as JUNIOR INVOICE CLERK, in a London wholesale Seed House. Salary 18s. to 21s. per week, according to ability.—Z. AND CO., *Gardeners' Chronicle* Office, W.C.

WANT PLACES.—Letters to be Post Paid.

To Gardeners and Bailiffs (Head, Foremen, or Under).

JAMES CARTER AND CO. having many applications for the above, request that those WANTING SITUATIONS will send NAME, ADDRESS, and COPIES of TESTIMONIALS, for ENTRY in their FREE REGISTER. Only those who can send unquestionable references need apply.

Any Lady or Gentleman requiring GARDENERS or BAILIFFS may rely upon J. CARTER & CO. adopting the most stringent regulations in reference to testimonials as to ability, honesty, &c.

237 and 238, High Holborn, London, W.C.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Age 37, married, no incumbrance; well skilled in all branches of the profession. Good reference.—C. M., 3, Standard Road, Bexley Heath, Kent, S.E.

GARDENER (HEAD).—Age 32, married; thoroughly practical in Pines, Vines, &c. Fifteen years' experience in good places.—A. B., Sutton Hall, Thirsk, Yorkshire.

GARDENER (HEAD).—Age 30, single; well experienced in every branch of the profession. Good references.—J. M., Post Office, Cheadle, Staffordshire.

GARDENER (HEAD).—Age 35, married; thoroughly experienced in every branch of the profession. Two years and nine months good character.—S. B., Post Office, Balcombe, Hayward's Heath, Sussex.

GARDENER (HEAD), in a large establishment, where a Man of trust and experience is required in the culture of Pines, Grapes, all Fruits and Vegetables, Plant Houses, Ornamental Trees and Grounds.—Age 35, no incumbrance. First-class testimonials and references from the Noblemen and Gentlemen he has lived with.—G. SCOTT, Royal Horticultural Gardens, South Kensington, London, S.W.

GARDENER (HEAD).—Age 29, married; has had 13 years' experience in first-class gardens, and thoroughly understands Early and Late Forcing of Pines, Vines, Stove and Greenhouse Plants, Ferns, and Kitchen and Flower Gardening, and will be at liberty in a fortnight to engage with any Nobleman or Gentleman in want of a thorough practical Gardener. Will not treat for a Single-handed place. Excellent references from late employers.—A. B., Mr. Joseph Meredith, The Vineyard, Garston, near Liverpool.

GARDENER (HEAD).—Age 32, married; thoroughly practical. Has had great experience in Growing and Forcing Stove and Greenhouse Plants, including Orchids and Ferns, the Forcing of all sorts of Fruit and Vegetables, keeping the Conservatory gay throughout the year, and the general Management of Fruit, Flower, and Kitchen Gardens, and all the requirements of a Gentleman's establishment. Testimonials of the highest order, and reference to late employer.—J. D., 4, New Street, St. John's Wood, London, N.W.

GARDENER (HEAD).—Age 38, married, with three children; practical in everything connected with Gardening, and a Man of good education. Has had experience in Growing Pines, Grapes, and other Forced Fruits, Stove and Greenhouse Plants, including Orchids and Ferns, and the Management of Flower and Kitchen Gardens; he has also some skill and taste, and has had some experience as a Landscape Gardener. None other than a good permanent situation accepted. Good recommendations.—Please address, with particulars, to G. E., 102, Eastgate Street, Chester.

GARDENER (HEAD), to any Lady or Gentleman in want of a thoroughly trustworthy Servant.—Age 32, practical knowledge of modern Horticulture in all its branches. Can be highly recommended.—H. T., 90, St. John's Wood Terrace, London, N.W.

GARDENER (HEAD).—A Lady wishes to recommend a thoroughly practical and steady Man, as above; master of the profession; has been Head Gardener about 17 years in three situations. No single handed place accepted.—A. B., 13, Charles Street, Portman Square, W.

GARDENER (HEAD).—Married; thoroughly practical; has had extensive experience in Early and Late Forcing, also the Cultivation of Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Can be highly recommended. Seven years' personal character.—T. B., 4, Park Terrace, Upper Richmond Road, Putney, S.W.

GARDENER (HEAD, WORKING).—Age 38; understands the profession in all its branches. Good character. Wife good Laundress.—S. R., 200, Lancaster Road, Notting Hill, W.

GARDENER (HEAD, WORKING), age 32.—Mr. CARLTON, Gardener to the Hon. Mrs. Howard, Ashtead Park, Epsom, Surrey, can with confidence recommend his Foreman as a thorough practical energetic man, having been Foreman ten years in five of the principal establishments, where every branch of Gardening is carried out in the most efficient manner. No single-handed place accepted. Character will bear the strictest investigation.—Address as above.

GARDENER.—Age 41, married; thoroughly understands the profession in all its branches. Good character.—Z. Y., Barker's Library, Hammersmith, W.

GARDENER, in a Suburban Nursery.—Good Plant Grower. A low remuneration accepted for permanent situation.—A. B., 87, Hall Place, Hall Park, Paddington, W.

GARDENER.—Age 40, married; thoroughly practical. Land and Stock if required. Wife no objection to Laundry, Dairy, or Poultry. Ten and a-half years' good character.—F. M., Itchen Abbas, Alresford, Hants.

GARDENER.—Age 25; thoroughly understands Pines, Roses, and all Indoor work, also Flower and Kitchen Gardening. Seven years' experience in a large establishment. Good reference.—A. P., Birch Hall, near Colchester, Essex.

GARDENER.—Age 27, single; understands the Management of Kitchen and Flower Gardens, Greenhouses, and the Forcing of Grapes. No objection to a good single-handed place.—J. PAYNE, Mixbury, near Brackley, Northamptonshire.

GARDENER (SINGLE-HANDED).—Age 24, single; understands Stove and Greenhouse Plants, Vines, Cucumbers, and Flower and Kitchen Gardening. Would not object to a good Foreman's place. Good references.—C. B., 7, Orange Tree Terrace, Stonebridge, Willesden, N.W.

GARDENER (UNDER), or to take charge of Houses.—Five years' good character.—Address, stating terms, F. C. A., General Post Office, Norwich.

GARDENER (UNDER), or to assist in a Nursery.—Has had five years' experience of Houses.—R. H., Elizabeth Cottage, King William Street, Wandsworth Road, S.W.

GARDENER (UNDER).—Age 19; would not object to a Single-handed place. Two years and three months' good character.—C. G., 62, Forest Road, Dalston, N.E.

GARDENER, or GARDENER and BAILIFF.—Married, no incumbrance; has a thorough knowledge of Forcing Fruit, Flowers, &c., and Flower and Kitchen Gardening; also Laying-out Pleasure Grounds, and has had good experience in Draining and Culture of Land and Rearing of Stock. Good references.—A. B., Post Office, Portsdown Road, Maida Hill, W.

GARDENER and BAILIFF, to any Lady or Gentleman.—Age 40, married, without children; 17 years' character. First-class testimonials from last and previous employers.—C. F., 7, Star Place, North End Road, Fulham, S.W.

FOREMAN and GROWER.—Age 36, married; has had a thorough practical knowledge in Plant and Cut Flower Growing for London Markets the last 10 years. Good references.—G. G., Anthony Terrace, Plumstead, Kent, S.E.

FOREMAN, or FOREMAN and PROPAGATOR.—Long practice in Hard and Soft Wooded Propagating and Plant Growing for Market and other purposes.—A. B., Mr. Ford's, 28, Rowland Grove, Wells Road, Sydenham, Kent, S.E.

To the Nursery Trade.

FOREMAN (WORKING), in a small, respectable Nursery.—A steady, industrious, trustworthy, attentive Man, with a good general knowledge of the business in each department. A good Market Grower and careful Packer, &c. Terms moderate.—A. B., 2, Gloucester Road, High Street, Lower Norwood, Surrey, S.E.

PROPAGATOR, or FOREMAN and PROPAGATOR (GENERAL).—Middle-aged; first-class practice. Good reference.—R. W., The Green, Parlington, Ashton-on-Mersey, Manchester.

ESTATE AGENT, or STEWARD and GARDENER.—Age 29; now leaving a situation where he has managed with success a Home Farm of 500 Acres, large Gardens, Timber and Plantations, and the general Repairs of a considerable Landed Estate. Is a first-class Accountant, Correspondent, &c. References to present employer.—J. H., Mr. Dennis, White Horse Hotel, Guildford.

ESTATE BAILIFF.—Age 37, married; is a first-class Gardener, but would prefer employment as above, for which he is fully competent. He understands all kinds of Estate Work, including Fencing, Draining, Road Making, Planting, Pruning, and Thinning of Young Trees, and Felling and Measuring of Timber; has a good practical knowledge of Land Surveying and Levelling; can read correctly Plans, Elevations, Sections, and Specifications of Farm-houses and Outbuildings, and other similar structures, and take out quantities of same, and can keep correct Accounts. Is strictly sober, and very steady and attentive to his duties. Can produce ample testimony as to his being qualified as above; and, if necessary, can give security for £200 or more.—Any one replying to this will oblige by stating nature of situation and amount of wages offered, to M. D., 102, Eastgate Street, Chester.

BAILIFF, or BAILIFF and to SUPERINTEND a Gentleman's Garden and Grounds.—Age 35, married; experienced, fully understands Farming in all its branches, both Heavy and Light Land; also the Breeding, Grazing, Buying, and Selling of Stock. Many years on a large farm in Norfolk. 1¾ year in present situation. Satisfactory reasons for leaving. Good references as to character and capabilities.—R. S. C., Post Office, Croydon, Surrey.

BAILIFF.—An experienced Man; understands Farming in all its branches, both Heavy and Light Soils; also Breeding, Buying, and Selling all kinds of Stock. Wife a good Dairy and Poultry Woman. First class testimonials from late employers.—F. F., Post Office, Forest Row, East Grinstead, Sussex.

BAILIFF (WORKING).—Middle-aged, married; understands the Management of Heavy and Light Land, Farming in all its branches, Keeping Accounts, &c. Wife, Dairy and Poultry. Can be well recommended by present employer.—G. A., Cross Ways Farm, Gatton, Red Hill, Surre

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

SHOPMAN, or SHOPMAN and CLERK.—Age 30; has Travelled. Fifteen years' experience in the Wholesale and Retail Trade.—SEEDSMAN, Boddington Villa, Biggleswade.

SHOPMAN.—Age 22; eight years' experience. Good references.—W. G., No. 6, Post Office, Berwick-on-Tweed.

To Seedsmen.

SHOPMAN, or ASSISTANT.—Six years' good experience; has a knowledge of Plants. Can be well recommended. No objection to Ireland.—G. D., 19, Millman Street, Bedford Row, London, W.C.

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

ITALIAN ALP or LIGURIAN QUEEN BEES.—The autumn importations of these beautiful Bees having now commenced, GEO. NEIGHBOUR & SONS are offering QUEENS, warranted bred and fertilised in Italy, at the following low prices:—One Queen, 12*s.*; three, 33*s.*; six, 60*s.*

GEO. NEIGHBOUR AND SONS, 149, Regent Street, W.; or 127, High Holborn, London, W.C.

Pure Berkshire Pigs.

FOR SALE, THREE BOARS and THREE SOWS, six months old—Mr. Griggs' Prize Stock. Will be Sold at a moderate price.

Mr. E. S. PALMER, South Street, Romford, Essex.

PRIZE BERKSHIRE PIGS.—Mr. G. GRIGGS, the Winner at the late Essex Agricultural Show of Four First, Four Second Prizes, and Four Commendations, has some first-class PIGS for SALE

The *Mark Lane Express*, of August 7, in the report of the York Show, says:—"The Berkshires are a moderate show, with the exception only of Duckering's magnificent Sow, which took the Cup at Wakefield last year, and was bred by Mr. Griggs, in Essex."

Oaklands, Romford, Essex.

WANTED, to RENT, a SMALL FARM, on Lease, from 40 to 50 Acres, within 12 miles of Covent Garden Market.

A. B., Eagle House, Victoria Road, Kilburn, N.W.

FARM TO BE LET.—600 Acres, in excellent condition; five years' unexpired Lease. A short distance from London, near a Station.

Mr MORTON, 19, Parliament Street, London, S.W.

TO BE SOLD, on reasonable terms.—A FLORIST'S BUSINESS, &c., on the best side of Manchester, realising a large and increasing income, is now on SALE, owing to failing health. A more inviting opening for a respectable man could scarcely be found.

Apply, by letter, to SAMUEL GATES, Seedsman, Manchester.

To Nurserymen and Florists.

TO BE LET, with immediate possession, near Birkenhead and Liverpool, a NURSERY (including a good House and Cottage), containing about Five Acres of Land, situate in the midst of a fashionable and increasing neighbourhood. The whole of the Glass and Stock to be taken at a valuation.

ROBERT DOBSON, Estate Agent, Rock Ferry, Birkenhead.

To Florists and Market Gardeners.

TO BE LET, at Teddington, S.W., within 1 mile of the Station, and with access to the River if desired, about SEVEN THOUSAND FEET of GLASS, comprising Vineries, Orchard, Pine, and other houses, with all the necessary buildings, recently erected in the best manner by Messrs. Weeks & Co., of Chelsea. Land, and a Dwelling-House, can be had, if required For particulars apply to

Mr. ROBINSON, Broome Hall, Teddington, S.W.

SALES BY AUCTION.

SALE THIS DAY and MONDAY NEXT.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY and MONDAY, September 16 and 18, at half-past 12 o'Clock precisely each day, several importations of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, and other Bulbs, just arrived from Holland, Lotted to suit the Trade and private buyers.

On view the mornings of Sale, and Catalogues had.

Highly Important Sale (Final Portion)

Of the CELEBRATED COLLECTION of ORCHIDS formed by S. RUCKER, Esq., at WANDSWORTH.

MR. J. C. STEVENS has received instructions from Messrs. Veitch & Sons, who have purchased the entire COLLECTION, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY and FRIDAY, September 21 and 22, at half-past 12 o'Clock precisely each day, the final portion of the above magnificent lot of Plants, amongst which will be found—

CYMBIDIUM EBURNEUM
MASDEVALLIA TOVARENSE, finest plant in the country
DENDROBIUM WARDIANUM
,, FALCONERI
SACCOLABIUM HOLDFORDII
,, GUTTATUM
DENDROCHILUM FILIFORME
CATTLEYA EXONIENSIS
,, DOWIANA
,, LABIATA (autumn-flowering variety)
ODONTOGLOSSUM NÆVIUM MAJUS
,, ALEXANDRÆ
,, PULCHELLUM MAJUS
PHALÆNOPSIS GRANDIFLORA
,, AMABILIS
,, SCHILLERIANA, &c.

All the Plants are in fine condition, and many are in bud, or blooming

On view the morning of Sales, and Catalogues had.

Choice Stove and Greenhouse Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 26, at half-past 12 o'Clock precisely, a very choice COLLECTION of SPECIMEN STOVE and GREENHOUSE PLANTS, belonging to a Gentleman, many having been exhibited at the Metropolitan Shows, and taken First and Second Prizes, including a good selection of very well-grown and healthy Azaleas, in 12-inch pots; also New Holland Plants and Cape Heaths, with nice plants of Allamanda, Ixoras, Dipladenias, and Stephanotis; of Orchids, Aerides, Saccolabiums, Phalænopsis; several varieties of Dendrobiums, Cattleyas, and many others, to be offered without reserve.

On view the mornings of Sale, and Catalogues had.

Garden Road Nursery, Abbey Road, St. John's Wood.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, as above, by order of the Mortgagee, on FRIDAY, October 6, at half-past 12 o'Clock precisely, the UNEXPIRED LEASE of 45 years of the GARDEN ROAD NURSERY, about One Acre, rent £25 per annum; also the THREE COTTAGES and TWO GREENHOUSES, and the HARDY PLANTS, consisting of Fruit Trees, Conifers, and a great variety of Hardy and Ornamental Trees and Shrubs in Lots, to suit large and small Planters.

On view the day before and morning of Sale, and Catalogues had of F. KEARSEY, Esq., 36, Old Jewry; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, London.

Re Mr. R. Glendinning, Deceased.

PRELIMINARY NOTICE of ABSOLUTE SALE.

To NURSERYMEN, FLORISTS, and OTHERS.

High Road, Turnham Green, nearly opposite the Duke of Devonshire's Avenue to Devonshire House, the present residence of H.R.H. the Prince of Wales, near the Toll Gate, and known as Chiswick Nursery, and The Nursery, Chiswick Lane, Chiswick.

MR. J. A. SMITH is instructed by the Executrix to SELL by PUBLIC AUCTION, at the Roebuck Inn, close to the Toll Gate, on TUESDAY, October 10, at 3 for 4 o'Clock precisely, in TWO LOTS, the valuable LEASES, GOODWILL, &c., of the important Business and Residential Property, established nearly 30 years in the name of Glendinning, extending over about Eleven Acres of rich Land, in trading cultivation, and each held at very low rents:—The Home Nursery at £84, cottage adjoining at £13, and now underlet; Chiswick Lane at £90, cottage underlet to Dr. Tuke, at £30; nett rental £60 only. Frontage to the High Western Road, about 325 feet, and 387 feet frontage in Chiswick Lane.

Auction Offices, 58, King Street East, Hammersmith, W.

Highly Important to the Trade.

EXTENSIVE SALE of WINTER FLOWERING HEATHS, EPACRIS, CYCLAMENS, TREE CARNATIONS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Fraser to SELL by AUCTION, on the Premises, The Nursery, Lea Bridge Road, Leyton, Essex, on THURSDAY and FRIDAY, September 21 and 22, at 11 for 12 o'Clock precisely, each day, without reserve, about 25,000 winter-blooming HEATHS, remarkably well grown, and including 12,000 Hyemalis, 3000 gracilis, 1500 Willmoreana, 1500 grandinosa; also large quantities of gracilis vernalis, melanthera, regerminens, Sindriana, colorans, rubro-calyx, and others. 800 EPACRIS, of the choicest kinds; 600 AZALEA INDICA, by name, some of which are handsome half specimens; about 600 large CYCLAMENS, of the finest strain of persicum, and profusely furnished with bloom-buds; CYTISSUS, ACACIA DRUMMONDII; a large stock of TEA ROSES, in pots; SOLANUM CAPSICASTRUM, in berry; TREE CARNATIONS, LAPAGERIA ROSEA, and a quantity of miscellaneous Greenhouse Plants.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

N.B.—Intending purchasers are respectfully invited to inspect the Stock, the whole of which is in the finest possible condition.

Tooting, S.W.

IMPORTANT SALE of EXTRA STOCK of STOVE and GREENHOUSE PLANTS, rare ORCHIDS, choice FERNS, selected PALMS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, on TUESDAY, September 26, at 11 for 12 o'Clock precisely, thousands of extra stock of STOVE and GREENHOUSE PLANTS, the whole of which are in a very healthy and thriving condition, comprising quantities of Ananassa sativa variegata, Anthurium Scherzerianum, Dracænas, Phormium tenax variegatum, Ficus, Epiphyllums, in splendid variety; Greenhouse Rhododendrons, choice double Camellias and Azalea indica, and numerous others. Also a large quantity of choice ORCHIDS, including Vanda suavis (Veitch's variety), Aerides maculosum and Lobbii, Lælia prestans (true), Angræcum sesquipedale, Cypripedium Veitchii, Thunia Bensoniæ; and hundreds of exotic FERNS, fine greenhouse and stove PALMS, likewise a selected assortment of SUCCULENT PLANTS, hardy HERBACEOUS PLANTS, choice TULIPS, &c.

May be viewed the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

4000 Araucaria Imbricata.

To GENTLEMEN, NURSERYMEN, and OTHERS.

HILLFIELDS, BURGHFIELD, near READING.

MESSRS. HASLAM AND SON have received instructions from T. B. Garland, Esq., to SELL by AUCTION, in a Field adjoining the Gardens of Hillfields, Burghfield, on TUESDAY, September 26, at 3 o'Clock in the afternoon punctually, in suitable Lots, 4000 ARAUCARIA IMBRICATA, raised from choice seed, specially imported by Horatio Bland, Esq., direct from Arauco.

Note.—The Auctioneers desire to draw special attention to this Rare and Choice Lot. They have been transplanted several times, and are now strong, healthy, and well-rooted, varying from 1 to 3 feet in height, and in the best possible condition for immediate removal. The whole will be sold without the slightest reserve.

May be viewed one week prior to the Sale on application to the GARDENER at Hillfields; and Catalogues had at the Office of the Auctioneers 17, Friar Street, Reading.

Preliminary Announcement.—Nursery Stock.

MILL HILL NURSERIES, HENDON, MIDDLESEX.

MESSRS. HUMBERT AND COX have received instructions from Messrs. Wright to SELL by AUCTION on the Premises, the Nurseries, Mill Hill, Hendon, in the month of October, the capital NURSERY STOCK, comprising Standard and Pyramid Fruit Trees (Apple, Pear, Plum, Cherry, &c.,) Laurustinus, Aucuba japonica, Portugal and common Laurel, Spruce, Scotch, and other Firs; Tree Box, Yew, a good general collection of Evergreens, Standard and Dwarf Roses; Forest Trees, Limes, Planes, Ash, Acacia, Chestnut, &c.

May be viewed on the day previous to the sale, and Catalogues had at the usual Inns in the neighbourhood, and of Messrs. HUMBERT AND COX, Land Agents, Auctioneers, &c., Watford, Herts, and 88, St. James' Street, S.W.

Ozleworth Park, Wotton-under-Edge, Gloucestershire.

THOROUGH-BRED STOCK and FARMING EFFECTS.

MR. THORNTON will SELL by UNRESERVED AUCTION, at 11 o'Clock punctually, on TUESDAY next, September 19, at OZLEWORTH PARK, the ENTIRE HERD of PURE-BRED SHORTHORNS, FLOCK of COTSWOLD SHEEP, several well-bred HORSES, together with the FARM IMPLEMENTS, &c., the property of the late Sir John Rolt. The Shorthorns are bred from the celebrated stocks of Col. Kingscote, Mr. Oliver, and Mr. Styles Rich, and crossed with Bulls of the highly fashionable Bates blood. The Sheep are from Messrs. Langston, Lane, Brown, Gillett, and Howell's well-known Flocks; and the Horses are very superior young animals by Birdhill and Redoubt from first-class carriage mares. Indeed, the whole stock is of a very high order, in excellent breeding condition, and much esteemed in the county.

Catalogues, with Pedigrees, may be had of Mr PETERS, Ozleworth Park, Wotton-under-Edge, Gloucestershire; and JOHN THORNTON, 15, Langham Place, W.

Important Sale of Pure-bred Shorthorns and YOUNG HORSES.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on WEDNESDAY, September 27, at Netherhouses, near Ulverston, about THIRTY HEAD of very superior PURE-BRED SHORTHORNS, chiefly of the far-famed Bates, Holker, and Towneley blood, the property of Mr. Wm. Ashburner. Among them will be found several promising young animals and prize-winners

Catalogues, with Pedigrees, may be had of Mr. W. ASHBURNER, Netherhouses, Ulverston; or of JOHN THORNTON, 15, Langham Place, London, W

Brailes House, Shipston-on-Stour.

IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD has received instructions from Henry J. Sheldon, Esq., to announce that the FOURTH BIENNIAL SALE of PURE-BRED SHORTHORNS will take place on THURSDAY, September 21, at Brailes House, Warwickshire, and will consist of upwards of Forty Head of Bulls, Cows, and Heifers, chiefly of Kirklevington and Fawsley blood. Amongst them will be found descendants of Asia, Barrington, Blanche, Craggs, Darlington, and Surmise families, as well as from Fillet, Primrose, Rosy, Walnut, and other well-bred animals. The Sires used have been of the same fashionable sorts; the one now in service is the 18th Duke of Oxford (25,995), from the famed Holker Herd, and most of the Cows and Heifers are forward in calf to him. This Sale will afford a favourable opportunity to purchasers of first-class animals, as those to be sold are very choice, in a healthy and regular breeding state, and will be offered in the same *bona fide* manner as heretofore at Brailes

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London; or of Mr. SHELDON, Brailes House, Shipston-on-Stour.

Ellington, near Kimbolton, Hunts.

VERY IMPORTANT SALE of SHORTHORNS.

MR. STRAFFORD begs to announce for SALE by AUCTION, without reserve, on THURSDAY, September 28 next, the extensive and valuable HERD of PURE SHORTHORNS, bred by and the property of Mr. Ladds, of Ellington, which numbers about 100 Head of Bulls, Cows, and Heifers; prominent amongst them will be found several fine specimens from Red Duchess and Princess, bred by Mr Chrisp; Jacintha, by Mr. Beasley; Farewell and Verbena, by Mr. Booth, as well as some old and favourite tribes of the Marquis of Exeter's, Mr. Robinson's, and other eminent breeders. First-class Bulls have been used for many years from Farnley Hall, Cobham Park, Revesby Abbey, and latterly, Cambridge Barrington 1st (14,223), bred by the Duke of Devonshire, Wellesley (25,421), from Lord Penrhyn's, and 2d Earl of Barrington, bred by Mr. Sheldon from the same famed line of blood: the two latter are now in service.

Catalogues, with Pedigrees, may be had, on application by post, of Mr. STRAFFORD, 13, Euston Square, London; or Mr. LADDS, at Ellington, near Kimbolton, Hunts.

ALTRINCHAM AGRICULTURAL SOCIETY.—The TENTH ANNUAL SHOW will be held on THURSDAY, September 28, when FIVE HUNDRED POUNDS and SILVER CUPS will be offered in PRIZES for Horned Cattle, Horses, Sheep, Pigs, Dogs, Poultry, Roots, Grain, Cheese, Butter, Implements, &c.

ENTRIES CLOSE SEPTEMBER 13. PRIZE LISTS, with FORMS of ENTRY, can be had on application to the Secretary,

28, Church Street, Altrincham. R. DAVENPORT.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

SMITHFIELD CLUB SHOW, AGRICULTURAL HALL, ISLINGTON, DECEMBER 4 to 8.

IMPLEMENT DEPARTMENT.

The LAST DAY for receiving APPLICATIONS for SPACE for IMPLEMENTS and MACHINERY, &c., is OCTOBER 2.

Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID PULLEN, Assistant-Secretary, corner of Half-Moon Street, Piccadilly, London, W. All communications should bear outside the words "Smithfield Club."

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form	A.	For an OX or STEER (in any Class).
,,	B.	For a COW or HEIFER (in any Class).
,,	C.	For a BEAST in extra Stock.
SHEEP. ,,	D.	For a Pen of three WETHERS.
,,	E.	For a Pen of three EWES.
,,	F.	For a SINGLE WETHER SHEEP in Extra Stock.
PIGS. ,,	G.	For a Pen of three PIGS (in any Class).
,,	H.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 16, 1871.

WHETHER we believe in the direct interposition of Providence, or refer events to general laws, which maintain not only the physical equilibrium of the globe, but an equilibrium in the contending influences which regulate the fate of its inhabitants, no one can well deny that the system of compensation which prevails in all the arrangements of Nature has a marvellous resemblance to the operation of design. Even the most indiscriminate supporter of "natural selection" will admit that the effects which he refers to that cause at least indicate design, and may probably be due to it indirectly, if not reached by the most rapid and straight route. But there are cases of compensation which, although consequential, may be too unconnected to be intentional, and consequently can only be regarded as coincident. We draw the reader's attention to one in this doubtful position, not only for its bearing upon the subject of compensation, but on account of other claims which it has upon their interest.

The reader is familiar with the fact that the act of man in destroying vast tracts of forest in Russia, America, and elsewhere has in some cases already produced, and in others has every appearance of being in the course of producing, an appalling deterioration of large portions of the earth's surface. An unconsciously compensatory action by man in the other direction has, however, now begun to make itself felt, viz., that where settlements have been made in treeless plains, as in the prairies of North America, the result has been an improvement in the climate.

It appears, from a report by Mr. R. S. ELLIOT, "On the Industrial Resources of Western Kansas and Eastern Colorado," published this year along with other reports in the United States Geological Survey of Wyoming and contiguous territories, and which we have just received, that there is a popular persuasion in Kansas that a climatic change is taking place, promoted by the spread of the settlements westwardly. The chief of the direct causes to which this is ascribed is the breaking up of the soil. Wherever this is done Mr. ELLIOT tells us "the wild Sunflower (Helianthus), and others of the taller growing plants, though previously unknown in the vicinity, at once spring up almost as if spontaneous generation had taken place." These shade the soil more thoroughly than the short grasses, and thus check or modify the reflection of heat from the earth's surface, &c. It is also noted that even where the prairie soil is not disturbed, the short Buffalo-grass disappears as the "frontier" extends westward, and its place is taken by grasses and other herbage of taller growth. That this change of the clothing of the plains, if sufficiently extensive, might have a modifying influence on the climate can hardly be doubted, but whether the change has been already spread over a large enough area, and whether the recent apparently or really wetter seasons are due to this, is a question which cannot be solved for years to come, when more extended statistics shall have been obtained.

The fact appears to be admitted, that rains have increased; and this increase has coincided with the extension of settlements, railroads, and telegraphs so decidedly that some have referred them to the mysterious electrical influence induced by the telegraphs. Prof. HENRY, a man in whose judgment we should be disposed to put more trust, thinks that the increased rains are due to extra mundane or cosmic influences not yet understood. If he is right, the change may be permanent, progressive, intermittent, or retrograde. If it is due to the settlements, then it must go on. Within the last fifteen years, in Western Missouri and Iowa, and in Eastern Kansas and Nebraska, a very large aggregate of surface has been broken up, and must hold more of the rains than formerly. During the same period, similar modifying influences have been put in motion in Utah, Montana, and Colorado. It appears that only very small areas of timbered land west of the Missouri have been cleared—not equal, perhaps, to the area of forest, orchard and vineyard, planted; hence it may be said that all the acts of man in that vast region have tended to produce conditions on its surface ameliorative of the climate. With extended settlements, Mr. ELLIOT anticipates (and we see no reason to dissent from his expectation) that the ameliorating conditions will be extended in a like degree, and that a permanent and beneficial change of climate may be experienced.

THE spirit in which questions connected with LAND and LAND LAWS have been discussed—as recently in Trafalgar Square—though beef is 10*d.* a pound, shows that moderation and good temper are still national characteristics. It must be admitted the price of many articles makes the times trying. It has always been remarked that the temper of the community depends, in some measure, on the price of food. In periods of abundance order has usually prevailed; discontent has generally followed close upon a rise of prices; riots have always occurred during dearths.

We wish to call attention to one particular point in the politics of the "working man" and his leaders, in connection with agriculture. It is generally maintained by our Trafalgar Square friends that the inclosure of commons has, in some way or other, been effected at the expense of the poor. It was not always thought so, and the idea seems to us to be erroneous. The great Inclosure Acts were popular when they were passed.

During the long series of deficient harvests, after the close of the remarkable era of abundance ending in 1765, when our exportations of home-grown corn ceased, and our increasing population began to be pinched, the legislature was forced, by popular agitation, to facilitate the methods of inclosure. Few other subjects occasioned the writing of so many pamphlets, even in that age of political pamphlets, as the waste arising from commons and the expediency of inclosing them. Such was the importance attached to the subject that Dr. PALEY introduced it in his "Theory of Moral Sentiments," expounding the arguments for inclosures, and showing their necessity and justice. Nor was this over-estimating the urgency of a question which involved that of feeding our increasing population.

Then followed the various Inclosure Acts, and especially the important General Inclosure Act of 41 Geo. III. During the war, a period of European scarcity when apparently one of the cycles of deficient harvests occurred, about 3,000,000 acres were enclosed. Subsequent inclosures have been comparatively trifling in extent, and only a small portion of the 8,000,000 acres of common land that are still uninclosed is naturally good enough to pay for improvement at the present time.

The question which is beginning to be asked throughout the country, and to be answered in various ways, some of them extravagant enough, is,—How is our food supply to be increased? It is a momentous question, for the high and rising prices of food not only diminish the profits of agriculture, but they increase the pressure of poverty and of pauperism, which is acknowledged to be a growing emergency, and they threaten to raise the cost of production, so as to invalidate our position as a manufacturing country.

Few persons realise that the cost of agricultural production must necessarily increase under the present circumstances while our agriculture has to fight against a national system of waste. It is unfortunate that the means of agricultural improvement are so little understood by the country at large, and that so many people should vainly anticipate improvements from mere political action which can only proceed from totally different causes. It is, no doubt, a matter of great importance to a country what form of government it adopts; but whatever the form may be, whether it be a little more or a little less perfect, so long as it is secure we do not think the food supply would be affected one way or the other.

The blessing of greater plenty depends on the application of knowledge in agricultural affairs, and not on mere politics. There is no doubt that legislation is needed, but in taking practical action for the general improvement of agriculture, certain hindrances can only be removed, certain prejudices overcome, and the necessary constructive measures adopted, when the teaching of science is more generally understood, and public opinion better prepared to sanction and demand the legislation that is needed.

Meanwhile those who aspire to teach and to lead the working classes, with a view to the improvement of their material condition, cannot do better than abandon mere politics, and take in their hand LIEBIG'S "Letters on Modern Agriculture," remembering that knowledge is power when properly applied, and that capital will flow to our fields when the public ceases to be careless of the truth.

WHEN conviction and energy are concentrated in the same individual, the world around will most likely be made aware of it. Such a person seldom hides his light, or muffles his tongue; why should he, when he is convinced he is right? After all, the world is very tolerant; we become accustomed to the loud mentors, speech makers, and prompters of society, and should miss them sadly from the agricultural arena, especially when they have held possession for long. Young performers, perhaps, are less admired, whatever their merits may be; but they have only to persevere, since force will always be respected, whether it be physical or mental—thunder and lightning or enthusiasm.

The agricultural world usually rejoices in its large number of enthusiasts, and is exceedingly obliged to them for relieving the dull monotony that intervenes at certain periods of the year. May their numbers never be thinned, and may they retain their characteristics! An agricultural enthusiast should be regardless of results, and indifferent to pecuniary considerations; he ought to have no money interests; nobody ought to be able to follow his advice without suffering in pocket. His rules ought to be hard and fast so long as he holds by them; his opinions should be dogmatically expressed, and coincide with those of no other person; his general laws ought to bind no one, and suit no circumstances but his own.

An agricultural enthusiast, being less practical than most men, exercising less caution, and possessing less tact and judgment, than other people, should try all sorts of experiments. He should lose a great deal of money, and settle very slowly, if ever, to practical, successful farming. He should go on sowing his wild oats long after his contemporaries have finished. We have no opinion of a prudent enthusiast; if he becomes matter-of-fact, his character is gone, and nobody notices him. He should set up a standard which ought to be talked about and written about and recommended, on scientific grounds if possible, till it is forgotten, superseded or disbelieved, as the case may be. Practical success is a test which ought not to be applied by an agricultural enthusiast; it should be contrary to his principles to succeed in anything at the first intent, and without losing time and money. Success, in his case, like FLAXMAN'S early marriage, in the opinion of Sir JOSEPH, would "spoil him for an artist."

It would never do for an enthusiast to imitate those successful agriculturists who possess a faculty for farming, and an agricultural genius which guides them through all difficulties. He must not be misled by their varying practice, their power of correct observation and comparison; their pondering of the laws of Nature, silently and sometimes instinctively obeying her voice—scientific without knowing it, and successful without talking about it. Instead of that he must proclaim his doings on the house-top, and before his plans are carried out he must change his mind and begin something fresh. He should always remember he has a character to keep up as an agricultural enthusiast, and he should shun sound practice and plain sense as he would shun extinction.

—— WHEAT has again risen somewhat in price during the past week. In Mark Lane on Monday it was 1*s.* dearer; and on Wednesday the full rates of Monday were realised. Barley, also, was in fair request, at full prices.——In the Metropolitan Cattle Market the demand has been good, and the supply was rather short in relation to it, both on Monday and Thursday. Prices have thus been higher than they were on the previous week.

—— The following analysis of the extraordinary SHORTHORN SALE at HOLKER last week, described in another column, is taken from the columns of the *Field.* The average prices realised by the members of the several families represented deserve a record :—

"*Oxfords.*"

Grand Duchess of Oxford 7th	£960 15 0	
,, ,, ,, 16th	640 10 0	
,, ,, ,, 18th	1055 5 0	
Average of females		£885 10 0
Duke of Oxford 19th	351 15 0	
,, ,, 20th	1050 0 0	
,, ,, 21st	162 15 0	
,, ,, 22d	320 5 0	
,, ,, 23d	162 15 0	
Average of males		409 10 0

Average of eight animals, £588.

"*Wild Eyes.*"

Bright Star	£78 15 0	
Winsome 2d	372 15 0	
Lady Bright Eyes	157 10 0	
Winsome 7th	315 0 0	
,, 8th	336 0 0	
,, 9th	425 5 0	
,, 10th	388 10 0	
,, 11th	367 10 0	
Average of females		305 3 1½
Sunshine	52 10 0	
Sunlight	94 10 0	
Wastwater	52 10 0	
Average of bulls		66 10 0

Average of 11 animals, £240 1*s.* 4½*d.*

"*Blanche*" *Tribe.*

Blanche 3d	£220 10 0	
Bracelet	105 0 0	
Blanche 5th	89 5 0	
Bland	54 12 0	
Blanche 8th	115 5 0	
,, 9th	157 10 0	
,, 10th	178 10 0	
,, 11th	105 0 0	
Average of females		128 4 0
Dunbar	49 7 0	

Average of nine animals, £119 8*s* 6¾*d.*

"*Rose of Raby*" *Tribe.*

Oxford Rose	£225 15 0	
Macgregor	105 0 0	
Average of two animals		165 7 6

"*Barringtons.*"

Lady Laura Barrington	372 15 0	
Barden	231 0 0	
Average of two animals		301 17 6

Summary.

	Total.	Average.
31 cows and heifers	£7701 15 0	£248 8 10½
12 bulls	2658 12 0	221 7 0
43	£10,360 7 0	£240 18 9

—— A correspondent in Thursday's *Times* speaks of the possibility of CONFINING RABBITS by WIRE FENCING properly fixed :—

"When renting a shooting manor in Bedfordshire I paid for three years an average of £18 a year compensation for damage round one 26-acre wood. I then determined to wire it in, and did so in the following way :—A plough was run round to make a trench 6 inches deep; into this was sunk wire 2 feet wide, and thus 18 inches only were out of the ground—light soil. I never paid another penny piece for compensation, and the wood was good for 1100 or 1200 rabbits a season. I have now, not having sufficient room in my walled garden, about three quarters of an acre of ground enclosed in the same way, and with the same width of wire, and have not lost a leaf. My neighbour preserves rabbits—so many that I can on any moonlight night count them by the score. I cannot keep a flower in my shrubberies, and some Cabbages in open ground are represented by bare poles. I see all round my netting where the rabbits have scratched, but, finding the wire, they, not knowing how deep it may be, I suppose, desist; and I grow Asparagus, Peas, Beans, Carrots, Cabbages, &c., within the wire, 6 inches under and 18 inches above ground, without being interfered with. I have never known a rabbit jump or scramble wire, and I have watched them for years; in proof of this, flower-beds on my terrace, protected by wire 10 inches high, are safe, while the same flowers in the shrubberies are eaten.

"I farm, and make it a rule not only to shoot down, but to destroy all the stooks I can find. One of my neighbours put down 1600 yards of wire on the surface—the rabbits got under, of course; he then earthed up, but once under always under; had he sunk it, as I have done, he would have saved his crops. I told him, or rather his man, this when putting it down, but receiving for answer that 'they knowed all about it," I rode on and left them to pay for their experience. I may add, in conclusion, that my supplementary kitchen garden was intact all last severe winter, when rabbits were found dead about me from starvation."

OUR LIVE STOCK.

CATTLE.

THE results of Mr. Strafford's Shorthorn sales of last week in the North prove that there is no diminution in the value of high-bred Shorthorns. At the long-to-be-remembered sale of Mr. Hegan's herd in 1865, "the trainer of the Duchesses was so delighted with the Duke of Devonshire's bid of 600 gs. for GRAND DUKE 10TH, that he rose and asked the auctioneer 'How much for the depreciation of Shorthorn prices?' an allusion which was caught up and highly relished." We may still, in 1871, repeat the same question, and thereby again arouse pleasant rejoinders. Six hundred guineas for GRAND DUKE 10TH appeared at the time it was given an enormous—a fancy—price. But the events of the past week have proved it to have been an excellent purchase, and we hope that the spirited bids which have so nobly compensated the Duke of Devonshire for his bold speculation, may be equally profitable to recent purchasers.

We have three important sales to record—the first on Wednesday week at Holker, the second on the succeeding day at Beaumont Grange, and the last on Friday at Killhow.

—— The sale of the Duke of Devonshire's stock at Holker far eclipses anything of the sort for some years past. The cows were large, good, and in excellent condition, and the heifers were a very fine lot, as, indeed, they ought to have been to have provoked such unprecedented competition. The general average over 43 animals was £240 13*s*. 10*d*. each; the average over 31 cows was £248 2*s*. 6*d*., and over 12 bulls, £221 11*s*., while the sum realised was £10,349 17*s*. The leading feature of the sale was the disposal of the "Oxford" tribe, eight in number, which realised £588 each. The price of the day, 1005 gs., was given for *Grand Duchess of Oxford 18th*, calved September 27, 1870, got by BARON OXFORD 4TH (25,580), and out of *Grand Duchess of Oxford 11th* by GRAND DUKE 10TH (21,848), who traces back to the *Matchem* cow by MATCHEM (2281). This splendid offer was made by Lord Bective, who seems bent on securing the best blood he can lay his hands on. A bull of the same family, also by BARON OXFORD 4TH, was purchased for 1000 gs. by Lord Feversham; and 300 gs. was so frequently bid, that we must refer our readers to the list for information regarding even such extraordinary prices.

Name of Animal.	When Calved.	Price	Purchaser.
Cows and Heifers.		Gs.	
Bright Star	1860	75	Mr. T. Barker.
Cleopatra 5th	1861	125	Mr. W. H. Wakefield.
Lady Butterfly Princess.	1863	73	Capt Gandy.
Alexandra	1863	51	Mr. H. D. de Vitre.
Blanche 3d	1863	210	Mr. M. Kennedy.
Grand Duchess of Oxford 7th	1864	915	Lord Penrhyn.
Gloria 10th	1864	44	Mr. H. D. de Vitre.
Winsome 2d	1865	355	Earl of Bective.
Blanche 4th	1865	.	Not offered.
Bracelet	1866	100	Mr. J. N. Dickinson.
Blanche 5th	1866	85	Mr. G. Ashburne.
Elvira 6th	1866	105	Capt. Gandy.
Music	1866	..	Not offered.
Oxford Rose	1866	215	Earl of Dunmore.
Bland	1867	52	Lord Chesham.
Caroline	1868	160	Mr. W. Angerstein.
Lady Bright Eyes ..	1868	150	Earl of Dunmore.
Blanche 7th	1868	125	Mr. J. E. Denison.
Winsome 7th	1869	300	Mr. A. Brogden.
Blanche 8th	1869	110	Mr. H. D. de Vitre.
Musical	1869	80	Mr. R. B. Hetherington.
Grand Duchess of Oxford 10th	1869	610	Rev. P Graham.
Winsome 8th	1869	320	Earl of Bective.
Winsome 9th	1869	405	Earl of Bective.
Blanche 9th	1869	150	Rev. P. Graham.
Lady Jocelyn	1870	90	Earl of Dunmore.
Winsome 10th	1870	370	Rev. P. Graham.
Grand Duchess of Oxford 18th	1870	1005	Earl of Bective.
Carry	1870	70	Mr. W. Angerstein.
Blanche 10th	1870	170	Mr. W. Angerstein.
Lady Laura Barrington	1870	355	Earl of Bective.
Blanche 11th	Jan., 1871	100	Earl of Feversham.
Winsome 11th	Jan., 1871	350	Earl of Feversham.
Bulls.			
SUNSHINE	1869	50	Mr. Marsden.
DUKE OF OXFORD 19TH ..	1870	335	Mr. R. Botterill.
MACGREGOR	1870	100	Mr. Allen.
BARDEN	1870	200	Mr. Marshall (Australia).
SUNLIGHT	1870	90	Mr. Tatten.
DUKE OF OXFORD 20TH ..	1870	1000	Earl of Feversham.
WASTWATER	Jan., 1871	50	Lord Chesham.
DUKE OF OXFORD 21ST ..	Feb., 1871	155	Mr. Denison,
DUKE OF OXFORD 22D ..	April, 1871	305	Mr. Isaac Downing.
STARS AND STRIPES ..	April, 1871	25	Mr. Ormanby.
DUNBAR	May, 1871	47	Mr. Greetham.
DUKE OF OXFORD 23D ..	July, 1871	155	Mr. A. Brogden.

Summary:—

31 cows at .. .. £248 2 6 = £7691 5 0

12 bulls at .. .. 221 11 0 = 2658 12 0

43 animals averaged .. £240 13 10 = £10,349 17 0

—— At Beaumont Grange, on Thursday, 19 females and 11 bulls were offered. The whole herd were suffering from foot-and-mouth disease, and yet in spite of this drawback some good prices were given. An average of £71 10*s*. 3*d*. was obtained over 28 animals sold. Nineteen cows realised £78 5*s*. each; 9 bulls realised £57 5*s*. 8*d*. each; and the sum total was £2002 7*s*. The demand for pure Bates blood was attested by the sale of a Lady Bates heifer by 2D DUKE OF TREGUNTER, born on February 19, for 500 gs.; and we may add that the general impression was that the calf was cheap. A similarly bred yearling bull was sold for 200 gs.

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Lady Spencer 2d	1864	30	Mr. Gibbon.
Moss Rose 5th	1866	41	Mr. Parker.
Golden Duchess	1866	50	Mr. R. C. Richards.
Rose of Lancaster	1866	51	Lord Chesham.
Rose of Cambridge ..	1866	40	Mr. Haslam.
Red Duchess 8th	1868	32	Mr. Todd.
Cambridge Beauty .	1869	65	Mr. Haslam.
Duchess 9th	1869	44	Mr. Richards.
Golden Duchess 2d	1869	100	Mr. Barnes.
Sweetheart 35th	1870	50	Mr. Swarbuck.
Cambridge Beauty 2d ..	1870	26	Mr. Parker.
Red Duchess 9th	1870	50	Mr. Starkey.
Lady Tregunter Bates ..	Feb., 1871	500	Mr. Fawcett.
Royal Charmer 5th .	Mar., 1871	58	Mr. S. K. Fowler.
Fawsley Duchess 2d ..	Mar., 1871	150	Mr. J. Boyd.
Duchess 10th	Mar., 1871	25	Mr. Todd.
Cambridge Beauty 3d ..	April, 1871	33	Lord Chesham.
Lady Barrington Spencer	April, 1871	21	Mr. Gibbon.
Moss Rose 6th	June, 1871	50	Lord Chesham.
Bulls.			
FAWSLEY BARONET 2D ..	1870	41	Mr. Parker.
GRAND DUKE OF LANCASTER 2D	1870	36	Mr. Brockebank.
ROYAL HUBBACK	1870	31	Mr. H. J. Gibbon.
GRAND DUKE OF KENT 2D	1870	..	Reserved.
FARNLEY DUKE 2D ..	1870	17	Mr. Mercer.
LORD BARRINGTON SPENCER 2D	1870	41	Mr. Kendal.
SIR CHARLES	1870	28	Mr. Bowling.
THE EMPEROR	1870	57	Mr. Eckersby.
PRINCE OF OXFORD ..	1870	40	Mr. R C. Richards.
BARRINGTON DUKE ..	1870	200	Lord Bective.

Summary:—

19 females at .. .. £78 5 0 = £1486 16 0

9 bulls at .. .. 57 5 8 = 515 11 0

28 animals averaged .. £71 10 3 = £2002 7 0

—— At Killhow, on Friday, the 8th inst., 56 of Mr. Foster's animals made £102 1*s*. 6*d*. each. Fifty-two females were sold for an average of £107 2*s*. 4*d*., and 4 bulls for £34 15*s*. each. *Carolina 5th*, by 7TH DUKE OF YORK, who was bought at Didmarton for 201 gs., was secured by Mr. McIntosh for 215 gs., and her calf of last September by GRAND DUKE 10TH, made 325 gs. by Mr. Angerstein. *Ursula 19th*, bought in 1869 for 100 gs., was resold at 105 to Mr. Angerstein; and her heifer calf, *Grand Duchess Ursula*, brought 125 gs. from Mr. Fawcett. *Grand Duchess 6th* by DUKE OF GENEVA (19,614), and of the "Wild Eyes" tribe, was secured by Sir Curtis Lampson at 325 gs. *Twin Duchess 3d* by KNIGHTLEY and of the "Charmer" tribe, brought 250 gs. from Mr. Sheldon. *Fantail 5th* by ROYAL CAMBRIDGE was sold for 360 gs. to Mr. Angerstein. *Fawsley Duchess* by GRAND DUKE OF LANCASTER and of the "Garland or Fillet" tribe, for 190 gs., to Mr. M'Intosh. *Grand Duchess Surmise* by GRAND DUKE 10TH, and of the "Secret" tribe, 210 gs., Mr. Sartoris.

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Belinda	1860	36	Mr. Pole.
Princess	1861	190	Mr. Thornton.
Fatima Gwynne	1862	60	Mr. Sartoris.
Fantail	1863	90	Mr. Cheney.
Young Strawberry ..	1863	76	Mr. Thornton.
Carolina 5th	1865	215	Mr. McIntosh.
Lily Cardigan	1865	33	Mr. Shepherd.
Butterfly Princess ..	1865	28	Mr. Jennings.
Ursula 19th	1865	105	Mr. Angerstein.
Musical 6th	1865	105	Mr. Angerstein.
Persiani	1865	120	Sir W. Lawson.
Florentia 11th	1866	61	Mr. Angerstein.
Jessy Cardigan	1866	67	Mr. Jefferies.
Fantail 3d	1866	155	Mr. Angerstein.
Grand Duchess 6th ..	1866	325	Sir C. Lampson.
Duchess Gwynne	1866	150	Lord Bective.
Red Rose	1867	68	Lord Feversham.
Fair Butterfly Princess ..	1867	80	Mr. Cheney.
Twin Duchess 3d	1867	250	Mr. Sheldon.
Pink	1868	50	Mr. Sheldon.
Oxford Brilliant	1868	71	Mr. Henkroft (?)
Musical	1868	140	Mr. Angerstein.
Holly Lady	1868	32	Mr. Shepherd.
Placid	1868	68	Mr. Blackstock.
Fantail 5th	1868	360	Mr. Angerstein.
Ganymede	1868	48	Mr. Richardson.
Cranberry	1868	54	Mr. Freer.
Peruvian Queen	1868	43	Mr. Fisher.
Cinderella	1868	38	Mr. Parker.
Princess Royal	1868	33	Mr. Dalton.
Ketura 7th	1868	51	Mr. Angerstein.
Cleopatra 13th	1868	31	——
Sweetheart 3d	1868	95	Mr. Parker.
Musical 15th	1869	160	Mr. Angerstein.
Fawsley Duchess	1869	190	Mr. McIntosh.
Sprightley	1869	77	Mr. Pole.
Lady Cardigan	1869	36	Mr. Jefferson.
Elvira 14th	1869	36	Mr. Dalton.
Cambridge Witch	1869	100	Sir W. Lawson.
Royal Gertrude	1869	100	Sir W. Lawson.
Maria	1869	78	Mr. Fox.
Jenny Cardigan	1870	34	Mr. Jefferson.
Grand Duchess Surmise ..	1870	210	Mr. Sartoris.
Florence Graham	1870	93	Mr. Angerstein.
Grand Duchess Carolina	1870	325	Mr. Angerstein.
Charming Duchess ..	1870	175	Sir W. Lawson.
Grand Duchess Ursula ..	1870	125	Mr. Fawcett.
Flora McIvor	1870	61	Lord Bective.
Countess of Roseberry ..	1870	36	Sir W. Lawson.
Countess Cardigan ..	Feb., 1871	30	Sir W. Lawson.
Blue Bell	Mar., 1871	51	——
Fairy Gwynne	June, 1871	60	Lord Bective.
Bulls.			
MUSIC MASTER	1870	20	——
BRILLIANT PRINCE ..	Jan., 1871	47	——
FAVONIUS	Feb., 1871	36	——
DUKE GWYNNE	June, 1871	36	——

Summary:—

52 females at .. .. £107 2 4 = £5570 1 4

4 bulls at .. .. 34 15 0 = 139 5 0

56 animals averaged .. £102 1 6 = £5709 1 4

—— At the Brockton House sale on Tuesday, 49 Shorthorns, bred by, and the property of, Mr. Thomas Bell, brought an average of £58 13*s*. 5*d*., and a total of £2874 18*s*. This high figure was due to the sale of the 8TH DUKE OF YORK, for 1065 gs., the highest price ever given for a bull, at which sum he became the property of Mr. J. Fawcett and a friend. The sale of *Princess Victoria 7th*, by 13TH DUKE OF OXFORD, and of the "Place" family, to Lord Skelmersdale, was the only other important event. With the exception of two "Georgina" heifers, and two "Hilpas," descended from *Cornflower* by BASHAW, the remaining stock sold for prices under 50 gs.

RAM SALES.

Leicesters.—On Wednesday last, at Aylesby Manor, 66 sheep were penned for letting; of these, 33 were shearlings, in prime condition. Mr. Torr names all his rams, and amongst the shearlings, Warrior, let to Mr. Jordan, of Eastbourne, for 20 gs.; Wellington, to Major Taylor, of Barton, for 22 gs.; and Westland, to Mr. Tindale, of Branstone, for 15 gs., were decidedly the best shearlings; but really, where all were so good, the pick may appear invidious. Ulysses, a magnificent full-grown 3-shear ram, was taken for £40 by Messrs. Dudding, of Panton, and Usher for £30, fell to the lot of Mr. Bonton, of Barton. The average scale of hire was £16. Mr. Torr still lets his rams on the old-fashioned principle of each customer having first choice of his last year's ram, and if there is more than one customer for a shearling, the sheep is put up in a friendly manner by auction.

—— In connection with the Border Union Agricultural Society, the annual sale of Leicester and half-bred rams took place at Kelso on Friday. The best Leicester ram sold realised the unprecedentedly high price of £115. It was one of the Mertoun lot, the property of Lord Polwarth, whose sheep have long been esteemed among the best on the Borders. This ram was purchased on behalf of Mr. Sanderson, and will go to Australia. Other rams of the Mertoun flock sold at £95, £65, £54, £50, £45, £36, £33, £28, £27, £26, £25, and smaller sums. The average price of Lord Polwarth's sheep (30) was £30 10*s*. At last year's sale Lord Polwarth also got the highest price for his rams, viz., £160, average £22 14*s*.; in 1866, highest £42, average £15 0*s*. 5*d*.; in 1868, highest £86, average £25 14*s*. 10*d*.; in 1867, highest £106, average £25 12*s*.; in 1866, highest £98, average £27 1*s*.; in 1865, highest £95, average £37 18*s*. 10½*d*.; in 1864, highest £70, average £26 19*s*. 8½*d*.; in 1863, highest £60, average £21 6*s*. 3*d*. The rams which brought the next highest prices belonged to the Mellendean flock, the property of Miss Stark. The highest price obtained by these rams on Friday was £100, which was paid by Sir George Dunbar. The prices of other rams in this lot were £91, £60, £50, £43, £40, &c. The average price obtained for 36 Lecester rams of the Mellendean flock was £28 15*s*. 3¼*d*. In 1870 the highest price given for the Mellendean rams was £32, average £13 10*s*.; in 1869, highest £109, average £16 9*s*. 4*d*.; in 1868, highest £62, average £18 0*s*. 10½*d*.; in 1867, highest £84, average £22 14*s*. 9*d*.; in 1866, highest £80, average £25 15*s*.; in 1865, highest £81, average £24 3*s*. Several of the other lots of rams sold brought very high prices. Among them were Rev. R. W. Bosanquet's, Rock, highest, £50; average for 66 rams, £14 3*s*. 3*d*. Mr. John Lee's, Marvingstone, highest, £40; average for 20 rams, £12 10*s*. Mr. Forster, Ellingham, highest, £32; average for 82 rams, £10 7*s*. 6*d*.; and many others. The highest prices paid for half-bred rams were £20, £19, £17, £15 10*s*., &c.

Lincolns.—At Owersby the show was confined this year to 88 shearlings, bred by the late John Davy, Esq. No. 45 fell to the lot of Mr. Hall, of West Finsley, for 30 gs. The 88 were sold for £1009 12*s*., being an average of £11 9*s*. 3¾*d*.

—— Somewhere about 30 years ago it was computed that Lincolnshire fed 2,000,000 sheep, producing

22,000,000 lb. of wool. It is now estimated that the number of sheep in the county is upwards of 4,000,000, and the wool returns not far short of 50,000,000 lb. With the gradual extension of sheep farming, there has been a corresponding increase of ram breeders to meet the wants of the green-crop folk. Amongst the most successful of the North Lincolnshire sheep breeders, Mr. Havercroft deservedly takes a first-class position. His flock of 60 longwool shearling rams, sold on Friday, would take a deal of beating, and attracted a goodly assemblage of customers, as well as admirers, to his pleasant homestead at Wootton Dale. This year the 60 sheep sold averaged £12 10*s.* 7*d.*, the prices ranging from 7 gs. up to 46 gs. The latter price was given for No. 12 by Mr. Robert Walker, of Somerby, near Brigg.

Shropshire.—Mr. May, of Elford Park, near Tamworth, held his annual sale of rams and ewes on Tuesday. There were rather more rams than usual in the catalogue. Of those sold, Nos. 14 and 15 made the highest figure, viz., 18½ and 18 gs. to Mr. Ridgway, and Mr. James, of Sudbury. Mr. Beardall secured a good 2-shear, by Sailor, at 14¾ gs.; the others ranging from 14 down to 5½ gs., and the average being just under £10 10*s.*

STEAM CULTIVATING COMPANIES.

AT p. 1047 Mr. Jacob Wilson told us that "there was a steam-cultivating company which, only the other year, had got from 20,000 to 30,000 acres to cultivate. Their prices were moderate; they could earn a fair percentage for their money, and, what was far more important, it was a source of profit and accommodation to the tenant-farmers of their district."

Let Mr. Wilson tell us where this wonderful company exists, and let him give all the particulars about this large number of acres worked at a moderate price, clearing a fair profit to the shareholders; and, above all, let him give the names of the farmers benefited thereby—giving the number of acres done on each farm, with time of working, &c.; for as yet I have never been able to learn that contractors have been able to work it at a moderate price, that would enable farmers to farm regularly by steam-power. I will repeat the questions that I asked in the *Times* on June 12, 1865, in reply to J. A. Clarke: "Where is their regular work? Where are their regularly cultivated farms? They have done a little experimental jobwork by bit here and a bit there, and that is all" (see p. 589, 1865); and state that that is about all Mr. Wilson's wonderful company has done. If not, why does he keep the name of the company, &c., in the dark? You say in your article, at p. 1046, on Mr. Bulstrode's letter, that "the only real annoyance in the former method (hiring) consists in having to wait the convenience of the contractor;" and then you follow up thus:—"There is constant risk of losing the great advantage of having the land worked at the right season," and then you encourage "an accommodating spirit among those who employ the apparatus," advising the contractor to remember "a customer who has suffered from delay." This may look very kind and friendly upon paper, but the suffering farmer's pocket will not be relieved thereby, and, besides all that, while this preference farmer is getting a plaster for his sore pocket, it may be that another farmer is suffering, and thus a perpetual suffering will go on in one quarter or another. My own practice thoroughly convinces me that a system of perpetual suffering will never farm England by steam-power, for I am certain the following results could have been attained only by having tackle at hand, to be brought out when needed. Take first my

HEAVY LAND.

Field No. 1.—16¼ acres, Beans after Wheat: After harvest 12 tons of dung per acre were spread over the Wheat stubble; on September 29, the ridger and subsoiler was set to work by steam-power to work it 10 inches deep, and put it into ridges ready for the winter, to be planted with Beans in February. The cost of this operation was 6*s.* 3*d.* an acre. In February the Beans were planted by hand, two rows on a ridge, that is, one row on each side. The rows average 18 inches from row to row; the cost per acre was 3*s.* 6*d.*, after which the rows were harrowed twice over, at a cost of 1*s.* per acre each time. The cost of seed-bed and planting, therefore, was 11*s.* 9*d.* an acre. The crop, although slightly affected at the top of the haulm by the fly, is splendid; and when we remember that it is the sixteenth under steam-culture, and also call to mind that a fine field of Wheat grew on this land last year, the conlusion is irresistible that, under a judicious application of steam-power, clay land can be kept clean under corn cropping, without any resort to dead fallows, which may justly be regarded as a "dead loss," not only to the farmer and the landlord, but in their not remote effects to the nation at large.

Field No. 2.—Here we have 22¾ acres, Beans after Wheat. This field has been manured and treated exactly as the preceding, and the crop is quite as fine. Indeed, the two fields may be regarded as one, there being no fence now between them; and it is a sight worth going to see—more than half a mile in length of fine, well-corned Beans. The crops under steam culture grown on this land for 16 years have been invariably good, and have been as follows:—In 1856 this field was in Wheat, and in the succeeding years the crops stood thus:—1857, Beans; 1858, Barley; 1859, Beans; 1860, Wheat; 1861, Swedes; 1862, Barley; 1863, Beans; 1864, Wheat; 1865, Beans; 1866, Wheat; 1867, Beans; 1868, Wheat; 1869, Beans; 1870, Wheat; 1871, Beans. The cost of seed-beds for the 16 crops stands at 9*s.* 2*d.* an acre each. With such evidence as this, who can doubt that steam culture beats horse culture both in cost and produce? These costs, 9*s.* 2*d.* an acre, are much less than half the cost of horse culture, and the crops have all been good; the present Bean crop is the best of the lot, and this without any fallow at all. Ponder over these facts.

Field No. 3.—29 acres, Wheat after Beans, excepting about an acre after dead fallow. The Bean-stubble smashing cost 4*s.* 8½*d.* an acre, which, with a heavy harrowing, at a cost of 1*s.* 3*d.* an acre, made the cost of seed-bed 5*s.* 11½*d.* per acre. This is a fine field of Wheat (Essex Rough Chaff), strong in straw, and well headed, and must give a good produce. This is the second crop on this land under steam culture. Three cwt. of superphosphate was sown per acre in March last.

Field No. 4.—24 acres Wheat, after a part in Peas and a part in Beans. The operations, manure, and costs were the same as in No. 3. It is a remarkably fine field of Wheat, and needs only suitable weather to ripen it. A small portion has been laid by the heavy rains, but with fine weather no harm worth speaking of will be sustained. This is the second crop under steam culture. About two years since, dead fallows and inferior crops were the order of the day on this land.

LIGHT LAND.

Field No. 1.—12 acres, Barley after roots: This field was ploughed with horses at a cost of 10*s.* 6*d.* an acre. The crop is very good, but a part of it was thrown down by the recent rains and wind.

Field No. 2.—13 acres, Wheat after Clover, ploughed with horses at a cost of 10*s.* 6*d.* an acre: This is a remarkably fine crop, very strong in the straw, and wonderfully headed. It has withstood the rain and wind, and with fine weather the yield must be great.

Field No. 3.—11 acres, Clover after Wheat: The Clover has been mown, but, like this year's Clover generally, the crop was light. Part of it will be mown again, but the plant is not thick enough to give a good crop. The hay crop throughout the neighbourhood this year has been under an average, and generally badly got. I had about 6 acres driven away by a flood, and a neighbour lost 10 acres in the same way.

Field No. 4.—12 acres, roots after Wheat: Ridge-ploughed, and subsoiled 10 inches deep, at a cost of 6*s.* 3*d.* an acre, and that was the cost of seed-bed, for all that the land needed in the spring was simply harrowing and drilling. There are 6 acres of Swedes, 4 acres of Mangels, and 2 acres of Kohl Rabi, all a full plant, with a certainty, with fine weather, of a good crop. The manure used was 12 tons of yard dung.

Field No. 5.—Wheat after Beans: The Bean stubble was left in such nice condition, after the ridging and subsoiling by steam-power for the preceding crop, that it needed nothing but a scuffling with horses, at 2*s.* an acre, as the cost of seed-bed for this splendid crop of Wheat. It would be next to impossible to find a finer crop; a little of it has gone down, being too heavy for the recent wind and rain.

Field No. 6.—14 acres, Barley: This is the fifth white-strawed crop in succession. It is a fine crop, a little of it rather too heavy. The cost of seed-bed was 6*s.* 3*d.* an acre, worked a foot deep, by ridging and subsoiling by steam-power last October. The manure was 6 cwt. of superphosphate per acre. This land, although it has got its fifth white-straw crop upon it, is very clean; horse culture could not have produced such a cleanly result at four times the cost per acre yearly; indeed, I am of opinion that horse culture could not give at any cost such clean land under such heavy cropping as we have here, particularly for the last five years, under Wheat the first year, and Barley the four succeeding years.

And now let us look at the following facts:—The steam-power work that produced the above crops was—53 acres of Bean and Pea stubble smashed in 6¾ days, at a total cost of £12 9*s.* 4*d.*, including 1*s.* 6*d.* an acre for wear and tear, &c., and 65 acres of Wheat and Barley stubbles, ridged and subsoiled in 12 days, at a total cost of £20 6*s.* 6*d.*, including 1*s.* 6*d.* an acre for wear and tear. The average day's work of smashing was 8 acres, at a cost of 4*s.* 8½*d.*, which, with a harrowing at 1*s.* 3*d.* an acre, brought the cost of seed-bed for Wheat up to 5*s.* 11½*d.* an acre, and the average day's work of ridging and subsoiling was 5½ acres at 6*s.* 3*d.* an acre, which was the total cost of seed-bed for Beans and Barley on ridged land as well as for roots.

The sixteenth year's farming under steam culture may be thus summarised:—78 acres of excellent Wheat, 26 acres of excellent Barley, 39 acres of first-rate Beans, 12 acres of roots (a very regular and rapidly growing plant), and 11 acres of Clover that has been mown once for hay, cutting about a ton per acre. This shows a total of 166 acres under culture, exclusive of 4 acres of Potatos just ploughed up. The heavy weight of corn cropping—143 acres out of the 166—is worthy of notice. There is no fallow on the heavy land, and only 12 acres under roots on the light land. The seed-beds under steam culture for Wheat cost only 5*s.* 11½*d.* an acre; for Beans, roots, and Barley, the latter the fifth white-straw crop in succession, the seed-beds stand at 6*s.* 3*d.* an acre. With this evidence before him, I am fully justified in saying that every farmer must have all his steam culture done in the autumn, or it would be impossible for him to obtain such results. Twelve years since I wrote:—"If steam-power is to be generally applied to the cultivation of the soil, every large farmer must possess a set of apparatus of his own. Two or three small farmers may have a set between them, or hire one of another, according to arrangement, for September and October will not wait, and if the work is to be done well, it must be done in those months;" and experience has endorsed my judgment. My challenges in support of my views have remained unanswered; and, while admitting that the contract system may, under certain circumstances, be worked to advantage, I contend that it is not "a best application" of steam-power, inasmuch as it cannot do the work at the proper season only at a very high cost, and Mr. Robinson, of Wisbech (a contractor), I cite as a substantial witness upon the point. In further confirmation of my views, I quote the following letter from the *Agricultural Gazette* of January 20, 1866:—

"I and my brother are in partnership in our machinery, and this year I did not have the cultivator until he had finished; consequently I have done but little, and of that can give no estimate. I consider steam cultivation far superior to horses, and with good fellows need not be attended with many breakages; but with careless men nothing is so ruinous. One thing I strongly recommend, *i. e.*, no partnership, for it might happen that one would receive great benefit and the other none, as so much depends upon the weather. *W. Addington, St. Neots.*"

With such evidence as this before me, with my own figures and results to support me, I call in question the permanent utility of the contract plan of working.

The Royal Agricultural Society may encourage it by dubbing the tackle that is the most suitable to work upon it as "the best application" upon the strength of opinion, for as yet there is no evidence to support that opinion; Mr. Wilson's case would be evidence, if he could support it by names and particulars. He tells us, that "he was himself in favour of Fowler's machines, but he was not prejudiced, if he could see a better to-morrow he would buy it." Then let him compare the summing up of my 16 years' practice given above with his own, over the whole of his farm, from his start, and give everything in detail, by way of proof that he is right in his opinion, or I shall take it that he jumps at conclusions. He is a Council member of the Royal Agricultural Society, and therefore it is quite natural that he should, with that noble body, jump at the conclusion that they must have the old plough, whereas my own evidence proves that that old plough has never been needed on my heavy land for 16 years, and never will again. Let him ponder over this evidence of mine well, and "see" whether he may not spend his money "to-morrow" in finding some tackle superior to his own, that is, by finding tackle by which he may work his land better and cheaper than he has done heretofore. Mr. Mechi, in his article on "thin-skinned land," appears to thoroughly understand the efficiency of my implement at deepening the soil on clay lands, and Mr. Wilson will do well to pay strict attention to what Mr. Mechi says upon the point, and the whole article will pay well for reflecting over. *William Smith, Woolston, Bletchley Station, Bucks, August.*

ASSOCIATED DAIRIES.

THEIR PRESENT POSITION AND FUTURE PROSPECTS.

DAIRY farming is a branch of rural economy affecting the interests not only of a large number of landlords and tenant-farmers, but it has now attained a great national importance; while within the last 25 years all other branches of farming have made immense strides that alone of cheese-making has remained stationary, and in many instances a retrograde movement has even take place. The English dairy farmer has generally ignored the teachings of science, though supported by the patient researches of Liebig, Johnstone, and Voelcker. The American agriculturists, with the arch keenness proverbial of their country, spared no expense in sending men of intelligence and ability to visit the best dairy districts of the country, and to make themselves thoroughly acquainted, both practically and theoretically, with the different methods of cheese-making practised here. After mature deliberation they adopted the Cheddar system, so well described by Dr. Voelcker in the Journal of the Royal Agricultural Society, as the system best adapted for the application of scientific principles. The Americans, after repeated failures, have succeeded during the last three years in raising their manufacture to a high degree of eminence, and cheese of American make has been gradually superseding the produce of English dairies in our own markets—they have been reaping golden harvests, whilst we have only been the gleaners.

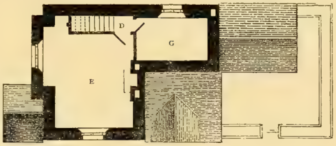
Dairy farming is most successfully practised on soils of medium quality, and with about one-fifth of the acreage under arable culture. This furnishes a sufficient supply of straw and roots to carry the stock well through the winter. Climatic influences to a certain extent affect the produce, a moist climate and low temperature being most conducive to large returns. In the south-western counties of Scotland a greater quantity of cheese per cow is made where there is no old permanent pasture, and where the whole of the land is worked on the five or six course system, and therefore only down in grass for one or two years, than is generally made from the old permanent pastures of the dairy districts of England. In the former case 480 lb. of cheese per cow is the rent at which on all the best farms they are let to bowers or men who make a business of renting cows, and who, in addition, must also make a sum sufficient to pay them for their labour of management, whilst in the latter, 400 lb. is the average make of ordinary dairies. This may be attributed to various causes. The Scotch dairy farmers, as a rule, are much higher feeders than the generality of English dairymen; where the farms are under a regular rotation of cropping, they derive great advantages from always having a liberal supply of straw and roots, which enables them to get their cows into good condition at calving—a most important point as regards the future produce; whereas on the old permanent pastures, with little arable land, they are mainly dependant on hay for their winter support. Again, in the south-western counties of Scotland, the prevalent breed of dairy cows are the small Ayrshire, which are celebrated for their high milking qualities in proportion to the amount of food consumed. They are unsurpassed for the quantity of milk they yield by any other breed of cows with which we are acquainted. We think they might be profitably introduced more extensively into the west midland counties of England. Four Ayrshires could be kept on the same quantity of food as three large Shorthorns would require, and, on an average, each of the former would give a greater quantity of milk than one of the latter. The great objection to the Ayrshires is their small value for feeding purposes when drafted from the dairy. Even with the Shorthorn on some farms we find this to be the case, particularly with good milkers, which are often retained until they are of little value to the grazier. This system of management is also unprofitable to the dairyman, for old cows are generally large consumers, and beyond the fourth calf the quality of the milk becomes depreciated.

Cheese factories and associated dairies are increasing in public favour. Besides the originals at Longford and Derby, another has opened at Freeford, near Lichfield, under the auspices of Colonel Dyatt, M.P. for the city of Lichfield. One at Tattenhall, near Chester, is carried on by Mr. Geo. Jackson entirely as a private venture, while late in the season another on a small scale was started near Crewe. The committee of the Derbyshire association have this year made several alterations, and introduced what they consider some important improvements, their chief aim now being to make an article that will command the highest price in the market. There are certain peculiarities inseparably connected with all cheese made strictly on the American principle, and cheese so made in this country becomes deteriorated in value by being classed with American produce. The Cheddar system, under good management, produces an article of superior excellence, and this the Americans adopted as their type, but in their anxiety to save time and labour they hastened the operation beyond its legitimate bounds. The American system of employing high temperatures, both in the vat and the curing-room, light salting and heavy pressure, produces a cheese which rapidly matures, but is limited as to its keeping properties. In the Derbyshire dairies this year the temperature is kept down to about 86°, the whey is run off, and the curd packed, pressed, and ground, and the cheese pressed for two days; in fact, the pure English Cheddar system is strictly carried out. Each district has its own peculiar fashion as to shape and colour, and in order to enable us to get into the different markets, we are compelled to make a variety of shapes, though all of the same quality; there are the Cheddar size, 13 inches deep, both plain and coloured; and the Leicestershire, 17 inches in diameter and 4½ inches thick. These are all coloured; and, besides, there is the Derbyshire, 16 inches in diameter and 4 inches thick, uncoloured.

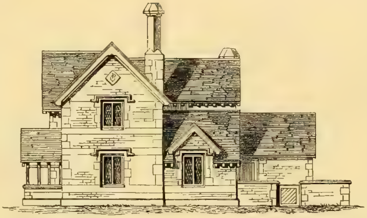
On the Cheddar system the labour is slightly increased, rather more salt is used; the cheeses require considerably more time to mature, and there is less loss of weight by shrinkage. Both the quality and keeping properties are greatly improved, and, according to our experience, less of the butter passes off in the whey. We find the Cheddar, though weighing 60 lb. per cheese, fit for market in the same time as the Derbyshire size, which weighs only 38 lb. The factory system is quite applicable to farmhouse dairies of from 30 cows and upwards, and the saving of labour, together with the certainty of making a more uniform article in point of quality, cannot fail to make it remunerative even on this small scale. At the Derby factory many experiments have been tried, in order to ascertain how the greatest quantity and the best quality of butter can be obtained from the whey. From 300 gall. to 400 gall. of whey are run into a vat, into which is placed a coil of copper pipes; through these a jet of steam is passed, and the temperature of the whey is raised to 180°, the top is then skimmed into narrow tin vessels, and these are placed in cold water till the temperature falls to about 60°, when their contents are fit to churn; this straining process entails a considerable cost in fuel and labour, and has the effect of throwing up a large quantity of casein, intimately blended with butter, and rendering it difficult to churn. The butter obtained in this way is fair flavoured; but we find that by running the whey into double-bottomed tin vats, between the bottoms of which cold water can circulate, (after standing 24 hours) an equal quantity of butter may be obtained with a much less amount of labour, the quantity to be operated upon being much less. For every 100 gall. of milk delivered at the factory, we obtain about 1 lb. of whey butter. The value of the whey for feeding purposes principally depends on the amount of sugar it contains, and therefore it suffers but little deterioration by the abstraction of the butter. In arranging the plan of a cow factory, it should be specially designed with the view of reducing labour to the minimum. The floor of the make room, on which the cheese vats stand, should be at least 3 feet above that on which the whey vats stand, so that the whey flows by its own gravitation from the milk to the whey vats, and thence again into the sour whey cistern. The butter dairy room may be a cellar under the floor of the curing room. This will secure a cool equable temperature in the hottest weather, and prevent the butter from getting soft. *Gilbert Murray, Elvaston Estate Office, Derby.*

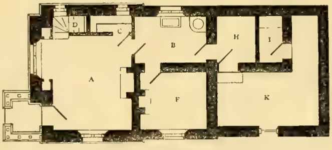
LABOURERS' COTTAGES.

THE design represented by the accompanying woodcuts (fig. 276), and furnished by Mr. Bailey Denton, jun., is intended to illustrate a class of cottages for rural estates to which the name of "lodge cottages" has not inappropriately been given, as they serve on occasion the double purpose of gate cottages or lodges and dwellings for agricultural labourers.



CHAMBER PLAN.





GROUND PLAN.

FIG. 276.—LODGE COTTAGES.

A, Living room; B, Scullery; C, Pantry; D, Stairs; E, Parents' bedroom; F, Second bedroom; G, Third bedroom; H, Fuel store; I, Privy; K, Yard.

Although representing the most expensive form in which cottage accommodation can be provided, single or detached cottages may be conveniently placed at the entrance of a park, at the commencement of the private road leading to the farm-house or mansion, or in situations where one labourer is all that is wanted.

Upon an examination of the plans it will be seen that the windows of the living room are placed so as to command a view in all directions, and that a bedroom has been provided on the ground floor, with the view of diminishing as much as possible the trouble incident to opening the gate after it has been locked at night.

The cubical contents of the cottage, exclusive of the outbuildings, is as follows:—Living room, 1416 feet; scullery, 616 feet; pantry, 97 feet; staircase, closet, and cupboards, 319 feet; parents' bedroom, 1491 feet; second bedroom, 616 feet; third bedroom, 680 feet; making a total amount of 5235 cubic feet.

The total cost of the works shown on the drawings may, under ordinary circumstances, be estimated at about £220. This sum is in excess of the general cost of cottages, owing to the fact that the building in question is built singly, covers a great deal of ground, is more expensive in construction, and more ornate in character than labourers' cottages usually are.

TIPTREE HALL.

I RECENTLY paid my first visit to Tiptree Hall, and devoted the day to Mr. Mechi and his farming. Thus, in going and coming, I thought and talked of Tiptree and its doings to all sorts of people, and in all sorts of places—in the train and by the wayside, in cottage and workshop, with labourers and mechanics, clergymen and tramps, reapers and farmers, I turned the subject Tiptreewards. I am happy to say that I received but one testimony, viz., that Mr. Mechi was a good man, a kind master, and a good farmer, and that his crops were very good, first-rate—better than any of his neighbours; that he had done a great deal of good, and that others were following his example, &c. Most of these, and many other similar testimonies, were collected within 6 miles of Tiptree, and they are at least equally trustworthy with the idle gossip of some farmers' rooms that found its way into your columns some years since. I was reminded of some of the latter tales by an incident that occurred on my way from the station. Meeting an old man, and inquiring the distance to Tiptree, he said, "You'll see some rare crops there, sir. There be some about there that speak against Mr. Mechi." Pointing to a farmhouse, he added, "The farmer that lived there once told me that Mr. Mechi wrote lies in the papers; and I said to him, 'If that is so, why don't you write and tell him so, and put your name to it; that's what I would do if I were a farmer. I would not say such things behind his back. Tell him so to his face like a man.' The farmer, who is dead now," said my informant, "came up and put his hand on my shoulder, and, pointing with the other to his Wheat, said, with a knowing wink, 'I say, old man, I have a good crop there, have I not?' From that day he never spoke against Mr. Mechi nor his farming to me." It is to be hoped that all others will take the old man's hint, and that we shall have no more false reports of a great man's doings, nor idle gossip paraded with the authority of veritable facts. So much for jottings by the way, which are a fair set-off against much that has been raked up on the other side. I should not have made them but for the damaging letters before referred to. I put no leading questions to my informants, and confess that I was quite prepared to hear a different account of Tiptree from its neighbours, for Mr. Mechi has not escaped the usual penalty of reformers. No man has been more pelted by the heavy artillery of prejudice, discharged from entire batteries of strongly entrenched ignorance. The greatest reformer the earth ever saw has likewise told us that a prophet or teacher is not without honour, save among his own people. We have seen that Mr. Mechi has been no exception to this rule, and no wonder. What could seem more supremely ridiculous to the mind truly rural and wholly agricultural than that an alderman or a lord mayor of London could teach it better farming. But seeing is believing—often the only kind of faith, indeed, acknowledged in the country. By force of annual demonstrations Tiptree has compelled belief in its success; those who carp and deny are those who have not been to see. It was gratifying to find that at last Mr. Mechi's immediate neighbours had made the discovery, that the great pioneer of the improved agriculture of the future was amongst them, and that they have begun to know and honour him as such.

Arrived at Tiptree, I found all grades of agriculturists busy taking mental notes or making memoranda—landlords, tenants, farm-proprietors, corn dealers, dry farmers, who believe in muck, and wet farmers, who have faith in sewage; and, best of all, Mr. Mechi was there himself, to explain all in his own happy style, and dispensing a hospitality and manifesting a kindness that have often been adverted to in your columns, but which no pen ever has, or ever will, do full justice to.

I do not purpose giving a detailed account of the farm. To most of your readers Tiptree Hall is familiar as a household word; all of them ought to contrive to see it for themselves. My expectations were pitched high, but not one of them was disappointed. The general verdict on the crops was—"We have seen nothing to equal them this year." The Wheat, of which there were several varieties, was uniformly good, remarkably regular in height of straw and in size of ear; every stalk stood bolt upright, like a guardsman on sentry duty. I did not see a single ear down on the farm. This evenness of the Wheat crop is the more singular, as the rotations at Tiptree are anything but fixed. One piece of splendid

Wheat, for instance, quite equal to any other, was the third Wheat crop in four years.—Mangel, which followed two Wheat crops, and yielded 39 tons an acre, last year, is succeeded by a splendid Wheat crop, that assuredly boasts no sign of distress, as if the land were corn sick, or had its back—that is, its productive force—broken by carrying all this grain in so short a time. Here are the past, present, and future doings of this field, as given by Mr. Mechi himself in the *Braintree Advertiser* of yesterday :—

"In 1867 the Willow Field produced a heavy crop of Clover; in 1868, 8 qr. of white Wheat per acre, sold at £23 per acre without the straw, which was worth £3 more; 1869, 7 qr. per acre of Shirreff's Wheat; 1870, 39 tons of Mangels; 1871, an excellent crop of red Wheat. Next year it will be Beans; in 1873, Wheat again; in 1874 Tares sown in October, 1873, followed by Kohl Rabi, or Cabbage transplanted in July, 1873; and in 1875 Oats sown down with red Clover. This finishes the rotation after red Clover. I thus get every year, one red Clover crop, four Wheat crops, one Bean do., one Oat do., one Mangel do., one winter Tares do., and one Cabbage or Kohl Rabi do."

Beans, again, on land of naturally indifferent quality were a splendid crop. Spring planted Beans were full of pods along nearly the entire length of their very tall stalks; they were a very heavy yield. Barley, which was mostly cut, looked well.

Mangel and Kohl Rabi were marvellous crops. I have seen nothing to equal them this season. They were more like a crop to harvest in October, than one in the beginning of August. The Mangels look like making from 40 to 50 tons per acre. The hay crop has been excellent, and the Clover layers were full of growth, some ready to cut a second time. Tare stubbles had been double ploughed, smashed, and planted with Cabbage, or Savoys, or Kohl Rabi. Pea and Bean stubbles will be served in the same way as soon as they are cleared. Mr. Mechi has boundless faith in the enriching and ameliorating influence of sun and shower upon land. Whatever surface is not covered with growing crops is broken up deeply and roughly, to collect and fix gases and vapour from the atmosphere.

The solid manure used is mostly spread upon the surface and ploughed in, in the ordinary way; then a strong subsoil-plough, without mouldboards, follows the other, and tears the land up in huge pieces to the depth of a foot or more. So stubborn is some of the land, that huge pieces occasionally come tumbling over the handles of the plough; and this huge mass of clods and manure is left to be broken fine by the pulverising hammer of the atmosphere—that is, if it may be left fallow a few months; if not, a heavy Crosskill is sent to battle with and master the surface clods sufficiently to get in a crop. The rougher the mass remains below the better Mr. Mechi likes it. The interstices are full of air and manurial gases, and the roots have a free course and a full larder.

Mr. Mechi is by no means favoured by soil. There is considerable variety, but none of it would be called good for farming. The heavy soil is too strong even for brick-making; the light, a black, dead-looking sand, full of huge lumps of plum-pudding stone. In dry weather this heavy land is hard as iron, during wet it is soft as butter. The price given for the land is a good test of its commonplace quality. Good land could not have been bought for £23 per acre. A gentleman who knew the place well many years ago assured me that a more unlikely place for good farming could hardly have been found. Spring-water, holes, hedgerows, ditches, straggling trees, and poor half-starved crops were the order of the day before the Mechian era. Neither is it necessary to go back a generation to prove this. Why, stationed within sight of Tiptree, I saw Wheat crops that would hardly pay for the seeding, and there is still a great deal of indifferent farming to be seen from Tiptree to Kelvedon.

But I hasten from these controversial points, which would obtrude themselves on me on my journey to Tiptree, to give an epitome of the foundations of Mr. Mechi's success as they revealed themselves to me on the spot. First among these are deep drainage with small pipes. Twenty years ago a field was drained 5 feet deep and 50 feet apart, with inch pipes, and the drainage is as perfect as ever. In many cases we get rid of the water too soon, in two senses—first, in regard to time, and, second, too near to the surface. We want to get all the caloric and mânure out of rain-water before we let it go. Deep drains, and of small bore, by giving the water a long journey, enables it to leave all that is useful to the land behind, before it leaves it; hence, I believe, their success. The more haste with drainage the less speed, or rather an excess of speed is dangerous.—The second point is deep culture. Mr. Mechi is by no means satisfied that he goes deep enough. On the contrary, he talks of advancing from half a yard to a yard, or even beyond. The root of a Parsnip will run down 6 feet, he remarked; why should we not provide something good for it all the way? Why not, indeed? But I need not dwell upon this, having so recently adverted to the importance of deep culture in your pages. Mr. Mechi has reached from a foot to 15 inches, and is boring away for 2 feet.—The third point is, no robbers allowed. I noticed neither weeds, nor trees, nor hedgerow-timber, nor o'ershadowing wood to shut out the light and shelter vermin to prey upon the crops, at Tiptree. The fields are large and square, or at least even-sided, and the crops had the full usufruct of the whole area of earth and air.—A fourth point—and it is a vital one in the Mechian system—is no overcrowding. Every plant has room to grow without being overborne by its neighbour. The consequence is, that instead of a motley crowd of pigmies, we have an imperial army of giants. Each plant reaches its full stature—grows to its utmost size. From hence comes a great economy of force. With fewer plants there is more vital energy expended, and consequently more produce grown. For produce cannot be computed by numbers alone, but by power expended upon growth, thoughit is a fact established beyond all controversy by Mr. Mechi's practice of thin-seeding, and by other analogous practices in cultivation, that 10 plants may yield more bread, or beef, or sugar, than 100. Hence there is a double saving in thin-seeding—we save the grain that would have been wasted in the earth, and get larger crops from fewer plants. An opponent of Mr. Mechi has admitted that his advocacy of thin-seeding has already saved several millions a year; and that, were his practice generally adopted, probably the nation would be £10,000,000 per annum the richer in consequence; and there really seems no reason why thin-seeding should not become general. With high farming there is no fear of a lack of plants. The maximum for Wheat at Tiptree is 1 bush. per acre. Over one large field only 2 pecks were used. Mr. Mechi challenged a number of practical men in my presence to point out which was which. None of them could do so, and yet over the thin-seeded about 200 barn-door fowls all ran freely winter and spring. One splendid piece of Wheat was pointed out that had looked wretched in the spring. The slugs, &c., had been upon it, and serious thoughts were entertained of ploughing it up,—no uncommon thing in the neighbourhood last spring; but, instead of this it was dressed with 2 cwt. of guano and 3 cwt. of common salt to the acre, and now, if there is any difference in the Wheat at Tiptree, this was the best of all.

Another great merit of thin-seeding is, that the straw is sufficiently strong to carry the ears. Much corn is badly laid this year. None is down at Tiptree. This is of the utmost importance. Another point with Mr. Mechi is to feed his land well. To starve land in the matter of manure is ruin. The sure road to success in farming is never to withdraw the full balance of productive force from the land. Always put in more with each crop than you take out. Even a tenant-at-will would find this to his interest: treat the land generously, and it will treat the cultivator yet more generously. Try to strike a hard bargain with it in the matter of its food, and the land will prove itself an adept in returning evil for evil. Tiptree crops, as they proudly stand up in their full strength, or cover the furrows with their large green leaves, give eloquent testimony to the importance of a full meal of rich stuff and often. Even the straw at Tiptree is mixed with cake or pulp—not only that it may make beef for the butcher, but richer manure for the land. And dry chaff is more savoury with oilcake soup, and served out hot with the same dual object—that meat and muck may be made the faster.

Again, Mr. Mechi, as is well known, applies much of his manure in a liquid state. At least two great advantages arise from this. No liquid excrement is wasted, and the manure is at once available for the plants. These statements are easily made and read, but it is hardly possible to estimate their full importance. Could it be truly written on every farm, No waste here! the produce of England would be doubled. And then there is a most prodigal waste of time in the manner of making and applying manure. Roots cannot eat solid dung; it is worse for them than it would be to set us down to a dinner of raw beef and unground Wheat. We could nibble enough of these to keep us alive, but roots are incapable of consuming solid muck. Mr. Mechi cooks it for them. His famous tank is the great stewpan of his farm; there he makes plant soup of the most nourishing kind, and on a regal scale. It is stronger than the richest turtle soup: all sorts of enrichment are thrown into this gravy pot—whole carcases of horses, cats, dogs, rats, solid excrements, liquids, rinsings, drainings of all sorts and varieties—all poured in here. Water is added to suit the taste and the wants of the crops; the whole is broken down by a blow-pipe from the steam-engine, and then lifted up and forced forth by steam-power, and distributed on a liberal scale to the growing crops. Mentally, we can see them smacking their lip-leaves as this rich gravy soup is served out to them. Filled with such good things as that, they must grow. And the grand merit of this mode of feeding is that the plants are filled at once; there is no waiting for their meal till slow-paced decomposition, like a heavy waggon-horse, has done its work. The roots absorb, the plants assimilate, transform the liquid food at once; hence, to a great extent, the potency of liquid manures—they are instantly available. This fact forms the very keystone of the sewage system. It offers the best food, in the best form, at the cheapest rate, in the most readily convertible mixtures. Long before solid manures can be rendered fit for plant food, liquids are transformed into the food of man. With such a fact generally recognised the waste of sewage must cease. What would be thought of the sanity of a London club that poured all its turtle soup into the Thames? But such a folly and waste would be wisdom itself compared to the great folly and unkindness of wasting day by day enough plant food of the richest sort to supply the wants of a farm of 30,000 or 40,000 acres. Mr. Mechi, who can write with authority on this subject, calculates the waste sewage of London would enrich so much land, and make it equal the sewage farm at Barking in its productiveness.

But Mr. Mechi feeds his land with other things besides manure, he has diverted two streams of capital towards it, that of a liberal landlord and a most enterprising tenant. Being his own landlord he has perfect security for both these streams of gold; what he has spent as a landlord is not generally known, but it seems to have been well spent, for I heard on the spot that the land that he bought for £23 or £25 an acre would probably now fetch from £80 to £100. His tenant's capital is £16 per acre; he says he believes from £20 to £25 would pay him better; and yet, though this is a model farm, there is no extravagance to be seen upon it. He keeps but seven horses, and the farm did not seem to be by any means overstocked with men. There is no attempt at gingerbread farming, nor extra cleanly mucking of yards, &c., the whole of the arrangements were businesslike and labour saving, without any attempt at mere show.

Finally, knowledge and business seem inscribed on everything one sees at Tiptree. Fortunately for agricultural progress Mr. Mechi had nothing to unlearn. I was much impressed with a remark he made on going round his farm. "Had my father and grandfather been farmers I never could have done this. I should have followed them, most likely. It is so much more difficult to unlearn than to learn." Mr. Mechi has had many difficulties to encounter, but he escaped one—the most difficult of all others to master. He had no farming prejudices to overcome, no deep ruts of antiquated routine to wrench himself out of; and hence, to a large extent, his success. At Tiptree we see what business principles, marvellous stores of knowledge, and an unexhaustible stock of common sense, energy, and geniality, can effect in agriculture. These qualities have, in spite of all opposition, converted a most commonplace poor farm into a model for the nation, and given a stimulus to farming that is being felt throughout Europe and the world. If it be true, and it is, that that man is a benefactor to his species who makes two blades of grass to grow where but one grew before, what shall we say of a gentleman like Mr. Mechi? I say this, that no honour in the power of his sovereign to bestow, could be too great as a recognition of his services, and a token of his country's gratitude. Titles, gifts, thick as Blackberries, have been showered upon our victorious soldiers; statesmen have been duly honoured and enobled; literary men have not been without their laurels-wreaths of fame, and their occasional coronets; the time seems to have come when other victories, and especially those achieved on the bloodless fields of agriculture, ought to have their reward. "Peace hath its victories as well as war," but it hath but scant measure of the prizes. Among those eminently entitled to national recognition and honour for the highest public services rendered to the state, I know none more worthy than Mr. Alderman Mechi, of the City of London and Tiptree Hall. He has pointed out, at immense labour and cost to himself, how the country may be enriched in two ways—by wasting less and growing more. As we bound along in the future by express, on the line of improved production, towards the final terminus, maximum yield, let it not be said that we neglected duly to honour him who, almost single-handed and alone, and amid laughing jeers and sharp-pointed opposition, and stinging words whizzing around him like infuriated bees, well and truly laid the rails, got up the steam, and has driven the car of agricultural progress at a safe speed to the present time. *D. T. Fish, F.R.H.S., August.*

HAYMAKING.

ON THE MAKING OF HAY BY TWISTING IT INTO ROPES.

I MADE some experiments more than 20 years ago at different seasons, in summer and in autumn, to test the powers of air drying as applied to the saving of hay, and found that without any great cost it could be dried and duly harvested in the ordinary changeable weather of June, July, and August.

A quantity of loose hay in a field looks one of the most unmanageable articles one could have to do with when the weather is "catching," for if it were bound in sheaves like corn it might be set up on end, but being either shaken out or shaken together, when foul weather sets in there is little else for it but to rot, and, obeying the ordinary laws of fermentation, it will heat, sweat, and finally burn, just as its bulk and its moisture will admit. The farmer can easily dry grain, malt, and the like on his kiln, but in the drying of other articles he seems sadly deficient, for example, when he washes wool for market it is very questionable whether or not he ever could dry it thoroughly except on the backs of the sheep, so he washes the whole animal before shearing, and thus gets the wool washed by using every sheep as a clotheshorse to dry its own fleece. When I have seen a flock of sheep passed from hand to hand across a river during the washing process, I could not help thinking what an important item that was in the way of cleaning and drying wool at little cost, for from being dripping wet the wool gets air-dried in a very short time, ready for shearing and storing.

In making hay the natural juices and the green colour should be dried into the hay, and by no means washed or bleached out, for sun and rain will not only bleach linen yarn but bleach also most other vegetable tissues, and in England, at least, whilst we dry the grass we should still keep it as green as possible. In the North, hay made from Rye-grass and Red Clover is generally dark in colour and wiry in quality, but as it suits their purpose they will not change, for in this they are incorrigible, being wedded to the windlestraw system of over-drying. Of the countless millions of bricks that are made during eight or nine months of the year all over the country, most of them are air-dried, for the sun is only second to the wind in air-drying, and when once bricks get well stacked they seldom fail to get dried sufficiently. There is a great difference between the deceptive bulk of hay when scattered all over a field and the real bulk of the same article when trussed for market, yet the 1 ton upon a cart or the 2 tons upon a waggon are often all that a whole acre of very good land has produced; it is, therefore, clear that hay, shaken out, deceives us as to its bulk, but hay compressed and weighed deceives no one. The simplest way of compressing green hay is to twist it into ropes, and then wind the ropes on a wooden core, or centre piece, so as to form hollow cylinders, just like a ropemaker's coil of hempen rope. Contrary to all the ordinary rules of haymaking, this spinning is best done when the hay is damp. My experiments were made with a bobbin or centre piece of 6 inches in diameter, and the length of the coil, or cylinder about 18 inches, and the size of the hay-rope would be about 1 to 1½ inch in diameter, and the two ends should be turned into the hollow centre. In making these ropes, it takes one person to turn and another to spin, and I mention this way of making samples not to complicate the experiment, just as if there were no other method of making ropes, as I am anxious that parties should be able to give the thing a fair trial during the autumn, and thus be able to judge of what can be done by compressing and air-drying. Walls should be built of the coils of hay-rope, similar to the walls in a brickfield, but thoroughly open for the wind to pass freely. It is worthy of remark, that as the ropes dry they open more and more to admit air, as if they anticipated the farmer's views.

I have lived long enough to see several reports of mine carried out, and not only become a general practice but actually a system: for example, the dry earth closet was observed by me in good working order in 1832, and little did my relative think that his ingenuity would get so largely developed; and however contemptible the thing may appear in the beginning to see grass made into hay-bands by hand, there is no other way of grappling with the weather but by setting one system against the other, so that the wind may undo what the rain has done; and as the bulk is so much reduced, many things can be done with it when coiled in ropes that could not be attempted with loose hay.

Let no one imagine that I ever thought of this system superseding the "making of your hay whilst the sun shines," but only reckon upon it as a valuable auxiliary, for a July sun and a withering wind combined is, and ever will be, the "heyday" of our haymaking; but as the rain usually comes vertically, whilst the wind blows horizontally, there is room for an ingenious hitch, as the sailor would express it, to "haul in" the wind, and at the same time try to give the rain "a wide berth." If the chaff had not been lighter than the corn, it might have been troublesome to separate them, but as it is, the wind is "hauled in," and separates the corn from the chaff most effectually. It has often been remarked that there is more hay damaged in the stackyard than ever there is in the field, and if this system will help the field practice, it cannot fail to be of service, for I claim the credit of being the first to set the hay crop up, or, in other words, to take it off the ground.

Whoever has seen a pile of cannon balls can easily form an opinion of the open nature of a pile or stack of cylinders, for they do not lie dead flat, like bricks, but resemble a honeycomb, save only that the section of the bobbin is a circle, whereas that of the honeycomb is always six-sided; but a honeycomb set on edge will give an excellent idea of the windrows of this system of haymaking.

Could we only predict the weather, what a saving it would be to the farmer in his haymaking; for we see the scientific and industrious man, with the barometer before his face, and the direction of the wind, the moon's age, and the like all taken into account, often lose his hay crop; whilst the slovenly cultivator, believing in blind chance, bides his time, and will often get a good hay harvest about the time that the corn is ripe, and though rather untimely, yet has it at very little expense. Surely those who are clever with the unseen world, who can take a walk with a clairvoyant over half a continent in a few minutes, could, if they liked to turn their attention to such simple subjects as haymaking, tell us when to cut our grass with a fair prospect of getting it saved, but—and there is always a reservation clause, and three days' grace given in prognosticating the weather, such as "Snow may be expected about December 25, the day before or the day after." I think it was O'Connell that said of fortune-telling, that as Lucifer was the "Father of Lies," no dependence could be placed upon what he might say or swear; still the weather must be predicted in one way or the other before the farmer can set his men to work, and it is just this necessity that creates the demand for quacks, who pretend to consult the stars, and print impudent falsehoods in the weather column of the penny almanack, as if it were founded on facts. Hay must be dried by farmers, and with such means as may lie in a farmer's power and at his disposal; and when hay has been spun, coiled, and windrowed, if need be, it could be kiln-dried, and the spinning process could be done in any barn or shed whilst the rain was falling on the hay in the field. Only let a trial be made. After the grass has lain long enough to get flaccid, make a rope of it, and hang it up to dry in the wind, and out of the rain, and it will then speak more eloquently than words can as to the powers of air-drying. When clothes cannot be put out-of-doors to dry on the clothes-lines during a wet washing day, they can be dried without fire in a garret, and manufacturers do a large business in the drying of cloth by means of air only.

When hay lies on the ground in wet weather, after a few days its own weight sinks it into the stubble, and the after-grass rises rapidly through it, and thus the wind is prevented from touching the bulk of it; for whatever force it may have on trees, wet bricks, and the like above ground, it can have little effect on anything hugging the ground in this manner. Those who have little faith in air-drying should watch the raindrops left on the window-pane after a shower, and see how soon the wind will carry them away. I have mooted this subject more than once, and it may have to be reiterated for years to come, before any effective measures may be taken with it; but I am convinced of its efficiency when tried in good earnest. But it is not every farmer that can make a good rope of either hay or straw, and you seldom see a good tool for making one. I have seen some five or six different kinds of twisters, and all of them were bad, so that it was simply a waste of time to use them. I saw a thatcher cleverly stick a large wooden reel into a haystack and commence spinning a straw-rope, making the wooden reel do the work of a boy twisting. This was all very well as a curiosity, but such a person would hardly earn *6d.* a day at this kind of work; and I can easily imagine the remarks that would be made by men of that school on making hay-bands.

When the "ancient mariner" gets on deck in the morning his first idea is to consult the prime mover, and watch how and from whence the wind blows, for although he has no power over the mountain wave beneath, neither can he battle successfully with the storm overhead, yet he can shorten sail and take in every stitch of canvass, and show only bare poles to the fearful force that would otherwise engulph him. The haymaker has equally to battle with the weather, for as long as the grass field is open to the sky so long will there be danger to be apprehended; but with no crop is there less danger than with meadow grass, with this exception, that when it has to be made into hay it requires what Burns styled a "lowan drouth." But it would not be believed, without calculation, how much the farmer has shortened sail by twisting his hay, for the surface exposed to rain when the cylinders are piled in windrows, and roofed with a wisp of straw, will be so small that it will be to him a hay-barn, where his fodder will be as safe as if it were under thatch and rope in the stack. *Alex. Forsyth*, 9, *Islington Square, Salford*, *Aug.* 26.

THAER ON TILLAGE.

SIXTY years ago the chemical changes produced by tillage were unknown; but the results of tillage were as well understood as at the present day. The conjectures of such a man as Thaer are exceedingly interesting, and if they add nothing to our actual knowledge at the present day, they show in what spirit and with how much caution an able man pursued his theories, and put them to the test of practical experience.

A more ingenious explanation of the *rationale* of tillage could not have been given at a time when the chemistry of the soil was unknown. The attempt to unravel the mystery of hidden causes, even when the knowledge which alone can secure success is imperfect, has led to the highest achievements; and even agriculture may gain from it. The most ancient of arts may justly be proud of resting its practice and success on the experience of all time; but even ancient practice may be improved when its foundation has been investigated and explained. The first steps towards knowledge are always taken by superior minds. Any indifference, therefore, to the labours of men of science, and too implicit a reliance on routine, would deprive us of the fruits of that patient and ceaseless inquiry which is the source of all improvement.

The following remarkable speculations from Thaer's "Principles of Agriculture" (1810), exhibit the keen insight of a man of genius. He fairly picked the lock for which chemists have since found a key. It recalls the wonderful foresight of Copernicus, who declared the revolutions of the heavenly bodies long before the discovery of the law of gravitation:—

"The more a soil is pulverised the more equally will it be penetrated by the roots of plants growing on it; the more hair-like and fibrous roots will these plants put forth, and the more will the ramifications of these roots be extended, so that thus all the nutritious particles contained in the soil are brought into contact with one or other of the suckers put forth by the roots of the plants." Jethro Tull must have been in error in attributing the fertility of a field to its pulverisation, "because, though an exhausted field may be made to produce grain by this means, that is only because the nutritive juices and particles which the soil contained are thus brought within the reach of the roots of plants, and not because this operation is able to create one particle of nutrition."

"Jethro Tull imagined that he could altogether dispense with manure, and replace it by the application of frequently repeated tillage applied to the crops, sown in rows, and by the complete division of the particles of the soil produced by that means. The plan at first turned out favourable for himself and his followers, for they had a fertile soil to work upon, which had for a long time previously been plentifully supplied with manure; in fact, by repeated tillage, and the consequent exposure of the soil to the action of the air, all the nutritive particles contained in it were converted into extractive matter fit for the food of plants, and thus brought into the service of the roots and their fibres. But this effect could only last a few years; and if this system of drawing upon the riches of the soil were closely followed, it would eventually render it so poor, that plentiful and repeated manurings would scarcely restore it to fertility.

"There certainly are some kinds of land naturally so rich in themselves, and so little impoverished by cultivation that they do not require manure; but these are rarely met with, and form exceptions to the general rule. It frequently happens that the high degree of fertility possessed by a particular field is entirely owing to its having been used as a meadow and grazing ground, and this is often wrongly attributed to the special nature of the soil."

These conclusions, confirmed as they are by practice, and explained by science, show the observant and thoughtful character of Thaer's mind, which was not misled even by the mistaken theories on the nutrition of plants which were then held by the learned. The absence of knowledge on the chemical constitution of soils is shown by the following quotation:—

"With regard to that portion of the earth which cannot be decomposed, and which resists the action of fire, the experiments made by De Saussure and Schrœder tend to prove that it has little to do with the positive act of vegetation, and only contribute to it by receiving the roots of the plants and preserving their nutritive matter, but is itself incapable of affording them sufficient nourishment for their support." "But as the plants derive the substance necessary for their nourishment from the humus, or decomposing animal and vegetable matter, it of course follows that this matter must be diminished, and in course of time exhausted, by the vegetation of plants in the soil; and the rapidity and degree of this diminution and exhaustion will be in proportion to the nutrition which they contain, supposing, however, that they are gathered and taken off the ground.

"Although Nature furnishes a number of substances which tend to quicken vegetation either by augmenting the vital principle, or by assisting in the decomposition of the mould, it is only the mould or humus (finely divided organic matter) or the vegeto-animal manures, which supply to plants the most essential particles, and those most necessary for their nourishment. I say their most essential particles, because they could likewise derive some nourishment from the decomposition of water as well as from the gaseous substances contained in the air.

"The exhaustion or impoverishment, occasioned by crops of grain, may be repaired in three ways. 1st, by manure; 2dly, by the conversion of the fields into pasture grounds. The putrefaction of the herbage which grows spontaneously, of the worms and insects that lodge in it, and the excrements of the cattle which pasture on it, communicate to the soil a nutritive power, which is greater or less in proportion to the state of the land when it was left to Nature, to the abundance and vigour of the vegetation, and to the quantity of excrements voided by the cattle. 3dly, by a dead summer fallow, attended with proper cultivation; by means of which the soil will not only be cleaned and pulverised, but will likewise receive positive nutrition, as well from its different parts being successively submitted to the fertilising influence of the gases contained in the atmospheric air, as from the putrefaction of the plants and roots, buried in it by the operation of ploughing, being hastened and expedited. The more vigorous and better the soil the more efficacious does the fallow become; and in proportion as it has been complete, and the soil has been thoroughly cleaned, pulverised, and aerated, and the nutritive particles which it contained brought into action, will the subsequent crops be abundant. It is, however, a fact, that in this manner a greater degree of exhaustion is subsequently created."

"There is no doubt that the fallow absorbs or attracts the fertilising properties of the atmosphere, and that the better the condition of the soil the greater is the quantity of nutritive particles thus absorbed."

"Others endeavour to obtain the same end by means of trenching with the spade, acting on the belief that the under layer of the soil acquires additional fertility while it lies buried and inactive, and that when brought to the surface it will bear abundant crops; and they fancy that by changing the layer of the earth every year, they shall ensure good crops, without being obliged to replenish the land with nutritive matter."

"It certainly does occasionally happen that on some soils where the layer which is turned up and brought to the surface is composed of a mixture of substances which contain combinations of oxygen and hydrogen susceptible of decomposition, this system appears to be successful for a time; but it will not endure for any length of cultivation, for after having produced a few crops without being manured the land becomes so poor as to be incapable of affording the smallest nourishment to plants. Moisture does not penetrate into argillaceous close or tenacious soils. When a clod of this nature remains unbroken in the soil, and becomes dry, it preserves the dryness in the centre during the whole summer. But the more the particles of the soil are separated from one another, and the more deeply the land is turned up, the more easily does the moisture penetrate into the interstices; in fact, the deeper the ploughing is, the more easily does the land absorb and retain humidity. When land has been thus prepared, the water does not flow back to the surface so soon, nor is it so easily dried up and evaporated in dry weather, but is communicated to the surface in proper proportions. These observations will be found to be everywhere confirmed by experience; and it has invariably been noticed that land which has been deeply and carefully turned over and stirred up does not soon become hardened on the surface, neither does it suffer so much as other land from drought. Every gardener who has dug up any portion of his land must acknowledge the truth of this observation. Soils which have been ploughed in the autumn resist the drought of spring in an almost incredible manner; in fact, they preserve a fair degree of humidity at the depth of an inch below their surface, while others are parched to a very great depth. It is not, therefore, literally true that ploughing dries land; such an effect can only be produced when the ploughings are deep and frequent, and always performed in dry weather. It has been observed that a slight ploughing, which only moves the surface of the soil, tends rather to preserve than to dissipate the moisture; and consequently, the insensible absorption of moisture by the soil from the air is greater than the evaporation. The humidity which is enclosed in the interstices of the soil, and which amasses there in large quantities when the land is fallowed before winter, causes such soils to become light and friable; and they divide easily, provided that we wait until they are dry. This is a natural consequence of the evaporation of that water, the elasticity of which had separated the particles of the soil by introducing itself between them."

"In the neighbourhood of large towns, where manure can be obtained at a low price, and in countries where, on account of the great extent of pasture lands, a large number of cattle is kept, little labour is bestowed on the ground; it is never suffered to lie fallow; the proper rotation of crops is not observed; the fields are sown with grain every year, and frequently with the same kind of plants. In those places, on the other hand, where, from the want of fodder, only a small quantity of dung can be obtained, the farmers seek to improve their land by constant ploughing and cultivation, and particularly by allowing it to lie fallow, and either by converting it into pasture ground or leaving it perfectly inactive. But the maximum produce can only be obtained when the soil, the manure, the labour, and the kind of grain, are in their relative proportions to each other."

"And if we deduct from this sum the value of the impoverishment occasioned by the crops produced in the course of the rotation, the balance which remains will indicate the natural fertility of the soil at the close of the succession or rotation, or that number of degrees with which the ensuing course will commence. There can be no doubt that there is a certain regularity and proportion existing in the exhaustion occasioned by the crops. After a fine crop of autumn corn, the spring crop generally proves scanty; and in the triennial rotation, with fallowing the autumnal crop in the second year, after a remarkably good crop of spring corn, will not be found to answer so well. A succession of abundant crops having been favoured by weather and temperature, impoverish the soil very considerably, while in bad seasons a larger quantity of nutritive matter is left in the soil."

"We are led to believe that a crop of Wheat will impoverish a fertile, and not too cold a soil, 40 degrees, while a crop of Barley will only exhaust 30 degrees, and a crop of spring grain 25 degrees."

This is an excellent account of the theory and results of fallowing. Notwithstanding the defective knowledge of the real food of plants, the practical conclusions with regard to the exhaustion of soils are proved by undoubted facts. No one will maintain that soils are inexhaustible who has seen that over the greater part of Europe they are, in fact, almost exhausted. The average yield of Wheat, after a bare fallow, is, in the corn districts of France, where little is restored to the land, about 14 bush. per acre. In all corn-exporting countries, where a small population does not admit of cattle feeding, and returning to the soil the constituents removed from it in the crop, the same result of comparative exhaustion is reached on the richest soils, after some years of cropping. In this meat-producing and corn-importing country the land ought to become richer, and would do so if it were not for the waste of human excreta; we could, however, point out many instances of the rapid exhaustion of land when cropped for a few years without a restitution of the plant food removed from it.

Home Correspondence.

The Land Question.—Some people who write about the land question, in the *Agricultural Gazette* and elsewhere, appear to me to jumble up three or four things (as transfer of land, tenant-right, game, and primogeniture), which have about as much to do with one another as the moon has to do with the statutes at large; and perhaps this may apply in some degree to Mr. Arnold's pamphlet, but the greater part of what he says is undoubtedly true, and it appears to me, and always has done, that such measures as the abolition of entails and the registration of titles are needed by the landlords far more than by the tenants. I am a landlord in a part of Yorkshire where leases are not the custom, and my opinion must be understood as referring to what I am familiar with; and I am convinced that the land may be perfectly well cultivated, and all the people connected with it may be perfectly comfortable and prosperous, under the present system, with the exception of the ruinous and destructive practice of entailing property, so that the person who ought to be the owner of it has no power to do anything that the owner of an estate ought to do for it. One would naturally suppose (if any one could think on the subject in an unprejudiced manner) that it ought to be a great advantage in the cultivation of land to have one person who should have a permanent interest in it, and whose duty it should be to do everything for it that would permanently improve it, and another person who should understand the management of farming, and whose capital should be invested in stock and crops; and that neither of these should have the manual labour to do, which, of course, would in most cases make scientific improvements or scientific farming impossible. It is clearly the landlord's business to do everything on an estate which improves the land in value permanently. His interest in the land is merely the sum total of the money which has already been invested in such improvements—at least more than nineteen-twentieths of it is this—exactly in the same way that the interest which a shopkeeper has in a bale of calico which belongs to him represents the value of the labour, &c., which has been expended upon converting the raw cotton into calico; and there is no reason whatever why one should be treated in any way differently from the other. In Yorkshire we have already a registry of deeds, and I have long thought that we ought to obtain an Act of Parliament to make it also a registry of titles, so that any one who had had undisputed possession of his property for (say) 30 years, and upon giving due notice of intention so to do, might register his title much as is suggested by Mr. Arnold. What are the supposed advantages of dividing landed property amongst a number of sons I do not quite see. A property ought not to be so large that one man could not look after it, and do all the works necessary for its permanent improvement; but with this limitation, I am utterly unable to see why it should be divided amongst a number of sons any more than the business of a banker, or of a watchmaker, or of a blacksmith. It is a more common thing than it used to be for a landowner to recognise the fact that the management of landed property is a distinct business, which it is his duty to learn and understand; and if the iniquitous system of entails were abolished, so that landowners were in a position (like other people) to make a right use of their property, I have no doubt that a great many more would do this. One word as to Mr. Arnold's sentiments respecting cottages. I have, as you know, spent a good deal of time in promoting the improvement of cottages, and I consider it one principal "permanent" improvement of landed property which a landlord ought to provide, but bad cottages are certainly not the chief cause of the immorality of the labouring class: bad public-houses have much more to do with it, and the utter indifference of employers as to the character of those whom they employ has also much more to do with. I have been for a good many years chairman of quarter sessions, and for a good many other years chairman of a board of guardians, and I am certain that what I say is true, in this part of the country at least. *C. W. Strickland.*

The Common Nettle.—In an article, headed "Uncultivated Plants," in the *Agricultural Gazette* of September 9, mention is made of some uses to which the Nettle may be put; but the author of the said article does not seem to be aware of the medicinal virtues of this neglected plant, or, as it is generally termed, weed. For years I have used the Nettle, with other herbs, in making broth, and also mixed with vegetables for ordinary table use; and I do not think that any herb growing has better effect in purifying the blood. In the heat of summer, a most cooling, refreshing, and healthful beverage may be made from it, by simply boiling the Nettles in water; strain off the liquid, add to it a little yeast, and, after it shows signs of fermentation, and has become cool, bottle, and tightly cork. It should be put into small bottles, as it possesses almost the effervescing properties of soda-water. If Nettles were more frequently used in the spring and autumn, I fancy we should have much less need of the services of doctors. *J. R. R.*

The Crops of 1871.—The threshing-machine by this time has very generally revealed the probable yield of Wheat for 1871. I am one of the few who took a sanguine view of it, and so far as I am individually concerned, the result has favoured my expectations; or, as I gave an opinion of a district, the estimate I found has been verified. I have threshed about 30 acres, the yield of which is about 6 qr. an acre, and sold at an average of 59*s.* a quarter. I have also learned from inquiries, that over the district which I represent the yield is an average one, with more than an average amount of straw. With these facts before me, I do not understand the great deficiency which such authorities as Messrs. Lawes and Sanderson attribute to the crop of the present year. A writer in the *Daily Telegraph*, in his review of Mr. Lawes' letter, makes the following remarks:—"The area under Wheat is 3,773,663 acres; and thus it would need an average of much more than 5 qr. to the acre to supply our wants. Such a yield, of course, is beyond what the fertility of English earth will supply." I have a higher opinion of the capabilities of the soil of England than the writer I have just quoted, for Mr. Mechi has told us over and over again, that on his farm, which is by no means conspicuous for its natural advantages, he grows from 6 to 7 qr. of Wheat an acre, and of good quality. Mr. Mechi is no conjurer, and what he does is free to all to go and do likewise. He has efficient drainage with deep cultivation, and those operations have secured to him the use of a natural force, which is as ceaseless in its action as it is beneficial in its results. I also anticipate that the day is not far distant when public men will hesitate to say that the corn growing lands of England, under proper management, are not equal to the growth of 5 qr. of Wheat an acre. *P. Mitchell, Rainham, Essex, Sept.* 8.

Farm Agreements and Land Improvements.—At p. 1116, "H. H. O.," says, "we dare not farm high under the present system of landholding in England. Many farmers would be willing to lay out their money in steam tackle and manures if they were certain that their outlay in improving their farms would still remain their own property." Now, a single grain of experience is worth an ounce of theory, and this remark of his comes desperately contrary to what happened to myself only yesterday. One of my tenants occupies 485 acres of land, for which he pays me the handsome rent of £150. Upon this farm there are about 250 acres in a state of Nature, a large part of which needs draining and fencing and liming to bring it into cultivation. Now, my tenant holds (like every one else in this quarter) on a yearly tenancy, and it is not to be expected that such a man would lay out money on his landlord's land. Knowing this, and knowing also that I have myself the means of laying out money, I made him a proposal to enclose and drain and lime for him each year for some years to come a field of from 25 to 35 acres, according as the ground suited,—the whole expense of draining and fencing and liming to be paid for by me, and in return I was to receive, as an increase to the rent, so much per rod for drains actually put in, and so much per rod for fencing actually put up, and so much per ton for lime actually drawn and laid down upon the land. The price I asked for draining and for fencing he was quite willing to pay, therefore I need not go into them, but what I asked for lime he would not listen to at all. Now let us go into figures. Lime costs 17*s.* per ton laid down on the land, that is to say 10*s.* at the railway station and 7*s.* for cartage, and I asked 3*s.* rise of rent for each ton of lime which I laid down upon the land, and I also offered, if he would cart the lime, to pay him the cartage, 7*s.* per ton; but he declined the offer, and proposed that he himself should buy the lime and cart it and lay it down on the land as manure, at the rate of 3 tons per acre. I pointed out to him that if he did so he would have spent 51*s.* per acre on my land, and that he had no security whatever that he might not be turned out of the farm or have his rent raised long before he had repaid himself the outlay, and I also showed that it would be nearly eight years before the charge of 3*s.* per annum would repay me my first outlay of 17*s.* and 5 per cent. interest thereon. I also asked him this question,—Suppose you spend this money on the farm, it will take you nearly eight years to get back your money and 5 per cent. interest at the rate of 3*s.* per annum; well, do you think that if you go on spending money in that way that your rent will not be raised long before eight years pass over your head? Now this man is not the only one of that opinion. The tenant of the adjoining farm had a similar proposal made to him about 10 days ago, and his reply was just the same,—"He would rather draw the lime himself at his own cost." Can "H. H. O." explain why these men should refuse to have their land improved for them, and prefer to pay the expense themselves? To me it is a mystery, but "H. H. O.," being a tenant, can probably solve it. Let me observe, they all agree in thinking lime the best possible fertiliser. *G. A. H.*

New Plans Require New Conditions.—"There's nothing but alteration, now-a-days," said a farming friend of the old school. I have got one of the new hay and corn elevators (that carry up a load of hay or Barley and deposit it on the stack in a few minutes), and find that there is not room enough between the stack-frames for the horse to work it. Another finds his gateways too narrow for the great steam-cultivators and reaping-machines, and so we go on adapting ourselves to new and improved practices. I don't hear much about the new thatch-stitching machine, but should be glad to be informed if it has been a practical success. Any invention that tends to shorten hay time and harvest must be welcome for many reasons. It gives us more time for cultivating and cleaning the land, it diminishes the risk of bad weather, and it protects us in some degree from the scarcity of labour, and of too great an enhancement of its cost. The mere making of these machines absorbs a large portion of what would otherwise be, perhaps, surplus agricultural labour. Machine makers are also adapting their machines to particular laying out of the soil, such as furrows and water-furrows. There have been several improvements lately in our reapers in this respect, and also as regards the avoidance of cutting off the ears of corn. In fact they will soon, I think, if they do not already, cut laid corn better than the scythe. I find that an iron plough, minus its breast, makes the best subsoiler; and this has been admitted by those practical farmers who have seen it at work on this farm. Landowners are rejoicing at getting rid of their barns, but they will have to provide new accommodation and shelter for the costly machinery and implements of modern agriculture. Road surveyors must bid farewell to their crazy old bridges, which crumble into ruins under the ponderous traction engines. All these changes involve the employment of labour, which is nationally a great desideratum. Plenty of room between the stacks will comfort the minds of our fire insurers by diminishing the risks of conflagration. *J. J. Mechi, September.*

Sewage Irrigation.—I am sorry that Mr. Morgan's friend, "Waste Paper," should be annoyed by this controversy, but he should remember, first, that Mr. Morgan began it; and, secondly, that the dispollution of rivers by the utilisation of sewage is, on the authority of Lord Derby, one of the most important questions of the day. As regards Mr. Morgan's decimals and his broad beds, I will merely say that I am willing to refer the points in dispute to the arbitration of Mr. Bailey Denton, of Mr. Bramwell, of either of the partners in the firm of Messrs. Eastons, Amos & Anderson, of Professor Fleming Jenkin, the President at Edinburgh of Section G (Mechanics) of the British Association, or to that of any professor of mathematics, or engineering, or natural philosophy, in any first-class college. This is not an "empty challenge," but a very definite one. Will Mr. Morgan straightforwardly say whether he accepts or declines it? *W. Hope, Parsloes, Sept.* 10. [We quite agreed with Mr. Hope that decimals are absurdly out of place in an agricultural discussion. Even "the rule of three" under such circumstances comes to grief—simply because in agriculture there are no things of "the same denomination." We fear professors of mathematics are thus out of place in an agricultural reference—the question under discussion had better be left to the plants and crops themselves for the final decision it will one day receive from them.]

The Finger-and-Toe in Turnips.—The prevalence of finger-and-toe amongst the Swedish Turnip crops in this locality is seen in many fields this year by the plants flagging in hot sunny days. It cannot be too generally known to farmers that a good liming to the land, subject to grubbing, is a certain cure to these pests. Many years ago, the late Duke of Portland tried the effects of a good dressing of the caustic magnesian lime of the district on a large field of light, sandy land, very subject to finger-and-toe when in Turnips. One-half of the field was tried with the lime and the other without, and the portion limed and sown with Turnips that year was quite free from finger-and-toe, whilst the other part of the field was attacked as usual. In the rotation of crops, and when the limed portion of the field was in Turnips again, the same immunity from finger-and-toe marked the crop, and this I believe continues up to this time. To show the caustic effects of this magnesian lime on vegetation, no grass or weeds would grow for years on the places on the head-rigs where it had laid in heaps before being distributed. *William Tillery.*

Societies.

BIRMINGHAM CATTLE SHOW.

WE reprint, from the *Midland Counties Herald*, the greater portion of its article on the prize list of this forthcoming show.

The prize lists for the next of the great annual exhibitions, at Bingley Hall—the 23d of the series—which commences on November 25, are in circulation, and will, we have no doubt, be regarded with satisfaction by every wellwisher of these important undertakings. With respect to the Herefords, there are, as heretofore, classes with prizes of £15, £10, and £5 respectively for oxen or steers above three years and three mouths old, for steers not exceeding that age, and for cows and heifers, but these are now supplemented by a class for Hereford steers not exceeding two years and six months old, with one prize of £10, given by the Mayor of Birmingham (Mr. G. B. Lloyd), and one for heifers of the same breed not exceeding two years and six months old, to the best of which a prize of £10, given by Mr. J. H. Dawes, will be awarded. Prizes of £15, £10, and £5, are again appropriated to Shorthorn oxen or steers above three years and three months old, to steers not exceeding that age, and to cows and heifers; while a class is opened, and three prizes of £15, £10, and £5, offered by Mr. G. F. Muntz, for Shorthorn steers not exceeding four years old, bred as well as fed by the exhibitors, who must be tenant-farmers—that is to say, persons renting 100 acres of land or upwards, not possessing more than 50 acres of their own land, and not engaged in any other business. There is likewise a separate class, with one prize of £10, given by the Mayor of Birmingham, for Shorthorn steers not exceeding two years and six months old. There are prizes of £15, £10, and £5, for Devon oxen or steers exceeding three years and three months old, for Devon steers not exceeding that age, for cows, and for heifers. There is, moreover, a class with one prize of £10, for Devon steers not exceeding two years and six months old; and another for Devon heifers not exceeding two years and six months old, the best of which will receive from Mr. Wm. Lort a prize of £10. No alteration is made as to the Longhorns, premiums of £10 and £5 being offered for oxen or steers of any age, and the same amount for cows or heifers. Scotch oxen or steers are still divided into "Polled" and "West Highland;" the former having two prizes of £15 and £10 set down for them, and the latter three of £15, £10, and £5; but Scotch cows and heifers will compete, without distinction, for a 1st prize of £15 and a 2d of £5. There is only one division for representatives of the Welsh principality, in which the best ox or steer of any age will receive a prize of £10. Cows or heifers will, however, be eligible to try conclusions with other pure breeds and cross-bred animals; prizes of £15, £10, and £5 being allotted to oxen or steers of any age, and the same sums to cows and heifers of this description. There are, moreover, two extra classes for animals the owners of which are unable to comply with the conditions as to breeders' certificates, or requirements imposed upon the other candidates, £5 being available for the best ox or steer, and the like for the best cow or heifer. Besides the foregoing, the judges will have at their disposal a silver cup or other suitable piece of ornamental plate of the value of 20 gs., given by Earl Beauchamp, for the best ox or steer, bred as well as fed by the exhibitor; a silver cup or other suitable piece of ornamental plate of the value of 25 gs., given by the inn and hotel keepers of Birmingham, for the best animal in the cattle classes; 10 gs., given by Mr. C. Ratcliff, for the best Scot; four extra prizes of £20 each, provided by the Society, for the best Hereford, the best Shorthorn, the best Devon, and the best Scot, in any of the classes restricted to those breeds; and two gold medals or articles of plate, of the value of £20 each, also given by the Society—one for the best ox or steer of any breed or age, and the other for the best cow or heifer of any breed or age in the exhibition.

With respect to sheep, some alterations have to be noted. Prizes of £15, £10, and £5, are offered in each of the six classes for pens of three fat Leicester, Lincoln, Cotswold, Southdown, Shropshire, and Oxfordshire wethers, not exceeding 23 months old. There are, further, prizes of £15 and £5 for pens of three fat wethers, not exceeding 23 months old, of other pure breeds; and the like for cross-bred wethers of the same age. The linen and woollen drapers of Birmingham renew the offer of four extra prizes of £10 each for the best pen of Leicester, Lincoln, Cotswold, or Oxfordshire wethers; Mr. Bromley Davenport, M.P., will give £10 10*s*. for the best pen of Southdown wethers; and Mr. Newdegate, M.P., a silver cup or other article of plate, value £10 10*s*., for the best pen of Shropshire wethers. In lieu of their ten-guinea cup for the best pen of two-year Shropshire wethers, Messrs. Mapplebeck & Lowe will this year substitute two £5 cups, or other article of plate, for the best Southdown and the best Shropshire wether, exceeding 23, but not exceeding 35 months old. There are seven classes for fat Leicester, Lincoln, Cotswold, Southdown, Shropshire, Oxfordshire, and other pure-bred ewes, which have produced one or more lambs, with a silver medal, value £2 2*s*., for the best specimen of each.

The silver cups and money premiums, for both fat and breeding pigs, and the arrangements concerning them, remain intact.

As regards the show of seeds:—With the exception that there are now only two classes for Peas—"white" and "blue or grey"—instead of "white," "blue," and "grey," the regulations concerning them are the same as in 1870; but Mr. Fred. Lythall, of Spitall Farm, Banbury, will give a five-guinea silver cup for the winner of the greatest number of prizes in this department. Should an equality of numbers occur, the judges will base their final decision upon the relative merits of the samples.

The roots, which have for some years formed a very useful and interesting section of these meetings, receive due consideration. With unabated liberality, Messrs. Proctor & Ryland, and Messrs. Sutton & Sons, of Reading, give silver cups, or other articles of plate, to the value of 5 gs., for collections—the former for the best six long Mangels, six Globe Mangels, and six Swedes; and the last named firm for the best six long red Mangels, six Globe or Intermediate Mangels, six Purple-top Swedes, six green Kohl Rabi, and six green, white, or yellow Turnips. Messrs. James Carter & Co., High Holborn, London, offer a 5 gs. silver cup for the best six Purple-top Swedes, six green Kohl Rabi, six long red Mangels, six yellow Globe Mangels, six yellow Intermediate Mangels, and six white-fleshed Turnips. There are, as previously, classes for Kohl Rabi, long Mangels, Globe or Intermediate Mangels, Swedes of any variety, Turnips and Carrots of any variety, with prizes of £2 and £1 each; the first premiums being augmented in the case of the Mangels and Swedes, by £2 2*s*. from Messrs. Proctor & Ryland. To Bovinia or cattle-feeding Potatos (12 specimens), £2 and £1, will be awarded; and the winner of the 1st prize will be entitled to a handsome silver-gilt epergne, value £8, given by Mrs. Paterson, widow of Mr. Wm. Paterson, of Dundee, the raiser of this new esculent. The prize for the best three specimens of Ox Cabbage is £2, and for the 2d best £1. For Potatos there are no fewer than 17 classes; prizes of £1 and 10*s*. being offered respectively for Ashleaf Kidney, Royal Ashleaf Kidney, Gloucestershire Kidney, King of Potatos, Milky White, Flukes, Dalmahoys, White Regents, Red Regents, Victorias, and Red-skinned Flourball, 12 of each kind. These classes are supplemented by four more for any other named sorts of early kidney, second early varieties, white late or winter varieties, and red or blue late varieties: Mr. J. Matthews will give £5—£3 for the best, and £2 for the 2d best six dishes, comprising two of early kidney, two of second early, and two of late or winter varieties; and Messrs. Wheeler & Son, Gloucester, £1 5*s*. and 15*s*., for the two best dishes of second earlies.

The principal points to be mentioned in connection with the poultry are that 10-guinea silver cups, or other articles of plate, are offered for the best Dorking cock, for the best Cochin China cock, and for the best Bramah cock; and for the best black or brown breasted game cock. £5 silver cups for the best Spanish cock, for the best pencilled Hamburgh cock, for the best spangled Hamburgh cock, for the best black or spangled Polish cock, for the best game cock among the duckwinged, black, and brassy-winged, or white and pile. It is expressly stated that where a bird takes one of these pieces of plate, the money prizes specified as the first for that particular class will be withheld. An extra prize of £5 is offered by Mr. H. Lloyd, jun., for the best buff Cochin cock of the present year, bred by the exhibitor, who must reside within 20 miles of Birmingham. The winner of the cup for the best black or brown-breasted game cock will receive an extra prize of £3 3*s*. from Messrs. M. Billing, Son & Co.; and the winner of the other cup, for game cocks, a silver medal, value £3 3*s*., from Mr. Ottley. Mr. J. Watts will give, in addition to any other prize, £3 3*s*. for the best pair of Hamburgh hens or pullets; and a few amateurs an extra prize of £4 4*s*. for the best pen of black East Indian ducks. The number of class prizes has been slightly curtailed by the omission of the following:—The 4th for partridge Cochin cockerels, the 4th for silver-pencilled Hamburgh cocks, the 5th and 6th for golden-spangled Hamburgh cocks, the 5th and 6th for silver-spangled Hamburgh cocks, the 5th for hens or pullets of the same variety, the 6th for black-breasted red game cockerels, the 6th for hens or pullets of the same variety, the 6th for brown and other red cockerels, and the 5th for duckwing or other grey and blue cockerels.

The entries in all departments will close on Saturday, October 28, and intending competitors should make application to Mr. Lythall, the secretary, for copies of the lists and regulations.

MANCHESTER AND LIVERPOOL.

THE following is the Prize List of the very successful show held at Liverpool last week—to which we referred in our last publication:—

SHORTHORNS.

(Open for competition to the United Kingdom.)

Bulls, above 2 years old.—1st, H. Thompson, Penrith, Cumberland; 2d, W. Linton, Sheriff Hutton, York; 3d, Marquis of Exeter, Stamford.

Bulls, above 1 but under 2 years old.—1st, Rev. W. Sneyd, Keele Hall, Staffordshire; 2d, T. Lace, Grenaby, Isle of Man; 3d, R. Parker, Burnley.

Bull Calf, above 6 but under 12 months old.—1st, J. Knowles, Wetherby; 2d, T. Statter, jun., Stand Hall, Manchester; 3d, Rev. W. Sneyd.

Cows, above 3 years old, in milk or in calf.—1st, J. Outhwaite, Catterick, Yorkshire; 2d, J. W. Kirkham, Cadeby Hall, Grimsby; 3d, A. Dugdale, Burnley.

Heifer, above 2 but under 3 years old.—1st and 2d, F. J. S. Foljambe, M.P., Osberton Hall, Worksop; 3d, Earl of Harrington, Elvaston Castle.

Heifer, above 1 but under 2 years old.—1st, E. J. Smith, Islanmore, Limerick; 2d and 3d, Rev. W. Sneyd.

Heifer Calf, above 6 but under 12 months old.—1st, J. Farrer, Burnley, Lancashire; 2d, E. H. Cheney, Gaddesby Hall, Leicester; 3d, Earl of Harrington.

OTHER BREEDS.

Ayrshire Cow or Heifer, above 2 years old, in milk or in calf.—1st, the Earl of Crawford and Balcarres, Wigan; 2d, A. Woods, Sefton, Liverpool; 3d, T. Statter, jun.

Welsh Cow or Heifer, above 2 years old, in milk or in calf.—1st, F. W. Earle, Huyton; 2d and 3d, T. Statter, jun.

Kerry Cow or Heifer, above 2 years old, in milk or in calf.—1st, Rev. J. C. Macdona, Hilbre House; 2d, J. G. Morris, Allerton; 3d, H. Inman, Stretford, Manchester.

French or Channel Island Cow or Heifer, above 2 years old, in milk or calf.—1st, G. Maples, jun., Wavertree, Liverpool; 2d and 3d, J. P. Duff, Lydiate House.

French or Channel Islands Bull, of any age.—1st, W. Brothers, Lawton, Cheshire; 2d, H. S. Woodcock, Wigan.

Kerry Bull.—1st, Rev. J. C. Macdona; 2d, R. Gladstone, jun.

Welsh Bull, of any age.—T. Statter, jun.

Ayrshire Bull, of any age.—1st, J. Tweddle; 2d, R. Kerr.

Best Bull, of any breed, belonging to a landlord resident in the district, that was allowed to serve the cows of his tenants gratis.—The Society's Silver Medal awarded to the Earl of Crawford and Balcarres.

(Competition limited to members resident in the Society's district. Prizes for tenant-farmers only.)

Bulls, of any breed, above 2 years old.—1st, W. Tillotson; 2d, R. Barnett; 3d, J. Chetham.

Bulls, of any breed, above 1 and under 2 years old.—1st, C. W. Brierley; 2d and 3d, J. Dickinson.

Bull Calf, above 6 but under 12 months old.—1st, J. Goolden; 2d, C. W. Brierley; 3d, H. Neild.

Cow, for dairy purposes, in milk or in calf.—1st, T. Atherton; 2d, H. Neild; 3d, J. Birch.

Pairs of Cows, for dairy purposes, in milk or in calf.—1st, J. Kenwright; 2d, T. Statter, jun.; 3d, C. W. Brierley.

Pairs of Heifers, above 2 but under 3 years old.—1st, J. Dickinson; 2d, T. Statter, jun.

Single Heifer, above 2 but under 3 years old.—1st, C. W. Brierley; 2d, J. Dickinson; 3d, W. Dale.

Pairs of Heifers, above 1 but under 2 years old.—1st, C. W. Brierley; 2d, T. Statter, jun.; 3d, J. Dickinson.

Single Heifer, above 1 but under 2 years old Silver Cup.—1st, W. Birch; 2d, C. W. Brierley; 3d, H. Neild.

Pairs of Heifer Calves, of exhibitor's own rearing, under 12 months old. 1st, C. W. Brierley; 2d and 3d, J. Goolden.

HORSES.

(Open for competition to the United Kingdom.)

Stallions, thorough-bred, most suitable for getting weight-carrying hunters. 1st, J. Casson; 2d, R. C. Naylor; 3d, G. Holmes.

Stallions, for getting horses for draught purposes.—1st, W. Wynne; 2d, H. Tomlinson; 3d, A. Cook.

Stallion Colts, draught breed, foaled in 1869.—1st, not awarded; 2d, R. Ashcroft; 3d, L. A. Mawdsley.

Stallions, most suitable for getting horses for carriage or road purposes.—1st and 2d, B. Mitchell.

Mare or Gelding, for draught purposes, 4 years old and upwards.—1st, C. W. Brierley; 2d, W. Robinson; 3d, J. Wright.

Three-year-old Gelding or Filly, cart breed.—1st, T. Statter, jun.; 2d, C. W. Brierley; 3d, J. Hampson, Wigan.

Two-year-old Gelding or Filly, cart breed.—1st, T. T. Parker; 2d, J. Wright; 3d, T. Statter.

One-year-old Gelding or Filly.—1st, J. Waterworth; 2d, W. Shawe; 3d, J. Pover.

Three-year-old Gelding or Filly, half-bred.—1st, J. Rigg; 2d, W. Roberts; 3d, R. Reade.

Two-year-old Gelding or Filly, half-bred.—1st, T. Horrocks; 2d, T. M. Tattersall; 3d, W. Roberts.

One-year-old Gelding or Filly, half-bred. 1st, T. Horrocks; 2d, E. L. Wright, Wigan.

Brood Mares for breeding hunters.—1st, T. Horrocks; 2d, T. Statter, jun.; 3d, S. Kirby.

Brougham Horse, Gelding, above 4 years old.—1st, T. Percival; 2d, A. Heywood; 3d, T. Jefferson.

Hack or Roadster, Mare or Gelding, 15 hands or upwards.—1st, W. Murray; 2d, J. Schofield; 3d, H. S. Woodcock.

Cobs, Mare or Gelding, under 15 hands.—1st, F. Hollins; 2d, C. Smith; 3d, J. Williams.

SHEEP.

(Open for competition to the United Kingdom.)

LEICESTERS.

Shearling Ram.—1st and 2d, T. H. Hutchinson; 3d, J. T. Clifton.

Ram, of any age.—1st and 2d, T. H. Hutchinson; 3d, E. Riley; silver medal, G. F. Statter.

Ram Lamb.—1st, 2d, and 3d, T. H. Hutchinson.

Three Shearling Ewes.—1st and 2d, T. H. Hutchinson; 3d, E. Riley.

Three Ewes, of any age, having reared lambs this year.—1st and 2d, T. H. Hutchinson; 3d, G. F. Statter.

Three Ewe Lambs.—1st, R. Jefferson; 2d, T. H. Hutchinson.

SHROPSHIRE DOWNS.

Shearling Ram.—1st, J. Coxon; 2d, Lord Wenlock; 3d, Sarah Beach.

Ram, of any other age.—1st, W. Baker; 2d, Lord Wenlock; 3d, S. Griffiths.

Ram Lamb.—1st, T. Nock; 2d, T. Johnson; 3d, T. Nock.

Three Shearling Ewes.—1st, Sarah Beach (who also got the silver cup of £10 for the best pen of three ewes); 2d, W. Baker; 3d, Lord Wenlock.

Three Ewes, of any age, having reared lambs this year.—1st, S. Beach; 2d and 3d, W. Baker.

Three Ewe Lambs.—1st, J. H. Bradburn; 2d, S. Beach; 3d, W. Yates.

SOUTHDOWNS.

Shearling Ram.—1st and 2d, Colonel R. N. F. Kingscote; 3d, J. & A. Heasman, Angmering.

Ram, of any other age.—1st, H. S. Waller; 2d and 3d, Colonel R. N. F. Kingscote.

Three Shearling Ewes.—1st, 2d, and 3d, Colonel R. N. F. Kingscote.

Three Ewes, of any age, that have reared lambs this year.—1st and 2d, H. S. Waller.

CHEVIOTS.

Shearling Ram.—1st and 2d, R. Shortreed.

Ram, of any other age.—1st and 2d, J. Robson.

Three Shearling Ewes.—1st and 2d, R. Shortreed.

Three Ewes, of any age, having reared lambs this season.—1st and 2d, R. Shortreed.

CROSS-BRED SHEEP.

Three Shearling Ewes.—S. Davies, Eardswick Hall.

BATH AND WEST OF ENGLAND.

AT the late meeting of the Council of this Society, at the commencement of the proceedings the Earl of Cork stated that he should not be doing his duty, in the position he occupied, were he to omit alluding to the loss sustained by the Society since the Guildford meeting in the death of the late lamented Sir Thomas Acland, a man universally esteemed and respected by persons of every rank and station in life, and sincerely beloved and esteemed by his neighbours and friends. Happily they had in the present baronet a warm and zealous friend of the Society, who, they felt satisfied, would follow in the steps of his worthy father.

The business of the day was chiefly of a routine character; Colonel Luttrell being appointed one of the stewards of arrangements, and Mr. Grenfell one of the stewards of field implements.

A copy of the Society's Journal, which has just been issued to members whose subscriptions are not in arrear, was laid upon the table, and reference was made to an important article by Professor Brown on "Pleuro-Pneumonia," especially that portion of it containing a history or summary of the legislation that has taken place with reference to the disease.

Notices of Books.

The Book of the Farm. By Henry Stephens. Third edition. In great part re-written to bring it up to the present time. William Blackwood & Sons, Edinburgh and London, 1871.

This valuable work has been cut down from three, to two volumes. We find, after carefully comparing it with the edition of 1844, that this reduction of matter has not been effected without loss. The book in its younger form was certainly wearisome in some of its details, but at the same time it was a monument of the author's industry and a mine of information upon many of the most abstruse subjects connected with agriculture. The bulk of the work was in a great measure owing to the multiplicity of its woodcuts and the amusing exactness with which the most elementary processes were described. The new edition retains these peculiarities, and we still find portraits of besoms and brushes, currycombs and corn strakes, pails and plough-staves, trowels, sacks, spades, and milking-stools; but we miss the mathematical formulæ bearing upon ploughs and ploughing, the interesting dissertation on various kinds of draining, and the detailed specifications and instructions for the erection of farm buildings, which occupied so large a portion of the older editions. The impression which cannot fail to rest upon the mind after a careful comparison of the new with the old editions is, that the editor has been wearied of his task. The parts which required an industry and research in the editor equal to that of the author, have been too often suppressed, while the mere generalities of practice have been preserved. Neither can we allow that the editor has brought his book up to the present time. This is much to be regretted in a work which has enjoyed a considerable reputation, and whose faults, being for the most part those of age, might well be viewed with leniency. The progress of agriculture has, among other things, been marked by the application of steam to the cultivation of the ground, and yet something short of three pages—less room than is given to broadcast sowing by hand—is the whole space allotted to this subject. Agricultural implements have been wonderfully developed of late years, although, judging from the woodcuts in the work before us, we should hardly have suspected it. Great changes have been effected in harvest operations, and yet while seven and a-half pages are devoted to a minute description of the sickle and its uses, only two are allowed to the reaping-machine. We are still more surprised, perusing this scant allowance of information, that Bell's, Hussey's, and M'Cormick's, as they appeared in 1851, are the implements introduced to our notice. Mr. Stephens "would not use Hussey's machine in preference to M'Cormick's," a not very valuable record of experience when both implements in their original form have disappeared from the arena of competition, the original Bell's reaper being now a curiosity in South Kensington Museum, where it is placed side by side with "Rocket," one of the earliest of Stephenson's locomotives.

In the details of cultivation we learn with surprise that Turnips are often sown broadcast in England, that farmyard manure should be twice turned for Turnips, and that Wheat is usually pickled with "chamber ley" (par. 1839, vol. i.). With all due deference, we sincerely hope that Scotch farmers will avail themselves of sulphate of copper in the stead of the above liquid, as an equally effective material, besides being pleasanter to work with.

We are expressly told in the preface that the author regards this as an "educational work." It is scarcely necessary to state that in educating the young we cannot be too careful in giving them the best and newest information, and it is probably best to leave to others the task of imparting knowledge upon subjects with which we are only partially acquainted. The atmosphere, according to Mr. Stephens (par. 28, vol. i.), is an explosive mixture, containing 23.32 of oxygen, and 1.03 of hydrogen. The chemical information is of the oldest and most faulty character. The analyses are mostly from Johnstone, and the earlier papers of Way and Ogston. The editor is apparently unacquainted with the recent work of "How Crops Grow," in which new and accurate figures of the roots of plants are drawn from life. Liebig, Johnstone, Voelcker, and Way have done much for agriculture, but a teacher on agricultural chemistry should not ignore the recent works of French and German chemists. In treating of milk, for example, we should certainly have expected the researches of Bouchardat and Commaille to have occupied a prominent place.

Take, as an example of the chemistry of "The Book of the Farm," paragraph 151, upon organic and inorganic nature. "The class of substances," we are told, "entirely dissipated by combustion is called organic," according to Professor Johnstone (for this antiquated authority is still to be the mouthpiece of English agricultural chemistry), "because they generally exhibit a kind of structure visible to the naked eye—as in the pores of wood and in the fibres of hemp, or of the lean of beef—and are thus readily distinguished from inorganic matter in which no such structure is observable. But in many substances of organic origin also no structure can be observed. Thus sugar, starch, and gum are found in plants in great abundance, and yet do not present any pores or fibres." The feculæ of starch, with their hila and striæ, have long been interesting microscopic objects, and yet we are told in an educational work that they are destitute of structure. Apart from this, however, it is curious to note how the editor struggles with his subject, and quarrels with his definition of the word organic, simply because he has not thought fit to draw the distinction between organic and organised. All matter is either amorphous, crystalline, organised. Gum, acetic acid, and alcohol, as products of vegetable growth, are organic; but starch and vascular tissues, having a definite symmetry and arrangement of particles through the force of life, are organised. Instances of similar errors might be multiplied *ad infinitum.*

The entomology is faulty, chiefly in its nomenclature. Thus, what was formerly spoken of as "Cataphagus," is now "Agriotes," and what is named by Mr. Stephens "Ceuterohyncus" is properly written "Ceuthorhynchus." The "Turnip fly" cannot now be called "Altica nemorum," as this old species has been split up into nine new ones, each possessed of distinctive characters. The genus is now named Phyllotreta, and the farmer's enemy is P. undulata, a much commoner species than P. nemorum. It is ridiculous to quote the 6th volume of the Royal Agricultural Society's Journal for information on the Wheat eel, which Mr. Stephens continues to name Vibrio tritici, although our knowledge of this singular animalcule has been so seriously modified by M. Davaine, and its name has long been changed to Anguillula (or Tylenchus) tritici.

The cryptogamic botany is shaky, and yet this difficult subject is approached with no lack of confidence. Many of the Fungi are designated by names now abandoned; thus the Potato Fungus, Peronospora infestans, is named Botrytis infestans; and among other now antiquated appellations we find Uredo caries given for Tilletia caries, the common "bunt," a Wheat blight which is confounded by Mr. Stephens with "smut," or Ustilago carbo, a Fungus affecting the ears of corn and grasses.

The idea of Wheat being infected with mildew from the Berberry is scouted, and we are told "there is no possibility of transforming the one Fungus into the other;" although that possibility is now, we believe, accepted, and which is quite in accordance with the singular dual forms of so many Fungi.

In concluding these remarks on the new edition of the "Book of the Farm," we can conscientiously state that we hailed its announcement with pleasure, but having gone through it with great care, we are compelled to declare ourselves disappointed. As a book of reference upon agricultural practice, it has still a certain value, inferior to that of the older editions; but as a book of reference to the physical sciences, in their relations to agriculture, it is not to be depended upon.

Farm Memoranda.

HAMPSHIRE.—The worst fears and strongest apprehensions of the farmers as regards the Wheat crop are now being realised. The unerring test of the threshing machine proves that the yield of Wheat, both in quantity and quality, is one of the most deficient since the harvest of 1854. A few fields yield 8 to 10 sacks per acre, the weight up to 62 to 63 lb. per bush.; but the larger portion of the crops give only from 12 to 16 bush. per acre, the weight being from 56 to 58 lb. per bush. The crop must, therefore, be considered at least one-fifth under the average. This deficiency has arisen from two causes — the cold, ungenial summer, and the loss of plant by frost in the winter; and it is generally admitted that a thin plant of Wheat should be re-sown, as it does not, when injured by frost, fill-up and tiller like a thin plant arising from other causes.

Barley is a bulky crop as regards straw, and will be probably an average in quantity of grain, but the quality is again disappointing, and a large portion will prove unfit for malting. This irregularity of the quality arises from several causes—a constant repetition of the crop, its following a root crop consumed by highly-fed sheep, and late sowing. All these causes are, however, under the control of the farmer, except when he is bound to cultivate under the four-course rotation.

The Oat crop has never been more bulky, or likely to yield more corn, especially where sown after roots fed off, for which purpose it is well adapted in admixture with Barley for home consumption, and it is now a common practice to pass the sheaves through the chaff-cutter, and use corn and straw together, instead of incurring the expense of threshing, winnowing, &c.

The crop of Peas is very good, yielding from 9 to 11 sacks per acre in many instances, and must be reported as over an average yield. The haulm, too, is abundant, and of excellent quality, being well saved, which will go far to assist in economising the short and damaged hay crop.

Beans, both winter and spring varieties, are not so good as were expected, and will not exceed an average crop.

The second-cut Clover and late meadows have yielded a good produce, which have been pretty well secured during the fine weather in August. Although the harvest is not completed, yet it has been favourable on the whole, and fortunately the weather has allowed a great part of the Lent corn (in many instances overgrown with Clover) to be secured in excellent condition.

Since our last report the root crops have continued to progress with every prospect of turning out one of the most abundant ever grown in this county, and it is generally admitted that our stock of sheep and cattle are so short that one-fourth of the root crop cannot be consumed in the usual way, and it has become a matter for discussion how it can be best disposed of, and, without doubt, hundreds of acres will be ploughed in rather than purchase sheep and cattle at present high prices.

This is the best time for sowing Trifolium. The seed being cheap, and the season fine, a large breadth will be sown. The plan of mixing a portion of broad Clover or Cow-grass, say 16 lb. Trifolium and 6 lb. Clover seed per acre, is recommended where the land is clean and not intended for Turnips to follow, as the Clover is found to give a good cut in the autumn months.

The main crop of Potatos yields well, but fully one-third of the tubers will be lost by disease. The quantity of sound ones for winter use will, however, reach an average.

The value of sheep and cattle is likely to continue high, for not only is food abundant, but the price of mutton and beef is exceedingly high, and it must be a long time before supplies can be equal to the demand.

The price of grain, especially Wheat, would run high if we were dependent more upon our own resources, but the world's market being open to us, will certainly hold prices in check. *Joseph Blundell, Southampton, September* 6.

North Riding of Yorkshire.—The maturing of the crops was accelerated in a wonderful degree by the brilliant weather of August. A considerable acreage has now been cut, and in some of the earlier localities a few stacks carried. The great bulk, however, is yet unsecured, and we require a full fortnight of fine weather to accomplish it. A closer acquaintance with the crops unfortunately confirms our opinion, already given in your columns, that the yield of the Wheat crop will be a short one. Thin on the ground, beat down with storms of July, together with the unfavourable season while in bloom, has rendered the crop deficient both in quantity and quality.

The Oat crop varies, being much the best where grown after Clover, but over a considerable acreage, where grown after Turnips, the crops are bad; suffering from grub in June, they never recovered, and are now very unsatisfactory, ripening at different stages. The sample will be bad, and yield very deficient.

Barley is the best crop of the season, but a shake wind during the last week in August did much damage, and will bring down the nett yield to a bare average one. The late rains have improved the Turnip crops, and the prospect of very large crops are good.

Pastures and aftermaths are also good, so that presently and prospectively cattle food is abundant.

Cattle and sheep, fat or lean, maintain unprecedentedly high prices. Mutton from 9*d.* to 10*d.* per lb. Beef from 9*s.* to 10*s.* per 14 lb.

Potatos are good crops, but complaint of disease is made from various farms.

Foot-and-mouth disease is prevalent, and seems to be fast spreading in this district. It is well known that it is not near so contagious as the rinderpest, and surely with close supervision by the local authorities it ought to be stamped out. The reverse, however, holds good, and it looks like sweeping every farm in the district. *W. J. M., Sept.* 10.

West Gloucester: *August.* — The beautiful summer weather of the last month has enabled us to clear up the hay in good condition. Had the hay season ended as it commenced, the results must have been most disastrous, for, as is well known, young grass will stand a far greater amount of bad weather than old without getting such a bad colour, or losing so much of its quality. We have rarely seen heavier crops of grass, especially the late cut.

The bright sunshine and very drying winds have proved of the greatest benefit to the grain crops, some of which, though not long since they showed a very dark unhealthy straw, have now ripened off a much brighter colour than we anticipated.

Harvest hereabouts has become general. Peas are cut, and, in most cases, stacked. We have a bulky crop of straw, but the yield will not be equal to last year, as many of the pods have not filled, while others have but very few Peas in them. Oats are very good; the early sown are secured in good condition. Wheat, it is feared, will turn out very middling; the crop is in many instances very thin upon the ground, and badly scrawled, owing in a great measure to the season having been more than usually favourable to the creation of the forces of our innumerable farm pests, as well as to the extraordinary winter which the autumn-sown Wheat had to encounter. None has yet been threshed in this neighbourhood, therefore the probable result cannot yet be stated, but, judging from the handling of the sheaves, there appears to be a great deficiency compared with average seasons. The stubbles are unusually foul.

Barley is very good in general, and much of the early-sown has been well secured.

All root crops look most promising, and at present quite free from mildew.

Potatos are badly diseased: in some cases scarcely a sound Potato can be found at a root.

Food for stock is abundant, and cattle of every description maintain a high figure.

Beef is realising 80*s.* to 84*s.* per cwt.; Mutton, 9*d.* to 9½*d.* per lb. *J. W.*

Obituary.

It is with unfeigned grief that we have learned the death of Mr. Robert Russell, of Pilmuir, near Leven, Fifeshire. He was a frequent and valued contributor to the *Agricultural Gazette* many years ago, when, with his friend the late Mr. Haxton, another Scottish farmer, he was an active and most efficient member of a small body of agricultural writers, to whom our own and other columns have been very greatly indebted. Mr. Russell was an independent labourer and thinker in the science of meteorology—had observed and travelled widely with special reference to meteorological and agricultural subjects—was quite one of the leaders of the agricultural world in the North—an active member of the Council of the Highland and Agricultural Society, and for many years Editor of their Transactions. But it is the loss of a friend by his death, even more than that of one who, in the very prime of life, was serving his generation so well, that will be generally felt and mourned. We quote the following from the columns of the *Scotsman*:—The agriculturists of Scotland will learn with deep concern, and all of his many friends with no common grief, that Mr. Robert Russell died at his farm of Pilmuir, Leven, on Sunday last. Both as a practical farmer and as a writer on agricultural subjects, Mr. Russell (long known as "of Kilwhiss") was held in high estimation all over Scotland, and beyond it. Of late years, too, he had directed much of his attention to the subject of meteorology, to the literature of which he made several valuable contributions, most of them appearing first in our own columns. From 1860 to 1866, he was Editor of the Transactions of the Highland Society, to which he also contributed papers on various agricultural matters. He was appointed a director of the Highland Society in 1867, and held that position till his death. In 1854, he visited the United States, Canada, and Cuba, and gave the results in a large volume, "On the Agriculture and Climate of North America," which the late Mr. J. R. M'Culloch, an excellent judge and no lenient critic, pronounced to be the best and most solid book ever written on its subjects. It was whilst absent on this tour that a vacancy occurred in the Edinburgh Chair of Agriculture; and his friends hesitated to put him forward, without his knowledge, for an appointment for which he was eminently fitted, and which he otherwise would have had a good chance of obtaining. During the discussions on the Irish land question he published a pamphlet, propounding a plan of his own, which obtained much attention and approval amongst those most conversant with the subject. After leaving the farm of Kilwhiss on the Lathrisk estate, a few years ago, Mr. Russell entered on the fine farm of Pilmuir, near Leven, belonging to the Standard Insurance Company, and he has also held for several years an extensive sheep-farm on the Duke of Montrose's estates at Loch Lomond. He attended the late meetings of the British Association in Edinburgh, and was then in even more than his usually robust health; indeed, his apparent vigour was so great as to draw the remark—the fact now strikes painfully on the memory—that, in a pretty large private company assembled during that visit, he was indicated by a physician as the man likely longest to enjoy health and life. A few days ago, one of his children was seized with scarlet fever, and died. He caught the infection, and notwithstanding his strength, succumbed after two or three days' illness. He was a man of good heart and temper, as well as of excellent head; and his removal in the midst of his days and the prime of his strength, whilst leaving a public place unfilled, will bring heavy sorrow to many hearths beside his own. *Scotsman.* [From another source we learn that it was not scarlet fever that was fatal to Mr. Russell, but that he died heart-broken at the death of his only daughter.]

—— Mr. Josiah Parkes, whose name and writings were familiar to agricultural readers in the early days of the English Agricultural Society, has lately passed away, at a great age. The following notice of his life and labours has been sent to us for publication:—Mr. Josiah Parkes died a fortnight ago, in his 78th year, without, as far as we could ascertain, a single line of notice in any of our daily papers, or even in those possessors of universal knowledge, the *Saturday Review* and *Pall Mall Gazette;* yet Mr. Parkes, whose later years were passed in cynical seclusion, did more for the progress of agriculture all over the civilised world than any man of the present generation, not forgetting Baron Liebig, whom on one important question he signally discomfited. Mr. Parkes, who followed the occupation of a civil engineer before that profession—out of the mining districts—had advanced much beyond the rank of a land surveyor in the pre-railway times, first came before the public through his attempts, which were quite unsuccessful, to apply steam-power to the cultivation of a peat-bog of the same character as Chat Moss, which he had drained for Mr. Heathcoate, in Lancashire. His observations of the effect of the deep cuttings on the bog led him to make experiments, and by these experiments he discovered the principles of agricultural drainage, which were previously not only unknown but misconceived. The vulgar idea was, and is even with educated men who have never thought about the subject, that agricultural land suffers from rain falling on the surface. Mr. Parkes found that a deep drain began to run after wet weather, not from the water above, but from the water rising from subterranean accumulations below, and that by drawing the stagnant moisture from 3 or 4 feet of earth next the surface it was rendered more friable and porous, easier to work, and more easily penetrated by the rain, which carried down air, which is full of ammonia and manure, made it much warmer, and therefore more genial to the roots of the various crops. Without drains a retentive soil is saturated with stagnant water, which remains until evaporated by a warm season, and then leaves the soil hard-baked. Mr. Parkes came to the conclusion that 4 feet, which left a sufficient layer of dry warm surface earth, after allowing for the rise of the moisture by capillary attraction above the water level of the drain, should be the minimum depth. This is now the universally accepted opinion of the best agriculturists in England, France, and Germany. Smith, of Deanston, a very clever man, almost a genius, who never succeeded in anything, had previously devised a system of shallow drains, made of broken stones in the gridiron shape. But he missed the principle; he devoted his ingenious mind to devising expedients for getting the surface water into his drains. After a few years of contest the Deanston plan was entirely superseded by the Parkesian plan. In 1843, Mr. Parkes gave his evidence before a committee of the House of Lords on agricultural distress and its remedies. He was warmly supported by the Earl of Lonsdale, whose experience as a commissioner of highways had proved the soundness of the system; but nothing could be done without drain-cutting tools and pipes. A Birmingham manufacturer, on Mr. Parkes' suggestion, produced, in 1844, the first set of drain-cutting implements, which have since been brought to such extraordinary perfection. A cheap conduit was still a difficulty. Stones choked up in many soils, and where they had to be broken up and carted to the ground, their cost became enormous. At the Derby show of the Royal Agricultural Society in 1843, Mr. Parkes showed Lord Althorpe a cylindrical clay pipe, saying, "With this pipe, my lord, I will drain all England." This pipe had been made by wrapping a lump of clay round a mandrel, by John Reade, a self-taught mechanic, inventor of the stomach-pump, who was a gardener by trade, and used these hand-made pipes for draining his hot-beds. The Council of the Royal Agricultural Society awarded John Reade a silver medal for his pipe, and offered a prize in the following year for a pipe-making machine. This prize was won by John Scraggs, at the Shrewsbury show, in 1845, and was, we believe, the only prize offered by the society, in an existence of 30 years, that ever produced a useful original invention. Drain-pipes can now be manufactured quite as fast as kilns can bake them. In 1846, Sir Robert Peel, as an aid to the distressed and frightened agriculturist, passed an Act by which four millions sterling were advanced in loans charged on lands to be drained under Government inspection, on the Parkesian principle. The first loan was nearly entirely taken up by Scotch landowners. A second loan of four millions was granted in 1856; but these eight millions only formed a small proportion of the amount invested in systematic deep drainage by the private enterprise of landowners and of companies formed for the purpose. By drainage, hundreds of thousands of acres of stiff clay soils, previously condemned to poor pasturage or uncertain crops of corn and Beans, have been rendered friable, fit to grow roots, carry sheep, and fall into regular rotation. In Yorkshire, Mr. Parkes, for Lord Lonsdale, at an expense of from £10 to £20 an acre, reclaimed moor land not worth a rent of 1*s.* an acre, and raised its value to £2 an acre. Increased fertility of soil was not the only result. Systematic drainage led to general agricultural improvements; hedgerows and useless timber were cleared away, undulating ridges were levelled, roads made, and buildings erected to accommodate the production of meat as well as corn. It is also in evidence that the idea of pipe instead of brick sewers was first taken from the operations of Mr. Parkes in a Gloucestershire village to which he adapted his system. One of the curious incidents during the introduction of the Parkesian, or scientific system of deep drainage, was the virulent opposition of that able chemist, Baron Liebig, so malignantly prejudiced against everything English. The Baron, about the time of the introduction of Mr. Parkes' principles and plans, introduced his patent universal manure, which proved so complete a failure, and seriously damaged the fortunes of the Liverpool chemists who undertook its manufacture. In order to push the sale of the patent manure, Dr. Liebig wrote a letter in its praise, and at the same time solemnly warned English farmers that deep drainage would reduce their lands to permanent sterility, by driving into the drains the principal elements of fertility. This ridiculous theory he has since, we think with a very bad grace, retracted. Mr. Parkes, like other men of original genius, had his foibles. He had not the art of managing men, and consequently a good deal of his early work on sound principles was very badly executed, and brought his system into disrepute. He was intolerant of advice, and jealous of opposition, and consequently never adopted the improvements introduced by Mr. Bailey Denton and others, who took advantage of the natural porosity of any tract of soil to diminish the cost of the series of uniform gridiron drains, to which Mr. Parkes adhered to the last. He would never admit that any improvement on his original plan was possible. Still, it must be admitted, it was a great triumph to introduce an entirely new system, to be executed with entirely new tools and machines against the stubborn prejudices of the farmers, within the short space of 13 years.

Mr. Parkes, for his services, was elected an honorary member of the Royal Agricultural Society; he was also a member of the Institution of Civil Engineers, but although he made immense collections of notes on experiments, he never contributed to its Transactions. At one time he had upwards of 1000 men in his employment in drainage contracts, but he lived alone and apart—the only conversation he understood was a monologue. He was the brother of the late Mr. Joseph Parkes, a famous attorney politician in the days of the first Reform Bill, and the uncle of Miss Bessie Rayner Parkes, who has some reputation as a poetess, author, and advocate of the Rights of Women. Certainly, a portrait of Mr. Josiah Parkes, if extant, ought to adorn the walls of the National Portrait Gallery and the Institution of Civil Engineers. We take the substance of this memoir from an article in the "Quarterly Review" of April, 1858.

Miscellaneous.

Agricultural Education.—Notice has been given by one of the members, that he will bring the subject of agricultural education before the Scientific and Journal Committee for the purpose of eliciting some opinion as to what the Society can do to promote the same. Special instruction in the principles of husbandry is much needed in this colony. It is more needed than in Europe, where agricultural experience is the heritage of thousands. There sons succeed to the occupation of farms that have been in the family probably for many years, and follow the rules observed by their immediate predecessors, modified or improved by such lights as science and practice have thrown upon them. Yet even in England, where the practice of agriculture is most advanced, the importance attached to special instruction is great. It is considered desirable that men should do such things, not because their fathers have done them, but because they are correct in principle. This involves a knowledge which is only to be obtained by a careful comparison of the results obtained by experiment, in various departments of this branch of industry; and the end is worth the means, inasmuch as certainty in the investment of energy and capital is substituted for uncertainty, by those who proceed upon knowledge. The choice of a wrong season, of a wrong soil, of a wrong manure, of a wrong grass, of a wrong remedy in disease, amounts to an opportunity thrown away. In other words the individual, and the community to which he belongs, has lost so much capital by his blunder. If there existed nothing to guide him in his procedure, his failure will not be regarded as a loss. It is merely a contribution to experience, and resembles a coast sounding, and the institution of a warning buoy. But if the experiment had been made before, and repeated in ignorance of this fact, it is clear that loss has been sustained, since it is just to suppose that the person who made it a second time would not have done so had he known the result of the first. All knowledge consists of the aggregation of the results of past experience, and this experience it should be the desire of all to possess who wish to make an economical use of the means placed at their disposal for the production of wealth. Agricultural education consists, of course, of the acquirement of this knowledge, which resembles very much the legal precedents with which the lawyer works. The agricultural colleges of America and England have been productive of the most decided benefit. With respect to the Cirencester College many thousands of acres in Great Britain are farmed by the students thereof, many hundreds of thousands more being under the control of former students who now hold land agencies. There are attached to the college a well-furnished agricultural museum and spacious laboratories, a botanic garden, and a veterinary hospital. The students have, by special arrangement, ample opportunities of learning practical agriculture on a farm of 500 acres, contiguous to the college. Instruction is given by the principal and a staff of professors in practical agriculture, and in chemistry and chemical analysis, geology, entomology, botany, veterinary medicine and surgery, surveying, and in architectural and mechanical drawing. The worth of this institution, although some doubts were entertained about it twenty years ago when it first started, is now well established. The young men, disciplined, trained, and instructed within its walls, are qualified to fill high positions as tenant-farmers, or to undertake the agency and management of landed estates. Every year adds to the number of collegians filling situations of importance and of trust, and the college diploma has long borne a high value as a test of knowledge, ability, and character. The attempt to establish such a college in New South Wales at the present time might be considered unseasonable. But there are many ways of promoting agricultural education without going the length of a college. We must be content to do what we can before attempting to do what we would like. Our noble president, Lord Belmore, has shown one way of promoting improvement. He offers a gold medal to the Senate of the University on the condition that an agricultural bearing is given to three branches of study—chemistry, mineralogy, and geology, in the hope of winning students thereto. Some one else might endow a Chair of Practical Agriculture, following the example of Scotland, or might give a prize for proficiency in certain subjects to be named by the Senate, that body merely appointing examiners. Or there may be other modes of attaining the same end, all of which it is well for a society to discuss whose aim it is to encourage agriculture. *Extracted from a paper in the Journal of the Agricultural Society of New South Wales.*

The Foot-and-Mouth Disease.—From the weekly returns forwarded to the Clerks of the Peace throughout the country, in accordance with the provisions of the Contagious Diseases (Animals) Act, it appears that foot-and-mouth disease is rapidly spreading in all directions. So long has it been a pest, and so steadily has it kept a hold upon our stock, now disappearing only to reappear in an aggravated form, and this in spite of all existing precautions and stringent regulations, that we are led to look narrowly into the causes of its continuance. Undoubtedly, many animals are imported with the disease in an incipient state, defying detection by the most experienced and able men, and many change hands in a similar condition at fairs and cattle markets. But, after giving full weight to this, it must be confessed upon reflection that the *bonâ fide* cause or causes are to be sought elsewhere. In the first place, the farmers of England are inclined to treat this epidemic with too great levity. It lacks the terrors of the cattle plague proper; the number of deaths is but a small percentage of the total number of animals attacked. In numerous cases cleanliness and mildly astringent applications to the mouth and feet effect a fictitious cure. There may be a slight inconvenience through the prohibition of removal for sale, and a decrease in the products of the dairy; and thus the agriculturist, lulled into a false state of security by the absence of immediate loss, becomes utterly careless. The loss, however, though not immediate, is nevertheless real. Any one who has had opportunities of seeing animals while affected with and upon recovering from the epidemic can testify to the wretched appearance the poor brutes present. Thin, "pinched up," hovering together from the first cold wind, with, perhaps, portions of the alimentary canal removed from sight still "blistered," or, worse, ulcerated (for the manifestations of the disease are not confined to mouth and feet), they do not recover their condition for months, and, as a natural result, when rent day comes there is a "deficit." Nor is this all. Many through negligence, and some through absolute defiance of the law, do not give notice to the police, who, in their turn, would give information to the inspector, and thus the enemy gains an advantage at the onset. It is cheering to know that both these classes of delinquents meet in some measure with a due reward—that is to say, are heavily fined: but it may be fairly questioned whether individuals wantonly pursuing a course detrimental to the interests of so many should not be still more severely handled. Another point upon which much more caution might be exercised, is the thorough disinfection of all places in which infected animals have been. I can speak from experience of the laxity existing in this respect. Inspectors should not only give orders, but should see them carried into execution. Of course there are some inevitable modes of propagating the disease, and disaster may reward man's best endeavours; but it is an undisputed fact that, as a rule, the diminution of disease is in direct proportion to the amount of care exercised. While, however, much may be traced to the agriculturists themselves, more is to be referred to the inefficiency of inspectors. Of the duly qualified men nothing need be said; their diplomas are presumptive evidence of their ability, and in the great majority of instances they do not abuse the confidence placed in them. There is, however, another class—the unqualified inspector. Again and again, totally illiterate, unpossessed of any knowledge of animals, of the causes, prevention, and treatment of disease, except what has come to them through the glimmering light of Nature, men of this class rush in with the utmost assurance where men of science, well trained and practised in their profession, venture but with diffidence. Apart from the ordinary effect of ignorance, it is not difficult to see what may and does occur in another way; the office of inspector is a powerful lever, and in the hands of the unscrupulous may become an instrument of evil. Still, these men are not altogether to be blamed. So long as an inspectorship is to be obtained by mere application, they are justified in seeking the post. Those who encourage this kind of thing are the really culpable persons. And who are these? Men who might be expected to appreciate better the difference between science and quackery; men who from experience in other pursuits can witness to the increased power attendant upon diligent study and research—in a word, the local authorities. Strange as it may appear, some of the gentlemen constituting these necessary and generally useful boards do not or will not understand the distinction between "farrier" and "veterinary surgeon," and in cases where both have applied for the same office, have been known to appoint the former in preference to the latter. An instance of this came under my notice some 18 months since. And here I may observe that my remarks are not elicited by self-interest, but by the necessity of reform in a matter of public moment. The importance of the subject is patent to every one, and has been acknowledged by Government, who have done and are doing much by legislation; but the good which might result is thwarted by deficiency in detail, and nowhere more than in the appointment of unqualified inspectors. Suppose unprofessional inspectors of hospitals to be appointed; they would not be tolerated. The cases are analogous, and need no further comment. The constitution of the local boards themselves so as to obtain the maximum of good affords a fair field for inquiry. Of this, however, more hereafter. Foot-and-mouth disease is on the increase; the county ratepayers, who have already unavailingly paid thousands of pounds for the prevention of the spread of contagious diseases, will probably have to pay many thousands more; the interests of the agricultural community are involved, and, through them, those of the community at large; and, this being so, nothing should be encouraged having a tendency to check the effect of salutary measures. *B. A., Higher Broughton, in the "Times."*

Brown's System for Watering and Utilising Manure.—This system has been in operation on the property of Mr. E. J. Coleman, Stoke Park, near Windsor. It was laid down in the end of August, 1870, upon 20 acres of pasture land, with a soil chiefly composed of a silicious clay, slightly calcareous, but from a want of loam-mould liable to become crust-bound in dry weather; it is, however, rich in the mineral constituents of a productive soil, and may be classed with that of the well-known brick earth of Slough. On September 5, with temporary engine-power, watering was commenced, the land was top-dressed, and irrigation was continued at night until the end of the month. Notwithstanding the lateness of the season, the dried-up soil, and the destruction of vegetation since the previous June, yet on the twenty-third day after watering, a very thick-set growth of about 9 inches of superior feeding grass was produced, and by the middle of October it became a large crop, which was cut, and given to stall-feeding cattle, and the land after was successfully grazed with sheep until the end of the year, while the adjoining pasture—unirrigated, and in every other particular the same as that over which the irrigation had been conducted—remained unproductive, although rain to some extent had fallen during the autumn. The value of the cut grass and the grazing upon the irrigated land may be estimated as equal to that of an average crop of Turnips, as such grass, weight for weight, is equally rich in beef and mutton constituents, or its money value may be fairly put at £5 per acre for this autumn crop. In the spring of this year, 1871, from delay in erecting the engine and pump now upon the irrigated land, operations were not commenced until the last week in March, and from five to six weeks of the best spring weather for watering and utilising manure were lost in consequence, yet a very large crop of hay, chiefly perennial Rye-grass, was fit for cutting by the second week of May. It was estimated by practical judges to yield 2½ tons per acre, and from its having been secured in fine condition without getting any rain, it became the best description of good horse hay, and at the present July market price its value in London is not less than £7 per ton, as hay not equal to it has been sold during this and the last month from £8 to £9. On cutting this crop, a portion of it on the same day was removed and made into hay with that upon the unirrigated land, which gave facilities for at once watering the ground from which it had been taken. This had the effect of producing a second crop of perennial Rye-grass of a large growth, which was fit for the scythe in the second week in July; such a result is, as a rule, unknown to agriculturists. A portion of the ground was measured, and the grass weighed gave a yield of 12¾ tons per acre, or about equal to 2½ tons of hay; while the unirrigated land, which had its first crop cut on the same day as the irrigated, only gave one-fourth of this weight as a second crop, although much rain had fallen during its growth, in the absence of which a mere fraction of this would have been the result; proving that even in a season such as 1871, the coldest and wettest (from April to August) there has been since 1862, that this system of irrigation has a threefold advantage over any ordinary means pursued by agriculturists in the cultivation of grass or hay. This arises from the facilities given by the system for tempering the soil, and utilising manure by the necessary moisture for promoting a perfectly developed and large growth; and from the operation of watering being conducted during the night, at such a trifling cost, a continuous process is secured by its application from March to November. The successful results obtained at Stoke Park by the British Rivers' Irrigation, since last September, undoubtedly warrant the step just taken by Mr. Coleman in extending it over the whole of the pasture-land upon his estate to the east of the 20 acres put down last autumn. The underground system of the patentee has been adopted over the whole of it, and is one which recommends itself for every description of cultivation. Its distribution of moisture is that of a perfect rain shower, according to the power used, over several acres simultaneously; and hundreds during the night, by the superintendence of an engine-man and a tap-boy, can be perfectly watered even during the hottest weather. *Quoted from a Published Paper.*

The Week's Work.

SEPTEMBER 16.—*Bean and Pea Stubble Fallows* for Wheat sowing, if not finished last month, should be so early in the present. Heavy clay lands, if clean, as they always are under good management, may be smashed up to the weather by steam. If ploughed it should be narrow and deep, assuming that the land has hitherto been deeply cultivated, otherwise plough the depth hitherto gone, and subsoil so as to get the land cultivated to the proper depth. By such means a suitable seed-bed for Wheat will be obtained without crossing or running the risk of poaching the land in the event of being overtaken by rain before the work is finished. Light land, full of Couch and annual weeds, is not well adapted for Wheat; but if to be sown with Wheat along with from 3 to 5 cwt. of guano, scuffle or broadshare, and gather off the weeds, and then harrow once or twice to braird the seeds of weeds shaken out by the harrow and scuffler, before it is ploughed for the seed-furrow. Some burn the weeds in small heaps on the land, but the more advisable plan is to cart off, and convert them into compost by lime, guano, or liquid manure, &c., as it effects more successfully the destruction of the seeds of weeds, and secures at the same time manure to the land.

Wheat Seed-time, owing to the greater breadth of root crops now grown on Wheat soils, extends over a greater length of autumn than it did under the old bare fallow system. But a very large proportion of the Wheat crop is still sown during the latter half of September and the first half of October.

Newly-threshed Seed is to be preferred to the old-threshed, the quality in other respects being equal. The best Wheat on the farm should be selected during harvest for seed—crisp, plump corn, grown on clean, flinty straw; and if such cannot be had at home, it should be obtained from some other place. Some soils and climates are defective one way or another in the growth of Wheat, so that annually it loses less or more constitutional vigour, according to the season, consequently a change of seed is desirable every year. Some, however, only change every second or third year; but, unless under exceptionally fine seasons, the practice involves a much greater sacrifice than is generally imagined. It is easily known in harvest if seed Wheat can be selected at home up to the maximum standard, and if not, the more advisable course is to change the whole of the seed for the ensuing crop.

Pickling Wheat is a very diversified practice, partly owing to opinion, and partly perhaps to the peculiar kind of Wheat sown, and Fungi with which it is infested. Thus the smooth thin-skinned varieties of Wheat, and also samples of any variety that have fine bran, are more easily washed and acted upon chemically than the thick hairy-skinned varieties and coarse bran samples; and with regard to Fungi, the spores of bunt adhere more closely than do those of smut. Some use ¼ lb. of blue vitriol (sulpate of copper) dissolved in two gallons of warm water to a sack of Wheat, so as to wet the surface of the grains equally; others use half a pound; others a whole pound, and sow as soon as the grain has absorbed the moisture. Others wash the Wheat in water and skim off the light grains that float before they use the above pickles; and as the pickle is applied whilst the Wheat is wet with some 4 to 6 gallons of water, the stronger pickles may be used with safety, and so on. Another and very common mode of pickling is to wash the Wheat in brine sufficiently strong to float a Potato. Stir and skim off so long as anything rises to the surface, and then dry by sifting hot lime over the washed Wheat spread thinly on the floor, mixing rapidly until the surface of the grain is wholly coated over. Whichever of these plans is adopted, no more Wheat should be pickled at a time than can be sown.

Kind of Seed is determined by climate, soil, and cultivation. The different varieties take their names from various sources, as (1) the person who selected them, as Hunter's, Shirreff's, and Hallett's Wheats; (2) the place where first grown, as Essex Wheat; (3) the colour, red Wheat and white Wheat; (4) the period at which they are sown, as winter and spring Wheat, and so on. Some are more hardy than others, and better adapted for this or that soil, climate, and management, so that trials on a limited scale should be made to ascertain whether new varieties can be grown with more profit than the old ones.

Thick and Thin Seeding is a question of experiment which every Wheat grower should solve. From 4 to 6 pecks per acre are sown in September, and from 2 bush. in November.

Wheat Sowing is generally done by seed and manure drills, less or more manure being now applied along with the seed. The coulters are placed from 8 to 12 inches asunder, each being kept down by a weighted lever to the proper depth.

Renovating Grass Land is sometimes more profitably done about this time than in August, in very dry seasons. The carting, harrowing, and rolling, are more easily done than in spring, and do infinitely less harm to the land. Ant-hills, Tussack-grass, and weeds should be dug out and carted off. Some throw the ant-hills, as it is technically termed, thus spreading the ants abroad as in winter, but we prefer getting rid of the ants on the former plan, for in mild autumns they are apt to establish themselves in safety before the killing frosts of winter come. If necessary the surface should be well harrowed before the compost is applied, and after it is spread it should be well harrowed into the roots of the old grass. The grass seeds should then be sown with a broadcast machine, and lightly covered with a bush or chain harrow. If the supply of compost is limited, it is preferable to do a part well than to half do the whole, top-dressing the remainder next year. Grazing stock should be kept off, as they not only do harm with their feet before the compost is washed in and consolidated with rain, but also pull up the young grass with their mouths. Should mild weather set in, so as to force up a too luxuriant growth, it is better to top in time with the scythe or mowing-machine, as in flagging Wheat, than to turn in stock. Instances have occurred of a light crop of hay having been harvested, but it is better to consume the grass green for soiling, leaving a good long stubble, and carrying the rake high.

Notices to Correspondents.

RUNNING TO SEED: *R. H.* The Carrots were probably sown too early for the season. This is, however, no doubt, a very imperfect answer to your question. Will any of our correspondents give us their experience of the circumstances which promote the running to seed of root crops?

RYELAND BREED OF SHEEP: *G. F. O.* Undoubtedly it is still in existence. Apply to Mr. T. Duckham, Ross, Herefordshire.

THE SEED PRODUCE OF A SINGLE PLANT: *The Earl of Essex* asks if any correspondent can say what is the amount of seed which will be produced by a good Drumhead Cabbage plant and a good Mangel Wurzel plant, properly protected? We have made inquiries, but in the meantime publish his lordship's request.

Markets.

METROPOLITAN CATTLE MARKET.

MONDAY, Sept. 11.

We have a much smaller number of Beasts on offer than on Monday last; choice qualities are scarce, and consequently are rather dearer, otherwise there is not much alteration in the trade. The supply of English Sheep is very short for the time of year; prices are higher for them, and an early clearance is made. Choice Calves are scarce and dear. Our foreign supply consists of 3100 Beasts, 14,780 Sheep, 190 Calves, and 25 Pigs; from Ireland there are 120 Beasts; from Norfolk and Suffolk, 30; and 1530 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. a.
Best Scots, Herefords, &c. .	5 8to5 10	Best Long-wools	6 6to6 10
Best Shorthorns..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 8	Ewes & 2d quality	5 4—5 8
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 4—6 8
		Pigs	3 8—5 0

Beasts, 4780; Sheep and Lambs, 23,600; Calves, 230; Pigs, 90.

THURSDAY, Sept. 14.

We have a few more Beasts than on last Thursday, but the demand is good, and Monday's quotations are well maintained. The supply of English Sheep is very short; they are consequently readily disposed of, at fully late rates. There are a few more foreign; these are also sold dear. Choice Calves are still in demand, at high rates. Our foreign supply consists of 530 Beasts, 8100 Sheep, and 342 Calves.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 8to5 10	Best Long-wools	6 6to6 10
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 8	Ewes & 2d quality	5 4—5 8
Best Downs and Half-breds ..	6 8—7 0	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 4—6 8
		Pigs	3 8—5 0

Beasts, 1320; Sheep and Lambs, 12,330; Calves, 449; Pigs, 35

METROPOLITAN MEAT MARKET, *Sept.* 14.

Best Fresh Butter	16*s.* per dozen lb.
Second do. do.	14*s.* „

Small Pork, 4*s.* 8*d.* to 5*s.* 4*d.*; Large Pork, 4*s.* 0*d.* to 4*s.* 8*d.* per 8 lb.

HAY.—*Per Load of* 36 *Trusses.*

SMITHFIELD, Thursday, Sept. 14.

PrimeMeadowHay,	95*s.*to	110*s.*	Clover, old	135*s.*	150*s.*
Inferior do.	50	70	Inferior do.	60	100
New Hay	—	—	Prime new do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	36	45			

CUMBERLAND MARKET, Thursday, Sept. 14.

Sup. Meadow Hay	110*s.*to	130*s.*	Inferior Clover ..	90*s.*to	140*s.*
Inferior do.	70	100	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	90	140
Inferior do.	—	—	Straw	42	48
Superior Clover ..	160	170			

JOSHUA BAKER.

HOPS.

BOROUGH MARKET, Sept. 14.

Messrs. Pattenden & Smith report that there is an active demand for the few small parcels of new Hops which have arrived at market, and prices have advanced considerably on the opening quotations:—Mid and East Kent, £9 to £12 12*s.*; Weald of Kent, £7 to £9 9*s.*; Sussex, £6 10 to £8 8*s.* per cwt. The quality of these early sorts is extremely good. The Continental advices speak of the Hops coming down very short, which is also the case here. Prices abroad rule very high. American reports are also unfavourable, and according to the latest advices their crop will not be sufficient for their consumption.

MARK LANE.

MONDAY, Sept. 11.

The supply of English Wheat from Essex and Kent to this morning's market was again moderate, and brought an advance of 1*s.* per qr. upon the prices of this day se'nnight. There was a fair attendance, but only a limited demand for foreign, at an advance of 2*s.* per qr. upon American and Russian, and 1*s.* per qr. upon other descriptions. Barley was in good demand, at full prices. Beans and Peas without change in value. Oats must be quoted 6*d.* per qr. higher. Flour was inquired for, at an advance of 1*s.* per sack and barrel. Several sales of Essex white Mustard seed were effected at 9*s.* 6*d.* per bushel.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk..White	56—61	Red......	55—59
— fine selected runs ....do.	59—63	Red......	58—60
— Talavera	61—63		
— Norfolk	—	Red......	—
— Foreign	50—67		
BARLEY, grind.& dist.,26*s* to 31*s*..Chev.	—	Malting ..	33—36
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....—*s.* to —*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	—	Suffolk ..	—
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	34—38
MAIZE	—	Foreign ..	29—31
FLOUR, best marks, delivered..per sack	—		
— 2d ditto ....ditto	—	Country ..	—
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Sept. 13.

There was a thin attendance of millers here to-day, and the business doing was on a less extensive scale; prices, however, were without material change. English Wheat came to hand sparingly, but from abroad the arrivals were good. The demand for both red and white produce was less animated, but in all sales effected the full rates of Monday were realised. Barley was in fair request, at previous currencies. The show of Oats was liberal, and the inquiry was limited, on former terms. Beans and Peas changed hands quietly, at late rates. In Flour there was little passing, but prices were unchanged.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	450	40	—	—
Irish ..	—	—	—	—
Foreign ..	31,860	10,500	28,820	620 — brls.
	32,310	10,540	28,820	

LIVERPOOL, Sept. 12.—The market was well attended, and sellers were firm, but the advanced rate checked transactions of any consequence, and only a moderate business was done, at an improvement of 2*d.* to 3*d.* per cental on Friday's rate. Flour was in considerable request, at 1*s.* per barrel and 2*s.* per sack advance on the week. Beans 1*s.* 6*d.* and Peas 6*d.* per qr. dearer. Oats and Oatmeal sold more freely. Indian Corn passed rapidly, at an advance of 2*s.* 6*d.* to 3*s.* on the week.

AVERAGES.

	Wheat.	Barley.	Oats.
Aug. 5	58*s* 0*d*	36*s* 7*d*	27*s* 4*d*
— 12	58 5	35 11	26 6
— 19	57 10	35 9	27 6
— 26	57 4	32 7	26 7
Sept. 2	57 2	35 0	26 4
— 9	56 6	35 1	26 0
Average ..	57 7	35 2	26 9

SEED MARKET.

Our seed markets have been fairly attended during the past week, but the trade has been generally very quiet. Small orders come to hand for Trifolium incarnatum. In Clovers and Trefoils there is nothing passing. Rye-grasses are advancing in price: the Irish crop is said to be a fair one, but from Scotland bad accounts reach us. We have a fair inquiry from France for seed Wheats. There is some business passing in large blue Peas. White Mustard seed is quiet but firm. New sowing Rape seed must be quoted 2*s.* to 4*s.* per qr. dearer. Winter Tares being in improved supply are now obtainable on somewhat easier terms. For Hemp and Canary seed the trade is slow. Other articles unchanged.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

ENGLISH WOOL.

After a temporary lull the market is again firmer, and with good reason, since stocks are extremely low, and staplers are aware that directly manufacturers have worked up the parcels bought some weeks since, they will not only be obliged to pay present rates, but probably even much higher ones.

COALS.—*Sept.* 13.

West Hartley, 18*s.* 6*d.*; Walls End Braddyll's Hetton, 17*s.* 3*d.*; Walls End South Hetton, 18*s.* 3*d.*; Walls End Hartlepool, 17*s.* 6*d.*; Walls End Heugh Hall, 17*s.* 6*d.*; Walls End East Hartlepool, 18*s.* 3*d.*; Walls End Original Hartlepool, 18*s.* 6*d.*; Walls End South Kelloe, 17*s.* 6*d.*; Walls End Tees, 18*s.* 3*d.*—Ships at market, 33; sold, 33; at sea, 10.

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

BENJAMIN LOOKER, Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes. May be obtained through any of the Agents; the PATENTEE, Gloucester; or W EASSIE AND CO, who have arranged for their sole manufacture. Price Lists and Testimonials on application —Gloucester

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PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.

The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

Adjustable Electric Thermometers.

MESSRS. FRANCIS AND CO., TELEGRAPHIC ENGINEERS, &c., beg to announce that they are now introducing their new invention, THE ADJUSTABLE ELECTRIC THERMOMETER It has a double action, giving extreme heat and cold, and may be set to any degree at will Accuracy warranted Carriage paid to any Railway Station on receipt of Post Office order for 25s

Chief Office · 125, New Kent Road, London, S E.

GREENHOUSES, FORCING-HOUSES, VINERIES, and ORCHARD-HOUSES, made of the best Yellow Deal, Glazed with 15-oz. Sheet Glass, painted four times. 20 feet by 12 feet, £40; 30 feet by 12 feet, £60; 40 feet by 15 feet, £85; 50 feet by 18 feet, £110; 100 feet by 20 feet, £230.

The above prices include Brickwork, Staging, Delivery, and Fixing, within 50 miles of London. Plans and Estimates sent on receipt of size required to

R. STEVENS, Horticultural Builder, Simpson's Road, Bromley, Kent

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SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size. Prices from 16s. 6d. {Prices from 35s
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E

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SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

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For Ploughs,

APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free

CHAPMAN'S MULTUM-IN-PARVO PLANT, FLOWER, and SEED PROTECTOR, preserves Plants, &c, from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass, and at half its cost.

They are made in nests, of different sizes The cost of a Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition purposes, with India-rubber valve, stake, clip, and all complete, from One Guinea. They can be made any size

Estimates given to Nurserymen, Market Gardeners, &c, for large quantities When not in use, they pack in a very small compass, without liability to breakage. To be obtained only from

W. F CHAPMAN, Bristol Road, Gloucester

A remittance from unknown Correspondents will have attention.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

One Penny per Square Yard.

TANNED GARDEN NETTING, for Garden purposes, such as Protecting Fruit from Birds, Blossom from light Frosts, &c Widths, 1, 2, 3, and 4 yards The Trade also supplied, HOOPER AND CO, Covent Garden, London, W C.

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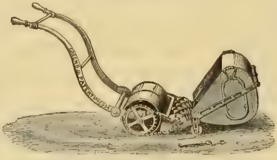

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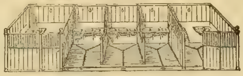

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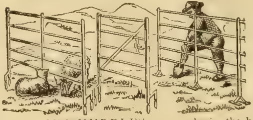

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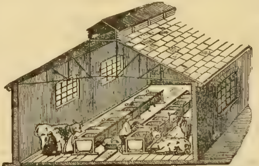

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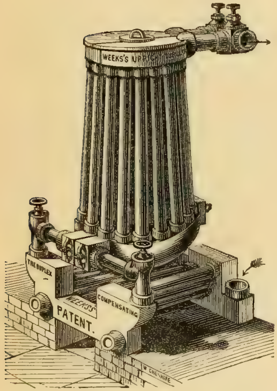

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THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 38.—1871.] SATURDAY, SEPTEMBER 23. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

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Double White Primula

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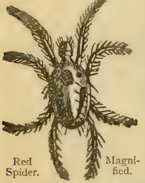

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12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..			
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12 varieties new FUCHSIAS of 1871	4	0
12 varieties best selected VERBENAS	2	0
12 fine new varieties VERBENAS of 1871	2	6
12 varieties best selected COLEUS	2	0
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12 varieties best selected CHRYSANTHEMUMS	2	6
12 fine varieties new CHRYSANTHEMUMS of 1871	3	0
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12 fine varieties SEDUMS	3	0
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12 fine varieties ANTIRRHINUMS	3	0
12 select varieties PANSIES	4	0
12 fine varieties JAPANESE EUONYMUS	6	0
12 fine varieties BOUVARDIAS	6	0
12 fine varieties MESEMBRYANTHEMUMS	4	0
12 select varieties HELIOTROPIUMS	3	0
12 select varieties LANTANAS	4	0
12 fine varieties PELARGONIUMS	6	0
12 fine varieties IVY-LEAF GERANIUMS	6	0
50 select varieties FUCHSIAS	8	0
50 select varieties CHRYSANTHEMUMS	8	0
50 select varieties HARDY HERBACEOUS PLANTS	14	0
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12 fine varieties DOUBLE and SINGLE PETUNIAS	6	0
12 fine varieties TROPÆOLUMS	3	0
12 fine varieties HYDRANGEAS	6	0
12 fine varieties VIOLA ODORATA	6	0
6 fine varieties ECHEVERIAS	3	0
12 fine varieties GREENHOUSE CLIMBERS	8	0
12 select varieties GREENHOUSE SUCCULENTS .. 6s. to	12	2
12 select varieties GREENHOUSE PLANTS .. 6s. to	12	0
12 fine varieties select STOVE PLANTS .. 6s. to	12	0
4 new AGERATUMS, White Tom Thumb, White Imperial Dwarf; Tom Thumb's Bride, the whitest; Sultan, the darkest, for 1s. 6d.		
12 varieties AGERATUMS, including the above	3	6
12 fine varieties tall HERBACEOUS LOBELIAS	9	0
12 fine varieties VERONICAS	6	0

B. W. KNIGHT, Florist, Battle, Sussex.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c., is now ready, and may be had gratis and post free on application.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

Gladioli, Amaryllis, New Roses, Pæonies, Iris, LILIUMS, PHLOX, &c.

EUGENE VERDIER, FILS AINÉ, trusts that his Clients and Friends will again favour him with their orders, which he assures them will be executed in a manner that will give entire satisfaction.

CATALOGUES will be obtainable direct from him about Sept. 25; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

EUGENE VERDIER, FILS AINE, Horticulteur, 3, Rue Dunois, Paris.

Camellias, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine plants of CAMELLIAS, without flower bud, best varieties, 1½ to 2 feet high, bushy plants, at £6 per 100.

Fine plants of PANDANUS UTILIS, for table decoration, 15s. per dozen; ditto, smaller, 12s. per dozen.

CHAMÆROPS FORTUNEI, young plants, with three to four leaves, 42s. per 100; ditto, formed plants, 30s. per dozen.

CORYPHA AUSTRALIS, nice young plants, 63s. per 100.

INDIAN AZALEAS, choice varieties, £5 to £6 per 100.

CAMELLIAS, with flower bud, £7 to £8 per 100; ditto small, £6 per 100.

ARAUCARIA IMBRICATA, in small and store pots, 30s. per 100.

JEAN VERSCHAFFELT begs to offer the following, in fine healthy plants, at the undermentioned low prices, viz.:—

CAMELLIAS, 1 to 1½ foot high, with buds, best sorts, all named varieties (selection left to J. V.), £7 per 100; larger, £10 per 100.
AZALEA INDICA, fine plants with buds, first-rate varieties, £5 per 100; stronger, £6, £8, £12 and upwards per 100.
OTAHEITE ORANGES, with fruit, 30s. per dozen.
JASMINUM GRANDIFLORUM, fine grafted plants, flowering all through the winter, 24s. per dozen.

Early orders are respectfully solicited, especially as regards Camellias, which are a scarce article this year. Apply to

JEAN VERSCHAFFELT, Nurseryman, 134, Faubourg de Bruxelles, Ghent, Belgium.

WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now booking orders for forward delivery of WILLOW PLANTS and CUTTINGS for TIMBER and ORNAMENTAL TREES for HEDGES and GAME COVERTS, and for BASKET-MAKING purposes. CATALOGUES free upon application as above. In the Press, and will shortly be published,

The SALIX, or WILLOW, a revised and enlarged Edition, containing Instructions for its Planting and Culture, with Observations upon its value and adaptability for the Formation of Hedges and Game Coverts. Post free, 1s.

Rhododendron and Periskia Stocks, and Epiphyllums.

SEEDLING RHODODENDRONS, from the best named varieties:—

2 to 4 inches high, twice transplanted, fine well-rooted plants.
4 to 6 inches high, twice transplanted, fine well-rooted plants.
6 to 9 inches high, thrice transplanted, fine well-rooted plants.
10 to 12 inches high, four times transplanted, fine well-rooted plants, fit for grafting.
PERISKIA, Stocks, strong.
EPIPHYLLUMS, in variety, good.

Prices on application to B. WHITHAM, The Nurseries, Reddish, near Stockport.

Cheap Nursery Stock.

WILLIAM ABRAHAM offers the following:—

LAURELS, 2-yr., 20s. per 1000; 4 to 6 feet, 15s. per 100.
LAURUSTINUS, 2-yr., 25s. per 1000; 3-yr., 30s. per 1000.
" bushy, fine, 1½ to 2 feet, 15s. per 100.
Evergreen OAKS, 3 to 4 feet, 25s. per 100.
Variegated BOX, 3 to 3½ feet, 25s. per 100.
American ARBOR-VITÆ, 4 to 6 feet, 20s. per 100.
MAGNOLIA GRANDIFLORA, 1½ to 2 feet, 12s. per doz.
" " very fine, 3 to 4 feet, 25s. per dozen.
PAMPAS GRASS, 20s. per 100.
ESCALLONIA MACRANTHA and RUBRA,
BUDDLEA GLOBOSA, DEUTZIA SCABRA,
LEYCESTERIA FORMOSA, COLUTEA CRUENTA,
TRITOMA UVARIA, GLAUCA—all 10s. per 100.
English OAKS, 3-yr. in drills, 2s. 6d. per 1000.

Terms, cash with order, package free. Through rates to London, Liverpool and Glasgow, moderate.

Fort Prospect Nursery, Limerick.

To Nurserymen.

TENDERS are REQUIRED for PLANTING about 100 Acres of Mountain Land with two-thirds of LARCH, and the remaining intermediate portions with equal quantities of SPRUCE, SCOTCH, and PINUS AUSTRIACA; the more exposed parts, about 20 Acres, to be planted 3½ feet apart, and the remainder 4 feet apart. The land is situate near Cwmllecoediog, about a mile from Aber Angell Station, on Dinas Mawddy Railway. Tenders, stating the price per acre, with samples of the Trees, to be sent to

Mr. ALFRED IKIN, Land Agent, Kerry, Montgomeryshire.

"The Best Catalogue."—*Vide "Horticulturist," October*, 1870.

GRATIS and POST FREE, a CATALOGUE of

DUTCH BULBS,

Fruit Trees, Dried Flowers, and General Autumn Requirements.

DICK RADCLYFFE & CO.,
SEEDSMEN, HORTICULTURAL DECORATORS, and GARDEN FURNISHERS,
129, HIGH HOLBORN, W.C.
SEED GROUNDS, ERFURT, PRUSSIA.

PAUL'S HYACINTHS, TULIPS, &c.

"MR. WM. PAUL * * * * well maintained the high reputation he enjoys for the successful cultivation of this class of flowers."—*Journal of Horticulture*, 1871.

"A remarkably fine display of Hyacinths."—*Gardeners' Chronicle.*

WILLIAM PAUL

BEGS TO ANNOUNCE THAT HIS

HYACINTHS, TULIPS, CROCUSES, and other DUTCH FLOWER ROOTS

Have arrived in excellent condition, and he respectfully solicits early Orders.

PRICED DESCRIPTIVE CATALOGUE Free by Post.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

Now Ready.

SUTTONS' AUTUMN CATALOGUE for 1871, profusely Illustrated, and containing full Cultural Instructions for the cultivation of—

Hyacinths
Miniature ditto
Narcissus
Jonquils
Ranunculus
Anemones
Crocus
Tulips, early and late
Gladiolus
Lilies
Amaryllis
Iris

With all other kinds of Flower Roots. Price 1*s*., post free; gratis to customers.

SUTTON AND SONS, Seedsmen by Special Appointment to H.M. the Queen, and H.R.H. the Prince of Wales, Reading.

Exhibition Hyacinths.

SUTTONS' SUPERB DUTCH HYACINTHS, for Pots and Glasses, specially selected for Exhibition purposes.

25 splendid new varieties, 40*s*.
12 ,, ,, ,, 20*s*.

CHEAPER COLLECTIONS,
containing the best old varieties.

		£	s.	d.
100	Hyacinths in 100 very choice sorts	£4	4	0
100	,, ,, 50 ,,	3	10	0
50	,, ,, 50 ,,	2	2	0
50	,, ,, 25 ,,	1	15	0
25	,, ,, 25 ,,	1	1	0
12	,, ,, 12 extra fine ,,	0	12	0
12	,, ,, 12 choice ,,	0	9	0
12	,, ,, 12 good ,,	0	6	0

MINIATURE HYACINTHS, finest named varieties, 4*s*. per dozen.

*** To secure the best Bulbs, early orders are solicited.

For complete Cultural Instructions, and list of Flower Roots, see SUTTONS' AUTUMN CATALOGUE for 1871, price 1*s*.; gratis to customers.

SUTTONS' SELECT LIST of DUTCH FLOWER ROOTS, gratis and post free on application.

☞ *All Flower Roots carriage free.*

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

Dutch Flower Roots.

CROYDON.
A. HENDERSON
EAST SURREY SEED WAREHOUSE
ESTABLISHED 1828

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon.

HOWCROFT AND WATKINS (Successors to CHARLWOOD & CUMMINS) beg to draw attention to their DUTCH BULBS, collections of which, amounting to 21*s*. and upwards, they forward carriage paid to any Railway Station in England and Wales.

Their Descriptive CATALOGUE, containing Cultural Notes for the Guidance of the Amateur, sent post free on application.

HOWCROFT AND WATKINS (Successors to CHARLWOOD & CUMMINS), supply GARDEN REQUISITES of every description.

14, Tavistock Row, Covent Garden, London, W.C.

THE PINE-APPLE NURSERY COMPANY, Maida Vale, Edgware Road, St. John's Wood, W., beg most respectfully to announce that they have successfully secured Mr. JOHN BESTER, the well-known Horticulturist, who is now permanently engaged as MANAGER of the NURSERY and SEED DEPARTMENT.

The Company having the greatest confidence in their arrangements, pledge themselves to supply the best productions in every department, and to conduct the Business in a spirit of liberality, with a determination of giving satisfaction to their Customers. Applications to be addressed to

Mr. JOHN BESTER, Pine-Apple Nursery, Maida Vale, W.

Seed Warehouse: 44, English St., & Blackfriars St.
NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs. LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.

LITTLE AND BALLANTYNE
WM. BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester. Nurseries: Fairfield, near Manchester.

New Bedding Plant, Thymus citriodorus aureus
MARGINATUS (Lemon-scented gold-edged Thyme).

MESSRS. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield, are now sending out an exceedingly pretty Thyme, of an erect-growing but much-branched habit, with large obovate leaves, which are of a very bright dark green in the centre, and with a broad rich golden-yellow margined variegation; is very handsome and attractive. It will prove very effective for edging flower beds, borders, or riband planting, and for growing in masses on banks, or in other varied forms; it may be grown as bushes or pyramids for winter bedding, having proved perfectly hardy. Altogether, it may be considered as one of the most charming bedding plants known, and with the additional delicious fragrance of the sweet-scented Lemon Thyme.

It was exhibited at the Royal Horticultural Society on June 21, 1871, and received a First-class Certificate; also at the Royal Horticultural Show at Nottingham, a First-class Certificate.

PRICES:—
1 plant for 2*s*. 6*d*.
6 plants for 10*s*. 6*d*.
12 plants for 18*s*.
25 plants for 33*s*.
50 plants for 63*s*.
100 plants for 105*s*.
Trade terms on application.

To Her Majesty the Queen.
DUTCH FLOWER ROOTS,
To H.R.H. the Prince of Wales.
CARRIAGE FREE.

JAMES CARTER & CO.

Having received their Consignment of DUTCH FLOWER ROOTS, which have arrived in splendid condition, beg to offer the following COLLECTIONS of BULBS, which will be found to contain, in the best quality, all the sorts required for the purposes mentioned:—

CARTER'S COLLECTIONS of BULBS for CONSERVATORY and WINDOW DECORATION, including Basket and Packing, and Carriage Free. Price 10*s*. 6*d*., 21*s*., 42*s*. 63*s*., and 84*s*.

CARTER'S "GUINEA" COLLECTION of BULBS for CONSERVATORY and WINDOW DECORATION, including Box and Packing, and Carriage Free. Contains—

12 HYACINTHS, in 12 extra fine named sorts.
9 POLYANTHUS NARCISSUS, in 9 varieties.
12 JONQUILS, sweet scented.
50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 ,, Rex rubrorum.
3 ,, La Candeur.
3 ,, Royal Standard.
6 ,, Yellow Prince.
3 ,, Rosa Mundi.
6 ,, Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
6 IXIAS, finest mixed.
6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

CARTER'S COLLECTIONS of BULBS for CONSERVATORY and OUT-DOOR PLANTING, including Basket and Packing, and Carriage Free. Price 15*s*., 30*s*., 42*s*., 63*s*., and 84*s*.

CARTER'S COMPLETE COLLECTION of BULBS for CONSERVATORY and OUT-DOOR PLANTING, including Box and Packing, and Carriage Free. Price 30*s*. Contains—

12 HYACINTHS, in 12 extra fine named sorts for pots or glasses.
12 HYACINTHS, in 3 colours for bedding.
12 NARCISSUS, Double, white.
12 ,, Poeticus or Pheasant-eye.
36 TULIPS, extra fine mixed.
6 ,, Tournesol.
6 ,, Duc Van Thol.
3 ,, Royal Standard.
3 ,, La Candeur.
3 ,, Yellow Prince.
3 ,, Rex rubrorum.
12 Double DAFFODILS.
12 STAR of BETHLEHEM.
12 SCILLA BELGICA, mixed.
75 CROCUS, blue.
75 ,, striped.
75 ,, large yellow.
75 ,, white.
36 ANEMONES, extra fine mixed
8 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice mixed English.
12 ,, extra fine mixed Spanish.
12 JONQUILS, Campernel.
36 RANUNCULUS, extra fine mixed.
50 SNOWDROPS.

"COLLECTIONS" of BULBS for OUT-DOOR PLANTING only, including Box and Packing, and Carriage Free. Price 10*s*. 6*d*., 21*s*., 42*s*., 63*s*., and 84*s*.

For full particulars of all the above, see

CARTER'S AUTUMN CATALOGUE
OF DUTCH BULBS, FRUIT TREES, ROSES, &c.,
Which may be had Gratis and Post Free on application.

5 *per cent. Discount for Cash.*

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.
SHOW of ZINNIAS, STOCKS, &c., SEPTEMBER 20, 1871.
AWARDS of the JUDGES.

CLASS 1.—12 Double ZINNIAS, cut blooms, 6 colours. (Open.)
1st, Mr. G. Wheeler, Warminster Nurseries, Wilts, 10*s*.
2d, Mr T. Bray, Gr. to E. A. Sanford, Esq., Nynehead Court, Wellington, Somerset, 7*s*.
3d, Mr. B. Porter, Gr. to Mrs. Benham, Sion Lodge, Isleworth, W., 5*s*.

CLASS 2.—6 STOCKS, cut spikes. (Open.)

CLASS 3.—12 PENTSTEMONS, distinct, in bunches of 3 spikes. (Open.)
1st, Mr. B. Porter, 15*s*.

CLASS 4.—6 HELICHRYSUMS, in 8-inch pots. (Open.)

CLASS 5.—3 CELOSIAS, feathered, in 8-inch pots. (Open.)
2d, Mr. S. Thorn, Gr. to E. Buckingham, Esq., North Hall, Hampstead, 10*s*.

CLASS 6.—6 BEGONIAS, in pots, distinct. (Open.)
1st, Mr. W. Bull, Nurseryman, &c., King's Road, Chelsea, £1 5*s*.

CLASS 7.—Early DESSERT APPLES, single dish. (Open.)
1st, Mr. W. Gardiner, Gr. to E. P. Shirley, Esq., Lower Eatington Park, Stratford-on-Avon, 15*s*.
2d, Mr. G. Craddock, Gr. to Lord Willoughby de Broke, Compton Verney, Warwick, 10*s*.

CLASS 8.—Early DESSERT PEARS, single dish. (Open.)
1st, Mr. T. Bray, 15*s*.
2d, Mr. J. Tranter, Upper Assendon, Henley-on-Thames, 10*s*.

CLASS 9.—Collection of TOMATOS. (Open.)
1st, Mr. W. Earley, The Gardens, Valentines, Ilford, E., 15*s*.

MISCELLANEOUS.
Extra Prize, Mr. W. Denning, Gr. to Lord Londesborough, Grimston Park, Tadcaster, York, Collection of Orchids.

MEMORIAL PORTRAIT of the LATE REV. JOSHUA DIX, M.A.

At a Meeting of Members of the Floral and Fruit Committees, held on September 20, it was resolved, That a Memorial Portrait of the late Rev Joshua Dix, M A., be procured, and with the permission of the Council suspended in the meeting-room of the Royal Horticultural Society, at South Kensington. The following Subscriptions, in furtherance of this object, have been already promised.—

	£	s.	d.		£	s.	d.
Marshall, Mr. William ..	£1	1	0	Carter & Co., Messrs. ..	£1	1	0
Baines, Mr Thomas ..	0	5	0	Lane, Mr. John E. ..	1	1	0
Earley, Mr. William ..	0	5	0	Fernyhough, Mr. J. R...	1	1	0
Denny, John, M.D. ..	0	10	6	Horne, Mr. C.	1	1	0
Standish, Mr. John ..	1	1	0	Wilson, Mr. G. F. ..	1	1	0
Moore, Mr. Thomas ..	1	1	0	Fenn, Mr R.	0	10	6
Masters, M. T., M.D. ..	1	1	0	Barron, Mr. A. F. ..	0	10	6
Green, Mr. Charles ..	0	5	0	Laing, Mr. John	0	10	6
Baker, Mr. George ..	0	5	0	Kinghorn, Mr. F. R. ..	0	10	6
Lidgard, Mr. Charles ..	0	10	6	Smith, Mr. George ..	0	5	0
Paul, Mr. William ..	1	1	0	Fraser, Mr. John ..	1	1	0
Hogg, Robert, LL.D. ..	1	1	0	Addie, Mr. William ..	0	5	0
Eyles, Mr. George ..	1	1	0	Wrench, Mr. Robert ..	1	1	0
Perkins, Mr. Thomas ..	1	1	0	Horne, Mr. Edward ..	1	1	0
Dombrain, Rev. H. H...	0	10	0				

Further Subscriptions, which are hereby invited, may be forwarded to WILLIAM MARSHALL, Esq., Royal Horticultural Society, South Kensington, Treasurer to the Dix Portrait Fund; or to Mr. THOMAS MOORE, Botanic Garden, Chelsea, Honorary Secretary.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Professor REICHENBACH, of Hamburgh
Dr. MOORE, of Glasnevin
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, SEPTEMBER 23, 1871.

THE FLORAL COMMITTEE of the Royal Horticultural Society would not have done its duty had it not taken the first opportunity of publicly expressing its regret at the decease of its late Chairman, the Rev. JOSHUA DIX. His love for, and his knowledge of, flowers; his sympathy with all those with similar tastes to himself; his catholic spirit, impartial judgment, and genial good-fellowship, rendered him eminently fitted to preside over a large body, the members of which have not unfrequently conflicting interests, and, of course, varied attainments and predilections. To keep so heterogeneous a body in good humour, and to secure fair play to all, is no light task, but it is one which we believe everyone who knows the circumstances will agree with us in thinking that the late Chairman fulfilled admirably well. It is therefore with very great pleasure that we learn that steps will be taken to provide by public subscription a portrait of our late friend, to be placed, with those of other workers in the same field, in the Council-room of the Royal Horticultural Society.

Such a recognition can, of course, do the deceased Chairman no service, but it will be an agreeable thing to his immediate friends, and a stimulus to others who, without thought of fee or reward, devote their energies unselfishly to the general benefit of horticulture and its chief representative body, the Royal Horticultural Society.

At the same meeting it was announced that the Council (with whom the appointment rests) had appointed Mr. W. MARSHALL as successor to Mr. DIX in the presidency of the Committee. Those who have had the opportunity of witnessing Mr. MARSHALL's exertions in the cause of Horticulture and of the Society will, we believe, commend the wisdom of this appointment. Few among the Council have been more energetic and more useful than Mr. MARSHALL in promoting the objects of which the Floral Committee, *par excellence*, may be taken as the representative; and we have every confidence that those qualifications which have rendered him so useful a man of business on the Council will be turned to even more profitable account in his new position as Chairman of the Floral Committee.

From his experience of the proper mode of managing exhibitions, and his knowledge of plants, and of those who exhibit them, we look forward with well grounded hope that the new Chairman will strain every nerve to discountenance the undue multiplication of certificates which, without some control, such as a Chairman having the confidence of the Committee can alone exercise, bids fair to become an evil, and to render the certificate of the Floral Committee about as valuable a decoration as the ribbon of the Legion of Honour! Mr. MARSHALL will do good service if he sedulously endeavours, without injuring the interests of any individual, to check any tendency towards a reckless indiscriminate issue of certificates, which should be esteemed primarily as horticultural trophies, not as commercial puffs. Again, it is highly desirable that any one who has the power of influencing for good the deliberations and awards of the Floral Committee, should do his best to secure fair play and due attention to meritorious plants, even if the interest attaching to them be not immediately of a mercantile nature. The Floral Committee is not a body constituted to determine what plants will pay best to sell, but what plants, as there exhibited, are most deserving recognition, whether from their utility, their interest, or their beauty. We would not entirely exclude commercial considerations in the judging of plants brought before such a body, inasmuch as a large number of plants submitted to it for adjudication are of such a character that they can hardly be judged by any other standard, but, at the same time, there are other subjects which not unfrequently come before the Committee, and which cannot be judged by such a standard; they are not in the trade, nor likely to be so to any extent; but that circumstance offers no good reason why they should be passed over by the Committee. At least they are as much deserving, often far more so than the subjects to which the Committee awards somewhat freely its diplomas and certificates. We do not wish to add to the difficulties which the new Chairman of the Floral Committee is sure to encounter, but we should not be doing our duty as horticulturists if we did not call attention to the points already mentioned.

POTATOS and PRIMROSES. There is at least as great a similarity between these two words as between Macedon and Monmouth, and we now associate the two with a view of urging on our food producers the necessity of applying the same persistent energy in introducing novelties of sterling worth that is manifested by our florists. We would not be misunderstood. We recognise and thankfully appreciate all that our Potato growers have done for us in selecting and hybridising, but still we assert our opinion, that they are working too much in one groove. Some Potatos are earlier, some later; some far more robust than others; their inner qualities, so to speak, vary as much as their outward semblance. Nevertheless, an examination of the exhibitions, year after year, only confirms us in the idea that the variations and differences we see are kaleidoscopic—the same materials worked up in different ways. Now, in view of the Potato disease alone—apart from the desirability at any time of securing another string to our bow—we believe that the great want of our times, in the matter of Potatos, is an entirely new strain. We go on breeding in-and-in — ringing the changes on one set of bells, and they of no great compass, and we wonder that the bells get cracked and out of tune; and, when the blight comes, we wring our hands and deplore the fate which we have done comparatively little to avert. We plant in autumn, we lift early, we eschew animal manures, we do this and do that—the this and that being often contradictory the one to the other, but we do not go back to the fountain-head and introduce new blood. There is as good fish in the sea as ever came out of it; there are other tuberous Solanums, which we have mentioned again and again (see p. 1253, 1869), which should at least be tried, either by themselves or crossed with the Potato. These have never been tried to our knowledge. The vast majority of growers do not even know of their existence. They would go on for ever bewailing their fate, and never attaining what at least affords a reasonable chance of success. Of course time is required, but ask Mr. FENN, or any other Potato grower, whether time and patience are not required to produce such samples as were exhibited on Wednesday last at the Royal Horticultural Society. It is perhaps too much to expect private individuals to go to the expense, and suffer the long delays and disappointments which would probably have to be encountered in introducing a new breed of tuberous esculents; such is work for a body like the Royal Horticultural Society. Among its members are those who know what kinds might be sought for with a fair chance of success; among them are those whose influence could secure a supply of the plants in question with comparatively little difficulty; among their officials assuredly there are those who, if they had the materials, would know how to turn them to good account.

What greater service to the community could the Royal Horticultural Society do than introduce some other species of Solanum (or other plant), and sedulously test its capabilities as an adjunct to, or a substitute for, the Potato? What sort of Potatos were those, we wonder, which RALEIGH (if it were really RALEIGH) introduced? What would our growers say to them could they see them? No matter if the new introductions we propose were at first unpromising looking, that is the case always at first. Plants to be useful to mankind on the large scale, must be cultivated and improved. This has been proved again and again. On the other hand, it has been proved equally often that improvement may be carried on till it ends in degeneration. This seems paradoxical, but every breeder, be it of plants or animals, will realise our meaning, and own the necessity for the introduction of new blood to counteract the tendency to decline in vigour of constitution which happens when breeding in-and-in is too long and too continuously persevered in.

We do not advocate fanciful or preposterous schemes, such as grafting Potatos into Artichokes, or *vice versâ*: such things may be left for psychic spiritualists, or whatever they call themselves. We confine ourselves to recommending steps in consonance with all that we know either of sound practice or of botany and vegetable physiology, and we say that in this matter no sound progress can be made unless we work in the right track, as pointed out by the physiologists.

But what has all this to do with Primroses? This much: the same amount of energy and skill which have been devoted to securing the magnificent hardy Primrose, of which we offer a portrait in another page, would secure to us, at least, in the future, a new esculent as valuable as the Potato now is. If men of commerce will not or cannot undertake to do this, our public gardeners—directors of botanic gardens, superintendents of colonial establishments, and the like, should do so, and earn the gratitude of their own and future generations.

—— A MOVEMENT has been set on foot, at the instance of the Rev. H. H. DOMBRAIN, to perpetuate amongst horticulturists the MEMORY of the LATE Rev. JOSHUA DIX, by obtaining his portrait in oil, to be hung in the meeting-room of the Royal Horticultural Society. It will be seen from our advertising columns that the matter has already taken a definite shape. Mr. MARSHALL has undertaken the office of Treasurer, and Mr. THOMAS MOORE that of Secretary, and a Committee has been appointed to consult as to the artist to be employed to execute the portrait.

—— In reference to IRISH SAXIFRAGES Mr. W. ANDREWS exhibited during the summer session of the Dublin Natural History Society specimens of Saxifraga Andrewsii, supposed by some to be a hybrid, and accompanied by a statement that he had lately given Mr. A. G. MORE the exact locality of this rare form, and fully expected that in the course of this summer Mr. MORE would be able to verify its distinctness; he himself believes, judging from the structure of its ovaries, that this species has strong affinities with S. nivalis. Mr. ANDREWS at the same time exhibited some very remarkable specimens of S. stellaris, closely resembling in form S. leucanthemifolia, a plant which Mr. JOHN BALL appears to regard as but a variety of the former. A coloured drawing by the late Mr. DU NOYER was also shown of a remarkable variety found at the Great Blasquet, in which the flowers presented a glandular disc surrounding the base of the pistil.

—— The MAXIMUM TEMPERATURES of the AIR during the week ending September 16, ranged from 78°.6 at Blackheath to 62°.6 at Aberdeen. The mean for all English stations was 71°.9, there being only two places in which the temperature was less than 70°, viz., Hull and Newcastle-on-Tyne. In Scotland the mean was 65°.6, thus being 6°.3 lower than England. The MINIMUM TEMPERATURES of the air ranged from 52°.5 at Blackheath to 41° at Leith, the mean for England being 48°.2, and for Scotland 43°.9. The MEAN TEMPERATURES ranged from 62°.6 at Blackheath to 53°. at Newcastle-on-Tyne. The mean for all English stations was 58°.2, and for all Scottish, 54°.6. Very little rain was recorded as having fallen, the greatest in England occurring at the most southerly station, Portsmouth (0.33 inch), the mean fall for the southern country being but 0.07 inch. It Scotland the greatest fall occurred at Dundee, viz., 0.50 inch, and another of 0.36 inch was recorded at Leith, the mean for the whole country being 0.14 inch. (See Mr. GLAISHER'S Tables, p. 1235.)

—— Those who are admirers of LILIUM AURATUM—and who is not?—should see a grand bed of upwards of 5000 of them, now in full bloom, at Mr. A. WATERER'S nursery at Knap Hill. The plants are seedlings of home growth, and are remarkable for the grand size, fine form, and rich marking of their flowers, while they are also exceedingly diverse. Those with red bands, and those with crimson spots, are plentiful amongst others, and some are most intensely and superbly spotted. Mr. WATERER would, we have no doubt, gladly show them to any one interested in Lily culture.

—— Among the different plants, the cultivation of which for Fodder has been recommended, the CORONILLA VARIA seems to merit special attention. MILLER, in 1760, gave the following account of experiments which had been tried with it, which may be of interest:—

"This plant was formerly proposed to the curious in agriculture as a proper food for cattle; and a few persons did make trial of it: some of whom found by experience that it might be cultivated with great ease, and become very beneficial to the farmer; but it was never extended very far. I suppose for the same reason as many other valuable things are neglected, only because they were not cultivated by their predecessors. I remember to have seen a large spot of ground planted with this at Deepdene, near Dorking, in Surrey, at a seat of the Honourable Mr. HOWARD, which, although it had been been neglected for some years after his death, yet was growing so rank as to spread over and get the better of all the rank weeds, Brambles, &c., which had been permitted to grow among the plants; and I measured some of the branches which I cut off, and found them upward of 5 feet long, and very tender their whole length, so that a small spot of ground will afford a good quantity of fodder for cattle, especially as it will grow fast enough to be cut five or six times a-year; and in dry seasons, when there is a scarcity of other herbage, this will be found an excellent plant to supply that want. The cattle I have tried with this herb green were horses and cows, both of which seemed to eat it greedily, and there can be no doubt of its being a better food for any cattle than the common Vetches, which are sown for that purpose, and, as this is an abiding plant, so it is much preferable to any which require to be renewed every year. The only objection of any force which I have yet heard made to the culture of this plant, is the difficulty of extirpating it when it is once planted, for the roots spread more than Couch Grass in the ground. But as the plant will last for ever, so it should be always planted where it may remain; and upon such land as is too dry to produce other herbage, this may be a very profitable plant."

New Garden Plants.

PRIMULA JAPONICA, *A. Gray; Memoirs of the American Academy of Arts and Sciences* (*On the Botany of Japan and its Relation to that of North America*), 1859. New series, vol. vi.

Undique glabra, foliis oblongis spathulatisve obtuse argute sæpius duplicato-denticulatis in petiolum alatum brevem attenuatis membranaceis venosis efarinosis (sed junioribus subtus atomiferis); scapo angulato (1—1½ pedali) multifloro; floribus verticillatis; involucri phyllis lineari-subulatis inappendiculatis integerrimis, pedicellis multo brevioribus; calyce ovato-campanulato, lobis 3 angulari subulatis tubo intus farinifero æquilongis, corollæ purpureæ tubo pluries brevioribus; lobis corollæ obcordatis; capsula globosa vertice nuda demum irregulariter rupta.—*Hakodadi*.

"A showy species, which manifestly belongs to Duby's section, Sphondophylla, although the involucre is not foliaceous."

The above is the technical description by the learned American botanist of a plant whose praises are now in every one's mouth. It will do much to redeem the prejudice felt against "New Plants," and engendered by the introduction in some cases of plants having no other qualification than that of novelty. In this case, however, there need be no fear; the plant is superb, and it is hardy. It was introduced to Mr. Bull's establishment by the instrumentality of Mr. Fortune, who found the plant in Japan some ten years since, but was not successful in introducing it to British gardeners till the present year. Mr. Fortune obtained the seeds from W. Keswick, Esq., of Hong-Kong, and Messrs. Walsh, Hall & Co., of Yokohama, which gentlemen, he observes, have the honour of introducing a very lovely plant to English gardens. We subjoin a few notes made on it during the season:—

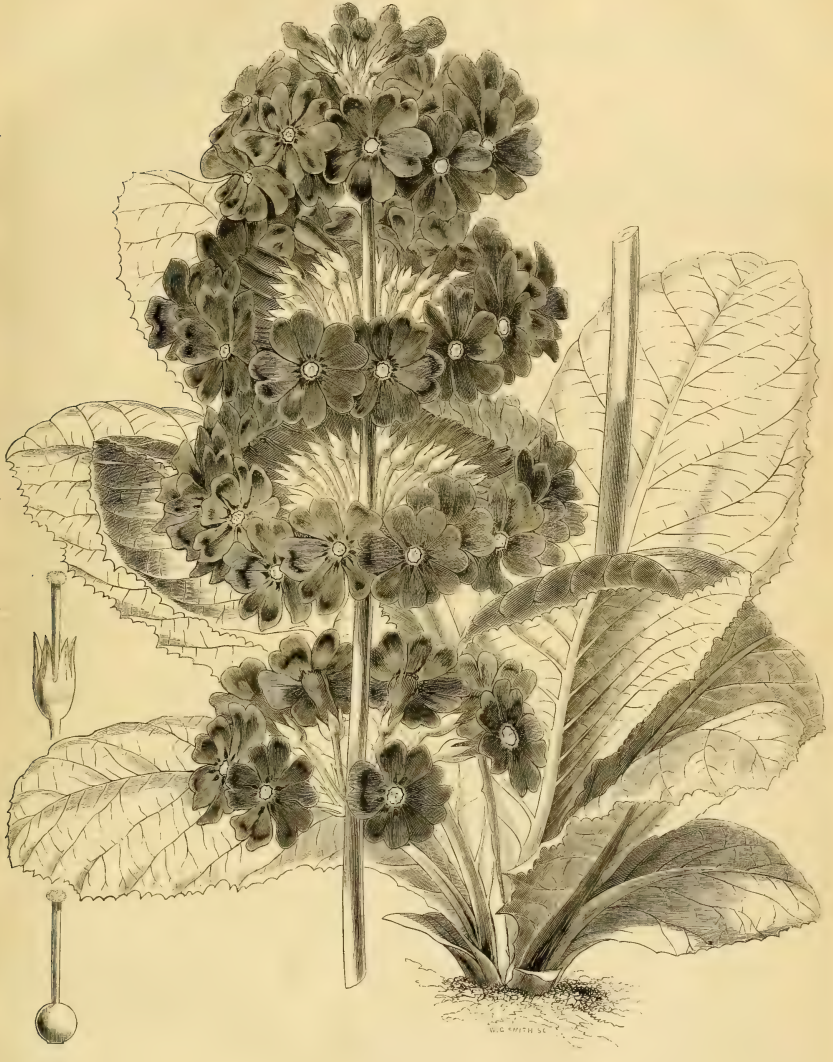

Fig. 277.—PRIMULA JAPONICA

A vigorous, hardy, herbaceous perennial, stemless, with bold, oblong-spathulate, rugose, sharply-toothed (biserrate or sublobate) leaves, 6—8 inches long, and about 3 inches wide. Scape erect, stout, smooth, 1—1½ foot long, bearing successive whorls (4—5 in number) of showy flowers, 10—14 or more in a whorl; pedicels smooth, 1 inch or rather more in length, each in the axil of a subulate bract. Flowers about 1 inch in diameter, of a lively magenta colour, with a small dark zone around the eye, and scentless, strongly suggestive of those of the richly-coloured varieties of Phlox Drummondii. Calyx small, purplish at the base, campanulate, with five short triangular acuminate lobes or subulate points. Corolla 5-lobed, the lobes roundish, obcordate, bipartite, or emarginate, with a small mucro in the sinus, distinct in some vars., overlapping in others; tube $\frac{5}{8}$ inch long, swollen just below the flatly expanded limb, with a zone of maroon-crimson around the mouth of the tube. Stamens five, almost sessile, inserted at the mouth of the tube on the swollen portion. Stigma capitate, about as long as the tube; but, as in other Primroses, sometimes projecting beyond the stamens, and forming a pin-eyed flower. Already several varieties have appeared, of which the following appear to us to be perfectly distinct:—

lilacina, whitish at the edge, flushed with rosy-lilac towards the eye, which has a zone of orange-red; very delicate and beautiful; a large flowered sort.

alba, white flowers with a zone of golden-yellow at the eye; smaller than the type.

carminata, carmine-red with crimson-maroon marking at the eye; smaller than the type.

splendida, more stocky in habit, large-flowered, the colour a very bright glowing magenta with brighter crimson zone, and broad open eye showing the yellow interior of the tube.

rosea, flowers lilac-rose, distinct.

The plant has been figured in recent numbers of the "Botanical Magazine" and of the "Florist and Pomologist."

SEEDLING FRUITS.

THERE is a fascination, if I may so term it, in raising new kinds of fruits from seed, which grew with my growth and has strengthened with my decline. I have been led into this train of thought by the wonderful variations I have seen in fruits raised from seeds; their history would, in the hands of a novelist, fill a volume. A few days since I looked over a plantation of 400 Jefferson Plums, raised from the stones of this sort in 1865, and I found a great number of them full of fruit, but all were purple—it is well known that this is a large yellow Plum; no two were alike, nearly all were round—the parent is oval; and all were more or less good, but not of a superior quality. One promises to be a rich reward, for it is longer than its parent, ripens a month earlier, is oval, purple mottled with red, its flesh transparent, like that of the Pine-apple, and of the most exquisite flavour. In the same batch of seedlings, of the same age, are 100 of Reine Claude de Bavay; all those that have borne have given purple fruit, more or less oval—how different to the parent stock!—yet they seem to inherit the Green Gage flavour. There are many hundreds in this plantation, raised in 1865, and all of great interest—to the raiser—as the origin of all is given. It will be some few years before all these trees bear fruit, but every season will give hope, and then disappointment, which one does not seem to feel, it is so often the lot of the fruit-raiser. It is only to-day that I saw on a young tree in the orchard-house one enormous fruit, measuring 12 inches round; it was the third generation from the White Nectarine, was quite white, and from its colour I judged it to be of the finest racy flavour. I cut it, and, alas! found it to be a Pavie, very sweet, but flavourless.

I must return to Plums, which are so useful, and every season, owing to our exports of preserves, becoming of greater value. It is now, as nearly as possible, 50 years since—I think I have told the tale, but *n'importe*—that my attention was attracted to some grand old Plum trees, planted by my grandfather between 1770-80. Their name, I think, was the Early French Plum. I soon found that the proper name was Précoce de Tours. These trees, once in four or five years or so, bore good crops; in other seasons a mere sprinkling of fruit. By a sort of intuition it struck me that this tender but early Plum might be acclimatised by raising seedlings from it. Accordingly I sowed some stones, and raised some young trees. These were planted in a corner, and nearly forgotten. I was then immersed in Rose culture. After some eight or 10, or 12 years had elapsed, these trees commenced to bear fruit; I was struck by the precocity and goodness of one, and the great fertility and goodness of the other. They were at first distinguished by their numbers, and were simply No. 1 and No. 2. After a few years the former was named the Early Favourite, a dessert Plum, and the latter the Early Prolific—at present the most popular of all Plums, not only for its earliness, for it is at market by the end of July, but for its excellent flavour as a preserve. It is, when well grown and ripe, far superior to any other early Plum, even as a dessert fruit. For the last 20 years it has so increased in popularity, that from 15,000 to 20,000 trees are sold here annually, and some thousands of young pyramids are planted out 6 feet apart for bearing, under market garden pruning. By raising this sort—creating it—one feels to have benefited one's species, and, like growing the extra blade of grass, the feeling is one of gratification.

Another seedling Plum has given me much gratification. As it will, I think, be a pleasant memento, shall I give its history? [By all means. EDS.] Well, at this rate I could fill a volume about seedling Plums.

About 25 years ago, when full of Rose love and Rose lore, I happened to be at Bellevue, a charming height near Paris—now, I think, devastated—on a visit to M. Laffay. In the midst of our Rose talk he said, "You are so full of Roses, but look here—taste." He then gave me a large mottled Golden Gage, with a most excellent and distinct flavour, superior, I then thought, to the old Green Gage. I think so still. This was Reine Claude Diaphane (now the Transparent Gage), because when fully ripe you can see the stone plainly. A few years after this time I received some trees, but they seemed so disinclined to bear that I despaired of them; their shoots were so glossy and vigorous, and their leaves the same, that no blossom buds would form. This went on till the hot summer of 1857, I think, when some fine fruit ripened in September—how large and excellent they were! I was not, however, satisfied with the habit of the tree, it was too vigorous, and to a certain extent shy in bearing; my success in acclimatising the Précoce de Tours came to mind, and I had hopes. Some stones were sown, some young trees raised, and two years ago I had the pleasure of seeing a Plum of my own creating likely, in a humble way, to immortalise my name (*cui bono?*). This seedling is a marvellous likeness of its parent as regards the colour, quality, and size of its fruit, but it ripens fully a month earlier and is a great bearer, but, above all, instead of having smooth, vigorous shoots it has stout downy ones and rugose leaves: a more complete departure from the parent I have never witnessed. One day this Plum will go to the London markets by thousands of bushels, and its raiser or creator may be remembered.

Among our numerous seedling Plums my attention has been directed to fine culinary sorts, so as to have a large size, deep colour, and fine flavour. One seedling from Prince Engelbert bore for the first time this season, and promises well, being large, and of the same size and quality as its parent, with this remarkable difference—it ripens at the end of July, or three weeks before it. Another Plum for the people is a seedling from Belle de Septembre, of the same size, or nearly so; this ripens the middle of August, and is a prodigious bearer—it bears up the stem, so that it can be cultivated as a close pyramid in small gardens. These market Plums will, when known, supersede that prolific but insipid Plum, the Victoria, now so largely grown.

With regard to seedling Pears, there are some three or four thousand here, many from hybridised sorts, as are many of the Plums; they are full of interest, but almost hopeless—it is so difficult to raise a fine Pear from seed to ripen when Pears are valuable. There are, as we know, too many really good Pears ripening in September, October, and November; but good Pears ripening in March and April are still rare. There are some scores of Pears raised here from seed now full of fruit; they have been raised from esteemed sorts, and which seem quite hardy, but not good enough to name, except one, a variety of the Louise Bonne, and like it in every respect, except in ripening a month or so after its parent; still the vagaries of my seedling Pears are productive of amusement, and the hundreds that have not borne, of hope.

With Apples raised from seed I have had but little success, for I placed the Ribston Pippin as a test, and not one could surpass or even equal it; and so my seedlings, with the exception of two or three surface rooters, which have made valuable Paradise stocks, were all grafted with established sorts.

My seedling Peaches and Nectarines are so numerous, and their origin and qualities so valuable, that I could fill a small volume in narrating their history. I will only at present mention one, most remarkable for its beauty and excellence: more than one or two of our best judges having declared it to be the largest, handsomest, and best Peach in the world, and yet this is only one remove from that uneatable Pavie (clingstone), the Pavie de Pompone. I ate one of these Peaches to-day (September 15); it is the Princess of Wales, and certainly I never saw one larger (12 inches round), and with its cream colour and rose so handsome, nor ate one so rich. This is most encouraging, still with Peaches hybridised there is something more to be done, for, as Sir John Sebright said of his bantams, "they can be bred to a feather." I can only illustrate this by saying that a seedling Peach tree has borne this season some extraordinary fruit. The tree was raised from that original Chinese sort, the Honey Peach, the blossom of which was crossed with the Albert Nectarine. The result is a perfect hybrid, with a skin nearly as smooth as the Nectarine, and with a combined flavour—the luscious sweetness of the Honey Peach, with the brisk Nectarine flavour. It may be asked why these things have not been submitted to the Fruit Committee? Well, I know the members to be good and honest, but—shall I say it?—rather deficient in, in—must I say it?—prudence. Some of them are better lovers of than judges of fruit, and so it has happened that errors have been committed, not so much, perhaps, from want of judgment as from haste; for, in my opinion, every variety of fruit should be exhibited at least for three seasons (giving it commendation, if deserved, each time it is shown) before a first-class certificate is given. The habits of the tree should be looked into before judgment is passed; in fact, the committee should have a peripatetic branch of, say, three good men to closely observe the origin and habit of a seedling fruit, and then wait. If this can be done we should not have a late Peach certificated as an early one, or a Grape certificate returned, or a Pear as a supposed seedling exhibited only once and certificated, putting sundry guineas into the pocket of the exhibitor. With Grapes, commencing with the Golden Hamburgh, we have much to lament, for many guineas misspent; let us hope that that horrible guinea will disappear as the price of our new fruits, and that we shall soon be glad to dispense with it: depend upon it the three years' trial and the peripatetics will stop it. I have written as above after much talk with fruit-loving friends, forgetting in my old age that I am a member of the Fruit Committee, and have been mixed up with all its doings till 1870, since which I have not been able to attend; so that I have helped it in its small errors with golden and other Grapes; and as it is never too late to mend, I have now endeavoured to lend an amending hand, for which I trust the committee, if it do not thank me, will at least consider kindly.

I may at some future time, if permitted, give my experience in raising seedling Peaches and Nectarines, commencing some forty years since. It would, I flatter myself, form a chapter not devoid of interest. *Thos. Rivers.* [The history of our correspondent's experiments would be most valuable. EDS.]

BATONEUS POPULI.

A MITE INJURIOUS TO THE ASPEN IN SCOTLAND.

AT the end of May last, Mr. George Norman, of Forres, a gentleman well known as an ardent and successful cultivator of Scottish entomology, kindly sent to me a batch of curious Aspen galls, accompanied by a note that they were growing in vast profusion on Sir A. Gordon Cumming's estate near Shiel, on the banks of the Findhorn, and that the branches of the Aspens were covered with them in all stages of growth. My correspondent also informed me that the Aspens were probably of natural growth—quite wild, and, in reply to my inquiry, I learned that none of the galls were seen near to or on the roots.

It is the first time that British specimens of these galls have come under my notice, but I have long been acquainted with their occurrence in Bohemia, as detailed by Herr L. Kirchner in the following note, of which I think it serviceable to give a literal translation:—

> "But the most diversified works I found on the Populus tremula, L., of our woods, at the young shoots of 4—5 years' growth, amongst which there are, however, individuals, nearly twenty years old, and which from the want of sun continue to vegetate in a crippled state in the thicket of old Pine plantations. Most remarkable of all are the gall-like deformations similar to tuberous growths, which are attached near to the root, and half imbedded in the ground, from the size of a Hazel-nut up to that of a man's fist; their outside is of a fine reddish-green, their shape and look that of a raspberry,* their interior full of small cells, nearly 100 in number, each of which has the size of a Hemp-seed, and is tenanted by 10—15 mites in the larval state (Batoneus populi, mihi). Only twice I was so lucky as to catch altogether five old females which were just busy [laying?].
>
> "This gall formation, which is quite peculiar in construction, and which is undoubtedly the work of a mite still undescribed, I have subsequently found on 11 different crippled shoots, always only near the root, fixed to the bark, half above ground, and half imbedded in it." *Lotos*, xiii., p. 44.

With the description here given of the Bohemian specimens, my own Scotch ones quite agree in every particular,—in size, colour, and internal structure. I was in particular struck by the rich, downy, reddish-green hue of their covering, by the loose, granulate texture of the outer layer, which could be easily broken up by hand, and by the fibrous, woody, hard centre, around and within which the numerous cells of the mites were located. In my opinion each of these galls springs from a bud, transformed into a short, deeply-imbedded foot-stalk, within which the parent mite had deposited her eggs. Hence I would not lay any stress on the fact, so much insisted upon by Herr Kirchner, that the galls occur only near the roots. On a future occasion I hope to be able to supplement this notice by an account of the development of the makers of these excrescences. In the meantime I wish to direct the attention of foresters and arboriculturists to the fact, how injurious these galls, "in vast profusion," must be to the trees, and what an enormous quantity of sap they must divert from its legitimate channels.

Those who value healthy growth, I would, therefore, recommend, not to use their pruning-hooks tremblingly, like "Aspen o'er a brook," but firmly, and mindful of the circumstance that if the operation is to do any lasting good, these excrescences should not remain on the ground, but should be collected and consigned to the fire. *Albert Müller.*

ENGLISH LOCAL FLORAS.—V.

IN 1825 appeared a second edition of "An Essay on the Geographical Distribution of British Plants through the counties of Northumberland, Cumberland, and Durham," by Mr. Winch; it first appeared in 1819. This is of importance as being one of the earliest papers directing attention to geographical botany, and will be perused with great interest. It contains a careful enumeration of the more interesting plants of the district, arranged under ten heads, including such as reach their north limit in this part of the kingdom, and such as here find their south limit; and two lists of introduced plants, the latter from the ballast hills of Tyne and Wear, being interesting as recording for the first time the occurrence of species which have since put in an appearance in other parts of the kingdom. There are two appendices—the first containing a monograph of the Roses of the district, of which 14 are enumerated; and the second, observations on temperature, &c. In a brief review like this, it would be impossible to give anything approaching a complete notice of such papers as these; and this remark applies even more forcibly to the works of Mr. Watson, which, however, it would be equally impossible to pass unmentioned.

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* Similar deformations are found on the trunk of Populus pyramidalis, perhaps also below, as in this case.

"A Catalogue of Rare or Remarkable Phænogamous Plants of South Kent," by the Rev. G. E. Smith, published in 1829, is the next work which claims our notice. It is arranged on the plan of the English Flora, and embraces a district of much botanical interest. In careful and critical observation, this catalogue is in many respects an advance upon most of its predecessors; it contains 246 species—a good number, considering that the commoner are excluded. Among the most interesting of these is the Statice, here published as cordata, which was subsequently described by the author, in the "Supplement to English Botany," as S. binervosa. This plant, although described and figured by Lobel and Gerarde, and localised by the latter and Ray, was long overlooked by subsequent writers, and a full description is here given. In the "Student's Flora" it is placed as S. auriculæfolia. Many detailed descriptions and critical notes are scattered through the book; the observations upon the species and forms of Ophrys, which, as is well known, are especially abundant at Folkestone, will be read with interest. The form known as O. fucifera appears to have been plentiful about this time, as our author speaks of having seen "more than 200 specimens" from the neighbourhood of Ospringe. He came to the conclusion, which subsequent writers have confirmed, that it could not be separated from O. aranifera. Careful figures of this and some other of the more interesting of the plants enumerated are given.

In 1829, also, Dr. George Johnston published Part 1 of a Flora of Berwick-upon-Tweed. This contained 248 pages, and was confined to the Phanerogams, arranged according to the Linnean system, the nomenclature being that of Smith's "English Flora." There is an introductory essay on the geology of Berwickshire. The number of species enumerated is 608; these are briefly described, with short notes of general interest, and full lists of localities for the rarer plants. A coloured figure is given of Veronica Buxbaumii, under its synonym of V. filiformis. According to Dr. Johnston, this had not been previously noticed in any work on English botany, although Mr. E. Forster had observed it "several years" before in Sussex. Its rapid spread throughout the country need only be referred to. Another plate is that of the Luzula, which we mentioned as having been figured by Purton, and which is here given as L. sudetica. Part 2, published in 1831, contains the Cryptogams, extending over 268 pages, and several appendices on the additional species and localities observed since the publication of Part 1. There is a detailed description of Myosotis repens, for which M. sylvatica had previously been erroneously recorded; also a figure and description of Lathræa Squamaria. There is also an arrangement of the plants according to the natural system, and a complete table of the Phanerogams and Ferns of Great Britain, with some general remarks upon introduced plants, founded on the catalogue published by the Rev. J. S. Henslow two years before. The plants, which reach respectively their north and south limit in Berwickshire, are enumerated. There is a sketch of the botany of north Durham and Berwickshire from the earliest records to the date of publication, stating the principal additions made to the flora by various observers, somewhat upon the plan recently adopted in the "Flora of Middlesex," noticed in these columns at p. 1067, 1869. Dr. Johnston was evidently a careful and painstaking botanist, and well known not only in that capacity but also as an accomplished physician and a learned zoologist. We shall refer later on to another of his works.

In 1832 appeared a work by Mr. Hewett Cottrell Watson, printed for private distribution, entitled, "Outlines of the Geographical Distribution of British Plants." This may be considered of especial interest, not only from its being among the first works which directed attention to geographical botany, but also from its having been the earliest botanical work of the author, and the pioneer, so to speak, of the invaluable "Cybele Britannica." It is divided into two portions; the first containing outlines of the conditions influencing the distribution of plants, of the climate and physical aspect of Britain, and of the topographical and geographical distribution of British plants. The second part is devoted to the particular distribution of species, arranged according to the natural system. In this the range of each species, both in Britain and abroad, is given, under its proper heads of habitat, topography, and geography. Under topography, Britain is divided into six districts: the first four including respectively the south-eastern, south-western; north-eastern, and north-western counties of England; the fifth and sixth the southern and northern counties of Scotland. Then follows a reference to the various local floras in which the species was recorded, and then the counties in which it was reported to grow. Indications of supposed introductions are given; and under the head of geography, the extra-British distribution of the species is traced.

In 1833 Mr. Winch's "Contributions to the Flora of Cumberland," which had appeared a few years before in the "Newcastle Magazine," was "republished with numerous additional habitats of scarce plants in consequence of the appearance of" Mr. Watson's work. This contains a critical examination of the claims of certain plants to be admitted to the flora which had been recorded on the authority of Hutton, a Lake guide; and justifies the rejection of many which had appeared in the "Botanist's Guide." A list on the Linnæan system, with localities, follows, in which the Mosses, Lichens, and Fungi are included. In 1837, a similar catalogue of addenda to the flora of Northumberland and Durham was published by the same author, apparently in the Transactions of the Newcastle Literary and Philosophical Society, from which it was subsequently reprinted. *James Britten, F.L.S.*

BRÉHAUT'S "LAWN CONSERVATORY" AND "CORDON CASE."

AT the Nottingham Exhibition of the Royal Horticultural Society Mr. Rendle, the patentee of the admirable inventions above named, exhibited examples to which we directed attention at the time, as being a decided step in advance of anything in their way which has been introduced to the notice of the public. We are now enabled to furnish the annexed illustrations (figs. 278, 279), and to add a full description from the pen of the inventor, the Rev. Th. C. Bréhaut:—

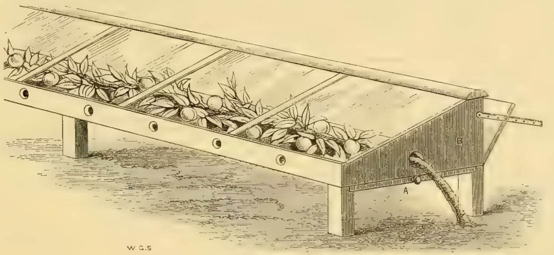


FIG. 278.—BRÉHAUT'S CORDON CASE (RENDLE'S PATENT).

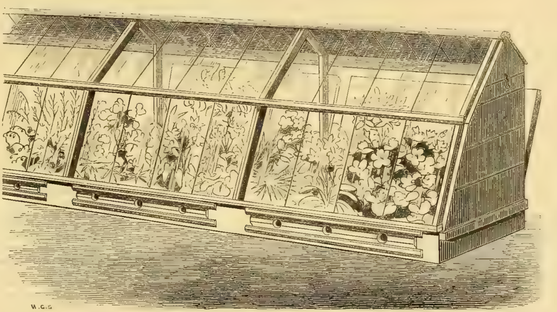


FIG. 279.—BRÉHAUT'S LAWN CONSERVATORY AND "FIRST FRUIT CASE" (RENDLE'S PATENT).

"The Lawn Conservatory and First Fruit Case (fig. 279) partly represents a 12-foot length, 3 feet 6 inches wide at the base, and about the same in height. The glass removes at pleasure, and so does the whole of the front and side shutters, and also lower down to water, shift pots, &c.—in fact, every part is movable. This gives immense ventilation, and ventilating slides for winter are provided. The case stands on a single row of bricks, so that the flowers may all be readily seen when the case is used as a conservatory, the back flower-pots being raised at pleasure. On a lawn the effect is very good. I have since added iron spikes along the ridge for a stout curtain to be drawn over the glass in stormy or cold weather. I have a 20-foot length 6 in. higher, and the same wider than the 12-foot here shown. But the smaller size is handier to transport, which, by sliding out the glass, it is easy to do. Thus we carried one and placed it over a Vine which had been trained on a wall, and at present it has this Vine running under the top, with Zonal Pelargoniums filling the floor beneath, both doing perfectly. Next winter and spring I intend filling this floor with Strawberries in pots, and replacing these, when ripe, with Roses or show Pelargoniums, which succeeded wonderfully in them this spring, being the finest in the island. This is using the case as a "first fruit" (Mr. Rivers gave the name) propagator; indeed, any early vegetables would thrive in it. If made cheaply, this is one important use it is destined for, being a miniature plant and fruit house, with glass placed to admit the direct morning and mid-day sun rays and ventilation at command.

"The leading idea of this case is that no shifting or lifting of glass lights occurs in it, the whole of the work being done by removing the back and side shutters, which are made in easy 4 feet lengths for this purpose. I am thinking of running a flue under my large cases, to grow early Strawberries for the markets, or to use for early Roses, &c.

"The cordon case (fig. 278) also illustrates a portion of a 12-foot length, with legs of 10 inches above the soil, and 3 inches buried to steady the case. The front glass is 18 inches long, and there is a half hip of wood at the back, removable to ventilate and prune in bad weather. In fine weather, the floor on which the Peach or Apricot cordon lies, is lowered to the earth to ventilate, prune, or syringe, and expose the cordon to the air at pleasure. The leading idea is, that the whole work is to be done by raising this floor to the level of the front portion (which closes up the case) in bad weather, and by lowering the floor in fine weather. The cordon is inserted at the side of the case, and may be planted in the earth, or from a pot. Vines are well suited for this case, which is also approved of by Mr. Rivers, and, being very portable and cheap, might be used for many other purposes, such as Strawberries or bedding plants."

The many uses to which cases of this character can be put, will no doubt commend those which Mr. Bréhaut has invented, to the favourable notice of cultivators generally.

Home Correspondence.

Philodendron crinipes.—The Philodendron we have here, under the name of P. crinipes, is at the present time in bloom. Is it an unusual occurrence? I attribute its blooming to the fact that the stem was severed just above the soil last winter, its only means of sustenance being by means of the air roots, the which are quite at home among the Lycopodium growing on the wall. *William Lees, The Gardens, Penrhos, Holyhead, September* 16.

The Potato Disease.—I have read with the greatest pleasure the article by "H." in your impression of the 9th inst., giving a synopsis of the papers of Dr. Kühn and Herr von Schultzenstein. When the disease appeared this year, I was profoundly ignorant of the whole subject, and I could not hear of any careful scientific researches on it, which, moreover, my friend Dr. J. H. Gilbert explained to me, had been discouraged by the clergy in the days of the Potato famine, on the ground that the disease was a scourge sent by God, and that to attempt its cure was impiously to oppose the designs of the Almighty. I was therefore thrown on my own resources, and having about 30 acres of Potatos, growing in different kinds of soil, and under very varied conditions, I had ample opportunities for making observations. I first of all asked all my workpeople what they knew, had observed, or believed about the disease. From them I heard of course a vast number of surprising theories, but I found that they were all agreed—though coming from different parts of the country—on one point, viz., that it began in the haulm. Here, then, was a first point, susceptible of comparatively easy proof or disproof. Accordingly I made a number of observations, and found that the haulm was visibly affected long before the tubers were. I then collected some affected leaves, and found that when powerfully magnified, they revealed the existence of a Fungus growth beyond any possibility of dispute. I then traced the gradual extension of this growth, accompanied by a more or less active decomposition downwards through the stem of the haulm to the tubers; and I observed this so frequently, as to leave no doubt in my mind as to the course of the disease. It so happens that I have devoted a good deal of time to the study of the origin and spread of infectious diseases in the human subject, and among domestic animals; and, although the origin of disease is generally so obscure as to defy observation, yet the means by which contagia are spread are susceptible of close observation and direct experiment. The result has been to make me a thorough believer in the "germ theory" of disease. It is true that no one has ever actually seen the "germs" of any contagion in animals, even through the most powerful microscope, and I was taunted with this at the recent meeting of the British Association, but many things can be proved to have a material existence, which have yet never been actually seen. No one ever saw the wind, pigs excepted (if I may be allowed an Irishism), yet houses have been blown down by the material effect of this invisible agent. If, therefore, we proceed upon the "germ theory," to treat the disease chemically, instead of the patient medically; and if we succeed, as an invariable, or almost invariable result, in killing the disease, instead of the patient, the actual material existence of the "germs" is, to the impartial mind, proved just as conclusively as if they had been seen through a microscope. This is the *rationale* of what is known as "antiseptic treatment." "Curing," "pickling," "salting," "smoking," are all antiseptic processes, and nothing else. They succeed because they are all destructive of low forms of life, whether vegetable or animal, and where they are not entirely successful, it is because the antiseptic agents have been too much diluted with water in the case of salts, with air in the case of smoke, or because sufficient means have not been taken to ensure the penetration of the antiseptic agent throughout the entire mass to be acted on. To act directly upon the parasitical disease-growth by an inorganic chemical agent, whose action we understand and can control, with the object and certainty of producing a definite result, is assuredly much more scientific and much more hopeful than to attempt to act upon it indirectly by administering to the subject attacked some empirical nostrum, sometimes organic, sometimes inorganic, sometimes a thoroughly unscientific "mixture" of both, whose action no human being pretends to understand. Accordingly the "germ theory" is much the most hopeful theory of contagia, and it is not surprising that it gains fresh adherents every year among the most scientific of our medical men, as the best explanation of the spread of contagia even where no germ can be detected by the microscope. In the case of Potato disease certain germs invariably accompany, and, according to my observation, which appears to coincide with that of Dr. Kühn and others, precede the development of the disease in the tubers. At all events on this point I prefer the evidence of my own observations to what appear to be only assertions, and unsupported ones, of Herr von Schultzenstein. Therefore I came to the conclusion (and see no reason to change my opinion), that it is in the direction of antiseptic treatment that we must look for a cure of Potato disease. But coming to this conclusion does not, unfortunately, advance us very far, for to apply antiseptic treatment to a parasitical disease in a growing plant, the valuable part of which is below ground, is obviously a problem of maximum difficulty, which is still further enhanced by the necessity of avoiding all agents which would communicate a disagreeable flavour. For some time I could not see my way through the difficulties of the case at all, and should much have preferred not writing on the subject until my experiments were much further advanced. But if they are successful this would be like locking the stable door after the steed is stolen; therefore as the disease will not wait, I think it my duty to give publicity to my views without further delay. It appeared to me at first that it would be hopeless to make any attempt to treat the Potatos before they are taken up, because I was informed, on reliable authority, that even if the haulm were cut off the disease would not be stopped; and it is at least evident that if this were done when the tubers were quite immature, the cure would be as bad as the disease, and the same argument applies to any very powerful antiseptic treatment. I therefore directed my attention to endeavouring to prevent the spread of the disease among the tubers after they are lifted. For some time I could not see my way to any process which would not give them a disagreeable flavour, but at last I thought of fumigating them with sulphur, and was delighted to find that, as I anticipated, this gave them no taste whatever. This is a great point gained, for I have difficulty in believing that the germs of the disease could resist the searching and penetrating action of sulphur fumes. In my experiments the Potatos were shut up in a tin-lined box for two hours, being supported near the top of the box on a grating, and the sulphur being thrown on hot charcoal at the bottom of the box and the lid immediately shut down. It is evident that this process could very easily and cheaply be applied on a large scale to Potatos piled up in any small building on an artificial floor 3 or 4 feet from the bottom, composed of wire netting, with suitable supports. A number of little heaps of hot charcoal (or cinders) should be made, a small measure of powdered sulphur hastily thrown on each, and then the operator should escape precipitately, and fasten up the door. This operation might be repeated several times. Unfortunately I cannot yet say whether the process would really be effectual, but so far as my experiments have gone, it would appear to be so. But I would recommend further that extra precautions should be taken in storing the Potatos. The earth in which they are "clamped" should be as dry as possible, and it should be mixed with them as well as thrown over them, so that they may be as much as possible separated, or, in medical language, "isolated," from one another, and a little powdered sulphur might usefully be dusted in between the layers. Another experiment that I am about to try with some late Potatos is, when the tubers are approaching full growth, to cut off the haulm, and throw a handful of chloride of sodium (common salt), or chloride of aluminium (chloralum), upon the bleeding stem. I propose to try this on about 4 acres, in alternate rows, leaving other rows untreated. I venture to think that, in the above remarks, I have indicated the only direction in which a cure for Potato disease may be looked for; and, even if my experiments fail, I may have set others to work who have more time for experimental research than I have, and some good may result, in which case my object will have been gained. *W. Hope, Parsloes, Sept.* 10.

—— The account of the Potato disease in the *Gardeners' Chronicle* of September 9 was very interesting, as giving the opinions of two learned men, who have made it a particular study; but it is singular that they should have arrived at exactly opposite conclusions. My object in writing now is to support the opinion of Herr von Schultzenstein, whose theory of the disease is, I believe, correct. Dr. Julius Kühn states that the cause of the blight is a parasitical Fungus (Peronospora infestans), whose spawn penetrates the substance of the tubers, and communicates the disease from tuber to tuber. Herr von Schultzenstein takes quite a different view, and states the cause to be a withering or dying off of the cellular tissue and the vessels with their contents, and that it is only along with the chemical decomposition of the decayed parts that the Fungus makes its appearance at a later stage of the decay. Now this, I believe, from close observation, to be the correct theory of the disease. It is very rare indeed, if ever, that Fungus upon any healthy living vegetable substance is the aggressor. It always follows upon any diseased or suppressed action in the cellular tissue, occasioned by sudden atmospheric changes, drought, excess of moisture, or peculiarity of soil. There are no circumstances under which the Potato disease has not occurred, and therefore the difficulty of finding a remedy is proportionately great. In fact, no specific, I think, will ever be found, as the disease is inherent, and discovers itself at a certain stage of growth, whether the Potatos are planted early or late. The disease may perhaps be the result of over cultivation, and it is in the nature of many plants as well as animals to become in the course of time degenerate and even extinct. It way be a wise ordination of Providence to prevent the human race depending almost wholly upon a vegetable not adapted to their constitution as primary food. However this may be, it is a fact that a disease has appeared in Potatos which admits of no remedy; and as long as such an enormous quantity is cultivated, a proportionate quantity will necessarily be diseased. Therefore the only alternative that offers is materially to lessen the cultivation, and, if necessary, look out for a substitute. There may then be a chance of the Potato assuming its former healthy condition. *W. H. Rogers, Red Lodge Nursery, Southampton.*

Parsons' Mignonette. — I will not encroach further on your space than to observe, in reply to the adverse criticism respecting "Parson's new white Mignonette," that it will be again exhibited at the spring flower shows, where many persons will have an opportunity of judging for themselves. Either the variety is distinct or not, and we have the authority, in the form of First-class Certificates of four different bodies of metropolitan judges, in our favour. *H. Hemsley, Manager, Nurseries, Hassock's Gate.* [We have several letters favourable and several adverse to this new Mignonette. Our readers must draw their own inferences. We have seen it good in places. EDS.]

Torch Pruning.—In connection with the subject of torch pruning let me offer some further instances in which it will be found the only means applicable for controlling the rampant boughs of trees injurious to more valuable neighbours. As this method of working is new to most readers, it may be allowable to repeat that nothing more is required by way of instruments than a long light rod of Bamboo cane or the like, which when held in the hand will reach to a height of 30 feet. To its end should be tied firmly two or three wires, each as thick as strong whipcord, and about 18 inches long. Let these be spliced to the rod, then twisted together, so as to make a metallic termination for receiving the torch, which would otherwise burn the rod. The torch itself is merely a bunch of linen or cotton rags, dipped in oil, and set on fire when used. Such an implement as this will be found very useful indeed to the many country gentlemen who attend personally to the details of the thinning of their own plantations, and who, at this charming season of early autumn, take especial delight in going into the woodlands, armed with knife and hatchet, to mark the trees which, after the fall of leaf, must fall under the axe. There is no better time than the present for this important preparatory work of decision on the owner's part, accompanied by his faithful woodman, and perhaps by some experienced friend, well-known for skilful management of his own sylvan property. In the North of England, as throughout Scotland, such a mode of occupying a bright autumnal morning or afternoon is very common; and it is full of interest from the ceaseless exercise of judgment which it requires, and the brilliance of the tints of foliage. Yet in mixed plantations, consisting mainly of hardwood trees such as Oak, Ash, Birch, Sycamore, and Wych Elm, we are continually forced to condemn a beautiful Ash, or Elm, not because it stands absolutely too near to an Oak, but because it is unluckily on the windward, that is, the westward, side of one; and consequently, the leeward branches of the Ash (which in our stormy, northern climate are always the longest) are extending themselves over their neighbour, sadly to his detriment. "Then why not send a lad aloft with a saw to cut off these leeward limbs?" All very good if we had but a few such cases to deal with, but what if we have hundreds? Nothing, in truth, is more perplexing and more discouraging than to stand surrounded by such cases, and yet to have no remedy save a too free and prodigal resort to the felling-axe, thereby causing a premature fall of trees which we are conscious ought to have been spared for some time longer, if any less violent remedy could have been applied. It is impossible to exclude Ash from our plantations. Nature herself intersperses it extensively in woodlands of Oak. The Wych Elm, again, cannot be shut out by any inexorable rule. It is most valuable to the planter for numberless moist and springy spots on hill sides, and in succulent bottoms of denes, gills, and ravines, affording also a timber in continual demand; nor is there any northern tree more beautiful and thoroughly characteristic. But wherever it stands within arm's-length of an Oak, it must be controlled with fire and sword; in other words, with torch, axe, and saw. Now, if we are prepared to make a timely use of flame to scorch the extremities of offending side-branches of Ash and Elm whilst the foliage is upon them, we may often postpone the felling of the trees themselves for some time. Nor will they be sensibly disfigured by the operation. The balance and symmetry will generally be improved by such curtailment of long leeward branches of the Ash, or rampant extremities of Elm, which are prone to wander in various directions, to leeward or otherwise. That so simple an agent as the torch has not been before advocated and largely called into activity in the interior of hardwood plantations, is certainly owing merely to the fact that it is only applicable during the summer half year; whereas plantations are thinned mostly during the wintry months, while the trees are naked. Nothing can be done in winter except with knife, axe, and saw, hence the torch was never thought of. Next to the Ash and the Wych Elm, the Birch is the most likely tree to need being curbed by flame, and this because in stormy climates, where westerly gales are very prevalent, it is prone to lose its balance and incline very much to the eastward, at the same time obtaining a greater stature than its neighbours, and so overhanging them. When this happens, the leeward spray of its head may be very properly curtailed by the lambent flame. In the secluded interior of a plantation, no eyesore will be produced by the pretty free application of the torch wherever it is really needed. These remarks are all chiefly made with reference to the North of England and to Scotland. Our northern woodcraft has to contend with difficulties unknown in the south; and I trust this consideration may explain the length of the explanations which the novelty of the torch in forestry has suggested. *R. Carr Ellison.*

Orchid Cultivation.—In my last letter on this subject, which you kindly published at p. 1070, I gave an extract from Professor Dyer's lecture (at p. 771), in which he is reported to have said: "There is no inherent disposition common to all plants to hibernate during the winter." He then goes on to explain that this hibernation, when enforced, is due to the want of one of two conditions needful—either heat or moisture. I need not again give you the whole extract, but I wish to draw your attention to the misprint in my letter where you make him to say, "There is *an* inherent disposition." I gave the quotation that I might hear what your correspondent, "Ex-Cantab," had to say upon this subject, as being so contrary to his theory, that all plants having distinctly formed pseudobulbs require a season of rest (see p. 515); but, as he does not appear to have noticed the quotation, I must draw his attention to it, and beg of him to set upon the Professor in the same manner that he takes me to task. I am unable to argue out my own views to his satisfaction—in fact, he whips me very hard at times, for my not being equal to him in discussion—so I was on the look out for some bigger and better man to take him in hand, and, if they will only come to wordy blows, I can look on with great calmness. I picture "Ex-Cantab," in my mind's eye, as a tall man, accustomed to look down upon most other men, and I am rather short, and used to being looked down upon by those that are taller; but I did think that, after I took so much pains to show him I had answered his questions, he would have explained how it was he missed seeing that letter; and, also, that he would have regretted that he had made me say what he could not find in print. He asks me for examples of cultivation, but he forgets that our plants are picked over each year and the best sold out. We produced one specimen, but were only able to retain it with great difficulty. As for the general collection, if it had not been a credit to us he may be quite sure he would have heard of it. Those who know me personally, and they are not a few, give me credit for trying to obtain and convey information upon Orchid cultivation, rather than, as he represents me, only intent upon forcing my own particular crotchets upon Orchid cultivators. I assure him I shall always take a genuine interest in any success he may attain in cultivating Orchids that the cool system suits, and am as anxious as he is to know which they are. I may also add that I shall joke him, if I can, when he gets unreasonably cross, as I think he is in this last letter, when he says I am, as usual, defending my theory by extracts from a work upon tropical climates. That description was confined to two sites where Odontoglossums were found. Certainly the description of the place where O. Alexandræ was found is rather tropical, but that is not my fault; it is the plants that must be excused, for not knowing that they should have been up at Bogota, with 8000 feet of altitude, instead of where they were. We must pass over a little ignorance on their part, as they are first-rate Odontoglossums, and it won't do to offend them. And then there are the citrosmums and grandes, and the little Phalænopsis, and others, but they must speak for themselves, I cannot make excuses for them all. That they come from New Grenada is enough for me to prove they must want the same treatment; for in New Grenada you can bathe in a river with a temperature of 100°, and, when you come out, you may shiver in the shade at 90°, and be obliged to dress in the sun at about 120° to 125°. You may be on the Parana, penetrated with cold, day and night, and be in danger of bursting your thermometers if they won't indicate over 130°. You may be in Bogota, where it is so dry that fires are not used for warmth, though it may freeze any day in the year, and salt is always shaken out of a sort of pepper-box; while, at lower altitudes, sugar melts because it is so damp, and is a fit home for the most tropical of all tropical vegetation. I must try, I suppose, to maintain that New Grenada plants must all be treated alike, be it the Odontoglossum, that grows at the top of a tall tree that it may be dry, and have plenty of light and air; or the Cypripedium, that likes the shade, and grows in the water that runs at the bottom. Now come, Mr. "Ex-Cantab," is there not room for both of us? You keep us informed of those that your treatment suits, and, if we find some that we can both grow, blow the plants up for being such fickle jades, but don't come down upon me so heavy; I am flesh and blood, and can feel it, if I am only a little man. When Odontoglossums were first imported, our hothouse engineers did not understand the use of pipe-heat as they do now, and we still have this difficulty with evaporating pans fixed on the pipe—should we depend upon them for the moisture required—that, if the pipes are hot enough to evaporate much water, the part of the pipe not covered with the pans is drying the air, and thus undoing what the pans effect; therefore, I am not sure that it was the heat alone that caused the failure. Mr. Anderson tells us that a hot, dry temperature, if long maintained, will be sure to kill them. Does any one know of an Orchid that is a native of such a climate? I think we are prepared with the treatment when they are forthcoming, and it should be reserved till then. If any one is especially anxious to know what my favourite theory is, I am not ashamed to explain it again. In all cases where Orchid cultivation is successful, there must be sufficient means of generating the moisture required without the agency of pipe-heat, and that the plants must live upon the food conveyed to them by precipitation. That I am an enemy to cool treatment is not correct; I have left others to advocate it most certainly, that I might hear what it can do. Every Orchid has its own requirements as to temperature and duration of rest, and the best gardener is he who, by means of heat and moisture, can get the most growth out of his plants during the year without endangering his crop of flowers—that crop being in direct proportion to the strength and maturity of the growth secured. I certainly do most thoroughly differ with your correspondent "M. M.," at p. 1135, in his opinion that it is better to keep the temperature down by shading than by giving air. *G. H.*

The Weather at Aberdeen during July, August, &c.—In a previous number you were kind enough to insert a note on the temperature and rainfall here during the first six months of the present year. You will, perhaps, consider the matter of sufficient interest to give room for a note on the weather from July 1 to the present date (September 18):—

	Mean Temperature.	Difference from Mean of 15 Years.	Rainfall.	Difference from Mean of 15 Years.
	Deg.	Deg.	Inch.	Inch.
July.. ..	58.1	+1.0	3.056	+0.771
August ..	59.2	+2.8	2.598	−0.449
Sept. 1—18.	56.2	+2.1	0.495	—1.207

The consequence of the fine weather since the middle of July is that green crops generally in this quarter are in excellent condition, and harvest has come about a fortnight earlier than most people anticipated. I never saw the Turnips looking fresher and healthier; blight has, however, appeared among the Potatos. A month ago I recognised the smell of what I considered the disease, during close, foggy, sunless weather, and however unwilling we may have been to admit it, there was no denying the evidence afforded latterly by the state of the tuber. One or two fields present a melancholy spectacle, but as yet the proportion of diseased tubers does not appear to be very large. *B.*

Bedding Pelargoniums.—A comparison of the opinions of flower gardeners on the merits of bedding Pelargoniums would not be out of place or unserviceable at the close of every season, and I was very pleased to see lately "R. F.'s" letter anent them. I was still more pleased when I saw that it has brought out that unimpeachable authority in gardening matters, the Rev. C. P. Peach. I endorse all that Mr. Peach says about Violet Hill Nosegay, except its dulness of colour. To my taste it is not bright enough; it is a dull dead red, and I do not know what it will mix with to make a pretty bed; it will be some time, however, before we are able to try it to any extent; for it is, as Mr. Peach says, a very, very shy grower. As far as I am concerned, and the trial has extended now over many years, I have brought the best of Pelargoniums to grow for effect down to a very few—very few in comparison with the vast quantity now grown. I'll tell you what they are. To begin with the brightest scarlet, I shall retain Lady Constance Grosvenor. There is nothing to equal this in brightness of colour, prolificacy of bloom, and dwarfness of habit. The next shade of scarlet is the one which signalises Waltham Nosegay,—not Waltham Seedling mind, for herein, in this matter of naming these two very excellent Pelargoniums, I think Mr. William Paul erred in adding the name of his place to each, as it makes sad confusion in many peoples' minds about them; indeed, I have found gardeners who held that they were one and the same variety, and if you said, "I like Waltham Nosegay," they would reply, "Oh! I have got it," but, they would add, on looking more closely at ours, "Yours is a different shade of colour to mine." Well, it is Waltham Nosegay I mean, one of dear old Donald Beaton's seedlings, and it would have rejoiced his heart if he could have seen it; it is dwarf in habit, spreading out all over the ground, profuse in bloom, many trusses, and many pips in a truss continuously opening, so that the flowers rarely look shabby, and bright, tellingly bright in colour, one of the greatest acquisitions to the flower garden ever sent out. Added to its other excellencies, it has a plain leaf without any visible zone in it. I hold (it's perhaps heresy to say so) that a zone in a leaf in a Pelargonium grown for its flowers is a detraction rather than an attraction; the zone seems to bother, disturb the eyes when you are looking at a bed of heavily zoned plants, and thus robs you of that enjoyment that otherwise you ought to have. The next shade of colour, getting to crimson now, is in a seedling of Mr. Pearson's, of the Chilwell Nurseries, called Bayard. We used to grow Waltham Seedling for this shade of colour, but we have now let the seedling "slide," and are growing Bayard, and a still more recent seedling of Mr. Pearson's, which he calls Douglas Pearson. They are both (or so nearly that you cannot detect the difference) alike in colour, a rich scarlet-crimson; Douglas has more zone in the leaf, and so we prefer Bayard to Douglas. Bayard has a very close and low growing habit, is a constant bloomer, and has a sound and vigorous constitution; it is a treasure, and though many of my friends think differently, I really conscientiously believe that Bayard is better in all ways than Douglas Pearson. As a rosy-lilac or the Christine shade of colour, we grow one raised in our neighbourhood, called Cleopatra. It is a sport from that excellent old variety, Trentham Rose: it has the same habit as Trentham Rose, and is as profuse in its blooming. That will be recommendation enough to many people, and the colour is deeper, brighter, and warmer than Christine; it is a charming thing, and the admiration of everybody that has seen it. We have sent it to the Royal Horticultural Society's trial of Pelargoniums, and are anxiously waiting for the judges' report about it. For a white-coloured Pelargonium, we have none found to beat Madame Vaucher, and as a golden-leaved one, nothing with us is better than Golden Fleece; as a golden bicolor, E. G. Henderson is our best yet; and as tricolors we shall retain Lady Cullum and Sophie Dumaresque. As a creamy-leaved variegated Pelargonium we shall keep Flower of Spring until we can get up a stock of Mr. Pearson's Pearl, and then Flower of Spring will have to give way. That is all I can think of at present about Pelargoniums, and as my contribution I send it. *N. H. P.*

Fruit Showing.—The suggestions which I made in your columns last year on the subject of vegetable showing, were carried out so well at Nottingham that I venture again to trouble you on the equally important point of fruit showing. At the exhibition just alluded to, my friend, Mr. Miles, of Wycombe Abbey, certainly exhibited some fine examples of good gardening, and so did Mr. Simpson, of Wortley; but the fruit was scattered over the table so thinly as to make anything but a satisfactory display. In the first place the green baize employed was of the most disreputable description, and a disgrace to the surroundings. For this I would recommend the substitution of white cotton or sheeting, which should be washed every time it is used. To make the fruit show a success, the first thing wanted is more exhibitors, and to get them greater inducements must be held out. I would suggest that we have three classes for fruit, viz., for 8, 6, and 4 dishes respectively, with £20 for 8, £16 for 6, £12 for 4 dishes, to be divided into three prizes. These sums amount to £48, which I would suggest should be subscribed for on the condition that subscribers only are allowed to compete, I am happy to say that I have several promises of support. Subscriptions need not be restricted to gardeners. I should like to see the idea supported by the purses of all or any of our horticultural friends. A new or improved method of showing should form part of the scheme, upon which point discussion should be invited. *R. Gilbert, Burghley.*

Preserving the Fruit of the Mountain Ash.—Put a quantity of the berries into a stewpan, with sufficient cold water to cover them. Boil them to a pulp; strain the juice through a canvas bag. To every quart of juice take 2 lb. of loaf sugar, and when it boils, let it boil for 10 minutes. This will make a beautiful preserve, but no amount of sugar will remove the slightly bitter taste which the fruit possesses. Rowans are a favourite food of fieldfares. Three large trees in this neighbourhood, covered with fruit, were stripped of every berry in a few days by flocks of these birds. *A. H., Dumfries.*

Picea lasiocarpa.—I have just measured my best specimen of Picea lasiocarpa; it is 19 feet 10 inches high, and 15 feet 2 inches through the branches. It is very robust, and full of foliage. This tree was planted where it now grows in the early spring of 1859, and was then about 15 to 18 inches in height. It is a very handsome tree, and well deserves all the praises which have been bestowed on it. I think it was stated some short time ago in the *Gardeners' Chronicle* to have coned in the Knaphill Nursery; my tree this spring was covered with small blossoms, but it has not as yet produced cones. I received it from Messrs. Veitch & Sons of the Exeter Nursery, under the name of lasiocarpa, and at the same time I also received from the same source two smaller plants under the name of Picea grandis, which have, so far as I can judge, turned out to be the same as lasiocarpa, and I call them all three by that name. Some time after this I purchased a plant as the true Picea grandis of the late Mr. Veitch of Chelsea, and which I have every reason to think is correctly named; but if so, and if the plant your correspondent describes as doing so well in the nursery at Great Berkhamsted (p. 1129) is also the true Picea grandis, it must do very much better at Berkhamsted than it does with me. My specimen is 8 feet high, but it looks very shabby, and now (September 10) is almost as bare of foliage as a deciduous tree in the beginning of winter, just before the last gale of wind that clears it of leaves. I have also noticed the same shabby appearance of this tree in other places, and have been told that it looks much the same in the neighbourhood of Exeter. Grandis, so far as my experience goes, is hardly an appropriate name for it. There was some short time ago some confusion about the names of the Piceas, arising from lasiocarpa and what is now called magnifica being sent out under the names of grandis and amabilis. Whether Mr. Gordon was in any way responsible for this I will not take upon me to say, but that the confusion existed I think no one will deny. The best specimens of the true Picea grandis that I have ever seen were at Elvaston Castle, where there were two specimens growing in one of the Pinetums, both of which I believe are now dead; but Mr. Barron, who was then gardener at Elvaston, and who has now a nursery at Borrowash, near Derby, has, or had a year or two ago, plenty of this tree for sale, raised by cuttings from the two plants I have referred to; but until seed was reintroduced there were no seedlings of it in the country. It is a fine tree where it does well, but I do not think any great improvement on the common Silver Fir. The true Picea amabilis I have never seen of any size anywhere but at Elvaston, though I believe there is a fine specimen of it at Dropmore. Picea nobilis is well known, and is a very general favourite, and very deservedly so. I suspect Picea magnifica, sent out as I have said as Picea amabilis, but to which it bears no resemblance, will turn out to be only Picea nobilis after all. I have two specimens of it, one of which I believe to be the finest in Europe; it is 16 feet 8 inches high. Another Silver Fir, a great favourite of mine, is bracteata; I have only one specimen of it, but that is very handsome, distinct, and robust. Bracteata is not so general a favourite as it deserves to be, it is well worthy a place in the most select collection of Coniferæ. Nordmanniana and Pinsapo I need not allude to, their beauties and merits, great as they are, are fairly appreciated; not so, however, with Picea cephalonica, which is really a very handsome tree, and should be more generally planted, though "spring" tender when small, from starting into growth too early in the season. When it gets older and bigger it acquires, or seems to acquire, as Mr. Weller would say, "wisdom with its width, and has more patience." I have a fine specimen of it here, which is robust and handsome, and which is generally admired. Not long ago a lady, the daughter of the gentleman who first introduced it into England, did me the honour to come and see it; she knew it directly, and had the whole story of its introduction off by heart, and quite correctly, as told by Mr. Loudon in the "Arboretum Britannicum." *C. F. P., The Grange, Kingston, near Taunton.*

The Trial of Boilers.—Respecting Messrs. Weeks' offer to test their boiler against others, I do not consider their first condition, viz., "that the size of the boilers should be determined by their water contents," to be a fair test, as a tubular of the same water capacity as a saddle would be much the larger of the two, and larger than most boilers of any other form than the tubular. I consider in a test that the size of the boiler is not of so much consequence; as, if a competitor were to fix a boiler of disproportionate size to a length of pipe (which should be the same for all the boilers tested), he would be the loser in the amount of fuel consumed, which would be greater than it ought in both cases, were the boiler too small or too large—unless he were to sacrifice time in heating with the smaller boiler, which would that way cause him to be a loser. In system B I should wish to see it clearly stated if there was to be any descent from the lowest part of the boiler to the heating apparatus or pipes, as if not, the condition of a descent of 3½ feet to 4 feet from the top of the boiler to the pipes would be altogether in favour of the conical form of boiler (including Weeks' tubular), as that descent would still allow the lower part of the boiler and the inlet to be at as low a level as any part of the pipes. I should much wish to see the question of the most suitable kind of fuel for boilers discussed in your columns. It appears to me that a boiler with numerous passages or flues, such as Cannell's for one, would lose half its advantages if heated with anything but coal, and that coke or culm would not be any way suitable for it; while the latter kinds of fuel would be the most suitable for the tubular, seeing that in the latter the passages around the tubes and the half of the tube from the fire quickly become coated with soot and rust, and that the tubulars rapidly lose their heating capabilities by becoming so coated: they certainly ought to be cleaned and scraped every season before commencing the winter's work. A fair and impartial trial of boilers, held, say, under the auspices of the Royal Horticultural Society, could not but prove to be most interesting and profitable to the horticultural community. *W. B. Smale, Barton Nursery, Torquay.*

The Belle Beauce Peach.—The early sort seen by Mr. Earley at Chiswick (see p. 1130) could not be this, for it is late rather than early, and ripens ten days after its relative, the Grosse Mignonne. Although the Belle Beauce has been in the French catalogues for many years, it is, and always has been, difficult to get true to name. I have many times received the Grosse Mignonne instead. It is a grand old Peach. There is no Plum called the "Black Diamond," unless in the Borough Market. The Diamond Plum was raised in Kent, at Brenchley, by a man named Diamond; it is terribly acid when cooked, but very large and handsome, and in an orchard-house, when dead ripe, is not to be despised. *T. R.*

Hardy Succulent Plants.—Severe indisposition has prevented me giving the information which your correspondent, Mr. Croucher, at p. 1165, very properly requires, and perhaps my unhappy experience may be of advantage to others of your readers who may be hesitating as to the best method of heating their glass-houses. All my little collection, with the exception of two specimens of Opuntia Rafinesquiana, was kept in a small span-roofed house admirably adapted for them, but unfortunately, when I first erected it, I was persuaded that I should save ian immense amount of trouble, with an infinitesimal ncrease of cost, if I had my boiler heated by gas. Now, this article is charged 5*s.* 6*d.* per 1000 feet, which brings the cost up, according to my calculation, about from three to four times the price of coke; but that was the lesser evil of the case, for not unfrequently every light in my house will suddenly disappear, and during the late severe winter our supply was entirely cut off by, I presume, water getting into the service pipes and there freezing. If succulents generally, and more especially Cactaceæ, are kept entirely dry, say from the end of September until March, they will bear a considerable amount of cold. Of course there are some few exceptions, as Pereskia aculeata; and from what has been reported from Paris, we may also expect that the Epiphyllum truncatum section will not hurt if we can wait until the spring for the bloom instead of looking for them at Christmas. My object and apology in first troubling you with an account of my miseries was to endeavour to induce amateurs to take an interest in this really beautiful and interesting class of plants, for we may indeed say, with the poet, that they are "things of beauty and joys for ever," easy of culture, and not difficult to keep by people with limited time or money. Many seed freely and germinate readily, and this is a great advantage if you wish to increase your stock, either for the purposes of exchange or, what is perhaps pleasanter still, to give away to your neighbours, in the hope of inducing a similar taste in them. With respect to the hardy Mammillaria, I am sorry to say I have not been successful in raising any of the seed which I procured; but of Cereus pumilus, said also to be hardy, I cannot speak in too high terms of the beauty of the two plants which I have managed to raise from a shilling packet of seed. There is also reported to be a grand Echinocactus in and from California, and with the additional advantage of being a fine esculent. Any grower having a surplus stock of hardy Mammillarias would confer a very great obligation by forwarding ever so small a plant or cutting to *John E. Daniel, The Terrace, Epsom.*

Blue Apron.—In reply to your correspondent "N. H. P.," the "shalloon" of which the gardeners' "blue" aprons are made, is only to be had from one manufacturer in Scotland that we know of, but we always keep the aprons in stock; so that, as your correspondent suggests, our customers may have them when ordering their seeds or bulbs. We shall be very pleased to supply "N. H. P., or any of your readers, with one or more aprons of the "true blue" colour, at 4*s.* 6*d.* each. *Downie, Laird & Laing, Stansted Park Nursery, Forest Hill.* [Messrs. J. Tremble & Son also write to say that they can supply it. EDS.]

Plants for Seaside Planting.—Residing at Southport, and only protected from the seashore by an embankment of sand, I am desirous of ascertaining what are the most suitable plants for my garden, which consists, as to a greater part, of sand mixed with such soil as can be procured in the neighbourhood, and manure. The plants on the south side of the house, where quite protected from storms, thrive admirably, but it is at the north side where the difficulty is felt. To give you an idea of the climate, I may say that where not exposed to the storms Fuchsias and Myrtles grow nicely, and the various kinds of vegetables are procurable with a little care. Unfortunately my flower garden, lawn, &c., is surrounded by raised banks or beds, which are indispensable, and sometimes plants are blown out of the ground, and such things as Pelargonium bloom spikes cut off; therefore anything to flourish must be dwarf and strong rooted. Any advice will be duly esteemed by *An Old Subscriber.*

Lilies.—We have had many discussions at South Kensington as to the Tiger Lily varieties. I held that Mr. Van Houtte had sent over a flower which he had named splendens, and which had large spots, and was more beautiful than any of the known varieties; but that the tigrinums exhibited as splendens were undistinguishable from Fortunei. At a recent discussion at Reigate, Mr. George Paul proposed sending me a flower from a bulb he had received from the Continent. This I have carefully compared with all the tigrinums we have in bloom, and again find the much larger spots and more showy flowers. I think the mistake has been in claiming more than these distinctions for splendens. I have just measured a tigrinum with the usual sized spots, which I will therefore call Fortunei. It is grown singly in a Rhododendron bed of deep peat, and had a mulching of very old manure in autumn. Its height is 7 feet; the two lowest branches have each four flowers, and each extend 14½ inches from the main stem; the flowering part of the stem is 2 feet 3 inches in height; the stem is woolly. These dimensions, I need hardly say, are fully double what the old L. tigrinum would have reached under similar treatment. I would therefore suggest that the L. tigrinum varieties now consist of the old Tiger, of comparatively dwarf growth, blooming three weeks the earliest; L. tigrinum Fortunei, and splendens, similar in growth, but the latter having the great advantage of large-spotted and more noble flowers: and that this is practically as yet unknown in this country—that which has been exhibited by myself and others, and received as splendens, being Fortunei; and the beautiful L. tigrinum flore-pleno, which will, I hope and believe, from large bulbs, equal Fortunei in growth. *George F. Wilson, Heatherbank, Weybridge Heath.*

Storing Potatos.—Mr. Bennett's remarks on the storing of Potatos (p. 1194) are worthy the attention of all growers that store them in quantities for keeping well. For the last three years, owing to the dryness of the summers, the disease did not injure the general crop of Potatos to any great extent; but this year it is the reverse, and great care will have to be taken in picking out the affected tubers and storing the sound ones in small quantities. I usually store from 20 to 30 tons of Potatos here every year in narrow ridges, and in former years, when the disease was rife, I found charcoal dust more effectual than quicklime in preventing the diseased tubers from affecting the sound ones. In the woods here a great quantity of charcoal dust is found in the places where charcoal has been burned, and this is no doubt the case in other places. Where this charcoal dust cannot be procured, the dust sifted from coal ashes will be found an excellent substitute for answering the same purpose. In trying quicklime for mixing with the heaps of Potatos, I found it hardened on the tubers when it got damp, and was no more useful in drying up the rotten ones than the charcoal dust. The quicklime used here for the purpose was made from the magnesian limestone of the district, and is of a very caustic nature. The ridges of Potatos here are all made on the surface of the ground, and instead of covering them with earth, I use coal ashes and charcoal dust mixed, as this covering repels the frost better than earth, and keeps the Potatos drier in the ridges, thus preventing heating. In severe frosts some litter is always at hand to cover the ridges, and is taken off when the weather gets milder. In the spring, however, this litter must be kept on, to prevent the sun's rays from warming the ridges and making the Potatos grow; but the best way is to pick them all over, and store them away in dark outhouses or sheds for keeping out the season. *Wm. Tillery.*

Water Weeds.—In reply to the letter of "W. E.," in your columns of September 9, in reference to my former communication, I beg to inform him that the lakes I referred to would not exceed 2 acres in extent; the depth of one lake would not exceed 4 feet, and the deepest part of the other is about 8 feet; so these lakes will bear no comparison to the extensive lake mentioned by "W. E.," but, nevertheless, they abounded with weed. A couple of swans and some ducks were procured, and they lived upon nothing but the weed, on which they greatly thrived and multiplied—being only fed in the winter during severe weather. I think that the number of swans "W. E." states he has got will, in due time, have the desired effect, and perform their work effectually. If from the depth of the water the weed is beyond the reach of the swans, they cannot possibly clear it. If the lakes are stocked with fish, it would not be policy to eradicate all the weed, as fish always thrive best where there is an abundant aquatic vegetation; they are much less healthy where the lakes are denuded of water plants. By lowering the water some few yards from the margin of the lake, and allowing it to dry for some days, great quantities of the weed in the shallow part might be cleared, along with all decayed vegetable matter, which would form good manure when rotted. *Thomas Campbell, 11, Thurza Street, Chorlton Road, Manchester.*

The Premature Bolting of Seedling Plants.—Heat and its constant attendant, aridity, it is that, as we generally surmise, incites young seedling plants to "bolt" prematurely; here is a fact, however, which, to my mind, singularly upsets this theory or preconceived idea. Large breadths of Cabbages, and Purple Sprouting Broccoli in particular, peculiar to extensive market gardening districts, have already this season shown an unwonted tendency to flower prematurely. Now this is not usual with either, particularly with the Purple Sprouting Broccoli. Hence it occurs to me that the fact of its being common this season deserves attention. What influences are at work to produce this effect it is hard to say. We have had a cold, wet, and, comparatively speaking, sunless season—such an one, in fact, as would be highly likely to be favourable to the development of succulent leaves and kindred growth, and one quite adverse to the promotion of a flowering tendency. Even late-sown Celery plants show an unwonted precocity in this way. Nor do I see how these facts are to be accounted for by the generally accepted aid of vegetable physiology. For not only do I perceive here principles, I might say, in antagonism with our generally accepted notions, but, if we accept this fact as it is forced on our view, we find ourselves opposed to ideas not at all consonant with the views upon which much of our practice is based. Every true gardener "pins to his apron" the belief that there is in Nature something which influences the formation of the aftergrowth of plants long before the time arrives for the secret to be unfolded. Take Cucumbers and Melons for instance. Is it not patent to every true gardener that a high moist night temperature will assure the formation of an excess of male blossoms, and these often exclusively in dense clusters? That these are induced by a preternaturally high temperature our practice goes far to prove. Now take the opposite side. Reduce the night temperature, and the chance is that, by keeping it as low as possible, consistent with healthy development, female flowers only, or nearly so, may be produced. These facts, looked at superficially only, would tend to point out that a reduced temperature has been the influencing agency which causes the premature bolting described. I have but stated thus much to show in what varied manners natural influences will act, in a direct and immediate form, upon vegetation. A cool, moist period will exert an undue influence upon any form of tropical vegetation, requiring naturally a maximum temperature for its proper development, even to the forcing of a heavy crop of female blossoms exclusively, as witness the dense crop of Gherkins and Cucumbers ridged out in the autumn months, with but little growth in the matter of leaves, stems, &c. Not so is it with plants natives of colder temperatures, as the Broccoli and Cabbages before alluded to. These grow most vigorously, comparatively speaking, during cold weather—the long, cool nights of early autumn, for instance, when swathed in heavy dews. In such a season as the cool moist period experienced during April and May of the past spring, such plants may be said to have had the most felicitous conditions for growing. Then, taking such circumstances into consideration, the question arises how did they progress in growth as they habitually do under the conditions described, in which no repose could exist for them, and an excessive leafy or succulent growth alone seemed possible, and yet "bolt" prematurely, without any incitement to do so, such as the more tropical plants above alluded to possessed. I think I have said sufficient to show how deeply I pin my faith on the fact that cool nights are to all intents and purposes suited to the wants of all vegetation whose primary aim is early productiveness apart from strong succulent growths. Since writing the above, I have seen, near East Ham—a place renowned for its market gardens—a field of Carrots, which I had taken to be planted for seed, so dense was the forest of huge flower-heads some 4 feet high. My surprise was greatly heightened when I beheld men and carts subsequently commencing at one end to take up the crop, and on learning that the plants coming into flower were only "rogues;" thus to some extent confirming my previous observations. Still, the point which I cannot settle in my mind, is as to the reason why such plants as young sprouting Broccoli show this remarkable tendency, whilst all around the most suitable conditions to a further growth-development abundantly exist. *William Earley*, *Valentines*, *Ilford*.

Foreign Correspondence.

OUTSIDE PARIS IN 1871.—"And now, M. Rivière, I place myself under your direction. I want to see something of the desolation that has taken place, not merely generally, but especially to horticulturists." Such were my sailing orders, as on the morning after my arrival in Paris we came out from the Hôtel du Louvre. I had of course early sought the able and intelligent *jardinier en chef* of the Luxembourg; for it is known to the readers of the *Gardeners' Chronicle* that, when the French Horticulturists' Relief Fund was started, a committee was also formed for the Société Centrale d'Horticulture, of which M. Rivière was named president. I had had a good deal of correspondence with him, and found him what I had imagined from his letters,—most courteous, ready to give every information in his power, and to take any trouble that he thought was necessary; and, as I knew he had been deeply interested in all that concerns the losses that had been experienced, I felt that I could have no better guide in the explorations I wished to make.

On passing out of the Arc de Triomphe (which has suffered marvellously little from the bombardment, it having been almost entirely encased), you at once see before you the scenes of some of the most desolating periods of the whole siege. How often, during the two months of the Commune, were we reading about Neuilly, Point de Jour, Passy, Auteuil, Ternes, the Porte Maillot, &c. It was on this side that the struggle took place, the Germans held the north forts, and so that part of Paris was quiet; but all along, from Charenton to those places which lay directly between Mont Valerien and the city, the fighting raged; and if any one wishes to see what the desolations of war are, what the progress of the science of destruction can effect, they can have no better idea of it than that which is afforded by these well known places. The destruction occasioned by the shells is of course much greater than that by cannon balls. Here for instance, in the Avenue de Reuil, is, or was, a house, No. 50. It was evidently a villa residence, with its well tended garden attached to it; there is literally not a stone of the house left standing, not a tree in the garden that has not been cut down by shells, not a portion of the ground on which you cannot pick up balls of all kinds and large pieces of shells; and as you walk around it you wonder what must have been the feelings of the owners when they returned and found it thus. And this is but a sample of many others. Here, for instance, is a small street; on one side the houses are nearly all down; on the other the walls are pitted, as if pock-marked, with balls,—the fact being that the insurgents held the houses on one side, the Versailles troops the other. The slaughter that took place no one knows, or ever will know. As you drive down the Avenue de l'Impératrice (now, with that babyish propensity which characterised the movement of September 4, changed to the "Avenue du Général Uhrich"), you see what was last year the prettiest of all the outlets for the Champs Elysées (in fact, the Rotten Row of Paris), a complete scene of desolation,—houses knocked about, gardens torn up and destroyed, lamp-posts broken, trees snapped across or cut down. Go on from here to the Bois de Boulogne, and you at first ask, Where is it? All that portion which was immediately close to the *enceinte* was cut down at the commencement of the first siege; the inner portion round by the lake, &c., has been preserved, but it will take years before ever it can be as it once was. The scene of desolation at the Porte Maillot passes all belief; there is not an atom of it left, and the same may be said of the station at Auteuil, while all along the route that we took you saw the baneful results of a civil war, in which the leaders on one side marched under the banner of "Liberté, Egalité, Fraternité."

In writing of the losses of horticulturists I do not think I shall be violating any sense of propriety if, in order to make the case more plain, I mention the names of some of those whose places I saw; the owners made no secret of it, and as it is not for the purpose of making an appeal for them (some at least do not need it), it will, I think, be better so to do. Most of us who have to do with gardens know well the name of Lierval, the raiser of the many fine varieties of Phloxes which have come over to us for many years. I remember some years ago going to see him, with Mr. Standish, at Ternes, where he was then living; besides his Phloxes he was growing Cannas extensively, and getting up an extensive collection of stove and greenhouse plants: his place was poor and mean, but he was evidently making money, as Frenchmen can do, and contented with this poor external appearance until he could do better. Well, some five or six years ago he left his old quarters, built a new house at the Rue de Villiers aux Ternes, not far from his former residence. Here he had expended the whole of his savings of many years, had built a very handsome range of iron houses, besides several wooden ones, had accumulated a large collection of stove and greenhouse plants, Palms, Ferns, &c. When the siege begun he was left alone with his boy, of about 14 years of age. As it dragged on, fuel became scarce, disease was rampant, as we know, and smallpox seized poor Lierval early in December; a man of feeble frame, worn out with present anxiety, and full of gloomy forebodings for the future, with insufficient nourishment (although at that date famine had not began to press so heavily on the inhabitants), what wonder was it that he succumbed to that fearful malady? The report has been spread that he died of starvation. Sad as his end was, I am thankful to say it was not from absolute want; doubtless the insufficient nourishment had something to say to it, but anxiety and disease, coming on a weakly frame, did their work. After his death his son-in-law endeavoured to do his best, but fuel became more and more scarce, the large plants were removed into the dwelling-house, some placed in cellars, but all to no purpose: a winter more severe than any experienced in Paris for many years made all such makeshifts unavailable; and now you may go into this but lately admirably arranged nursery, and find the tall rank weeds—the more rank from the care bestowed on the garden—now forming a tangled wilderness, through which you have to brush your way to get to the houses. Through these you walk, and see thousands and thousands of pots—not absolutely empty, but with the skeletons of the plants they once held, telling their woful tale; and of all the fine collection of plants, but one solitary specimen of Chamærops remained. After this came the Commune; the shells from Mont Valerien fell thickly about—some smashed the houses; and one can readily believe, that had the poor old man lived on, he would have died of a broken heart. We sometimes feel vexed when, through our own carelessness, or that of our gardener, a plant or two is lost; but imagine what this was—to see your whole collection succumbing to frost, and no possibility of saving it—to go out to your houses, and find a scene of desolation where all was lately beauty,—and can you conceive anything of loss more distressing than this. Madame Lierval is left with two children, with hardly any means of living. The collection of Phloxes is safe, and I hope that many amateurs will this year endeavour to give the widow a helping hand, by ordering sets of the new ones. If any are so disposed, I shall only be too happy to receive their orders, and transmit them. Probably there will be some compensation by the Government by-and-by, but it will be difficult to obtain, and tardy in payment; and in the meantime we must try to do something to alleviate the present distress. "Never," said his son-in-law, "shall I forget the sensation of joy we experienced when we heard the Versailles troops coming up the avenue at the double; for then we knew that the worst was over." Such is but one picture out of many that might be drawn. Messrs. Thibaut & Keteleer, with a far more valuable and extensive collection, have seen it all perish. And such is war. No wonder that those who knew it best, as our own great Duke and Sir C. Napier, hated it. Would that France herself might learn to hate it, and instead of dreaming of a vengeance that can never be realised, would quietly submit to circumstances, and endeavour to utilise her vast resources for the common good. It were useless to detail the scenes of desolation at the other villages which I have named; it was a harrowing scene, and made one feel more than ever that no enlightenment, civilisation, or learning are of avail against the natural evil of the human breast.

M. Rivière had kindly volunteered to go with me to Bourg la Reine, but news that I received of the increased illness of a beloved relative hurried me home; however, I was determined not to miss my visit, and as early rising is a habit with me, I started off for the railway at 6, and got down to Bourg la Reine at 7, got my cup of coffee, and then found out some of my old friends. What Rose grower does not know the name of honest old Margottin, the raiser of Jules Margottin?—and most fruit growers know Jamain, formerly a partner with Durand, and, I may add in passing, the raiser of the Strawberry, Vicomtesse Hericart de Thury, one which is likely to take a prominent position with Strawberry growers. [For many years one of the best varieties grown at Chiswick. EDS.] Let me then say how I found my friends. Bourg la Reine was early occupied by the Germans, and many of the inhabitants left their homes, among them the Margottins; their house was occupied by Bavarians, and such havoc as they made—uselessly, wantonly made! The garden had had deep trenches cut through it; the walls had been broken down for the passage of guns and cavalry; embrasures and loopholes had been made for musketry; and now, where formerly one used to see large quarters of standard Roses and beds of seedlings, were to be seen only beds of Cabbages, Haricot Beans, and suchlike produce. Well, this may have all been necessary in a military point of view, and war respects nothing, but the desolation in the house was abominable; doors, wooden chimney-pieces, cupboards, and even staircases, were torn to pieces to burn, filth allowed to accumulate, handsome mirrors dashed to pieces, clocks pocketed, and packed off to Germany (it is said that they looted 1,000,000 clocks in France, which they packed up in chests of drawers and any available thing, and sent off); and all this, as Margottin solemnly affirmed to me, notwithstanding that when he came back he found that there was still a pile of 200 faggots left in the garden untouched. What wonder that my old friend was indignant—that, smarting under his losses, he should talk loudly of vengeance, and threaten himself to march against them. His collection of Azaleas, Camellias, and other plants, was also gone; and now, instead of retiring, as he talked of doing, he goes to work again. By-the-by, his intelligent and amiable Jules has lately married, and has taken a nursery for himself, where he has a very nice collection of plants and Roses, which have happily been untouched by the Germans. A prettier lot of standards I have rarely seen. "But," said my friend, "we have not suffered so much as poor Jamain." Well, I thought, his must be bad enough if it be worse than this. It was only last year that he, honest fellow, went with me and showed me over his new house and garden—his model garden, where he had been for years arranging his collection of Pears; and I well remember the pride with which he pointed out to me his fine specimens of trained trees. Alas! the Germans made short work of all of them. They cut down the Pear trees, and tore up the stout iron trellises on which they were trained, for the purpose of making fascines and gabions; they cut deep trenches and knocked down his wall. In the larger garden, too, they had committed a like damage; and here it was that he had tried, and successfully tried, to reunite his Pear trees when they had been cut nearly in halves by the German adzes; and many of them seemed to be doing well. After the peace, of course poor Jamain thought he might return to set his *penates* in order; but then came the Commune, and his house stood directly in front of one of the insurgent batteries at La Haute Bruyère—the Government troops having now taken the place of the Germans in the neighbourhood of Bourg la Reine; and so down came the shot and shell, to complete that which the Germans had begun. And completed indeed it was. And yet withal, there was a calm and quiet dignity in the way in which my poor friend spoke of his losses that no one that knew him would be surprized at, but which is very different from the excited manner in which many speak of the devastation occasioned by the war. None of those persons of whom I have written are what is called in Ireland "little men" (had poor Lierval lived he might have repaired his losses in time), but these are samples of the destruction that has been made; and if serious to them, what must it be to the host of small nurserymen who live about

Vitry, Villejuif, and the neighbourhood? I hope shortly to give some statistics as to the aggregate losses sustained; and, in the meantime, let me assure those brothers of the spade, amateur or practical, who have contributed to the Relief Fund, that, small although the aggregate amount is, it has called forth an expression of gratitude on account of the sympathy shown, which ought to tend to bind more closely together the horticulturists of both countries. *D.*, *Deal.*

Societies.

ROYAL HORTICULTURAL: *September* 20.—W. Marshall, Esq., in the chair. The usual preliminary business being concluded, the Rev. M. J. Berkeley stated that since commenting upon the specimens of Trifolium cœruleum, recently introduced by Messrs. Carter & Co., he had seen the plant growing at Chesterfield, and had been asked whether it was a Trifolium at all. An examination had confirmed the surmise that it was not a Trifolium, but the Trigonella cœrulea of De Candolle's "Prodromus," which name it ought now to bear. [The plant is common enough in botanic gardens, and generally grown as Melilotus cœruleus. EDS.] After alluding to a case of monstrosity in a double-flowered Pelargonium, Mr. Berkeley remarked that at the next meeting prizes were offered for Fungi, which included a series for a collection of poisonous and edible Fungi to be shown in separate groups; for a collection of edible Fungi only; and for six cultivated edible Fungi, distinct. He (Mr. Berkeley) would also on that occasion have some observations to make on the Potato disease, and would show that the Potato mould produced resting spores, which came forth again in the following year.

Floral Committee.—W. Marshall, Esq., the newly appointed Chairman, took his seat for the first time. In opening the proceedings of this Committee, whose highly respected Chairman, the Rev. Joshua Dix, has passed away since the last meeting, Mr. Marshall alluded to the sad event in terms expressive of great sorrow, and paid a high tribute to the qualities which our departed friend brought to bear on the management of this Committee; after which the following resolution was proposed by Dr. Denny, and seconded by Mr. W. B. Booth:—"That this Committee is desirous of recording its deep regret at the loss it has recently sustained by the death of its much-esteemed Chairman, the late Rev. Joshua Dix, whose genial and kindly disposition and universal courtesy attached each member personally to himself, and whose business-like habits, in conjunction with his knowledge and love of floriculture, pre-eminently fitted him for the post he filled. Moreover, devoting as he did a large portion of his time and energies with untiring zeal to the advancement of floriculture, and to the maintenance of the usefulness, popularity, and honourable position of the Royal Horticultural Society, his loss will long be felt and deplored, not only by the committee over which he so ably presided, but by all connected with the institution."

This resolution was unanimously assented to without being put from the chair. It was further ordered to be recorded on the minutes of the meeting, and it was agreed that a copy should be at once sent to Mrs. Dix. Subsequently an informal meeting was held, at which it was resolved to open a subscription to provide a portrait of the late Chairman of the Floral Committee, to hang in the Council-room, in company with those of Mr. Rivers and of the late Dr. Lindley and James Veitch.

The meeting, although a fairly good one for the season, was productive of no very decided novelties, neither did the prizes offered for Begonias, Pentstemons, Celosias, Stocks, and Helichrysums, bring forth any competition. Mr. Bull was the only exhibitor of 6 Begonias, distinct, in pots, and these were deservedly awarded the 1st prize. Double Zinnias were fairly represented by Mr. G. Wheeler, Warminster; Mr. T. Bray, gr. to E. A. Sandford, Esq., Nynehead Court, Wellington; and Mr. Porter, gr. to Mrs. Benham, Sion Lodge, Isleworth, who took the awards in the order named. The last named was also the only exhibitor of 12 distinct Pentstemons, taking the 1st prize in the class; and Mr. S. Thorn, gr. to E. Buckingham, Esq., Hampstead, had a 2d prize for three very ordinary feathered Celosias. First-class Certificates were awarded to Mr. Green, gr. to W. W. Saunders, Esq., for a new silvery-leaved Bromeliaceous plant, named Hechtia argentea; to Messrs. Veitch & Sons for Vriesia brachystachys, another handsome member of the same natural order, and for Agave rotundifolia; to Mr. W. Denning, gr. to Lord Londesborough, for Pescatorea Wallisii, an interesting Orchid, which will be found fully described by Prof. Reichenbach at p. 710 of our volume for 1869; to Mr. Knight, Floral Nursery, Hailsham, for a fine new climbing perpetual Rose, pinkish blush, named Princess Louise, a nice-shaped flower and a vigorous grower; to Mr. Parker, Maiden's Green, for Dahlia Admiration, a showy Fancy, of a creamy yellow colour, striped with purplish-crimson; to Mr. Turner, for Dahlias Mrs. Waite, Mephistopheles, Yellow Standard and Livonia; and to Mr. Eckford, gr. to the Earl of Radnor, Coleshill, for Verbenas Lady Gertrude, Mauve Queen, and Lady Braybrooke; Certificates of the 2d class were voted to Mr. Turner for Dahlias Ranunculus, Master M'Grath, and Bucks Lass; to Mr. G. Rawlings, Romford, for Dahlias Mrs. Bennett, lilac-rose, a large flower, and Golden Beauty, a fine yellow but rather flat; and to Mr. G. Parker, for Dahlia John Batten, deep maroon. Mr. William Paul sent eight fine boxes of cut Roses, and received a Special Certificate. The same award was also made to Messrs. Veitch & Sons for a nice group of Orchids, Agaves, &c.; and for a well grown specimen of Lasiandra macrantha floribunda, which was just coming into flower; and to Mr. Denning, gr. to Lord Londesborough, for a choice group of Orchids, which included nice specimens of Dendrobium chrysanthum, Vanda cœrulea, Oncidium macranthum, Epidendrum dichromum amabile, Miltonia candida, &c. An extra prize was also awarded to this collection. Messrs. Carter & Co. exhibited a showy new dwarf Capsicum from Brescia, which was bedded out last year in the public gardens in Milan, where, on account of its very dwarf habit and free bearing capabilities, it is said to have attracted much attention. Messrs. Cripps & Son sent two new Begonias, and examples of Cupressus macrocarpa Crippsii, apparently a very elegant hardy form, but the specimens were too small to form a correct judgment. From Messrs. Osborn & Son came cut flowers of several forms of the beautiful hardy Hibiscus syriacus. Mr. Russell, Mayfield, Falkirk, sent one of the handsomest spikes of Saccolabium Blumei Dayanum that has ever been seen, and the committee recommended it to the notice of the Council as deserving the award of a medal.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair. According to previous notice given in these columns, the "tatie" growers had a grand field day in connection with this meeting. First came Mr. Fenn, the noble tuber's greatest champion, with a batch of seedlings and graft hybrids of the most promising description; followed by the Brothers Dean, of Bedfont, with a choice collection of the best varieties, not the largest in size, it is true, but with quite the largest share of the points which in combination make up the word quality; next to whom came Messrs. John & Charles Lee, Hammersmith, and Messrs. Sutton & Sons, Reading, with collections comprising about 50 varieties in each, of all shapes and sizes, from the ugly and wasteful deep-eyed kidneys and rounds down to the more handsome Cobbler's Lapstone and Early Emperor. In Mr. Fenn's collection were nine forms of graft hybrids, the best of which appeared to be a white kidney named Fenn's Perfection, the result of grafting Yorkshire Hero into Fenn's Onward, specimens of both of which were also shown. It is of fair size, very smooth in outline, and, unlike most of its fellows, clear skinned. Amongst 15 new seedlings specially selected for the garden, were Cricket Ball, round red, second early, and recommended as a good variety for cottagers; English Rose, early second early, a very smooth and good flavoured summer kidney; Woodstock Kidney, an excellent late keeping sort; Fenn's Bountiful, second early red kidney, a great cropper and recommended for cottage gardens; Cottagers' Blush, a good early second early variety for the same purpose, although a little too deep in the eye; Eliza Fenn, first early, fine shaped round, very smooth and a great cropper; John Fenn, a pebble-shaped early round, capital for summer use; Fenn's Goldfinder, early second early round, a large-producing good-keeping and excellent variety; Rector of Woodstock, a smooth round late keeping variety, to which the Committee awarded a First-class Certificate on a former occasion; and Mayor of Woodstock, a good keeping early round, rather deep eyed, but recommended as a good sort for hotel purposes, and which has also received the highest honours that can be bestowed upon it. Amongst frame varieties were Fenn's Early Frame, a medium sized round variety; Excellent, a long smooth kidney, well adapted for first early frame work; and Early White Kidney, a late-keeping, late-spurting, white-fleshed, and good flavoured sort, which is also said to be hardy, and resists the disease. For winter culture in pots, Mr. Fenn had Multum in Parvo, a small flat variety, possessing excellent qualities; Little Gem, a nice smooth kidney, the most suitable of all; and a first early round variety, not over large, but smooth in outline and good in quality. With these also came six new seedlings of great promise, raised from seed sown this year. A Special Certificate was awarded. The collection exhibited by Mr. R. Dean, seedsman, Ealing, was grown by his brother, at the seed grounds, Bedfont, and comprised good examples of the Waterloo Kidney (Dean), which is regarded as the best of all of that type; it is a second early sort, distinct in character, a fine cropper, and first-rate in quality; Cottagers' Red, a very heavy cropper, of good quality; King of Potatos, second early kidney, handsome in shape, and a good cropper; the original Cobbler's Lapstone, one of the best of the type; a long unnamed smooth kidney, a graft hybrid betweent Yorkshire Hero and the Fluke; Eureka, a late pink kidney, fine in quality, and a good cropper; the Favourite Potato of the Mormons, a longish kidney, brought from the Mormon territory by Mr. Robinson; Early Emperor, second early round pink, a handsome looking variety, of good quality; Fenn's Betsy's Favourite, pebble-shaped, round, blotched with purple, a seedling of great promise; Wellington, late, round, small, but handsome in shape, and a good cropper; and Red Breadfruit, second early, of fine shape, a good cropper, and of excellent quality. A Special Certificate was awarded. In the collection of 50 varieties grown on light soil, shown by the Messrs. Lee, the handsomest was Birmingham Prizetaker, a pebble-shaped round of attractive appearance. It does not, however, follow up these great points, being both a poor cropper and poor flavoured variety. The examples of Paterson's Victoria were very fine, fully confirming the high character of this variety as one of the best for light soils. It is of the first quality, and a great cropper. Other varieties well represented were the Beaconsfield Kidney, Lapstone (said to be true); Bresee's Prolific, large and smooth; Lee's Hammersmith Early Kidney, a new variety, not yet sent out; Dunbar Regent, Mona's Pride, Coldstream, Bresee's Climax, Milky White, and Wood's Scarlet Prolific. A Special Certificate was awarded. Messrs. Suttons' collection contained many well-grown examples, but many of the varieties were of the deep-eyed, coarse type, whose principal recommendation is their size. The most meritorious examples in point of quality appeared to be Early Emperor, Dawes' Matchless, Haigh's Kidney, Myatt's Ashleaf, Prince of Wales Kidney, Milky White, Berkshire Kidney, and Headley's Seedling Nonpareil. With these came eight new American varieties, and some new sorts sent out last year. A Special Certificate was awarded. The same award was also made to Mr. J. May, Westfield Gardens, Hayling Island, Hants, for a dozen Shallots, grown from seed sown at the same time as the general crop of Onions, and which weighed 4 lb.; to Mr. Piccirillo, Wigmore Steet, for two very fine specimens of the Giant White Tripoli Onions, weighing 7 lb., and four immense heads of Garlic, weighing 2 lb. 6 oz., grown at Eboli, near Naples, and said to be mild and pleasant in flavour; and to Messrs. Rivers & Son, Sawbridgeworth, for a collection of small pyramidal Plum trees, carrying a splendid crop of fruit, to the admiration of everyone. Mr. William Paul sent three very fine bunches of a seedling White Grape, of great promise, named Winter Muscadine, which the Committee requested to see again further on in the winter; and several varieties of Pears and Plums. Messrs. Sutton & Son sent a handsome brace of Cucumbers, named Marquis of Lorne, cut from plants which have been bearing fruit since last Christmas. Mr. Fenn again exhibited specimens of Blenheim Pippin Apples, which have been altered in character through grafting, and from Mr. Earley came a bunch of Black Grapes, cut from the parent plant of the old Hampton Court Vine, which is growing in the gardens of C. M. Ingleby, Esq., LL.D., at Valentines. The bunch shown was one of 16 grown on a rod 13 feet long, large, fine in berry, well coloured, and of good flavour, which shows that there is still plenty of vigour in the old Vine. Mr. Simpson, The Gardens, Broomfield Lodge, Chelmsford, sent tubers of what he supposed to be a graft hybrid between the Potato and the Jerusalem Artichoke, but, in the opinion of the Committee, the tubers were those of the Potato, without any Artichoke admixture. The examples sent were said to have resulted from grafting two white kidneys into the Artichoke, the produce as shown being red kidneys of the same character, and undistinguishable from, a variety known as the Cottager's Red. The prizes offered for the best dishes of dessert Apples were taken by Mr. Gardiner, Lower Eatington Park, and Mr. Craddock, the Gardens, Compton Verney, Warwick, with Ribston Pippin; and the best dishes of Pears were of Bon Chrétien Fondante, from Mr. Bray, and Jersey Gratioli, from Mr. Tranter, Upper Assendon, Bucks. The only collection of Tomatos came from Mr. Earley, who had the 1st prize.

ROYAL CALEDONIAN HORTICULTURAL: *September* 13.—This was one of the best autumn shows held in Edinburgh for some years. The plants were in better style, at least some score of them, than we are in the habit of seeing; and the fruit was a large, and, upon the whole, a very attractive exhibition; the cut flowers were not so largely shown, but were of average merit. The Hall looked full, and the whole appearance of it, enhanced in effect by some six collections of plants from the various nursery farms in and around the city, indicated an interest that is pleasing to see to all those engaged in horticultural pursuits. Unfortunately, the attendance of the upper and middle class was not so good as we might have expected, and hoped to have seen, but at night the Music Hall was well filled. Judging by the shows held in the metropolis and in the western division of Scotland throughout the past season, horticultural shows are more indebted for a self-sustaining support to the sixpences of the working classes than to those above them in a social position.

Coming to individual objects of interest, the first place must be voted to the plants staged for Mr. B. S. Williams' prize of £10. There were three collections of 10 plants; the 1st, gained by Mr. Paterson, gr. to Mr. Syme, Millbank, was a very uniform lot, comprising Eucharis amazonica, in splendid inflorescence, and a noble plant it makes for a collection. This was the next best plant we have seen since Mr. Howard's fine examples at the International Exhibition of 1866. Along with this was a very well-managed densely flowered Clerodendron Balfourianum, several good Heaths, an excellent plant of Odontoglossum grande, with at least 30 flowers; an equally good Miltonia spectabilis, with at least 40 flowers, and the whole young, fresh-looking, and captivating. They looked well indeed on the bare boards of the table upon which they were placed, and would have gained in importance and in effect under proper setting. Mr. Lees, gr. to the Earl of Haddington, had a most effective lot—larger than their compeers, but not so even, and some of them a little past. His Heaths—most, if not all of them, Turnbull's seedlings—were unusually fine; Austiniana, for example, was a picture of symmetry and health, splendidly coloured, and so was the novel long-tubed and fine coloured Bothwelliana—a Heath destined to rank in importance with Marnockiana, placed alongside of it. Another good Heath shown, but a little past, was linnæoides prægnans, with pink corolla and white tube, a soft-growing variety, and coming in useful in autumn. Vallota purpurea was in extra style in this collection (numbering as many as 100 flowers or more), and of a rich brilliant carmine; Cattleya Dowiana was also shown, but a little past its best, as was also Vanda tricolor insignis. Mr. Paterson had a good and effective lot of foliage plants, and so had Mr. Currie, gr. to William Nelson, Esq., Salisbury Green, who showed Areca Verschaffeltii in fine style, as well as the spiny rachised Mexican Astrocaryum. These, with Yuccas and Tree Ferns, rather limited in number certainly, but what there were of them, made up an agreeable whole, taken along with the bright colouring of the numerous stands of cut flowers. Capital Ferns came from the gardens of Sir John D. Wauchope, of Niddrie, consisting of numerous Maidenhairs—at all times graceful and interesting; some good Todeas, and the neat looking Cheilanthes elegans. There seems so much cutting about the pinnæ and pinnules of this charming species, that the eye scarcely ever wearies admiring its decompound fronds. As for the nursery collections, covering a large amount of table space, the prizes went as follows:—To P. Lawson & Son, to Thos. Methven & Son, and to Dickson & Son. The only novelties in the plant way was an Amaranthus salicifolius, from Messrs. Veitch & Sons, a Manilla species, of remarkably elegant pyramidal habit with the leaves undulated, ligulate, acuminate, not at all Willow-like, but none the less effective from the suffusion of Indian red and green and yellow that characterised them. It is certainly a fine looking annual for individualising, and will become valuable for relieving the squatness of dumpy flower gardening. Another subject, of a dwarf, almost uncultivatable look, was shown by Mr. Butler, Greenock; this was the variegated form of the Cornish Moneywort (Sibthorpia europæa), growing flatly on the surface of the small pots in which it was shown. It was certificated by the judges.

The fruit consisted of collections of 20 sorts from Mr. G. Johnstone, gr. to the Earl of Strathmore, Glamis Castle. Among the best dishes were marvellously fine samples of Buckland Sweetwater, Black Prince, and Muscat of Alexandria Grapes. The Peaches were also good, and the other dishes, which consisted of Melons, Brunswick and White Marseilles Figs, Nectarines, Cherries, Strawberries and Plums, of average character. The Prince of Wales Strawberry, indeed, was very good, and had been well kept back. Mr. Temple, gr. to J. Balfour, Esq., Balbirnie, Markinch, had a good lot of 16 dishes. His Stirling Castle Peaches and Moorpark Apricots were very fine, and so were his Brown Turkey Figs, Bellegarde Peaches, and Downton Nectarines. Mr. James Turner, gr. to Mark Turner, Esq., Readall, Selkirk, had also a good lot. Mr. Fowles, Fordell, Inverkeithing, had two extra well-managed fruit of Smooth Cayenne Pine, weighing from 7 to 8 lb. each; and another exhibitor, whose name we did not catch, had extra samples of Easter Pippin Apple in the best state of preservation, scarcely at all crushed, and yet of the crop of 1870. This was a remarkable case of retardation, and if this should meet the exhibitor's eye, it would be a matter of interest to know how he so long and so effectually preserved the fruit. The best Grapes in the exhibition came from Mr. Johnstone. His Muscat and Buckland Sweetwater, and all the varieties, indeed, which he showed, were well done. His Hamburghs were the only exception, only he did not stage in the classes with that sort, showing it only in his collection. The Black Hamburghs were, as a rule, badly exhibited—great ill-finished bunches, some of them badly rubbed and others destroyed with water-spots over the surface—indeed, it is questionable whether any of the dozen of entrants should have been awarded a prize, unless it were the owner of the 2d prize, Mr. T. Boyd, gr. to Wm. Sanderson, Esq., Oaklese, Gallashiels. That exhibitor's bunches were well shown, cleanly put up; although the judges passed them for first honours, because the lot they selected were the better flavoured of the two; in point of appearance there was no comparison. The prize for best flavoured black went to Mr. Temple, with Muscat Hamburgh; and the prize for the best flavoured white went to Mr. George Greig, gr. to Mr. William Christie, Craigend Park, with Duchess of Buccleuch. That exhibitor was very successful in his lots, taking 1st for Black Alicante in very good style, 1st for White Lady Downes, and 1st for finest flavoured white. The largest or heaviest bunch came from Mr. J. Dickson, gr. to J. Jerdine, Esq., Arkleton, Dumfriesshire, in the shape of White Nice or Syrian, weighing the extraordinary weight of 18 lb. 7 oz.—the largest or heaviest bunch on record, probably, since the days of the Grapes of Eshcol. The Rev. W. P. Bushby, The Parsonage, Dalkeith, sent a nice dish of three bunches of Muscat of Alexandria, of fine form, not large in bunch, but well up in colour. Immense Solway Peaches, of a fine citron colour, came from Mr. Mark Kyle, Elliston House. Excellent Stirling Castle and Walburton Admirable also came from Mr. Lees, from Mr. Johnstone, and from Mr. Price, gr. to the Earl of Rosslyn, Dysart House. There were really a grand lot of these fruits and of Nectarines, of Elruge, and of Pitmaston Orange, one of the most attractive skinned fruit upon the table. Very good Apricots came from Mr. Cumming, gr. to the Earl of Wemyss, Arnisfield; and there were lots of Plums, of Jargonelle Pears, and, notwithstanding the scarcity, of Apples, where Messrs. Lees, Brunton (gr. to Sir W. Kinloch), and Mr. Cumming divided the chief honours.

Cut flowers were in fair condition, especially the Gladioli; the Roses, the Dahlias, and Hollyhock blooms, but little of a class to elicit special notice. Some very good novelties in Dahlias were staged by Mr. Turner, of Slough. The following sorts were certificated:—James Wilder, a deep-shaded crimson, with the top florets shaded with blackish crimson, most novel and striking; florets fine formed, and the whole flower well raised in the centre; substance good, and making up a most distinct whole,—First-class Certificate. Laura Haslam, a primrose, with shaded white florets, much deeper and denser shaded than Mrs. Landers, and a very striking flower,—First-class Certificate. John Standish, cerise, shaded deep maroon towards the centre of the flower, form perfect, build firm and globular; altogether, a fine thing,—First-class Certificate. Mrs. Landers, yellow tipped with white, form a little flat, but good-turned florets, scarcely perfect enough, however, for even a Second-class Certificate. Hope, fine deep crimson, with well-turned florets, flower well raised, and form unexceptional,—Second-class Certificate. The following Hollyhocks, from Messrs. Downie & Co., had First-class Certificates:—John Stewart, rosy-crimson, very full of petals well packed together from the guard petal upwards, and making a full flat head of agreeable outline. Mrs. Laing, salmon-shaded flesh, very full flower, and of general good parts. Mr. John M'Pherson, Aberdeen, had a Certificate of Merit for a yellow ground Pansy, with good dense eye and dark purple belting.

Vegetables were in limited quantity, but what were shown were good, particularly the Onions, which were not only Spanish-like, but well matured. The Celery, and Carrots, and Beet, and Leeks, were of first quality. The best collections came from Messrs. C. Irving and A. Anderson, and the best Onions came from Messrs. D. Marshall and C. M'Farlane. Cottagers and amateurs had each separate classes for themselves, but they were not largely represented, although they showed in general very creditably.

ROYAL HORTICULTURAL OF ABERDEEN: *September* 15 *and* 16.—The autumn show of this Society was held in a large marquee on the Inches The show was in every respect successful. The autumn show is intended chiefly for cut flowers, fruits, and vegetables, and therefore little encouragement is held out for the exhibition of pot plants; nevertheless, the show of the latter was very good. Among those sent in for competition we observed a good plant of Lilium speciosum roseum, with about 100 blooms on it, and in the same collection very fine plants of Yucca aloifolia variegata and Lomaria gibba. The cut flowers were, almost without exception, very good,—several nurserymen round the town, such as Morrison, Forbesfield; Cocker, Sunnybank; M'Pherson, Polmuir; Reid, Albyn Place, sent in fine stands for exhibition.

The display of fruit was very good. The display made by Mr. Mackie, Dunkeld; Mr. Webster, Gordon Castle, and Mr. Moir, Ury, in various classes, was remarkably fine.

The show of vegetables was also better than ever seen before in Aberdeen. Uninterested persons who had attended the recent shows at Edinburgh and Dundee asserted that the vegetables shown on this occasion were very much superior to those shown at either of those places. A new variety of Potatos, shown by Mr. M'Pherson, Polmuir, was highly commended by the judges.

As usual, the amateurs, in fruit, flowers, and vegetables, were little, if at all, behind the professionals; and we were glad to observe much improvement in all branches on the tables assigned to the working classes.

Notices of Books.

At Last: a Christmas in the West Indies. By Charles Kingsley. Two vols., crown 8vo, pp. 631. With illustrations. (Macmillan.)

If the passenger traffic of the West India Mail Company does not increase considerably during the coming winter, it will be no fault of Mr. Kingsley's. To read his volumes is a delightful occupation, to review them is tantalising in the extreme. Instead of calmly taking pen in hand and endeavouring to give our readers some idea of these charming volumes, there is a well nigh irresistible impulse to rush off and secure a berth in the next steamer bound for the West Indies. Familiar with descriptions of tropical scenery and tropical vegetation, and not wholly unversed in the details of the latter, Mr. Kingsley's word-paintings appeal to us with a vividness and force as delightful as surprising—surprising because descriptions of tropical vegetation are not uncommon, and the botany of the West Indies in particular has been pretty well worked up by naturalists. Mr. Kingsley's descriptions have the uncommon but excellent qualification of being not only scientifically accurate so far as they go, but fluent. Too often when even a practised writer tries his hand at this kind of work, the result is wearisome to the general reader, and useless, if not unintelligible, to those who read for information rather than amusement. Again, the scientific writer is too apt to make his fishes talk like great whales, and disgust the general reader. Mr. Kingsley's volumes record the impressions made on the mind of the writer by a hurried visit to the island of Trinidad. We say hurried, because the whole journey out and home was completed within three months. Though in this place we naturally lay stress on the natural productions of the islands, and especially on those derived from the vegetable kingdom, Mr. Kingsley's scope is wider. He tells of the physical features of the islands; of their geology, not forgetting the extraordinary pitch lake in Trinidad; he glances at their history; he has much to say on their present and probable future social and commercial state; he enters at some length into the peculiarities and differences of the several races inhabiting the islands—Anglo-Saxons, Hindoo-coolies, negroes, and Chinese. In every case, what he says he says well, and his opinions will command a respectful hearing, if not in all cases full assent.

Mr. Kingsley saw everything through Claude Lorraine glasses. He went for a holiday, and sensibly made his journey a veritable pleasure trip. He went under the most favourable auspices; he was favoured, apparently, with fine weather—in fact, so thorough a vein of Mark Tapleyism runs through the book as to lead us to suppose that a West India hurricane, or the shock of an earthquake, would have been no more disagreeable to him than the "roaring forties," or the north-easterly gales he tells us of.

We think it may reasonably be surmised that had Mr. Kingsley's visit been of longer duration, and had it been made under less favourable conditions, his impressions of what he saw and heard would have been somewhat less rose-tinted than they are. However, it is quite time to let Mr. Kingsley speak for himself, and we do not think we can do better than quote the greater part of one of his chapters descriptive of West Indian scenery, merely adding that this is only one of many similar landscapes, if we may so call them, scattered throughout the volumes.

The Botanic Garden here referred to, is that of Port of Spain, under the management of Mr. Prestoe.

"You look out—would that you did look in fact!—over the low sill. The gravel outside, at least, is an old friend; it consists of broken bits of grey Silurian rock, and white quartz among it; and one touch of Siluria makes the whole world kin. But there the kindred ends. A few green weeds, looking just like English ones, peep up through the gravel. Weeds, all over the world, are mostly like each other; poor, thin, pale in leaf, small and meagre in stem and flower; meaner forms which fill up for good, and sometimes, too, for harm, the gaps left by Nature's aristocracy of grander and, in these tropics, more tyrannous and destroying forms. So like home weeds they look: but pick one, and you find it unlike anything at home. That one happens to be, as you may see by its little green mouse-tails, a Pepper-weed [Peperomia], first cousin to the great black Pepper bush in the gardens near by, with the berries of which you may burn your mouth gratis.

"So it is, you would find, with every weed in the little cleared dell, some 15 feet deep, beyond the gravel. You could not—I certainly cannot—guess at the name, seldom at the family, of a single plant. But I am going on too fast. What are those sticks of wood which keep the gravel bank up? Veritable Bamboos; and a Bamboo pipe, too, is carrying the trickling cool water into the bath close by. Surely we are in the tropics. You hear a sudden rattle, as of boards and brown paper, overhead, and find that it is the clashing of the huge leaves of a young Fan Palm [Sabal], growing not 10 feet from the window. It has no stem as yet; and the lower leaves have to be trimmed off, or they would close up the path, so that only the great forked green butts of them are left, bound to each other by natural matting; but overhead they range out nobly in leaf-stalks 10 feet long, and fans full 12 feet broad; and this is but a baby—a three years' old thing. Surely, again, we are in the tropics. Ten feet further, thrust all awry by the huge Palm leaves, grows a young tree, unknown to me, looking like a Walnut. Next to it an Orange, covered with long prickles and small green fruit, its roots propped up by a semi-cylindrical balk of timber, furry inside, which would puzzle a Hampshire woodsman; for it is, plainly, a Groo-groo, or a Coco Palm, split down the middle. Surely, again, we are in the tropics. Beyond it, again, blaze great orange and yellow flowers, with long stamens, and pistil curving upwards out of them. They belong to a twining, scrambling bush, with finely-pinnated Mimosa leaves. That is the 'Flower-fence' [Poinciana], so often heard of in past years; and round it hurries to and fro a great orange butterfly, larger, seemingly, than any English kind. Next to it is a row of Hibiscus shrubs, with broad crimson flowers; then a row of young Screw Pines [Pandanus], from the East Indian Islands, like spiral Pine-apple plants 20 feet high standing on stilts. Yes: surely we are in the tropics. Over the low roof (for the cottage is all of one storey) of purple and brown and white shingles, baking in the sun, rises a tall tree, which looks (as so many do here) like a Walnut, but is not one. It is the 'Poui' of the Indians [Tecoma (serratifolia?)], and will be covered shortly with brilliant saffron flowers.

"I turn my chair and look into the weedy dell. The ground on the opposite slope (slopes are, you must remember, here as steep as house roofs, the last spurs of true mountains) is covered with a grass like tall Rye-grass, but growing in tufts. This is the famous Guinea-grass [Panicum jumentorum], which, introduced from Africa, has spread over the whole West Indies. Dark lithe Coolie prisoners, one a gentle young fellow, with soft beseeching eyes, and 'Felon' printed on the back of his shirt, are cutting it for the horses, under the guard of a Mulatto turnkey, a tall, steadfast, dignified man; and between us and them are growing along the edge of the gutter, veritable Pine-apples in the open air, and a low green tree just like an Apple, which is a Guava; and a tall stick, 30 feet high, with a flat top of gigantic curly Horse Chestnut leaves, which is a Trumpet-tree [Cecropia]. There are hundreds of them in the mountains round: but but most of them are dead, from the intense drought and fires of last year. Beyond it, again, is a round-headed tree, looking like a huge Portugal Laurel, covered with racemes of purple buds. That is an 'Angelim' [Andira inermis]; when full grown, one of the finest timbers in the world. And what are those at the top of the brow, rising out of the rich green scrub? Verily, again, we are in the tropics. They are Palms doubtless, some 30 feet high each, with here and there a young one springing up like a gigantic crown of male Fern. The old ones have straight grey stems, often prickly enough, and thickened in the middle; grey last year's leaves hanging down; and feathering round the top, a circular plume of pale green leaves, like those of a Cocoa-nut. But these are not Cocos. The last year's leaves of the Coco are rich yellow, and its stem is curved. These are Groo-groos [Acrocomia sclerocarpa]; they stand as fresh proofs that we are indeed in the tropics, and as 'a thing of beauty and a joy for ever.'

"For it is a joy for ever, a sight never to be forgotten, to have once seen Palms, breaking through and, as it were, defying, the soft rounded forms of the broad-leaved vegetation by the stern grace of their simple lines; the immovable pillar-stem, looking the more immovable beneath the toss and lash and flicker of the long leaves, as they awake out of their sunlit sleep, and rage impatiently for a while before the mountain gusts, and fall asleep again. Like a Greek statue in a luxurious drawing-room, sharp cut, cold, virginal; shaming, by the grandeur of mere form, the voluptuousness of mere colour, however rich and harmonious; so stands the Palm in the forest; to be worshipped rather than to be loved. Look at the drawings of the Oreodoxa avenue at Rio, in M. Agassiz's charming book. Would that you could see actually such avenues, even from the sea, as we have seen them in St. Vincent and Guadaloupe: but look at the mere pictures of them in that book, and you will sympathise, surely, with our new Palm-worship.

"And lastly, what is that giant tree which almost fills the centre of the glen, towering with upright but branching limbs, and huge crown, thinly leaved, double the height of all the trees around? An Ash? Something like an Ash in growth; but when you look at it through the glasses (indispensable in the tropic forest), you see that the foliage is more like that of the yellow Horse Chestnut. And no British Ash, not even the Altyre giants, ever reached to half that bulk. It is a Silk-cotton tree; a Ceiba [Eriodendron anfractuosum]—say, rather, the Ceiba of the glen; for these glens have a habit of holding each one great Ceiba, which has taken its stand at the upper end, just where the mountain spurs run together in an amphitheatre; and being favoured (it may be supposed) by the special richness of the down-washed soil at that spot, grows to one of those vast air-gardens of creepers and parasites, of which we have so often read, and dreamed. Such a one is this: but we will not go up to it now. This sketch shall be completed by the background of green and grey, fading aloft into tender cobalt: the background of mountain, ribbed and gullied into sharpest slopes by the tropic rains, yet showing, even where steepest, never a face of rock, or a crag peeping through the trees. Up to the sky-line, 1000 feet aloft, all is green; and that, instead of being, as in Europe, stone or moor, is jagged and feathered with gigantic trees. How rich! you would say. Yet these West Indians only mourn over its desolation and disfigurement; and point to the sheets of grey stems, which hang like mist along the upper slopes. They look to us, on this 30th of December only as April signs that the woodlands have not quite burst out into full leaf. But to the inhabitants they are tokens of those fearful fires which raged over the island during the long drought of this summer; when the forests were burning for a whole month, and this house scarcely saved; when whole cane-fields, mills, dwelling-houses, went up as tinder and flame in a moment, and the smoky haze from the burning island spread far out to sea. And yet, where the fire passed six months ago, all is now a fresh, impenetrable undergrowth of green: creepers covering the land, climbing up and shrouding the charred stumps; young Palms, like Prince of Wales' feathers, breaking up, 6 or 8 feet high, among a wilderness of Sensitive Plants, scarlet-flowered dwarf Balisiers [Heliconia Caribæa], climbing Fern [Lygodium venustum], Convolvuluses of every hue, and an endless variety of outlandish leaves, over which flutter troops of butterflies. How the seeds of the plants and the eggs of the insects have been preserved, who can tell? But there their children are, in myriads; and ere a generation has passed, every dead grey stem will have disappeared before the ants and beetles and great wood-boring bees who rumble round in blue-black armour; the young plants will have grown into great trees beneath the immeasurable vital force which pours all the year round from the blazing sun above, and all be as it was once more. In verity we are in the tropics, where the so-called 'powers of Nature' are in perpetual health and strength, and as much stronger and swifter, for good and evil, than in our chilly clime, as is the young man in the heat of youth compared with the old man shivering to his grave. Think over that last simile. If you think of it in the light which physiology gives, you will find that it is not merely a simile, but a true analogy; another manifestation of a great physical law.

"Thus much for the view at the back—a chance scene, without the least pretensions to what average people would call beauty of landscape. But, oh that we could show you the view in front! The lawn with its flowering shrubs, tiny specimens of which we admire in hothouses at home; the grass as green (for it is now the end of the rainy season) as that of England in May, winding away into the cool shade of strange evergreens! the yellow Cocoa-nut Palms on the nearest spur of hill throwing back the tender blue of the higher mountains; the huge central group of trees—Saman [Inga Saman—'Caraccas tree'], Sandbox [Hura crepitans], and Fig, with the bright ostrich plumes of a climbing Palm, towering through the Mimosa-like foliage of the Saman; and Erythrinas [Erythrina umbrosa] (Bois immortelles, as they call them here), their all but leafless boughs now blazing against the blue sky with vermillion flowers, trees of red coral sixty feet in height. Ah that we could show you the avenue on the right, composed of Palms from every quarter of the tropics—Palms with smooth stems or with prickly ones, with fan leaves, feather leaves, leaves (as in the wine Palm [Caryota]) like Venus' Hair Fern; some, again, like the Cocorite [Maximiliana], almost stemless, rising in a huge ostrich plume which tosses in the land breeze till the long stiff leaflets seem to whirl like the spokes of a green glass wheel. Ah that we could wander with you through the botanic garden beyond, amid fruits and flowers brought together from all the lands of the perpetual summer; or even give you, through the great arches of the Bamboo clumps, as they creak and rattle sadly in the wind, and the Bauhinias, like tall and ancient Whitethorns, which shade the road, one glance of the flat green savannah, with its herds of kine, beyond which lies, buried in flowering trees, and backed by mountain woods, the city of Port of Spain. One glance, too, under the boughs of the great Cotton-tree at the gate, at the still sleeping sea, with one tall coolie ship at anchor, seen above green cane-fields and coolie gardens, gay with yellow Croton, and purple Dracæna, and crimson Poinsettia, and the grand leaves of the grandest of all plants, the Banana food of Paradise. Or, again, far away to the extreme right, between the flat tôps of the great Saman avenue at the barracks, and the wooded mountain spurs which rush down into the sea, the islands of the Bocas floating in the shining water; and beyond them, a cloud among the clouds, the peak of a mighty mountain, with one white tuft of mist upon its top. Ah that we could show you but that, and tell you that you were looking at the 'Spanish Main;' at South America itself, at the last point of the Venezuelan Cordillera, and the hills where jaguars lie. If you could but see what we see daily; if you could see with us the strange combination of rich and luscious beauty, with vastness and repose, you would understand, and excuse, the tendency to somewhat grandiose language which tempts perpetually those who try to describe the tropics, and know well that they can only fail.

"In the presence of such forms and such colouring as this, one becomes painfully sensible of the poverty of words, and the futility, therefore, of all word-painting; of the inability, too, of the senses to discern and define objects of such vast variety; of our æsthetic barbarism, in fact, which has no choice of epithets save between such as 'great,' and 'vast,' and 'gigantic;' between such as 'beautiful,' and 'lovely,' and 'exquisite,' and so forth; which are, after all, intellectually only one stage higher than the half-brute Wah! wah! with which the savage grunts his astonishment—call it not admiration; epithets which are not, perhaps, intellectually as high as the 'God is great' of the Mussulman, who is wise enough not to attempt any analysis, either of Nature or of his feelings about her; and wise enough also (not having the fear of Spinoza before his eyes) to 'in omni ignoto confugere ad Deum'—in presence of the unknown, to take refuge in God.

"To describe to you, therefore, the botanic garden (in which the cottage stands), would take a week's work of words, which would convey no images to your mind. Let it be enough to say, that our favourite haunt in all the gardens is a little dry valley, beneath the loftiest group of trees. At its entrance rises a great Tamarind, and a still greater Saman; both have leaves like the Mimosa. Up its trunk a Cereus has reared itself, for some 30 feet at least; a climbing Seguine [Philodendron] twines up it with leaves like 'lords and ladies:' but the glory of the tree is that climbing Palm, the feathers of which we saw crowning it from a distance. Up into the highest branches and down again, and up again into the lower branches, and rolling along the ground in curves as that of a Boa bedecked with huge Ferns and prickly spikes, 6 feet and more long each, the Rattan [Calamus Rotang, from the East Indies] hangs in mid-air, one hardly sees how, beautiful and wonderful, beyond what clumsy words can tell. Beneath the great trees (for here great trees grow freely beneath greater trees, and beneath greater trees again, delighting in the shade) is a group of young Mangosteens [Garcinia Mangostana, from Malacca—the really luscious and famous variety has not yet fruited in Trinidad], looking, to describe the unknown by the known, like Walnuts with leaflets 8 inches long, their boughs clustered with yellow and green sour fruit; and beyond them stretches up the lawn a dense grove of Nutmegs, like Portugal Laurels, hung about with olive-yellow Apples. Here and there a Nutmeg-apple has split, and shows within the delicate crimson caul of mace; or the Nutmegs, the mace still clinging round them, lie scattered on the grass. Under the perpetual shade of the evergreens haunt Heliconias, and other delicate butterflies, who seem to dread the blaze outside, and flutter gently from leaf to leaf, their colouring—which is usually black with markings of orange, crimson, or blue—coming into strongest contrast with the uniform green of leaf and grass. This is our favourite spot for entomologizing, when the sun outside altogether forbids the least exertion. Turn with us—alas! only in fancy—out of the grove into a neighbouring path, between Tea shrubs, looking like Privets with large Myrtle flowers, and young Clove-trees, covered with the groups of green buds which are the cloves of commerce; and among fruit trees from every part of the tropics, with the names of which I will not burden you. Look, though, down that Allspice avenue, at the clear warm light which is reflected off the smooth yellow ever-peeling stems; and then, if you can fix your eye steadily on any object, where all are equally new and strange, look at this stately tree. A bough has been broken off high up, and from the wounded spot two plants are already contending. One is a parasitic Orchis; the other a parasite of a more dangerous family. It looks like a straggling Magnolia, some 2 feet high. In 50 years it will be a stately tree. Look at the single long straight air-root which it is letting down by the side of the tree bole. That root, if left, will be the destroyer of the whole tree. It will touch the earth, take root below, send out side-fibres above, call down younger roots to help it, till the whole bole, clasped and stifled in their embraces, dies, and rots out, and the Matapalo (or Scotch Attorney [Clusia], as it is rudely called here) stands alone on stilted roots and board walls of young wood, slowly coalescing into one great trunk; master of the soil once owned by the patron on whose vitals he has fed: a treacherous tyrant; and yet, like many another treacherous tyrant, beautiful to see, with his shining evergreen foliage, and grand labyrinth of smooth roots, standing high in air, or dangling from the boughs in search of soil below; and last, not least, his Magnolia-like flowers, rosy or snowy-white, and green egg-shaped fruits.

"Now turn homewards, past the Rosa del monte [Brownea] bush (bushes, you must recollect, are 20 feet high here), covered with crimson Roses, full of long silky crimson stamens: and then try—as we do daily in vain—to recollect and arrange one-tenth of the things which you have seen."

Some beautiful woodcuts are given, illustrative of tropical scenery, but they are hardly more effective than Mr. Kingsley's narrative, from which we may be tempted to make yet further extracts at another time.

—— Under the appellation of *Album Van Eeden*—a taking title!—we have received a specimen number of a periodical devoted to the illustration in chromolithograph of the flowers of "Dutch Bulbs and Bulbous Plants." The plate before us represents a variety of Rex Rubrorum Tulip with variegated leaves, and is very satisfactory. It is not stated whether any descriptive letterpress is intended to accompany the plates, but if so—and if it is intended for the benefit of English readers, we would suggest that it be written in English, and not in the "double Dutch" of the prospectus addressed to the florists and amateurs in Great Britain and Ireland. Twelve large coloured plates will, we learn, be published in the course of a year, in two instalments, at a cost of 12*s*., post free. Application should be made to MM. A. C. Van Eeden & Co., Wagenweg No. 91, Haarlem.

—— We do not suppose that many people are foolish enough to be their own lawyers. Amateur work of that description is not very profitable; however, it is often a matter of interest to the laity to know what are the rules of law applicable in particular instances, and to no class of cases is this statement more applicable than to that relating to landlords' fixtures. *The Rule of the Law of Fixtures* is the title of a little book drawn up by A. Brown, Esq., Barrister-at-Law, and published by Butterworths, Fleet Street, and which may be recommended to those concerned.

—— To sportsmen and naturalists we may safely recommend a little treatise of Mr. J. E. Harting's, entitled *Hints on Shore Shooting* (Van Voorst). The work is thoroughly practical, and the spirit of the book sportsmanlike. It tells the reader where to go, what to do, how to distinguish the several birds, and how to preserve them; and these details are interlarded with a little pleasant chit-chat.

The Apiary.

THE HIVE.—What does it matter in what kind of hive or box the bees are kept? It does not matter much during the summer months, if the bees be located in a good district for honey collecting. But we have to provide for one or two contingencies, and not a few drawbacks from the extremes of heat and cold—the sun-heat melting the new combs in wooden boxes, as happens even in the straw hives, which are the best substitute for the natural habitat of the honey-bee, because the straw absorbs the moisture within the hive in winter, and with slight protection from the summer heat and winter rains, has carried through many a stock of bees. But there is the drawback of providing stands for the straw hives, as well as covers from the weather; and then how completely is the state of the interior condition of the hive a dead letter to the owner, while transportation for fresh pasturage for the bees is impossible. Then comes the period of smoking and driving, to save the hives of the bees at the honey harvest, if the old plan of the brimstone match has really been set aside! What a hard task has it been to introduce this "humane system," in spite of the able writings of the Rev. W. C. Cotton, with Mr. Robert Golding's straw hives and pamphlet—or any collateral, or safer, or nadir hiving; or even the "bar-frame plan," with all the German and American adaptations of more recent dates. Nor have the frames been stopped by the skilful writings of the late lamented Mr. Woodbury, who did so much in introducing thoroughly the yellow-banded bee, commonly called the "Ligurian bee," and which has become quite a profitable business in America and England, although the first agent, Mr. Neighbour, of London, had the "Apis ligustica" from M. Herrmann, of Switzerland, only in 1859, who called this bee "Apis helvetica." But to return to the question of hives. No hive yet introduced by hivemasters and sellers has been constructed to meet the wants of the bees, but rather the capricious fancies of bee-keepers, where the maker has to tax his skill and ingenuity to meet these wants, while every season apparently requires a new hive or a new book to be foisted on the public, whilst the true principles have been lost sight of both for economy and the right management of the honey-bee. No hive could be so easily converted, either for the usual profitable keeping of bees, or the scientific observation of the same, as the "bar frames," by those who wish to combine the two; but they generally fail in their object by their own zeal in finding out a "perfect cure" for all the ills that bee management has to contend with, and the bee-hive seller and constructor is always ready to assist the "new idea"—to put in a hinge, or a bar, or some piece of glass that would surely make the hive a marvel of invention! instead of taking a lesson from the simple wants of the bees. We may then sum up the history of the bee-hive with a hop, skip, and a jump,—from the Schirach suggestion to Huber, who used the leaf-hive, and the improved bar-fixed Grecian hives of Golding, made in straw and circular, to the adapted wood and straw hives of Mr. Woodbury, who introduced the system of compound bar and frame, with the adjusted bar of Mr. Golding, having guide-combs affixed, to make the bees build in a perfectly straight line; but none have attempted the first views of the "bar-frame hive," which followed on the heels of the Grecian hives, not with any view to multiply bee apparatus, bee-houses or sheds, or the necessity of stands, covers, dividers, or glass frames, except for the ladies and timid beekeepers, but with the single object of an easy mode of inspecting each comb, and protecting the inmates of the hive, and transporting the hive and bees bodily anywhere and at any moment. *W. W. M.*

Miscellaneous.

GISHURST COMPOUND FOR MANGE.—A Scotch terrier of mine was for some time troubled with mange. I tried a variety of preparations, with no satisfactory effect. One day I was mixing a large dose of Gishurst Compound for my Peach trees, which had been dreadfully cut up with the fly during the summer, when the idea occurred to me to try the effect of it on the dog's back. I took a lump of it, and rubbed him well with it until his back was in a perfect froth, and so left him, without washing it off. I repeated the process every day for about a week, and I am happy to say that at the present time he has very little appearance of mange about him. The hair is still short, but there are no bare places, and there is no question but he has derived considerable benefit from the application. *Francis Francis, in the "Field."*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, SEPT. 16, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	77.8	52.4	25.4	72.2	53.6	18.6	61.6	0.33
Blackheath ..	78.6	52.5	26.1	72.5	55.1	17.4	62.6	0.00
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	73.5	49.0	24.5	65.2	52.9	12.3	57.7	0.16
Wolverhampton	71.6	49.7	21.9	66.1	53.0	13.1	58.3	0.01
Leicester ..	..	..	..	..	..	..	..	..
Norwich ..	70.5	48.0	22.5	67.3	53.7	13.6	59.2	0.00
Nottingham ..	73.5	48.2	25.3	68.3	52.9	15.4	59.3	0.06
Sheffield ..	70.0	45.0	25.0	64.1	52.6	11.5	57.0	0.21
Liverpool ..	72.3	49.5	22.8	65.5	51.8	13.7	57.4	0.00
Manchester ..	72.7	49.2	23.5	70.1	52.9	17.2	60.2	0.00
Salford	72.8	47.1	25.7	67.2	50.3	16.9	57.4	0.00
Bradford ..	70.0	48.4	21.6	64.9	52.3	12.6	57.3	0.00
Leeds	71.0	47.0	24.0	65.3	52.7	12.6	57.7	0.13
Hull	68.0	46.0	22.0	64.0	51.0	13.0	56.2	0.02
Newcastle ..	64.0	43.0	21.0	59.7	49.0	10.7	53.0	0.12
Edinburgh ..	66.7	42.0	24.7	..	..	..	53.2	0.00
Glasgow ..	67.0	42.4	24.6	..	..	..	55.0	0.00
Dundee.. ..	64.0	70.0	17.0	..	..	..	55.2	0.50
Aberdeen ..	62.6	44.1	18.5	..	..	..	53.6	0.13
Paisley	..	..	..	..	..	..	..	..
Greenock ..	64.0	48.0	16.0	..	..	..	56.0	0.00
Leith	68.0	41.0	27.0	..	..	..	53.4	0.36
Perth	67.0	43.0	24.0	..	..	..	56.0	0.00
Dublin	70.5	45.2	25.3	..	..	..	54.4	0.04

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, SEPT. 20, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
Sept.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
14. Thurs. .	30.12	59.5	54.2	49.4	70	4.0
15. Friday .	30.07	64.0	57.2	51.8	64	4.3
16. Satur. .	30.06	65.1	61.4	60.2	79	5.4
17. Sunday.	30.05	59.1	56.4	54.0	84	4.7
18. Monday	29.97	58.4	50.5	43.4	57	3.2
19. Tues. .	29.94	54.2	47.3	40.4	60	2.8
20. Wednes	29.81	55.6	51.7	48.2	76	3.9

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
Sept.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg	Deg.	Deg.		Miles	
14. Thurs. .	64.8	56.2	8.6	59.6	+ 2.4	N E.	360	0.00
15. Friday .	71.1	54.0	17.1	61.8	+ 4.7	N E.	275	0.00
16. Satur. . .	71.8	53.0	18.8	60.4	+ 3.5	N.E.	295	0.00
17. Sunday.	65.2	52.4	12.8	57.5	+ 0.8	N E.	295	0.00
18. Monday	65.9	51.4	14.5	57.4	+ 0.9	N N E.	265	0.00
19. Tues. . .	64.4	49.4	15.0	55.6	— 0.6	N.E	165	0.00
20. Wednes	65.2	48.8	16.4	55.7	— 0.3	E.	125	0.00

Sept. 14.—Generally overcast, with the exception of a short period in the middle of the day. Dull.
— 15.—Fine, with small amount of cloud till night ; then cloudy.
— 16.—Generally cloudy but fine.
— 17.—Overcast till the afternoon, then generally cloudless.
— 18.—A fine day Cloudy throughout.
— 19.—Overcast generally, with the exception of the period comprised between 3 and 5 o'clock
— 20.—Very variable. A few drops of rain fell shortly after 3 P.M. A cloudless night.

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

STOVES and greenhouses should now be set neatly in order, after the housing of the plants which have been standing out. Should there be the least danger of over-crowding—and where is there space sufficient to meet all requirements?—I advise that strong measures be resorted to, such as destroying decrepid old specimens, to make way for more creditable stuff. We are all too prone, in decided opposition to our best interests, to retain old specimens which have done good service in the past, even though they may afford but a scant supply of flowers. With a view to economise labour I generally choose a wet period to wash the pots of incoming plants, pick them over, and re-arrange them, &c. Fresh surface-soil is frequently placed over the surfaces of the old balls at the same time, to which there are objections, as I shall show. At such a period the ball of each plant is generally extremely wet, the rims of the pots are so also, in consequence of the washing ; it follows, therefore, that soil compressed on to a waterlashed and bedabbled surface cannot well carry out the wishes or intent of the operator. It is for such reasons as these that I advise the fresh "soiling" to be deferred for a short time—until the pots and surface soil have become somewhat dry, so that the addition be made at a time when undue cohesion is not possible, and when the aid rendered will more readily meet the requirements of the roots. Potting successional "relays" of *Primulas*, *Cinerarias*, and the forward *Herbaceous Calceotarias* must receive the usual attention somewhat by anticipation, so that the roots may be kept constantly active and the plants growing. Those desirous of an early display of bulbous plants, who have not yet potted any, should do so quickly, as it is impossible to get good trusses of blooms without first allowing the bulbs ample time to form good roots for their support. They thrive well in a generous maiden yellow loam, with moderate additions of sand and good decomposed and thoroughly sweetened "spit" manure, an inch or so in thickness being placed immediately over the few crocks deemed necessary to insure an effective drainage. In potting the bulbs, first firmly press the soil into the pots, and then fix the bulbs as tightly as possible in and upon it, burying them to about a third of their depth into the fresh soil. Unless the soil is somewhat dry at the time of potting—which is not desirable, as it prevents its being made firm by pressure—they should not be watered immediately, nor, in fact, until the surface has become dried sufficiently to let the water percolate freely through without in anywise causing undue binding. To this end they should be placed in the situation where they are to be covered over with ashes or cocoa-nut refuse, and there remain for a day or so, until the surfaces have become sufficiently dried, when the necessary watering should be given, soon after which the process of covering them over may be done. In the country generally, the family being at home at this season, every possible effort must be made, by a concentration of all the flowering plants possible, to keep the conservatory gay. Cut back late-flowering *Ixoras* immediately the bloom is past, and place them into a nice bottom-heat, with a high, moist atmosphere, to induce them to "break" and form young shoots before the advent of winter. Withhold water gradually from *Gloxinias*, *Gesneras*, and *Achimenes*, which are going out of flower, and require now a state of rest to ripen their tubers. They ripen off better by being placed into an airy vinery, or some such similar structure, where more air can be afforded them, with a drier atmosphere.

FORCING HOUSES.

Hanging *Grapes* which are over-ripe should be very closely watched, the bunches being looked carefully into to detect any decayed berries, so that they may be removed at the earliest possible moment, as it is well known what sad havoc an individual berry so decayed will make in a bunch. The longer and cooler nights have also a tendency to induce decay amongst them. Continue constantly and evenly the use of fire-heat in moderation in connection with late Grapes, and afford the usual plentiful supply of fresh air. It is more necessary than ever now to give air betimes in the morning, as any perceptible rise in the internal temperature through external agency is certain to cause a sweating moisture to adhere to the berries and all inside surfaces, which is opposed to the real requirements of the place. Besides, the moisture which becomes deposited, if not dispelled before the sun again becomes "cloud-bound," will have a doubly injurious influence upon all such as are fully ripened. The earliest *Vinery* may now, if the wood is well ripened and most of the leaves have fallen off, have the necessary pruning operations performed, as, with the above conditions to guide the operator, there will be little danger of bleeding if the house be kept as cool as possible. Besides, the value of early pruning to the Vines cannot well be over-estimated, in so far as the greater conservation of their strength is concerned, independently of assuring to each a much longer period of rest. In regard to *Pineries* the mean temperature of 80°, recommended last month, must now be somewhat reduced, and by this time a gradual fall of 3° should be insured below the mean before necessary for the whole 48 hours. Afford also, during bright warm weather, even more air than has been previously afforded, to harden if possible all watery parts in any formerly robust growth, and to oppose at this time the formation of any too succulent growth during the remaining days of a quick growing period. Push forward, on the contrary, by every possible means, those fruiters now actively engaged in swelling their fruits ; and this whilst bright summer intervals last. Upon bright, sunny days, therefore, an excessively moisture-laden atmosphere, and a high temperature, should be maintained, even to the extent of running the thermometer up to 93° or 95°, at or about 3 P.M., following the shutting-up for the day. *Figs* now ripening their second crop must have all water withheld in instances where planted into open borders only. Attend to the earliest *Peach* and *Nectarine houses* as soon as the foliage becomes sufficiently ripened to part from the branches without undue violence, when they may be brushed off and the branches be loosened from their trellis supports, and the usual cleansing and dressing over with Gishurst Compound be performed.

HARDY FLOWER GARDEN.

Look carefully through *Rose* plantations, and remove all robber suckers, which often form and push somewhat freely at this time. Remove all old blooms from *Dahlias* immediately they cease to show a neat exterior. Cut away all old flower-spikes from *Hollyhocks* as soon as their work has been performed, and they cease to afford a display, so that the roots may have every opportunity of forming young shoots to carry the old stools through the winter with. Remove all the wild branches upon Roses which have been budded by shortening them in to about a foot in length, and loosen the ligatures around the buds, to afford them greater freedom for expansion. Finish transplanting all biennial and perennial seedling plants, and finish transplanting *Crocuses*, *Narcissi*, and *Snowdrops*, &c. Often a sowing made just at this time of sundry kinds of hardy annuals comes in well by way of succession to those sown earlier, or if very open weather supervene between now and Christmas, the plants are better able to stand any subsequent hard weather than the earlier sown ones, which may have become too robust. I allude to such things as *Collinsias*, *Limnanthes*, *Silenes*, *Virginian Stock*, *Nemophilas*, *Eucharidiums*, *Clarkias*, *Godetias*, and many similar kinds. Sow them on to a warm summer aspect.

KITCHEN GARDEN.

Every advantage must be taken of the first rainy period to transplant good breadths of winter *Lettuces* and *Endive*, some of the last sowings of which could not be got out before, owing to the dryness. Young seedling *Cauliflowers* intended to stand the winter will be much hardened by being transplanted out into neat nursery beds at this time, to be removed at a not very distant date to their more permanent winter quarters. Attend well to the thinning out of successional crops of *Spinach ;* to leave them too thickly only endangers the whole crop, whilst the actual supply afforded is no better, if so good as when properly thinned out. Thin out late sowings of *Radishes*, and make another sowing in frames if a succession is wanted. Make a sowing of *Dwarf French Beans* in pots if a like requirement exists, Fully expose the fruit of *Tomatos* to the full sun by removing all gross shoots and overhanging leaves. For the rest water all lately transplanted stuff if dry weather continues, and look well to Cabbage plantations to detect and destroy the leather-coated grub. *W. E.*

Notices to Correspondents.

BOOKS : *G. L.* Mosses, Wilson's "Bryologia" (Longmans) ; Berkeley's "Handbook of Mosses" (Reeve & Co.).

HARDY SUCCULENTS : *J. M.* The following of those you mention are hardy :—Sedum glaucum, corsicum, anglicum ; Sempervivum arachnoideum, globiferum, montanum ; Saxifraga ligulata, crustata. Antennaria tomentosa is hardy, but not a succulent. Sempervivum tabulæforme and the Echeverias are greenhouse plants, but available for summer gardening.

INSECTS : *T. K.* The insects found in great numbers in your Pine-houses are an exotic and probably undescribed species of millepedes (Polydesmus sp.) They may be driven from the plants by gas-tar water, and as they feed on decaying vegetable matter they may be trapped in great numbers by laying decaying fruit about, or partially burying slices of Potatos or Turnips. *I. O. W.*

IRESINE LINDENI : *W., Inveresk.* This plant should be wintered in a cool stove, and may be propagated to any extent by cuttings, in heat, in the early spring months. It strikes very freely.

LIFTING THE ROOTS OF VINES : *E. J. W.* October is about the best month to perform this operation. Keep the border free from getting into a soddened state during the winter, or the roots will perish.

NAMES OF FRUIT. *W. H. Port.* Pear, Beurré d'Amanlis. The China Winter Radish is a very useful variety.—*J. Scott.* Your Apple, named Scarlet Court of Wick, we have found to be only the true Golden Wick. The Scarlet Golden Pippin and Lord Lennox Apples are unknown to us under those names.—*K. J.* Apples : 12, Ribston Pippin ; 1, Gravenstein, probably ; 4, Kerry Pippin ; 5, King of the Pippins ; 10, Hawthornden; Pear : Williams' Bon Chrétien. You should send better examples, otherwise it is impossible to name them with certainty.

NAMES OF PLANTS : *Downie, Laird & Laing.* Phygelius capensis, Meyer ; native of the Cape of Good Hope, but with very much the appearance of a Pentstemon. Introduced by Messrs. Veitch about the year 1855, and figured in Bot. Mag. t. 4881. —*T. L. S. Horsman.* Apios tuberosa ; native of the central plain of North America (*e.g.*, Kentucky, Missouri, &c., to Canada).—*C. W. S.* 1, Oncidium micropogon, Reich. f. ; closely allied to, but distinct from O. barbatum, which you supposed it to be ; 2, O. Harrisonianum, Lindl. (See Bot. Reg. t. 1569.) —*C. W. M.* Geranium sanguineum.—*J. L. N.* Polygonum Hydropiper.—*E. Pease.* Dabeocia (or Menziesia) polifolia alba.—*W. H. B.* Chrysanthemum segetum, Corn Marigold.—*J. M.* Spiræa salicifolia.—*J. G.* Calceolaria chelidonioides.—*J. C. & Co.* Zephyranthes candida of Sims. (See Bot. Mag. t. 2607.) Native of Peru. It is the Amaryllis candida of Herbert.—*W. Foster.* Struthiopteris pennsylvanica.—*W. N.* 1, Polypodium vulgare ; 2, Nephrodium molle ; 3, Pteris serrulata ; 4, Pteris aquilina. We cannot name the others without flowers.—*A. B.* Sea Buckthorn (Hippophæ rhamnoides.—*T. W.* 1, Dahlia superflua, R. Br. (*alias* D. variabilis, Desf.), also known as Georgina superflua or variabilis by the older botanists—the parent of the Dahlias of our florists ; 2, Mentha rotundifolia, L.—*W. M., Ely.* Ammi majus, L. ; a common weed in Egypt and the East generally, but which has only once or twice previously been gathered in this country.—*W. K.* Polygonum cuspidatum, S. and Z. ; a native of Japan, now frequent in gardens.—*J. R.* Rhus cotinus, the Wig plant.—*E. W.* Gomphocarpus fruticosus.

PEARS : *G. W.* The following may perhaps suit you :— 1, Doyenné d'Eté ; 2, Williams' Bon Chrétien ; 3, Louise Bonne of Jersey; 4, Beurré d'Amanlis; 5, Marie Louise; 6, Thompson's; 7, Fondante d'Automne; 8, Beurré Bosc; 9, Glou Morceau; 10, Beurré Rance; 11, Bergamotte d'Esperen; 12, Josephine de Malines.

PHLOXES: *J. P. A.* We should understand the class "best six perennial Phloxes, dissimilar," to mean six panicles of flowers cut from distinct sorts. If, therefore, an exhibitor shows seven panicles by tying two panicles together to be set up as one, we should decide that he does not comply with the conditions, and is disqualified.

RIDGE CUCUMBERS: *H. H.* Stockwood Bridge is a very good sort, if you can get it true; but either of the sorts named will answer well, if true.

SEEDLING PEACH: *J. S.* The fruit sent was too far gone for us to pass any opinion on its qualities. The half that remained looked well.

THE KEEPING OF A GARDEN: *R. S.* It is always a difficult matter to decide as to what amount of labour is required for the keeping of a garden from a mere description of the place. There are so many ulterior affecting causes, that none but those immediately connected can be conversant with. From your statement it seems to us, that beyond keeping a certain surface polish on the place, you can do little else with the strength allowed. The extent of glass is about sufficient for two men during the summer season, and 6 acres of kitchen garden to be cropped thoroughly would require all the strength you say you are allowed; but, as we have already stated, it is all a matter of style in keeping and requirements. It is true, also, that some masters can get about twice as much work done as others, by properly understanding themselves when and how the work should be done. There is a deal in method and management. Do you not fail in this?

VINE FAILURES; *A Constant Reader.* We can gather little from your statement further than that your Vines, instead of improving, as they should do, are gradually dwindling away. There must be grave mismanagement somewhere, either in the amount of sustenance given to the roots, as regards soil or water, or in the atmospheric condition of the houses. Is the wood properly grown? and if so, is it properly ripened? We almost suspect that your houses are kept far too close and warm, and that the shoots and leaves are very much crowded together, so that they cannot perform their functions. It is absurd for any gardener to tell you that Vines that have not been planted 10 years are too old, and that young ones are wanted. They may be. and evidently are, so mismanaged, that they seem old; but, with proper liberal treatment that will recover, for no plant is more easy of cultivation; but where the actual points of failure have arisen, we of course cannot say. If your borders are outside, no artificial watering has been necessary. Are they sufficiently drained?

CATALOGUES RECEIVED: William Knight, General Catalogue of Nursery Stock.—James Coker, Descriptive Catalogue of Dutch Flower Roots.—Downie, Laird & Laing, Descriptive Catalogue of Dutch Flower Roots.—Little & Ballantyne, Select Descriptive Catalogue of Flower Roots, &c.—James Dickson & Sons, Catalogues of Select Roses and Bulbous Flower Roots.—Dick Radclyffe & Co., Autumn Catalogue of Dutch Bulbs, Horticultural Decorations, and Garden Requisites.—George Gibbs & Co., Catalogue of Dutch Bulbs and Seeds for Autumn Sowing.—G. & W. Yates, Descriptive Catalogues of Bulbous Flower Roots and Hardy Flowering and Evergreen Shrubs, Ornamental Trees, and Fruit Trees, &c.—John Scott, Autumn Catalogue of Flower Roots.—Charles Turner, Catalogue of Choice Bulbous Roots, &c.—Fergus Farrell & Son, Catalogue of Dutch and Cape Flowering Bulbs, &c.—Robertson & Galloway, Descriptive Catalogue of Dutch Roots and other Plants, for Winter and Spring Flowering.—E. G. Henderson & Son, Autumn Catalogue of Bulbs and Flower Roots, with full lists of Stove and Greenhouse Plants, &c.—William Paul, Catalogue of Roses.—James Holder, Catalogue of New and Choice Pelargoniums.

COMMUNICATIONS RECEIVED.—W. C. T.—C. A.—One in Trouble.—P. B.—W. M.—O. O.—J. A.—W. T.—R. D.

DIED.—At Waiblingen, on the 7th inst., Mr. WILLIAM BARRATT, of the St. John's and Newton Moor Nurseries, Wakefield.

Markets.

COVENT GARDEN.—Sept. 22.

The markets are very steady, and the demand and supply about equal. French produce is still largely imported, and eases the market to some extent, as good Apples and Pears of home growth are light in crop this season. Hothouse Grapes are freely offered, without alteration in price. The Potato trade remains very steady, at former quotations.

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, per doz.	4 0 to 6 0	Horse Radish, p. bun.	3 0 — 5 0
Beet, per doz. ..	1 0 — 2 0	Leeks, per bunch ..	0 2 — 0 4
Brussels Sprouts, p. half sieve.. ..	3 6 — 4 0	Lettuces, per score..	0 9 — 1 6
Cabbages, p. doz. ..	1 0 — 1 6	Mushrooms, p. pott.	1 0 — 2 6
Capsicums, p. 100..	1 6 — 2 0	Onions, per bunch ..	0 4 — 0 9
Carrots, p. bunch ..	0 6 — 0 8	Parsley, p. bunch ..	0 2 — 0 4
Cauliflowers, p. doz.	2 0 — 6 0	Peas, per quart ..	10 — 1 0
Celery, red, p. bun.	1 6 — 2 0	Radishes, per bunch	0 2 — ..
— white, do. ..	1 0 — 1 6	Shallots, per lb. ..	0 8 — ..
Chilies, per 100 ..	1 6 — 2 0	Spinach, perbushel	2 6 — 3 0
Cucumbers, each ..	0 6 — 1 0	Tomatos, p. sieve ..	4 0 — 6 0
— Ridge, p. dox.	1 0 — 2 0	Turnips, p. bunch..	0 4 — 0 6
French Beans, p. lb.	0 4 — 0 6	Vegetable Marrows, per doz.	1 0 — 2 0
Herbs, per bunch ..	0 2 to 0 4		

Potatos (good samples), New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½ sieve	2 0 to 4 0	Melons, each ..	2 0 — 5 0
Cobs, per lb. ..	0 6 — 1 0	Nectarines, per doz.	4 0 to 8 0
Figs	1 0 — 2 0	Oranges, per 100 ..	12 0 — 20 0
Filberts, per lb. ..	0 6 — 1 0	Peaches, per doz. ..	2 0 — 8 0
Grapes, per lb. ..	1 6 — 5 0	Pears, per dozen ..	2 0 — 4 0
Lemons, per 100 ..	8 0 — 12 0	Pine-apples, per lb.	2 6 — 6 0

Indestructible Plant Terra-Cotta Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

BENJAMIN LOOKER,
Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

Archangel Mats.

J. BLACKBURN AND SONS beg to inform their friends that the First Shipment of NEW MATS has just arrived, and they are of very good quality. Price List on application.

Russia Mat Importers, 4 and 5, Wormwood Street, E C

EXHIBITORS of CUT FLOWERS, GRAPES, CUCUMBERS, SALADS, &c., will find CHAPMAN'S PATENT VENTILATED WATER TUBE CASES the best now in use, either for Exhibition or Transmission purposes May be obtained through any of the Agents; the PATENTEE, Gloucester; or W. EASSIE AND CO., who have arranged for their sole manufacture. Price Lists and Testimonials on application.—Gloucester.

Notice of Removal.

PHILIP PALMER has REMOVED from his old-established WINDOW and HORTICULTURAL GLASS WAREHOUSE, 118, St. Martin's Lane, W.C., to more extensvie premises, at 36, ST. MARTIN'S LANE, nearly opposite.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size. Prices from 16*s* 6*d*. [Prices from 35*s*
MANGERS, easily kept clean, non-absorbent, and not liable to rust
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

BLUE APRONS for GARDENERS, post free. No. 1, 2*s* 6*d*; No 2, 3*s*; with pockets 6*d* extra. Complete and well made, from best material.
JOSEPH TREMBLE AND SONS, The Nurseries and Seed Establishments, Penrith.

PARTNER.—By the retirement of one of the Firm, an opportunity occurs for an active Working Gardener to become PARTNER in a small Nursery and Jobbing Business, on long lease, in Islington, on very moderate terms.—Apply to Mr. GEORGE ROE, 20, William Street, New North Road, Islington, London, N.

WANTED, as NURSERY FOREMAN, in a country Nursery, a good general Man, well up in Fruits, Roses, and with a knowledge of the other Stock generally met with in a good Nursery Above all, he must know how to do his work, and to take the head of the other men employed.—Address, stating full particulars, B S, Post Office, Ashford, Kent

WANTED, a HEAD GARDENER, in Hampshire. Large Kitchen Garden, moderate Flower Garden, 20 Acres Land, Cows and Pigs. Wife to undertake Dairy and Poultry. No children. Excellent cottage, firing, milk. Guinea a week Only experienced persons with first-rate character, and of Church of England, need apply, to J. M. C, 17, Little Tower Street, London, E C

WANTED, a young active Man as GARDENER. Situation permanent.—CHARLES SHARPE AND CO., Sleaford.

WANTED, as GARDENER, an active, energetic, married Man, who understands the profession in all its branches.—Address, stating wages and age, to Mr K., The Priory, Prittlewell, Essex.

WANTED, a practical WORKING GARDENER, understanding Vines, Forcing generally, Greenhouse, and Flower and Kitchen Gardening. Wife must undertake the Laundry. Cottage found.—Rev. W. HOMFRAY, West Retford Rectory, Retford, Notts

WANTED, a steady, active, young MAN (SECOND), with knowledge of general Nursery Work. Good Budder, Grafter, and Propagator.—Apply, stating wages, &c., to G J. WOOLETT, Nurseries, Caterham, Surrey.

WANTED, an IMPROVER, in the Seed Business.—At present there is an opening in the Seed Department of Mr. WILLIAM BULL'S Establishment for a respectable and intelligent young Man. Apply, in own handwriting, stating where last engaged and wages expected.—Establishment for New and Rare Plants, King's Road, Chelsea, London, S W

Land Manager and Farm Building Resident Agent.

WANTED, in Devonshire, an active, intelligent Person, between 30 and 45 years of age, having a practical knowledge of Stock, and of the Value and Management of Light Land, including Measuring, Fencing, Planting, &c.; fully competent to prepare Plans, Specifications, and Estimates for, and to Superintend the Erection and Repair of Farm Buildings. Respectability and sobriety, with practical experience acquired in a similar situation indispensable. Salary £200 per annum, with a residence, and £50 per annum to provide and keep a horse.—Full particulars, stating age, family (if any), and references, to be addressed to R M., 21, Arundel Street, Strand, London, W.C.

Seed Trade.

WANTED, an ASSISTANT SHOPMAN, in a London Wholesale House. Must be experienced and quick at Counter work.—Address, stating experience and salary required, to C. D, *Gardeners' Chronicle* Office, W.C.

WANTED, a young Man, as JUNIOR INVOICE CLERK, in a London wholesale Seed House. Salary 18*s.* to 21*s.* per week, according to ability.—Z. AND CO., *Gardeners' Chronicle* Office, W C

WAITE, BURNELL, HUGGINS, AND CO. are in WANT of a JUNIOR SHOPMAN, also a JUNIOR CLERK.—Apply by letter only, Southwark, S.E.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Married; understands Early and Late Vineries, Greenhouse, Kitchen Gardening, and every other branch of the profession Six years' character —C S., Sydmonton, Newbury, Berks

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thorough practical Gardener.—Age 36, no family; capable of the Re-laying out or making Improvements. Unexceptionable character.—F. T., Post Office, Ramsbury.

GARDENER (HEAD), age 33, married, one child.—LADY DE BLAGUERE wishes to recommend the above Thoroughly practical, and acquainted with every branch of the profession.—T. BALCOMBE, The Lawn, Whitchurch, Hants

GARDENER (HEAD).—A Lady wishes to recommend a thoroughly practical and steady Man, as above; master of the profession; has been Head Gardener about 17 years in three situations. No single-handed place accepted —A. B, 13, Charles Street, Portman Square, W.

GARDENER (HEAD).—Age 36, married; a first-class Man, who thoroughly understands the profession. Has had extensive experience in Laying-out Grounds, Removing and Transplanting very large Trees and Shrubs; also understands the Management of Plantations, Woods, and Forests in general. Would not object to the Management of Land. Can be highly recommended.—C. A. PEARSE, R. E. E. Warburton, Esq, Arley Hall, Cheshire.

GARDENER (HEAD).—Age 29, married; has had 13 years' experience in first-class gardens, and thoroughly understands Early and Late Forcing of Pines, Vines, Stove and Greenhouse Plants, Ferns, and Kitchen and Flower Gardening, and will be at liberty in a few days to engage with any Nobleman or Gentleman in want of a thorough practical Gardener. Will not treat for a Single-handed place. Excellent references from late employers.—A. B., Mr. Joseph Meredith, The Vineyard, Garston, near Liverpool.

GARDENER (HEAD, WORKING), age 32, single.—Mr. CARLTON, Gardener to the Hon. Mrs. Howard, Ashtead Park, Epsom, Surrey, can with confidence recommend his Foreman as a thoroughly practical, energetic Man, having been Foreman 10 years in five of the principal Establishments, where every branch of Gardening is carried out in the most efficient manner. No single-handed place accepted. Character will bear the strictest investigation.—Address as above

GARDENER (HEAD, or SINGLE-HANDED).—Age 29, married, one child; thoroughly understands Flower and Kitchen Gardening, Forcing, &c. Highest personal character.—W. B., Brackett's, Redhill, Surrey.

GARDENER (JOURNEYMAN).—Age 21, single; one year's good references —H. M., 114, High Street, Putney, S.W.

GARDENER, where assistance is given.—Age 26, single; well up in the profession. Good character.—A. B., 10, Albert Terrace, Hornsey Rise, N.

GARDENER (SECOND, or THIRD), where five or more are kept —Age 21, single; has had experience in Stove and Greenhouse Plants, Vineries, Pines, and Flower and Kitchen Gardening First-class character from present situation.—L. C. SUMPTER, Head Gardener, Fring Hall, Lynn Regis.

To Gardeners.

GARDENER (UNDER).—GEORGE COOPER, Rose Hill Nursery, Derby, can with confidence recommend a young Man, who has been in his employ three years, to any Gardener wishing to have a good useful person, and one who is likely to make a good Gardener.—Address as above.

To Seedsmen and Fruiterers.

FOREMAN or MANAGER, in either of the above Trades —Age 24; ten years' experience in both Trades.—H. S, 27, James Street, Covent Garden, W.C.

FOREMAN, in a Nobleman's or Gentleman's Establishment —Age 26; thoroughly experienced in the profession. Eleven years' experience in good establishments. Good references —G. J, 47, James Street, Oxford Street, W.C

FOREMAN, or FOREMAN and PROPAGATOR.—Long practice in Hard and Soft-wooded Propagating, and Plant Growing for Market and other purposes.—A. B, Mr. Ford's, 28, Rowland Grove, Wells Road, Sydenham, Kent, S E

To the Trade.

HOUSE FOREMAN, Soft-wood PROPAGATOR, and good SALESMAN.—Age 36; would not object to Grow for Market.—PROPAGATOR, 5, Cemetery Street, Biggleswade.

GENERAL NURSERY FOREMAN, PROPAGATOR, and SALESMAN —Has a thorough practical knowledge of the Management of Fruit Trees, Roses, Conifers, and general stock. A successful Budder and Grafter, indoor and out. Could take the Management of a Nursery to any extent. Good references.—FOREMAN, Messrs. Low & Co., Clapton Nursery, London, E.

PROPAGATOR (GENERAL), or FOREMAN, PROPAGATOR, and SALESMAN.—Well up in Camellias, Coniferæ, Roses, &c., and general Nursery Stock.—X. Y., Millbank Nursery, near Warrington.

ESTATE AGENT, or STEWARD and GARDENER.—Age 29; now leaving a situation where he has managed with success a Home Farm of 500 Acres, large Gardens, Timber and Plantations, and the general Repairs of a considerable Landed Estate. Is a first-class Accountant, Correspondent, &c. References to present employer.—J. H, Mr. Dennis, White Horse Hotel, Guildford.

FARM BAILIFF.—Married, no family; can take the full Management, or willing to Assist as Working. Wife can take charge of Poultry or Dairy. Good references.—J. F., Crewmarsh Farm, near Wallingford, Berks.

FARM BAILIFF, at Michaelmas next.—Age 30, married, no family; thoroughly understands the Management of Light, Heavy, and mixed soils; also Breeding, Rearing, and Feeding all kinds of Stock. Wife has had the charge of a Nobleman's Dairy. Good references —M, Chipping Warden, Banbury, Oxon.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

W. RUMSEY, Confidential CLERK, MANAGER of Seed and Bulb Department, and General NURSERY SALESMAN, at Cheshunt and Waltham Cross Nurseries for the last 21 years, is now open to an engagement in any large establishment.—W. RUMSEY, Waltham Cross, N.

BOOK-KEEPER, or ASSISTANT.—An energetic young Man, desiring a practical knowledge of Horticulture, seeks an Engagement in a General Nursery, where his time will be divided between office duties and the general work Well recommended.—Y. Z., Post Office, Cotham, Bristol.

SHOPMAN, SHOPMAN and CLERK, Warehouse Foreman, or to Manage Country Shop or Branch.—Age 35, married; 18 years' experience in the Trade. Highest testimonials.—T. W. B., Messrs. Thos. Gibbs & Co., corner of Half-moon Street, Piccadilly, W.

SHOPMAN and general NURSERY SALESMAN.—Age 34; good knowledge of the business in all its branches.—D. R., 4, Cullum Street, City, E C.

SHOPMAN, or COUNTER HAND.—Age 24; steady, active. Eight years' experience. Highest references.—G., 144, Caledonian Road, N.

COUNTER-MAN (ASSISTANT), in a Wholesale London Seed Warehause.—Age 23; five years' experience.—X. Y. Z., Post Office, King Street, Covent Garden, W.C.

GOVERNESS.—A young Lady, accustomed to tuition, and who has resided some time in France, is desirous of obtaining a situation as above. Good references will be given and are expected.—B., 41, Wellington Street, Covent Garden, W.C.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

Autumn Sowing.

ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited).

Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—County Chambers, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.
Managing Director—James Odams.

This Company was originally formed by, and is under the direction of, agriculturists—circumstances that have justly earned for it another title—viz.,

"THE TENANT-FARMERS' MANURE COMPANY."

Its members are cultivators of upwards of 80,000 Acres of Land, which has been for years under management with Manures of their own manufacture; consequently, the consumer has the best guarantee for the genuineness and efficacy of the Manures manufactured by this Company.

Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

MR. JAMES FRASER (of the late Firm of J. & J. Fraser, Lea Bridge Road), undertakes HORTICULTURAL VALUATIONS of every description, SALES by AUCTION, &c.—Maylands Farm, Romford, Essex, E.

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

ITALIAN ALP or LIGURIAN QUEEN BEES.—The autumn importations of these beautiful Bees having now commenced, GEO. NEIGHBOUR & SONS are offering QUEENS, warranted bred and fertilised in Italy, at the following low prices:—One Queen, 12*s.*; three, 33*s*; six, 60*s.*

GEO. NEIGHBOUR AND SONS, 149, Regent Street, W.; or 127, High Holborn, London, W.C.

FARM TO BE LET.—600 Acres, in excellent condition; five years' unexpired Lease. A short distance from London, near a Station

Mr. MORTON, 19, Parliament Street, London, S.W.

To Nurserymen and Others.

THE well-known TEDWORTH CONSERVATORY (upwards of 300 feet in length), which is now being re-erected in a most substantial manner by a Limited Company, on the South Bourne Estate, about 2½ miles from that fashionable resort, Bournemouth, will be TO LET, from JANUARY 1, 1872. For terms and particulars apply to Mr. WEBB, Earl Street, Bournemouth.

Joyning's Nursery, Enfield Highway, N.

TO BE LET, with possession, the above OLD ESTABLISHED NURSERY, in consequence of the death of the late proprietor. It comprises about 9 acres of General Nursery Stock, and 3 acres of Orchard Land, Dwelling House, Cottage and Seed Shop, Greenhouses, Pits, Stabling and Sheds.

For full particulars, apply to Messrs. PROTHEROE AND MORRIS, American Nurseries, Leytonstone, E.

To Florists and Market Gardeners.

TO BE LET, at Teddington, S.W., within 1 mile of the Station, and with access to the River if desired, about SEVEN THOUSAND FEET of GLASS, comprising Vineries, Orchard, Pine, and other houses, with all the necessary buildings, recently erected in the best manner by Messrs. Weeks & Co., of Chelsea. Land, and a Dwelling-House, can be had, if required. For particulars apply to

Mr. ROBINSON, Broome Hall, Teddington, S.W.

SALES BY AUCTION.

GREAT NURSERY SALE, without any reserve, at the Nurseries, Wetley Rocks, near Leek, on the 2d, 3d, 4th, and 5th of OCTOBER. Catalogues may be obtained from the Proprietor, Mr. A. B. FOX, on and after the 20th inst.

N.B. The FLORAL BUSINESS, with Stock, Plants, Propagating House, Greenhouses, Frames, &c., to be SOLD by PRIVATE CONTRACT, offering a rare opportunity for any young Man wishing to embark in a ready-made Business.

Also 20,000 strong roots of ROYAL ALBERT and HAWK'S CHAMPAGNE RHUBARB, fit for forcing, at 7*s.* per 100, put on rail.

The whole Stock may be viewed any day previous to Sale.

Elvaston Nurseries, Borrowash, Derbyshire.

HIGHLY IMPORTANT and EXTENSIVE SALE of FIRST-CLASS NURSERY STOCK.

MESSRS. POTT AND NEALE have received instructions from Messrs. Barron & Son to OFFER for SALE by AUCTION, on the Premises, at Borrowash, on OCTOBER 11 and 12, a considerable portion of their most valuable NURSERY STOCK, consisting of rare Coniferæ, Evergreen and Deciduous Shrubs, Golden Hollies and Yews, Roses, Rhododendrons, &c.

May be viewed any day prior to the Sale (except Sundays) after October 1.

Descriptive Catalogues may be had one week prior to the Sale on application, by post or otherwise, to the Auctioneers, Nottingham; and 23, Cockspur Street, London; or to Messrs. BARRON AND SON, Elvaston.

SALE THIS DAY and MONDAY NEXT.

Dutch Flowering Roots.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W C., on SATURDAY and MONDAY, September 23 and 25, at half-past 12 o'Clock precisely each day, 1000 LOTS of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, RANUNCULI, ANEMONES, and other Bulbs, just arrived from well known Farms in Holland, and Lotted to suit Amateurs and the Trade.

On view the mornings of Sale, and Catalogues had.

Choice Stove and Greenhouse Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 26, at half-past 12 o'Clock precisely, a very choice COLLECTION of SPECIMEN STOVE and GREENHOUSE PLANTS, belonging to a Gentleman, many having been exhibited at the Metropolitan Shows, and taken First and Second Prizes, including a good selection of very well-grown and healthy Azaleas, in 12-inch pots; also New Holland Plants and Cape Heaths, with nice plants of Allamanda, Ixoras, Dipladenias, and Stephanotis; of Orchids, Aerides, Saccolabiums, Phalænopsis; several varieties of Dendrobiums, Cattleyas, and many others; to be offered without reserve.

On view the mornings of Sale, and Catalogues had.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and SATURDAY, September 27 and 30, at half-past 12 o'Clock precisely each day, several large importations of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, LILIUMS, ANEMONES, RANUNCULI, and other BULBS, just arrived from Holland, and lotted to suit private buyers and the Trade.

On view the mornings of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 3, at half-past 12 o'Clock precisely, valuable POULTRY and PIGEONS, including many promising young Birds, from the yards and lofts of well-known Breeders and Exhibitors.

On view the morning of Sale, and Catalogues had.

Garden Road Nursery, Abbey Road, St. John's Wood.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, as above, by order of the Mortgagee, on FRIDAY, October 6, at half-past 12 o'Clock precisely, the UNEXPIRED LEASE of 45 years of the GARDEN ROAD NURSERY, about One Acre, rent £25 per annum; also the THREE COTTAGES and TWO GREENHOUSES, and the HARDY PLANTS, consisting of Fruit Trees, Conifers, and a great variety of Hardy and Ornamental Trees and Shrubs in Lots, to suit large and small Planters.

On view the day before and morning of Sale, and Catalogues had of F. KEARSEY, Esq., 36, Old Jewry; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, London.

Tooting, S.W.

IMPORTANT SALE of EXTRA STOCK of STOVE and GREENHOUSE PLANTS, rare ORCHIDS, choice FERNS, selected PALMS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, on TUESDAY, September 26, at 11 for 12 o'Clock precisely, thousands of extra stock of STOVE and GREENHOUSE PLANTS, the whole of which are in a very healthy and thriving condition, comprising quantities of Ananassa sativa variegata, Anthurium Scherzerianum, Dracænas, Phormium tenax variegatum, Ficus, Epiphyllums, in splendid variety; Greenhouse Rhododendrons, choice double Camellias and Azalea indica, and numerous others. Also a large quantity of choice ORCHIDS, including Vanda suavis (Veitch's variety), Aerides maculosum and Lobbii, Lælia prestans (true), Angræcum sesquipedale, Cypripedium Veitchii, Thunia Bensoniæ; and hundreds of exotic FERNS, fine greenhouse and stove PALMS, likewise a selected assortment of SUCCULENT PLANTS, hardy HERBACEOUS PLANTS, choice TULIPS, &c.

May be viewed the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

Oaklands Nursery, Shepherd's Bush.

SHORT NOTICE of an EXTENSIVE SALE of STOVE and GREENHOUSE PLANTS, EXOTIC FERNS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, Oaklands Nursery, Shepherd's Bush, on FRIDAY, October 6, at 11 for 12 o'Clock precisely. Full particulars will appear next week.

Lee, S.E.

IMPORTANT SALE of a COLLECTION of STOVE and GREENHOUSE PLANTS; about 1500 Winter Blooming HEATHS, &c.; fine Standard and Dwarf ROSES, clean grown FRUIT TREES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Burnt Ash Lane Nursery, Lee, Kent, S.E., on MONDAY, October 9, at 11 for 12 o'Clock precisely, by order of Mr B. Maller, without reserve, a valuable COLLECTION of STOVE and GREENHOUSE PLANTS, the stock of a Private Gentleman, removed for convenience of sale, comprising choice Dracænas, Marantas, Allamandas, Lapageria rosea, Begonias, Exotic Ferns, Light Boxes, Hand Lights, Iron Seats, &c.; also a choice and varied collection of Greenhouse Plants (the property of Mr. Maller), consisting of 1500 beautifully grown Heaths of the best varieties, Cytissus, Acacias, Veronica Blue Gem, Echeverias, Epacris, &c.; 60 specimen Bouvardia longiflora, 3 to 4 feet, extra fine; Solanum capsicastrum, full of berries; double Myrtles, fine Camellias, Azalea indica, Epiphyllum, &c.; also strong Fruiting Vines in pots, selected Fruit Trees, Standard Roses, comprising all the best kinds; choice Succulent and Rockwork Plants, &c.

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

Balham, S.W.

IMPORTANT SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Balham Nursery, Balham, S W., on WEDNESDAY, October 11, at 11 for 12 o'Clock precisely, by order of Mr G Edwards, a large quantity of valuable SURPLUS NURSERY STOCK, the whole of which is in capital condition for removing, including 2000 Green Hollies, 1½ to 3 feet; 1000 Aucuba japonica, 1½ to 2 feet; 800 Chinese and American Arborvitæ, 2 to 5 feet; 300 bushy Green Box, suitable for potting; 500 Ligustrum ovalifolium, 500 Berberis aquifolium, Laurustinus, common Laurels; also a large quantity of Ornamental and Forest TREES, comprising Planes, Limes, Birch, Acacias, &c.; 300 fine Standard and Dwarf ROSES, of the best varieties, by name; likewise a quantity of Coniferæ, Evergreen and Flowering SHRUBS, in borders; some large Double CAMELLIAS, and PAMPAS GRASS, in pots, &c,

May be viewed two days prior to the Sale Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

Re Mr. R. Glendinning, Deceased.

ABSOLUTE SALE.

To NURSERYMEN, SEEDSMEN, and FLORISTS.

High Road, Turnham Green, near the Toll Gate, and known as the Chiswick Nurseries.

MR. J. A. SMITH is instructed by the Executrix to SELL by AUCTION, at the Roebuck Inn, Turnham Green, on TUESDAY, October 10, at 4 o'Clock P.M., in TWO LOTS, the valuable LEASES, GOODWILL, &c., of the important Business Premises and Residential Property, known as the Chiswick Nurseries, established in the name of Glendinning for nearly 30 years, extending over or about Eleven Acres of rich Land, in trading cultivation, including the Residence, Shop, Offices, Warehouse, &c., and the 7-roomed Cottage adjoining, having a frontage of about 320 feet to the most attractive portion of the High Western Road, and a depth of about 750 feet to the South-Western Railway. Rent on lease, £84 per annum; and Gore Cottage adjoining, £13 per annum. LOT 2 comprises the Nursery on the West side of Chiswick Lane, with Residence held on Lease at the reduced rent of £60 per annum. The purchaser in each case may arrange to take the Greenhouses and other Erections, Nursery Stock, Utensils, &c., at a valuation, if required. May be viewed.

Further printed particulars, with plans and conditions, of W. H. MARSHALL, Esq., Solicitor, Bridge Avenue, Hammersmith, W.; and of Mr. J. A. SMITH, Auctioneer and Land Agent, Hammersmith.

NOTICE.—The ENTIRE NURSERY STOCK will be SOLD by AUCTION, about the LAST WEEK in OCTOBER. See Advertisements.

4000 Araucaria Imbricata.

To GENTLEMEN, NURSERYMEN, and OTHERS.

HILLFIELDS, BURGHFIELD, near READING.

MESSRS. HASLAM AND SON have received instructions from T. B. Garland, Esq., to SELL by AUCTION, in a Field adjoining the Gardens of Hillfields, Burghfield, on TUESDAY, September 26, at 3 o'Clock in the afternoon punctually, in suitable Lots, 4000 ARAUCARIA IMBRICATA, raised from choice seed, specially imported by Horatio Bland, Esq., direct from Arauco.

Note.—The Auctioneers desire to draw special attention to this Rare and Choice Lot. They have been transplanted several times, and are now strong, healthy, and well-rooted, varying from 1 to 3 feet in height, and in the best possible condition for immediate removal. The whole will be sold without the slightest reserve.

May be viewed one week prior to the Sale on application to the GARDENER at Hillfields; and Catalogues had at the Office of the Auctioneers 17, Friar Street, Reading.

Frimley Park Nursery, near Blackwater.

To GENTLEMEN, NURSERYMEN, and OTHERS ENGAGED in PLANTING.

MESSRS. WEEKS AND WATTS are instructed by the proprietor, Mr. Holder, to SELL by AUCTION, at the above Nursery, on TUESDAY, October 10, at 11 o'Clock (in consequence of the expiration of the lease at Lady Day next), the whole of the thriving NURSERY STOCK upon Ten Acres, including Evergreen, Coniferæ, and Deciduous Shrubs, Ornamental and Forest Trees, Standard and Dwarf Roses, together with some fine Standard Rhododendrons, selected Standard and Dwarf Fruit Trees, &c.; a few Ornamental FLOWER POTS and VASES.

May be viewed the day previous and morning of Sale, and Catalogues had of Mr OVER, York Town, Blackwater; or of the Auctioneers, Wokingham, Berks.

Periodical Sale of Pure-bred Hereford Cattle.

MR. DUCKHAM'S NEXT PERIODICAL SALE by AUCTION will take place in the Cattle Market, Hereford, on WEDNESDAY, October 18, being the great October Fair Day, and the second day of the Show of the Herefordshire Agricultural Society. Early ENTRIES are respectfully solicited.

50, Broad Street, Hereford.

Waresley Park, near St. Neots, Hunts.

IMPORTANT SALE of PURE-BRED SHORTHORN CATTLE.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on THURSDAY, October 19, 1 o'Clock, at Waresley Park, the valuable herd of PURE-BRED SHORTHORNS, the property of the Hon. Col. Duncombe. Bred for a lengthened period from sound and old-established strains of blood, it comprises between 60 and 70 head of Cows, Heifers, and choice young Bulls, among which are many representatives of the Fame (Mr Booth's), Finella, and Countess tribes, and others descending from the celebrated stocks of Messrs. Crawley, Marjoribanks, Fawkes, and Dudding. The Sires have always been very superior bulls of high pedigree, inheriting the fashionable Bates blood, Col Kingcote's General Wetherby (24,026), by 2d Duke of Wetherby, the famous son of the prize cow Duchess 77th, and Windsor Lad (27,823), being the latest. The cattle show fine breeding and neatness with quality, and sound constitutions, and form a very healthy uniform herd.

Catalogues, with Pedigrees, may be had of Mr. CHANDLER, Waresley Park, St. Neots; or of JOHN THORNTON, 15, Langham Place, London, W.

Smithfield Club, 1871.

THE EARL of POWIS' PRIZE for SLAUGHTERING ANIMALS.

A SPECIAL PRIZE of TWENTY POUNDS is offered by THE RIGHT HON. THE EARL OF POWIS, one of the Vice-Presidents of the Club, for the best Instrument, that shall be an efficient substitute for the Pole Axe, for Slaughtering Animals, by separating the spinal marrow, commonly called pithing. The Competing Instruments must be delivered at the Office of the Hon. Secretary, on or before OCTOBER 1, 1871. All information can be obtained of

Mr. DAVID PULLEN, Assistant Secretary.

Corner of Half-Moon Street, Piccadilly, London, W.

ALTRINCHAM AGRICULTURAL SOCIETY.—The TENTH ANNUAL SHOW will be held on THURSDAY, September 28, when FIVE HUNDRED POUNDS and SILVER CUPS will be offered in PRIZES for Horned Cattle, Horses, Sheep, Pigs, Dogs, Poultry, Roots, Grain, Cheese, Butter, Implements, &c.

ENTRIES CLOSE SEPTEMBER 13. PRIZE LISTS, with FORMS of ENTRY, can be had on application to the Secretary,

28, Church Street, Altrincham. R. DAVENPORT.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 30, New Street, Birmingham.

SMITHFIELD CLUB SHOW, AGRICULTURAL HALL, ISLINGTON, DECEMBER 4 to 8.

IMPLEMENT DEPARTMENT.

The LAST DAY for receiving APPLICATIONS for SPACE for IMPLEMENTS and MACHINERY, &c., is OCTOBER 2.

Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID PULLEN, Assistant-Secretary, corner of Half-Moon Street, Piccadilly, London, W. All communications should bear outside the words "Smithfield Club."

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS. will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A. For an OX or STEER (in any Class).
" B. For a COW or HEIFER (in any Class).
" C. For a BEAST in extra Stock.
SHEEP. " D. For a Pen of three WETHERS.
" E. For a Pen of three EWES.
" F. For a SINGLE WETHER SHEEP in Extra Stock.
PIGS. " G. For a Pen of three PIGS (in any Class).
" H. For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 23, 1871.

THE country is considerably worse off now than it was this time last year, both in respect of FOOT-AND-MOUTH DISEASE and PLEURO-PNEUMONIA. In the beginning of last autumn the number of attacks of foot-and-mouth complaint in one week did not exceed 18,000, now we may fairly calculate upon more than

20,000. Pleuro-pneumonia is not so rife as foot-and-mouth disease, fortunately for owners of stock, but it prevails more extensively than it did during the corresponding period of last year. According to the last weekly returns there are about 150 fresh attacks, against less than 100 last year. The rate of increase of lung disease bears no comparison with the more infectious foot-and-mouth disease; for example, commencing with the month of May last, we find that the cases of pleuro-pneumonia had a weekly average of less than 100; in June the increase amounted to about 30, in July there was a decrease to the May average, in August a return to the average of July. The highest number of weekly attacks reported did not exceed 150.

It is not contended that our sources of information are so complete that no chance of error exists; on the contrary, we are prepared to allow that many cases escape notice altogether; but the same thing is true of foot-and-mouth disease, and, therefore, the comparison between the two affections may be accepted as fairly correct. In the month of May we had an average of less than 1000 weekly attacks of foot-and-mouth complaints, during June there was a weekly increase of about 400 cases. In July the number was more than doubled, making a total of more than 3000 cases, as compared with 1400 of the previous month. During August the increase was still more serious; in the first week of that month the attacks reached a total of nearly 5000; in the second week 1000 were added; in the third week the total suddenly mounted to more than double that of the previous week, reaching nearly 13,000; and in the last week of the month the attacks reached nearly to 22,000. Meanwhile, be it observed, there was no corresponding increase in progress of the disease abroad, but, on the contrary, in most parts of the Continent the malady assumed insignificant proportions. Spain is still suffering from it, but the last reports from that country are favourable. Several cargoes of Spanish cattle have been detained at the outports for slaughter, in consequence of the discovery of diseased animals among them; but foreign animals generally have been particularly free from the disease, at least when landed in this country.

Allowing a full share of blame to the movement of cattle from unscheduled countries, we are sorry to be compelled to admit that there remains a very large balance of mischief to be accounted for, and, judging from our own observation, and also from the public records, we are bound to refer this balance to a general laxity in the administration of the laws of sanitary police. A very little decided action would make an immediate impression upon the diseases about which everybody, in theory, cares so much, and in practice so little; but, unfortunately, there is no such thing as an universal basis on which to discuss even the necessary measures. If it were generally allowed that foreign store stock are dangerous, feeders in this country would not buy them, and consequently they would cease to be exported; if every owner of cattle and sheep believed in the infectious nature of lung disease and foot-and-mouth complaint, great care would be taken before fresh animals were allowed upon the farm, and no one having a diseased beast would conceal it, or send it to a fair or market to the injury of all animals with which it may come in contact. The fact is, farmers elect to deal with their diseased animals as they think best for their own interests; they dislike restrictions, and strongly object to have their affairs regulated for them by the local authorities.

We are told that the recent application from the Northamptonshire committee for an Order to stop fairs and markets in certain infected districts, was made after consultation with some of the leading agriculturists of the country; but had the application been granted, we can imagine how the attempt would have been met by the agriculturists of surrounding counties, the trade of which would have suffered by the prohibition, which, after all, would have been futile, because the disease would enter the district again as soon as the markets were reopened. A general stoppage of fairs and markets all over the country is simply out of the question, such a measure would be entirely out of proportion to the importance of the disease.

Farmers must, it appears, rely mainly on their own care and forethought if they desire to keep their animals free from infectious maladies; and we can confidently assure them, by way of encouragement, that strict isolation is a very effectual preventive against contagious affections of all kinds.

Having concluded harvest under greater difficulties than we have ever before experienced, we review our work, under the impression that we may be useful thus to others. Farming in the south-west of England, we generally have early crops; indeed only once before the present year since 1863 have we had a load of corn unsecured on the first day of September. This season, however, we have been full a fortnight later.

Our perplexities commenced in the hay field, from which scarcely a single rick has been got together without wet. We have thus been fain to make small ricks, snatching up a few waggon-loads of the fittest over night, to be ready to unload and add to next day if the weather would allow.

With every care, however, in the catching weather of this year, hay has been often put together insufficiently made, so that one had to watch for over-heating; and as we have found the rick ventilator most useful, we recommend its adoption on every farm. Failing an appliance of this kind, it may be necessary to cut a hole or two in the rick for ventilation, which is not looked upon as a sign of good management.

The Wheat we had to deal with thus has been the Talavera and the Rough Chaff White, both very delicate sorts in a damp season, so much so, that with the former we were not without evidence of its germinating in the ear before the crop was ripe, while the woolly chaff of the latter held the moisture with perplexing pertinacity. Added to this, a violent thunderstorm — and we have had three at different times during harvest—caused the sheaf butts to be immersed in water, and that, in this wet weed-growing season, made it necessary to put this crop together in "windrows" preparatory to ricking. These have kept it tolerably safe, but with mildew, weeds, and a sparse plant, half a crop has been more costly than is usual with a double one.

In one 50-acre piece, part of which was scrawled from an attack of insects, we found bagging or hewing to be best. In another part hand-reaping picked it best from Poppies and other sand-loving weeds; whilst, where it stood at all well, we have found Samuelson's Eclipse Reaper a most handy and efficient implement.

These remarks upon our Wheats of this year will have told the reader that we farm light land, which, as a rule, has been this year very poor and very dirty.

We have also had to deal with 100 acres of Barley this season, 50 with young seeds, and 50 after Wheat.

The first has been harvested with difficulty, as the crop was a very heavy one, whilst the seeds, broad Clover and Hop Trefoil, were so good as to render it difficult to cut with the reaper, which, indeed, took off the Clover too close to the ground. We have, therefore, had to mow most of it with the scythe, and to wait until the seeds had dried before we carried. This, then, had to be got in as weather would permit, and, like the hay, it has been done a bit at a time, and we have every reason to be satisfied with the result, as though only seeded to the extent of less than 6 pecks an acre, we have secured a very large crop of the best Pedigree Chevalier Barley.

A neighbouring farmer, in order to utilise a large growth of Alsike Clover in his Barley, threshed out the grain in the field, putting up the seeds and straw into a rick for fodder; this we are inclined to think was no bad plan, as the Barley was over-ripe and not in bad condition.

Our 50 acres of Barley after Wheat were a good crop, and fell nicely before the machine, which we cannot extol too highly, as it easily cuts down 12 acres a day, and, unlike the mowers, does not need the many quarts of cider which they drink per acre. Indeed, all things considered, we look upon it that the cost of the machine has been saved in a single year. At present we hear of a little "rattening," and less violent opposition on the part of the men on some farms, but the time will come when they will want to borrow "master's mower" to cut down the corn in their allotments, as they do now the threshing-machine to knock out their bit of grain. With regard to the latter, in our parish, where as many as 24 flails used to be kept at work all the winter, not a single flail can now be found. And yet wages have increased and must increase, —a circumstance at which we shall ever rejoice, when we find it means better lodging, better food, and better clothing, instead of, as is too often the case, more drink.

—— The price of Wheat somewhat declined on Monday; it was 1*s.* per qr. lower than during the previous week—and on Wednesday the reduction was maintained.——In the Cattle Market prices have rather advanced, the number shown on Monday being below the demand, and the demand on Thursday also ing barely supplied.——In the Seed Market the tone is firm but quiet.

—— An amusing rivalry in repartee occurred the other day at an agricultural meeting at Castle Douglas, where Mr. Caird, C.B., proposed the toast "The Agricultural Interests:"—

"Though he was not the oldest man in the room, he could remember about 35 years ago, when he began farming; so that nobody could say he was not an experienced farmer: he had probably had as much experience as most men in the room. He remembered a meeting which was held in Wigtown in honour of the late Hugh Hathorn, of Castlewigg. Lord Galloway was in the chair, and very properly praised that particular breed of cattte which bears the name of the province from which he takes his title. He (Mr. Caird) also had a very great respect for these black cattle, but he ventured at that meeting to say, from his own short experience, that the Ayrshire cattle, with that shape of a wedge which they possess, when once introduced to the district, would drive their way among all other breeds, the native breed included. Lord Galloway remarked, in a very good-humoured way, that the Ayrshires must have their horns cut off before they could act as a wedge in the way he had mentioned. It was a fact, however, that with the industry, energy, and perseverance exhibited by the dairy farmers of Galloway, the Ayrshires had done great things—the quality of the cheese produced had been gradually raised from Dunlop to Lancashire, and finally to Cheddar, which had largely increased the returns to the farmers of the county without increasing their expense.—To Mr. Caird followed Mr. Biggar, of Chappelton. He begged to thank Mr. Caird for the very handsome manner in which he had proposed the toast. Agriculture was at once a healthy and retired branch of industry. Often after visiting on business some of the large and busy towns of England, where you can scarcely thread your way for smoke and fog, or hear the sound of your own voice for the constant roar and din of traffic, he had felt thankful to find himself again at home with everything as quiet and peaceful as a Sabbath morn. Alluding to Mr. Caird's remark about the Ayrshire breed of cattle, with their narrow shoulders, driving out the Galloways, he had no doubt that what Mr. Caird said was perfectly true, but not because the Ayrshires were wedge-shaped. He remembered a dairy farmer once telling him, 'We can get more money at dairy farming than you Galloway farmers can do;' to which he replied, 'I doubt that; you may pay higher rents, but I don't believe you live better: you dairy farmers can live on curds and whey, while we Galloway farmers like a piece of roast beef.' It was a long street that had no turning, and he thought a change was not very far distant. He found that cheese was not bringing the same price in the market that it used to bring; beef and mutton, on the other hand, were increasing in value, and he hoped the time was not far distant when the Galloway breed of cattle would resume its old position in public favour.—Mr. Caird requested the indulgence of the meeting for a moment, because he had had the great misfortune to be misunderstood. Mr. Biggar had in the most excellent manner stood up for the Galloway cattle. Long might he have plenty of roast beef. He was sure he could not have too much of it. He had not a word to say against the Galloway cattle, but he had simply told an anecdote about himself as a young man beginning farming many years ago. Before coming there, their worthy Chairman had put into his hands an excellent letter published by his grandfather in 1811, describing the state of agriculture in the Stewartry for the preceding ninety years. Now, with regard to Galloway cattle, he thought Mr. Biggar would confess that a change had taken place in the value of that breed of cattle, as well as in the breed of Ayrshire produce. In the letter referred to, Mr. Maxwell mentioned that a Mr. Anthony M'Kie, of Netherlaw, sold at the Bridgend of Dumfries, in 1736, five score of 5-year-old Galloway cattle, in good condition, to an Englishman, for £2 12*s.* 6*d.* a piece. So conscious was he of the great increase in the value of cattle, that in his argument he had gone on to show that in this west country, with the abundance of grass and Turnips, their great business was the growth of beef, cheese, and butter, rather than the cultivation of corn, which could be brought from abroad.

We are inclined rather to agree with Mr. Caird, that meat production is the end to which recent agricultural progress points. We must give the discussion in full another week. Meanwhile we may refer to Mr. Mechi's letter on corn production as the proper object of the English farmer.

—— The following letter from Mr. Mechi, on a very important subject, appeared in the *Times* of September 20.

"Your very able and competent agricultural correspondendents, Mr. Sanderson and Mr. Scott, have written gloomily of our Wheat prospects, the former estimating our foreign requirements at 11,000,000 qr., the latter at 13,000,000 qr., costing this country £35,000,000 sterling, a sum likely to disturb our money market and depress our trade. But, sir, does it not strike you as a most anomalous circumstance that out of 45,000,000 acres of farmed land in the United Kingdom we choose only to spare less than 4,000,000 for the all-important purpose of producing our daily bread? Is this justifiable or profitable? Can any excuse be found for it? I reply, none of valid worth; and I speak with the confidence of 25 years of practical experience, for while the average Wheat acres are only about 9 per cent. of our agricultural area, on my farm, since I occupied it, my average has been fully 38 per cent of Wheat acreage, with an average yield of 10 to 12 bush. per acre more than the general acreage of the kingdom, and this on land below the general average, but annually increasing in fertility. It is a remarkable confirmatory fact and coincidence that, although Mr. PROUT and myself are personally unknown to each other, and manure our farms on opposite principles, suited to the differing soils, yet we both have 38 per cent. of Wheat acreage. Mr. PROUT has 153 acres in Wheat, but no permanent pasture, and I have only 14 acres, eight of which I shall this year break up as unprofitable. The prize Oxfordshire farm had, too, only some 12 per cent. of ill-conditioned pasture. Shall we, then, be content to continue the suicidal practice of paying to foreigners annually some 20 to 35 millions sterling for that which we might produce profitably at home? The cause of this unprofitable state of things is obvious and remediable. It is our attachment to the old pastoral age, when the acres were many and the population few. One half of the United Kingdom is occupied by permanent pasture, much of it exhausted, weedy, and nationally most unprofitable; deprived of the benefits arising from cultivation, yielding a minimum of produce and employing a minimum of labour and capital. Making due allowances for climatic peculiarities, our Wheat area and Wheat produce might be much more than doubled, as it has been on my farm, Mr. PROUT'S, and many others, and this without damage to the soil. But, then, what a change would come over the scene! Half-starved animals would no longer be permitted to wander over large areas of poor, unproductive pastures, with little fields, great timber-encumbered hedgerows, deep ditches, and every unprofitable topographical arrangement. We should then see a multiplication of our most approved and profitable models of modern agricultural improvement.

"But, before we can realise those happy results, new ideas must enter the minds of both landowners and tenants, and how painfully slow this must be! for we are all creatures of custom, and if I and my forefathers had been farmers I doubt whether I should have so greatly deviated from the old well-beaten track.

"But a change must come, and every effort should be used to make it as speedy as possible. Steam has so multiplied our power, our wealth, and our population, and so enlarged our wants, that there will be a clamour for a more common-sense and commercial use of our soil.

"But while I insist upon the necessity for breaking up poor pastures, it is not for the too common purpose of their being 'run out' by a succession of corn crops, but that they should be farmed on the best principles of modern agriculture.

"Our legislators will do well to watch the signs of the times, and adapt their land laws to our altered circumstances, so that our accumulated wealth my flow freely into agricultural improvement, and thus, by enlarging the employment of labour and capital, greatly increase our home-grown food supply.

"Mr. WILLIAM SMITH, of Woolston, has 49 per cent. of Wheat, or more than five times the average of the kingdom. His own statement is—'76 acres of excellent Wheat, 26 acres of excellent Barley, 39 acres of first-rate Beans, 10 acres of roots, 11 acres of Clover, 4 acres of Potatos.' He also says:—'The heavy weight of corn, cropping 141 acres out of 166, is worthy of notice.' What will poor grass-landers say to this?

"High farming and an increased proportion of Wheat will necessitate considerable modifications in farm leases. I find that Rivett bearded Wheat succeeds well on heavy land after white or red Wheat. I have this bad year 5 qr. 2 bush. per acre after 6 qr. of white Wheat. The Rivetts weighed 63 lb. per bush., sold for 54*s*. per qr., and realised £14 3*s*. 6*d*. without the straw; quantity of seed sown, 1 bush. per acre.

"My soil differs entirely from, and is very inferior to, Mr. PROUT'S, mine being a non-calcareous plastic clay or tile earth, on which the superphosphate of lime shows no result. The light soil is black and white sand."

NOTEWORTHY AGRICULTURISTS.

THE REV. GEORGE WILKINS, OF WIX.

THE REV. GEORGE WILKINS, OF WIX.

FOR more than half a century Mr. Wilkins has been one of a most estimable but not very large or numerous body of country clergymen, who, knowing how much the interests of their parishioners are bound up with agricultural prosperity, have taken a prominent and especial interest in the promotion of all that tends to agricultural progress. With no thought of personal advantage—attracted probably at first by the love of country life and of living things, whether they be plant or animal—drawn on afterwards by a sense of duty to his neighbour—there is here and there a country clergyman, especially in England, who, as part of his devotion to the best interests of his people, is to be found taking a lead in whatever tends to local, county, and even national agricultural improvement: and such an one, during almost two successive generations of us, is, and has been, Mr. Wilkins. Resident in early life where that which now is London was covered with the most richly cultivated market-garden fields, he from the first became acquainted with the merits of deep and thorough cultivation; and, whether in Lancashire, where he was for many years incumbent of a small parish near Blackburn, or in Essex, where he has long been known, both as the home-loving and warm-hearted parish clergyman, and as the outspoken public-spirited advocate of agricultural improvement, he has urged, whether in private intercourse with neighbours, or at public meetings, or in public prints, the importance of that intensive agriculture with which he thus first became familiar. And not only by word and observation, but by actual practice and example has he taught and learned. Thus in the very outset of his career, while still a master in the Hackney school, where he had been a pupil,—

"There was a plot of ground," he tells us, "near the school, which I rented and cultivated with my own hands; and it was on that piece of ground I put into practice the system of deep and thorough cultivation, and seeding, and planting which I had seen in the nurseries and market gardens, and which was superior to anything that could be seen in what are designated farms,—though it appeared to me then, as it does now, that all farms, by whatever machinery or implements used, ought to be cultivated with the same science, manual skill, and perseverance that might even then, as now, be seen in operation in nurseries and market gardens round London and elsewhere. Nor were my farming and seeding confined to my Shacklewell 2 roods of land, for at the age of 16 (assisted by a gentleman, lately dead, and who, at a lecture I gave at the Royal Agricultural College, confirmed before the Principal of the College and the respectable company there present all I had stated) I hurdled in an exact measured acre of land in the centre of a 30-acre field, and dibbled it with just 1 peck of seed Wheat: and the produce of this, when threshed by hand at harvest, which it was on the plot on which it was grown, was 200-fold, or exactly 204 pecks. And as the seeding had caused considerable interest in the neighbourhood, the field being a portion of a very large farm, many gentlemen and others were present at the threshing, winnowing, and measuring; and several of those gentlemen afterwards each dibbled his acre of land, and with equal success; but the expense and tediousness of the dibbling, separate threshing, &c., were too great to be persevered in, for there was none of the machinery to facilitate and perfect farming operations that are now seen in general use throughout, I believe, the whole civilised world. . .

"But I must come to my parish of Wix, the living of which I entered upon in January, 1837; and to carry out my farming views, being in the very centre of one of the finest landed districts in the kingdom, I at once determined to enter in earnest upon the cultivation and seeding of land, according to the system I had adopted and in part put into practice. For this purpose I took of a very aged man two small fields, and to them I afterwards by purchase added a third. But I will confine myself to the two first; and here is a brief account of what I did to those two fields. They were of course very full of Couch-grass and all other weeds, or what are called weeds. The first thing I did, therefore, was to commence getting rid of the Couch and other weeds, and for this purpose I ploughed my land during the first summer 11 times, going deeper and deeper every time; and by these means, assisted by the scarifier, harrow, and roller, I got out, I may say, nearly mountains of rubbish of nearly all kinds; and of this I made heaps in several places of the fields, and to these I added the huge hedge banks, which I grubbed up, and the stuff I scoured out of the ditches. 'And of course, Mr. Wilkins, you burnt the whole, as farmers would, and writers advocate.' 'No, Mr. Observer, I did not, for I would nearly as soon set fire to dung-heaps in my farmyard; but having made the whole into heaps, by the fermentation of them, all seeds of weeds were destroyed, and then followed the destruction of the Couch and weeds also, which I used for the dressing for my subsequent crops.'—These, I will here state, were, in the larger field — Wheat for 14 years in succession, the seed having been in general 2 pecks—or half a Winchester bushel per acre. In general, I write—but I sometimes had an acre or more seeded with 1 peck only, and sometimes with only half a peck; and the average yield for the 14 years was 44 bush. an acre, and one year the crop was 55 bush. an acre, the seed having been below 2 pecks; and one year, from the same quantity of seed, the yield was only 32 bush. an acre; but the average, I repeat, of the 14 years in succession with Wheat was 44 bush. an acre. And I here most emphatically state, that my land being near the village, and where two roads cross, I also got as many people as I could to witness both the putting in the seed and the threshing and measuring of the crops, which was always done by machinery, and openly in the fields where it grew. But as some readers, perhaps, will be sceptical, I inform them that the yield of 55 bush. an acre was threshed and measured in the presence of several individuals as sceptical as themselves, and who afterwards employed a surveyor to measure the field, and, not being satisfied with his measurement, they measured it themselves, and found the calculated part of the field to be rather less than it was stated to have been.

"But I must here state that, as well as so completely cultivating my land the first year I had it, I also drained it, making the main drains 6 feet deep, and the branches 4½ feet, and not being able to procure pipes at that time I was compelled to use shingles from the sea-shore; and I will here observe, that those drains work as well now, after 33 years' use, as they did the first year in which they were made. And I will add another thing, which contributed I believe not a little to, what I consider, the unusual result of my cultivating and seeding"——

Mr. Wilkins goes on to speak of the fact that he encouraged the breed of moles in his land, which, as he contends, are ignorantly destroyed by Mr. Smith, of Woolston, and other agricultural authorities. We are, however, here rather concerned with the presentation of such a portrait of our friend as may give the leading points of our agricultural indebtedness to him; and it is not necessary, therefore, to enter upon the details of his farm practice.

Mr. Wilkins has long been one of our agricultural heroes. At a great age, with all his old energy of mind, and with even more than ever of that noble bodily presence which has necessarily contributed somewhat to the great personal influence which he exerts, he retains that vivid interest in agricultural affairs which has led him for so many years to urge the principles of garden practice on the acceptance of the farmer — he still retains the perfect simplicity and lucidity of that pure Saxon English style which has always given his writings one of their chief charms for country readers—he retains unabated that power of good-natured satire, by which, for so many years, agriculturists have been instructed and amused. He has been a welcome contributor to these columns during, we believe, all the years that we can claim for them, and we hope that he will long continue to discourse in them for the advantage of our readers.

OUR LIVE STOCK.

CATTLE.

NO very high prices were given for Shorthorns at Holly Bank on the 13th inst. SIR HENRY, calved May 5, 1871, got by EARL OF BARRINGTON (26,051), was purchased for 35 gs. by the Earl of Lichfield; LORD FOPPINGTON 2D, calved March 21, 1871, became Mr. Aldon's at 33 gs.; and LORD DORKING, calved last February, was sold to Mr. Oldacre at 22½ gs. The remaining cattle were generally sold at from 17 to 25 gs. each.

—— On Tuesday last a large company assembled at Ozleworth Park, Gloucestershire, to witness the sale of the entire herd and flock of the late Sir John Rolt. After luncheon Mr. Thornton proceeded to sell 36 head of well-bred animals, which realised the fair average of £41 3*s*. 4*d*. each. Thirty females made £41 17*s*. 2¼*d*. each; six bulls made £36 15*s*. each, and the entire proceeds of the Shorthorn sale was £1476 6*s*. Some of the best bred lots fell to Lord Fitzhardinge, who purchased *Dora* by 2D DUKE OF AIRDRIE (19,600), a nice white cow of the "Darlington" tribe, for 240 gs.; *Bracelet 7th* by GRAND DUKE 7TH (19,877), for 60 gs.; *Ursula of Ozleworth 2d*, by LORD RED EYES 4TH, of the Didmarton and Tortworth "Ursula" tribes, for 74 gs., and DUKE OF OZLEWORTH by 3D DUKE OF CLARENCE, and out of *Dora* (lot 3), a very taking bull calf, for 46 gs. *Ursula 21st* by 7TH DUKE OF YORK, was bought for 70 gs. by Mr. G. Hooper. *Annie of Wetherby* by HEIR OF WETHERBY (24,126), was purchased by Mr. Spratt for 50 gs., and *Ursula of Ozleworth* by 2D DUKE OF COLLINGHAM, was bought by Mr. Gow at 90 gs. DUKE OF FUSSBOX by 3D DUKE of CLARENCE, dam *Fidget 6th* by 7TH DUKE OF YORK, g.d. *Fidget 4th* by 4TH DUKE OF YORK, and previously coming in a direct line from cows of the same name by DUKE OF NORTHUMBERLAND (1940), and 2D DUKE OF CLEVELAND, ought to be a good bull. His breeding, indeed, is perfect, and it is to be hoped his stock will be so. No doubt the bull has been worked hard, which may account for his deteriorated appearance since the Kingscote sale in the spring. His appearance is not taking, but experienced breeders considered him cheap at 105 gs., at which price he passed into Mr. Gow's hands. Among the principal buyers we may mention the Rev. Mr. Weigh, Sir Walter Trevelyan, and Messrs. W. Marsh, Knight, Griffiths, Ind, Bush, Cornwall, Viveash, and Pugh.

—— The Hon. Col. Duncombe, of Waresley Park, St. Neots, has entrusted the sale of some valuable Shorthorns to Mr. Thornton. The sale takes place on October 19, when some well-bred animals, of good colour and character, and nice quality, will be offered.

—— We are sorry to record the death, a fortnight previously to calving, of Mr. Cheney's pure-bred Duchess cow, recently imported from America into this country.

SHEEP.

AT Holly Bank, on the 12th inst., Messrs. Lythall & Clarke sold the flock of Shropshire sheep so long bred by Mr. Willoughby Wood, who is about to let his home farms and retire from farming. The shearling rams, 28 in number, made an average of £10 5*s*. 9*d*. each; 38 ram lambs made from £2 2*s*. to £6 each, or an average of 58*s*.; 130 ewes made an average of 81*s*. each, and 70 ewe lambs made 52*s*. each. Among the highest prices were 29 gs. for lot 6, a shearling ram, and £6 each for a pen of five ewes.

—— At Ozleworth Park, last Tuesday, Mr. Thornton disposed of the late Sir John Rolt's Cotswold flock. The theaves, to the number of 142, sold very uniformly, at prices varying from 60*s*. to 70*s*. per head. One pen brought 86*s*. 6*d*. per head, a second 80*s*., a third 72*s*. 6*d*., and two pens were sold for 57*s*. 6*d*. each. Chilver lambs sold as high as 60*s*., and two lots made only 27*s*. and 35*s*. per head respectively—the general price being from 40*s*. to 50*s*. per head. One two-shear ram made 15½ gs., and ram lambs sold as low as £3 5*s*., and as high as £9 2*s*. 6*d*. each. Three shearling wethers preparing for exhibition at Birmingham and Islington were sold for £13 10*s*.

—— The Milcote Down flock was sold on the 13th inst. For many years the late Mr. Adkins had blended the best Cotswold and Hampshire blood with Oxfordshire Down as a foundation, and he at length succeeded in producing a distinct type of Down sheep. The flock sold remarkably well, 28 rams going as high as £11 8*s*. average. Ewes made from £3 to £5 each; ewe lambs £6 3*s*. each, and wether lambs 56*s*. each. Among the principal purchasers were Mr. Howard, of Biddenham, and Mr. Humphries, of Pershore.

RAM SALES.

THE following are the highest and average prices fetched for the lots sold in connection with the meetings of the Lothian Ram Society at Warrender Park last week, and of the Border Union Society's Show at Kelso:—

Leicesters.—Mr. Simson, Blainslie (39), highest, £20, average, £8 18*s*. 4*d*. Mr. Melvin, Bonnington (102), highest, £11, average, £7 4*s*. 10*d*. Mr. Allan, Billie Mains (20), highest, £12 10*s*., average, £5 15*s*. 3*d*. Earl of Southesk (13), highest, £26; average, £10 15*s*. Mr. Lees, Marvingston (70), highest, £20; average, £9 17*s*. 5½*d*. Mr. Hope, Fentonbarns (50), highest, £12 10*s*; average, £7 4*s*. 7¾*d*. Mr. Smith, Castlemains (40), highest, £33; average, £10 8*s*. 4½*d*. Mr. Clark, Oldhamstocks (35), highest, £55, average, £12 18*s*. 1¾*d*. Mr. G. Watson, Esperston (21), highest, £18, average, £9 10*s*. 6*d*. The Duke of Buccleuch (28), highest, £22, average, £8 15*s*. Mr. Linn, Woodside, Chevington (24), highest, £15; average, £8 7*s*. Rev. R. W. Bosanquet, Rock, Alnwick (66), highest, £50, average, £14 5*s*. 3*d*. Mr. Dinning, Adderston, Belford (45), highest, £20, average, £10 18*s*. 6*d*. Mr. Wilson, Woodhorn, Morpeth (24), highest, £20; average, £9 13*s*. 9*d*. Messrs. Angus, Whitefield, Morpeth (26), highest, £23, average, £10. Mr Forster, Ellingham, Chathill (32), highest, £32; average, £10 7*s* 6*d*. Mr. Bolam, Low Trewitt, Rothbury (40), highest, £16, average, £8 13*s*. 10*d*. Mr. Wilson, Haymount (55), highest, £21 10*s*.; average, £10 7*s*. 6*d* Mr. Hardie, Harrietfield (100), highest, £22; average, £9 8*s*. 9*d*. Mr. John Lees, Marvingston (20), highest, £40, average, £12 10*s*. Mr. Thomson, Dilston Haugh (15), highest, £13 10*s*.; average £8 4*s*. The Right Hon Lord Polwarth, Mertoun (30), highest, £115; average, £30 10*s*. Mr. Purves, Linton Burnfoot (25), highest, £16 10*s*.; average, £8 9*s*. 4¾*d*. Mr. Roberton, Harperton (35), highest, £25, average, £12 9*s*. 5½*d*. Mr. Wotherspoon, Spotsmains (36), highest, £17, average, £9 14*s*. 5½*d*. Mr. Ray, Linton Bankhead (15), highest, £21; average, £11 8*s*. Mr. Dickenson, Maidenhall (50), highest, £21; average, £11 3*s*. 3½*d*. Mr. Robeson, Springwells (53), highest, £20; average, £10 9*s*. 3*d*. Mr. Bell, Linton (38), highest, £25, average, £12 2*s*. 1½*d*. Mr. Simson, Courthill (30), highest, £20; average, £10 2*s*. 6*d*. Mr. Hume, Wormerlaw (22), highest, £25; average, £10 14*s*. 9*d*. Miss Stark, Mellendean (36), highest, £100; average, £28 15*s*. 3½*d*.; Mr. Hogarth, Eccles Tofts (42), highest, £23; average, £9 17*s*. 10½*d*.

For the purpose of comparison we subjoin the entries since 1861, the highest and average prices in that period, and the names of the sellers who topped the sales:—

No. of Entries.	Year.	Sellers.	Highest.			Average.		
			£	*s*.	*d*.	£.	*s*.	*d*
	—	Mr. Purves	—			5	13	6
1827	1861	Lord Polwarth ..	52	10	0	17	0	0
	—	Mr. Simon	31	0	0	10	5	10
2329	1862	Lord Polwarth ..	50	0	0	17	19	5
	—	Mr. Simson	45	0	0	8	6	6
2300	1863	Lord Polwarth ..	60	0	0	21	6	3
	—	Rev. Mr. Bosanquet ..	28	0	0	9	10	0
2100	1864	Lord Polwarth ..	70	0	0	20	19	8½
	—	Mr. Stark	57	0	0	9	0	6
2006	1865	Lord Polwarth .	95	0	0	37	18	10½
		Mr. Stark	81	0	0	24	3	0
2226	1866	Lord Polwarth ..	98	0	0	27	1	0
	—	Mr. Stark	80	0	0	25	15	0
	—	Mr. Purves .. .	50	0	0	10	12	9
2429	1867	Lord Polwarth ..	109	0	0	25	12	0
	—	Miss Stark	84	0	0	22	14	9
	—	Mr. Purves	60	0	0	7	17	9¾
1813	1868	Lord Polwarth ..	86	0	0	25	14	10
		Miss Stark	62	0	0	18	0	10½
	—	Rev Mr Bosanquet .	31	0	0	11	17	1
1751	1869	Miss Stark	100	0	0	16	9	4
	—	Lord Polwarth	42	0	0	15	0	5
	—	Mr. Forster	50	0	0	15	8	2
	—	Rev. Mr. Bosanquet ..	30	0	0	12	18	8
	—	Mr. Torrance	41	0	0	9	8	9
1737	1870	Lord Polwarth	100	0	0	22	14	0
	—	Miss Stark	32	0	0	13	10	0
	—	Rev. Mr. Bosanquet ..	62	0	0	12	4	6
	—	Mr. Forster	36	0	0	11	0	6
	—	Mr. Torrance	35	0	0	7	0	0
	—	Mr. Bell..	39	0	0	9	17	3
	—	Mr. Cunningham ..	35	0	0	10	15	8
	—	Mr. Simson	40	0	0	8	12	8½
1802	1871	Lord Polwarth ..	115	0	0	30	10	

Cheviots.—Mr. Stevenson, Mount Lothian (24), highest, £7 5*s*.; average, £4 5*s*. Mr. Welsh, Ericstane (20), highest, £51; lowest, £7 12*s*. Mr. Johnston, Archbank (45), highest, £40; average, £7 17*s*. Mr. Plenderleith Moorfoot (26), highest, £8 5*s*.; average, £4 15*s*. Mr. Archibald, Glengelt (20), highest, £23, average, £6 17*s*. 6*d*. Sir G. Montgomery (12), highest, £10; average, £4 12*s*. 6*d*. Mr. Moffatt, Rinleith (50), highest, £58; average, £9 9*s*.

Shropshires.—Mr. Crawford, Pitlowie (20), highest, £6 5*s*.; average, £3 16*s*. 9*d*. Mr. Gibson, Woolmet (24), highest, £8 10*s*.; average, £4 16*s*. 9*d*. Lord Strathmore (35), highest, £27, average, £7 13*s*.

Cotswolds.—Mrs. Gibson, Woolmet (18), highest, £12 10*s*.; average, £6 1*s*. 1*d*.

Blackfaced.—Mr. Gray, Harperrigg (22), highest, £21; average, £6 Mr. Bryden, Burncastle (24), highest, £12 10*s*.; average, £7. Mr. Aitken, Listonshiels (50), highest, £43; average, £11 2*s*. 6*d*. Mr. Melrose, Westloch (40), highest, £31; average, £9 11*s*. Mr. Wilson, Crosshouse (42), highest, £14; average, £6 10*s*. Mr. Archibald, Overshiels (60), highest, £23; average, £8 11*s*. Mr. Greenshiels, Westown (46), highest, £25; average, £12.

Shropshires.—The celebrated Sutton Maddock flock, in the hands of Mr. Henry Smith, has been before the public for a term of at least 20 years; and since 1852 has acquired a high reputation from the position it has taken in the Royal, the Birmingham, the Smithfield, and other showyards. It has been universally looked upon as a true-bred Shropshire flock, and the leading ram breeders have frequently made selections from it to maintain and improve their stocks. The most successful exhibitors at the Royal Agricultural Society, at Wolverhampton, viz., Mrs. Beach and Lord Chesham, owe much of their victories to the use of Sutton Maddock sheep, the two entries made this year securing a prize and high commendation. The funeral of Lady Louisa Whitmore kept all the Apley tenantry away, and consequently not more than about 120 sat down to the luncheon, at which Sir John Morris presided. A most sumptuous repast was provided, the table being amply filled with game and fruit, the gifts of the respected landlord. Business was rather slack for the rams, No. 1 going cheaply to Mr. Landor, at 10 gs.; No. 2, at 15 gs., to Mr. E. Lythall, who paid that sum for the hire of him last year; No. 3 to the same gentleman, at 10 gs.; No. 4, at 10 gs.; No. 5 being let to Mr. Nock, at 9 gs.; and others making about similar figures. Lot 5, however, made 25 gs., to Mr. Brown, of Bockton. Mr. Gardour purchased five rams, and Mr. Cooke, six, the other buyers being Messrs. Roden, Wadlow, Cooper, Blewitt, Shaw, Nicholls, Yates, Burton, Wilson, Fletcher, Webster, Hatherall, &c. The average of the 55 was £8 18*s*. 2*d*. For the ewes, than which there has seldom been a better lot offered, the competition was much brisker—Mrs. Wadlow, Lord Boyne, Mr. Jowitt, Mr. Davies, and others, being eager to secure the best pens. Prices, consequently, ruled high—190*s*., 115*s*., 105*s*., and 100*s*., being paid; whilst only one pen made less than 72*s*. 6*d*., bringing the average up to 96*s*. 6*d*. for 81 sheep. Messrs. Lythall & Clarke, of Birmingham, conducted the sale.

—— At the recently held Peterborough ram fair, 50 shearling rams, the property of Mr. J. H. Casswell, Laughton, were sold by auction by Mr. Lumby at an average of £17 4*s*. 6*d*. each, the highest price being 40 gs.; 48 shearling rams, the property of Mr. Tom Casswell, Pointon, were sold by Messrs. Mason at an average of £16 19*s*. 6*d*. each; highest price 56 gs.

Cotswolds.—At the September sheep fair, at Cirencester, Messrs. Moore & Hill sold 10 Cotswold rams, the property of Mr. Thomas Clarke, of Frampton Mansell, which averaged £7 17*s*. 6*d*. each; and seven rams belonging to Mr. H. Howell, of Coates, at an average price of £7 14*s*. 6*d*. Messrs. Acock & Hawk sold 15 rams for Mr. Russell Swanwick, of the Royal Agricultural College Farm, which made an average of about £9; and 12 rams, the property of Mr. Joseph Walker, of Compton Abdale, at an average price of £11 3*s*. Mr. James Villar sold 18 rams for Mr. H. Cole, of Ashbrook, at an average of £12. (The highest price was 31 gs.) Mr. Villar also sold 12 rams for Mr. Tucker, of Soundborough, at an average of £8; 10 rams for Mr. W. Smith, of Bibury, averaged £9 15*s*.; 10 for Mr. T. Beale Brown, of Salperton Park, which made an average of £9 2*s*. 6*d*.; and seven Cotswold rams for Mr. Vaisey, of Stratton, at an average of £9 12*s*. These were all the Cotswold rams offered by auction, but Mr. Villar likewise sold 22 ram lambs, by Oxfordshire Down rams, out of Hampshire Down ewes, for Mr. C. Hobbs, of Maisey-hampton, which made an average price of £4 12*s*.

THE HARVEST OF 1871.

[The following is a third long report on the probabilities of the past harvest. Mr. T. Scott writes to the *Times* as follows:]

AFTER the three weeks' brilliant weather which immediately preceded the general commencement of harvest operations, few anticipated that we should now have to record, as the most conspicuous feature of the season, a great deficiency in the Wheat crop. Such, however, is the unwelcome fact, confirmed from many districts by the proof of threshing out. From Sussex, Cornwall, Somerset, and Gloucester, from the intervening country to Kent, Essex, and Norfolk, and from districts in several of the great midland counties, as far north as York, I have obtained returns from the occupiers of land and the owners of public threshing machines, and there is no exception to a reported deficiency, varying from 6 to 12 bush. an acre. Basing a calculation on the areas from which these returns have been obtained, and testing it by my own observations, the conclusion arrived at is that we have this year a product—not of the best quality—of from 9 to 10 bush. an acre below that of an average crop. Assuming that there were an average number of plants on the ground—which, however, was only the case in exceptional instances—an examination of the heads of various kinds of Wheat, from wide apart localities, gives the following results:—Golden Drop, blank cells, 24 per cent.; Talavera, blank cells, 22 per cent.; Browicks, blank cells, 19 per cent.; Rivetts, blank cells, 13 per cent.; Rough Chaff, blank cells, 12½ per cent. Deducting these deficiencies from an assumed average product of 30 bush. an acre, the respective residues are $22\frac{4}{5}$, $23\frac{3}{5}$, $24\frac{3}{10}$, $26\frac{1}{10}$, and $26\frac{5}{20}$ bush. per acre.

In addition to these deductions for blank cells, another should be made, equivalent to one or two bushels an acre, for the smallness of the ears, which are everywhere less than in ordinary seasons. In the best districts, such as the eastern division of Lincolnshire, the damaged grain, arising from mildew, rust, and laid crops, will likewise be a serious drawback to the outcome of the crop. The restorative weather of August had a marvellous effect in maturing the grain we have now secured, but after the torrents of rain and gusts of wind which prevailed all over England in the middle of July, knocking off the Wheat bloom and laying the straw, no practical man could anticipate a better result than we have now obtained. We must also remember the ordeal through which the plant passed in the month of June—the coldest for fifty years—under a night temperature ranging from 47° to 52°, when field labourers were everywhere to be seen at work with their coats on, cattle and sheep shivering under the lee of a hedge, chickens cowering at mid-day under their mothers' wings, and Wheat turning blue in the stem and yellow in the flag before it was out in the ear. In my letter in your columns on the 24th of that month I predicted that the change which then occurred had come too late for the recovery of the Wheat crop, though highly beneficial to the grass and green crops, and the result has proved the correctness of the prediction. Wheat generally did not break into ear until later in July than in 1860, when reaping only began in September, and ingathering was carried into November, and in very late districts into the following year. In the Royal Agricultural Society's Report on the prize farm at Sherlow, in Staffordshire, the Wheat crop is estimated at from 32 to 36 bush. an acre, equal to an average of 34; but this is only an estimate from appearances, made on July 24, and appearances this season have everywhere been found to be most delusive when tested on the barn floor. Only yesterday, in company with the owner, I saw the produce of a field on Mr. Prout's wonderful anti-stock farm, in Herts, being threshed out, and, though fairly estimated before harvest by himself, the auctioneer who sold the crop, and the purchaser, at 56 bush. an acre, it is now admitted to be yielding only 48. This still looks a large crop, but it is only so by comparison. In the eastern part of Essex, embracing the great Wheat-growing hundreds of Rochford and Dangie, where 44 bush. an acre is not an unfrequent average, and was counted on before harvest this year, the yield is turning out about 32. This fact is confirmed to me by reliable reports from the owner of a number of steam threshing machines in the one hundred and an extensive corn factor residing in the centre of the other. I have found in inferior districts, where 3 qr. an acre were expected, two only were obtained. On my own small farm in Surrey I have not yet threshed out any of my crop, but the harvesters report that it handles perceptibly light on the prong. I am, therefore, convinced that the Wheat crop of this year is disastrously deficient, and that we shall have to import about 13 millions of quarters, costing probably £35,000,000, or half our national taxation. The following is the basis of the calculation:—

Last year, in my letter in your columns on September 8, I estimated the area under Wheat at 3,800,000 acres, and it turns out to be 3,773,275 acres, or 26,725 acres less. The home produce I estimated at 14,250,000 qr., the consumption at 21,250,000 qr., the seed requirements at 1,000,000 qr., making 22,250,000 qr., and the foreign imports required at 8,000,000 qr., and they have been 8,017,856 qr., or 17,856 qr. in excess of my estimate. Although a considerable breadth of Wheat-sown land was ploughed up last spring for other crops in consequence of Wheat failures, I am still inclined to adopt the area of last year—namely, 3,800,000 acres—as the Wheat break of this; and taking the average produce at 21 bush. an acre, we have in round numbers 10,000,000 qr.; deducting from this 1,000,000 qr. for seed leaves 9,000,000 qr. for consumption. Seeing then that the population has increased nearly half a million, equivalent to a consumption of 343,750 qr. of corn, and that the ability to consume of three-fourths of the population has been augmented to an equal extent by increased employment and wages, we have 687,500 qr. to add to last year's consumption, making 22,000,000 of quarters; deducting from this the 9,000,000 qr. of home produce, we have a deficit of 13,000,000 qr. to be provided for by foreign importations. In 1801 our wants were represented by an importation of 500,000 qr.; in 1840 by double that quantity, or 1,000,000; during the last three years they have fluctuated between 8,000,000 and 10,000,000 qr., and now we appear to require 26 times the foreign aid we did at the beginning of the century. To those who have long hoped, and perhaps still believe, that by improved farming home produce would overtake and outrun the increase of population, and that our only safety was independence of the foreigner, the above facts must be rather alarming. If, as Lord Derby said the other day, the land of this country is capable of producing double its present yield by the application of increased capital and facilities to draw it out, of which I have no doubt, it is evident the owners of the soil have a serious responsibility resting upon them and the occupiers a great duty to perform. Since the final repeal of the Corn-laws, 22 years ago, the rate of importations has far exceeded the rate of increase of the population, showing clearly a decrease in the home production, arising either from a reduced yield per acre or a reduced area under Wheat. We had no agricultural statistics at the earlier date to enable us to test the latter supposition, but as we are constantly taking in commons and reclaiming waste lands, there can be little doubt that our reduced Wheat produce does not arise from a reduced area under that cereal. What steps, then, are open to us to stay this decadence? Are there any general impediments to capital flowing upon the land? Would a national tenant-right facilitate it or leases induce it? On many of the larger estates in England the latter do not exist, nor would they be appreciated if offered, because the landlords have known hereditary principles on which dependence can be placed. But those who have not hereditary principles are increasing in number every day, and necessitating legal securities for the capital that has further to develope the resources of the soil. Laying down mediocrity soils to permanent pasture is one of the agricultural necessities of the day, but who would undertake this unless he owned the land or occupied it under a compensation agreement? On the other hand, if a tenant draws unfairly upon old pastures by breaking them up or applying the scythe, or exhausts old arable land by excessive cropping or under-manuring, the owner is equally entitled to compensation. The old and still favourite theory of production was to keep stock, with a profit if you could, without if you couldn't; but, as manure makers, stock must be kept, and in support of this theory I at one time strenuously advocated an embargo being put upon the importation of foreign animals, believing that if we had the privilege of feeding all the cattle we consumed we could grow all the corn we required. If anything could modify this belief, it would be a visit to Mr. Prout's farm in Hertfordshire, which was so ably and interestingly reported on in your columns last November. There I yesterday walked over 450 acres of land, all under the plough, on which not a hoof or a horn has been kept for ten years, except the work horses, and even these are all but superseded by the steam-engine. In an experiment made this season, and still open to inspection, on Potatos, Mangels, Swedes, Carrots, and Maize, I have found that excessive manuring does not lead to profitable results; but on Mr. Prout's system, applied on the Bagshot sand formation, I should not have expected any crop at all. Mr. Prout purchases artificial manures, it is true, equivalent to £3 an acre, but his main dependence is on the soil itself and the atmosphere, in opposition to shallow tillage and the dung-cart, and already a great part of his land is laid up in the rough, imbibing atmospheric nutriment for next year's crops. Whether or not this great experiment will succeed in the long run, cannot yet be considered a settled question, although it has now been on its trial for 10 years. It is difficult to make up one's mind on the subject, and Mr. Prout has not made up his own. If the mineral taken from the soil by the crops is restored by applications of bone-dust, which I believe it is, there is no reason why it should not succeed; and, if it does succeed, it will create an era in the history of agriculture on strong soil. We know that the virgin soils of America become unproductive from continued cropping; but then we know that the occupiers have not drawn upon the atmosphere for nitrogen by deep cultivation, and restored the minerals carried off by the crops by the application of artificial manures. Inductive reason has never yet done anything directly for agriculture, and it is therefore to experience alone that Mr. Prout is looking for instruction, considering it the only safe guide to any system worthy of becoming an adopted practice. If we compare this with Mr. Mechi's diametrically opposite principles and practice, where, on very similar soils, profitless stock-keeping is the basis of all his operations, it would puzzle the most impartial to decide which system to advocate or adopt, especially when we see, as I did this season, the best Wheat crops, in both cases, anywhere to be seen. Tiptree Hall is now resuscitated, and those who formerly went there to hear advanced theories propounded, may now return to see good farming practised. It requires no balance-sheet this year to prove that the farm is in a paying condition, which must be doubly satisfactory to the owner, considering how often he has been asked to prove his theories by results. Mr. Prout, possessing no theory, only offers results for consideration, and these are as follows, for this year's crops, all sold off:—

	Acres.		£	s.		£
Wheat	153	at	13	10	equal to	2006
Barley	38	,,	9	1	,,	897
Oats and Beans ..	90	,,	8	16	,,	792
Clover and Sainfoin, growing, and in hay	88	,,	14	16	,,	1302
	429					£5057

Some Sainfoin has been retained for seed equal in value to £50, and the horses, six in number, have been maintained off the farm. After charging the farm with rent, at the rate of 40s. an acre, interest on capital at the rate of 5 per cent. per annum; rates, taxes, labour, manures purchased, £1500; and all proper charges; the result will be a nett profit of over £3 an acre. Mr. Prout has drained nearly all his land, 3½ feet and 4 feet deep, and considers, like many other occupiers on similar soils—marl and chalk—that the annual extra produce is equal to 8 bush. of Wheat per acre.

Coming now to the less important cereal and pulse crops, my observations lead me to the conclusion that throughout England and Scotland we have a very full crop of Barley, also of Peas; Oats an average, and Beans a little under. The latter are not yet all secured, but those still exposed have suffered no injury from frosts, and are now likely to be got in safe. In all cases the straw is much longer than it was last year, but in many cases it is valueless as fodder, from discoloration, rust and blight. All crops ripened rapidly and so close together that labour could not be got to reap and secure them when ready. The reaping machine was extensively employed, and never more indispensable to the farmer; and yet in more quarters than one sporting landlords were found to be as great impediments to its progress as laid and twisted crops. It appears from this as if partridges had as much claim to consideration for disturbance as Irish tenant-farmers.

All forage and stock food crops are decidedly abundant, and much beyond early anticipations. Many good second cuts of grass and Clover have been obtained for fodder and seed. The cold state in which the early hay crop was got in, and the non-solution of the saccharine matter in the stem, from the absence of moderate heating in the rick, have left it devoid of that aromatic sweetness which it usually possesses, and goes some way to account for the considerable fall in price, which is no doubt partly due to inferiority in quality, as well as the abundance of the crop. There was ample room for a fall from the prices in July—namely, £9 for Clover, £8 for meadow hay, and £3 for straw per load. Green crops are all good and regular, although the Mangel roots are not so large as usual, for want of sun and heat. Swedes are also generally good, but as they are so sensitive to the attacks of the fly and other insects, increasingly shy in growing even on the most congenial soils, and impossible to be grown on others, I would again venture to recommend Kohl Rabi as a partial substitute. Potatos were early struck by blight, the earlies—which escaped in former visitations—being most injured. The tubers are less injured than the blighted haulm would indicate, and if the weather keeps moderately dry for another month, a nearly average crop may yet be secured. If it becomes very wet, it will cause incalculable loss of food—probably of 5,000,000 tons—as there are over 1,000,000 acres under the root in Ireland alone. I have 17 field experiments on my farm in Surrey with seed from the north of Scotland and a different formation, and, although I have not yet dug the crop, I can clearly see that the seedlings and whole Potatos are longest resisting the disease.

The Hop crop this year is the greatest failure of any, and were it as important as the Wheat crop, the result would be a national calamity. As it is, the loss is great, for in Mid-Kent, which is considered the best Hop division in the county, the produce is only reckoned at from 3 to 3½ cwt. per acre. As Kent farmers are also great Wheat growers they have been doubly hit, and in other Hop districts worse. The universality of the diseases and vermin which have this year attacked the plant may be inferred from the fact that Hops in France have suffered as in England, and in Mr. Jackman's nursery as Woking, where he grows his celebrated Clematises, intertwined with Hop bines, the latter are struck as if they had been growing in the Hop garden. The rain in June washed the plants clean, but they were immediately re-attacked and covered with gum. Taking the 61,800 acres that were under Hops last year at £50 per acre, and 60,600 acres as the estimated area this, at £10 an acre, we have an approximate loss little short of 2½ millions sterling.

The predictions I have ventured on, especially with regard to the Wheat crop, will not, I am aware, coincide with everybody's views, nor suit their interest, and may expose the writer to the censure of many; but there can be little doubt that the best knowledge of facts we can obtain helps to adjust supply and demand; and that reliable statistics, when we obtain them, will be beneficial alike to producers and consumers.

Since last harvest capital has been abundant and interest nominal, but it has not flowed freely upon land either in its purchase or permanent improvement. The construction of railway and other reproductive home works has been left in abeyance, and all spare capital has gone, and continues to go, into foreign loans and doubtful enterprises.

Labour was consequently, until harvest came on, extensively unemployed and indifferently remunerated, while bread was at Protection rates, and beef and mutton at war prices, and yet pauperism decreased, and the labouring people of this country continued peaceable and loyal.

Surely this is something for a country to be proud of, as it is less due to the enjoyment of physical comforts than to a tacit appreciation of equitable laws ! *Thos. C. Scott*, 19, *Kings' Arms Yard*, *Moorgate Street*, *E.C.*, *Sept.* 15.

THE GARDEN OF THE FARM.—VII.

How and with what to Furnish it.

The modes of furnishing a garden are as varied as those of furnishing a house. Some elect to furnish all at once ; others piecemeal, a little at a time. Some deal in second-hand furniture, others must have all new. Again, there are those who run after cheapness only, and more wise furnishers who chiefly value quality. The first and last inquiry of the former concerning anything is, Is it cheap? the latter only query, Is it good? Finally, some furnishers decry beauty, and try to crowd it out of house and garden alike with utility; others have learned the higher lesson that utility itself is more serviceable to man when fringed round with the grace of beauty. A couch, a chair, a bed, for instance, are not less comfortable, but more, when moulded in beauteous form, or draped with pleasing colours.

All this is pre-eminently true in the furnishing of gardens ; in fact, a garden without beauty, if such were possible, would be unfurnished. There ought to be the beauty of order and form everywhere, and beauty of colour, either like clustering masses of stars, or running through and round the whole, like golden threads. A garden without flowers is like a house with bare walls, carpetless floors, deal tables, and hard, uncovered chairs. All is hard, raw, cold, comfortless. But paper the walls, down with the carpets, drape the tables, cushion the chairs, and comfort as well as beauty come in on the heels of the finisher, and cosiness and taste take up their abode and dwell there ever after. Smoothness, order, and, above all, the gleam of flowers, effect similar transformations in gardens. Such aids to enjoyment raise utility itself into the regions of taste ; and the two are found to be complementary the one to the other, and to make one really enjoyable garden between them. These considerations should never be lost sight of in furnishing the Garden of the Farm. We shall, therefore, begin by ordering the utilities aright, and end with fringing the same with beauty.

One more hint or two as to the mode of furnishing, before presenting an inventory of the goods themselves. A good deal may be urged in favour of furnishing houses a little at a time. It suits the limited means of beginners, and enables them to keep pace with changing fashion. But this mode is hardly applicable to the stocking of gardens. The plants grow into profitableness, and, for that reason, should be planted all at one time, and that the earliest possible. As to second-hand goods, most wise housekeepers fight shy of them for obvious reasons, unless they know all about them. Even greater reserve is needed concerning second-hand plants. Without a special and particular knowledge of their merits is forthcoming, it is better to have nothing to do with them. If, however, you know all about them, they may be better than new, inasmuch as they have been tried, and not found wanting. Mere novelty as such should be wholly ignored. Farm gardens as a rule are far too small to be converted into experimental plots, and only varieties of acknowledged merit and proved worth should find a place in them.

Again, no one should ever purchase a new or second-hand plant merely because it is large. It may possibly turn out to have been a cumberer of the ground, got rid of because it was worthless. Better far start with maiden—that is, new plants, from a nursery. In purchasing these, deal with the best and most respectable tradesman in the neighbourhood, whose character will be a guarantee of the quality of the goods, and their trueness to name. As to cheap plants, shun them as you would a plague : a real plague of lost time, vexation, and cumbering rubbish, they will certainly prove, if, in a moment of weakness, or fit of closeness, you are tempted to let them into your gardens. Good plants are cheap enough, as I shall show by-and-by ; but excessive cheapness invariably means utter worthlessness. In gardening it is even more emphatically true than in farming, that the best of everything is invariably the cheapest. Hence the answer to the questions, how and with what to furnish the garden, may be packed into a nutshell, thus—With the very best of everything ; as speedily as possible.

But thousands of farmers who are interested in the matter are helplessly asking what are the best fruits, vegetables, and flowers to grow? I purpose answering these questions as briefly as possible. It may be well, however, to preface these particular replies with a few words of general advice. Whatever else you choose or discard, be sure to grow only good varieties of fruit, vegetable, or flowers that thrive specially well in your neighbourhood. This advice is especially applicable to fruits, and among these more immediately to the Apple. The varieties of this fruit are almost endless, and there are very few neighbourhoods where some local variety has not acquired, and generally deservedly so, more or less celebrity. They seem to the climate born, to take to the soil as the babe to its mother ; and their quality—well, every one approves it. The same thing, to a lesser extent, is found among Plums, Pears, Cherries, which, though more limited in number and less thronged with seedlings, are yet capricious as to locality, some varieties electing, in virtue of hidden idiocracies, to thrive in one place and pine in another without apparent reason. But these niceties of adjustment of plants to localities must not be overlooked by those who would be successful in gardening. Plants reveal their preference by results, and these should be carefully gathered and noted for future guidance. Farmers are proverbial for their keen power of observation. There is large scope for its exercise in the furnishing of their gardens. Whatever their opinion of mere book knowledge—and it is often lamentably low—they have a high estimate of all that their own eyes have seen, their own hands handled, and their mouths have tasted, of the fruits of their own experience. Well, I appeal to that first ; and not till they have exhausted that store would I counsel them to take my list of fruits, &c., into their gardens. They may do this with confidence, for as a man on a mountain can see further, clearer, than another in the valley, so is the experience of one who has made these matters his special business, larger and even more trustworthy than that of those who necessarily lack the time, and it may be also the ability to determine such matters. Nothing will find a place here that has not been tested, and found good by experience. No variety will be omitted because it is old, none commended because it is new : quality alone can qualify for a place in the Garden of the Farm. Of course, in such necessarily short lists as can be given here, much that is good must be left out, but nothing bad or indifferent will be admitted. Assuming either that the garden is walled around, or that there is room for some fruit trees upon the walls or roofs of the farm buildings, I will first of all name a few varieties of different classes of fruit suitable for such places. The waste of roof space throughout the farmeries of the country is prodigious. Every kind of roof, unless it be thatched, ought to have its whole area pressed into the service of production. Any kind of rough trellissing, of wood, iron, or even boughs, laid over it, that will keep the trees from 6 to 18 inches from the tiles or slates, will do. If the branches are laid on the roof the extremes of heat and cold are too great for their well-doing, but raise them slightly above it and they are safe. Grape Vines, Figs, Peaches, Apricots, Cherries, Pears, are some of the best fruits for roof covering, and they often do better and fruit more freely on a southern or western roof than on a wall. Next to the roofs there are the walls of the farm, whether formed of brick, stone, compost, mortar, clay, wood, or straw, to cover with trees. By the use of slight protective expedients and the employment of riders—that is, trees with long bare stems to carry the branches beyond rubbing range of the stock—almost every farm wall might be clothed with fruit-bearing trees. And then there are the back offices, the garden walls, and the walls of the dwelling-house, which, however, ought to be reserved for flowering shrubs of sweet smelling savour, so that between roof and wall of garden farms or outbuildings a considerable amount of space for trees may readily be found or made. All the southerly and westerly aspects must be appropriated to Grape Vines, Figs, Peaches, Nectarines, Apricots, and a few of the earliest Cherries and Plums, and one or two Pears, such as the Jargonelle or the Chaumontelle, where it is expected fine, or the Uvedale's St. Germain, where monsters are wanted for stewing. The eastern and northern sides of walls and roofs of buildings may be devoted to Plums, Cherries, especially Morello Cherries, Pears, choice Apples, late Gooseberries, Currants, or Raspberries. The three latter come very fine on north walls in hot summers, full of juice and flavour, that cannot be attained by plants in the open, exposed freely to the heat of the sun.

Every inch of bare wall should be looked upon as so much waste land to be immediately occupied. A single foot of a 4 feet wall would grow a cordon tree that might yield two dozen fine fruit for the dessert, while no space is too broad nor high for a well-trained liberally cultivated small wall-tree to occupy and cover with a luscious harvest of golden or rosy fruit. Having thus, as it were, tempted farmers by dangling a full basket of odours rich and flavours sweet before their eyes, I will now proceed to guide them in the filling thereof, by specifying what sorts to grow. To that end I will begin with the Grape Vine, the king of the dessert. The Esperione and the Cambridge Botanic Garden are perhaps the two best Black Grapes for out-of-door cultivation. They are wonderful bearers, very hardy, and of excellent quality. The Trentham Black, Ingram's Prolific Muscat, and Black Hamburgh may be added to these in highly favourable localities on south walls or gable ends of houses. Among White Grapes, the Royal Muscadine, Early Smyrna, Prolific Sweetwater, Early Saumur Frontignan, and Pitmaston White Cluster are the surest croppers. For wine making, Miller's Burgundy, the Black Cluster, and the Claret should be grown ; the latter is also worth growing for its fine scarlet leaves alone in the autumn.

Peaches : Early York, Royal George, Noblesse, Grosse Mignonne, Barrington, Bellegarde, Lord Palmerston, Dr. Hogg, Walburton Admirable—the last being what is called an October, that is, a very late Peach.

Nectarines : Elruge, Violette Hâtive, Rivers' Orange, Balgowan, Hardwicke Seedling, Pitmaston Orange, Victoria.

Apricots : Hemskirk, Moorpark, Kaisha, Pineapple, Peach.

Figs : Brown Turkey, White Marseilles, Black Ischia ; the first, which is likewise called Lee's Perpetual, is the hardiest and the surest cropper.

Plums : Coe's Golden Drop, Green Gage, and Jefferson. One of each on a south or west wall comes in before those on the east or northern sides, or from pyramids or bushes, and are sometimes of a higher flavour. For the colder aspects these three, and Reine Claude de Bavay, Royale Hâtive, Reine Claude Violette, Guthrie's Late Green, White Magnum Bonum, Kirke's, and Ickworth Impératrice. The latter is often a shy bearer, but where it does well it shrivels on the tree, and becomes a most valuable and veritable sweetmeat for the dessert all through the latest autumnal months ; suspended by the stalks in a dry storeroom it will even keep good till Christmas.

Pears : Beurré Diel, Easter Beurré, Winter Nelis, Marie Louise, Glou Morceau, Brown Beurré, Duchess d'Angoulême, and Uvedale's St. Germain, the last being a magnificent stewing Pear.

Cherries : Bigarreau, Early Red Bigarreau, Royal Duke, Monstrous Heart, Elton, Werder's Early Black, and Morello, for preserving. These do well on the coldest walls, with an outlook to the north.

Throughout all the northern parts of England, and, indeed, everywhere where wall space can be spared from the foregoing trees, the following Apples deserve a place on a wall : Ribston Pippin, Scarlet Nonpareil, Braddick's Nonpareil, Downton Pippin, Margil, Cox's Orange Pippin, Melon, Mother, Golden Russet, Adams' Pearmain, Northern Spy, Sturmer Pippin, Pearson's Plate, and the Calville Blanche. If any wall space still remains, furnish it with such exquisite Gooseberries as the red, yellow, or white Champagne, the Pitmaston Green Gage, Keens' Seedling, Ironmonger, or red Warrington. These are splendid on a north wall, as are red and white Dutch or red Cherry Currants, and such Raspberries as the red Fastolf, Carter's Prolific, or sweet yellow Antwerp.

The rule in reference to all walls should be to cover every inch of them with fruit-bearing trees or bushes, or beautiful and sweet flowers. To this end the trees should be planted thickly, that is, from 4 to 6 feet apart ; this is about three times as close as the orthodox prescriptions in works on gardening, but trees are cheaper now and time more precious, and the world more impatient than it used to be. The first or second crop from young trees will pay the cost of purchase, and when the trees get too close every alternate one can be removed out of the way, or, better still, probably may be kept within their allotted space by root and top pruning. To facilitate the covering of high walls two sets of trees are mostly planted : riders, that is, trees with a bare stem, of from 3 to 5 feet in height, to occupy the top of the wall ; and dwarfs, that is, trees that branch out within 6 inches or a foot of the ground, to furnish the bottom. To these have recently been added cordons, single or double, which are either trees with one stem, single cordons, or two stems, double cordons—closely spurred in, so as to produce ropes of fruit, so thickly clustered together as to resemble ropes of strung Onions. The latter are admirable for filling up small vacant spaces on walls, either at top or bottom ; or, trained vertically, in the unoccupied spaces between other trees. They are specially adapted for small gardens, and for producing a maximum weight of fruit of the best quality from the smallest area of space. Carried along, either on walls or on the ground, on wires, or props of wood or iron, at distances of from 9 to 18 inches from the earth—the fruit is nourished by the vapours arising from the ground, and attains a large size. The system is specially adapted for Apples ; but Pears, Apricots, Plums, Peaches, Cherries, can all be readily moulded into cordon form, and successfully grown and fruited as such.

They can either be purchased in fruiting condition, or maiden plants may be had for one-third of the price, and readily converted into cordons. For a single one, lay in the young shoot full length—in a horizontal position. During the summer almost the whole of its buds, instead of rushing out into wood, will plump up into fruit buds for a crop next year. The second season a fruiting cordon is produced, without any effort or manipulation whatever. By leaving it alone it becomes fruitful, without either pinching or pruning. If a double cordon is wanted, the single shoot must be shortened back—within three or four buds of its base. Then two shoots are produced and allowed to grow instead of one, and both may be treated as above the next season, and they will fruit the following one, the same as maiden plants. This mode of growing cordons into fruitfulness is economical, saves the labour of pruning and pinching, and is most effective in forcing them into fruit bearing. We have numbers now in their third year, full of fruit, that have never been either pinched or pruned. Should, however, they make a rush woodward, every growing shoot, except the leader, should be pinched out at every second or third leaf made. This forces the trees into fruitful ways, and if a fertile habit is established when the trees are young, they will not readily depart from it when they are old.

The oblique cordon is formed exactly on the same principle. It is slanted to allow a greater length of stem on low walls; vertical cordons are simply trained upright—either form may be carried to any length without greatly increasing the width, 6 feet long by from 6 inches to a foot wide are good proportions. Double vertical cordons have a neat appearance, and cover a gable end of a house, barn, or high wall sooner than any other form.

Single cordons can be planted from 2 to 4 feet apart, and as the roots have only one or two stems to support they make rapid progress. Of course the double cordons may likewise be trained obliquely, like the single. Among the best varieties of Apples for conversion into cordons are these:—Cox's Orange Pippin, White Nonpareil, Early Harvest, Lord Burleigh, Reinette du Canada, the Melon Apple, the Mother Apple, Duke of Devonshire, Cellini, Hubbard's Pearmain, Pitmaston Pine-apple, Court-pendu Plat, and Northern Spy. Among Kitchen Apples,—Betsy Geeson, Calville Blanche, New Hawthornden, Lord Suffield, Small's Admirable, Cox's Pomona, Tower of Glamis, Yorkshire Greening, Dumelow's Seedling, Alexander, Beauty of Kent, and Blenheim Pippin. The Pears and Plums, as already observed, may be grown in a similar form; but special lists of these for cordons are hardly needed. Two of the very best Pears for the purpose are Louise Bonne of Jersey and Beurré de Capiaumont, and these may be taken as types of the more moderate growing, free fruiting sorts, that do best for this form. We have tried most of the best varieties of Plums, and found little difference among them.

The only other forms of trees admissible into the kitchen garden, are the pyramid or conical, pillar, vase, bush, and espalier. The latter is a fan or horizontal trained, in fact a wall tree backed up against an iron or wooden trellis in the open ground. All the other names explain themselves, and some of them may possibly be adverted to in our chapter on keeping the garden. *D. T. Fish.*

A PROPOSED AGRICULTURAL SURVEY.

I ENCLOSE copies of a correspondence that has passed between me and the Council of the Royal Agricultural Society. The subject has some interest at the present moment, when the manner in which the owners and cultivators of English soil have performed their duties is so loudly, and as I believe so unjustly questioned. I think the outside public will scarcely agree that the essays in the Transactions of the Royal Agricultural Society's Journal will fill the place of the national work outlined in the accompanying letter to Lord Vernon. *Sam. Sidney, Agricultural Hall, Islington, September* 9.

March 17, 1871.

1. *To the Lord Vernon, &c., &c., &c., President of the Royal Agricultural Society of England.*

My Lord,—Acting on your suggestion at our last meeting, I do myself the honour of sending you my ideas for the agricultural survey of England by the Royal Agricultural Society of England, which I have several times brought before the Council in the course of the last eight years. The object would be to ascertain what progress has been made in every branch of agriculture since the Society was established in 1839. With this view—1st. England should be divided into a certain number of agricultural districts, quite irrespective of county divisions. 2d. A series of questions should be prepared for circulation in each district, amongst the landowners and farmers. 3d. These questions would ask the progress made in each department of agriculture. For instance: Live stock, viz.:—1. Cattle; 2. Sheep; 3. Pigs; 4. Draught horses. Implements, viz.:—1. Preparation of soil; 2. Sowing seeds; 3. Collection of crops; 4. Preparation for market. Food purchased for cattle, as, for instance, cake of various kinds, Maize, &c.; artificial portable manures, drainage, crops, roots (of what kinds), other new crops. In a word, the object would be to put flesh on the dry bones of agricultural statistics, and to enable the Society to collect authoritative reports of the amazing progress of 30 years of English agricultural history. Then to the motto of the Society on the volumes might be added, "*Quorum pars magna fui.*"

I am aware all this would involve considerable expense, but not so much as the reports of the travelling commissioners.

The forms, which should include blank pages for "general observations" and "reminiscences," should be sent out in the autumn, through the members of the Council, to the most willing contributors in each district, to be worked at during the winter. Many zealous and able assistants would certainly be found amongst the 5000 subscribers who are neither able to write an agricultural article or make a speech. When returned, they could easily be digested by referring each district to one competent editor. The names of the contributors should be given with each report. I need not dwell on the national importance of such a work. Any further questions I shall be happy to answer.—I am, my lord, your most obedient servant, S. SIDNEY.

2. *To S. Sidney, Esq.*

Sir,—I am instructed by the Council to inform you that your letter, dated March 30, addressed to the President of the Society, having been carefully considered by the Journal Committee, the enclosed report thereon was unanimously passed at their meeting on Wednesday last.—I remain, sir, your obedient servant,

H. M. JENKINS, Secretary,
Royal Agricultural Society of England,
12, Hanover Square, June 9, 1871.

Extracts from Report of Journal Committee.

Mr. Thompson (chairman) reported, that after considering a letter referred to them by the Council, in which Mr. Sidney advocated an agricultural survey of England by the Society, the committee were of opinion that the information which Mr. Sidney thinks it desirable to collect, by means of a general and very expensive survey, has been to a great extent obtained in a more interesting and useful shape by means of the reports which have been published in the Journal within the last few years, viz.:—

1867. Reports on steam cultivation, giving the details of the management of 176 farms cultivated by steam, and situated in 29 different English counties.

1869. Reports of a few eminent farms, selected for the known excellence of the results obtained by the occupiers.

1870. Reports on the farms which competed for the prizes offered at the time of the Oxford Show.

These reports have been drawn up by very able writers, at a considerable cost to the Society, and will, with the consent of the Council, be continued from time to time; and the Committee submit that an exact account of a limited number of noted farms in different districts is more likely to be useful than the indiscriminate collection of details referring to good and bad alike, and which, if faithfully collected, would be too bulky to be fit for general perusal.

This report was adopted.

PROFITABLE SHEEP FARMING.

IN the opinion of many competent judges, says a writer in the *Chamber of Agriculture Journal*, the most profitable kind of sheep-farming that can possibly be adopted is the high-feeding system applied to ewes and lambs, for the fattening first of the offspring and then of the mothers. Shrewd farmers, who find no difficulty in buying in the autumn draft six-teeth in-lamb ewes from superior flocks, often give up breeding their own stocks, and confine their attention to this branch of business altogether. Those who do so should not be faint-hearted or sparing of oilcake, and with ordinary good fortune they may turn out their lambs about Easter in plump and fat condition, and make nearly a shilling a pound of the carcasses, while the ewes themselves will ripen into fat mutton not later than May or June. We lately rated a high-farming friend on not breeding his own stock. "I have no breeding downs," he said; "besides which I have no occasion to breed while I can get the pick of draft six-teeth ewes in-lamb from a hundred superior flocks." Our friend had long been famous in his neighbourhood for converting his Turnip crops into lamb and mutton by making free use of bountiful supplies of oilcake and other feeding stuffs. In the opinion of all the old farmers for many miles round he very much overdid the thing. "Consider the enormous expenditure," they cried one and all; and so fully impressed were they with this one-sided view that they omitted to calculate the results the large outlay entailed. For ourselves, we never doubted. "In for a penny in for a pound," always seemed to us the proper motto for all entering heartily into the enterprise. In fattening ewes and lambs farmers are far more likely to err on the side of economy than of bountiful feeding. Besides which, our friend's luxuriant Barley crops offered standing mementos to the excellence of the system adopted. Still, we required something even more palpable to check the argument, and consequently teased him for his balance-sheet. This we have never yet been able to obtain *in toto*, but a statement put into our hands a few days since bears materially on the point at issue, and this we deem quite important enough not only for the consideration of farmers in eastern Dorset, the part of the country in which the profits were secured, but also for other readers of this journal.

The draft ewes of a good flock were purchased October 14, 1870. They were 150 in number, and appeared what sheep dealers termed a thrifty, useful lot; their breed two-thirds Sussex and one-third Hampshire, an amalgamation of which Dorset men are fond. Although warranted forward in lamb, they failed to answer expectations in this particular. 84 only yeaned in January; 56 dropped their lambs the ensuing month; 10 turned out barren, and were fattened off early; these yielded a profit for their keep, but not so great as that derived from the ewes and lambs, and our flockmaster has omitted them entirely in his statement. The artificial feeding did not commence until December 1; and it was confined to acorns throughout that month, the abundant yield of the fruit of the Oak last autumn causing large quantities to be procurable at about 4*s.* per sack, at which price they are, no doubt, a far cheaper auxiliary food for the flock than either cake or corn. These sheep eagerly devoured all that were given them, and were kept in sound and improving condition with such aid and the natural food of the farm until the beginning of January, when a substitute was found in cotton cake. As the ewes yeaned, they were removed from the lambing fold to the Turnip break. The roots were cut up by Gardner's cutter. Plenty of hay-chaff was provided, and oilcake mixed therewith; in the first place cotton cake, afterwards cotton and linseed cake mixed; and as the lambs grew big the proportion of linseed was increased, and in the latter stages of fattening it superseded cotton cake altogether. The lambs cropped down the tops in advance of the pens, and had troughs outside for themselves, plentifully supplied with meal, oilcake and pollard impregnated with Thorley's condiment, of which they soon learned to partake freely. The lambs throve to a wish, and on March 28 the first draw for the butchers took place to the number of 52, which were disposed of at 38*s.* per head. On April 21 a second draw of another 50 took place, sold at the same price, viz., 38*s.* each. As many as 68 still remained, for there were a number of twins, and our friend had the prodigious good luck of rearing 170 lambs out of 140 ewes, or rather 136, as four died in lambing, or shortly afterwards. It testifies somewhat to his good management, moreover, that the twins were all fattened. A third draft of 50 were sold on May 20 at 36*s.* per head, while the remaining 18 odd lambs were disposed of on June 6 for a trifle over 29*s.* each, the return being £26 5*s.* The ewes were three-fourths fat when the lambs were taken from them, and were rapidly forced on by the aid of oilcake to be very soon fit for the knife afterwards. They were sold at 9½*d.* per lb. in their wool. The first lot of 100 were marketed on May 20, and the whole cleared off by June 27, realising by weight a nett return of £399 10*s.* But at what cost were these good returns realised? Nothing very alarming. The entire bulk of auxiliary feeding stuffs, oilcake, corn, meal, and acorns amounted altogether to £93 19*s.* This will be deemed by no means heavy expenditure when the profits secured thereby are taken into consideration. We append a summary of the whole outlay and results:—

Cost.	£	s.	d.	*Proceeds.*	£	s.	d.
140 in-lamb ewes, bought at £2 each	£280	0	0	52 lambs sold at 38*s.*	£98	0	0
Auxiliary feeding stuffs purchased	93	19	0	50 ditto ditto at 38*s.*	95	0	0
Balance	334	16	0	50 ditto ditto at 36*s.*	90	0	0
				18 ditto sold for ..	26	5	0
				136 fat ewes sold at 9½*d.* per lb., realised ..	398	10	0
				4 skins	1	0	0
	£708	15	0		£708	15	0

This leaves £334 16*s.* as remuneration for the natural food of the farm consumed. A perfect balance-sheet would, of course, include the cost of attendance and labour with the expenditure; but, on the other hand, nothing is credited on the score of manure by the land being put in high condition for the Barley crop through the bountiful use of oilcake and other rich feeding stuffs.

The above account, however, is rather given as an example of what may be done under favourable circumstances in a fortunate year than as a fair estimate of outlay and profits in the adoption of the system. The flockmaster was enabled to buy in cheap and sell out dear, and had unusually good luck in suffering few losses and obtaining a singularly good number of twins. The same quality ewes he purchased last year at 40*s.* each now readily command 50*s.*, and it is not every spring that fat lamb sells at 11*d.* and 1*s.* per lb., and fat mutton at 9½*d.* Nor are there any allowances in the above statement for losses by barren ewes. A more correct general estimate of the profits to be obtained by the adoption of this system of sheep feeding may be made by supposing the ewes to be bought in at 42*s.* per head; setting down the probable sales of the lambs at about 34*s.* each, which would admit of their weights being 40 lb. each, at a little over 10*d.* per lb. The ewes might fairly be estimated to attain the average weight of 80 lb. each, and to be sold at 8*d.* per lb.; but as a death loss of 5 per cent. ought to be deemed probable, the number would be reduced to 133. Another 5 per cent. might be expected to be barren, consequently the yield of lambs, giving due allowance for twins, ought not to be estimated at more than 135. We draw a balance sheet on this basis with the appended results:—

Estimated Outlay.	£	s.	d.	*Estimated Returns.*	£	s.	d.
140 in-lamb ewes at 45*s.*	£294	0	0	135 lambs at 34*s.* ..	£229	10	0
Purchased feeding stuffs	93	19	0	133 ewes at 53*s.* 4*d.*	354	13	4
Balance	197	19	4	7 skins at 5*s.* ..	1	15	0
	£585	18	4		£585	18	4

We may add that the farmer who furnished us with the statement of the outlay expended and the returns secured in fattening 140 ewes and their lambs in the past season occupies an oasis in a barren heath district. Low-lying, it possesses some depth of soil and natural fertility, but the high state of productiveness now displayed is primarily attributable to good farming. The fact, too, is particularly noteworthy that these profitable results in fattening lambs were obtained in consuming Turnips and green crops on arable land. With the exception of a fresh bite of natural grass consumed by the ewes just after lambing, they were not kept in pasture fields at all. Nor must the statement be regarded as rarely exceptional; for although better profits were secured last winter than have been realised in any previous year, heavier weights of both lamb and mutton were produced on the same farm in the spring of 1870, but disposed of at a less rate per pound. We have the authority of the occupier in asserting that in a general point of view the average of seasons affords him larger profits than those calculated on in our own estimate; which surely places the high-feeding system in a favourable light, and recommends it to the careful consideration of many who have not fully acquainted themselves with the advantages of feeding liberally with oilcake, and thereby converting their Turnips and grain crops into lamb and mutton.

Home Correspondence.

The Dry Earth System.—Probably few of your readers will attach much weight to the confident assertion contained in my communication inserted in your impression of September 2,—that if the whole of the refuse of a town or village be given up to a board of management of the dry earth system, a manure may be manufactured the minimum value of which shall be £1 per head of the population of that town. Fewer persons still may be disposed to procure and read my pamphlet to which in that communication I referred—"The Science of Manure as the Food of Plants,"—in order to see the principles on which that manure is manufactured, and on which my confident opinion of its value rests; perhaps, then, you will allow me briefly to state those principles. 1. It is self-evident that previous to any substances affording to a plant that nutriment with which life and growth are maintained, those substances must be reduced to an almost infinitesimal minuteness. 2. It is equally self-evident that the nutritious particles thus disintegrated and transformed should be brought into that position and circumstance in which the organs for their transmission into the sap vessels of the plant can act upon and absorb them. 3. From a very little consideration of this infinitesimal minuteness into which the nutritious particles of any manure must of necessity be reduced, it will readily be perceived that the aggregate amount of such nutritious particles requisite for the healthy growth of a given plant, or even of a given crop, must in its actual and immediate application be very small indeed. 4. In cultivation, then, whether on a small or a large scale, the main object must be the actual and immediate application of this very minute quantity of matter, and that at the proper time, to those vessels of the vegetable system through which it is to be received into each separate plant. 5. The problem to be solved (and which I claim to have solved), then, is this: since the actually nutritive portion of any manure, as distinguished from the medium through which it is prepared and conveyed, is very small indeed, how is this to be introduced into a medium of the narrowest compass, yet tangible and manageable? The compass must be narrow, that as a vehicle of transmission it shall, in proportion to the matter conveyed, be small; and yet it must be sufficiently large to render the application of the nutriment to all portions of the crop certain and uniform. This problem, in a recent modification of the dry earth system, in its application to sink water and slops, I certainly have now more completely solved; and in a way which at the same time will render the removal of that portion of the refuse of towns easy and profitable. Moreover the method is available in stables and cowsheds to an extent that, while giving large employment to labourers during the winter months, will save nineteen-twentieths of horse-labour in manuring land. All that is required to satisfy the public is a large and widely extended experiment. Forty tons ought to be tried by 40 different farmers. I should like it tried first for Wheat, because of the amount of silica which I can introduce. For each ton I ought to have £5. A farmer yesterday promised to commence the subscription by taking 5 tons. If this experiment be tried and succeed, I am ready, under a fair consideration, to throw the whole open to the public. Hitherto I have worked hard during 14 years, and have spent more money for the public good than I ought to have done. *Henry Moule, Fordington Vicarage, Dorset, Sept.* 12.

Artificial Manures.—The subject of manures is often discussed in your columns, and the Royal Agricultural Society's report, recently given by Dr. Voelcker, should open the eyes of farmers to the frauds practised upon them, particularly in guanos and Turnip manures. In my neighbourhood, superphosphate, guaranteed to contain 25 to 28 per cent. soluble phosphates, is largely used by most of the principal farmers, and it is generally admitted that no other manure will produce a good crop of Turnips so cheaply. Some few have used superphosphate containing 32 to 35 per cent. of soluble phosphates, which, considering the saving of carriage, in buying so concentrated a manure, is, perhaps, the cheaper of the two. It unfortunately happens that a great number of farmers are always seeking after some mysterious compound, whose effects will eclipse everything that has preceded it or that can possibly follow. They do not try to ascertain its composition—the amount of plant food—which it contains, but value it in proportion to the amount of puff with which it is introduced, which as often as not stands in inverse ratio to its fertilising properties. Farmers, as a body, can discuss with you as long as you please the breeding and feeding of stock, the different kinds of implements in use, even those recently introduced, which they will have seen at some local show, but on the subject of manures they seem perfectly at sea; they either know nothing as to how a manure should be composed in order to furnish food for the crop; or if they have some knowledge of chemical analysis, they are, in the majority of instances, too niggardly to be at the expense of having it tested by some experienced chemist, although the few shillings spent in this way would often, to my knowledge, be the means of saving them pounds. The 25 to 28 per cent. soluble phosphate is sold here at £4 10*s*. per ton in bags, delivered free at railway stations, for ready money.—I send you by this post a sample of manure marked No. 1, the ready money price for which by a local dealer is £6 10*s*. per ton. I have had it analysed, and give you the results:—

Analysis of a Sample of Manure.

Moisture	3.90
*Organic matters	32.10
Biphosphate of lime	2.83
(Equal neutral made soluble, 4.42)	
Insoluble phosphates	17.20
Hyd sulph. lime	22.77
Alkaline salts	0.55
Sand and earthy matter	20.65
	100.00
*Containing nitrogen	1.65
Equal ammonia	2.00

I shall be glad of your opinion of it. The dealer in question puffs his manures more than all the other vendors put together; he secures paragraphs in newspapers, ay, and leading articles, in his favour; and he condemns alike Peruvian guano, nitrate of soda, and, as he terms them, cheap phosphates, and announces his own compounds as "the best and cheapest manures that can be used, specially prepared for all crops, under the scientific superintendence of one of our firm." The sample I send is called nitrophosphate for Turnips, and as to its scientific composition chemical analysis proves it to contain 20 per cent. of sand and earthy matter, and less than 5 per cent. of soluble phosphate. I venture to say that there is no other business but farming where those who practise it show such ignorance of the use and value of the materials they have to purchase; yet farmers live, grumble, and save money, swindled and despised by those who are preying upon them. Prizes are offered by Agricultural Societies through the length and breadth of the land for stock, implements, &c., and no doubt much good has resulted therefrom; but until these societies or Chambers of Agriculture, or other generally prevailing organisations take up the question of explaining and securing cheap chemical analysis, the great bulk of tenant-farmers will remain ignorant of the necessary plant food which should be contained in any material to entitle it to be called a good manure. An objection is often made to these highly soluble phosphates that they work pasty, and clog up the sort of drills which are now very much used in their application, but this dealer puffs his manure as being in such fine condition for the drill; and farmers forget, or rather will not learn, that they have the same means of making their manures work as the dealer has, namely, by the admixture of a little sand or ashes, which they can procure for next to nothing, instead of paying £6 10*s*. per ton for them, as in the instance I have referred to. *Yorkshireman.*

Land Improvements by Tenants.—In your paper of last week (p. 1212), "G. A. H." asks if I can explain why one of his tenants prefers improving his farm with lime himself to letting the landlord do it. I do not see in his letter why the tenant so acts; but I can tell "G. A. H." a few instances where tenants have laid out their money freely although under the usual tenure, that is, subject to six months' notice to quit. One tenant on an estate in my county has spent more than £300 a year in heavy manures alone, besides artificials and feeding stuffs, and eating all his produce except Wheat and malting Barley. Another spent more than £1000 in two years in manures and feed. Most of the other tenants have laid out money in improvements. A valuer is now going over the estate. Whenever a landlord sends a valuer to look over his property, the meaning is a rise of rent. If the tenants do not like this, they can leave if they please, and other farmers will come and pay the increased rental. But the outgoing tenant then leaves his property in the landlord's hands, who increases his income in consequence of his evicted tenant's outlay. It is this which makes English farming of such a hand-to-mouth sort. If we had security, we could plaster on manure like a Mechi, and rip up our clays like a Smith. Until we get security from "felonious" confiscation, the soil of our country will not yield its proper food for the people. *H. H. O.*

Landlords and Tenants.—Much has been written, and still more spoken, upon the relative duties, business policy, and arrangements between landlords and tenants. What is their precise position? The landlord, as proprietor of the land, is entitled to a full and equitable rent, according to the value of his land and the liberal covenant he gives to his tenant, in or by which ought to be included especial reference and acknowledgment of the great improvements which British agriculture has achieved of late years; and he is entitled in all fairness to have his land managed upon the modern principles and practice of agriculture both in the farming and grazing departments. The tenant ought to enter upon his farm with the clear understanding, that he is by his skill, capital, and industry, to cause the farm to yield the largest possible return of produce, in accordance with the nature and quality of the land or soil and climate in which it is situate. Modern agriculture demands a liberal outlay of capital in labour, in mechanical aids to culture and other farm service, in chemical manures, in artificial foods for stock, in breeding and stock management, and in the growth of the best varieties of grain, roots, &c., that can be procured. To encourage and give security to a tenant to do this, the landlord must take unusual care in selecting an intelligent and enterprising tenant, with competent capital to manage upon these modern principles; having done this, he should be left in the free exercise of his own judgment as to his own course of management throughout, except some equitable restrictions relative to breaking up pasturage, buildings, and the condition of the farm at the termination of the tenancy. There is this certain fact for the security and encouragement of landlords, that no tenant can profitably manage a farm upon the fair, not to say expensive practice of modern agriculture, without improving his farm. He must inevitably do it, or fail. The best principles and practice of modern agriculture lie principally in the drainage and the deep effectual culture of the various soils, in the application of artificial manurings wherever requisite (and no one knows yet to what extent these can profitably be applied), to secure good crops; for such only will pay, and must be obtained at any reasonable cost. These principles in the management of farm stock comprise this one prominent course—to keep every animal thriving from its birth to the time of slaughter; and this can only be done by a liberal outlay in artificial foods, and very careful management. Every head of stock purchased for fatting ought to be supplied with these foods. In this way a much larger number can be fatted upon the grazing part of the farm. Farms managed after this order cannot deteriorate. It is only by this course being pursued throughout the country that the landed interest can do their duty in making the soils of the kingdom produce their utmost for the sustenance of a large and rapidly increasing population. *O. F.*

Societies.

NOTTS.

The Breeding and Feeding of Cattle.—At the quarterly meeting of the Notts Chamber of Agriculture, on Wednesday of last week, at Newark, the chair taken by Mr. George Storer, Mr. W. SANDAY, of Ratcliffe-on-Trent, formerly of Holme Pierrepont, read the following paper "On the Breeding and Feeding of Cattle:"—

The breeding and feeding of first-class stock having of late years attracted much attention, and being a pursuit in which I have been myself engaged for the greater part of my life, I felt that the result of my experience might be of use to others, and therefore, much as I dislike appearing in public, I acceded to your request to read a paper on the subject. I have endeavoured to make my remarks as practical as possible, as I have not come across any article on the subject which can be said to be of any practical use. Breeding, as the more important of the two subjects under consideration, should first claim our attention. Shorthorns, on account of their early maturity, having became more popular in this country than any other breed of cattle, I shall confine my remarks to them; the same observations will, of course, apply with equal force to any other variety. To give you some idea of the increase in the number of Shorthorn breeders within the last 20 years, I may mention that in the year 1850 there were 316 subscribers to Coates' Herd Book, and the pedigrees of 1127 bulls were entered; to the last volume we find 655 subscribers, with the pedigrees of 2366 bulls. I would ask whether, in the opinion of this meeting, the number of really first-class animals has increased in proportion? My own opinion is, that the animals bred at the present day are inferior both in size and in quality to those bred 20 or 30 years ago. Now, if this be the case, surely there must be something wrong in the present system of breeding. It is evident that but little common sense can have been brought to bear on the subject.

Deterioration of Live Stock.—I am convinced that the cause of this deterioration is the principle on which most herds are raised, viz., the fashion—or rather infatuation—of collecting from certain families, without any regard to the qualifications necessary for producing and perpetuating good animals. To follow out this plan, in-breeding must, to a very great extent, be resorted to, and the number of families on which such an experiment can be tried with the smallest chance of success is so limited, that in the majority of cases the consequences cannot fail to be ruinous. We all know the difficulty of raising and keeping up a good herd or flock; this can only be done by breeding from the very best males and females, but the present system seems to set this rule completely at defiance; if an animal be only of the fashionable strain, it is sure to make a fabulous price, whatever its quality. Only last year two heifers were sold by Captain Gunter to a Canadian gentleman for £2500, and their produce, two heifer calves, has since been purchased by Lord Dunmore for the same sum (£2500). Should these calves breed, what price do you think Lord Dunmore will set upon their progeny? Of course it will be a high one, totally irrespective of their quality; should a bull be reared, doubtless he will be used, no matter what he may turn out. I have, of course, put this as an extreme case; but similar ones are constantly occurring, and this servile adoration of pedigree cannot fail to end in disappointment, and ultimately in the permanent deterioration of Shorthorns. We may have some idea of the extent of the evil if we take the number of bulls annually exhibited at our various shows, and consider how few of them are really fit to perpetuate their species, and yet the majority of them are so used, which would in some measure account for the great scarcity of good animals. With many, a long pedigree is all that is considered necessary; but unless this pedigree be composed of really good animals the produce will probably be unsatisfactory. A well-descended bull or ram may, although not itself first-rate, produce first-rate stock; numbers of such instances have come within my own knowledge. The case is far different when the sire comes of a line of light-fleshed, delicate animals (and these, I am sorry to say, are in the present day only too numerous). Surely any of us may foresee the end of such an irrational plan, and yet it is pursued, as I have already stated, by numbers of breeders. There are two other causes which, in my opinion, must hasten the deterioration of many of our best herds, viz., first, the artificial manner of rearing calves; and second, the practice of using bulls before they arrive at maturity.—First, the artificial manner of rearing calves, especially bull calves. They are confined in small stalls, or loose boxes, instead of being allowed to suck upon their mothers in the open pastures, where they could take any amount of the exercise so necessary to their muscular development. I am well aware of the difficulty of carrying out this plan to any great extent, but whenever practicable it should be adopted, if really first-class animals are to be produced. Second, the practice of using bulls long before they come to maturity. It will be evident to every one that such a practice cannot fail to be injurious, and, though instances to the contrary may be adduced, they are only the exceptions which prove the rule.—I am also quite of opinion that over-feeding is another cause of deterioration; but it is not likely to be discontinued at present, as, owing to the extreme difficulty of judging animals when out of condition, there are but few who will purchase them. I am well aware of the scarcity of first-rate sires, and never in the history of Shorthorns have they realised such enormous prices; but had the supply increased in proportion with the number of breeders, no such difficulty would have arisen. One advantage, however, has been gained. There is no lack of useful bulls, which may be purchased at moderate prices, and these, I think, we may fairly congratulate ourselves, have much improved the ordinary stock of the country, more especially in Ireland, as may be seen by the superior quality of the cattle brought to our fairs and markets. I am now especially addressing myself to farmers, many of whom keep well-bred bulls, a practice the importance of which cannot be over-rated.

Selection of Sires.—Here I may perhaps be allowed to make a few remarks on the selection of this description of stock. In the first place, it should always be remembered that the male has a greater influence on the quality of the stock than the female; consequently, every female put to a good male will probably produce a better animal than herself; this rule applies to all ordinary stock put to a well-bred sire. Therefore, never spare a few pounds in the purchase of a good animal, for you may reasonably expect a handsome return for the amount expended in the improved quality of the stock. Second, with regard to the selection, the importance of which I think you will admit, I would most strongly recommend you to fix upon a flock or herd known to be descended from a long line of heavy-fleshed and robust animals, and one whose owner has a character for careful selection of his breeding stock. I am glad to say that breeders answering to this description are still to be found. By pursuing this course, the danger of getting inferior stock is reduced to a minimum. Any one who has the smallest experience in breeding knows how often the offspring of two first-class animals is not what might fairly be expected. For this reason well-bred bulls are often to be obtained at a moderate price from our best breeders, many of which, if of strong constitution, might be depended upon to produce good stock, or, at any rate, good feeders. Carefully avoid, however, herds bred from the light-fleshed, narrow, and delicate animals, so common at the present day. In purchasing a bull for ordinary use, above all things choose a fair-sized animal, with good quality of flesh; if well descended, do not be too particular about his form. The shoulders are better well open at the top, not narrow, like the withers of a horse, no matter if a little coarse, if it is a sign of constitution; the ribs should be well sprung, a most important point, but difficult to get; the hips large, even though they should be coarse; the head and neck masculine, and the horns rather thick than otherwise—a thick horn is a sign of robustness and vigour. I do not like the thin, papery hide which so many admire; you may be sure there is not much flesh under it. I think I have now given you the essential points of a useful animal, and one obtainable without any very great outlay. As there may be some amongst my hearers who are breeders of first-class Shorthorns, a few words of advice to them may not be out of place, though it must be understood that they do not in any way extend to those whom we may term "pedigree breeders." With them I have no sympathy; and though I am bound to admit that large sums of money may be and are realised by this mode of breeding, that its effects are injurious must be apparent to every unprejudiced person. What I have said in my advice to farmers will apply here, only, if possible, with tenfold force, viz., avoid any tendency to light flesh or delicacy of constitution. A cross of this kind is often attended with most disastrous results; a case in point occurred some years ago in the herd of the late Mr. Richard Booth, whose name is doubtless well known to most of you. He had for many years been breeding entirely from his own stocks, and thinking that a cross was beneficial, he was induced to purchase at one of the sales of the late Earl Spencer a bull called Exquisite. Earl Spencer's herd, though neat in form, were wanting in flesh and robustness—the very characteristics possessed in such an eminent degree by Mr. Booth's, but the cross, contrary to Mr. Booth's expectation, proved a most unfortunate one, the stock from Lord Spencer's bull being decidedly inferior. Similar cases have more than once occurred in my own flock of Leicesters, and this has strengthened my conviction that, unless the male be superior, or at least equal to the female, in all essential points deterioration must take place. Let me here again impress upon you the importance of selecting a bull from a herd superior to your own; he should, of course, be as perfect in form as possible, but the following points should be made a *sine quâ non*, viz., good and heavy flesh, good looks, well-sprung ribs, and, above all, a pedigree without blot. Bear in mind, however, that a long pedigree is not necessarily a good one. Success in breeding, I am quite convinced, requires a certain amount of intuitive knowledge; it is this which enables one to see at a glance when an animal is likely to be a good stock-getter, or whether a young animal is likely to improve or deteriorate. I cannot believe that this faculty is possessed by many of the breeders of the present day: if it were, the quality of the cattle brought under our notice at sales and shows would be very different. To quote an eminent authority (Mr. Darwin), "Not one man in a thousand has accuracy of eye and judgment sufficient to become an eminent breeder. If gifted with these qualities, and he studies his subject for years, and devotes his lifetime to it with indomitable perseverance, he will succeed, and may make great improvements; but if he wants any of these qualities he will assuredly fail." Before concluding this part of my paper, I must say a few words on this subject—a subject to me most interesting, but at the same time most complicated. I feel certain that, under some conditions, the experiment might be tried with every chance of success, but these conditions so seldom occur, that it can be attempted in but few cases. The conditions to which I refer are these: If two animals be first-rate in form and quality, without the slightest appearance of delicacy, or if the male be very good in points where the female is deficient, or if it be desirable to perpetuate any particular strain, then I think you might put father and daughter, mother and son, or, indeed, any relations together, with the exception of brother and sister. Bear in mind, however, that any defects in the parents would be exaggerated, and each generation would decrease in stamina. From personal experience I cannot speak with any authority, having only tried the experiment once, and then upon sheep—the result was not satisfactory.

Feeding.—I feel some diffidence in addressing you on the subject of feeling, being well aware that there are many present who are better qualified to do so than myself. I must, therefore, be excused making any lengthened remarks, hoping that some one may be induced to offer a few suggestions before the close of the meeting. I shall begin by saying a few words on the rearing of calves, and their after-treatment until fit for the butcher. I have always considered September, October, and November the three best months to begin rearing, that the calf may be strong enough to withstand the second winter, which is always the most trying time. Each calf should have, if possible, a loose box not less than 9 feet by 5 feet 6 inches, especial care being taken that it be well drained, any accumulation of moisture being most injurious. Each box should be provided with water-trough, manger, and small rack for hay. New milk should be given for a fortnight at least; this should gradually be supplemented by skimmed milk, and mixed with linseed or oilcake porridge, that as many as possible may be reared. A little good hay should be given as soon as the calf will eat it, and I believe that no better food can be substituted. A small quantity of linseed cake may also be given, with pulped roots and cut hay; if hay be scarce, a very little straw may be added. At the age of 14 or 16 weeks the milk may be gradually discontinued, and a little flour substituted, which may be mixed with the pulp and chop. This treatment should be continued throughout the winter, and up to the first week in May, when the calf may be turned out to grass, fetching it up at night for the first fortnight at least. One pound of cake per day should be given during the summer, and by the autumn this treatment should have produced an animal in good condition, and well able to get through the ensuing winter. The cake should now be increased to 1½ lb. to 2 lb. per day, and equal portions of hay and straw may be given chopped and mixed with pulped roots. If the stock are to be sold at an early age, which I strongly advise, a small quantity of flour should be given with the chop. I would here impress upon you the importance of keeping every young animal in a thriving state; should it once lose its calf's flesh it will take some time to restore it, and it should be remembered that time is money. At the end of the second winter the yearling ought to be in good condition, and during the next summer it may be grazed in the store pastures with ewes and lambs. At two years old those not sufficiently forward to be fed may be put into the straw folds; they should have an unlimited supply of cut straw mixed with pulped roots. If a sufficient quantity of roots can be allowed they are in my opinion preferable for store cattle to any kind of cake. The heifers intended for stock may be put to the bull; a few of the rest, with some of the steers, may possibly be sufficiently forward to be fed in the winter. Feeding may commence with from 4 lb. to 5 lb. of cake per day with as many roots as can be spared, and if possible a little hay; the quantity of cake must be regulated to suit the time when the animals are to be disposed of. It is a much debated question with feeders whether the preference should be given to boxes, stalls, or yards. I should place them in the following order: 1st, yards; 2d, boxes; 3d, stalls. It depends, however, in some measure on the kind of cattle to be fed. Steers will improve faster in yards or boxes, but cows, from their quarrelsome disposition, do better in stalls. Farmers, however, have not often sufficient accommodation to admit of choice in the matter. In the foregoing remarks I have pre-supposed that the stock have been fairly bred, for it is only by this means that early maturity can be secured; at the same time I would have it understood that I am speaking of ordinary stock, and not of animals intended for exhibition. Not having any definite knowledge of the system adopted by the large dairy farmers in rearing, I cannot give any information on the subject, but beg to refer you to the forthcoming volume of the Royal Agricultural Society's Journal, where you will find some valuable hints in the account of the first prize dairy farm. I may remark that the calves on this farm were economically fed and in very good condition. With regard to the rearing and management of first-class breeding stock, I most strongly recommend that all the bull calves should, whenever practical, be reared upon cows in the open pastures; they should suck from six to eight months, and a few weeks before weaning should become accustomed to artificial food, as a calf so soon loses condition after leaving the dam. Exercise should be given regularly, this being such an essential point. The bull calves will, of course, receive the most liberal treatment possible until sold; the heifers only require to be kept in good growing condition, which can be done by giving a very small quantity of artificial food and good hay. They should be put to the bull at one-and-three-quarters or two years old, as, if this be longer deferred, they are likely to prove non-breeders. Stock for exhibition require the most liberal and careful feeding. Only so much should be given as can be consumed at once; if any be left it should be removed. This I believe to be the most important point in breeding. Change of food is also very essential. Linseed-cake should be given with judgment; if too much be given the animal is soon cloyed. But all these directions will be useless unless the intending exhibitor have an intelligent, persevering, and trustworthy servant, as it must depend upon his exertions to bring out the animal in show condition at the right time, which is no easy matter. Economical feeding, *i. e.*, obtaining the best results from the smallest amount of food, is of the greatest importance; but it is difficult to lay down any special rule on the subject. I shall not attempt to give any opinion on the different feeding stuffs and condiments now before the public, my experience of them being very limited, malt, however, excepted. I am convinced that it is one of the most valuable foods known, not only as a condiment, but as a fat producer. Animals for exhibition are kept in better health on malt than upon any other food, milk excepted. It is a food of which they never tire. I only hope I may live to see the day when it will be within the reach of every farmer. For further information on the subject, I must again refer you to the forthcoming number of the Royal Agricultural Society's Journal, where you will find a description of the different modes of feeding, as adopted on the prize farms, the details of which may be useful and interesting.

Discussion.

Mr. Sampey expressed the opinion that nothing would more conduce to reduce the price of meat than the use of malt in the feeding of cattle. It was invaluable as feed for young stock, and he very much agreed with what Mr. Sanday had said upon the subject. He hoped he might live to see when farmers would have the free use of malt. He scarcely thought 1 lb. of oilcake was sufficient; what they wanted was to turn out the calves strong, and they then came up all the stronger and better beasts the next winter. He again expressed his satisfaction that Mr. Sanday had made such an allusion to the importance of malt as a feeding ingredient.

Mr. Colton said the deterioration of Shorthorns must be owing to breeding in-and-in too much. He was of opinion that the Shorthorns now bred and exhibited had nothing like the flesh they had 20 years ago. Still, they made more money than they did 20 years ago. It was to be hoped that more attention would be paid to substance, as light-fleshed animals were more liable to disease.

The CHAIRMAN said they had heard a very instructive paper. He might observe that some 30 years ago he thought of setting up as a Shorthorn breeder, and after hearing Mr. Sanday's paper he could fully realise why his anticipations were not fulfilled. He purchased some stock at the sale of a neighbour, Mr. Rose, but they had been bred in-and-in too much, and the consequence was that three or four of the heifers would not breed at all, which rather daunted him. He had a brother, however, a great breeder, but he had told him he went in too much for pedigree and too little for flesh. He recollected the remark of an excellent farmer in his locality, Mr. Bean, who said, in reference to this subject, "It's all very well, but keep beasts kind." He supposed that was an old saying, but he thought that keep would not do it unless there was kind to start with. With regard to the paper they had heard, they had been sitting at the feet of Gamaliel; for no man could be more qualified to advise them than Mr. Sanday, and he was sure their thanks were due to him. He could not propose it from the chair, but it must be the general feeling of the meeting.

A discussion ensued as to the time of breeding, Mr. Sampey being of opinion that proceeding early conduced to regular breeding and fewer barren beasts.

Mr. HEMSLEY said he should like to know what amount of beef might be produced by farmers generally beyond what was now grown. He believed the two great points which now affected farmers most were the labour and meat questions. He should be very glad to know how they could produce more meat, as by that they would be better able to pay for their labour. As far as he could see, something might be done in the way of artificial grasses. In that way they would increase the supply of beef and mutton. It is quite certain that their attention must be turned to the growing of beef and mutton more than it had been.

Mr. SAMPEY said unless they did so they would have to give way to the foreigner.

Mr. SANDAY remarked that in the matter of breeding much depended on the way a calf had been reared. If well kept, it would be ready at a year and three-quarters; if badly kept, at two years old it would only be three-fourths the size of one well-kept. In answer to a remark of Mr. Hemsley's he mentioned one-and-a-half years as the very earliest time, but if later it would be far better. They were anxious to get produce as soon as possible; the principle was too much carried on throughout the country, and was decidedly injurious. If the animal began to breed at too early an age the stock must deteriorate to some extent. It was this gradual deterioration which had taken place that caused the Shorthorns to be different to what they were 20 years ago. Of that deterioration he was quite convinced. He had the opportunity as much as most people of going from one show to another, and thus could judge of this. Some 30 years ago he saw some Shorthorns at Mr. Booth's, and he was quite convinced that there were no such cows like them now. The fashion of breeding for pedigree alone had been one great cause of deterioration. There was recently a sale of the Duke of Devonshire's Shorthorns, and look what fabulous prices those cattle made. He did not see them, and therefore could not speak as to their real worth. There were no doubt some fine animals among them, but they could not all have been good ones, but must have been bought at such prices from other causes than their intrinsic value. The very dissemination of them, therefore, must have caused an amount of harm. One cow made 1005 gs.; it might be a good one, but he doubted whether it would have been worth half the money 25 years ago. As to Lord Dunmore's sale, two heifers were there sold for £2500. They were bought as calves, a practice which he thought was ridiculous. Even if they were good ones, they were very dear; but what would the end be? They would breed from them as long as they could, and fancy they were good ones. He could get as useful Shorthorns in the markets for a tithe of the price given by Lord Dunmore and others; but they would have blood, let the consequences be what they might. There was a sale some months ago, at which a cow sold for £100; he put that down in his catalogue as the dearest cow ever sold; but a neighbour having given £300 for one, he entered that as ten times dearer than the other. He advised them, notwithstanding, to improve the breed of their cattle as much as they could, as a well-bred animal was always in a condition to sell. He thought Mr. Hemsley's suggestion as to growing artificial grass might be adopted with the greatest benefit; but how it was to be carried out they must decide, as he was not now a farmer.

A MEMBER suggested that they would want irrigation.

Mr. SAMPEY said that Italian Rye-grass could be grown with irrigation manure.

Mr. SANDAY said it might answer to keep their cattle up.

Mr. SAMPEY said this was done at Mr. Webb's farm, where he had seen as many as a hundred kept up.

Mr. GILBERT could not help thinking that there was a great scarcity of stock in this country, which he believed could be accounted for by two sufficient reasons. Last year there was a great scarcity of all sorts of provender, stock being sacrificed through a want of keep; and another reason was that the cattle plague was now being felt. He thought they were greatly indebted to Mr. Sanday for the able paper he had read, and all members of the Chamber would look it over carefully when it was in print. As to the remark of Mr. Sanday on the use of malt in feeding, he did hope that that question, which was a very large one, would be taken up by the Chamber of Agriculture, in order to see whether they could not get that enormous duty either mitigated or done away with, so that they could use their produce in their own way. There were many national questions which he trusted the Chamber would discuss, and we must look to the press of the country to get their opinions placed before the people. They wanted to show that it was their desire to feed the people with the best and cheapest food they could produce. With the prospect now before them, meat, and even bread, must be at a high price. He could not help observing that many farmers reaped but little benefit from high prices or stock, because they had none. He had heard it remarked by butchers, &c., that there was a great deal of grass land in the country quite unstocked. He begged to move a hearty vote of thanks to Mr. Sanday for his kindness in coming before them and reading so able a paper.

Mr. COLTON seconded the motion, and hoped they would all profit by the paper. He hoped they would continue in their endeavours to impress upon the Legislature that food was getting scarcer, and that, therefore, the malt duty ought to be repealed. He did not agree that the tax should be mitigated; he thought it should be taken off altogether. Let every farmer make his own malt-house, and use his Barley in the best way he could for the country at large. Making it into malt, he contended, was for the benefit of the country at large, inasmuch as if they were allowed to do so more beef and mutton would be produced. He hoped Chambers of Agriculture would not relax their efforts on this question; and they were indebted to Mr. Sanday, with his great experience, for referring to the subject in so pointed a manner.

The motion was carried unanimously.

Mr. SANDAY, in reply, said he was only too glad to give the Chamber any information he could on subjects of this character, and he only regretted that his remarks on feeding had been so meagre, though he fully expected some one would take the matter up and continue it. As to the use of malt, they might depend upon it that anything they could say in its favour would fall short of the advantage which would be derived from the use of it. He had tried it with animals going to Royal shows, and if animals getting up for exhibition would eat malt when they would not eat anything else, and would take it when cloyed by everything besides, they might be satisfied that the advantages of malt were greater than anything else. There was nothing but milk which would give anything like the same fatness as malt. Whether it was stronger than oilcake he would not pronounce an opinion, but that malt was most beneficial to animals, whether store or fat, he was thoroughly convinced; and if he had the opportunity of saying so before a committee of the House of Commons he should be only too thankful and too glad. Mr. Barrow had written a letter to him, and he gave him his opinion, but he thought the committee was quashed, as nothing more was said about it. He begged to thank them for their kind expressions towards him, and assured them that it had given him the greatest pleasure to place his opinions before them.

A vote of thanks to the Chairman concluded the proceedings.

Farmers' Clubs.

HEXHAM.

AT a late monthly meeting of this club, Mr. J. J. HARLE, of West Mill Hills, read a paper "On Feeding in Relation to Cropping." He said: Before commencing my paper on the subject of "Feeding in its relation to the Cropping of the Land," you will perhaps allow me to review the great advances agriculture has made during the present century. The enormous price of Wheat during the great European war caused large tracts of poor land to be brought into cultivation, and the comparatively low prices of sheep and cattle made farmers chiefly depend upon the sale of their corn for the production of rent and profits. At that time only a few acres of Turnips were grown on the fallowed land, and the only manure produced on the farm was made by the consumption of Turnips and straw by cattle. Thus there were large quantities of corn sold off the farm and no manure but lime returned to it. A few years afterwards a better style of farming came in vogue. Drainage, and the assistance of guano and other artificial manures, enabled the farmer to grow all his fallowed land with Turnips; and these roots being consumed by the stock, along with a portion of the corn grown on the farm, the sales from off the land and the returns to it became more equally balanced. But since then we have advanced another stage. Feeding cakes of all descriptions have been introduced, and the great increase in the prices of beef and mutton has enabled us to consume large quantities of these cakes on the farm, generally with a profit, thus obtaining the rich manurial value of their residue often for nothing. At the present day we have, therefore, a much greater chance of keeping the land in good condition, and can bring back to the soil all the manures we sell off it in the shape of corn, &c. There is not so much necessity to slavishly adhere to the old rotations so long as we keep the sales from each field, and the returns to it in manure equally balanced. The corn crops of the rotation are generally the most profitable, at the same time being the most deteriorating for the soil, whilst the green crops, as Turnips, seldom pay for their expenses, but are the chief means by which the condition of the soil is again renovated.

Turnips being the keystone, as it were, of every rotation, I shall briefly consider the best means to render the crop profitable and increase the fertility of the soil. The too frequent growth of this crop is, perhaps, one of the chief reasons why we have now so much difficulty in getting a full plant and regular crop, for it has often been noticed how much quicker the Turnips braird and how much more vigorous is the growth on the higher lands in this district, which lie longer in grass, than on the more anciently cultivated lands in the valleys which are cropped on the four-course rotation. And, as the root crop is generally so unprofitable, we should try to keep the land clean and in good condition, with few crops of Turnips, compared with the better paying corn crops. This can be done by consuming the greater bulk of the Turnips on the land by sheep, with a liberal use of cakes, and still keeping the usual number of cattle in the yards with the remaining Turnips and cake and meal. It is frequently the practice to cart off one-half and sometimes the whole of the Turnips. If manure be applied to the Turnip crop alone, and we remove the bulk of the roots, we leave comparatively little in the land to grow the corn crops of the rotation, and the soil is never in a very good condition.

The Consumption of Turnips by Sheep.—As a general rule, where the dryness of the land allows it, it is as profitable to consume Turnips on the ground with sheep as to remove them to the buildings for cattle, and we save the cost of pulling and carting. I would suggest that two-thirds be eaten on the ground, and one-third carted off for the cattle. Care should be taken to remove the same proportion from each field; but, if any field be so distant as to cause too much expense in carting, that field should be sown with artificial manures, and the whole eaten on the ground; there will thus be a larger quantity of farmyard manure for the fields nearer home, and these will be able to stand having more roots carted off them. The extra quantity of Turnips to be eaten off with sheep would make us require a larger number of sheep than we keep at present, and our grass in the autumn would not, perhaps, be sufficient to keep them; but this could easily be remedied by placing the sheep on Turnips earlier in the autumn. One field might be sown with white Turnips early in May, which would be full grown and ready to be consumed about the end of September. I cannot see the reason why we are usually so late in beginning to use our Turnips in this district; in the south, I have frequently seen the sheep eating full-sized Turnips in the end of August; and if, taking the chance of mildew, we can get the Turnips to their full growth by the end of September, we will surely get more benefit from them than eating them in November and December when the land is wetter. By so doing we might, at that dry season, eat Turnips on some of our strongest land, and get it sown with Wheat before the wet autumn weather commences. We have no conclusive proof that the liberal use of cake during the whole winter is a more profitable way of feeding sheep than the more common way of only giving them corn in the spring; but I think common sense shows that it must be wrong in principle to feed any animal wholly on Turnips, which contain only 10 per cent. of dry food, whilst grass, their natural food, contains 25 per cent. This is conclusively shown by an experiment at Rothamsted, where several sheep were fed on dry hay, with liberty to drink water *ad libitum*—each sheep drank on an average 6½ lb. of water daily. Now an ordinary sheep will eat 20 lb. of Turnips daily, containing 18 lb. of water, so that an animal fed wholly on Turnips is obliged to take nearly three times as much water as it probably requires. This excess of water must act prejudicially, especially in the cold months of winter. A great difficulty is sometimes experienced in getting the hoggs to commence to eat their artificial food. A very good plan is to give the ewes and lambs a little cake, for a week or two, after lambing; the lambs soon learn to nibble at the troughs, and never forget the training of their early youth, and no difficulty is then found in the autumn. Supposing the hoggs to be placed on Turnips early in October, they should have, if possible, an outrake upon a grass field for a certain portion of the day, for a change of food. The shepherds on the Cotswolds are very particular about a change of food to make the sheep thrive, and very often fold their sheep on Rape for one half of the day, and on Clover aftermath during the other half. In the autumn a large proportion of the dry food should be bran, as it is a good corrective to the system, and the sheep should also have access to the salt; rock salt will be readily licked by the sheep, but it will be given more regularly to the whole of them by mixing a small quantity of salt amongst the bran, cake, &c., when they are mixed together in the feeding house. The outrake for the sheep should be, if it can be contrived, grass land that is intended for corn during the next season, the manure from the sheep putting the land in capital condition for the Oats. As the autumn advances, and the grass on the outrake is consumed, the sheep should have dry fodder supplied to them in racks. Hay is the best food for this purpose, but it is too expensive; pea-straw is readily eaten by the sheep, and is very nutritious and wholesome when well won, and a very much cheaper food than hay. By the middle of January the softer varieties of Turnips ought to be consumed, and the sheep have cut Swedes given to them in troughs; and the quantity of cake and corn be slightly increased every month through the winter. From this period to the middle or end of March the sheep should be folded regularly over the Swede land, the Swedes being cut into troughs from heaps placed at equal distances from each other over the fields. By this means we manure all the Turnip land equally, and if the major part of the roots have been eaten on the land, and the sheep have been liberally fed with cake, the soil will be in very good condition for the rest of the rotation. A very important point is the manner in which the Turnip land is sown with corn. If it has been poached by the sheep during wet weather it will be soddened, and all the stirring and loosening of the soil for Turnips will be lost. Owing to the quick growth of Barley, and being a shallow-rooted plant, it can extract little or no nourishment from clods or hard stiff soil; to obtain the maximum benefit we must therefore have the land thoroughly pulverised and loosened for this crop, taking care to keep the manure as near the surface as possible. This is done most effectively by the use of the steam cultivator, followed by the steam harrow, as by these implements the soil can be thoroughly pulverised to any depth we like, and the manure be still retained near the surface. With horses, the land should be ploughed during the winter as soon after clearing it as possible, and allowed to be weathered by frost until the sowing season, when it can either be ribbed for sowing broadcast, or drilled on the stale furrow. If the weather is very dry, and the furrows turn over stiff and in large lumps, a grub-harrowing, followed by the scrubber, will be very effective.

The Consumption of Turnips by Cattle.—The number of cattle that can be kept, if only one-third of the roots are carted off the land, of course, entirely depends on the quantity given to them daily. In the north we frequently give them Turnips *ad libitum*, and they often eat 150 lb. daily; whilst in the south of England only a small quantity is given. On the college farm at Cirencester, for example, the feeding cattle receive 30 lb. of roots per day, and no more cake and meal than we give them, but they consume large quantities of cut straw. It seems most natural and economical to give the cattle no more Turnips than will supply the animals with water, and 80 lb. per day, containing 7 gall. of water, will probably be near the mark. On this quantity 1 ton will supply each animal with roots for one month, and if we feed each animal, on the average, five months, 5 tons will be consumed during the season. If we calculate our crop of Turnips to be 15 tons per acre, and cart off one-third, or 5 tons for the cattle, then with that proportion drawn off the land we can feed one beast for every acre of Turnips, which is above the average number fattened in this district at present. The supply of meal and cake to feeding cattle is a very important point. Some Norfolk farmers give as much as 14 lb. of oilcake per day, but it is very questionable whether such large quantities are profitable. There is no doubt a great difference amongst animals as well as men, with regard to their appetites and digestive powers, but there will be a limit to every one, and if more concentrated food be given than can be digested, the excess will pass through the intestines and be voided along with the indigestible woody fibre, and therefore wasted. On the other hand, the animal requires a certain amount of food for respiration and to repair the waste in the system, and if that amount of food only be given, it will remain in the same condition. If we assume, for the sake of argument, that 4 lb. of cake be required daily to keep an animal in the same condition, and that by giving it 6 lb. daily it becomes fat in 20 weeks, then 40 stones will have been consumed in keeping the animal alive, and 20 stones in making it fat. But if we give 8 lb. daily, in ten weeks 20 stones will have been consumed in fattening the animal, and only 20 stones in keeping it alive; and if, as we may naturally suppose, the animal has become as fat or nearly so, in ten weeks, the shorter and heavier feeding must be the more economical. We cannot, therefore, feed cattle too highly, as long as the animal can assimilate the food. Besides the fattening cattle, a large number of store cattle may be kept without any Turnips, by giving them 3 lb. or 4 lb. of cake, with good straw and plenty of water. The manure made by them will be richer and better than if they had lived on Turnips and straw; and the cattle will be cheaper and better kept if the labour of pulling and carting the roots be considered. And if we are once convinced that the cattle will pay for the cake, the more we use the better the condition we make the land, and we cannot bring too much of such manure on to the farm, if we can get it for nothing.

Foods.—I will now make a few remarks about the manurial value of foods. We have no certain data to show how much of the manurial value of foods goes into the farmyard manure, more especially as the quantity assimilated varies so much in different animals. Thus, in lean cattle and cows a large quantity of nitrogen will be absorbed into the system to form the muscular tissues, and phosphates to build up the bones of the growing animals. On the other hand, fat cattle assimilate a much smaller proportion of these manures for their food, and two-thirds of their increase is pure fatty matter, which is of little or no value for manure. There are only three ways that the food can go. First, the increase; second, the manure; third, for the animal heat and respiration, and to repair the waste of the body. The food used for heat and respiration is chiefly non-nitrogenous organic matter, of little or no value for manure; whilst the nitrogenous matter used to repair the waste of the muscular tissues and the mineral salts absorbed into the blood, after they have served their purpose, pass out into the manure. Thus nearly all the manure in a food that is not stored up in the increase goes into the farmyard manure. According to the experiments of Lawes and Gilbert on some sheep, only one-thirtieth of the mineral matter and one-twentieth of the nitrogen was extracted from the food to lay on the increase. We shall, therefore, be on the safe side if we consider nine-tenths of the manure in a food to be passed through the system into the farmyard manure. The value of cakes as manure is generally much higher than that of Barley, Oats, &c. Thus, the percentage of nitrogen in cakes is from 4 to 6½, whilst in Oats and Barley it is only from 1½ to 2 per cent., and the percentage of bone earth in cakes is from 5 to 7, and in Oats, &c., generally from 1½ to 3 per cent. An extreme example of this difference is shown in the comparison of Barley and decorticated cotton cake, which are generally the same price per ton in the market:—

Cotton cake, 7 per cent. of ammonia, worth £5 5s., and 7 of bone earth	£1	8	0
Barley, 2 per cent. of ammonia, worth £1 10s., and 1 8 of bone earth	0	7	0

If we deduct one-tenth of this value for loss, the cotton cake will be worth £6 per ton for manure, and the Barley £1 13*s.* 6*d.* From these figures it will be seen that the consumption of cake enriches the land much more than our own produce.

Modifications in Cropping Land.—When we consider that a crop of Turnips if taken off the land remove more manure than two crops of Wheat or Barley, the consumption of two-thirds of the crop on the land, along with cake, ought to put the land in a very high condition, and capable of bearing two or three crops of corn. Several of the high farmers in the South grow two crops of corn after the Turnips, with very good results; and when we consider the greater value the manure from cake is than from corn, it is easily seen that an extra crop of corn might be grown in the rotation without deteriorating the condition of the land, if a corresponding quantity of cake was consumed on the farm. And, if we could grow three average crops of corn for every crop of Turnips, our farming would be much more profitable than growing two as at present. In this district we seldom grow good crops of Wheat, as the bulk of it is sown in spring after Turnips. If we substituted Barley after Turnips, and then grew Wheat after the Barley, we would get it sown in October—the proper season. I have been much ridiculed for attempting to grow Wheat as a second corn crop, but if we consider that Wheat is longest on the ground, and that in spring the roots are extended underground in all directions, we will see that it has a greater chance of flourishing in an exhausted soil than the shallow-rooted plants of Oats or Barley, which have no time to search for their food. Instead of sowing Clover and grass seeds at the end of every rotation, I would grow some other crop, as Peas, Potatos, or Rape; or, instead of these crops we might miss the Clover crop, and grow, after Turnips, two white crops, and then Turnips again, as many farmers have been obliged to do lately on account of the failure of the seeds. By so doing we are more certain to obtain a good crop of hay, if it is only sown once in eight or ten years, and the grass will probably make a good pasture for two or three years. There is no doubt that the sowing of grass seeds every four or five years has resulted in almost a total failure. On the other hand, I have several times noticed that the only good crop was on that field which had not been grass for eight years previously. Potatos might be grown on part of the land that should have been seeds. It is much better for the land to grow Potatos at this stage of the rotation than on the portion for Turnips, for if the soil be dunged for Potatos now, it will be thrice dunged during the ten years of the rotation; whereas if grown on the Turnip land, it would only receive two manurings during that time, and an extra one is requisite for this crop. Peas or Beans might be grown, accordingly as the land was light or heavy. They are generally very nearly as profitable as a corn crop, and are a change to the soil; the pea-straw is, besides, especially valuable to sheep or Turnips during winter. Tares are also a good substitute for the Clover crop, especially on land infested with weeds, as any annuals, such as Charlock, Poppies, &c., will be cut before they have ripened their seeds, and if the land be full of Couch-grass, or "quickens," it can be cleaned by a bastard fallow during the summer after the Tares have been cut. Tares are not generally a profitable crop, as the food obtained seldom pays the expenses of rent, seed, and cultivation, but they are sometimes absolutely necessary to some farmers in dry seasons, and materially lessen their consumption of artificial foods. In certain districts of the south of England, a large extent of Tares are consumed on the ground by sheep. An average crop is considered to maintain 100 sheep for one week. The land is ploughed immediately afterwards, and sown with white Turnips, but I should think these two crops will seldom pay their expenses, and are generally grown to keep light soils in good condition, and maintain the large stock of sheep which are usually kept on the light land farms in the south of England. On soils naturally poor, or out of condition, Rape might be grown instead of the Clover crop. At this stage of the rotation (being only the second crop after Turnips) the land ought to be clean, and having been ploughed in the autumn, one grubbing, and a little harrowing in the spring ought to be sufficient. The Rapeseed should be drilled in rows from 18 to 20 inches apart, and might receive 30*s.* per acre of artificial manure. This will increase the crop of Rape, and all the benefit of the manure will go to the succeeding corn crop. I believe much more produce would be obtained from Rape if sown earlier in the season. When sown about the first week of May the seed would be certain to germinate, and the crop would be ready for the sheep probably by the end of July, and would be a valuable food for fat lambs, or for the hoggs when the grass has begun to fail. After it has been eaten down, the stems will shoot up again, and if we have an average rainfall, there would be a fair crop again in the autumn, which would be much appreciated by the breeding ewes. If any extent be grown of the crop, portions should be sown at intervals of two to three weeks, to afford a succession of meat for the sheep. All these crops, grown instead of Clover, may be sown with Wheat in the autumn, which is a great advantage, as Wheat is not found to answer after grass in this district, and the great bulk is not sown until spring. The autumn-sown Wheat is more certain and generally a heavier crop than the spring-sown; indeed, by some authorities it is considered to be heavier by 3 or 4 bolls per acre. By sowing Wheat at this part of the rotation we decrease the acreage of Oats after lea, and increase in proportion the extent of Wheat and Barley, which is very desirable; as although the oat-straw is the most valuable of the straws for fodder, yet the value of the corn is considerably less per acre than Wheat or Barley, and is more difficult to dispose of, especially since Indian meal and Beans have begun to be partly substituted for Oats in feeding horses. Another advantage of having autumn Wheat after Peas, Beans, &c., is that we are not compelled to sow so much Wheat after Turnips as we generally do in this district. Unless we have a favourable seed-time, the Wheat sown on land after Turnips, generally ploughed barely dry, and which has probably been poached by sheep, is very often a thin and poor crop; but if it had been ploughed as it was cleared, and weathered by frost until spring, and then sown with Barley, the crop would probably be more remunerative, and the soil would be in a more friable state for the reception of the grass seeds. It is the combination of high feeding with heavy corn crops that produce the real profits of the farm; and it should be the object of every farmer to keep as much stock, and thus consume as much cake, &c., as he profitably can. By doing so, he will bring on to his farm substances unfit for human food, but rich in manure, and will be enabled to produce more meat and corn. It would also greatly benefit the landowner, if he enabled the tenant to farm highly, by giving him the security of a lease or tenant-right, and less restrictions in cropping his land; for the land will pay more rent if corn crops be more frequently grown, whilst its fertility will not be diminished if the artificial manures and the cake consumed be equal in manurial value to the increased quantity of corn sold off the farm.

A vote of thanks to Mr. Harle for his paper concluded the proceedings.

Farm Memoranda.

WEST SUSSEX: *Sept.* 19.—Harvest is now completed, and, on the whole, has been secured in good order. And now there are a good many samples of new Wheat in the market, and some of it is good and heavy, but the yield is said to be very bad—from 20 to 25 per cent. below last year. Some of the best land has turned out very badly; the wireworm destroyed a great deal of it, and owing to the dull weather the rest did not fill up as a thin plant usually does; and as weeds come to fill up all blanks, some of the stubbles are in a very foul state.

Barley will not be a heavy crop, and very little of it will be a good sample, and more than usual may be used in fattening, as meat is so dear. Oats will turn out well, and are already at rather a low figure.

We have abundance of grass in the fields, and lean stock are dear. The hay crop, on the whole, may be put at an average; though a good deal of the first crop was spoiled, there has been more than the usual quantity of second cut made, but some of it has been spoiled, and we do not expect hay to be very dear this winter. There is a great quantity of good oat and barley straw that will be useful for store stock, and with a mild autumn they will cost less than usual to keep.

Potatos, though a little diseased, are a good crop. The disease does not appear to be quite the same as formerly; it struck sharply during one or two days, and after that did not spread, and very few Potatos were hurt; those that were hurt had all rotted entirely before digging, and there are now no partially diseased ones, as has hitherto been the case, and they are likely to keep better. Carrots have suffered from wireworm, and there are many blanks among them; and far more than usual have run to seed. When early sown there are always a few do so, but this year a great many more than I have ever seen. Perhaps it is owing to the very changeable weather we have had,—cold nights, often with frosts in May, partly checking the growth, and then bright sunshine, with heat following, started them again. The weather is now very favourable for working the land, and Pea stubbles will be got in good order.

The root crops are not at all up to the mark. Mangel, as a rule, are small, as they may be expected to be. Swedes are not good, and many of them are now going from the effects of grub and wireworm, and there are many blanks in the fields, both of Swedes and Turnips, so that we shall require all the extra grass to compensate for the root deficiency.

Lean stock are still dear, but sheep are not in such great demand as they were, as some fears are entertained for the supply of winter food.

Taking the season altogether, it can hardly be favourable to the corn and grazing farmer, but rather so to the stock farmer; but many corn farmers, who are obliged to sell corn to pay Michaelmas rents, have to bring more acres into the market than usual, and by-and-by the home supply will fall off, and prices may be expected to rise. *G. S.*

The Week's Work.

September 23.—*Seed Clover* is harvested about the close of the month. Wait for fine weather, as the crop should be secured dry.

Winter Beans are grown either in ridges or on the flat, and in lighter land than what is generally termed Bean soil. The cultivation and seeding is very diversified. They are now mostly grown in rows from 18 to 27 inches apart for horse-hoeing, but we have sown broadcast on an Oat stubble both with and without manure, and ploughed them in with a light furrow; or the Beans are sown broadcast on the Wheat or Oat stubble in the same way, with or without manure, but generally a slight manuring and the land ridged up with a double-furrow plough, or a bout of a common plough, which gathers the manure and Beans into a row in the centre. When grown this way the rows are sometimes 30 inches apart, with 15 to 18 inches clear for horse-hoeing when the Beans come up in narrow beds 12 to 15 inches broad. If a light soil is set up deep, the drills will require rolling to let out the Beans equally, and on strong clays a light harrow may be needed to cover the seed. In the above examples the seed may be sown with a Bean-barrow at the back of the furrow in ridging, and in the bottom of every second furrow, where the crop is grown on the flat on lands liable to drift in winter. Another plan is to smash up the stubble, manure and drill, or manure on the stubble, smash up and drill at one operation by steam, and either dibble or drill in the seed by machine. But where the weather and season will permit, the more advisable course is to give the land a more thorough autumn fallow than above, in August if possible, or as early in this month as the work can be done, ridging and manuring as for Potatos and Carrots, and then either dibbling or drilling in the seed with a machine, or the seed may be sown with a Bean-barrow over the manure, 2 bushels per acre.

Potatos.—Harvesting the main crop usually commences this month, South and North. When dug with a three-pronged fork, a man will keep two women or boys gathering with baskets. When the Potatos are turned up by a common or double mouldboard-plough, or potato-plough with skeleton mouldboard, a man will shake out to six or eight gatherers. The Potato digger turns up and shakes out the Potatos, thus dispensing with manual labour both in digging and shaking out. A cart goes alongside the gatherers, into which the Potato-baskets are emptied, the duty of the carman being to empty the baskets so as to keep the gatherers going, and when the cart is full an empty one is ready to take its place. Potatos are stored either in barns or pits, the latter about the breadth of the cartwheels outside, so that the loaded carts can readily be backed into them. The pits are first covered with straw and an inch or so of earth, not quite up to the ridge, and when the "sweating" is over it is covered with from a foot to 15 inches of earth, with straw vents at intervals along the ridge for ventilation. Those who market immediately sort their Potatos in the gathering into three qualities; the first for sale, the second for seed, and the third for pigs. The more common practice is to pit the whole sound crop, and when sold to sort them by means of Potato-riddles, the width of the mesh being a matter of agreement. If there is any part of the field more promising than another for seed, the crop on that part should be pitted by itself, and in gathering the two extremes of unshapely large and premature small, so to speak, may be separated for pigs.

Manuring for Potatos, Carrots, Mangel Wurzel, and spring Beans and Peas, and the prior fallowing of the land, should be proceeded with without delay; and also the autumn fallowing of land for manuring for Swedes and Turnips at the time of sowing. In all such cases the land should get a thorough deep tillage, not less than 15 inches. Where it has been previously ploughed to this depth we prefer turning up the bottom to the weather by the plough, but where it has only been ploughed some 6 or 8 inches deep, smashing, subsoiling, or digging by steam is preferable, the subsoil in very few cases being perfectly sound. In late districts, where the harvesting of the Oat crop is only just concluded, the fallowing should be done at one operation, by steam in preference to horses, and if the weather will permit of manure being applied the manuring should keep close to the ploughing or smashing of the stubbles, so that when overtaken by heavy rain the work may stop, until the weather breaks up, when the manuring of the newly ploughed or smashed land may be resumed; when otherwise, had the manuring of the newly ploughed land been allowed to fall behind, the carting after the rain could not be done so well, if at all. The stubbles may now be smashed and ridged for manure by steam at one operation, so that the manure-carts can go alongside the implement, the small heaps being left upon the stubbles and spread on the newly opened drills while the implement in returning is covering the manure in the last two or three drills.

The Dairy.—In our southern counties September is a good dairy month, the temperature being favourable for the operations of making either butter or cheese; but towards its close that great enemy, a damp atmosphere, begins to be felt, more especially on the west coast; hence the prudent maxim is to light the stove in time, not only to keep things dry and free from mustiness, but also to ventilate the milk-room and cheese-room when the windows are closed.

Notices to Correspondents.

Poultry: *C. B., Charing.* Your Hamburgh hen, in all probability, was pecked or wounded by one of her companions, and as at this time of year when all birds are moulting, and consequently very tender in flesh and feather, the scar that at other seasons would have passed unnoticed assumed an importance that would not otherwise belong to it. The substance of which you speak as having been easily removed by a pen-knife is of a tubercular nature, common to fowls and pigeons. The stoppage of the other nostril is rather a point against the health and condition of your birds. To the wound we should apply caustic; for the discharge we should commence with a treatment of castor-oil, and give a vegetable diet as far as possible.—Nos. 2 and 3: In showing silver-grey Dorkings you have no two shades of colour. As soon as a bird deviates in any point from the colours laid down for the silver-grey class it would, by good judges, be disqualified or passed without notice. In breeding Hamburghs, with any idea of success, whether for sale or exhibition, the greatest care is necessary. Your idea as to breeding between the golden and silver birds would result, in all probability, in great disappointment.

Small Steam-Engine for Dairy Farm: *H. P.*, speaking of himself as the holder of a mixed dairy and arable farm, the former predominating, asks if any one has found it a paying process to buy a 2 or 2½-horse power steamer exclusively for chaff-cutting, pulping, &c., as he has hitherto been unable to hear of any case where this has been done in his locality (Vale of Blackmoor, Dorset); nor can two of the local implement-makers inform him of any such case, although some cut chaff with threshing-engines.

Markets.

HOPS.

Borough Market, Sept. 21.

Messrs. Pattenden & Smith report a steady demand for all good samples of the new growth, late rates being well maintained. Quotations:—Mid Kents, £9 to £12 12*s.*; Weald of Kent, £8 to £10 10*s.*; Sussex, £7 10 to £9 per cwt. Yearlings command a fair amount of attention, at enhanced values.

METROPOLITAN CATTLE MARKET.

Monday, Sept. 18.

The number of Beasts is about the same as last Monday; choice qualities are, however, scarce, and realise a small advance. On the average trade may be quoted about the same as last week. The supply of Sheep is unusually small for the time of year; the trade is not brisk, but choicest qualities are rather dearer. Choice Calves continue to be scarce and dear. Our foreign supply consists of 3020 Beasts, 11,270 Sheep, 311 Calves, and 10 Pigs; from Ireland there are 100 Beasts; and 1710 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 8 to 6 0	Best Long-wools	6 6 to 6 10
		Do. Shorn ..	.. — ..
Best Shorthorns ..	5 6—5 8	Ewes & 2d quality	5 4—5 8
2d quality Beasts	4 0—4 8	Do. Shorn ..	.. — ..
		Lambs ..	.. .. — ..
Best Downs and Half-breds ..	6 8—7 0	Calves ..	.. 4 4—6 8
Do. Shorn ..	.. — ..	Pigs ..	.. 4 0—5 4

Beasts, 4830; Sheep and Lambs, 20,630; Calves, 319; Pigs, 75.

Thursday, Sept. 21.

There are not quite so many Beasts as on last Thursday, and the demand is good; consequently Monday's quotations are well maintained. The supply of Sheep is shorter, and choicest qualities readily disposed of at fully late rates; trade was, however, dull towards the close. Trade is not so brisk for Calves as of late, and prices are rather lower. Our foreign supply consists of 370 Beasts, 4680 Sheep, and 343 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8 to 6 0	Best Long-wools	6 6 to 6 10
		Do. Shorn ..	.. — ..
Best Shorthorns ..	5 6—5 8	Ewes & 2d quality	5 4—5 8
2d quality Beasts	4 0—4 8	Do Shorn ..	.. — ..
		Lambs ..	.. .. — ..
Best Downs and Half-breds ..	6 8—7 0	Calves ..	.. 4 0—6 4
Do. Shorn ..	.. — ..	Pigs ..	.. 4 0—5 4

Beasts, 1220; Sheep and Lambs, 9840; Calves, 450; Pigs, 35.

METROPOLITAN MEAT MARKET, *Sept.* 21.

Best Fresh Butter	17*s.* per dozen lb.
Second do. do.	15*s.* „

Small Pork, 5*s.* 0*d.* to 5*s.* 4*d.*; Large Pork, 4*s.* 2*d.* to 4*s.* 8*d.* per 8 lb.

HAY.—*Per Load of* 36 *Trusses.*

Smithfield, Thursday, Sept. 21.

Prime Meadow Hay	95*s.* to	110*s.*	Clover, old ..	..130*s.*	145*s.*
Inferior do.	50	70	Inferior do. ..	.. 60	100
New Hay	—	—	Prime new do. ..	—	—
Inferior do.	—	—	Inferior do. ..	.. —	—
Straw	36	45			

Cumberland Market, Thursday, Sept. 21.

Sup. Meadow Hay	110*s.* to	120*s.*	Inferior Clover ..	84*s.* to	140*s.*
Inferior do.	70	100	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	160	170			

Joshua Baker.

MARK LANE.

Monday, Sept. 18.

The supply of English Wheat from Essex and Kent to this morning's market was again moderate, and although we do not alter our quotations, millers were reluctant buyers, and many samples were left unsold at a late hour. The attendance was fair, but only a very moderate demand for foreign, at a decline of 1*s.* per qr. upon the prices of this day se'nnight. Barley, Beans, and Peas were unaltered. Oats a slow sale, and rather less money was accepted for anything but good qualities. Flour not so much sought after. Mustard seed firm, at our quotations.

Price per imperial Quarter.	*s. s.*		*s. s.*
Wheat, Essex, Kent, Suffolk..White	56—61	Red......	55—59
— fine selected runs ....do.	59—63	Red......	58—60
— Talavera	61—63		
— Norfolk	—	Red......	—
— Foreign	50—67		
Barley, grind. & dist., 26*s* to 31*s*..Chev.	—	Malting ..	33—35
— Foreign .. grinding and distilling	28—31	Malting ..	—
Oats, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24 26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
Rye	31—33	Foreign ..	—
Rye-meal, Foreign..................			
Beans, Mazagan....—*s.* to —*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
Peas, White, Essex, and Kent..Boilers	—	Suffolk ..	—
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	34—38
Maize	—	Foreign ..	29—31
Flour, best marks, delivered..per sack	—		
— 2d ditto ....ditto	—	Country ..	—
— Foreign ....per barrel	24—28	Per sack..	38—60

Wednesday, Sept. 20.

The grain trade to-day presented a quiet appearance. The supplies of English grain were more liberal, but from abroad the arrivals were less extensive. Transactions were much restricted, and the tendency of prices was unfavourable. Choice Barley sold to a fair extent, at steady prices; but other qualities were dull, and in some instances easier. Malt sold slowly on former terms. The arrivals of Oats were good; the inquiry was inactive, and prices generally favoured buyers. Maize was firm, with a fair demand. Beans were quiet, but prices were maintained. Peas met with a slow sale, at recent values. Flour was dull, at drooping prices.

Arrivals of Grain, &c., into London by Water Carriage.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	129	20	—	—
Irish ..	—	—	—	—
Foreign ..	4000	1460	30,780	370 — brls.
	4129	1480	30,780	

Liverpool, Sept. 19.—The market was well attended, but the transactions in Wheat were unusually limited, American and other red descriptions declining 3*d.* to 4*d.*, and white 2*d.* per cental on the rates of this day week. Flour was without change, the extra qualities commanding full prices. Beans lost the improvement of Friday. Peas quite 1*s.* per qr. dearer. Indian Corn went slowly into consumption, and prices were reduced to those of Tuesday last.

Averages.

	Wheat.	Barley.	Oats.
Aug. 12	58*s* 5*d*	35*s* 11*d*	26*s* 6*d*
— 19	57 10	35 9	27 6
— 26	57 4	32 7	26 7
Sept. 2	57 2	35 0	26 4
— 9	56 6	35 1	26 0
— 16	56 7	35 8	24 9
Average ..	57 4	35 0	26 3

SEED MARKET.

Our markets exhibit the same quiet but firm tone noted in our last; the autumn trade this year is an exceedingly poor one. In Clovers there is nothing passing. Trefoil seed excites but little attention. Winter Tares are in limited request, and are obtainable for less money. Rape seed continues scarce and dear. In white Mustard seed the tendency of prices is upwards. Bird seeds are quiet. New Rye is firm, at the recent advance. There is a fair trade doing in seed Wheats for France. Large Blue Peas are in good demand. Rye-grasses are dearer; French Italian is without alteration.

John Shaw & Sons, Seed Merchants,
16, Water Lane, London, E.C.

ENGLISH WOOL.

Business during the past week has been somewhat limited, but solely owing to the high prices now asked, and which for the moment leave no margin to manufacturers. It is still, however, the prevailing opinion that next month will see a fresh start in the upward direction.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the SCORCHING RAYS of the SUN.
WOOL NETTING, 2 yards wide and 1*s*. 6*d*. per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1*s*. 9*d*. per yard.
Three yards wide	2*s*. 8*d*. per yard.
Four yards wide	3*s*. 6*d*. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d*. to 8½*d*. p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d*. and 8¾*d*. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.
NOTICE.—Removed from 7, Great Trinity Lane.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

For Double Ploughs,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, E.C.

THE STEAM-ENGINE TRIALS
OF THE
ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz. :—
First Prize for Horizontal Fixed Engine of 10 H.P.; First Prize for Steam Engine, with Boiler combined.

At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N.B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.

GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN;
78, LOMBARD STREET, LONDON, E.C.; and TARLETON STREET, LIVERPOOL.

GRAY'S OVAL TUBULAR BOILER.
INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

J. C. & J. S. ELLIS,
HORTICULTURAL ENGINEERS,
NORFOLK FOUNDRY, SHEFFIELD,
MANUFACTURERS and ERECTORS of HOT-WATER APPARATUS
OF EVERY DESCRIPTION, FOR
HEATING GREENHOUSES, CONSERVATORIES, HOTHOUSES, CHURCHES, PUBLIC BUILDINGS, PRIVATE RESIDENCES, WAREHOUSES, &c.

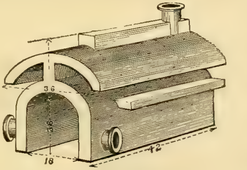
The great advantages of these Boilers are :—

The fire acting directly under the flow pipe, the water begins to circulate immediately.

The Flues all being formed by a continuous water-way, the fire and all the hot gases are brought in direct contact with the heat-absorbing surface of the Boiler, thereby giving a greatly increased amount of power, and by which an immense saving of fuel is effected.

These Boilers offer great facilities for banking-up the fire, and will burn easily from 12 to 14 hours without attention.

The arrangement of Soot-doors in the brickwork is such that all the flues can be cleaned in a few minutes.



PATENT DOUBLE-ARCH BOILER.

TESTIMONIALS.

"The Gardens, Chatsworth, January 19, 1871.

"DEAR SIR,—After using your Patent Double-Arch Boiler for the past 12 months, enables me to speak with a practical knowledge of its merits; and I have no hesitation in saying, out of many Boilers, of all sorts of construction, we have in use, it is the most efficient, and I believe it to be the best Boiler extant; neither do I think there is another that exposes so much surface to the direct action of the fire. Its efficiency, economy in fuel, and the minimum of attention, renders this Boiler a valuable improvement in Horticulture, and it reflects great credit on your good sense in designing it. I shall be glad to show the one I have in use to any person calling at Chatsworth.

"Mr. Ellis." I remain, dear Sir, yours truly, "THOMAS SPEED.

"Westbourne Gardens, Sheffield, October 27, 1870.

"DEAR SIR,—Your Patent Double-Arch Boiler, that you have put down for us lately, to heat the whole of our houses, answers admirably. Its heating surface exceeds all others which I am acquainted with. The small amount of fuel required, the way it is set, and the arrangement of soot-doors, renders it the most complete and economical Boiler I have had to do with.—Believe me, Sir, yours truly,

"Mr. Ellis, Norfolk Foundry, Sheffield." "W. H. BIRD.

Horticultural Buildings.

A. SHANKS AND SONS' CATALOGUE of HORTICULTURAL BUILDINGS in IRON and WOOD, including DESIGN of GRAND WINTER GARDEN recently erected by them in Edinburgh, will be forwarded on receipt of 30 postage stamps.

Dens Iron Works, Arbroath, Forfarshire; and 27, Leadenhall Street, London, E.C.

Greenhouses and Conservatories.

H. FREEMAN AND SONS' HORTICULTURAL WORKS, 106, Mare Street, Hackney, E. Established 25 years.

Good substantially made GREENHOUSES, glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15; a handsome CONSERVATORY on hand, 35½ feet by 18 feet, £110; Nurserymen's LIGHTS, £25 per 1000 feet.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

6. Bankside, Southwark, London, S.E.

The Patent Imperishable Hothouse.

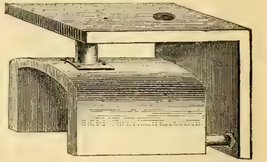
AYRES'S PATENT.
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the

IMPERISHABLE HOTHOUSE COMPANY,
Newark-upon-Trent, Notts.
MANAGER—W. P. AYRES, C.M.R.H.S.,
Forest Road West, Nottingham.

Plans, Specifications and Estimates supplied upon the shortest notice.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



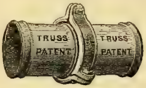
These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 ,,	18 ,,	24 ,,	450	6	0	0
20 ,,	18 ,,	30 ,,	600	7	0	0
24 ,,	24 ,,	24 ,,	700	8	0	0
24 ,,	24 ,,	30 ,,	850	10	0	0
24 ,,	24 ,,	36 ,,	1,000	12	0	0
24 ,,	24 ,,	48 ,,	1,400	15	0	0
28 ,,	28 ,,	60 ,,	1,800	20	0	0
30 ,,	30 ,,	72 ,,	2,600	30	0	0
36 ,,	36 ,,	96 ,,	4,500	50	0	0
48 ,,	48 ,,	108 ,,	7,000	75	0	0
48 ,,	48 ,,	144 ,,	10,000	100	0	0

And are kept in Stock and sold only by the Inventors and Patentees,

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

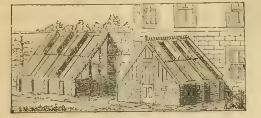
No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½*d*. per yard run.
No. 2.—54 inches wide	at 7*d*. per yard run.
No. 3.—54 inches wide	at 5½*d*. per yard run.
No. 4.—54 inches wide	at 4*d*. per yard run.
No. 5.—54 inches wide	at 5½*d*. per yard run.

In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.
Manufactured in London; Ulverstone (Lancashire); Gloucester Coventry; Paisley, and Aberdeen, only.



Illustrated Price Lists free. A Pamphlet, with Views of these and other styles of Glasshouses, post free, 3*d.* Estimates given for Conservatories, &c., to any design in Wood; also for Heating Apparatus.

HEREMAN AND MORTON, Horticultural Builders, 14, Tichborne Street, Regent Quadrant, London, W.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating GREENHOUSES, HOTHOUSES, CONSERVATORIES, CHURCHES, PUBLIC BUILDINGS, &c

Improved Conical.

Tubular Boiler

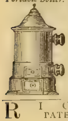
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s* 6*d.* each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s* each.

Portable Boiler.



Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

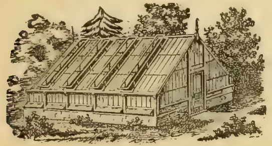
INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

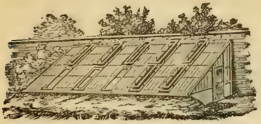
Elliptic Boiler

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S E (Surrey side Blackfriars Bridge). Price List on application.

RICHARDSON'S
PATENT HORTICULTURAL BUILDINGS





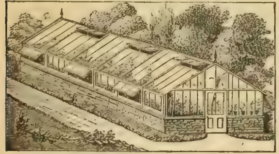
Are STRONG, DURABLE, ORNAMENTAL, and CHEAP. The MOST PERFECT SYSTEM OF VENTILATION, combined with COMPLETE PROTECTION FROM THE WEATHER. A free and copious circulation of air in any length of range obtainable instantaneously through every part, or at the top alone, by a single handle.

These Houses are PORTABLE, and most easily fixed, without the disturbing of any glass, the use of nails, or a screw-driver.

Improved Portable and other kinds of GREENHOUSES, CONSERVATORIES, &c., of the best construction, designed and supplied, carriage paid, to any part of the country.

Illustrated Price Lists free on application to the Makers, enclosing a stamp for postage.

Apply to W. RICHARDSON AND CO., Horticultural Builders, Darlington.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

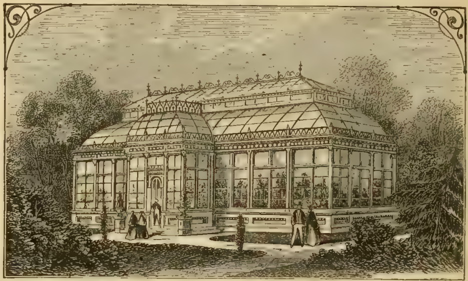
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

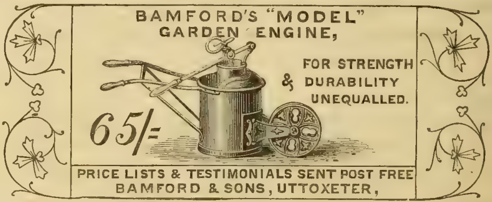
Estimates given for Conservatories or Greenhouses to any Design.

ST. PANCRAS IRON-WORK COMPANY.



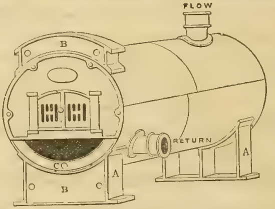
CONSERVATORIES, GREENHOUSES, &c.
ARCHITECTS' DESIGNS CAREFULLY CARRIED OUT.

APPLY FOR ESTIMATES TO
OLD SAINT PANCRAS ROAD, LONDON, N.W.



BAMFORD'S "MODEL" GARDEN ENGINE,
FOR STRENGTH & DURABILITY UNEQUALLED.
65/=
PRICE LISTS & TESTIMONIALS SENT POST FREE
BAMFORD & SONS, UTTOXETER,

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry

"I feel that anything I can say in favour of Mr Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler.

"WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used.

"H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known.

"G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

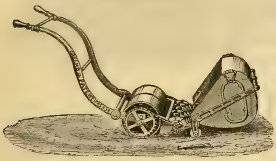
J. TYLOR AND SONS' FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

GREEN'S PATENT "SILENS MESSORS" or NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

The WINNER of EVERY PRIZE in ALL CASES of COMPETITION.



GREEN'S PATENT ROLLERS for LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, and GRAVEL PATHS,

Suitable for Hand or Horse-power.

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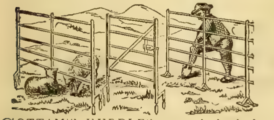

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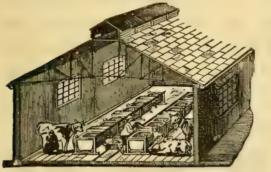

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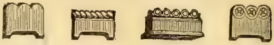

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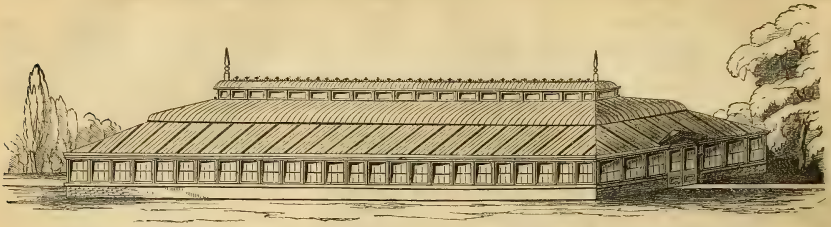

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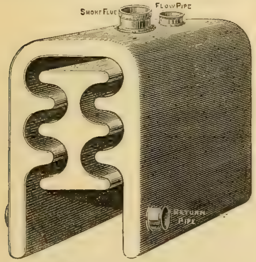

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, September 23, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 39.—1871.] SATURDAY, SEPTEMBER 30. { Registered at the General Post Office as a Newspaper. } **Price 5d.** POST FREE, 5½*d*.

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CATALOGUES of the above, also FRUIT TREES and general NURSERY STOCK, post free on application.

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STEPHEN BROWN'S BULB CATALOGUE, Illustrated, Descriptive, and Cultural (free for 6 stamps, gratis to Customers), contains his superb LILIES, in 75 varieties, with several new sorts; GLADIOLI, a large collection, with several of the newest French varieties; and a very extensive collection of DUTCH, CAPE, FRENCH, and other BULBS.

Seed, Bulb, and Plant Establishment, Weston-super-Mare.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received from the most celebrated growers in Holland their First large Importation of the above, and have the satisfaction to say that the BULBS are large, sound, and well ripened.

Early orders respectfully solicited.

Descriptive Priced CATALOGUE post free on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

DUTCH FLOWER ROOTS.—Descriptive Priced LIST, with Cultural Hints to Amateurs, will be sent free, on application to DRUMMOND BROTHERS, Seedsmen, &c., 52, George Street, Edinburgh.

Dutch Flower Roots.

WM. WOOD AND SON'S first importation of the above have arrived in splendid condition. CATALOGUES may be had on application.

Woodlands Nursery, Maresfield, near Uckfield, Sussex.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

New Lily.

MR. WILLIAM BULL begs to intimate that he can now supply fine healthy Bulbs, as imported from California, of the extremely beautiful, rare and hardy LILIUM HUMBOLDTII.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

LATE SHOW TULIPS.—A choice Collection, consisting of 400 Bulbs, in 150 varieties, comprising most of the newest and best sorts, also the esteemed of Dutch kinds, will be DISPOSED OF, very cheap, being the property of an old grower compelled to decline their cultivation. A LIST, with full particulars, can be obtained of

Mr. H. ALEXANDER, Seedsman, 299, Goswell Road, London, E.C.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.

Forwarders to all parts of the World.

Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants. CATALOGUES gratis on application.

HUNT'S superb SWEET WILLIAM, in 24 varieties, seed or plants, as per former Advertisement.

Crown Nursery, Reading.

WANTED, CUTTINGS of BEDDING PELARGONIUMS, as Golden and Silver Tricolors, Bicolors, Yellow-leaf Section, Silver margined, Double flowered, Scarlet, Rose, and other Zonals and Nosegays; VERBENAS, VIOLAS, ALTERNANTHERAS, CALCEOLARIAS, and other Bedding Plants. State name and price per 100, Mr. RUSHTON, Blackpool, Lancashire.

To Nurserymen, &c.

WANTED, Strong TREES of LANCASTER SORTS of GOOSEBERRIES; also BLACK NAPLES CURRANTS. State lowest price per 1000, for cash.

WM. KNIGHT, Floral Nurseries, Hailsham, Sussex.

EVERY GARDEN REQUISITE KEPT in STOCK at CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

MR. JNO. BESTER begs to inform his Gardening Friends that his present ADDRESS is PINE-APPLE PLACE, MAIDA VALE, LONDON, W., where he shall be happy to receive a VISIT from each and all of them.

RUSSELL'S PYRAMIDAL PRIMULA.—Strong healthy plants, in thumbs and 60's, requiring an immediate shift, 4*s*. per dozen.

GEO. CLARKE, Nurseries, Brixton Hill, London, S.W.

Cinerarias, from one of the very finest Strains of TRICOLORS in ENGLAND.

JOHN STANDISH AND CO. are now able to offer fine strong healthy plants of the above, to flower early in the winter, at 1*s*. each, 9*s*. per dozen, £3 per 100; also seed of the same at 2*s*. 6*d*. and 5*s*. per packet.

Royal Nurseries, Ascot, Berks.

Roses.—New Roses, Gladioli, Camellias, Azaleas, PÆONIES, &c., from PARIS.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital, Paris), beg to inform their Customers and Friends that their STOCK of the above is unusually large and of first quality this year. Price LISTS on application. Fifteen per cent. discount on the New Roses for 1872.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No 7.

Foot's Cray Nursery, Sidcup Hill, Kent

Autumn Catalogue.

GEORGE POULTON'S AUTUMN CATALOGUE of PLANTS and CUTTINGS of NEW PELARGONIUMS, FUCHSIAS, CHRYSANTHEMUMS, &c., is now ready, and may be had post free upon application.

GEORGE POULTON, Fountain Nursery, Angel Road, Edmonton, Middlesex, N.

ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., begs to advise his SPECIAL LIST of GARDEN and AGRICULTURAL SEEDS for the present year (of Seeds all the growth of 1871) is now ready, and can be had on application. Samples and stocks are very fine, and prices very low.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Spring Flowers.

THOS. S. WARE'S NEW LIST of SPRING FLOWERS (which ought to be planted at once) is now ready and may be had on application. The above is a selection from my GENERAL PERENNIAL CATALOGUE, which may also be had.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Herbaceous and Alpine Plants, Hardy Bulbs, &c.

THOS. S. WARE has much pleasure in announcing that his PERENNIAL LIST for 1871 is ready, and may be had on application.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Succulents.

THOS. S. WARE'S New Priced LIST of SUCCULENTS, containing selections from Twenty of the principal Families, is now ready, and may be had an application.

Hale Farm Nurseries, Tottenham, Middlesex, N.

SEEDLING QUICK, 2-yr., stiff.—Large quantity of above to offer. Ground must be cleared. Prices extremely moderate. J. GREEN, Garforth Nursery, Leeds.

Myosotis dissitiflora.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to offer the above valuable early bloomer, at 2*s* 6*d*. per dozen, or 17*s*. 6*d*. per 100.

To the Trade.—Passiflora cœrulea.

A. HENDERSON has about 20,000 of the above, strong and healthy, height 2½ to 3 feet, in large 60's, 40*s*. per 100, or £17 10*s*. per 1000.

A. HENDERSON, Sion Nursery, Thornton Heath, White Horse Road, Croydon.

Thuja semper aurescens.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to intimate that he has a few large SPECIMEN PLANTS of this superb and desirable Novelty for SALE, 3 feet high, price 42*s* each.

SPIRÆA (HOTEIA) JAPONICA, and LILY of the VALLEY, for forcing.—A few thousands of the above can be had, in good strong tufts, at 50*s*. per 100; the Lily of the Valley each to give from six to twelve and more flower-spikes. Orders to be sent at once to JEAN VERSCHAFFELT, Nurseryman, 134, Faubourg de Bruxelles, Ghent, Belgium

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R H. the Prince of Wales, Reading, Berks.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.

Bardney Manor, Lincoln.—July 6.

WINTER TARES or VETCHES, at 8*s*. per bushel.
P.S. Lower prices for large quantities.
T. L. MAYOS, Seedsman, Lugwardine, Hereford.

FOR SALE, 200 GREY RHUBARB ROOTS.
Apply to
JOHN MOIR AND SON, 56, Virginia Street, Aberdeen.

CABBAGE PLANTS, Autumn Sown.—Enfield Market and Early York, per 1000, 3*s*.; per 10,000, 25*s*. Drumhead or Ox ditto, per 1000, 2*s* 6*d*; per 10,000, 20*s*. Free on rail. Remittances to accompany all orders

CHRISTMAS QUINCEY, Seedsman, &c., Peterborough.

Autumn-sown Cabbage Plants.

W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts:—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3*s* per 1000; do. RED PICKLING, 5*s*. per 1000.

The Nurseries, Wonersh, Guildford, Surrey.

Exhibition Hyacinths.

SUTTONS' SUPERB DUTCH HYACINTHS, for Pots and Glasses, specially selected for Exhibition purposes.

25 splendid new varieties, 40*s.*
12 „ „ „ 20*s.*

CHEAPER COLLECTIONS,
containing the best old varieties.

	£	s.	d.
100 Hyacinths in 100 very choice sorts	4	4	0
100 „ „ 50 „	3	10	0
50 „ „ 50 „	2	2	0
50 „ „ 25 „	1	15	0
25 „ „ 25 „	1	1	0
12 „ „ 12 extra fine „	0	12	0
12 „ „ 12 choice „	0	9	0
12 „ „ 12 good „	0	6	0

MINIATURE HYACINTHS, finest named varieties, 4*s.* per dozen.

*** To secure the best Bulbs, early orders are solicited.

For complete Cultural Instructions, and list of Flower Roots, see SUTTONS' AUTUMN CATALOGUE for 1871, price 1*s.*; gratis to customers.

SUTTONS' SELECT LIST of DUTCH FLOWER ROOTS, gratis and post free on application.

☞ *All Flower Roots carriage free.*

SUTTON AND SONS, Seedsmen, by Special Appointment, to the Queen and H.R.H. the Prince of Wales, Reading.

THE LARGEST, CHEAPEST, and BEST STOCK of ROSES is still at WILLIAM PAUL'S.
PAUL'S Nurseries and Seed Warehouse, Waltham Cross, Herts, N.
Priced Descriptive CATALOGUE free by post.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c., is now ready, and may be had gratis and post free on application

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W C

CHEAP STRAWBERRY PLANTS.—Strong plants of the following approved sorts:—Sir Joseph Paxton, President, Keens' Seedling, Sir Charles Napier, John Powell, Prince Imperial, Crimson Cluster, Carolina superba, British Queen, and Dr. Hogg; 2*s.* per 100, 11*s* per 1000. Hampers, 1*s* extra. Post-office Orders to be made payable at New Ferry, Cheshire.

J. SHIELD, Strawberry Farm, Thorton Hough, Neston, Cheshire

New Bedding Plant, Thymus citriodorus aureus
MARGINATUS (Lemon scented gold-edged Thyme).

MESSRS. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield, are now sending out an exceedingly pretty Thyme, of an erect-growing but much-branched habit, with large obovate leaves, which are of a very bright dark green in the centre, and with a broad rich golden-yellow margined variegation; is very handsome and attractive It will prove very effective for edging flower beds, borders, or riband planting, and for growing in masses on banks, or in other varied forms; it may be grown as bushes or pyramids for winter bedding, having proved perfectly hardy. Altogether, it may be considered as one of the most charming bedding plants known, and with the additional delicious fragrance of the sweet-scented Lemon Thyme.

It was exhibited at the Royal Horticultural Society on June 21, 1871, and received a First-class Certificate; also at the Royal Horticultural Show at Nottingham, a First-class Certificate.

PRICES:—

1 plant for 2*s.* 6*d.*	12 plants for 18*s.*	50 plants for 63*s.*
6 plants for 10*s.* 6*d.*	25 plants for 33*s.*	100 plants for 105*s.*

Trade terms on application.

NEW and SELECT PLANTS.—The following are now offered at the prices annexed. No charge for package. On all orders of £1 the carriage will be paid to London:—

	s.	d.
12 fine varieties DOUBLE GERANIUMS	4	0
12 superb new varieties DOUBLE GERANIUMS of 1870	8	0
12 varieties best selected FUCHSIAS	2	0
12 varieties new FUCHSIAS of 1871	4	0
12 varieties best selected VERBENAS	2	0
12 fine new varieties VERBENAS of 1871	2	6
12 varieties best selected COLEUS	2	0
12 fine new varieties COLEUS of 1871	2	6
12 varieties best selected CHRYSANTHEMUMS	2	6
12 fine varieties new CHRYSANTHEMUMS of 1871	3	0
12 fine new varieties PENTSTEMONS	4	0
12 fine varieties PERENNIAL PHLOXES	3	0
12 varieties selected ZONAL GERANIUMS	3	0
12 fine new varieties ZONAL GERANIUMS of 1870	6	0
12 fine var. GOLD and GOLDEN BICOLOR GERANIUMS	6	0
12 fine varieties JAPANESE AUCUBAS	12	0
12 new varieties Hardy CHILIAN MIMULUS	3	0
12 fine varieties ACHIMENES	2	6
12 fine varieties IRIS GERMANICA	4	0
12 fine varieties SEDUMS	3	0
12 fine varieties SEMPERVIVUMS	3	0
12 select varieties SAXIFRAGAS	3	0
12 fine varieties ANTIRRHINUMS	3	0
12 select varieties PANSIES	4	0
12 fine varieties JAPANESE EUONYMUS	0	0
12 fine varieties BOUVARDIAS	6	0
12 fine varieties MESEMBRYANTHEMUMS	4	0
12 select varieties HELIOTROPIUMS	3	0
12 select varieties LANTANAS	4	0
12 fine varieties PELARGONIUMS	6	0
12 fine varieties IVY-LEAF GERANIUMS	6	0
50 select varieties FUCHSIAS	8	0
50 select varieties CHRYSANTHEMUMS	8	0
50 select varieties HARDY HERBACEOUS PLANTS	14	0
100 select varieties HARDY HERBACEOUS PLANTS	25	0
12 fine varieties DOUBLE and SINGLE PETUNIAS	6	0
12 fine varieties TROPÆOLUMS	3	0
12 fine varieties HYDRANGEAS	6	0
12 fine varieties VIOLA ODORATA	6	0
6 fine varieties ECHEVERIAS	3	0
12 fine varieties GREENHOUSE CLIMBERS	8	0
12 select varieties GREENHOUSE SUCCULENTS .. 6*s* to	12	2
12 select varieties GREENHOUSE PLANTS .. 6*s.* to	12	0
12 fine varieties select STOVE PLANTS .. 6*s* to	12	0
4 new AGERATUMS, White Tom Thumb, White Imperial Dwarf; Tom Thumb's Bride, the whitest; Sultan, the darkest, for 1*s* 6*d*		
12 varieties AGERATUMS, including the above	3	6
12 fine varieties tall HERBACEOUS LOBELLIAS	9	0
12 fine varieties VERONICAS	6	0

B W KNIGHT, Florist, Battle, Sussex.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30*s.* per cwt.; 36-lb. tins, 10*s.* Directions and testimonials on application.

Principal Agent:—W. D. BARBOUR, 3, Park Row, Leeds.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR ANNUAL SUPPLY OF

HYACINTHS, AND OTHER BULBOUS ROOTS FROM HOLLAND,

And are pleased to say that they are in splendid condition.

J. V. & SONS were awarded the following Prizes at the London Exhibitions last spring—viz.,

First Prize for 18 Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First Prize for 18 White Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First Prize for 12 pots Tulips, in 6 varieties, Royal Horticultural Society, March 15, 1871.
Second Prize for 6 New Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
Extra Prize for Group of Hyacinths and Tulips, Royal Horticultural Society, March 15, 1871.
First Prize for 12 Hyacinths, distinct varieties, Royal Botanic Society, March 22, 1871.
First Prize for 12 pots Tulips, distinct varieties, Royal Botanic Society, March 22, 1871.
Extra Prize for Collection of Hyacinths, Royal Botanic Society, March 22, 1871.

JAMES VEITCH AND SONS also supplied to the Commissioners of Her Majesty's Works the TULIPS, HYACINTHS, and CROCUSES which made such a grand display last Spring in Hyde Park.

CATALOGUES are now ready, and will be forwarded Post Free on application.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

NEW ENGLISH ROSE (Hybrid Perpetual Climbing)
PRINCESS LOUISE VICTORIA.

W. KNIGHT,

FLORAL NURSERY, HAILSHAM, SUSSEX,

The raiser of this Rose, will send it out for the first time in November next, in good Plants, at

7s. 6d. each, or Three for 21s.

Has been awarded Three First-class Certificates.

Report of the Floral Committee, September 20, 1871:—"Mr. KNIGHT, Floral Nursery, Hailsham, Sussex, again exhibited his New Hybrid Climbing Rose, Princess Louise Victoria, which was shown last June. Upon this occasion young growth 8 feet in height, and heavily laden with large trusses of bloom, was staged; which places beyond doubt the fact, that it is a true climbing and perpetual flowering variety. The flowers are deep carmine, shading off to peach, of medium size, very full, and produced in large clusters. It is certainly a most decided acquisition to our somewhat limited list of climbing Roses, and is worth growing for furnishing a supply of cut flowers for bouquets or vases. It was awarded a First-class Certificate."—*Gardeners' Magazine.*

Coloured Plates will shortly be ready, post free for 12 stamps.

PRICED CATALOGUES FREE.

NEW CRIMSON PRIMROSE,
PRIMULA JAPONICA.

MR. WILLIAM BULL

Begs to announce that he is NOW SENDING OUT this NEW HARDY PRIMROSE. It has been recently figured in the "Florist and Pomologist," "Floral Magazine," and "Botanical Magazine;" and the opinion of every one who has seen it in blossom may be expressed in the one word, "lovely!" When exhibited before the Floral Committee of the Royal Horticultural Society, it was voted a First-class Certificate by acclamation.

The "Florist" says of it,—"Hail! Queen of the Primroses! for so its introducer designates the lovely flower we now figure, which is hardy as a peasant, resplendent as a princess. It is just ten years since Mr. Fortune met with it in Japan, a basketful of blooming plants having been brought to his door; they were, of course, secured, but the journey home was too much for them, and despite every care none reached England alive. Ever since that time endeavours have been made to introduce this lovely plant, but till now without success, the seeds having been found to lose their germinating power in the course of transmission to Europe At last, however, perseverance has been rewarded, and from seeds imported by Mr. Fortune plants have been raised in the establishment of Mr. W. BULL, of Chelsea. Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely Primrose, one which is really valuable on account of its intrinsic beauty. Of the hardiness of the Primula japonica there can be no doubt, since plants which have been standing all the winter, fully exposed, in the trying atmosphere of London, are perfectly healthy, and came into bloom about the middle of May, some two or three weeks later than the plants which had been potted and flowered under glass."

The "Floral Magazine" remarks,—"Since the day when Lilium auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as that which we now figure, when Mr. W. BULL exhibited it on May 3 of the present year. Its history is now well known, and of its merits too much cannot be said. To Mr. Fortune, already so successful in enriching our gardens, are we indebted for it; and Mr. BULL may well congratulate himself on being the first to introduce it into Europe. A Primula a foot and a half high, bearing four or five separate whorls of flowers, each flower an inch in diameter, and of a splendid magenta colour, and the plant, moreover, perfectly hardy—can anything be added to this to indicate its value? We hardly think so, and everyone who saw it will fully bear out our assertion, that a more beautiful and more useful plant has not been for many years introduced into Europe. Of its hardiness there can be no doubt, as it has stood the ordeal of the last severe winter in the neighbourhood of London."

The Plants now offered are very strong and healthy, in 4-inch pots, and will be sure to bloom beautifully next Spring. Early Orders are respectfully solicited to insure having the strong Plants, for the demand is expected to be very large. Price **10s. 6d.** each, or **£4 10s.** per dozen. Coloured Plates can be supplied at 1*s.* 6*d.* each.

Those wishing to add this splendid Primula to their Gardens, are recommended to procure Plants, for even if imported Seed should be offered this season, it can scarcely be expected to grow. Mr. Fortune imported Seeds many times during a period of 10 years, but they always failed to vegetate, except in one instance, when sent to this country in a special manner.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA,
LONDON, S.W.

Chrysanthemums.

ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6*s.* and 8*s.* per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

Brunswick Nursery, Stoke Newington, N.

CHOICE TRICOLOR GERANIUMS.

Jetty Lacy	Mrs Dunnett	Miss Burdett Coutts
Coronet	Sir R Napier	Italian Beauty
Pre-eminent	Phœbus	Mrs. John Clutton
Sunray	Sunbeam	Mabel Morris

The 12 for 21*s.*, package included. Terms cash. Remittances requested from unknown Correspondents. A LIST of 250 varieties post free.

ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALCEOLARIA; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1*s.* 6*d.* 2*s.* 6*d.*, 3*s.* 6*d.*, and 5*s.* per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Roses—New Varieties for 1871-72.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, &c., 3, Rue Dunois, Paris, has the honour to inform his clients and friends that he will be ready to send out in November next, on the most advantageous terms, all the NEW VARIETIES of ROSES for 1871 72; also those of 1869, 1870, and 1871.

Descriptive CATALOGUE of above can be obtained direct from E. V., or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Gladioli, Gladioli.—To the Trade.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, 3, Rue Dunois, Paris, offers to his Friends a considerable stock of fine BULBS of his unrivalled collection of above; also the following New Varieties (the whole for £2 16*s*):—Alcyone (Souchet), Antigone (S.), Antiope (S), Ariane (S), Arsinöe (S.), Beatrix (S.), Celimène (S), Didon (S.), Jupiter (S.), Minerve (S.), Ossian (S), Phœbus (S.), Virginalis (S.).

CATALOGUES, with description, will be obtainable about September 25, by addressing direct to E. V., fils ainé; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, E.C.

Camellias, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine plants of CAMELLIAS, without flower bud, best varieties, 1½ to 2 feet high, bushy plants, at £6 per 100.

Fine plants of PANDANUS UTILIS, for table decoration, 15*s.* per dozen; ditto, smaller, 12*s* per dozen.

CHAMÆROPS FORTUNEI, young plants, with three to four leaves, 42*s* per 100; ditto, formed plants, 30*s.* per dozen.

CORYPHA AUSTRALIS, nice young plants, 63*s.* per 100.

INDIAN AZALEAS, choice varieties, £5 to £6 per 100.

CAMELLIAS, with flower bud, £7 to £8 per 100; ditto small, £6 per 100.

ARAUCARIA IMBRICATA, in small and store pots, 30*s.* per 100.

CHEAP FERNS, FUCHSIAS, &c.

MUST BE SOLD, for WANT of ROOM.

FERNS.—Lomaria gibba, Pteris serulata, Gymnogramma Laucheana, Polypodium trichodes, all strong, healthy plants, in 60-sized pots, 4*s.* per dozen; 30*s.* per 100. Dicksonia antarctica, strong plants, in 48-sized pots, 1*s.* 6*d.* each; 12*s.* per dozen.

SELAGINELLAS. — Martensii, spoda, denticulata, and serpens, very strong, in 60 pots, 3*s* per dozen.

FUCHSIAS.—First-class sorts, strong plants, coming into bloom, 2*s.* 6*d.* per dozen; 16*s.* per 100.

Double GERANIUMS, strong scarlets, in bloom, 12*s.* per 100.

Terms, cash. Remittance or reference must accompany all orders from unknown correspondents. Post-office Orders payable at Huntingdon. All package free for cash with order.

KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Rhododendron and Periskia Stocks, and Epiphyllums.

SEEDLING RHODODENDRONS, from the best named varieties:—

2 to 4 inches high, twice transplanted, fine well-rooted plants.
4 to 6 inches high, twice transplanted, fine well-rooted plants.
6 to 9 inches high, thrice transplanted, fine well-rooted plants.
10 to 12 inches high, four times transplanted, fine well-rooted plants, fit for grafting.

PERISKIA, Stocks, strong.
EPIPHYLLUMS, in variety, good.

Prices on application to B. WHITHAM, The Nurseries, Reddish, near Stockport.

WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now booking orders for forward delivery of WILLOW PLANTS and CUTTINGS for TIMBER and ORNAMENTAL TREES for HEDGES and GAME COVERTS, and for BASKET-MAKING purposes. CATALOGUES free upon application as above. In the Press, and will shortly be published,

The SALIX, or WILLOW; a revised and enlarged Edition, containing Instructions for its Planting and Culture, with Observations upon its value and adaptability for the Formation of Hedges and Game Coverts. Post free, 1*s.*

The Planting Season.

J. SCOTT, The Nurseries, Merriott, Somerset, begs to offer to Gentlemen, who intend Planting this Season, a large and well assorted stock of all the best kinds of TREES and SHRUBS, in various sizes, and at very moderate prices. Now is an excellent time to plant Evergreens. CATALOGUES on application.

J. SCOTT'S extensive stock of FRUIT TREES, covering many acres, are this season fine, and grown in all the usual forms.

CATALOGUES free; or the ORCHARDIST and its COMPANION at 2*s.*, describing over 2500 sorts, with Cultural Notes.

DUTCH BULBS, just arrived from Holland, in prime condition. CATALOGUES free on application.

To Railway Contractors and Enclosure Planters.

S. ROBINSON has a very large Stock of fine 3, 4, and 5-yr. Transplanted and Budding QUICKS to offer, at prices varying from 7*s.* to 20*s.* per 1000. Samples, of not less than 250, to be charged.

S. R. has also a quantity of fine bushy SPRUCE, 2 feet 6 inches to 3 feet; about 50,000 LARCH, of a similar size, and 50,000 of a size smaller. A large quantity of fine SCOTCH FIR PLANTS, OAKS, and other FOREST TREES. Samples and prices upon application.

S. ROBINSON, Shaw House, Melbourne, Derby.

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TWO MILES from BLACKHEATH STATION;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves

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Cheap Nursery Stock.

WILLIAM ABRAHAM offers the following:—

LAURELS, 2-yr., 20*s.* per 1000; 4 to 6 feet, 15*s.* per 100.
LAURUSTINUS, 2-yr., 25*s.* per 1000; 3-yr., 30*s.* per 1000.
„ bushy, fine, 1½ to 2 feet, 15*s.* per 100.
Evergreen OAKS, 3 to 4 feet, 25*s.* per 100.
Variegated BOX, 3 to 3½ feet, 25*s.* per 100.
American ARBOR-VITÆ, 4 to 6 feet, 20*s* per 100.
MAGNOLIA GRANDIFLORA, 1½ to 2 feet, 12*s.* per doz.
„ „ very fine, 3 to 4 feet, 25*s.* per dozen.
PAMPAS GRASS, 20*s* per 100.
ESCALLONIA MACRANTHA and RUBRA,
BUDDLEA GLOBOSA, DEUTZIA SCABRA,
LEYCESTERIA FORMOSA, COLUTEA CRUENTA,
TRITOMA UVARIA, GLAUCA—all 10*s.* per 100.
English OAKS, 3-yr. in drills, 2*s.* 6*d.* per 1000.

Terms, cash with order, package free. Through rates to London, Liverpool and Glasgow, moderate.

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Seedsmen
to Her Majesty
The Queen.

BULBS
For Autumn Planting.

Seedsmen
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Prince of Wales.

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Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

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12 HYACINTHS, in 12 extra fine named sorts
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12 JONQUILS, sweet scented.
50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 „ Rex rubrorum.
3 „ La Candeur
3 „ Royal Standard.
6 „ Yellow Prince.
3 „ Rosa Mundi
6 „ Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
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6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

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All Seeds and Bulbs Carriage Free.

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12 HYACINTHS, in 12 extra fine named sorts for pots or glasses
12 HYACINTHS, in 3 colours for bedding.
12 NARCISSUS, Double, white.
12 „ Poeticus or Pheasant-eye.
36 TULIPS, extra fine mixed.
6 „ Tournesol
6 „ Duc Van Thol.
3 „ Royal Standard.
3 „ La Candeur.
3 „ Yellow Prince.
3 „ Rex rubrorum.
12 Double DAFFODILS.
12 STAR of BETHLEHEM.
12 SCILLA BELGICA, mixed.
75 CROCUS, blue.
75 „ striped.
75 „ large yellow.
75 „ white.
36 ANEMONES, extra fine mixed
8 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice mixed English.
24 „ extra fine mixed Spanish.
12 JONQUILS, Campernel.
36 RANUNCULUS, extra fine mixed.
50 SNOWDROPS.

Packing and Carriage Free.

Five per Cent. Discount for Cash.

BULBS for OUTDOOR PLANTING ONLY.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S "GUINEA" COLLECTION,

For Outdoor Planting only, contains:—

12 HYACINTHS, in 3 colours.
12 NARCISSUS, Double, white.
12 „ Poeticus, or Pheasant-eye.
12 Double DAFFODILS.
12 TULIPS, extra fine mixed, double.
12 „ extra fine mixed, single.
12 „ finest mixed, late.
12 „ Duc Van Thol.
6 POLYANTHUS NARCISSUS, fine mixed.
6 CAMPERNEL JONQUILS.
12 STAR of BETHLEHEM.
6 TRITELEIA UNIFLORA.
6 DOG'S-TOOTH VIOLETS.
25 CROCUS, blue.
50 „ striped.
50 „ large yellow.
25 „ white.
24 ANEMONES, extra fine, mix.
6 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice, mixed, English.
12 „ extra fine, mixed, Spanish.
3 LILIUM CANDIDUM.
3 „ TIGRINUM.
24 RANUNCULUS, extra fine, mixed.
50 SNOWDROPS.
24 Winter ACONITES.

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£5.	£2 10*s.*	£1 5*s.*	£1 1*s.*	15*s.*	10*s.* 6*d.*

FOR FLOWER GARDEN DECORATION.

No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£3.	£2.	£1 5*s.*	£1 1*s.*	10*s.* 6*d.*

For CONSERVATORY and FLOWER GARDEN DECORATION.

£5 5*s.*	£2 12*s.* 6*d.*	£2 2*s.*	£1 1*s.*	15*s.*	10*s.* 6*d.*

CATALOGUES, containing full details of these Collections, free and post paid.

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DOWNIE, LAIRD, AND LAING have now received their annual importations of FLOWER ROOTS, consisting of Hyacinths, Polyanthus, Narcissus, Double Narcissus, Crocus, Tulips, Jonquils, Ranunculus, Anemones, Snowdrops, &c, which have all been carefully selected from the most celebrated establishments in Holland.

The Bulbs this season are well ripened, unusually large, and very heavy, and have arrived in splendid condition.

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Hyacinths
Miniature ditto
Narcissus
Jonquils
Ranunculus
Anemones
Crocus
Tulips, early and late
Gladiolus
Lilies
Amaryllis
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With all other kinds of Flower Roots. Price 1*s.*, post free; gratis to customers.

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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Professor REICHENBACH, of Hamburgh
Dr. MOORE, of Glasnevin
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, SEPTEMBER 30, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Oct. 4 { Royal Horticultural (Fruit and Floral Committees), at S. Kensington .. 11 A.M.
Ditto (General Meeting) .. .. 3 P.M.

◆

ALL horticulturists know how deeply they are indebted to the labours of BOTANICAL COLLECTORS. A glance round any garden, great or small, will at once show how large a proportion of its inmates owe their presence to the zeal, enterprise, and labour of the collector. Sadly too often has it happened that his efforts have resulted in the loss of life: yet more frequently in the sacrifice of health. There is no necessity to dwell on this—we all acknowledge it; we profit by their labours, and honour their zeal, and glory in their triumphs. We shall not be accused of any lack of appreciation of the efforts of those who have gone before—efforts not exceeded by those of any class whatever,—if we now proceed to point out sundry matters on which information is still wanted, countries still unexplored, and from which a rich harvest may be anticipated. It is natural and proper that the commercial spirit should be thoroughly manifest in these explorations, only it should be held in check, and guided by higher considerations. Mere greed and love of gain should, under no circumstances, be allowed to prevail over the requirements of science, and the general welfare of humanity.

We are led to these remarks by the comparatively little trouble which the modern race of collectors give themselves, to attend to anything but the purely commercial element. To exterminate rare plants, to communicate wrong localities, to preserve no authentic specimens with localities attached for purely scientific purposes, to give heedlessly scientific names to plants collected without due inquiry, all this is to injure science very materially; and from a commercial point of view, sooner or later, it is equally detrimental, as the existence and history of valuable commercial products is too often overlooked in the exclusive and sordid devotion to one object. All this is a veritable killing of the goose that lays the golden eggs. Such selfishness is opposed to the spirit of the times, and sooner or later it is sure to recoil on the heads of those who pursue or sanction it. Much that yet remains uncertain or unknown may be attributed to some such causes as we have hinted at, still more perhaps to a want of sufficient knowledge on the part of those who have the opportunity and often the will to do good service did they but know how to do it. For the benefit of such persons the late Sir William Hooker and other scientific men, some years since, prepared a volume published under the authority of the Admiralty, and to a new edition of which we now beg to call attention.

In the new edition of "The Admiralty Manual of Scientific Inquiry," the article Botany, originally written by Sir William Hooker for the guidance of those persons serving in or visiting foreign countries, in collecting plants and their products, has been revised by Dr. J. D. Hooker, C.B. The instructions for collecting living plants for cultivation, for collecting and drying plants for the herbarium, and for collecting and preserving specimens for the museum, are brief, but quite to the purpose. The existence of this article cannot be too widely known amongst travellers, especially those whose business or pleasure takes them into those parts of the world the botany of which is at present but little known ; for though of late years much of the earth's surface has been opened out, it is nevertheless quite true "that much of it is still unknown, alike to the botanist and the geographer. The interior of South America, particularly towards the sources of the great rivers ; the deserts and mountain chains of Africa, all Central Asia, with the northern declivities of the Himalaya mountains, the Chinese dominions, much of Japan, and of the Malayan Archipelago, are still *terræ incognitæ* to the naturalist."

The subject of Insular Floras is one of so much interest, that every effort should be made in collecting materials for its elucidation ; and for the purpose of bringing the matter more prominently before our readers, we cannot do better than quote the following paragraphs :—

> "The botany of islands, and especially of oceanic islets, is of especial interest ; and considering the means afforded to officers of the Royal Navy of visiting them, it is astonishing how little has been done in bringing collections from them. Of many that lie not far from the usual tracks of ships, absolutely nothing is known, whilst of the flora of a vast majority we possess most imperfect materials. The following are especially worth exploring, and to the list is added an indication of the least explored coast lines of the great continents. As far as possible complete dried collections should be made, not only of each group, but of each islet of the group, for it is usually the case that the floras of contiguous oceanic islets are wonderfully different. Of those in italics the vegetation is absolutely unknown, or all but so.
>
> "1. Atlantic Ocean.—Cape de Verd, Tristan d'Acunha, *Fernando Noronho*, *Trinidao*, and *Martin Vas* (off the Brazil coast), *Diego Ramirez*, S. Georgia, off the African coast, Morocco, Senegal, the Gaboon, and Dammara Land, offer the most novel fields. On the American coast, Cayenne, Bahia, to Cape Frio, Patagonia.
>
> "2. West Indies.—The Bahamas and St. Domingo ; and of the Antilles all remain to be explored, except Dominica, Trinidad, and Martinique. On the mainland, Honduras, Nicaragua, and Mexico ; the Mosquito shores and Guatemala offer rich fields for botanical research.
>
> "3. Indian Ocean.—The Seychelles, *Ammirautes*, Madagascar, Bourbon, *Socotro*, *St. Paul's*, and Amsterdam Islands, *Prince Edward's*, the *Crozets*, and *Marian* groups.
>
> "Of the East African coast no part is well explored, and from Pemba northwards all is utterly unknown botanically.
>
> "4. Pacific Ocean.—1. N. Temperate : Collections are wanted from N. Japan, and the Kuriles and Aleutian Islands. 2. Tropical : Considerable collections have been made only in the Sandwich Islands, Fiji Islands, Tahiti, and New Caledonia ; from all of which more are wanted. The *Marquesas*, *New Hebrides*, *Marshall's*, *Solomon's*, and *Caroline's*, together with all the smaller groups, may be said to be wholly unknown. Of the American continent, the Californian peninsula, Mexico, and the whole coast from Lima to Valparaiso, are very imperfectly known. Of the small islands off the coast, Juan Fernandez, and the Galapagos alone have been partially botanised. 3. S. Temperate ; Juan Fernandez, *Masafuera*, *St. Felix*, and Ambroise, *Pitcairn*, *Bounty*, *Antipodes*, *Emerald*, *M'Quarrie* Islands.
>
> "5. Indian Archipelago.—Java alone is explored, and the Phillippines very partially : collections are especially wanted from all the islands east of Java to the Louisiade and Solomon Archipelagos. Siam, Cochin China, and the whole Chinese sea-board want exploration. 6, Australia : All the tropical coasts are very partially explored."

The appendix to this useful little article is equally valuable with the article itself. It is drawn up by Mr. D. Hanbury and Prof. Oliver, and is composed of a series of inquiries into the sources or origin of pharmacological and economic substances, about which at the present time we know little or nothing, and it is a fact worth noting that many of those articles about which we know less are amongst the most valuable of our imported products. For instance, we read that—

> "Gutta-percha is, even up to the present day, little known. It is said to be yielded by several plants, such as species of *Isonandra*, *Chrysophyllum*, *Sideroxylon*, and others. Attention should be paid to the vernacular names, such as *Gutta-percha*, *Ugiato putip*, *Kotian*, *Tuban* or *Taban*, &c. Abundant and carefully preserved wet and dry specimens of the leaves, flowers, and fruits of the different kinds, the products of the same individuals from which the dried specimens were obtained, are greatly needed."

With regard to drugs or medicinal products, still less is known. Sagapenum, for instance, is occasionally shipped from Bombay, and it is presumed that it is produced in Persia. Though it has been used in medicine for ages, its botanical origin is not ascertained, but there seems to be no doubt that it is the produce of an umbelliferous plant. Little is also known of the origin or source of Galbanum, though it is more common than Sagapenum ; it occurs in trade in two varieties, which are so distinct as to lead to the inference that they are the produce of different plants. Galbanum is said to be imported into Russia in large quantities by way of Astrachan, but that which reaches England comes principally from Bombay.

It is with the hope of clearing up such doubts as these that the queries have been strung together and added to the appendix to this article, Botany, of "The Admiralty Manual of Scientific Inquiry."

—— We have received the following letter, on the Temperature of Fungi, from Dr. McNab, the Royal Agricultural College, Cirencester :—

> "Last week I met with a number of specimens of the Giant Puff-ball, Lycoperdon giganteum, while making one of my usual weekly class excursions in the neighbourhood of Cirencester. Two of them were selected, a large and a small one, for museum specimens, while a portion of a very large one was placed by me in my botanical box. Next morning on opening the box I found the contents sensibly warm to the hand, and had no difficulty in tracing the effect to its cause. The portion of Fungus was quite warm, and had communicated part of its warmth to the other plants in the box. Unfortunately, no thermometer was at hand at the time, or a careful reading of the temperature would have been made. The smaller specimen of the Puff-ball, weighing 1 lb., was taken, and placed in a box, where it remained all night. Next morning, two readings of the thermometer were made at 8.45 A.M. The temperature was again observed at 10.30 A.M. and 11.15 A.M.

	8.45 A.M.		10.30 A.M.	11.15 A.M.
	1.	2.		
Temperature of Fungus.. ..	12°.2	12°.4	12°.4	12°.2
Temperature of air	11°.1	11°.2	11°.6	12° 0
Difference ..	1°.1	1°.2	0°.8	0°.2

Next morning two readings were taken at 9.10 A.M., the Fungus being warmer than the surrounding atmosphere.

	9.10 A.M.	
	1.	2.
Temperature of Fungus	11°.4	11°.5
Temperature of Air	10°.5	10°.6
Difference	0°.9	0°.9

On the next morning the Fungus was found to be drying up, and the observed temperature was only 0°.2 higher than that of the surrounding air. The air outside the box, 11°.4 ; inside the box, 11°.4 ; temperature of Fungus, 11°.6. No further observations were made.

> "A. de Bary mentions (Hoffmeister, 'Handbuch der Physiologischen Botanik,' vol. 11, pt. 1, p. 228) that the temperature has been observed by Dutrochet in five Fungi belonging to the genera Agaricus, Boletus, and Lycoperdon. He, however, was only able to observe an increase of from 0°.10 Cent. to 0°.45. The greatest increase in my specimen was noticed on the first morning of the observations, at 8.45 A.M., namely, 1°.2 Cent.
>
> "The greatest temperature is evidently produced during the night, as the difference between the temperature of the Fungus and air rapidly diminished, so that at 11.15 A.M. the difference was only 0°.2 Cent.
>
> "The difference between the morning temperatures on the first and second day of the observations—1°.2 and 0°.9—can be easily accounted for by loss from conduction, &c., but chiefly from the loss of heat caused by the evaporation of water, the weight of the Fungus having decreased from 16 oz. to 13½ oz. during the three days the experiments lasted.
>
> "The cause of the increase of temperature is due to the oxidation of the nutrient materials in the Fungus, a process depending on the absorption of oxygen, which acts on these nutrient materials, and causes various metamorphoses, an equivalent quantity of carbon dioxide being liberated. This metamorphosis of nutrient or assimilated materials goes on in all plants in daylight as well as in darkness, and is always associated with the taking up of oxygen and liberation of carbon dioxide, a process which is now recognised by all Continental physiologists as the true respiration of plants. In Spirogyra we can, during the day, observe the formation of assimilated materials as starch in the cells, which contain chlorophyll. During the night the assimilated material is metamorphosed or elaborated, and the cell divides and converts the assimilated material, after it has been metamorphosed, into cellulose and protoplasmic substance. In Fungi the nutrient materials are probably taken up only during the day, and during the night metamorphosis, or elaboration of these materials, takes place. Heat is the result of the oxygenation, and, from the energy of the process and size of the plant, the elevation of the temperature is very marked. All the temperatures are given in degrees Centigrade, and as the temperatures were always carefully observed by Professor Church, the accuracy of the readings may be depended on."

—— Several inquiries having reached us respecting the International Exhibition of Fruit on Wednesday next, it may be useful to print the following information, which we have obtained from headquarters :—The "Collection of Apples" (Class 1) is intended to include both culinary and dessert sorts. The same remark applies to the "Collection of Pears" (Class 4). The exhibitors need not, on this occasion, be the growers of the fruit they exhibit. It may, however, be a question another season whether separate classes should not be provided for growers who show only their own productions.

—— In the current number of the "American Journal of Science," we find the following note relating to the stamens of the Grass of Parnassus (Parnassia) :—

> "In the 'Journal of the Linnean Society,' vol. xi., Mr. A. W. Bennett published, two or three years ago, an interesting article upon Parnassia—its structure, affinities, and its mode of fertilisation. I am now to remark only upon its anthers, which are generally described as extrorse. Mr. Bennett, observing that the present writer, in the 'Genera of North American Plants Illustrated,' describes the anthers as introrse, and gives a drawing of P. caroliniana as an illustration, proceeds to say :—'I do not, however, find any other observer to agree with Professor Gray's observation in this respect, except two American botanists, Dr. Torrey and Mr. Chapman, who have probably borrowed their descriptions from him ; nor do any specimens which I have been able to examine of this species confirm any departure in this respect from the ordinary type of the genus.'
>
> "It is easy to show that Dr. Torrey's observation, at least, is independent and original. In his 'Flora of Northern and Middle States,' published in 1824, p. 326, he described the anthers of P. caroliniana as 'incumbent ;' in his 'New York State Flora,' 1843, as 'fixed by the base, introrse.' The first volume of the 'Genera N. Am. Illustrated' appeared in 1848. This season I have, for the first time, had the good fortune to see both P. palustris and P. caroliniana in flower, in the Botanic Garden of Harvard University, the former blossoming at the beginning, the latter at the close of August. The difference between the two species 'in this respect' is obvious.
>
> "In P. palustris, the anthers are certainly extrorse as to insertion ; but the line of dehiscence lateral, with introrse rather than extrorse tendency.
>
> "In P. caroliniana, the anthers are quite as much introrse as extrorse as to insertion, and truly introrse for dehiscence. A transverse section removes all doubt, showing the connective or solid part to be posterior, and the anther to be as truly introrse as possible. *A. G.*"

In reference to this matter, we may refer to some correspondence in our columns, 1870, p. 1217, where, in specimens sent to us from Oban (as well as many others since seen, from other localities), the anthers opened laterally, and moreover the pollen was liberated before the buds were open, though neither the filaments, nor the style, nor the ovules were fully developed ; from which we drew the inference, that the object of the peculiar palmate scales of these elegant plants was, not to convey pollen to the stigma of its own flower, but rather to retain it, and subsequently allow insects to convey it to the stigma of some other flower, thus serving much the same use as the corona of Passion-flowers.

—— Some interesting papers have lately been published in the Journal of the Society of Arts, under the heading of the Industrial Classes Abroad. The papers are based on official reports compiled by the British Consuls in various countries, and take cognisance of the rate of wages, the state of the labour market, the cost of lodging, food, clothes, the fiscal or other restrictions on trade, manufacturers, &c. The general result is that the working classes are better off in Great Britain than on the Continent, and that there are but few promising fields for the artisan in the Old World. Across the Atlantic, however, the conditions are reversed, in spite of the increased cost of lodgings and of all necessaries of life, except butcher's meat. On the farms of the West the high rate of wages for labourers, we are told, soon enables them to start a farm for themselves. Even in Louisiana, where the climate is none of the healthiest, and ill-adapted for European constitutions, it appears that in the healthy districts, by means of regular habits, industry, perseverance, frugality, and temperance, it is quite possible for any ordinary individual to acquire by economy a capital after 10 or 15 years of work. "Cases," says the report of Mr. Consul Briggs, "could be cited of men who could neither read nor write 10 or 15 years ago, who now possess a capital of 8000 dols., or £1500, acquired simply in this manner, in one of the ordinary occupations of mankind—as a *gardener for instance*" (the italics are our own)—"and that without any more than the usual share of intelligence, with no extra gifts in his speciality." From the same report we learn that there is a general demand for waggon makers, blacksmiths, common engineers, horsekeepers, and men conversant with the details of a farm or garden, or for those able to manage a market garden in the neighbourhood of the inland towns. There is a significant hint that the railway and river communication is excellent, so that those who are dissatisfied with their lot in the Southern States can readily betake themselves anywhere else, as to the Western States of the Union, which open a new field of almost boundless extent. In Pennsylvania the respectable mechanic, in comparison with his British compeer, is described as "better housed, better fed, and equally well clothed, but still at a far greater expense." Admirable schools are provided at the public expense, though, *surgit aliquid amari*, "a large number of this class who ought to profit by the free education neglect to do so," and the result is that in the State there are 75,000—in Philadelphia alone 25,000 children—"who do not frequent the public schools, and who lead a life of reckless Bohemianism." Clearly, then, the American Union is not quite the paradise for the labouring classes that it is sometimes represented to be, and the Old World faults, follies, and crimes, thrive as vigorously across the Atlantic as here, and produce the same misery. To this the answer may be, that this is the fault of individuals, but so it is here; and balancing one thing with another, we think there is reason to doubt whether a workman, be his calling what it may, and who has the requisite regularity of habit, industry, and the other good qualities abovementioned, is not as well off here as in the United States. We are speaking of a first-class workman, be it understood, and one possessed of all those qualities mentioned by Mr. Consul Briggs, and which would, we presume, secure to their owner commensurate advantages anywhere, unless under specially unfortunate circumstances.

—— The Berkhamstead Nursery has for some few years had a reputation for Grape Growing, which is not likely to be lowered by its productions of the present season, the large vinery, as usual, showing an extraordinary crop of fine fruit. We, however, now more particularly refer to some splendid clusters of Muscat of Alexandra, which are well worth going to see. We believe Mr. Lane intends to exhibit some of these Muscats at the Great International Fruit Show, on October 4, so that those who cannot get to Berkhamstead, may have an opportunity of seeing some of them in London on that occasion.

—— The Maximum Temperatures of the Air during the week ending September 23 ranged from 69°.9 at Nottingham to 56° at Dundee, with a mean of 63°.8 at the English and of 57°.6 at the Scotch stations. (See Mr. Glaisher's Tables.) The extreme lowest temperature in the week at the English stations was 35°.2 at Portsmouth, and was 39° at Edinburgh, being the lowest in Scotland. Generally the temperature in England rose during the day 5° to 6° higher than in Scotland, but sank lower at night on an average of 4°; the mean of the lowest in England was 39¼°, and in Scotland was 43°. The mean temperature of the week varied from 53° at the South of England to 49° in the North, and varied from 49° to 52° in Scotland. The mean of the 15 stations in England was 50°.9, and of the seven in Scotland was 50°.2. The average Rainfall of the English stations was 0.2 inch, and of the seven in Scotland was 1 inch nearly. The weather was cold everywhere.

—— Mr. W. Wadsworth, in a letter to the *Sacramento Union*, strongly advocates the Manufacture of Sugar from Melons, rather than from Beet. The sugars are, when manufactured, chemically identical, and in Hungary and Italy Melon sugars are even now largely produced. Melons only require 16 feet of ploughed land, as against 50 for Beet. The Melons picked from the Vine are ready for the mill at once, whilst Beet has to be stacked and otherwise prepared. Sugar-making can commence one month sooner, and be continued as late. The Melons yield their seed each year; Beet requires a second year and careful culture to obtain the seed. Melon seeds yield 16 per cent of excellent table oil. The surplus of Beet seeds is useless. Mr. Wadsworth also states that with Melons the manufacturing processes are far less troublesome and costly. The rinds, with dry grass or straw, make good food for milch cows. The yield of sugar is as 7 per cent. from Melons, to 8 per cent. from Beet.

—— The New York publications mention a Lilium columbianum as a very pretty species. It is said to be a native of Columbia and Washington territories, to grow from 1 to 2 feet high, and to have a most graceful habit. The leaves are whorled, resembling those of L. superbum; the flowers small, with reflexed petals, orange-yellow, spotted with dark brown. The bulbs are noted to be as hardy as any of the American Lilies, and to thrive in rich moist soil.

—— To obtain Dwarf Dahlias, M. Rafarin, says the "Revue Horticole," forces the tubers in a stove in February, and when the shoots have developed somewhat they are cut off, and struck as cuttings. Another method adopted by M. Rafarin is to force the tubers as above, and when the shoots attain a height of a foot or 18 inches the end is pinched off, the lateral buds then grow out, and are pinched off at the extremities in the same manner. This continued pinching induces a dwarf habit, as might be supposed.

New Garden Plants.

DENDROBIUM FUGAX, *n. sp.*

Dendrocoryne, pseudobulbis stipitatis brevi-fusiformibus monophyllis; foliis cuneato-ligulatis obtuse acutis; floribus terminalibus subsolitariis, tenuissimis, fugacissimis; mento rectangulato; sepalo dorsali ligulato acuto, sepalis lateralibus subæqualibus, latioribus; tepalis bene angustioribus; labello a basi cuneato dilatato ampliato; laciniis lateralibus antrorsis obtusangulis, lacinia media unguiculata abrupte hastata flabellata, dilatata, antice emarginato retusa, lateribus undulata; carina membranacea utrinque a basi in apicem unguis antice crenulato lobulato, postice integerrimo; columna brevissima.

A very curious botanical species, having stalked shining bulbs, 1—2 inches long, sheathed at the base, and giving stalked new lateral bulbs. The leaves reach the length of 5 inches, and are nearly 1 inch broad. The flowers are yellow, with a white lip, marked with some purple and yellow. The flower is of the very thinnest structure, and lasts but a few minutes. It bothered for many years both its possessor and its grower; neither of them could, either by day or night, get to see it flowering, though they watched it with the greatest care. At length, after much trouble and anxiety, came March 14, 1871, when J. Day, Esq., was so fortunate as to catch the fugacious flower just when it was kind enough to get open. A sketch was prepared, and—*avis aux lecteurs*—two flowers were dried for the benefit of the writer of these lines. The species stands close to Dendrobium convexum, Lindl., and D. xantholeucum, Rchb. f., but the middle part of its lip is totally different, to say nothing of the two thin carinæ. I have been lucky enough to get the interesting Indian species for the Hamburgh Botanic Garden, and expect the interesting moment when its little thin flowers will be produced. *H. G. Rchb. fil.*

TRICHOCENTRUM CAPISTRATUM, *Lind.*, *Rchb. f.*

Foliis oblongo-lanceolatis acuminatis purpuratis; pedunculis unifloris; sepalis linearibus acutis; tepalis paulo latioribus apice revolutis; labello ligulato obtuse acuto, basi in calcar brevissimum depressum pentaceras extenso; columna breviori bialata alis ligulatis obtusis, androclinio postice bidentato; anthera semilunata hispida.

This little plant is one of the greatest curiosities I have ever seen. There are many Orchids with two spurs—the Satyria, Diplocentra, Comparettias,—there is something comparable to two spurs in Rodriguezias and Scelochilus now and then; but an Orchid enjoying five spurs at once was never seen before. Hence I looked with a certain feeling of reluctance on the small yellow flower, which has a white lip, bearing some purplish dots and spots on the sides of the wings and on the anterior side of column, and one purplish blotch at the base. I saw the plant in good health in September, 1868, in Director Linden's establishment. Was it not a monster? This suspicion was the reason of my not publishing the plant. Now, however, the scene has changed totally. Mr. Endres, the excellent Costa Rica traveller, has found since 1867, in Costa Rica, another Trichocentrum, bearing the same most remarkable spurs, and also broad ovate acute leaves, brown sepals and petals, and a rhomboid white lip, with purplish numerous spots, a shorter column, with rhomboid wings (T. caloceras, Endr., Rchb.) The T. capistratum would appear to have been also collected in Costa Rica by Wallis. *H. G. Rchb. fil.*

CONIFEROUS NOMENCLATURE.

I am always pleased to see an effusion from the pen of my old and warm-hearted friend "C. F. P.," of The Grange, Kingston. I know he will forgive my gratuitous aid in helping him out of the muddle into which the "Pine doctors" have plunged him. Were he alone in this dilemma I should not treat him so jocosely, I respect him too much for this. But seeing that he and all the Pine doctors together are in a fix, I cannot help smiling at their simplicity in keeping their patients so long in the fever hospital. My friend's article on "Picea lasiocarpa" is an odd one. I shall not waste paper in giving the various names by which this tree has been sent out (all of them wrong), but simply state, without fear of contradiction, that no species of Picea exists at present in Great Britain to which the name of "lasiocarpa" can be correctly applied. Professor Balfour named a tree "Picea lasiocarpa." This tree was raised from Jeffrey's first batch of seeds, and, as far as I know, only a very few were raised, and the only plant of it in England is in my nursery at Borrowash. In Jeffrey's second expedition he plucked our Scotch friends and others of their cash, and then cut off to the diggings, and left them in the lurch. Some years after Messrs. Parsons, of Flushing, engaged Messrs. Low & Co., of Clapton, as their agents, to sell a number of Californian trees in England, and amongst them the trees known generally as "P. lasiocarpa, Lowii, and Parsonsii." The present Mr. Low, of Clapton, sent home from America to his father, then alive at Clapton, a plant of a sort which Messrs. Parsons had to offer. The late Mr. Low sent this, with others, to me at Elvaston Castle, and requested me to give him their names. I wrote back to the effect that this species was "either P. lasiocarpa or a new species." I had not at that time had an opportunity of examining the plant named P. lasiocarpa by Dr. Balfour. In a few days after this I went to Edinburgh, and as soon as I saw P. lasiocarpa, I told Mr. McNab that it was not specifically distinct from the Picea grandis of Douglas, but only a distinct variety of that species. I also told Dr. Balfour the same when I met him in Switzerland in 1861.

Shortly after my return from Scotland, I found that Mr. Low, jun., had returned from America with the consignment of new trees; and that Mr. Bull, with all his alacrity and push with new things, had bought of them largely, and had scattered them over the country, under the name of P. lasiocarpa, upon no better authority than my qualified letter to Mr. Low, sen., saying that it was either lasiocarpa or a new species. As soon as I had an opportunity, I ran up to Clapton, and put Messrs. Low right by telling them that it was "not lasiocarpa, but a new species." The season following, Mr. Parsons and Mr. Olmstead were commissioned by the American Government to make a tour of Europe prior to the Park at New York being laid out. Mr. Parsons called on me at Elvaston Castle, and I told him his Picea was a new species. A few months after this he wrote me from Lausanne as follows:—

> "Dear Sir,—The proof you gave me of the decided distinct character of our Picea from the lasiocarpa was so satisfactory to me, that I cannot doubt that your opinion must be adopted by all. In that case, what shall be its name? I do not think that either my brother or I have much vanity about attaching our name to anything; but as we are commercial men, there are certain advantages to be derived from fathering the nomenclature of a really good thing. It is perhaps, therefore, a fair question whether we are not entitled to have this Picea called by our name. It was obtained by our enterprise and expenditure of money. Four years ago, before much movement was made to collect seeds in California, we ordered a merchant there to send out a man and collect seeds for us, let the cost be what it may. He wrote us that he had done so, and in a few months sent us a parcel of seeds with an immense bill. From these came this Picea, which we sent out through Low & Co. Are we not fairly entitled to its name?—and would not Parsonsiana be as euphonious as Nordmanniana? Please write me what you think of it, as you are an authority in this, because Backhouse and all others still call it lasiocarpa. *S. B. Parsons.*"

It was then published in my catalogue as Picea Parsonsii. Some time after this, Mr. Gordon brought it out in his supplement as Picea Lowii, in compliment to Messrs. Low, who were only agents for its sale.

Seeing then that it has not any connection with the so-called Picea lasiocarpa of Dr. Balfour, and that Picea Parsonsii was its first legitimately published name, it will be well for the future, to avoid confusion, that all misnomers be put under ground. Picea magnifica, poor thing, has also been woefully abused by the libellers. It has been vended as Picea amabilis, P. nobilis robusta, P. magnifica, and other queer names. My worthy friend thinks it will turn out a nobilis after all; and well he may, as most of the doctors say so. Doctors are only like other men—seldom guilty of extensive, sound, pathological knowledge; hence the patients must suffer. Here is a fact worthy of their consideration.

Picea nobilis belongs to the longi-bracteata section. The bracts quite cover the scales; whereas Picea magnifica (a good name) belongs to brevi-bracteata, having its bracts entirely hid within the scales. This week I have sent to Dr. Hooker a fine cone of P. magnifica with a branch; also a good cone of P. nobilis, in order that he may fulfil the promise he made me when last here, viz., that if I would send him a cone and branch he would name it with authority. This I have no doubt he will do.

Picea grandis is well worthy of its name, whatever locality or mismanagement in any way may have done to establish a contrary opinion. There was only one tree of this species originally raised from David Douglas' seeds. I was quite familiar with it, and its true history, 36 years ago. I believe I may fairly take credit for conserving to our country this noble tree. When my friend "C. F. P." favours me with a visit, I shall be pleased to drive him to a piece of that tree, well worth a journey from Taunton to Derbyshire to make the *amende honorable*, and to acknowledge its grandeur by a significant bow of admiration! Unless certain conditions are fulfilled in the procreation of trees, a progeny of worthless seedlings will be the result. But when these conditions are duly observed, and the nursing or after management is in strict accordance with the requirements of a healthy and vigorous constitution, all diligent attention bestowed on them will be amply rewarded. Who ever saw a healthy and fully developed Abies excelsa, canadensis, Pinus Cembra, or Picea grandis as an isolated tree, fully exposed to the four winds of heaven? I never did. Why, then, so place them? All four are proof against a lower temperature than we ever experience in this country. Shame upon our teachers, who have never failed to collect their fees! and for what?—only to find us, as a nation, the laughing-stock of those who have far outstripped us in useful knowledge.

Excuse my blunt axe in so roughly hewing these knotty trees. *William Barron, Elvaston Nurseries, Borrowash.*

MILTONIA WARSCEWICZII.

THOSE who purchase imported Orchids have had abundant facilities offered them for becoming acquainted with this plant (fig. 281), it having been introduced in large quantities from Peru, and sold at Stevens' sales under the provisional name of Oncidium Weltonii. It is also known as Odontoglossum Weltonii, and Oncidium fuscatum of gardens. A capital figure will be found at t. 5843 of the "Botanical Magazine." When not in flower the plant is easily recognised by its long, flat, ancipitate pseudobulbs. The flowers are borne on a panicle, and on imported flower stems, scarcely a foot long, as many as 20 pedicels have been counted; so that when it becomes fairly established in our collections we may expect it to be a profuse bloomer. The sepals and petals are ligulate, their margins being reflexed and beautifully undulated, of a warm brown colour tipped with golden yellow. The larger part of the lip is of a dull purple, the bilobed apex being creamy white. The plant was discovered by Pœppig, and since collected by Warscewicz, Welton, and others; while the honour of first flowering it in Europe belongs to Mr. Linden, of Brussels. Like many more Orchids it sports into several varieties of more or less merit from a cultivator's point of view, and it must be considered as one of the most charming acquisitions of late years.

Miltonias generally are characterised in our collections by their pale yellow, or what might be designated sickly-looking foliage; but this peculiarity, although in some measure natural to the genus, may, to a great extent, be obviated by good cultivation. These plants should be grown in shallow pans, using fresh fibrous peat, to which may be added a little coarse washed river-sand and a few broken crocks, the whole being neatly surfaced with fresh living Sphagnum. Drain the pan well, and then, when the plants are growing freely, they may be deluged with tepid rain or river water, and under this *régime* will be found to lose much of that sickly appearance, so objectionable to the practised eye of a good cultivator. *F. W. B.*

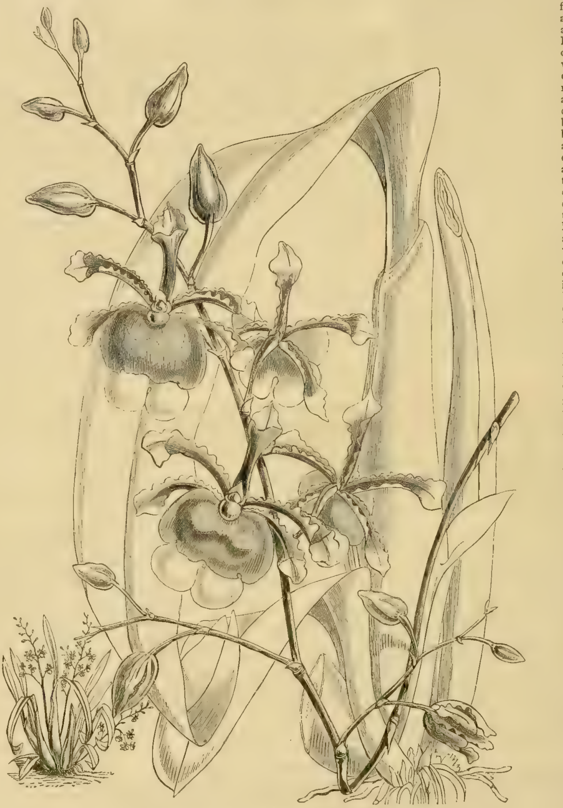

FIG. 281.—MILTONIA WARSCEWICZII.

A BOILER TRIAL.

WHILE the great trial of boilers seems to hang fire, it may be interesting to note the results of a "little go" of considerable public interest. This trial took place at Woolwich on the evening of September 5. By special arrangement I arrived at Mr. Cannell's about 9 P.M., the object being to see the operation, as well as otherwise test the doings of this gentleman's new hot-water circulator. Furnished with bull's-eyes, we at once proceeded to examine the boiler, the fire, the state of the pipes, and the work given the circulator to accomplish. The fire had recently been lighted, the pipes were barely milk-warm, and the arrangements for a fair trial found perfectly satisfactory.

The boiler was placed well under, and in the centre of its work, behind the block of houses to be heated. The main flows and returns proceeded along the centre of a glass ridge that connected blocks of houses over 50 feet long, and which proceed at right angles to the right and left of the centre. Those nearest the boiler were given up to be heated on the new principle—that of converting the lowest pipe into the flow. Those furthest from the boiler had the hot water sent along the highest pipes first in the usual manner.

I was assured that the pipes in all the several houses—six or eight—were on a level, but found it impossible with the time and means at my disposal, to test this fact, which is one of most vital importance, as even an inch difference in altitude may make all the difference in favour of the higher pipe. In recording the following facts, it is essential to bear this important statement in mind. It must also be assumed that the pipes in all the houses were alike free from sediment. Of course it was impossible to test their condition in this respect, but were sediment present it would fall to the lowest point and retard the flow of the water more on the old plan than upon the new; for, of course, a strong force acting from beneath would agitate and cause sedimentary matter to move on more effectually than a similar or lesser force pressing on from above. With these precautions in mind I would proceed to record what I saw, felt, and noted of the actual doings of this circulator or new connective boiler. It will render the matter more explicit to your readers, and likewise do greater justice to the inventor, if I classify my remarks under two headings—the heating capacity of the new boiler, and the potency and worth of its reversing powers.

First, then, does the boiler heat well? It does. It is scarcely possible to conceive of any contrivance that would heat with more facility, in less time, with less fuel. From an hour from the time of first examining the boiler nearly all the pipes were hot, and during the whole time of trial there was no great fire, but all that there was seemed to be thoroughly utilised and sent in through the iron into the water. By substituting a thick piece of glass for an iron door, so as not to interfere with the draught, the action of the fire as it hugged the boiler plates and leaped from storey to storey of the boiler could be seen. Literally the tongues of flame licked the metal all round and darted along the roof in red-hot haste to warm another dual layer of metal and water; and so on, until, exhausted of caloric, they reached the chimney, and the comparatively cool products of combustion were swept out by the draught into the air. The bottom of the chimney immediately above the last storey of the boiler was almost quite cool, a pretty conclusive proof that the caloric had been exhausted on the metal and its all-embracing water-jacket, and not on the bricks that receive the fire as it leaves its iron-girt flue, the boiler. The boiler is so constructed as to absorb all the heat of the fire. There are no solid bars of iron, no absorbing masses of brick to compete with the water for the absorption of caloric. The fire impinges upon metal wrapped round with water at all points. Having thus arranged to get a maximum of caloric into the boiler, every precaution is taken to keep it there. The boiler is insulated from all conductors of caloric; radiation is likewise checked from the outside; within fire is coiling through it in all directions, like writhing serpents, wriggling along its sides, leaping along its many crowns, and gliding over its fiery bottom; without, a packing of dry hair and sand, from 5 to 7 inches in thickness, envelopes all, and is kept in position by dry boarding. So effective is this in keeping the heat in, that you can scarcely feel the boards warm. The heat can only escape in one way—into the water that flows through the houses. This layer of non-conducting material also keeps the two sides of the boiler-plates, the outside and the in, almost at equal temperatures,—an immense economy of force this in the circulation of the water. All the heat stolen from the outside of ordinary boilers is not only so much absolutely wasted, but it involves a double waste—the waste of caloric and of motive-power in the circulation of the water. Mr. Cannell thus effects a double saving, by packing and insulating his boiler. Another great advantage arises from this mode of incasing the outside of the boiler. The whole of the joints are beyond reach of the action of the fire. From an examination of these leakless joints I believe they would stand fire with perfect safety. Still there is no need to expose them to it if it is not necessary, and it seems probable that more caloric may be husbanded by packing in this novel way than could be generated by enveloping the outside of the boiler by the spent products of combustion, in the ordinary way. There is, however, no difficulty in doing the latter if desirable. But ready accessibility to the outside of a boiler of this kind must be an object. The capacity of these boilers is meant to vary with their work. Is that work heavy, on with another storey or two; is it light, off with two or three. Either can be done in a few minutes, and there is no danger of leakage.

A very moderate fire was made up about 12 o'clock at night, and I examined it and the houses about 4.30 in the morning, and found fire and temperature all that a stoker could wish. The fire would have lasted many hours more, as the temperature of the pipes, considering the limited amount of fuel consumed, was most satisfactory. In fact, I have no hesitation in placing Cannell's hot-water circulator in the very first rank as a hot-water boiler, distinguished by economy of fuel, time, and labour, and by great efficiency.

I come now to my second question—Does the boiler reverse the ordinary mode of circulation? My answer to this question must be Yes and No. In certain of the houses at Woolwich there could be no question about the reversing,—indeed, I have not denied that it is possible. The hot water may be compelled to take the lower road first; and that with most other boilers, as well as Mr. Cannell's, the conversion of the flow-pipe into the return is a mere matter of pipe arrangement, and not an affair of boiler,—though I admit that, possibly, Mr. Cannell's boiler is better adapted for this mode of circulation than most others.

I must likewise acknowledge that at Woolwich most heat was thrown into those pipes in which the circulation was reversed. It must also be stated that the houses heated on the usual principle were bad examples of that mode of heating, for from some cause the return-pipes continued cold throughout their entire lengths in some of them. The whole were heated from Mr. Cannell's boiler, and the valves, &c., as far as I could learn, were equally favourable to the houses heated on the old and the new principle. I have no hesitation in stating that at Woolwich the new plan seemed to have the best of it. Whether there were one or two currents through the pipes, could not with certainty be tested. But that there was more heat in the houses heated from beneath than from above was undeniable. I have the less hesitation in making these admissions for the following reason. Mr. Cannell attributed comparatively little importance to these examples. He was content to rest his case on a larger illustration in the neighbourhood of Forest Hill, near Sydenham; and for this new scene of trial we were in motion by 5 o'clock in the morning. Here we found a nice block of houses, part of a dwelling-house, and an attached conservatory, heated on Mr. Cannell's reversing plan by a convert to his system, who had converted the return-pipes into flows, and was perfectly satisfied with the result. The boiler was not one of Mr. Cannell's, but a powerful double saddle, one of Jones', I think. The houses were good, the pipes ample in all cases, and the arrangements for the experiment admirable. The fire was speedily got up, and the experiments began. All the flow and return pipes passed through the stokehole, within feeling range, before they entered and as they returned from the houses. This afforded rare facilities for testing. Within a nice block of houses the main flows and returns were carried along the centres, and diverged to each side under the shelves or stages. From the very first there were differences of temperature between the pipes, alike in the stokehole and more still inside the houses. On one side, throughout the experiments, which were continued for four or more hours, the highest or flow-pipe in the ordinary mode of heating was the hottest; and the other, the return—that is, the flow under this arrangement—coldest. More marvellous still, in several cases the upper-pipe became the hottest on that side also, and obviously the hot water was ill at ease, and trying hard to take the natural, that is, the highest, road for it. Again and again the fire, the damper, stopcocks, &c., were regulated, but with similar results; and I think Mr. Cannell will allow that this great demonstration proved virtually a failure. The water did exactly what I asserted months ago in the *Gardeners' Chronicle* it would do. It bounded up the return-pipe, and sent a current of hot water down to meet and master and turn back, the one being driven up by the sheer lifting force of caloric alone from beneath. In justice to Mr. Cannell, I would further state that in this case the back action was favoured by the fact that the bases of the return pipes rested on the fire flue outside the boiler. The absence of this sheet of flame outside Mr. Cannell's boiler, as he has set it at Woolwich, would give it an advantage in this respect, as I have already hinted; but where is the benefit of reversing the circulation? Doubtless it can be done. Shut up the hot water to the lower road, and it must perforce travel thereby; give it a choice of ways, and it will choose the higher road, unless compelled by blocks or extra pressure to take the lower. Such were my views before the trial, and they are rather confirmed by what I saw. I am, however, still open to conviction, and went to Woolwich half or more expecting to be convinced. In my paper on the *rationale* of heating, which I hope you will find room for, I pointed out that by reversing the circulation we should work against natural laws and consequently lose force. I adhere to that statement. It is just as natural for the hottest water in a heating apparatus (no matter how heated) to take the highest route first, as for the highly heated water at the Equator to float away on the surface of the ocean, while the colder waters of the Arctic regions press back to their natural warming place at lower depths. All the driving force in the world, the sum total of its caloric, would fail to reverse this circulation; and if it could our cry then, as now, in regard to the small matter of our boilers, would still be, *Cui bono? D. T. Fish, F.R.H.S.*

ON THE VARIOUS TINTS OF FOLIAGE.

ALTHOUGH we cannot yet say—

> "Far, far o'er hill and dale green woods are changing,
> Autumn her many hues slowly arranging,"

still it may be interesting to put together certain facts with reference to the tints of foliage which have recently been acquired to science.

Up to the present time I have been able to distinguish several dozen colouring matters in the leaves of different plants, and far more in the petals and fruits, and no doubt further inquiry will very greatly increase this number. The subject would, therefore, be quite unmanageable, if we could not divide them into well-marked groups by means of their optical characters. This is still more important when, as on the present occasion, it is desirable to give a condensed summary of the leading facts. I shall, therefore, not attempt to describe the individual colouring matters, or to explain how they may be distinguished or identified by means of their spectra, either in their natural state or after being acted on by re-agents; but merely point out the general relations of the various groups, and refer to my published papers for illustrations of the methods employed in the inquiry.* The colours of these groups are not only related to one another optically and chemically, but also have a very similar connection with the growth of the plants, and thus it is possible to give a general explanation of the very various tints of foliage, without entering into technical details. For a more complete account, I beg to refer to a paper on this subject, just published in the July number of the "Quarterly Journal of Microscopical Science."

One of the chief difficulties in studying the colours met with in plants is, that they are often mixtures of quite distinct colouring matters. Sometimes these may be easily separated, for one may be soluble, and the other insoluble, in such reagents as water, alcohol, ether, or bisulphide of carbon; but in many cases they are so closely related, that anything like a complete separation is perhaps impossible; even then, however, it may be possible so to effect a partial separation, that the presence of two different substances may be recognised, and with proper care a very good opinion may be formed as to their general properties. Nature, also, herself often assists us in this inquiry, for different plants, or the same in different states, may furnish particular colouring matters comparatively pure, or so variably mixed that the character of the mixture may be recognised.

For the purposes of the subject before us, I have found it desirable to divide the different colouring matters into the following groups:—

1. The *Chlorophyll* group is distinguished by being insoluble in water, but soluble in alcohol and in bisulphide of carbon. There are three or four species, giving well-marked spectra, with several narrow, dark, absorption-bands, one or more of which occur at the red end. The mixed chlorophyll of ordinary green leaves may be obtained in a tolerably satisfactory state by heating in alcohol dark-green Holly leaves previously crushed so as to insure rapid solution, and then, when cold, agitating in a test tube with bisulphide of carbon. This sinks to the bottom, holding nearly the whole of the dark-green chlorophyll in solution, whilst nearly all the xanthophyll remains dissolved in the alcohol. Leaves having an acid juice must not be used, for that would change the normal chlorophyll into another modification, nor should the solution be left long in contact with them, for then the separation is much less perfect.

2. The *Xanthophyll* group also contains several distinct species, but only two are common in leaves, one being more, and the other less, orange. They are characterised by being insoluble in water, but soluble in alcohol and in bisulphide of carbon; and when dissolved in this latter their spectra show two not very distinct absorption-bands at the blue end; but the red, yellow, and yellow-green rays are freely transmitted. They may be obtained from yellow leaves, by the use of alcohol and bisulphide of carbon.

3. The *Erythrophyll* group comprises a number of colours soluble in water, in alcohol, and in ether, but insoluble in bisulphide of carbon. Those met with in leaves are more or less purple, made bluer by alkalis, and redder by acids; and thus sometimes plants containing the same kind may vary more in tint, owing to a variation in the amount of free acid, than others coloured by entirely different kinds. The erythrophyll may be obtained, free from chlorophyll and xanthophyll, by heating the leaves in alcohol, evaporating to dryness, redissolving in water, filtering, and evaporating at a gentle heat; but, on the whole, it is better to digest the leaves for a day or so in sufficient cold ether to dissolve all the contained water, and then to agitate with water, which subsides to the bottom, with nearly all the erythrophyll in solution, but mixed with more or less of the colours of the following group. There are many species of erythrophyll, some of which have very interesting botanical relationships, being so far found only in particular classes of plants.

4. The *Chrysotannin* group contains a considerable number of yellow colours, some so pale as to be nearly colourless, and others of a fine, dark, golden-yellow. They are soluble in water, in alcohol, and in ether, but not in bisulphide of carbon. Their spectra show a variable amount of absorption at the blue end, usually with no bands when in their natural state, but sometimes with one or more sufficiently distinct when they are oxidised. They may be obtained free from chlorophyll and xanthophyll by processes similar to those made use of in the case of erythrophyll, and leaves should always be selected which are as free as possible from colours of that group. Some of the chrysotannin colours strike a dark colour with ferric salts, and constitute the tannic acid sub-group, of which there are at least six different kinds, whereas others do not give any such reaction, and constitute the chrysophyll sub-group. In both sub-groups the intensity of colour is usually greatly increased by partial oxidisation, and they are thus altered into colours of the following group.

5. The *Phaiophyll* group comprises a number of more or less brown colours, insoluble in bisulphide of carbon, and of very variable solubility in water or alcohol. The spectra show strong absorption at the blue end, extending over the green, often the red is very dull, and sometimes there are definite absorption bands, when the solution is acid, neutral, or alkaline. On the whole, they are in that state of oxidisation which has a maximum intensity of colour, and are simply decolorised by further oxidisation.

The very numerous tints of foliage depend almost entirely on the relative and absolute amount of the various colours of these different groups, but much remains to be learned before we can explain all their relationships. The colour of green leaves is mainly due to a mixture of chlorophyll and xanthophyll, and the variation in the relative and absolute amount of these easily accounts for the darker and brighter green. The tints are also much modified by the pressure of colours of the erythrophyll group, which, according to circumstances, may give rise to lighter or darker browns, approaching to black or to red. Healthy unchanged leaves also contain various substances, belonging to the chrysotannin group, but in many cases when these belong to the more typical kinds of tannic acid their colour is so faint that they have little or no influence on the general appearance of the leaves.

The relation of these groups to one another is still somewhat obscure. There are facts which seem to indicate that chlorophyll may in some cases pass into xanthophyll by oxidisation, and xanthophyll into chlorophyll by deoxidisation, but neither point can be considered to be established. There is manifestly some connection between the formation of chlorophyll and erythrophyll; and those conditions which are favourable to the production of one are unfavourable to the development of the other. In the present state of our knowledge it seems most probable that chlorophyll is formed when the vital functions of the leaves are very active, and erythrophyll when they are less active, but not destroyed. Exposure to light also appears to be necessary, and we often see rough natural photographs of superjacent leaves produced in this manner. As I have already said, there are several different kinds of erythrophyll, giving very different spectra, but the most prevalent are two which are related to each other in an interesting manner. One of these is more especially found in very young leaves, and when slightly oxidised artificially it passes into the other. The more oxidised kind is that found in the greater number of leaves which are dead in autumn. Both are completely decolorised by further oxidisation, and most probably this occurs in leaves themselves when their red colour is lost. Since many contain erythrophyll in early spring and lose it as the season advances, whilst it still continues to be present in the leaf-stalks, I am much inclined to believe that its disappearance is due to the ozonised oxygen given off from the chlorophyll, which is developed to so much greater an extent in the leaves than in the stalks, and that its reappearance in autumn in many leaves is characteristic of the period when they are not dead, but have more or less ceased to give off ozone.

On the approach of autumn, before the leaves have withered, we have thus in the foliage of different plants an exceedingly variable mixture of chlorophyll, xanthophyll, and erythrophyll, with the different members of the chrysotannin group, and it is to the changes which occur in some or all of these substances that the very variable tints of autumn are due. The most striking of these depend on the alteration of the chlorophyll. So long as it remains green the production of bright reds and yellows is impossible, but when it disappears the yellow colour of the xanthophyll is made apparent; and, if much erythrophyll is present, or contemporaneously developed, its colour, combined with this yellow, gives rise to a scarlet or red. In many cases, however, the chlorophyll does not disappear, but is changed into the dark olive modification, easily prepared artificially by the action of acids on the more green, and when this is present, only dull and unattractive tints can be produced. We may thus easily understand why the special tints of early autumn are yellows and reds, or dull and dark greens. In these changes the various pale yellow substances of the chrysotannin group remain comparatively unaltered, and even sometimes increase in quantity; but they soon pass into the much darker red-browns of the phaiophyll group, whilst the erythrophyll fades; and thus later in the autumn the most striking tints are the brighter or duller browns, characteristic of the different kinds of plants or trees.

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* "Proceedings of the Royal Society," vol. xv., p. 433; "Philosophical Magazine," vol. xxxiv., 1867, p. 144; "Quarterly Journal of Microscopical Science," vol. ix., 1869, pp. 43 and 358; "Monthly Microscopical Journal," vol. iii., 1870, p. 229; "Quarterly Journal of Science," new ser., vol. i., 1870, p. 64.

As already named there are many different species of colouring matters belonging to the chrysotannin group, both of those which are, and of those which are not, closely related to the more typical kinds of tannic acid. So far I have not been able to ascertain whether there is any one particular artificial oxidising process which will in each case give rise to the exact products naturally formed in the leaves themselves; but on the whole there is such a close correspondence between them that we cannot hesitate in concluding that the rich brown tints of autumn are mainly due to the oxidisation of the previously-existing more or less pale yellow colour of the chrysotannin group—a conclusion fully borne out by various independent facts. The difference in kind of tannic acid, and the absence or presence of any considerable amount of a chrysophyll substance, explains in a very satisfactory manner the difference in the tint of the leaves of different trees. Thus, for example, the quino-tannic acid found in a comparatively pure state in the yellow leaves of the Beech is changed by oxidisation into the fine red-brown colour of those leaves at a later period. This kind of tannic acid also occurs in the Elm, but is there mixed with more or less of the chrysophyll, which turns to a duller brown; and thus we find the leaves of different Elm trees vary in tint, and are often of very dull brown colour. The leaves of the Oak and Spanish Chestnut contain gallo-tannic acid, and this, when oxidised, gives rise to a dull tint, like that seen in the faded leaves of those trees; and similar principles hold good in other cases.

As far as we are able to judge from the various facts described above, we must look upon the more characteristic tints of the foliage of early spring as evidence of the not yet matured vital powers of the plant. In summer the deeper and clearer greens are evidence of full vigour and high vitality, which not only resists but also actually overcomes the powerful affinity of oxygen. Later on the vital powers are diminished, and partial changes occur, but the affinity of the oxygen of the atmosphere is nearly balanced by the weakened but not destroyed vitality. At this stage the beautiful red and yellow tints are developed, which produce such a fine effect in certain kinds of scenery. Then comes more complete death, when the affinity of oxygen acts without any opposition, and the various brown tints of later autumn make their appearance, due to changes which we can imitate in our experiments with dead compounds. This may not be a pleasing way of viewing an otherwise charming subject, but I think we must all admit that it is substantially true. *H. C. Sorby, in "Nature."*

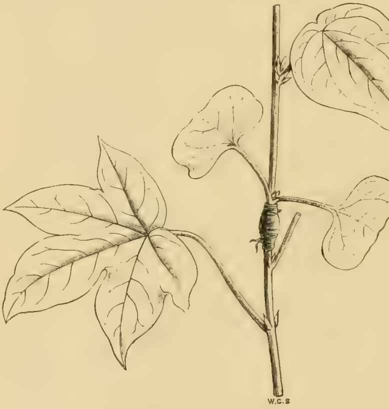

FIG. 282.—GRAFTED SEEDLING COTTON.

GRAFTED SEEDLING.

FOR the illustration given (fig. 282) we are indebted to the ingenuity of that clever experimentalist, Major Trevor Clarke. It is to him that our Indian friends are indebted for many valuable crosses, obtained by pollen-fertilisation, of various breeds of Cotton, with a view to insure better staple, hardier constitution, and varieties better suited to varying conditions of climate, soil, &c. These experiments have much scientific value, while their practical importance, though still under trial, may yet be pronounced to be very great. The present case, however, is of a different nature, and has a less directly practical value, though it is not without interest to the practical man. It will be seen that Major Clarke has succeeded in engrafting, on a stock, a seedling plant, so young as still to retain its cotyledons, or seed-leaves, and the result is that the seed-leaves have assumed a more permanent character than usual—they have at once taken their place amongst, and fulfil the same functions as, the ordinary leaves. Dr. Dickie and others have caused the seed-leaves of the Castor-oil to become permanent by repressing all the other leaves as they appeared; hence it is abundantly proved that the seed-leaves have in such cases no essential diversity from other leaves. We have ourselves succeeded in producing a miniature Ash tree, such as a Chinaman or a Japanese might delight in, by a similar repression. The principle is acted on by our fruit growers, and is probably capable of greater useful application than at first sight appears. At any rate, it is certain that by engrafting an annual plant on a perennial stock the duration of the graft may in some instances be prolonged; and numerous experiments of this kind may be successfully performed, which the practical man may at some time or another find it worth his while to avail himself of.

JAMES DE CARLE SOWERBY, F.L.S.

THE career of a working naturalist must always be a subject of interest to the medical world. Scarcely any botanical name is more literally a househould word than that of Sowerby. For three generations members of this family have taken a conspicuous part in popularising—using the word in its best sense—a knowledge of botany and other branches of natural history. Combining with rare felicity the feeling and skill of the artist with the rigorous accuracy of the scientific naturalist, they have enriched our libraries with delineations of plants, shells, fossils, and minerals pre-eminent for beauty and truth. The most accomplished of those who have borne the name, and one who, perhaps, achieved the greatest amount of work, is James De Carle Sowerby, who died on August 26 last, at the age of 84. He was the eldest son of James Sowerby, the founder of the scientific race of his name, and himself the descendant of an old border family. His mother was a De Carle, who belonged to a French family settled in Norwich. James Sowerby, the father, is the real author of the "English Botany," a work which for more than half a century has had no rival, and which is even now going through a new edition. Upon this great work almost all the Sowerbys have laboured, but none more assiduously than the subject of this memoir, who took up the work in his own name on the death of his father in 1822. He in the same manner continued the equally celebrated "Mineral Conchology." It is no injustice to the several eminent botanists who, from Sir James Smith downwards, have been associated with the Sowerbys in the "English Botany" in furnishing the literary descriptions of the plants, to say that the great and enduring scientific merit of the work consists in the figures. These, in fact, not only reproduce the plants as they appear in Nature to the uninstructed eye, but they exhibit all the chief structural details which the scientific naturalist demands. These remain for ever, whilst descriptions and classifications are doomed to change. So well are these figures appreciated, that those enterprising authors and publishers who find it convenient to annex the labours of others are constantly borrowing from this never-failing source.

The life of James De Carle Sowerby was spent from boyhood in intimate association with scientific and literary circles. As a lad, his passion was chemistry, and he enjoyed the friendship of Faraday as a fellow-student. He was received as a favourite in the houses of Dawson Turner, the Hookers, Dr. Woollaston, Sir Joseph Banks, and many other distinguished naturalists. At an early period of his life he conceived the idea of founding the classification of minerals upon their chemical composition. He believed that chemistry might offer a better basis of classification than the forms of the crystals. In carrying out his scheme, he analysed the minerals, the description of which was published in his father's "British Mineralogy," and "Exotic Mineralogy." From 1823 to 1850 he contributed papers, principally relating to fossil conchology, to the "Philosophical Transactions," the "Zoological Journal," and the Transactions of the Linnæan and Geological Societies. He named, arranged, and described the fossil shells for Professor Sedgwick, Sir Roderick Murchison, Dr. Buckland, Dr. Fitton, Mr. Dixon, and Colonel Sykes, all of whom gratefully acknowledge the assistance thus rendered them. In 1840, the "Woollaston Fund" was awarded to him by the Geological Society, to facilitate the prosecution of his researches in mineral conchology. The prize was presented by Dr. Buckland, who took the opportunity of paying a graceful tribute to the merits of father and son as accurate and enthusiastic observers of nature. He observed that the modern "rapid advance in geological knowledge, arising from the introduction of the evidences of mineral conchology, was largely due to the publications of the Sowerbys."

In 1846, Mr. Sowerby was appointed Curator and Librarian to the Geological Society. These offices he was soon obliged to resign, owing to the increasing demands made upon his time as Secretary to the Royal Botanic Society. This society, with which his name has been identified from its institution in 1839, was founded by his cousin, Mr. Philip Barnes, F.L.S., who naturally sought the aid of one whose scientific reputation and connections were so well calculated to promote the success of his project. Mr. Sowerby's name is associated with that of his cousin, the Earl of Albemarle, Colonel Rushbrooke, and others, in the first charter granted to the Society. In this office much of his time was necessarily absorbed in administrative labour, so that he found little leisure to continue his scientific pursuits. The Society is better known for its floricultural and fashionable displays than for the cultivation of botany. But still the influence of the secretary was always steadily exerted to promote the scientific utility of the gardens. These contain departments devoted to the natural classification of plants, to medical botany, to plants used in arts, &c. In the working out of the scientific element he was warmly assisted by Dr. Frederic Farre, Professor Bentley, Mr. Marnock, the first curator, Mr. P. Edward Barnes, the assistant secretary, Mr. Bushell, and others. It is here especially that the medical profession is indebted to Mr. Sowerby. It is greatly owing to him that the collections of plants are so freely thrown open to students. The students of the Pharmaceutical Society, as well as students of medicine, are admitted at certain hours, courses of lectures in illustration are given, and the lecturers on botany at our medical schools are liberally supplied with specimens for instruction as far as the resources of the garden will admit.

A year or two before his death Mr. Sowerby retired from his office on a moderate pension, and was succeeded by his son, Mr. William Sowerby, whose character and services as assistant-secretary had well earned the respect of the Council. Gentle, earnest, conscientious, ever ready to help others out of his wealth of knowledge, Mr. Sowerby's name will be remembered with affection and reverence by all who knew him. His was truly a blameless and a useful life. *The "Lancet."*

BOTANY FOR BEGINNERS.—XV.

THE grain of Wheat and the acorn have this in common—that they are neither of them seeds. Most people unversed in botany would class them as such, but this is one of the many vague and incorrect notions which the botanical student has to rid himself of. Both invest and contain the seed, but are themselves no more to be considered the seed than the case of a watch is to be held as a timepiece. The acorn, as previously explained (p. 1197), is the seed-vessel. The outer skin of a grain of Wheat or other cereal in like manner is the seed-vessel. In botanical language, the "fruit," or "seed-vessel," is that which immediately contains or invests the seed—it is, in fact, the pistil or ovary of the flower, more or less altered in character during the ripening of the seed. By referring to the description and illustration of the Wheat (fig. 283), this statement may the more readily be comprehended. To see for oneself the structure of a Wheat grain, which is what every one should do who wishes to have a clear knowledge of the subject, a few grains should be soaked for some hours in water; or, better still, they should be induced to germinate, and all the stages of the process watched.

We have already mentioned how this can be done in the case of an acorn or a filbert suspended in a bottle, and we may now commend to the notice of those of our readers to whom it may not be known an equally simple method of growing their own Wheat on the chimney-piece, where it will form an object of great interest to the young folk, and a pretty ornament during the dull season. All that it is necessary to do is to secure some ears of Wheat, with a portion of the straw to serve as a stalk, and to plunge these stalks into some sand or moss placed in a vase or bowl, so that the ears project above the surface of the sand. The sand should be kept constantly moist, and the vase should at first be placed in a dark cupboard till the germs begin to sprout, when it may be moved on to a mantelpiece or into a window —anywhere, in fact, where it will get a moderate share of light and warmth. We once had a bowl of this description with a dome of sand in the centre, which, when covered with the green sprouts of the Wheat, presented so much of the aspect of the odd-looking ornament on the top of the monument near London Bridge, that we were almost tempted to suppose the architect took his idea from a mass of germinating Wheat grains in a bowl! To revert to our Wheat grain. Let the pupil take one that has been duly soaked, or which has only just commenced to grow, let him slice it in half lengthwise, as has been done at fig. 283, A B C. He will then see that the great bulk of the seed is made up of a floury mass, at one end of which is a little body, the embryo, fig. 283, B C, which wants a little looking for on the part of a beginner unaccustomed to use his eyes, but which may be recognised by its different texture and colour, and which, as growth proceeds, will force itself into recognition by the importance of the changes it undergoes. The floury mass is the *perisperm*, or albumen, and is the inner portion of the seed; its "floury" character is due to the circumstance that it contains a quantity of starchy material, stored up in anticipation of the wants of the seedling plant.

Comparing this arrangement with that of the acorn, it will at once be seen that the seed proper in the Oak contained no store of nutriment corresponding to the albumen of the Wheat, and the embryo plant filled up the whole of the seed, instead of occupying a little notch at one end. The seedling Oak is thus independent of the seed from the time it begins to sprout, even as a young chicken asserts its independent existence almost immediately after it is liberated from the eggshell. The seedling Wheat is not so precocious, it is more like a helpless kitten, and is dependent on its mother-seed for its supplies for some time. Of course this analogy must not be pressed too far. The fact is, the necessities of the seedlings in the two cases are equally well provided for, the one is no more really independent in its early stages than the other. The difference between them is merely this, that in the Oak the food for infants—true farinaceous food—is stored up in the tissues of the seedling itself, which thus, as it were, lives on its own resources, while in the Wheat the nutritive matter is contained in the seed and not in the seedling. After this explanation it is easy to see why the seedling Oak has such sturdy proportions almost from the first, while the seedling Wheat, on the contrary, is so tiny in its dimensions.

In order clearly to see the parts of the seedling Wheat, and to trace its mode of growth, it is advisable to take a grain that has not merely been soaked, but one which has begun to germinate, as has been done in the case from which fig. 283 D was taken. Now compare this seedling with that of the Oak, fig. 274, p. 1197. In the Oak is a central stem or axis bearing, one on each side of its centre, the seed-leaves, and terminated above by a bud, the *plumule*, which thus emerges from between the seed-leaves, and ending below in a well-marked radicle or root, which tapers gradually from above downwards. In the Wheat there is a similar central axis, but it is comparatively very short. It bears on one side a single seed-leaf (*monocotyledon*), see p. 1197, concealed within the seed, the lower part of which forms a sort of very short sheath around the stem, and out of which the first bud or plumule emerges in such a manner as to appear to spring from the side of the seed-leaf, instead of from the end of the stem, as it does in reality.

Below the seed-leaf the stem scarcely tapers at all, neither does it perceptibly lengthen. The true root, then, is by some supposed to be absent in these cases. Probably it would be quite as correct to say that the root of a monocotyledon does really exist, but that instead of lengthening, as in the case of a dicotyledon, it is subjected to an arrest of development. Whether this be so, or not, the fact remains that a tap-root, such as we see in the Oak, has no existence in the Wheat, and that in the latter case the office of the root is filled by a number of fine threads, which gradually emerge from the root end of the seedling Wheat, fig. 283, D E, pushing before them the skin, and ultimately breaking it so that each root fibril passes through a sheath—a circumstance very characteristic of the root of monocotyledons, but very rare in those of dicotyledons. These root fibres of the Wheat rapidly branch and subdivide, so as to be able to avail themselves, so to speak, of every particle of soil, or rather of every droplet of water intervening between these particles. Thus every provision is made for rapid growth, rapid feeding, and rapid reproduction. The *rôle* to be played is quite different in this respect from that which has to be enacted by the acorn, where deep anchorage, slow growth, and firm wood have to be secured years before it becomes necessary to produce acorns. This question of root-growth is one of the most important that can occupy the attention of gardeners and farmers, but it is one that has not been sufficiently attended to. Intending to confine these remarks to structural points chiefly, we merely indicate this matter as one deserving the fullest consideration of practical men, and may ourselves revert to it on a future occasion. We have now indicated the differences between a dicotyledonous and a monocotyledonous seedling, and we have shown (p. 1197) how these differences are associated with so many others as to render it possible to group all flowering plants—barring exceptional instances too small in number to be worth considering from this particular point of view (though in themselves most worthy of attention)—into the group of monocotyledons to which the Wheat, the Tulip, the Hyacinth belong; and dicotyledons, under which the Willow, Poplar, Ash, Daisy, and other plants that have been illustrated in these articles, may be grouped. The main structural features, however, on which we would lay stress, in the case of the seedling Wheat, are these—the *alternate* arrangement of the leaves, as manifested from the very first in the single cotyledon, and the definite growth of the root (or at least of the root-end of the stem). It is worth while calling attention to these principles of growth as here shown in a simple condition, in order the better to understand the working of the same principles in their more complicated manifestations in the course of the growth of the tree or shrub.

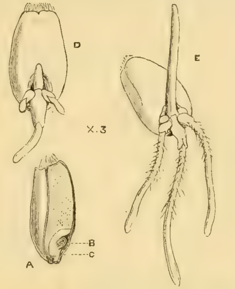

FIG. 283.

A, Grain of Wheat from which a slice has been taken to show the interior; B, Plumule; C, Radicle; above B is the solitary cotyledon at the base of the albumen, marked by fine dots in the engraving; D, Early stage of germination, the cotyledon is retained within the grain, the plumule is shown ascending, and three root-fibres are protruding through their root-sheaths; E, Further stage of germination.

THE ACTION OF FROST.

WE have frequently recurred to the interesting subject of the effects of frost upon vegetation, and we now give some extracts from Dr. Goeppert's article in the Botanische Zeitung on the degree of cold which plants will bear. Nobody, perhaps, has devoted more attention to this subject than the author, who published an important work, containing his earlier observations, some 40 years ago:—

Our knowledge as to the actual degree of cold which plants will bear without injury is still far from complete, on account of the general disregard of modifying conditions. At Ustjanks, in Siberia, 70° 55′ N. lat., the mean winter temperature is —38°,[*] and that of the coldest month, January, —44°, whilst at Jakoutsk, although 8° further south, in 62° N. lat., the mean is even —38°.9, owing to peculiar conditions, and the lowest —44° in December, the coldest month, during which on 19 days the thermometer did not rise above —40°. For 12 or 13 weeks the mercury is constantly frozen at the latter place. Even as far north as 75° N. lat., in the Polar Sea, Parry found the coldest months several degrees warmer than it is at Jakoutsk; but in West Greenland, 78° 37′ N. lat., Kane experienced —43°.5, McClure even —47°; and the latest German arctic expedition, on the east coast of Greenland, in 77° N. lat. registered, as the greatest degree of winter's frost, and that in February only —32°. Kane still found, even in these high latitudes, a somewhat luxuriant vegetation; and at no part did the snow line descend to the sea level. Hence there can scarcely be a doubt of the existence of vegetation even up to the north pole.

The cause of this remarkable phenomenon must be sought for in the protection afforded by the covering of snow, which prevents radiation, and, as a bad conductor of heat, the penetration of frost, thereby ensuring a more uniform and less fluctuating temperature. For the first observations on the temperature of snow at different depths we are indebted to Saussure ("Voyage dans les Alpes," t. ii. § 1002, p. 459). On one of the peaks of the Great St. Bernard, called La Chenalette, at an elevation of 8413 feet, with a temperature of +8° in the sun, the snow immediately beneath the surface showed freezing point, and the same degree at a depth of 3 feet.

The first connected observations, with reference to vegetation and the temperature of the snow and ground, were made by Goeppert in the Botanic Garden of Breslau, from January 22 to February 17, 1830.

The ground where solid was frozen to a depth of 12 inches, and where tilled to a depth of 16 inches. On January 22 the mean temperature of the air from three daily observations was —20°, on the 23d —16°.4; and the temperature beneath the 4-inch covering of snow —6°.5. On the 24th, with a mean air temperature of —8°, the snow, now 8 inches deep, showed only —2°.5; from the 27th to February 2, with a mean temperature of —2° to —3°, between —0°.4 and —0°.8, at a depth of 8 inches. On February 4 the snow attained a depth of 12 inches, and remained so until the 15th, on which day a thaw set in, followed by frost again on the 17th. The mean temperature of the atmosphere of this period, from February 4 to 15, amounted to —8°, and that of the snow at a depth of 12 inches during the coldest days, on three days only, —2° to —2°.5. The temperature of the ground corresponded to that of the overlying snow at a depth of 1 or 2 inches only, rising gradually to the freezing point at a depth of 12 to 16 inches. Of course, all the roots of perennials were frozen stiff, and they remained so below a depth of 1 or 2 inches during the rapid thaw of February 15 to 17, whilst the upper green portions, that had been sheltered by the snow, began to vegetate.

On the 17th, in the afternoon, the temperature again fell to —2°, and the snow froze so hard that in some places one might walk over it without breaking the crust, and on the same day there was another slight fall of snow, forming a new layer about an inch thick. Beneath this, on the 18th, the green part of plants were not frozen; and the temperature of the snow, at a depth of 5 inches, remained at freezing point, although the temperature of the air throughout the day fluctuated between —5° and —4°. On the 19th, after a night temperature of —8°, and —4° at noon, the snow registered —2° in 5 inches, and in 3 inches —3°.5, and all the green vegetation was again frozen. On the 20th, the temperature rose from —9° in the morning to freezing point towards mid-day. The snow was now colder, —1°.5, at a depth of 5 inches, than the atmosphere; whilst nearer the surface it ultimately established an equilibrium with it. On the 21st, when the thermometer did not rise above —4°, and did not fall below —5°, the lowermost layer of snow answered to that of the previous day, and the uppermost came nearer to that of the air, viz., --2°.5. On February 22 and 23, with a mean temperature of +2°.4, the snow disappeared almost wholly in many places, and nowhere was there sufficient left to institute further observations on its temperature; notwithstanding which, however, the ground and vegetation remained frozen below 3 inches deep. Amid alternating frosts and thaws the ground was not free from frost a foot deep until March 14. In spite of this apparent obstacle, vegetation began to develope, and Holosteum umbellatum and Draba verna flowered. Not before the 20th had all traces of frost in the ground disappeared.

Goeppert's observations in February, 1870, in the same place, led to similar results. During the preceding month of January, according to Dr. Galle's observations at the Breslau observatory, the mean temperature was —1°.03. The warmest days were the 8th, 9th, and 10th, with +4°.33, +4°, and +3°.67; the coldest, the 26th and 27th, with the mean temperatures of —7°.87 and —7°.60.

The snow which fell towards the end of December thawed on January 6, as also the slightly frozen ground, and was renewed again on the 17th, and remained about the same thickness—4 inches—until the 11th of the following month, and was very little increased before the thaw on the 19th—a very rare circumstance at this time of year, but just what I wished for my observations. The moderate frost of the latter part of January increased to great severity on February 1, and for about 12 days the cold was more intense than has been known for such a period since 1791, excepting the winter of 1830, when the above-mentioned observations were made.[*] The average temperature of these 12 days and nights was —13°.69, and that of the six days, from the 5th to the 10th inclusive, even —16°.03; the coldest mean for the 24 hours was —17°.63, on the 6th. On three days (the 6th, 7th, and 8th) the thermometer fell in the morning below —20°, and the minimum registered was —20°.5, on the 7th, at 6 o'clock in the morning. From the 13th onwards the cold was less severe, and it thawed during the last five days of the month, with a maximum of +5°.3 on the 28th, and the warmest mean daily of +3°.1 on the 27th.

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[*] The degrees are of Reaumur's thermometer, which, it will be remembered, has its zero at freezing point, and the boiling point at 80°. A degree of Reaumur's scale is equal to 2¼° of Fahrenheit's. The degrees are reckoned plus or minus, according as they are above or below the freezing point.

[*] It is a remarkable fact that in England (Blackheath) the temperature did not fall below freezing point in February, 1870, until the 9th, though we had experienced very cold weather in January. We then had a period of about six days' severe weather the lowest temperature recorded being 19°.4 F., equal to about —6° R., on the 11th. Breslau is in about the same latitude as London.

The mean temperature of the whole month of —7° is 6° lower than the average rate. The greatest fluctuations of temperature from one day to another occurred—

Jan. 31 to Feb. 1	—6°.8
Feb. 5 to Feb. 6	—2°.9
Feb. 12 to Feb. 13	+5°.5
Feb. 15 to Feb. 16	+4°.1
Feb. 20 to Feb. 21	+3°.4
Feb. 23 to Feb. 24	+2°.9

Goeppert's observations on the temperature of the snow, which was 4 inches deep, began on February 4, and terminated on February 16.

On Jan. 29 the mean temperature was	— 1°.15
,, 30 ,, ,,	— 0°.83
,, 31 ,, ,,	— 4°.83
On Feb. 1 ,, ,,	—11°.07
,, 2 ,, ,,	— 9°.17
,, 3 ,, ,,	—10°.5

	Temperature of the Atmosphere.			*Temperature under the Snow.*	
4th Feb.,	morn., 6 o'clock	—13°.6	—12°.6	morn., 7 o'clock	—3°
	after., 2 do.	—10°.4		after., 2 do.	—3°
	even., 10 do.	—13°.8		even, 7 do.	—3°
5th Feb.,	morn., 6 o'clock	—17°.2	—14°.7	morn., 7 o'clock	—4°
	after., 2 do.	—11°.1		even., 7 do.	—4°.5
	even., 10 do.	—16°.0			
6th Feb.,	morn., 6 o'clock	—20°.0	—17°.6	morn., 7 o'clock	—5°
	after., 2 do.	—14°.8		even., 7 do.	—5°
	even, 10 do.	—18°.1			
7th Feb.,	morn., 6 o'clock	—20°.5	—16°.7	morn., 7 o'clock	—5°.6
	after., 2 do.	—12°.9		even., 7 do.	—5°.5
	even., 10 do.	—16°.8			
8th Feb.,	morn., 6 o'clock	—20°.0	—16°.7	morn, 7 o'clock	—6°
	after., 2 do.	—13°.7		even., 7 do.	—6°.5
	even., 10 do.	—16°.4			
9th Feb.,	morn., 6 o'clock	—19°.2	—15°.4	morn., 7 o'clock	—6°
	after, 2 do.	—12°.6		even., 7 do.	—6°
	even., 10 do.	—14°.5			
10th Feb.,	morn, 6 o'clock	—19°.6	—14°.9	morn, 7 o'clock	—6
	after., 2 do.	—11°.7		even., 7 do.	—6
	even., 10 do.	—13°.4			
11th Feb.,	morn., 6 o'clock	—15°.8	—15°.8	morn., 7 o'clock	—5°
	after., 2 do.	..			
	even. 10 do.	..			
12th Feb.,	morn., 6 o'clock	..	—8°.95	morn., 7 o'clock	—4°.5
	after., 2 do.	— 8°.7		even., 7 do.	—4°
	even., 10 do.	— 9°.2			
13th Feb.,	morn., 6 o'clock	— 7°.8	— 5°.7	morn., 7 o'clock	—3°.5
	after., 2 do.	— 4°.7		even., 7 do.	—2°
	even, 10 do.	— 4°.6			
14th Feb.,	morn., 6 o'clock	— 4°.8	—5°.03	morn., 7 o'clock	—2°
	after., 2 do.	— 4°.2		even., 7 do.	—2°
	even., 10 do.	— 6°.1			
15th Feb.,	morn, 6 o'clock	— 9°.2	— 6°.9	morn., 7 o'clock	—2°
	after., 2 do.	— 5°.7		even., 7 do.	—2°
	even., 10 do.	— 5°.8			
16th Feb.,	morn, 6 o'clock	— 5°.4	— 2°.8	morn., 7 o'clock	—1°.5
	after, 2 do.	— 0°.2			
	even., 10 do.	— 2°.8			

The ground itself was frozen 15 inches below the snow, and on the very cold day of February 5, at 2 inches deep, it was only —1°.

Two series of observations upon nearly the same spot in our garden agree so well in results, and show the use of the snow as a protective agent for vegetation.

At the Professor's instigation similar observations were instituted in several other parts of the province, the layer of snow being quite uniform throughout, and the results obtained corresponded to my own, with slight modifications, due to the nature of the soil and the presence or absence of woods. It was also ascertained that not only snow, but also a thin layer of leaves, 2 or 3 inches thick, affords an extraordinary amount of shelter to herbaceous plants. According to a statement by H. and G. Schlagintweit, Boussingault ("Econom. Rurale," ii., p. 250) appears to have made observations on the temperature of snows, but I have not seen his work. Kerner's observations are, however, known to me, and coincide with mine. The temperature of the air showed a fluctuation of 23°, and that of the ground little more than 1° (A. Kerner, "Kultur de Alpenpflanzen:" Innsbruck, 1864, p. 150).

The snow covering exercises an equally favourable influence in the highest northern latitudes. Kane, to his surprise, and formerly our own, found luxuriant vegetation of perennial plants in 82° N. lat., and in 78° 50′ N. lat., with a surface temperature of —27°.5, at a depth of 2 feet in snow —17°, at a depth of 4 feet —13°.3, and 8 feet —2°.6, only a few degrees below freezing point, about 6° Fahrenheit. Middendorf,* it is true, instituted no observations of this kind, but he furnishes a very decisive example of the effects of snow in an observation that the actual northern limit of the Fir tree in Taimyrland is 1° north of its forest limit. But the Fir is reduced to an intermediate stage between root and stem, which does rise above the snow covering. All shoots protruding through the snow are yearly killed back, so that it is entirely dependent for life upon the snow. We must not be astonished, therefore, at the appearance of a luxuriant vegetation there, because the lowest temperatures of —40° to —50° never reach it, and possibly it never has to bear more than a few degrees below freezing point.

The stony ground of our Alps is early clothed with a thick, abiding layer of snow, and thus it is seldom frozen to any considerable depth, and rarely has to bear more than —2° of frost—about 27° Fahr.—according to Kerner. Under less favourable circumstances most plants would succumb. Roots of Helleborus niger, H. viridis, and Valeriana Phu perished when out of the ground, at a temperature of —15°, and those of Cicuta virosa at a still lower, about —10°. Julius Sachs discovered that the roots of Myosotis palustris possess a very slight power of resistance against the cold. In return, many roots in the ground will bear an extraordinary degree of frost for a lengthened period without being killed, which I proved by direct observation during the remarkable winter of 1829-30. They remained frozen without injury from November 20, 1829, until February 9, 1830, during which time the temperature never rose above the freezing point. In East Siberia, on the ice-bound ground, the roots of plants are always frozen in winter, and entirely independent of the mean temperature of the ground, which is far below their growing point. The roots freeze hard and stiff, and do not penetrate the underlying ice stratum, about a foot below the surface, but turn away as though they had encountered an impervious stone. Goeppert, however, doubts whether this torpidity could continue for several years without injurious influence, especially in the case of flowering plants; less so with Lichens. Charpentier, Ramond, Veultz, and Thomas, cite instances in which different plants, including Phanerogams, such as Trifolium alpinum, Geum montanum, Cerastium latifolium, &c., have remained under the ice of the glaciers for years without injury. The presumed growth of plants under the snow scarcely deserves serious refutation. It rests merely upon incomplete observation. The flowers of such plants are so far developed during the preceding autumn as to need but little warmth in spring. According to Von Vogt, Galanthus nivalis will flower at a temperature of +2°.42, Hepatica nobilis, +4°.77, &c. (Dove, in the "Monatsberichten der Berlin. Akadem." 1850, p. 214.)

This premature development of the flowers I observed here in the open air in 1829 and 1830, in 236 (chiefly alpine) plants, belonging to 42 families.

True winter flowers are rare with us, with the exception of some annual plants already alluded to. Bellis perennis and the cultivated Helleborus niger only belong to this category. Their flowers stiffen with the slightest frost, but grow on again when it thaws, though the same portion of the roots remains frozen. Towards Christmas, when the weather previously has been only moderately cold, Helleborus niger is in full bloom, and Bellis is much the same throughout the year. Bellis withstood the cold of the winter of 1870, when purposely deprived of its snow covering, but the leaves and flowers of Helleborus niger perished, though not where sheltered by the snow.

Under these circumstances the full severity of the frost is only experienced by the parts of plants above the snow, and the Mosses, Lichens, and Fungi growing upon the trees, &c., not only in the arctic regions, but likewise in our own latitudes. And to the absence of an abiding snow layer we may ascribe the loss of many polar and arctic plants in our gardens. Thus trees and their parasites alone experience the extremes of temperature given at the beginning of our article, and especially the Siberian Larch, Larix sibirica, Led. This forms, according to Middendorf (*l. c.* p. 1662), a forest even up to 72° 30′ N. lat., in Taimyrland, which is the highest northern forest limit on the earth. It attains here a diameter of 4 to 6 inches, and a height of 3 to 4 German fathoms, with an annual growing period of only nine or ten weeks. Associated with this are:—Picea obovata, Led., which reaches 67° to 69° N. lat.; Pinus ajanensis, Fisch., 70°; Abies sibirica, Led., 67° 45′; Pinus sylvestris, 64°; Pinus Cembra and Betula alba, on the Lena, according to Wrangel, up to 71° 5′; Alnus incana, to 69° 5′; Alnus fruticosa, to 70° 45′ and 71° 45″; Populus suaveolens and tremula, to 69°; Prunus Padus, to 70° 5′; Sorbus Aucuparia, 71°, and beyond; Juniperus nana, at least to 71° 5′; and the same with Betula nana and the Willows as the most northern — the latter scarcely rising above the Moss and Lichen, with underground branches 5 to 6 feet long, like our Salix herbacea, &c.

In European Russia the tree-line is much farther south. The Birch appears as a bush only in 70° N. lat., on the Kolan peninsula of Russian Lapland; the Mountain Ash, also, only shrubby in 67°. In Norway, as trees, Pines and Firs up to 70°, and the Aspen and Mountain Ash perhaps a little farther. In arctic America, according to Richardson, Pinus alba, together with Populus tremuloides, balsamifera, and Betula papyracea, forms the tree limit, 60° N. lat., in the valley of the Mackenzie; and Pinus microcarpa, P. Banksiana, P. nigra, Alnus viridis (20 feet high), Salix speciosa (12 feet high), Juniperus virginiana, shrubby, reach no higher than 68° 5′. In the valley of the Mackenzie, Seemann saw a wood of Pinus arctica, in 66° 44′ N. lat.

The strange assertion by the otherwise trustworthy Schacht, to the effect that the bark of trees prevents the ingress of frost, may be disproved any winter. Krutsch investigated this point in 1853, and found, with the temperature of the air at —23°, that of living trunks of Pines, &c., to be —20°.9.

Cryptogams, especially Lichens, are found up to the extreme limits of vegetation, and are capable of withstanding a greater degree of cold than any other class of plants. Even Fungi were found by Middendorf on the Larch in 71° N. lat. The number of Lichens found growing on trees and shrubs in the arctic regions is considerable, amounting, on the authority of Prof. Körber, to 68, of which, however, only 10 belong exclusively to high latitudes.

It is estimated that the lowest temperature borne by Lichens in exposed positions, such as the faces of rocks, &c., where no snow can protect them, is not beyond —24°, equal to 22° below zero Fahrenheit. *H.*

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[*] "Sibirische Reise," iv., p. 668, the most complete German work on the Arctic Regions, extremely rich in observations on the biological and morphological relations of plants.

Home Correspondence.

The Potato Disease.—There is nothing very singular in the fact of two learned men—Dr. Kühn and Herr von Schultzenstein—arriving at opposite conclusions respecting the nature of the Potato disease. As this mysterious visitant is now known to be atmospheric, philosophy and learning are equally impotent to teach us more than we already know of its nature, or how to cure it. We must try, however, to grow the noble tuber at whatever cost, for there is no root known in our climate ever likely to be a substitute for it, and I believe the great bulk of the population would rather go without bread than Potatos as an auxiliary for their dinners. Your correspondent (W. H. Rogers, p. 1228) is for lessening the cultivation of Potatos, and to look out for a substitute. This is the old panacea promulgated by the Potato commissioners when the disease first appeared, but the substitute has not been found yet, nor is it likely to be. In the dry years of 1868, 1869, and 1870, as good crops of Potatos were grown, both as regards quantity and quality, as in any year before the disease first appeared. Even in this year, although June and July were such wet and ungenial months, the great bulk of the early and second early sorts, showed capital crops, and where fully matured before the beginning of August they were free from the disease, and when lifted and stored have kept well till this date. Another correspondent (W. Hope, p. 1228) is hopeful that he has found a remedy for destroying the germs of the Fungus in the tubers by fumigating them with sulphur. As he says he was profoundly ignorant of the subject of curing the Potato disease until this year, he may not be aware that sulphur has been tried before, and found to be of little benefit as far as regards preserving the diseased tubers. At Welbeck, in the years when the disease first appeared, a series of experiments were tried, and, amongst them, sulphur was used, as well as chlorine gas. An old Mushroom-house was closed up, and fitted with open shelves, and the diseased Potatos spread on them in thin layers, so that the fumes of sulphur and chlorine gas could penetrate all round the tubers. After repeated fumigations, the diseased Potatos were stored in the usual way, but they rotted, or dried up, as bad as those not operated upon. The theory of electricity having something to do with bringing the disease on is, I think, only tenable in one way, namely, the first attack of it is often seen in August, during sultry, moist weather, either preceding or after a thunderstorm; but the weather then is favourable for the development of the mildew without the electrical effects. On purpose to set the disease at defiance in seasons like the present, early and second early varieties, of good keeping properties, must be found out, and planted for the main crops. It might likewise be worth while to try very late planting, so that the Potatos would only arrive at a state of ripeness by the end of October, when the cold weather would check the mildew from appearing—heat and moisture being its foster-parents. Our great Potato authorities have now a splendid opportunity of raising early seedling Potatos of good keeping properties; and consumers would not grudge their making little fortunes in trying to resuscitate the noble tuber from its present degraded condition. *William Tillery, Welbeck.*

—— I have just finished getting in and storing my Potato crop, and have again, for the nineteenth time in the last twenty years, to record with thankfulness my exemption from serious loss by disease. This favourable result of my labour is the more important as again in the present year, as frequently on former occasions, it is so different from that which many of my neighbours have experienced. For example, the percentage of loss in one kind (Paterson's Early Perfection), which in my case is 1 in 30 perhaps, is 60 or 70 per cent. in the case of a neighbour, to whom I gave some of my seed from the same lot. These opposite results cannot then be attributed to difference in the liability to disease of different kinds of Potato, although I strongly incline to the belief that such difference exists. It cannot be attributed to difference (apparently) in the nature of the attack, for my Potatos were affected in the haulm at the same time and in the same manner as my neighbour's, yet when we come to the harvesting, my crop (the bulk of it) is safe, and his is lost. Now in the sight of this startling difference, illustrated in the present season by comparison of my crop, not alone with that of one of my neighbours, but of many—illustrated also by similar comparative differences during many years, and in several different counties of England and soils in which I have grown Potatos—I have some right, I think, to claim, under God's mercy, attention to the mode of treatment which has been attended with such uniform exemption from the destructive effect of this disease. I find my poor neighbours willing to listen to me, not only because my loss is so slight in comparison with their own, but because my crop is so abundant, and that without my possessing any extraordinary resources for enriching my poorish soil, and so accounting for that abundance. It is, in fact, the simplicity of the means adopted, and which are so successful in their results, which enables me to recommend to poor men the same mode and principles of culture. The same facts may justify me in publishing these things, and seeking to impress them, through the pages of your excellent paper, on the minds of those who have suffered serious loss. It is the more due from me to do this, because many of the ideas were originally drawn by me from the pages of the *Gardeners' Chronicle*, though added to by my own observation, and the whole systematised in the course of years. In answer to Mr. Fenn's question, I can only say that I cordially wish him God-speed in his attempts at improving the kinds of Potato, and in advocating progress in the mode of cultivation. I cannot, without much more convincing proof, accept of his electrical theory any more than I can feel confident that the mould theory, to which I incline, is the true one. One thing, however, I would observe in reply to him in relation to a wet or dry system of treatment. I should not expect a crop, or freedom from disease, by drying up the soil; nor should I expect attacks of disease from the action of rain, either artificial or otherwise. The Potato must have a considerable amount of moisture for the promotion of vigorous, and therefore of, in one sense, healthy growth. Stagnation of water about the roots, or of vapour about the plants, is, I think, the condition of extreme danger, so far as water is connected with it; and every precaution must be taken to prevent this. Having given in a previous communication some of the most important of my rules in Potato planting, I will now recapitulate them shortly, adding some previously omitted:—1. I plant those kinds, both early and late, which are in repute as the most healthy and profitable kinds. 2. I always choose good-sized and perfectly shaped Potatos for seed, and store them so that they shall not be heated or subjected thereby to premature sprouting. 3. I cut all Potatos into sets, retaining but few eyes (often only one), in order to produce a tree-like growth, *i.e.*, with one stem. 4. I plant early, *i. e.*, in February or March, the former in preference. 5. I plant the sets, so that when earthed up (very moderately) they shall be 7 inches deep. 6. I subsoil my Potato ground most thoroughly, and if I suspect that the land requires draining, I plant in beds so raised above the general level of the ground that the sets lie upon the original surface level; nor would I ever plant Potatos on such land if I could help it; *i. e.*, until thoroughly drained. 7. I act upon this as an essential principle, that every plant shall have ample room to expand its foliage to the genial influence of sunshine, light, and air, and so that the rays of the sun may penetrate to the surface of the soil beneath, and that thorough aëration may take place, maturing the foliage, producing short, stiff, and hardened stalks, and dissipating the vapours. 8. In manuring, which I do abundantly, I take special care to secure all the liquids as well as solids of the stable, stall, or stye; and if I could only have one of these I would not hesitate to choose the former. My attention was directed years ago to the exceeding healthiness and excellence of a crop of Potatos grown on old garden ground and manured the previous autumn with the contents of a tank attached to a pigstye. By a rough application of chemical analysis, I came to the conclusion that the large quantity of saline matters contained in urine, and likewise so characteristic of the Potato, indicated the value of the former as a manure for the latter. There appeared to me then, and ever since I have perceived the same effect, that the growth of the Potato thus fed is peculiarly healthy, and the produce uniformly excellent; and, on the contrary, from hot dry stable dung, such as is used in making hotbeds, I have observed rankness of foliage, distortion in the tubers, hollowness in the centres of the larger ones and coarseness in quality. From the time of making that observation I have never grown a coarse quality, though occasionally I have had many very large Potatos. Now certainly if we would have a plant resist disease, we must aim at producing the most healthy state possible to meet the attack. I know not how to avoid the attack, I therefore aim at the best possible mode of resistance. 9. Keeping the crop clean, and cutting off the whole of the haulm as soon as it is so far gone as to be useless to the promotion of growth to the tubers, complete my series of remarks. Cultivators, and especially cottagers, disregard my seventh rule, and in order to secure largeness of yield overcrowd the plants. This temptation must be resisted, and one of the most powerful motives to depart from the custom is that it does not attain its object. The abundant room which ministers to healthy growth increases the yield. I have dug 3 lb. of Potatos this year from one plant of Rivers' Royal Ashleaf; and the yield of Paterson's Blues has been in some places prodigious, many tubers weighing over 1 lb., and though the haulm was badly affected, and the sickly odour of the disease in it very perceptible, not more than 1 in 20 (near the shade of a belt of trees) proved diseased, and more generally not more than one or two to the bushel. Walking yesterday evening among the cottage allotments, I noticed a labourer digging Red Regents. The produce would have been unsaleable for want of size. He told me there had been a fair quantity of larger tubers, but that they were all rotten. The drills were 21 inches apart, with here and there a row of Broad Beans, and no extra room allowed for their growth. The Potatos were close to the surface. The ground had been dug with a spade used in a sloping direction, and not penetrating more than about 7 inches. The subsoil had never been stirred. The result was miserable failure. I hope to see better cultivation, and the introduction of the better sorts of Potatos among the labouring class; and trust that this long account may be of some value to some of your less experienced readers. *J. M. Taylor, Seer Green Vicarage, near Beaconsfield.*

—— Plato, in his "Phædon," says, "If what I am about to advance appear to be true, embrace it; if otherwise, attack it with all your might." I say the same. Let us argue, not for victory, but for truth. We frequently mistake effect for cause. A man's head aches, and the wife, mother, or sister, rings the bell for vinegar and rag, and bathes the temples. As well might she blister a horse behind his ears for spavins in his hocks. The seat of the ache, or primary cause of it, are the offended nerves of the stomach, with which the nerves of the brain sympathise. Correct the stomach, and the pain in the head will cease. I never could detect Peronospora infestans with such glasses as I have. Probably they are not powerful enough. Let us then for a moment suppose there is Peronospora infestans to be found on the damaged stalks and leaves of afflicted Potatos. Is it the cause of, or the consequence of lesion? At present I agree with those who consider it to be a consequence, and not the cause of the malady. As long as a Lemon or Orange is sound in the skin, you will see no Fungus, but cut them in half, and the mould will soon form. How often have I seen in a decayed place in a lofty Elm tree a mighty Fungus, bigger than the crown of a hat, and looking like baked batter pudding? Well, I do not believe the Fungus caused the decay in the bark, but that the bark decayed, and the Fungus spore found a suitable "nidus." I believe something injures the tissues of the stalks and leaves of Potatos, suddenly stopping the inspiration and respiration of the plant, and that the juices of this member of the Nightshade family poisons the progeny, more or less, according to the more or less advanced state of the tubers. It is plain that damp ground and shady places greatly augment the calamity. It is curious; one plant will have all bad tubers, and the next plant all good ones. *W. F. Radclyffe, Sept.* 25.

Seaside Rock Plants.—I am forming some rockwork on a bank about 3 feet high, and about 60 feet long, in front of a greenhouse, the aspect south-east. The situation is somewhat hot and dry in summer, but it is well sheltered from cold winds. Would any of your correspondents be good enough to furnish me with the names of any permanent plants suitable, and that would be likely to do well and look handsome in such a situation? *William B. Miller, Elms, Ramsgate.*

Orchid Cultivation.—"G. H.," at p. 1229, says that he most thoroughly differs with me in my opinion in keeping down the temperature by shading in preference to giving any air. "G. H." must have made a great mistake, for if he looks over my letter a second time, he will find that I used the words different. I cordially thank "G. H." for the pains he has taken in giving a description of the foreign climate where this most beautiful class of plants come from, but I doubt very much whether he shall find any practical Orchid grower in this country to agree with him in his mode of cool treatment; for my part I should never agree with any of his propositions regarding the cool treatment, and as far as my opinion goes, the climate where these plants come from must be very regular, as there is nothing I can see more injurious to them than cold draughts and irregular heat. This was my object in saying at p. 1135 that I would prefer using the shading at certain seasons of the year in preference to giving much air; and if "G. H." has a collection of Orchids in charge during March, April, and May, he will either injure the plants or use the shading to a certain extent. I am strongly of opinion that in a few years' time, if "G. H." is spared so long, he will have the pleasure of seeing some of these plants growing out-of-doors during the summer months, as a substitute for the tropical plants. I am well aware that this can be done, and will prove very successful by proper treatment. *M. M.*

Hound Manure.—Seeing the extraordinary growth of grass on a piece of pasture where hounds are exercised, it struck me that the manure of them would be valuable as a top-dressing for Vines and fruit trees in general. The hounds are fed on boiled oatmeal and horse-flesh. *J. P. K.*

The Madresfield Court and Golden Champion Grapes.—Both of these newly introduced Grapes can now be seen growing at Chiswick, under favourable circumstances. They are in the small lean-to vinery, near the orchard-house, which, as is well known to the frequenters of Chiswick, has an aspect due south. The former is simply grand in development, fine in berry, large and handsome in bunch, and exquisitely flavoured. In all probability Mr. Barron will show some bunches of this at South Kensington on October 4, and its appearance will disappoint no one. The fruit-bearing wood is not particularly strong, but wiry, and very healthy; the flesh might be termed firm, but very melting and juicy, and the skin quite tender. And then the bloom! I thought of Milton's fine lines:—

> "—— blooming ambrosial fruits
> Hung amiable, Hesperian fables true,
> —— and of delicious taste."

The Editor of the *Gardener*, in the last issue of that periodical, when writing of this Grape, states, "We are of the opinion that the Muscat-house is the place for it." A somewhat striking comment on this sentence is furnished at Chiswick at the present moment. In the Rev. John Fountaine's orchard-house there can be seen growing against the line of supports along the middle of the house fruiting examples of the Madresfield Court and Black Hamburgh Grapes. It is in every sense of the word a cold house, and the front drop sashes are opened daily, and nightly as well, to admit a free current of air. Here the Madresfield Court has the appearance of being a valuable hardy Grape, capable of bearing as much exposure as the Black Hamburgh, but very much superior in every respect. Here is a robust growth, good bunches, fine berries, a capital bloom, and well flavoured; while the Black Hamburgh, that has borne some very fair bunches, is comparatively flavourless. This suggests that the Madresfield Court is an easily managed Grape, capable of shifting for itself to a considerable extent, bearing and setting freely, and therefore adapted for amateur cultivators who can only give a partial attention to their vinery. I think the Messrs. Lee have every reason to be proud of having given to the horticultural world such a fine Grape, in the high estimate of the excellence of which fruit cultivators appear generally to concur. In the small lean-to vinery can also be seen a remarkably good example of the Golden Champion Grape, as far as growth is concerned. The fruit-bearing wood is remarkably strong, and the impression seems irresistible, that if under any circumstances this Grape could be brought to a high state of perfection, it would be on a Vine healthily developed, as in this instance. The Editor of the *Gardener*, in the article before referred to, states—"The prospects of this Grape are improving." This is scarcely borne out by the Chiswick trial, except it may be taken as substantiating the opinion that it is a very uncertain Grape. There are several bunches on it, not one of which has any claim to be regarded as more than a third of a bunch; the berries on these are large, even in size, and pretty well coloured, but by no means highly flavoured, though very juicy. The Grape appears to be pretty well at its best, but fine and plump as the berries are, there can be observed on them that great defect—the tendency to spot. Looked at against the light, this takes the appearance of a dark substance formed within the berry, and gradually coming outwards. Whether this is merely an accident of cultivation that will be presently explained and removed, or whether it is an inherent defect in the Grape that cannot be eradicated, time alone will show. Meanwhile the general testimony goes to show the invariable appearance of this fatal blemish. Scarcely did any Grape look more promising at Keele Hall Gardens during the early days of last June than the Golden Champion. In point of cultivation it had all the advantages a new Grape under trial could desire to enjoy, and there was a master cultivator—a man who stands in the foremost ranks of the Grape growers of the day—endeavouring to get the very best results he could from it. Such a magnificent freedom of growth could scarcely be excelled; the bunches were very fine, and considering that the Vine was only recently planted the berries were enormous. "Surely," said I, "this must be a much abused Grape;" and Mr. William Hill, the gardener at Keele Hall, was very sanguine that it would acquit itself worthily. He promised to inform me how it succeeded with him; and this is his account of its doings, dated Keele Hall Gardens, Sept. 19:—"Respecting the Golden Champion Grape, it promised at one time to be very fine, as you observed; but, I regret to state it became discoloured, as I have always seen it. It is one of those sorts of Grapes that wants eating as soon as ready. I do not believe it will ever become a popular Grape." I have finished my testimony to the relative value of the two as shown by the Chiswick trial, and I leave it to the consideration of your readers. *R. D.*

Pergularia odoratissima.—What kind of treatment does this plant require? By whom, and when, was it introduced into this country? I thought of giving it the same treatment as the Stephanotis floribunda. *H. W. W.* [Pergularia odoratissima is an Indian Asclepiad, and was introduced in 1784. It is a free-growing stove climber, and does best planted out: the greenish-yellow flowers are exceedingly fragrant. It should have rich friable loamy soil. Eds.]

Flame Tree of Australia (Nuytsia floribunda).—It has been pointed out to me that the statement in the abstract of my fifth lecture, that this plant has never been known to produce a seed, is too absolute. The embryo is 3—4 cotyledonary, as described by Prof. Oliver in the Proceedings of the Linnean Society, vol. vii., 96. I had in my mind a passage in Prof. Harvey's Memoirs, p. 266, in which, writing from King George's Sound, he says, "One rarely gets ripe seeds here. Some plants seem seldom to ripen any seeds, and others are attacked by troops of maggots, which are deposited in the young pod, and eat the seed as it matures. This is especially the case with Leguminous plants. The Cabbage Tree (Nuytsia floribunda), one of the commonest and most showy of the flowering trees, and which produces annually sheets of golden orange flowers, thicker than the leaves, so that the bush looks a blaze of gold, has never been known to produce a single seed from all this display." How many centuries since the present stock were sown we cannot tell, but the only increase is by underground suckers from the roots of old trees. *W. T. Thiselton Dyer.*

Trial of Peas at Seaham Hall, Sunderland.—The following is the result of a trial of Peas at Seaham Hall, 1871. All the varieties were sown on March 4. The trial embraced 56 varieties, supplied principally from the firm of Messrs. J. Veitch & Sons, Chelsea. A word of comment is due from me, namely, to say how satisfactory it is to find what care and attention is taken by the trade in keeping the sorts so select. I find, out of so many kinds, scarcely two Peas that resemble each other. Those marked with an asterisk (*) I can recommend, and those with two (**) I can highly recommend as the best useful kinds. I may say I have had six practical gardeners to assist me in deciding their merits. All the kinds grew so tall with the wet season that the extreme height cannot be taken as a standard. As to flavour the trial was made in the raw state, which I think is not a good criterion to judge by. Although some gardeners pretend to judge the quality in this raw state, I have failed as yet to get master of this part of judgment. I must highly recommend to the notice of gardeners Maclean's Little Gem; I consider it the best and cheapest Pea to grow, as it requires no stakes: good flavoured, early, productive, and can be grown in rows 1 foot 6 inches apart, and the produce is equal to, or more than, that of the tall varieties—taking into consideration the same space of ground; the latter should be trenched 2 feet deep, and manured well. *Robert Draper, Gr. to Earl Vane, Seaham Hall.*

NAME.	In Flower.	Height.	Ready.	Average Peas in a Pod.	Remarks.
		feet.			
Auvergne	June 27	6	July 30	5	Good.
*Advancer	June 18	3½	July 19	6	Good.
*Carter's Leviathan ..	July 3	7	July 26	6	Good tall variety.
*Blue Scimetar	July 1	4	July 27	4	Good useful variety; the best variety in a dry season.
Bishop's Longpod	June 12	3	July 20	5	Good dwarf variety.
*British Queen	July 3	7	July 28	6	Very good, tall variety.
*Champion of England ..	June 22	6	July 20	6	Very good.
*Carter's Invicta	June 3	5	July 7	5 and 6	Very good, new sort.
*Competitor	June 3	8	July 29	5 and 6	Tall variety, large Peas and good flavour.
*Climax	June 10	4	July 19	5	Very good useful sort.
Champion of Scotland ..	July 2	7	July 26	5	Cannot recommend this sort; bad flavour.
*Dickson's Favourite ..	June 19	6	July 6	5	Good early kind.
Dwarf Sugarloaf	June 26	3	July 20	6	A useless variety.
**Dickson's First and Best ..	June 5	4	July 6	5	One of the best early varieties.
Eley's Essex Rival ..	June 18	7	July 23	..	Good.
**Eastes' Kentish Invicta ..	June 5	7	July 7	5	Very good new sort.
*Evershed's Marrow ..	June 20	5	July 23	6	Good.
*Epicurean	June 8	6	July 23	5	Good.
**Fortyfold	June 22	7	July 23	..	Good useful kind, and a good cropper.
*Glory of Cassel	June 22	6	July 19	6	Good.
Grotto	July 13	7	July 20	..	Tall late variety.
**Hundredfold	June 27	8	July 20	6	One of the best.
Harrison's Glory	June 16	3	July 21	5	Good, but not one of the best.
*Huntingdonian	June 18	8	July 23	6	A good tall variety.
*Hallett's Large	June 19	7	July 22	5 and 6	A fine tall variety.
Imperial Green Marrow ..	June 27	7	July 21	5	A good useful Pea.
Imperial Wonder	July 2	8	July 29	..	Too large to be recommended.
King of the Marrows ..	June 29	8	July 24	..	Too large to be recommended.
**Little Gem	June 8	2	July 10	5	Can highly recommend this for general use; the cheapest Pea grown.
*Laxton's Quality	June 8	7	July 12	5	Good new kind.
**Laxton's Quantity ..	June 8	7	July 23	5	Good; rightly named; one of the best.
**Laxton's Alpha	June 7	6	July 12	5	Good.
**Laxton's Supreme	June 27	7	July 20	5	Very good; highly recommended.
Maclean's Wonderful ..	June 28	3½	July 23	5	Good.
Mammoth Dwarf ..	June 28	3½	July 30	5	
*Maclean's Prolific ..	June 22	5	July 20	5	Good.
**Maclean's Premier ..	June 30	3½	July 14	6	One of the best.
Mumstead Marrow ..	June 30	7	July 28	5 and 6	A good tall variety.
Nonpareil Marrow ..	June 30	8	July 22	5 and 6	Good tall variety.
Nelson's Vanguard ..	June 11	3½	July 15	..	Very good.
**Ne Plus Ultra	June 30	8	July 24	5 and 6	One of the best for general use; highly recommended.
Paradise Marrow	June 27	8	July 20	5 and 6	Good.
*Prizetaker	June 18	8	July 26	6	Very good dark green variety.
Peabody	June 1	2	July 28	4	A useless variety.
**Princess Royal	June 27	3½	July 26	5	Highly recommended.
**Ringleader	June 3	5	July 6	5	Good early variety; one of the best.
Surprise	June 22	7	July 26	5	Good.
*Sangster's No. 1	June 6	5	July 10	5	Very good early kind.
**Sutton's Early Champion	June 5	5	July 8	5	Good.
**Taber's Perfection ..	June 6	5½	July 7	..	Good useful kind.
Tom Thumb	June 11	3	July 26	..	
The Australian	June 12	8	Aug. 3	6	Too tall, and very late for general use; the pods are warty at this season, also in Grotto.
**Veitch's Perfection ..	June 27	3½	July 28	5	A good useful Pea, of fine flavour.
*Waterloo Prolific	June 30	7	July 28	..	
**Waterloo Dwarf Branching	June 11	3½	July 30	5	One of the best; very prolific; very highly recommended.
**Yorkshire Hero	July 28	4	July 30	5	A good useful sort.

The Floral Committee and its Awards.—I was much pleased with the observations on this subject contained in your leader at p. 1223. It is a matter that I have thought much about of late, and I have come to the conclusion that, if the Floral Certificates are to be respected as of value, a fixed standard of merit ought to be made, and that when a Certificate is awarded, the particular merit of the plant should be mentioned. For instance, a plant may be especially useful for table decoration, bedding out, or for stove or greenhouse decoration; or again, it may be adaptable in a young state for winter work. At present the Certificates do not specify the qualities for which they are awarded, but are merely given for the plant; but it would, I think, be to the benefit of the public if this were otherwise, for it is the public, and not the traders, the Society should help and encourage. That the traders are the principal importers of new plants is true, and when such are exhibited they should receive their due reward, but that they should be favoured is not the right thing. It appears to me that a plant should not be valued according to its propagating qualities, but according to its permanent beauty, and in some instances, its rarity. This would much help to refine the taste and improve the standard of amateurs, for though some good collections of such plants as are not generally called florists' flowers, the majority are apt to be influenced by the Society, and go in for the most gaudy. When we benighted individuals have the presumption to show plants of beauty out of the common line, we hear that worn-out phrase, "they are very interesting, but more curious than beautiful," and are looked upon as strange fish; which feeling is in danger of spreading. Knowing Mr. Marshall's love of plants, I trust that under his guidance the danger of certificates losing their value may be avoided. That the Committee have acted always with the best intention, I believe; but when the stream runs strong one way, it requires a strong man to face it; and as plant fanciers are not men devoid of goodness of heart, they are apt to err through charity. I think the Committee have it in their power to help the public out of old ruts, and should be glad to see them trying to do so. *J. Croucher, Gr. to J. T. Peacock, Esq., Sudbury House, Hammersmith, W.*

Extirpation of Heath, &c.—I have lately enclosed a common, and I find the Furze and Heath are coming up very strongly. To plough it up would destroy my crop of grass; to draw up each rootlet will be a very expensive and tedious operation. Can you suggest any other course, so that I may destroy the Furze without getting rid of the turf? I have run the mowing-machine over the surface, but the Furze only grows thicker; and I shall be glad to hear the experience of yourself and that of your numerous correspondents. *Rusticus.*

Trees and Shrubs for Sea-side Planting.—I may be able to assist "An Old Subscriber" in this matter. Plants that will grow by the sea may be divided into two groups:—1st, those that will face the bluster of direct exposure to stormy sea wind, and, 2d, those which rejoice in the immediate neighbourhood of the sea, but are the better for some slight protection. From my own observation I will enumerate the two:—1st group: Scotch Fir, Pinaster, Juniperus macrocarpa, Abele Poplar, Tamarix, common Yew, Ailantus glandulosa, common Alder, White Willow and Goat Willow, Quercus Ilex, Gorse, Elder, Spartium junceum, Chenopodium fruticosum. 2d group: Norway Maple, Sycamore, common Beech, Fig tree, Myrtle, Arbutus, Sweet Bay, common Hydrangea, Bladder Senna, common Rhododendron. No doubt many might be added to these lists, especially the latter, and I hope some other correspondents may send contributions. Let me add some remarks. The whole of the first group may be added to the second. They will do well though quite exposed, but probably a little protection would help them, especially at first planting. The Scotch Fir is better than the Pinaster in very exposed situations, it gets less battered and broken. That most beautiful of our fastigiate Conifers, Cupressus macrocarpa, very much loves the neighbourhood of the sea, and flourishes gloriously in the southern counties thus situated; but, whether it would do well so far north as Southport, may be questionable. The White or Abele Poplar is also very tenacious of life under sea exposure, but it, as well as the Ailantus, Alder, and the two Willows, should have moisture. The Spanish Broom (Spartium junceum) grows surprisingly well near the sea. I have seen it flourishing in the most vigorous health, perfectly exposed to the east, growing in mere sand close to the waves. *S. J. A. S.*

Carbolic Acid: Fungi: Insects.—I notice that my paste, to which two or three drops of carbolic acid is added when made, never produces mould; but the acid does not seem to be injurious to the larvæ of a small crimson-eyed fly which breeds in the paste in swarms. If your entomological referee should not recognise the fly by my description of it, I will send him some specimens both in the larva, chrysalis, and perfect states. *W. Marshall.* [Our correspondent should send a specimen of the insect to Prof. Westwood, Oxford. Carbolic acid is now used in the herbarium at Kew to prevent mould on the dry plants. EDS.]

Irish Saxifrages.—The paragraph in the last number of the *Gardeners' Chronicle* suggests my asking whether any of your correspondents can state with whom originated the opinion that Saxifraga Andrewsii is a garden hybrid? Babington speaks of it as such; and Hooker and Arnott, in the 7th edition of their "British Flora," say, "From what we have learned, this supposed species is a garden hybrid, between S. umbrosa and S. ligulata." Does anyone know on whose authority these statements are made? And can any of your correspondents throw light on the origin of Saxifraga Guthrieana, a plant closely allied to, but less vigorous in habit than, Saxifraga Andrewsii? It exists in many collections, but I can find neither name nor description in any botanical work. Saxifraga Andrewsii occurs in the collection of the Jardin des Plantes, Paris, under the name of Saxifraga serratifolia, and in the Montpellier garden, there is a specimen stated to have come from the Alps, but without any name or exact record of locality. The history of such a plant ought not to be hidden in obscurity, and I hope some of your correspondents will take it up, and decide at once and for ever whether or not it is a garden hybrid, as has been alleged. If it is known to be a hybrid, the particulars of its birth and birthplace are probably known also. Some 18 years ago, long before I took to the cultivation of Saxifragas, I found a Saxifrage on the Great Isle of Arran, Galway, somewhat after the habit of Saxifraga cæspitosa, but with thick, fleshy, reddish leaves. Can any of your correspondents help me to a name for it? My herbarium specimens are labelled Saxifraga hirta. *Geo. Maw, F.L.S., Benthall Hall, Broseley.*

Scott's Pommier de Paradis.—Examples of this stock I have sent, to show how hardy it has proved amidst the almost general wreck of other kinds. The fruit should be tasted soon after gathering. The extreme hardiness of this as a stock, I should think, would tend to the healthy development of more tender sorts. Our young trees worked upon it this season have made extraordinary growths, and I now feel satisfied that no other stock can equal it in hardihood, let the seasons be what they may. We had it last summer (1870) as dry as it could well be; we had the thermometer down 3° below zero, this winter (1871); and now we have had one of the most disastrous springs for fruit trees that any of us have ever known; yet this hardy Apple has braved all weathers, and is in every sense in luxuriant health, and that, too, within a few yards of a river in low, rather damp ground. The branches and fruit sent were taken from a tree planted under the end of a water shoot, and will speak for themselves. *J. Scott.* [We are not sensible of any general wreck amongst the Apple stocks this season. We have looked over several quarters, and find almost all other sorts than those of our correspondent's in the most vigorous condition, equally so as in the examples sent, which were very good. It would be enough, we think, for our correspondent to state that he finds his variety of stock the best suited for his purposes, and best adapted for his soil and locality, and without entering into a general condemnation of all others, which have been proved to succeed elsewhere. EDS.]

Leptosiphon roseus.—The Godetia Whitneyi, introduced by me last spring, has received, both in your journal and other publications, abundant recognition of its value, but, with one exception, I am not aware that any special reference has been made to the beautiful little plant, introduced at the same time, whose name heads this note. I, therefore, crave a small space to call attention to its great value as an early bloomer, especially when sown in autumn, feeling confident that all who may make trial of it will be more than content with the result. Whether sown in early spring or autumn, it will never fail, in proper soils, and with proper treatment, to amply reward the cultivator for his trouble; but, as might be inferred by all who have grown the leading Californian annuals, this will be more especially the case when plants of the maximum size and vigour are obtained by autumn sowing, and which will yield their flowers before the heat of summer comes on. Sown early in September, in pans, pricked out when an inch or so high, and transferred to the beds or borders, either prior to the winter or about the middle or end of March, it will produce its bright rose-coloured flowers in great profusion, the beds presenting, when in full bloom, a sheet of colour to the eye. As may be supposed, the finest plants are obtained by planting out the seedlings early in autumn. If sown late, it will be better, after pricking off, to winter them in a cold frame. In conclusion, I would observe that those who will persist in the practice of thick-sowing, compelling, as often happens, 500 seedlings to develope themselves within limits barely adequate to the support of one, have only themselves to blame if the results do not realise their expectation. *W. Thompson, Ipswich.*

Mixed Bedding Plants.—In the remarks on the "bedding-out" in Hyde Park, contained in your issue of the 9th ult., my attention was drawn to the not altogether satisfactory introduction of Viola cornuta amongst some of the variegated Pelargoniums. Allow me, therefore, to recommend in substitution thereof Ageratum Imperial Dwarf Blue, which, I opine, would prove highly suitable, if I may judge by an example I lately saw in the unique "Nesfieldian" parterre at Weston House, Shipston-on-Stour, the seat of Sir G. R. Philips, Bart., composed of Pelargonium Manglesii mixed with the Ageratum in question, producing, as they signally did, an effect of the most exquisite loveliness, infinitely more so than preceding combinations of Manglesii with Verbena venosa or blue Lobelia, which, however, were very telling. From what I have seen of that new acquisition, Viola Perfection, I think it would also prove a gem for the purpose indicated. *William Gardiner, Lower Eatington Park.*

Foreign Correspondence.

St. Helena.—The following report on the progress of the Government plantations in St. Helena, recently drawn up by Mr. J. C. Melliss, the surveyor of crown lands in that island, will, we are sure, be read with interest.

Since the years 1808—1814, during which General Beatson accomplished so much for the improvement and extension of the vegetation of the island, no public effort for its further development was made until the importance of such work, strongly urged by Dr. Hooker, C.B., the director of the Royal Gardens at Kew, and supported by the governor, Admiral Sir Charles Elliott, resulted in the selection of Mr. Chalmers as a Government gardener for this island. He was accordingly sent out from Kew in the year 1868, with the express objects in view of improving and extending the vegetation generally, and establishing a Cinchona plantation on the high central ridge, near Diana's Peak. It is now 31 months since Mr. Chalmers arrived here, and it becomes highly desirable to record under each of these heads what amount of work has actually been done up to the present time. A cottage in Plantation Grounds was appropriated as quarters for Mr. Chalmers, and a forcing house for raising Cinchonas and other plants erected. The land deemed most suitable for the cultivation of Cinchona being in the hands of private persons, an arrangement was made for securing possession of 5 acres of the land called "Newfoundland," situated on the south and windward side of the main central ridge, near Diana's Peak, at an elevation of 2600 feet above the sea. A cottage was also obtained adjacent to this plot of land, and a man placed on the spot to take immediate charge of the proposed plantation; a small forcing-house was also erected on the land. Several Cinchona plants, including some raised from seed a year or two previous to 1868, were placed out in different parts of the high lands—secluded spots, safe from the tracks of cattle, amongst the native vegetation, being selected for them; and in the following year (1869) the general planting of the 5 acres commenced, sufficient young plants by that time having been raised by seed, given to the island by Dr. Hooker. At the present time the plantation presents, in a healthy thriving condition, 500 trees of Cinchona succirubra and 300 of C. officinalis, numbering in all 800 plants; the tallest of these is a plant of C. officinalis, raised by Mr. Melliss, and planted out on the high land on October 14, 1868. It now measures 7 feet 2 inches above the ground. The next tallest tree in the plantation is one of C. succirubra, planted out in May, 1869, and now measuring 6 feet above the ground. About 300 of those first put out average a height of 4 feet 6 inches, and the remainder vary from that down to 6 inches. The cultivation of the species C. Calisaya and C. Pahudiana has not been continued, because it was found that in St. Helena they do not grow so well as the other species.

The nature of the ground forming the plantation is very steep and rugged, which prevents it from being planted very thickly. It is incapable of containing more plants, and the fact of the surrounding land being in the hands of private persons, who do not as yet see the advantage to be derived from the cultivation of this valuable plant, is the chief reason for the non-extension of the plantation. The actual cost of these 800 trees, exclusive of Mr. Chalmers' salary, and such outlay as could not be fairly charged against a limited number of plants, has been £244 19*s.* 3*d.*, or very little over 6*s.* a tree.

The work done for the general improvement of the island may be reviewed under three heads, viz., the propagation of those plants which were introduced by General Beatson and others; the interchange of plants and seeds with other countries, and the successful introduction of new plants.

With reference to the first, it may be remarked that a few years ago only eight Norfolk Island Pines (Araucaria excelsa) were growing on the island. Mr. Chalmers has, during the past year or two, set out at "Plantation" 38 fine healthy young trees of this beautiful and valuable species, which have been raised from the seeds of those few trees planted in St. Helena about 50 years ago, and which now have attained a height of over 100 feet. Several of the Norfolk Island Pines, as well as some Bermuda Cedars (Juniperus bermudiana) have been planted by the direction of his Excellency the present governor, Admiral Patey, in the hospital enclosure, as also in the castle gardens in Jamestown, where the warmer climate of the lower land appears to suit them well, and they promise to become objects of great ornament to the town. A large number of young plants raised from seed, about 1000 in all, including Pines (Pinus Pinaster), Cape Yews (Podocarpus elongatus), Blue Gums (Eucalyptus diversifolia), Acacia (Acacia longifolia), and wild Olives, have been, chiefly during last year, planted out in the grounds at "Plantation." There is still, however, room for a continuation of the important work of propagating those plants which already grow in the island. There exist single specimens of valuable exotic trees, which must have been introduced at considerable trouble and expense, and which it is most desirable should be preserved from dying out. Many of these are now very old, and not likely to last much longer; amongst them may be mentioned a Clove (Caryophyllus aromaticus), growing at "West Lodge;" one or two Holly trees (Ilex Aquifolium) at the same place, as well as at "Oak Bank" and "Rose Cottage;" a Chestnut tree (Castanea vesca), at "Arnoss Vale;" several Teak trees (Tectona grandis) at "Bamboo Grove," in Sandy Bay; a Japanese fruit (Diospyros Kaki), a single tree of which grows at "Plantation;" one or two valuable timber trees (Cedrela Toona) at Mr. Elliott's; an Arbutus tree (Arbutus Unedo), with one of the handsome flowering shrubs, Schotia tamarindifolia, at "Francis Plain;" several Tamarind trees (Tamarindus indica), with a specimen or two of the Chinese fruit (Scytalia Longan), commonly called the Litchi at St. Helena, in the gardens of Jamestown. It is most desirable, also, that some of the extremely interesting native plants, which have become very scarce, should be preserved from extinction: two of these especially may be mentioned, viz., Solidago rotundifolia and Commidendrum robustum. There exists now but one tree of each of these species, the former in the "Black Field," at Longwood, the latter at the back of "West Lodge," near the High Peak. Good work has been done in reviving Oranges and Lemons. The island was once a Lemon-producing spot, but the trees having grown too old to be of any use, and not having been replaced by young plants, this fruit had nearly disappeared. Mr. Chalmers has succeeded in raising about 400 Orange and Lemon trees, more than half of which have been distributed in the island.

With reference to the interchange of plants and seeds may be mentioned that many valuable and interesting packets of seeds have been given to the island by Dr. Hooker, as well as several cases of plants; some of these cases have been refilled with indigenous plants of the island, and returned to the Royal Gardens, Kew. A case of Norfolk Island Pines has been sent to the Mauritius, and another to the Emperor of Brazil. A case containing Cinchona plants has been sent to Capetown. An interchange of seeds has been established with the Queensland Acclimatisation Society.

So far as new plants have been introduced with success since Mr. Chalmers arrived, the following may be recorded: About 75 trees of the Bermuda Cedar have been raised from seeds sent to the island by Dr. Hooker, and planted out in various positions, but chiefly at Plantation. They appear to thrive, and have taken well to the soil and climate, many of them having attained already a height of 2 to 3 feet. This plant will doubtless form a valuable introduction to the island. About 500 plants of Sanseviera guineensis have been raised in the nurseries at Plantation, but the climate at that elevation appears to be too cold for them; a trial is now being made to grow them on the lower land. This plant was introduced from the neighbouring island of Ascension in 1868, in consequence of the value said to be attached to the fibre it yields. Tobacco plants raised from the best kinds of seeds, given also by Dr. Hooker, have been cultivated, but the report received on a sample of leaf sent to London was unfavourable; it was said to want flavour, which might be acquired by cultivation in a richer soil; this report has for awhile somewhat discouraged its further cultivation. The Tobacco plant thrives freely, and the species N. Tabacum grows as a weed in the island. The propagation of the Ailantus tree (A. glandulosa), the food of the silkworm, Bombyx Cynthia, sent out from the Royal Gardens at Kew in the year 1861, and which has now attained a height of about 18 feet at Plantation, has received attention.

Amongst the new plants which Mr. Chalmers has succeeded in establishing may also be mentioned the following:—Argania Sideroxylon, Aralia papyrifera, Betula alba, Biota orientalis, B. intermedia, Cupressus Lawsoniana, C. torulosa, C. torulosa var. cashmeriana, C. McNabiana, C. glauca, C. glandulosa, Cryptomeria japonica, Casuarina muricata, Eugenia Ugni, E. Pimenta, Pistacia Terebinthus, Sophora japonica, Thuja orientalis, Thuja occidentalis, Salix viminalis, Tacsonia mollissima, T. Van Volxemi, Juglans regia, Passiflora sp. (West Indian Granadilla).

Mr. Chalmers is at present engaged with the lads, who have been bound for a certain period to serve under his instruction, with the view of their ultimately becoming useful in the island, where the art of gardening has been for so many years neglected, in the very desirable work of improving the state of the grounds at Plantation.

Notices of Books.

FOREIGN JOURNALS.

Since our last reference to the plates in **La Belgique Horticole**, four thick parts have been issued. The figures comprise the following subjects of interest:—Tillandsia Lindeni, var. Regeliana, is the name Prof. Morren gives to the plant which has been so often confounded in gardens with the original T. Lindeni, figured in the same periodical in 1869; the variety is distinguished by its few-flowered spike, its green instead of rosy bracts, and its white-throated flowers. Maxillaria triloris is a neat-looking Orchid, which has flowered in the Liège Botanic Garden; it has narrow spreading tawny yellow sepals, yellow reflexed petals, and a reflexed white lip. Of Bertolonia guttata two varieties are illustrated, one with pearly white, the other with rosy spots over the leaf-surface. The plant is referred to the genus Gravesia of Naudin. The Pomme Neige Framboise de Gielen is a small, high-coloured Apple, which is said to be a delicious and early variety, ripening in August. A group of new Dahlias of Verviers, and another of four varieties of Caladiums, with handsome leaves—Queen Victoria, Halévy, Prince of Wales, and Meyerbeer—possess interest for their respective admirers. Maackia amurensis, seems to be a fine tree of the Amoor country; it grows from 30 to 40 feet high, is furnished with imparipinnate leaves, having three or four pairs of broadish ovate leaflets, and bears long narrow crowded racemes of small white flowers at the ends of the branches; it belongs to the tribe Sophoreæ of the Leguminous order, and is referred to Cladrastis by Hooker and Bentham; the plant was introduced by M. Jean Van Volxem, and flowered and fruited last year in his nurseries at Perck, where it proved to be perfectly hardy. The volume of this publication for 1870, which contains a copious index to the twenty volumes already published, contains also a portrait of Dr. Von Martius. Billbergia Leopoldi, with two double plates of which (t. 1—4) the volume for 1871 opens, is a very fine Bromeliaceous plant, compared as to its affinities with B. zebrina, vittata, and Morelii; its long, spiny leaves are banded with white on the under surface, and its nodding spike consists of blue and white flowers, with large rose-coloured bracts; it comes from Brazil, and is the B. ianthina of some gardens. Lonicera brachypoda fol. aureo-reticulatis (t. 5) is a good figure of the golden-veined Japanese Honeysuckle, showing its distinct ovate and pinnatifid leaves, and its small white flowers growing in pairs from the axils. This plant has flowered in many places in England—not for the first time—during the past season. Lycopodium mandioccanum (t. 6) is an erect-growing, red-stemmed, Mexican and Brazilian plant, not unlike some young Abies in its foliation, though differing in its dichotomous growth; the leaves are nearly an inch long, acerose, and reflexed. L. dichotomum (t. 7), from the same countries, is a stout plant, with frequently forking pale-coloured stems, and shorter, linear, subulate, spreading leaves. L. taxifolium (t. 7, fig. 5), introduced from Mexico, has shorter and broader leaves (linear-lanceolate), and the pale-coloured stems are erect at the base, but become drooping towards the apex. Codiæum (Croton) variegatum var. aucubæfolium (t. 8), is one of the broad-leaved forms of this protean plant, with the leaves dotted over with yellow blotches. Viola cornuta var. Perfection (t. 9) is copied from the *Floral Magazine*. Aceras hircina var. romana (t. 10) is a purple-lipped variety of the Lizard Orchis, with the much elongated middle lobe of the lip deeply bipartite. Lathyrus odoratus, Invincible Scarlet (t. 11), is a good figure of the finest of all the Sweet Peas. Tillandsia staticeflora (t. 12), a most elegant epiphytal Bromeliaceous plant of Mexico, is that which obtained a first-class certificate at one of the

International meetings of the present year under the name of T. Morreniana. It forms a dense tuft of elongate subulate-filiform leaves, which are erecto-divaricate, plane above, convex beneath, and from the centre of which tuft rises a lax panicle, not much exceeding the leaves, of small pale blue flowers, having reflexed petals. Primula japonica (t. 13) is copied from the plate in the *Florist and Pomologist*. This brings the publication up to June, 1871. We note that in the account of the show at South Kensington on June 7, Professor Morren erroneously attributes the display of American plants to "Messrs. John Waterer & Sons, of Bagshot," instead of to Mr. Anthony Waterer, of Knap Hill.

The numbers before us of the **Gartenflora** (August, 1870—Jan., 1871) contain the following plant portraits:—Amaryllis pardina β rubescens (t. 658), a narrow-petaled form, with the flowers suffused with red. Rhododendron Falconeri (t. 659), one of the Sikkim species, with large blunt leaves, rusty beneath, and dense heads of small white flowers. Lepidozamia Peroffskyana (t. 660), a very elegant Cycadaceous plant of Australia, with a stout trunk, and pinnate leaves, consisting of numerous leaflets, decurrent at the base; it bears, according to Dr. Regel, amongst other synonyms, those of Encephalartos Denisoni, Macrozamia Denisoni, M. Peroffskyana, M. Macleayi, M. gigas, and Catakidozamia Macleayi. Cypripedium caudatum (t. 661). Rhododendron macrosepalum (t. 662), a Japanese species of the Azalea section, forming a low sub-deciduous shrub, with dull rosy flowers, spotted with purple on the upper segment of the corolla. Clavija Riedeliana (t. 663) the fine orange-flowered species figured in the *Botanical Magazine* (t. 5829), under the name of C. macrophylla. Lythrum flexuosum (t. 664, fig. 1—3). Lilium Maximowiczi β tigrinum (t. 664, fig. 4), a handsome slender Lily, with scattered linear-lanceolate leaves, and orange-scarlet nodding flowers, spotted with dark purple, and having recurved segments. Mimulus Tilingi (t. 665), an erect-growing and free-flowering hardy herbaceous perennial with terete stems, 2 feet or more in height, oblong-ovate leaves, and a profusion of smallish yellow flowers, the throat of which is closed. Rhododendron semibarbatum (t. 666), a Japanese species of the Azaleastrum section, growing 2—3 feet high, with elliptic, coriaceous, sub-deciduous leaves, and small lateral rotate greenish-yellow flowers, apparently of no beauty. Lilium Roezli (t. 667), a pretty slender-growing Lily, found by Roezl on the Rocky Mountains, and nearly related to L. superbum; it grows 4 feet high, and has narrow linear-lanceolate leaves, the lower of which are scattered, and have about two flowers which are nodding, with recurved segments, orange-red, marked towards the base, which is yellow, with dark purple spots. Dr. Regel suggests that, if it should eventually produce, as L. superbum does, a paniculate inflorescence, it might be called L. superbum β Roezli. Gilia linifolia (t. 668), a pretty annual plant, from California, with branching stems, palmatisect leaves, and rather large white flowers. Colea undulata (t. 669) is the Colea Commersoni of gardens, a robust stove shrub, with whorled pinnate leaves, 2—4 feet long, and fascicled racemes of moderate-sized, rosy-lilac, Bignoniaceous flowers. Rubus leucodermis var. Golden Cap (t. 670). Vriesia corallina (t. 671), the Enchilirion corallinum of *Linden's Catalogue*, a tropical American Bromeliacea, is a distinct-looking plant, with a tuft of concave, oblong-ligulate leaves, glaucous beneath, and a scape clothed with crimson bracts, and bearing a distichous spike of refracted flowers, which are yellowish-green, with the close-pressed crimson bracts half their length; the scape, rachis, and bracts, are purplish-crimson. Dieffenbachia alliodora (t. 672) is a neat-growing plant, with long-stalked, oblong-lanceolate, bright green leaves, and a much shorter shining green spathe. Oxycoccus macrocarpa (t. 673). Tetratheca ericifolia (t. 674). Cordyline Haageana (t. 675), a green-leaved New Holland Dracæna, with oblong-elliptic stalked leaves, and terminal panicles of small white tubulose flowers.

The eighteenth volume of **L'Illustration Horticole** (Jan., 1871), the second volume of the third series, opens with a plate of a noble Japanese Rose, Rosa Regeliana (t. 47), a low bushy shrub, with tomentose branches furnished with numerous slender, straight, unequal, pale-coloured spines, broad stipuled pinnate leaves, tomentoso-canescent beneath, and terminal many-flowered corymbs of large single crimson flowers, measuring, according to the figure, nearly 4 inches across, and looking more like single Pæonies than Roses. It is a hardy shrub, introduced from Japan by M. Maximowicz, and is cultivated by M. Linden. Epidendrum Frederici-Gulielmi (t. 48) is a fine Orchidaceous epiphyte, from northern Peru, with tall, leafy stems, broad oblong leaves, and terminal ovate racemes of large, deep rosy-crimson, narrow-petaled flowers, with a white lip, and attached by long rosy-purple ovaries to the dark purple rachis. Hæmidictyon? refulgens (t. 49), a stove climber from Eastern Peru, very like what Mr. Bull calls Bignonia Roezliana; the leaves (the few lower ones at least) are in opposite pairs, ovate, oblong-acuminate, of a rich velvety bottle-green, with slight silvery markings along the course of the veins, and having throughout a rich flush of violet-purple, the under surface being of a reddish-violet tint. In Clematis hybrid. vel var. Crippsianæ (t. 50), are represented the three varieties tunbridgensis, Star of India, and Lady Caroline Nevill, raised by Mr. Cripps, the figures being copies of the plates issued by Mr. Cripps, and noticed by us on a previous occasion. Carica erythrocarpa (t. 51) is a curious little fruit-bearing tree, with a simple erect fleshy stem, upwards of a yard high, surmounted by a head of bold trilobed leaves, the flowers small, white, produced from the upper part of the trunk below the leaves, and succeeded by scarlet fruits, which are as large as a hen's egg, oval, pointed, and with a distinct suture on one side; the fruit is succulent, and said to be edible, but it is described as leaving a not very agreeable after-taste, and the plant is therefore recommended chiefly as an ornamental object for its Palm-like habit, its fine lobate foliage, and its brilliantly coloured fruit. Camellia Vessillo dell' Arno (t. 52), an Italian variety, of fine imbricated form, represented as a blush-white with carmine stripes, but described as a magnificent scarlet-red, veined with deeper lines. Dioscorea multicolor (t. 53) represents six varieties of a very beautiful climbing plant, the leaves of which are variously marked with shades of green, copper colour, bronze, silver-grey, &c. The leaves are more or less distinctly cordate. They are—chrysophylla, rich golden bronze, mottled and shot, and having a golden central band; sagittaria, a silvery grey, with the veins marked of an emerald-green; melanoleuca, deep or bottle green, with broad central silvery band, and irregular blotches disposed along the line of the two lateral veins; metallica, deep olive or coppery green, with salmon-tinted central band; Eldorado, rich olive-green, with several broad longitudinal bands, having their margins irregular; prismatica, rich deep green, with a central silvery band, the lateral ribs and transverse veins marked by narrow silvery lines, the surface shot with a rich purplish hue. They are all very handsome plants, especially the two last-named. Verschaffeltia melanochætes (t. 54), a Fan Palm, represented by us at p. 697 (1870), and remarkable for the black spines of its stem. Geonoma Schotteana (t. 55), an elegant, slender-leaved, pinnate Palm of Brazil, with something of the aspect of Coccos Weddelliana. Odontoglossum Wallisii (t. 56), is a pretty New Grenadan epiphyte, described at p. 104 (1870); the flowers are tolerably showy, the sepals chestnut-red bordered with yellow, the yellow petals blotched with chestnut colour along the centre, and the lip white towards the base, chestnut-red bordered with white in front. Plumieria lutea (t. 57), copied from the figure in the *Botanical Magazine*. Odontoglossum Halli (t. 58), a handsome figure of a now well-known and very ornamental Orchid, with large flowers, fine in colour and in marking—yellow with deep purplish brown on the sepals and petals, and white spotted with purplish red on the tip. Lonicera Periclymenum aureum (t. 59), is a hardy Honeysuckle with the leaves striately banded and blotched with yellow. Gloneria jasminiflora (t. 60), is a fine new Rubiaceous stove shrub, of erect branching habit, with leathery ovate-oblong entire leaves, and compact terminal trichotomous panicles of long-tubed white flowers. Gongora portentosa (t. 61), is a handsome Orchid of a genus now somewhat neglected, the pendent spikes being furnished with flowers of large size and of a yellowish hue finely dotted with brown. Welfia regia (t. 62), is a fine and rather novel Palm, of which we published a figure of a young plant at p. 764 (1870). M. Linden's figure is more advanced, showing a more decidedly pinnate leaf, with several pairs of pinnæ, and there is also a reduced sketch of a matured plant, in which the pinnate character is very strongly developed. The genus is mainly distinguished from Geonoma by the much more numerous stamens and staminodes.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, SEPT. 23, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	69.2	35.2	34.0	63.7	45.3	18.4	53.2	0.00
Blackheath ..	67.6	39.0	28.6	64.1	46.3	17.8	53.6	0.10
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	62.8	40.1	22.7	59.1	45.1	14.0	50.8	0.00
Wolverhampton	62.3	37.5	24.8	58.8	43.7	15.1	50.0	0.47
Leicester ..	66.2	36.0	30.2	62.3	43.5	18.8	51.6	0.00
Norwich .	63.5	38.5	25.0	59.8	45.2	14.6	51.2	0.00
Nottingham ..	69.9	38.7	31.2	62.6	44.1	18.5	52.0	0.00
Sheffield ..	62.0	40.0	22.0	58.4	45.4	13.0	50.6	0.23
Liverpool ..	61.1	43.8	17.3	57.9	45.3	12.6	50.3	0.73
Manchester ..	64.0	36.0	28.0	58.9	43.1	15.8	49.7	0.33
Salford	60.5	36.2	24.3	57.9	41.4	16.5	48.3	0.49
Bradford ..	65.4	42.7	22.7	58.9	45.6	13.3	50.9	0.15
Leeds	65.0	42.0	23.0	59.4	46.6	12.8	51.7	0.04
Hull	61.0	41.0	20.0	58.0	45.0	13.0	50.4	0.32
Newcastle ..	57.0	44.0	13.0	55.0	46.0	9.0	49.2	0.23
Edinburgh ..	60.0	39.0	21.0	..	..	..	48.9	1.40
Glasgow ..	57.0	43.0	14.0	..	..	..	50.4	0.75
Dundee.. ..	56.0	44.0	12.0	..	..	..	49.7	0.95
Aberdeen ..	54.4	42.5	11.9	..	..	..	49.2	1.01
Paisley	..	..	..	..	..	..	..	..
Greenock ..	59.0	47.0	12.0	..	..	..	51.7	0.75
Leith	57.6	41.5	16.1	..	..	..	50.4	1.00
Perth	59.0	45.0	14.0	..	..	..	51.0	1.07
Dublin	68.9	..	38.9	..	..	..	49.2	0.01

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, SEPT. 27, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
Sept.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
21. Thurs. .	29.40	58.1	53.9	50.1	75	4.0
22. Friday .	29.59	55.2	49.0	42.8	64	3.1
23. Satur. .	29.71	51.3	47.7	44.1	77	3.3
24. Sunday.	29.17	50.2	49.8	49.4	97	4.0
25 Monday	29.59	51.5	48.2	44.9	78	3.4
26. Tues. .	29.36	49.8	49.0	48.1	94	3.8
27. Wednes	29.11	56.0	55.5	55.0	96	4.8

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
Sept.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg	Deg.	Deg.	Deg.	Deg.		Miles	
21. Thurs. .	67.6	43.4	24.2	55.0	−0.8	N.E.: NNW	168	0.00
22. Friday .	64.0	40.4	23.6	51.2	−4.3	WSW	331	0.00
23. Satur. ..	56.7	39.0	17.7	47.9	−7.3	S W: E N E	155	0.10
24. Sunday.	53.7	45.3	8.2	48.3	−6.7	E.: NWW	388	1.15
25. Monday	55.3	41.9	13.4	47.4	−7.4	W.: E.N.E.	207	0.53
26. Tues. ..	55.8	44.0	11.8	48.7	−5.9	N.E.: E.N.E	242	0.20
27. Wednes	65.6	46.0	19.6	54.6	+0.2	ESE: S	303	0.45

Sept. 21.—Very variable throughout. Slight fog and haze at night.
— 22.—Cloudless in the early morning and at night. A little cloud present during the day. Very fine.
— 23.—Foggy in early morning. Cloudy throughout. Rain fell more or less heavily from 3 P.M. onwards.
— 24.—Rain fell very heavily during the early morning, and thinly till noon. Overcast till 2 P.M. Cloudless generally afterwards.
— 25.—Overcast throughout. Rain commenced falling about 3 P.M., and continued throughout the evening.
— 26.—Overcast till 3 P.M.; generally fine afterwards. Rain fell throughout the morning almost continuously till a little after noon.
— 27.—Generally overcast throughout; very frequent showers of rain.

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THOUGH it is desirable, and, in fact, necessary, for the future well-being of all plants, to reduce the artificial heat in stoves and Orchid-houses proper at this time, care must be taken not to permit the temperature to decrease too much or too suddenly, so as to prevent the plants from receiving a check. In doing this, we should aim at ensuring a decline of temperature more uniform, and with less decided fluctuations, than is externally experienced. In other words, though a slight decline must be insured, it may be necessary, on occasions, to maintain rather more artificial warmth than is at all advisable at other times, to counteract the influence of a too sudden fall of the external temperature. Water must now be given to all plants more carefully than heretofore, and especially to *Ericas*, *Epacrises*, and *New Holland plants* in general. Those who possess *Indian Azaleas* which flowered late, and are from that or any other cause backward in the matter of growth, should now hurry them on in a nice genial warmth, that the necessary growth may be perfected before the comparatively cloudy months of October and November arrive. These remarks are not inapplicable to those *Camellias* which flowered late in the past season, or such as are required in bloom at an early date. Promote, by every possible means, the further growth of such popular subjects for early winter blooming as *Gesneras*, *Euphorbias*, *Begonias*, &c., stopping fast-growing plants of the latter, when required, and placing all such, and kindred subjects, upon shelves, or in other elevated positions, where the greatest possible amount of sun and light may reach them. *Rocheas*, *Kalosanthes*, and *Cactuses* of the *Epiphyllum* type, should also be well exposed to every ray of the now declining sun, thereby to insure that the wood may become well ripened, as the only true precursor of abundant bloom in the future. Some kinds of Orchidaceous plants, such for example as *Dendrobium nobile*, *Cypripedium insigne*, and many cool Mexican varieties may now be removed into cool greenhouses, their season's growth having been completed. Here they rest better, and frequently flower more abundantly afterwards than they do when wintered in higher temperatures. In some instances it may happen that *Agaves* (Aloes), which have been placed out-of-doors for the summer, may require to be shifted into new tubs, before they are removed to winter quarters. In all such instances, therefore, let due attention be given to such matters, for though some Mexican or American varieties will stand a little frost, it is not advisable to run too great a risk of injuring them. Attend to and forward the work of finally staking *Chrysanthemums*. Too few stakes cannot possibly be used, if it is desirable that the plant should preserve a natural contour. Those of course who "go in" for stiff table-topped specimens of Pompons, or any of the extreme forms which an emulative system of culture seems to give birth to, must make their final tyings by performing the usual contortions practised on the unfortunate branchlets. *Climbing Plants* must have all the young growths possible removed as they successionally go out of bloom, that every ray of light may be the better afforded to the plants beneath. By a gradual cessation of root-watering, all climbing plants must also be induced to cease growing rampantly, and to go to rest for the winter.

FORCING HOUSES.

The ordinary forcing-pits, or houses attached to any, or every establishment, should now be finally got into order. Where artificial bottom-heat is afforded by means of fermenting materials, these should be procured and made ready. Flues or pipes having tanks of hot-water attached, should also be attended to. This done, first thoroughly fumigate, then lime-wash all internal surfaces. Stir the bark-beds around fruiting *Pines*, watering the surface well; and by these, and every other means, keep up a nice surface growing heat. Though, in regard to these, a high temperature is desirable by day, let it be somewhat moderated by night, now that the hours of darkness are becoming so long. Excess at such a time is likely to produce weakly growth, which will not come to maturity as it should do. Be very particular to give the freest possible circulation of air to those *Vineries* intended for starting early, say in November, more especially to such as are in process of being, or are already, pruned. Constantly and persistently stop the young lateral shoots which continue to push upon the next earliest Vines, as is frequently the case at this season, owing to the fact that the Vines are denuded of their crops, yet are not gone to rest, and so are making a too free use of what should be a store of strength and vigour. To permit these to grow unimpeded at this time is to shorten to a great extent their legitimate period of rest, which, if not checked with a firm hand, will tell against them at a future day. *Pot Cherries* intended for early forcing, and which have been plunged out in the open borders, should now undergo an examination, and have a good surface mulching. *Cherries* may also be taken up from the open ground, and carefully potted forthwith, if they possess plenty of bloom-buds, with every hope that they will, under proper treatment, carry a good crop of fruit next year. No plant that I know of is more adaptable in this way, for such a purpose, than the Cherry. *Tomatos* grown in houses or heated pits for the winter supply, as they are in some gardens, must now have abundance of air, to impart to them the necessary robustness. Be careful to keep the stock of young *Dwarf French Beans* for the early successional supply free from red-spider, which, if existing upon such when removed into forcing structures, is likely to infest everything else, and prove a great source of annoyance all the winter. Attend well and finally to all *Cucumber* and *Melon pits* requiring aid from linings. To let the heat decline materially at this time is to check the plants beyond recovery.

HARDY FLOWER GARDEN.

By gradually withholding water from *Auriculas* at this time, a kindly rest will be insured to them, more favourable than such as is forced upon them through the increasing coldness of the weather. Preliminary to this, however, they should be placed in their winter quarters, where greater immunity will be experienced from the fluctuations of the natural elements. Real earnest winter is already foreshadowed by the falling of leaves, necessitating much labour, for if we would keep the places around mansions as tidy as it is desirable, we should collect periodically such as fall for the next five or six weeks. At this season fresh plans for the improvement of gardens are made, and these must be entered upon and carried out vigorously a few weeks hence. It may suit some to transplant shrubs at an early date, and as the end of the present month approaches this work may safely be commenced.

KITCHEN GARDEN.

With the past rain, all who were properly on the alert made good progress with the necessary transplanting of a variety of subjects, which, owing to the want of rain, they had been unable to plant before. Pits and frames which can be spared should immediately be filled with young *Lettuces* and *Endives* intended to come in about Christmas, and to succeed such as will be taken up full-grown and transplanted into other pits at the first approach of frost. Other batches of these salads must likewise be transplanted on to sunny southern borders, where, even though none of the many kinds of plant protectors now in use are supplied, there will be some chance that they may withstand the severity of winter. Autumn-sown Cauliflowers should likewise be transplanted permanently under the customary handlights or into an empty frame. Where saladings are largely used, it would be advisable now to make a sowing of *Lamb's Lettuce*, subsequently placing the useful *cloche* over the seeds. Attend to the necessary permanent earthing-up of *Cardoons* before bad weather sets in, and continue earthing-up successionally rows of *Celery*, according to the requirements of the establishment. Thin out further successions of *Spinach*, and where the "cutting down" of *Parsley* has been neglected so long, let this be done forthwith, if a future supply is at all valued or must be forthcoming when wanted. Make up the rows in *Cabbage* plantings where insects have done mischief, as I find is too generally the case this season. Remove the decaying leaves from around the base of *Brussels* and other *Sprouts* and the stock of green stuff generally, not only to insure a neat appearance, but that the air may exert to its fullest extent its useful hardening influences. *W. E.*

TOWN GARDENING.

ONE of the most useful plants in town gardens is the *Golden Feather Pyrethrum*, cuttings of the side shoots of which put in, eight or ten in 48-sized pots, at once, and wintered in a cold frame, will make nice early plants for spring, and be far in advance of seedlings sown now. But where a great quantity is required, the seed should be sown at once in pans, and be placed close under the glass. When large enough to handle, prick them out in light soil in a cold frame, protecting them from frost, and giving them all the air possible in fine weather. *Echeveria secunda* and *E. glauca* make very pleasing edgings, are of easy culture, and can be kept well through the winter in a cold frame. They make offshoots very freely, and these should be taken off the old plants, and be potted singly into 60-sized pots, at the same time putting the old plants in small pots, in light, sandy loam. The *Cerastium tomentosum* makes a pretty margin, and stands well in town. The above, if judiciously planted in the spring with *Coleus Verschaffeltii*, *Centaurea ragusina*, *Cineraria maritima*, and *Dell's Dwarf Beet*, make charming beds; and in my opinion are more fitted to make a display through the summer in confined gardens than Pelargoniums, Calceolarias, and such-like bedding plants. The beds intended for *Bulbs* should be cleared as soon as possible, and having had a good dry dressing of leaf-mould and sand dug in, should be left rough to sweeten till the roots are planted. A few early *Hyacinths* should now be placed in glasses filled with soft water, so that the base of the roots only may come in contact with the water. Put them in a dark, cool place for about a month, when they may be brought out, and with a soft brush remove any decayed matter, which generally accumulates about the roots. At the same time change the water, and remove them to the light, always observing to change the water when it becomes fœtid. For cultivating in pots, they should have a compost consisting of one-half loam, and the other half equal portions of leaf-mould, rotten dung, and sharp sand; with this fill 48-sized pots rather firmly, place the bulb on the surface, with a little sand under and about the root, press them in the soil, leaving the crown of the bulb above the surface, give them a good watering, and place them in some snug corner on slates to keep the worms out; and as soon as they have become dry, cover them with about 6 inches of fine ashes or cocoa-nut fibre, there to remain till they have made a growth of about an inch, when the ashes should be carefully brushed out of them, and the plants be placed in a close frame for a few days. They may then be removed to the rooms, and some may be turned out of their pots into baskets filled with damp Moss, where they will make pretty features for the sideboard and table when in bloom. Where it is intended to winter *Pelargoniums* and *Fuchsias* indoors, turn them out of their pots, remove the old crocks, put in fresh, remove a small portion of the surface mould, place the plants back, adding a little fresh soil, trimming off all straggling shoots, and well water them. Then keep them out of the frost, and give them as much light and air as possible in fine weather, using water very sparingly during the winter months. *J. D.*

Notices to Correspondents.

Beetroot. Will any experienced correspondent oblige by satisfying an inquirer from Australia, if Sugar Beet can be grown near the precincts of the sea, without injury to its manufacturing qualities. The inquiry has reference to a large investment of capital.

Books: *A French Subscriber.* Grieve's "Ornamental Foliaged Pelargonium."—*Perth.* Thompson's "Gardener's Assistant" (Blackie & Co.).—*Old Subscriber, Inverness.* "The Modern Peach Pruner," or Rivers' "Miniature Fruit Garden" (*Journal of Horticulture*).

Borrowing and Purchasing for Exhibition Purposes: *A Gardener.* No doubt this is a very reprehensible practice. If you have good evidence in support of your assertions, you should bring it under the notice of the Committee. The professional feelings must be sadly weak where such practices prevail.

Coarse Sulphuric Acid: *C. W. H.* Any druggist or dealer in cattle medicines ought to be able to supply you.

Cyclamens: *G. J.* A friable soil, of a rather loamy character, well enriched with decayed cowdung and leaf-mould. The Royal Vineyard is not a high-class Grape. It should hang late, and requires considerable heat.

Figs: *F. A. C.* Fig trees produce two crops of fruit in one season. The first crop is produced on the shoots of the previous year's formation, and show themselves a little in advance of the leaves; these ripen in the open air in this country. The second crop is produced in the axils of the leaves of the growing shoots, but seldom ripen well in the open air through want of heat. These are those you speak of; they are too late to ripen this season, and are of no use for the next.

Fruit Showing: *J. Pearce.* We cannot possibly decide the question you raise. A good Queen Pine, weighing 3 lb. 5 oz., in an amateur's collection of eight dishes should have had some influence on the award; but you admit that your opponent's Grapes were better than yours, and you say nothing of the rest of the collection. In default of further information, we can only suppose that the judges knew what they were doing.

Fruit Trees Barked by Rabbits: *Charles Asprey.* The best thing you can do to save your trees which have had the bark eaten off the stems, is to first give the stems a good coating of clay or soil and bind them round with thick haybands as far up as the broken bark extends. This will encourage the formation of young bark. Do this at once, and keep the bands moist.

Fungus on Grapes: *H. Munro.* There are two common moulds on your Grapes, Penicillium glaucum and Polyactis vulgaris, neither of which is the cause of mischief. Your Grapes are probably spotted, or, as it is commonly called, scalded; and the moulds are developed on the affected spots. *M. J. B.*

Fungus on Willow Leaves: *H. Munro.* Your Fungus on Willow leaves is Lecythea epitea. *M. J. B.*

Gossypium barbadense: *C. P., Manchester.* Yes. Reply to No. 2 next week.

Heating a Small Greenhouse: *J. H.* Trotman's gas stove will answer your requirements.

Insects: *G. J.* Give repeated syringings with Gishurst Compound, washing the plants alternately with clean water. Use the syringe vigorously. Of course you can do little with plants in flower, and must wait for the resting period.

Keeping Grapes: *S. E.* See p. 1382 of our last year's volume.

Muscat Grape: *A. O.* Very seldom have we seen a more deplorable example of Grapes than those sent by you—shanked, rusty, and dirty to a degree—a shocking case of neglect and mismanagement. The border being not drained is probably the cause of one evil, viz., the shanking of the stalks, combined with over-cropping. The dirtiness is caused through syringing them with dirty water, and rust through cold draughts of air, &c. Purchase and study "Thomson's Practical Treatise on the Vine," which will enable you to grow good Grapes.

Melons: *C. W. M.* On examining your Melon branch under the microscope we find that you have been using flowers of sulphur, mixed with the globose particles of which we find abundant spores like those of a Glæosporium. The specimens, however, did not arrive in a sufficiently good condition to say to what species they can be referred. It is curious that this genus seems to be doing mischief everywhere, and unfortunately we know of no remedy. *M. J. B.*

Mushroom: *A. Boyle, Whitland,* writes:—"I have this morning found a Mushroom, Agaricus campestris, of what appears to me very uncommon dimensions—weight, $14\frac{3}{4}$ oz.; circumference, 2 feet 1 inch. It was perfectly bright, and salmon-coloured in the gills, so must have been the production of one, or at most two, nights."

Names of Fruits: *J. S.* The Apple named Golden Court of Wick is simply the true Court of Wick, not Golden Wick, as stated at p. 1235.

Names of Plants: *Fair Play.* Rhus Cotinus, the Wig plant; 2, Yes.—*Gwylim glau Lafaer.* Impossible to say; smashed in the post.—*J. Bartlett.* You have sent more than we profess to name at once:—1. Asplenium marinum; 2. Lastrea Filix-mas; 3. Scolopendrum vulgare marginatum; 4. Adiantum pubescens; 5. Polypodium vulgare cambricum; 6. Polystichum angulare proliferum; 7. insufficient; 8. Doodia media; 9. Lastrea Filix-mas cristata angustata; 10. Polystichum angulare cristatum; 11. Hypolepis tenuifolia; 12. Cystopteris fragilis dentata; 13. Cystopteris fragilis.—*A. B. C.* Cephalotaxus drupacea. *A. M.*—*J. D. & S.* We must decline to attempt to name Willows from their leaves only.—*W. H.* 1. Clethra alnifolia; 3. Calycanthus occidentalis.—*Old Subscriber.* Saponaria officinalis.—*C. D.* 1. Sempervivum aizoides variegatum; 2. Œnothera riparia; 3. Francoa ramosa.—*J. C.* 1. Lastrea patens, probably; 2. Pleopeltis irioides; 3. Aspidium trifolium; 4. Adiantum trapeziforme, var. pentadactylon.—*H. Mills.* Polystichum angulare—probably not permanent.

Peach Trees Dying: *One in Trouble.* We have carefully read your statement with regard to the condition of your Peach trees, &c., and have examined the shoots, portions of root, soil, water, &c., sent. The water contains a great portion of lime, and is what is termed "hard" water. Such water may, as you say, be injurious to Azaleas, and is certainly not by any means so good as rainwater, yet we can hardly ascribe to its use the failure of your trees. The soil is heavy, more clayey than we should prefer to use, but we have seen Peach trees do well in soil of a similar nature. The roots were tolerably healthy, with a good deal of lime adhering to them. The shoots were weak and very badly ripened. It is very likely that your border may have become soddened, but more through the quantity than the quality of the water applied. Is the drainage perfect? Being in the condition they are, it would no doubt be beneficial to take them up and replant in fresh soil. Lastly, you state that the trees are planted against a back wall, and that there is a Vine every 6 feet in front overshadowing them. Now if these Vines are allowed to make any shoots at all, they must almost completely shade the Peach trees, and Peach trees will never succeed under the shade of Vines. Peach trees require the freest exposure to the direct influence of the sun to ripen the shoots thoroughly. It is here, we take it, that the great cause of your failure has arisen.

Peaches: *J. W. B.* There is no difficulty in raising Peach trees from Peach stones. Plant them now: they will grow up in due course. You should read Mr. Kingsley's hints printed at p. 807.

Potato and Artichoke Grafting: *T. S.* As we quoted your statement wrongly, we insert your correction: "The tubers were said to have resulted from the grafting the Artichoke into the Fluke, and the White Regent into the Artichoke; the produce being both round and kidney-shaped tubers." You have now made your statement and shown your specimens, and if you have failed to convince the committee, the fault is not ours. For our own parts we think you are labouring under a very great fallacy, and we must decline to insert any further communication on the subject.

PRICE OF SEEDLING FRUIT TREES: *X. Y. Z.* Not being dealers in novelties among fruits, we really cannot answer your question. Apply to some respectable firm, and you will get the answer you want.

THE NEW VINE DISEASE: *Richard Shore.* A large reward, something like 40,000 f., is offered by the French Government for a certain cure for the Phylloxera. Under these circumstances communications will naturally be made to head quarters should any really valuable information be obtained. *M. J. B.*

THE KEEPING OF A GARDEN: *R. S.* We are not aware that, in replying to your questions on this subject in our last issue, we at all called your ability into question—on the contrary; we are glad, however, to have your disclaimer, and to be informed that you are well "posted up." We may say that we agree in the main with your remarks, if not with the spirit. Employers do want a great deal done, and "for the least possible cost;" and quite right too: that is, simple value for value. We repeat our observation again, that "there is a deal in method and management,"—the management of your difficulties, if you will,—the making of much out of little. What makes one man a better ganger over a lot of labourers than others?

VINE CULTURE: *J. D.* We are always willing to assist, yet we can scarcely enter into the details of Vine culture, which would take up many pages of the paper to make ourselves intelligible to you. It is a subject which is very frequently touched upon in our columns, and every week in the Calendar of Operations, so that we can but refer you to our pages, or to consult any of the cheap and extremely practical treatises on the Vine, which can be procured anywhere—to wit, "Thomson's." For a small vinery, such as yours, we would not recommend you to raise the border more than 12 or 15 inches above the surrounding level; make it about 2½ feet deep, and drain it well. Plant the Vines outside. Soil good turfy loam, with the addition of about a bushel of ground bones to a cubic yard of soil, and a mixture of bricks and lime rubbish, to give it porosity. Treat them as liberally as you would Cabbages the first year or two. To allow of plants growing underneath, the Vines should not be planted at less than 6 feet apart. Azaleas and Camellias will do very well in the shade of Vines. The best sorts of Vines that you can plant, are the Black Hamburgh and Royal Muscadine,

WASP TRAP: *A. B.* Your letter was mislaid. The dimensions are as follows:—Height, 12 inches; diameter, 4½ inches. Length of horn, 4 inches; diameter of large end of ditto, 1½ inch; of small end, ½ inch. The collar is merely a fold of the tin horn, contrived to prevent it slipping into the bottle. They may be had of various sizes.

COMMUNICATIONS RECEIVED:—J. M. B. P.—J. T.—J. C.—A. R.—J. E.—G. L.—T. C. B.—W. H. S.—E. H.—W. A. M.—T. S.—Cork.—J. C. S.—W. H.—H. M.—P. H. G.—Q. R.—Old Sub.—J. C.—Subscriber, Leek.—S. R.—T. W.

Markets.

COVENT GARDEN.—Sept. 29.

The home markets are unusually dull, but large quantities of goods are being sent to the northern ones, such as Plums, Apples, and French Pears, of which we are now receiving very large supplies. Rough produce in vegetables is about sufficient for the demand, and hot-house Grapes, Peaches, and Nectarines remain at last week's quotations.

FRUIT.

	s. d. *s. d.*		*s. d.* *s. d.*
Apples, per ½ sieve	2 0 to 4 0	Melons, each ..	2 0 to 5 0
Cobs, per lb. ..	0 6 — 1 0	Nectarines, per doz.	4 0 — 8 0
Figs	1 0 — 2 0	Oranges, per 100 ..	12 0 — 20 0
Filberts, per lb. ..	0 6 — 1 0	Peaches, per doz. ..	2 0 — 8 0
Grapes, per lb. ..	1 6 — 5 0	Pears, per dozen ..	2 0 — 4 0
Lemons, per 100 ..	8 0 — 12 0	Pine-apples, per lb.	2 6 — 6 0

VEGETABLES.

	s. d. *s. d.*		*s. d.* *s. d.*
Artichokes, per doz.	4 0 to 6 0	Horse Radish, p. bun.	3 0 to 5 0
Beet, per doz. ..	1 0 — 2 0	Leeks, per bunch ..	0 2 — 0 4
Brussels Sprouts, p. half sieve	3 0 — 3 6	Lettuces, per score ..	0 9 — 1 6
Cabbages, p. doz. ..	1 0 — 1 6	Mushrooms, p. pott.	1 0 — 2 6
Capsicums, p. 100 ..	1 6 — 2 0	Onions, per bunch ..	0 4 — 0 9
Carrots, p. bunch ..	0 6 — 0 8	Parsley, p. bunch ..	0 2 — 0 4
Cauliflowers, p. doz.	2 0 — 6 0	Peas, per quart ..	10 — 1 0
Celery, red, p. bun.	1 6 — 2 0	Radishes, per bunch	0 2 — ..
— white, do. ..	1 0 — 1 6	Shallots, per lb. ..	0 8 — ..
Chilies, per 100 ..	1 6 — 2 0	Spinach, per bushel	2 6 — 3 0
Cucumbers, each ..	0 6 — 1 0	Tomatos, p. sieve ..	4 0 — 6 0
— Ridge, p. dox.	1 0 — 2 0	Turnips, p. bunch ..	0 4 — 0 6
French Beans, p. lb.	0 4 — 0 6	Vegetable Marrows, per doz.	1 0 — 2 0
Herbs, per bunch ..	0 2 — 0 4		

Potatos (good samples, New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

GRIGOR'S AQUILEGIA GLANDULOSA.—Strong flowering plants of this, the finest of all the Columbines, are now ready for sending out, at 10*s* per dozen, including basket and package. Smaller Plants, 30*s* and 40*s* per 100; Seeds, 2*s* 6*d* per packet Cash prices For editorial remarks on this exquisite flower, see the *Gardeners' Magazine*, June 11 last, and *Gardeners' Chronicle* of the same date. JOHN GRIGOR AND CO, Nurseries, Forres, N.B.

To the Trade.—Thuja gigantea, from Seed.

C. WHITEHOUSE, Brereton Nursery, Rugeley, Staffordshire, has the pleasure of offering a few hundreds of this fine Thuja, very nice plants, 15 to 18 inches, transplanted the second time in April, 1871, 9*s* per dozen, or 50*s* per 100, for cash Samples sent if wished, three for 2*s* 6*d*, six for 5*s* It is well known that Seedlings of this fine Thuja are far superior to grafted plants, which, in fact, are considered by many quite useless.

CYCLAMEN PERSICUM (from the best growers), strong plants, in 3-inch pots, 3*s* per dozen, 20*s* per 100; can be had by the 1000. GERANIUM JEAN SISLEY, 6*s* per dozen; cheaper by the 100 GOLDEN TRICOLORS, GOLD and BRONZE and ZONALS, all strong plants, in 3-inch pots, at low prices, all package free A NEW AUTUMN CATALOGUE of GERANIUMS, FUCHSIAS, &c., is now ready, and may be had post free on application to

W POTTEN, Seedsman and Florist, Sissinghurst, Staplehurst, Kent

Seed Warehouse: 44, English St., & Blackfriars St.

NURSERIES & SEED FARM: KNOWEFIELD, near CARLISLE

THE SUBSCRIBERS having now entered upon possession of the Old-established SEED and NURSERY BUSINESS so long carried on by Messrs LITTLE AND BALLANTYNE, of this city, respectfully request a continuance of the support so liberally accorded to the Old Firm. They shall continue to conduct the business, as already announced, under the Firm of LITTLE AND BALLANTYNE, and they will endeavour to merit the confidence of the Public by close personal superintendence in every department of their Business.

LITTLE AND BALLANTYNE
WM BAXTER SMITH, } Sole
JAMES WATT, } Partners.
July 1, 1871.

THE PINE-APPLE NURSERY COMPANY, Maida Vale, Edgware Road, St. John's Wood, W., beg most respectfully to announce that they have successfully secured Mr. JOHN BESTER, the well-known Horticulturist, who is now permanently engaged as MANAGER of the NURSERY and SEED DEPARTMENT.

The Company having the greatest confidence in their arrangements, pledge themselves to supply the best productions in every department, and to conduct the Business in a spirit of liberality, with a determination of giving satisfaction to their Customers. Applications to be addressed to

Mr. JOHN BESTER, Pine-Apple Nursery, Maida Vale, W.

HOWCROFT AND WATKINS (Successors to CHARLWOOD & CUMMINS) keep a choice assortment of EVERLASTING and DRIED NATURAL FLOWERS and GRASSES, arranged in Baskets, Wreaths, Bouquets, &c.; FRENCH IMMORTELLE WREATHS and CROSSES, for Funeral Decoration.

HOWCROFT AND WATKINS (Successors to CHARLWOOD & CUMMINS) keep a large stock of various articles in PLAIN, ENAMELLED, and ETRUSCAN TERRA COTTA, consisting of Vases, Garden Seats, Window-Boxes, Fern-Stands, Flower-Pots, &c.

14, Tavistock Row, Covent Garden, London, W.C.

SPECIAL OFFER of POTATOS, Bags included.

	Per Stone of 14 lb.	Bushel of 4 stone	Cwt.	Sack of 16 stone
Early Rose	3*s.* 6*d.*	12*s.*	23*s.*	42*s.*
Climax	4*s.* 6*d.*	17*s.*	32*s.*	..
Bresee's King of the Earlies	5*s*	19*s.*	36*s.*	..
" Peerless	5*s*	10*s.*	36*s.*	..
" Prolific	4*s.* 6*d.*	17*s.*	32*s.*	..
Early Goodrich	3*s.* 6*d.*	12*s.*	23*s.*	42*s.*

Stocks direct from America, are well grown and free from disease Large quantities and wholesale prices on application. Remittances to accompany all orders.

CHRISTMAS QUINCEY, Seedsman, &c., Peterborough

WANTED, a HEAD WORKING GARDENER.—Wages, £1 per week; cottage free.—A. A. A., Mr. Alexander, 24, Old Cavendish Street, W.

WANTED, as GARDENER, an industrious, steady Man, about 25 years of age; one who understands the Culture of Vegetables and Flowers both for use and seed.—G. R., 19, Ann Street, Pentonville Road, N.

WANTED, a respectable MARRIED COUPLE, without family—the Husband as an industrious Plain Gardener (no glass); the Wife capable of taking charge of the House in the absence of the Family. Wages, for the Husband 20*s* per week, with rooms in the house, and £10 a-year for the Wife's services, if suitable.—Apply, stating ages, references, and all particulars to FRANCIS & ARTHUR DICKSON & SONS, Seed Merchants, 106, Eastgate Street, Chester.

WANTED IMMEDIATELY, a first-class HARD and SOFT-WOODED PROPAGATOR, for America. Must be single, as he would be required to Board in the House. Liberal wages offered to a suitable person.—Apply, at once, to B. S. WILLIAMS, Victoria Nurseries, Upper Holloway, London, N.

IMPROVER, in the Seed Trade.—There is an OPENING in the Establishment of Mr WILLIAM BULL for a respectable and intelligent young Man as above. One who has recently completed his Apprenticeship, or has had a few years' experience.—Apply, in own handwriting, stating wages expected, &c., Establishment for New and Rare Plants, King's Road, Chelsea, London, S W.

NURSERY CLERK.—JAMES DICKSON & SONS REQUIRE, for their Nurseries, a thoroughly respectable and competent CLERK, accustomed to Correspond, and who has filled a similar situation in a large general Nursery. State age, and all particulars as to experience, salary expected, &c.—"Newton" Nurseries, Chester.

Packing-Shed Clerk.

CHARLES TURNER is in WANT of a competent PERSON to Superintend the Packing and Dispatch of Plants Must write a good hand, and be tolerably well up in the Names of Plants and Trees Liberal wages given to an experienced Man.—Apply by letter, with reference, The Royal Nurseries, Slough.

Seed Trade.

MESSRS. CHARLES SHARPE AND CO., Sleaford, are in WANT of an active young Man as COUNTER HAND. One acquainted with this branch of the business preferred.—Apply, in own handwriting, stating experience and salary required.

Seed Trade.

WANTED, a young Man as ASSISTANT (principally Counter Work).—Must write a good hand, and be able to execute orders neatly and expeditiously.—Address, giving age, references, and salary expected, to CHARLES H. DICKSON, Seed Merchant, Manchester

WANTED, a MAN and WIFE (age about 40), four miles from London—the Man to attend to Cows, Invalid Horses, small Garden, &c; the Wife as General Servant. A small House. One in family. It being a responsible situation, none but those of good character need apply.—19A, Devonshire Street, Portland Place, W.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

To Gardeners and Bailiffs (Head, Foremen, or Under).

JAMES CARTER AND CO. having many applications for the above, request that those WANTING SITUATIONS will send NAME, ADDRESS, and COPIES of TESTIMONIALS, for ENTRY in their FREE REGISTER. Only those who can send unquestionabte references need apply.

Any Lady or Gentleman requiring GARDENERS or BAILIFFS may rely upon J. CARTER & CO. adopting the most stringent regulations in reference to testimonials as to ability, honesty, &c.

237 and 238, High Holborn, London, W.C.

GARDENER (HEAD), age 32.—F. CLARKE, Gardener to the Dowager Lady Knatchbull, Provender, Faversham, Kent, is open to engage with any Lady or Gentleman requiring the services of a good Gardener. F. C can produce good references as to abilities, and satisfactory reasons for leaving.

GARDENER (HEAD), age 32, single.—Mr. CARLTON, Gardener to the Hon. Mrs Howard, Ashtead Park, Epsom, Surrey, can with confidence recommend his Foreman as a thorough practical, energetic Man, having been Foreman 10 years in five first-class establishments, where every branch of Gardening is carried out in the most efficient manner. No Single-handed place accepted. Character will bear the strictest investigation.—Address as above.

GARDENER (HEAD).—Age 37, married, no incumbrance; well skilled in all branches of the profession. Good reference.—C. M., 3, Standard Road, Bexley Heath, Kent, S.E.

GARDENER (HEAD).—Age 29, married, one child; would like an engagement either in Lancashire or Cheshire. Satisfactory character as to ability and integrity.—A. R. A., 3, Chapple Street, Liverpool.

GARDENER (HEAD).—Age 33, single; thoroughly acquainted with Gardening in all its branches. Has lived in some of the best places in England and Scotland.—A. B., Clapton Nursery, Upper Clapton, London, E.

GARDENER (HEAD).—Has had many years' experience in Fruit, Flower, and Kitchen Gardening, both in England and on the Continent, and is bearer of the most satisfactory testimonials.—J. JONES, 43, Fish-street Hill, London, E.C.

GARDENER (HEAD).—Thoroughly understands the Forcing of Fruits, Flowers, and Vegetables, and could Manage Land and Stock if required. Good recommendation.—T. BALCOMBE, The Lawn, Whitchurch, Hants

GARDENER (HEAD).—A Scotchman, who has a first-rate knowledge of the profession in all its branches. First-class testimonials from last and former employers.—J. S., 9, Blythe Hill Terrace, Forest Hill, S.E.

GARDENER (HEAD).—Married; understands Early and Late Vineries, Greenhouse, Kitchen Gardening, and every other branch of the profession. Six years' character.—C. S., Sydmonton, Newbury, Berks

GARDENER (HEAD).—Age 32, married; thoroughly practical. Has had great experience in Growing and Forcing Stove and Greenhouse Plants, including Orchids and Ferns, the Forcing of all sorts of Fruit and Vegetables, keeping the Conservatory gay throughout the year, and the general Management of Fruit, Flower, and Kitchen Gardens, and all the requirements of a Gentleman's establishment. Testimonials of the highest order, and reference to late employer.—J. D., 4, New Street, St. John's Wood, London, N W.

To Noblemen and Gentlemen.

GARDENER (HEAD).—Has had much experience in the Propagation and Cultivation of Hardy and Exotic Plants, Early and Late Forcing of Fruits, Vegetables, Dinner and Flower Garden Ornamentation, and the usual requirements of a large establishment. Is well up also in making Plans, Garden Formation and Alteration, Draining, Ornamental Planting, Road-making, and Land Improvement generally References to present and late employers. Five and a-half years with a Nobleman.—HORTUS, Lilac Cottage, York Street, Harbourne, Staffordshire.

GARDENER (HEAD), where two or more are kept.—Age 29; can Lay-out new grounds, also understands Vines, Pines, Early and Late Forcing, and Grass Land and Stock.—J. T., Post Office, Bishopstoke, Hants.

GARDENER.—Age 24, single; thoroughly understands all classes of Plants, Forcing, and Fruit, Flower, and Kitchen Gardening. Good references.—B., Gloucester Villa, St. James' Road, Tunbridge Wells.

GARDENER.—A LADY will have great pleasure in recommending her Scotch Gardener to any Gentleman wanting a first-rate Man, who is competent to take charge of a first-class establishment.—Apply by letter to VERITAS, 1, Cobden Terrace, Canterbury Road, Forest Hill, S.E.

GARDENER (under a Foreman), in a Nobleman's or Gentleman's Garden.—Age 21; five years' good character.—A. C., Mr. Potten, Florist, Sissinghurst, Staplehurst, Kent.

GARDENER (UNDER).—Seven years' good character.—B., 10, Bridge End, Warwick.

GARDENER (UNDER), in a Nobleman's or Gentleman's Establishment.—A steady, respectable young Man, with good character.—A. B., 5, St. John's Cottages, Penge, Surrey.

GARDENER (UNDER).—A LADY wishes to recommend her Under Gardener for a Single-handed place.—G. B., Bearhurst, Dorking

FOREMAN, in Fruit and Seed Trade.—Age 25; ten years' experience.—T. H. S, Post Office, King Street, Covent Garden, W C.

PROPAGATOR (GENERAL), or GROWER for Market.—Age 26, single; good Salesman.—For particulars, apply to L. P., Sunny Bank Nurseries, Lindley, Huddersfield

PROPAGATOR and GROWER of Soft-wooded Plants Nine years' reference in the London Trade.—A. B., 13, Hill Road, St. John's Wood, N.W.

JOURNEYMAN, under a good Gardener, where he could further improve himself in the Houses.—Age 20; three years' experience in good gardens, with a little knowledge of Nursery Work Excellent character J. M. McRAE, Mrs. Tyson's, White Lodge, Upper Norwood, Surrey, S.E.

IMPROVER, in the Houses, in a Gentleman's Garden.—Age 18; four years' experience. No objection to pay a small Premium. Good character from present employer.—B. J, The Gardens, Franklands, Lindfield, Sussex

NURSERY MANAGER.—Upwards of 20 years' practical experience in first-class Nurseries, both in Scotland and England. Thorough knowledge of the value of Stock, the Propagation of Conifers, Roses, Rhododendrons, Evergreen and Deciduous Trees and Shrubs, Stove and Greenhouse Plants, &c. First-class recommendations.—A. B., Downie, Laird & Laing, Forest Hill, London, S E.

ESTATE AGENCY, &c.—Age 29; has had 14 years' practical experience on some of the largest Estates in the country; thoroughly understands the Value and Management of Land, Stock, Timber, &c.; also all kinds of Estate Work, including Fencing, Draining, Levelling, Land Surveying, Preparing Plans, Specifications and Estimates for all kinds of Building, &c. Small salary accepted. References to present employer.—J. H., Mr. Dennis, White Horse Hotel, Guildford.

To Noblemen and Gentlemen.

STEWARD or BAILIFF.—Has had extensive practical experience in the Management of Land and Stock; and being thoroughly acquainted with the various duties required on a Home Farm and Estate, Woods, and Repairs, desires a re-engagement as above. Good Accountant and Salesman of Stock and Crops, and would be found thoroughly useful in carrying out Plans of a Proprietor. Twelve years' unexceptionable references will be given.—A. B., Mr. J. Burgiss Browne, *Advertiser* Office, Andover.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W C.

To the Trade.

TRAVELLER.—An energetic young Man, well up in the Nursery Business. Excellent character. ALPHA, Post Office, Handsworth, Sheffield

SHOPMAN, SHOPMAN and CLERK, Warehouse Foreman, or to Manage Country Shop or Branch.—Age 35, married; 18 years' experience in the Trade. Highest testimonials.—T. W. B., Messrs. Thos. Gibbs & Co., corner of Half-moon Street, Piccadilly, W.

SHOPMAN, or ASSISTANT.—Age 31; has a thorough knowledge of the Seed Trade, Names of Plants, &c.—H S, Mr. May, 35, Brydges Street, Covent Garden, W.C.

ASSISTANT, in Seed Trade.—Age 24; five years' experience.—X. Y. Z, 27, James' Street, Covent Garden, W C

GOVERNESS.—A young Lady, accustomed to tuition, and who has resided some time in France, is desirous of obtaining a situation as above. Good references will be given and are expected.—B., 41, Wellington Street, Covent Garden, W.C.

PAGE BOY, and to make himself generally useful, out-of-doors.—Age 14; unexceptionable references.—J. R. GOODING, Esq., Southwold, Suffolk.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

Autumn Sowing.

ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.

Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.
Chairman—Robert Leeds, Castleacre, Norfolk.
Managing Director—James Odams.

This Company was originally formed by, and is under the direction of, Agriculturists—circumstances that have earned for it another title—viz.,

"THE TENANT-FARMERS' MANURE COMPANY."

Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

Wheat Sowing.

DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. A 9*d*. packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.

Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district

Full directions for use are given with each packet.
Prepared at the Manufactory, Woburn, Beds.

CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.

Agents in every Town throughout England, Scotland, and Ireland.

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

Tredegar Nursery, Bow, E.

TO BE LET, with immediate possession, the above, containing NINE GREENHOUSES, PITS, &c.; also 150,000 PLANTS, adapted for the London Markets.

For particulars, apply to PROTHEROE AND MORRIS, American Nurseries, Leytonstone, E.

SALES BY AUCTION.

Frimley Park Nursery, near Blackwater.

To GENTLEMEN, NURSERYMEN, and OTHERS ENGAGED in PLANTING.

MESSRS. WEEKS AND WATTS are instructed by the proprietor, Mr. Holder, to SELL by AUCTION, at the above Nursery, on TUESDAY, October 10, at 11 o'Clock (in consequence of the expiration of the lease at Lady Day next), the whole of the thriving NURSERY STOCK upon Ten Acres, including Evergreen, Coniferæ, and Deciduous Shrubs, Ornamental and Forest Trees, Standard and Dwarf Roses, together with some fine Standard Rhododendrons, selected Standard and Dwarf Fruit Trees, &c.; a few Ornamental FLOWER POTS and VASES.

May be viewed the day previous and morning of Sale, and Catalogues had of Mr OVER, York Town, Blackwater; or of the Auctioneers, Wokingham, Berks.

Six Greenhouses, a Conservatory, Twenty Pit and LIGHT-FRAMES, &c.

MR. F. PRIEST will SELL by AUCTION, the above, on the Premises, 205, King Street, West Hammersmith, on WEDNESDAY, October 11, at 1 for 2 o'Clock, by order of Mr. James Smith, Horticultural Builder (who is relinquishing the Trade); also the valuable LEASE of the PREMISES.

Particulars at the Auctioneer's Offices, 252, King Street, West Hammersmith, London, S.W.

EXTENSIVE SALE by AUCTION of NURSERY STOCK, consisting of Forest, Fruit, and other Trees; choice Evergreens, Shrubs, and Fancy Plants; Agricultural, Vegetable, and Flower Seeds; Roots, Bulbs, &c., at the noted Meldrum Nurseries and Seed Shops, Kendal.

ORDER of SALE, at 1 o'Clock each day:—

TUESDAY and WEDNESDAY, October 10 and 11—SHRUBS,, EVERGREENS, FLOWERS, and FANCY STOCK, in the Castle Street Nurseries
THURSDAY and FRIDAY, October 12 and 13—FOREST, FRUIT and OTHER TREES, in the Mints Feet, and Canal Head Nurseries.
TUESDAY, October 17—VEGETABLE and FLOWER SEEDS, ROOTS, BULBS, &c., at the Premises in the Market Place.
WEDNESDAY and THURSDAY, October 18 and 19—AGRICULTURAL SEEDS, SHOP FITTINGS, TOOLS, IMPLEMENTS, &c.

Catalogues may be had on application to M. DEROME, Auctioneer; or Mr. JNO. BOLTON, Solicitor, Kendal.

SALE THIS DAY and MONDAY NEXT.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY and MONDAY, September 30 and October 2, at half-past 12 o'Clock precisely each day, first-class HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, and other Bulbs, just arrived from Holland, and Lotted to suit the Trade and private buyers.

On view the mornings of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 3, at half-past 12 o'Clock precisely, valuable POULTRY and PIGEONS, including many promising young Birds, from the yards and lofts of well-known Breeders and Exhibitors

On view the morning of Sale, and Catalogues had.

Valuable Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, October 5, at half-past 12 o'Clock precisely, splendid masses, lately imported, of CATTLEYA LABIATA, CATTLEYA SPECIES, long slender bulbs, flowers deliciously fragrant; Sophronites grandiflora, Lælia grandis, Lælia Perrinii, Oncidium sarcodes, Oncidium phymatochilum, Burlingtonias; Dendrobium Devonianum, Falconeri, Wardianum, McCarthiæ; Vanda cœrulea, V. tricolor, V. suavis; Phalænopsis grandiflora, &c.

On view the morning of Sale, and Catalogues had.

Garden Road Nursery, Abbey Road, St. John's Wood.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, as above, by order of the Mortgagee, on FRIDAY, October 6, at half-past 12 o'Clock precisely, the UNEXPIRED LEASE of 45 years of the GARDEN ROAD NURSERY, about One Acre, rent £25 per annum; also the THREE COTTAGES and TWO GREENHOUSES, and the HARDY PLANTS, consisting of Fruit Trees, Conifers, and a great variety of Hardy and Ornamental Trees and Shrubs in Lots, to suit large and small Planters.

On view the day before and morning of Sale, and Catalogues had of F. KEARSEY, Esq., 36, Old Jewry; and of Mr. J C STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, London.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C. on Tuesday, October 10, at half-past 12 o'Clock precisely, a SMALL COLLECTION of ESTABLISHED ORCHIDS, including Phalænopsis, Vandas, Saccolabiums, Aerides, Cattleyas, and Odontoglossums; also a small importation, in fine condition, of Cattleya Dowiana, Odontoglossum Schlieperianum, Phalænopsis grandiflora, Luddemanniana, and rosea; Angræcum, supposed new species, from Madagascar, and Angræcum eburneum.

On view the morning of Sale, and Catalogues had.

Shepherds Bush, W.

IMPORTANT SALE of VALUABLE STOVE and GREENHOUSE PLANTS, CHOICE EXOTIC FERNS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. T. Hawkins to SELL by AUCTION, without reserve, on the Premises, the Oakland's Nursery, Shepherd's Bush, W. (8 minutes' walk from the station), on FRIDAY, October 6, at 11 for 12 o'Clock precisely, an extensive and varied assortment of valuable STOVE and GREENHOUSE PLANTS, in capital health, comprising a quantity of Dracæna Cooperii, terminalis, and others; 22 handsome specimen Dracæna indivisa and Veitchii, 5 feet high; 200 Gardenias, 300 fine Clerodendron Balfourii, 300 Epiphyllums, 300 Ardisia crenulata, large Marantas, Crotons, Anthuriums, Cypripediums, Lomaria gibba, major, and cycadifolia; Tree Ferns; also 5000 choice Heaths of the leading kinds, &c; 1000 thriving Lomaria gibba, and a large quantity of other choice Exotic Ferns, &c.

On view two days prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E

Lee, S.E.

IMPORTANT SALE of a COLLECTION of STOVE and GREENHOUSE PLANTS; about 1500 Winter Blooming HEATHS, &c.; fine Standard and Dwarf ROSES, clean grown FRUIT TREES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Burnt Ash Lane Nursery, Lee, Kent, S E, on MONDAY, October 9, at 11 for 12 o'Clock precisely, by order of Mr B Maller, without reserve, a valuable COLLECTION of STOVE and GREENHOUSE PLANTS, the stock of a Private Gentleman, removed for convenience of sale, comprising choice Dracænas, Marantas, Allamandas, Lapageria rosea, Begonias, Exotic Ferns, Light Boxes, Hand Lights, Iron Seats, &c; also a choice and varied collection of Greenhouse Plants (the property of Mr Maller), consisting of 1500 beautifully grown Heaths of the best varieties, Cytissus, Acacias, Veronica Blue Gem, Echeverias, Epacris, &c.; 60 specimen Bouvardia longiflora, 3 to 4 feet, extra fine; Solanum capsicastrum, full of berries; double Myrtles, fine Camellias, Azalea indica, Epiphyllum, &c.; also strong Fruiting Vines in pots, selected Fruit Trees, Standard Roses, comprising all the best kinds; choice Succulent and Rockwork Plants, &c.

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E

Balham, S.W.

IMPORTANT SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Balham Nursery, Balham, S.W., on WEDNESDAY, October 11, at 11 for 12 o'Clock precisely, by order of Mr G. Edwards, a large quantity of valuable SURPLUS NURSERY STOCK, the whole of which is in capital condition for removing, including 2000 Green Hollies, 1½ to 3 feet; 1000 Aucuba japonica, 1½ to 2 feet; 800 Chinese and American Arborvitæ, 2 to 5 feet; 300 bushy Green Box, suitable for potting; 500 Ligustrum ovalifolium, 500 Berberis aquifolium, Laurustinus, common Laurels; also a large quantity of Ornamental and Forest TREES, comprising Planes, Limes, Birch, Acacias, &c.; 300 fine Standard and Dwarf ROSES, of the best varieties, by name; likewise a quantity of Coniferæ, Evergreen and Flowering SHRUBS, in borders; some large Double CAMELLIAS, and PAMPAS GRASS, in pots, &c,

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

GREAT NURSERY SALE, without any reserve, at the Nurseries, Wetley Rocks, near Leek, on the 2d, 3d, 4th, and 5th of OCTOBER. Catalogues may be obtained from the Proprietor, Mr. A. B. FOX, on and after the 20th inst.

N.B. The FLORAL BUSINESS, with Stock, Plants, Propagating House, Greenhouses, Frames, &c., to be SOLD by PRIVATE CONTRACT, offering a rare opportunity for any young Man wishing to embark in a ready-made Business.

Also 20,000 strong roots of ROYAL ALBERT and HAWK'S CHAMPAGNE RHUBARB, fit for forcing, at 7*s*. per 100, put on rail.

The whole Stock may be viewed any day previous to Sale.

Re Mr. R. Glendinning, Deceased.

ABSOLUTE SALE.

To NURSERYMEN, SEEDSMEN, and FLORISTS.

High Road, Turnham Green, near the Toll Gate, and known as the Chiswick Nurseries.

MR. J. A. SMITH is instructed by the Executrix to SELL by AUCTION, at the Roebuck Inn, Turnham Green, on TUESDAY, October 10, at 4 o'Clock P.M., in TWO LOTS, the valuable LEASES, GOODWILL, &c., of the important Business Premises and Residential Property, known as the Chiswick Nurseries, established in the name of Glendinning for nearly 30 years, extending over or about Eleven Acres of rich Land, in trading cultivation, including the Residence, Shop, Offices, Warehouse, &c, and the 7-roomed Cottage adjoining, having a frontage of about 320 feet to the most attractive portion of the High Western Road, and a depth of about 750 feet to the South-Western Railway. Rent on lease, £84 per annum; and Gore Cottage adjoining, £13 per annum. LOT 2 comprises the Nursery on the West side of Chiswick Lane, with Residence held on Lease at the reduced rent of £60 per annum The purchaser in each case may arrange to take the Greenhouses and other Erections, Nursery Stock, Utensils, &c., at a valuation, if required. May be viewed.

Further printed particulars, with plans and conditions, of W H. MARSHALL, Esq., Solicitor, Bridge Avenue, Hammersmith, W.; and of Mr. J. A. SMITH, Auctioneer and Land Agent, Hammersmith.

NOTICE.—The ENTIRE NURSERY STOCK will be SOLD by AUCTION, about the LAST WEEK in OCTOBER. See Advertisements.

Ashby Lodge, near Rugby.

SALE of PURE-BRED SHORTHORNS, THOROUGH-BRED HORSES, IN-CALF DAIRY HEIFERS, GRAZING BULLOCKS, FAT SHEEP, &c.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on TUESDAY NEXT, October 3, at Ashby Lodge, near Rugby, the ENTIRE HERD of PURE-BRED SHORTHORNS, the property of W. I N Angerstein, Esq. It comprises between 30 and 40 Head of Bulls, Cows, and Heifers that have been carefully selected and bred from the Herds belonging to Lady Pigot, and other noted breeders, most of the animals being by Bulls of pure Booth blood; there are also several Heifers descended from the celebrated Kingscote Herd Also will be offered some very superior in-calf Dairy Heifers, prime grazing Bullocks, and well-bred fat Sheep, as well as several thorough-bred Horses.

Catalogues, with Pedigrees, may be had of Mr. W. WARD, Ashby Lodge, Rugby; or of JOHN THORNTON, 15, Langham Place, London, W.

Lillingstone Dayrell, near Buckingham.

IMPORTANT SALE of a VERY OLD ESTABLISHED HERD of PURE-BRED SHORTHORNS.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on WEDNESDAY NEXT, October 4, at Lillingstone Dayrell, near Buckingham, the very superior and old-established HERD of SHORTHORNS, bred by the late Mr Elias Clarke. It comprises between 40 and 50 Head of Bulls, Cows, and Heifers, about half of which are of the much admired Seraphina tribe; the others being of the Buttercup and Duchess families, which have been very carefully bred for the last 40 years, and latterly crossed with the fashionable Bates blood. The Cattle have won many Prizes at the Northamptonshire and Bucks County Shows, and are well known for combining great milking qualities and heavy flesh.

Catalogues, with Pedigrees, may be had of Mr. S. CLARKE, Lillingstone Dayrell, Buckingham; or of Mr. THORNTON, 15, Langham Place, London, W.

NOTICE.—The SALE of the HERD of SHORTHORNS, at Waresley Park, St. Neots, will take place on FRIDAY, October 20, and NOT Thursday, the 19th, as Advertised last week.

Smithfield Club, 1871.

THE EARL of POWIS' PRIZE for SLAUGHTERING ANIMALS.

A SPECIAL PRIZE of TWENTY POUNDS is offered by THE RIGHT HON. THE EARL OF POWIS, one of the Vice-Presidents of the Club, for the best Instrument, that shall be an efficient substitute for the Pole Axe, for Slaughtering Animals, by separating the spinal marrow, commonly called pithing. The Competing Instruments must be delivered at the Office of the Hon. Secretary, on or before OCTOBER 1, 1871. All information can be obtained of

Mr. DAVID PULLEN, Assistant Secretary.
Corner of Half-Moon Street, Piccadilly, London, W.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.
Offices, 39, New Street, Birmingham.

SMITHFIELD CLUB SHOW, AGRICULTURAL HALL, ISLINGTON, DECEMBER 4 to 8.

IMPLEMENT DEPARTMENT.

The LAST DAY for receiving APPLICATIONS for SPACE for IMPLEMENTS and MACHINERY, &c., is OCTOBER 2.

Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID PULLEN, Assistant-Secretary, corner of Half-Moon Street, Piccadilly, London, W. All communications should bear outside the words "Smithfield Club."

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS. will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under

CATTLE.—Form A. For an OX or STEER (in any Class).
" B. For a COW or HEIFER (in any Class).
" C. For a BEAST in extra Stock.
SHEEP. " D. For a Pen of three WETHERS.
" E. For a Pen of three EWES [Stock.
" F. For a SINGLE WETHER SHEEP in Extra
PIGS. " G. For a Pen of three PIGS (in any Class).
" H. For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 30, 1871.

THE great increase of PAUPERISM which took place during the 16th century was the first appearance of an unwelcome phenomenon, with which we have become only too familiar. As a matter of course we find nothing in history to compare with the colossal amounts now expended in the relief of the poor in England and Wales, *i. e.*, between seven and a half and eight millions of pounds in each of the last three years, and from five and a half to something less than six millions in the corresponding years of the last decade.

In the year 1601, when the first of a long succession of Acts of Parliament relating to the relief of the poor (43 Eliz.) was passed, the population of England is supposed to have been about 5,000,000. The recent census shows us that it has more than quadrupled. Neither the great statesmen nor the subjects of Queen ELIZABETH were accustomed to the large sums in social arithmetic with which modern society has to deal, and in that respect there is no parallel between the past and the present, but in other respects there is a close analogy between the pauperism of the two periods; and history undoubtedly supplies the key by which we can read and understand what is passing under our eyes.

At the breaking up of the feudal system the bond-labourers of the great barons became free labourers. Previously the poor had enjoyed few of the pleasures of liberty, and they had suffered none of its pains—they had always been certain of food. It is a natural condition of freedom that people must shift for themselves, and it is better for them to do so at some risk than to subsist on bounty as serfs, fed like animals at a master's trough. The desire of men to improve their condition is the germ of many social virtues, and of much that is excellent in the human character. But the sudden creation of a large class of independent poor was an evil for which there was no remedy. It was the signal for the appearance of a new order of society, the "sturdy vagabonds" and "valiant beggars," who were to figure so considerably in the statutes of the ensuing period. The earlier Acts were comparatively mild. They enacted that loiterers, wanderers, beggars, and idlers, when caught, should be put in the stocks for three days, "there to remain with no other sustenance than bread and water." If caught again, after having been commanded to avoid the neighbourhood, they were to be put in the stocks for six days, with "like diet as is before rehearsed."

The dissolution of the monasteries at a time when the church lands embraced one-sixth of the real property of the kingdom involved 50,000 persons in utter ruin, and this so recruited the ranks of vagrants and beggars that the Parliament of HENRY the Eighth's successor proceeded to pass a barbarous law to repress "vagabundrye and idleness." Any person "living idly and loiteringly" was to be branded with a hot iron with the letter "V," and adjudged to be the slave, for two years, of the person who brought him to justice. If he ran away he was to be branded a second time and enslaved for live, and if he ran away a second time he was to be a felon and "to suffer pains of death." Any person helping the slave to remove his iron ring to forfeit £10. So much for contemporary wisdom and appreciation of the causes and possible remedies of the increasing pauperism of that day.

Our ancestors persevered in their attempts to exorcise the demon that had appeared among them. For 200 years the most industrious people in the world were convinced that "idleness and otiosity" were the besetting sins of the nation. In DEFOE'S "Giving Alms no Charity," one of the first tracts and pamphlets on this subject in the last century, it is maintained that, though "we are burdened with a crowd of clamouring unemployed, unprovided-for poor people," yet "there is more labour than hands;" that the causes of poverty in England were casualty and luxury, sloth and pride. "Good husbandry (economy) is no English virtue," we are told; it may thrive here and there, but it is against "the natural temper and genius of the nation," who, "generally speaking, cannot save their money." "The profuse extravagant humour of our poor people in eating and drinking keeps them low." An Englishman loves "to get his pocket full of money, and then go and be idle, or perhaps drunk, till all be gone." "We are the most lazy, diligent nation in the world," and an Act of Parliament is needed "to cure the sloth and luxury of our poor; make drunkards take care of wife and children, spendthrifts lay up for a wet day; idle, lazy fellows diligent; and thoughtless, sottish men careful."

This estimate of the power and province of legislation was followed by an Act which Mr. McCULLOCH has described as a bulwark for half a century against the progress of fictitious pauperism. This was the famous Act of 1723, which enabled parishes to unite for building workhouses, and gave them the privilege of refusing relief except in a workhouse, an alternative which was regarded with great and natural aversion, as it is now. A growing trade and a cycle of good harvests aided the new law, and the period which followed will always be remarkable as an era of singular prosperity. The amount raised for the relief of the poor in England and Wales in the middle of the century did not exceed an average of £750,000, which was considerably less than it had been 50 years previously.

But even Parliaments do not always let well enough alone. After the American war, and before the Revolutionary war with France, when the poor's rate was still moderate, the salutary law of 1723 was abandoned, and in 1782 GILBERT'S Act provided that work should be found for able-bodied paupers at or near their own homes, and thus an active Member of Parliament succeeded in removing the checks to idleness and imposture, and in obtaining the adoption of one of the most mischievous schemes that could have been devised.

A time of trial soon came, and for many years the poor were subjected to influences calculated to destroy their self-respect and independence. At one time, when wages were partly paid out of the rates, almost every agricultural labourer in the country became a pauper, and as they were paid according to the number of children, without regard to skill, conduct, or actual earnings, imprudence, improvidence, and idleness were directly encouraged. The mischief was widespread, for war and adverse seasons crippled the resources of the country, and occasioned a rapid increase in the amount levied for the poor, till, in 1814, 1815, and 1816, it exceeded £6,000,000 a-year, and in 1817 it reached £7,870,800—Wheat being 94*s.* 9*d.* per qr. The Act of 1834, which established the existing system of administration of Poor-laws, may be said broadly to have corrected old errors and grievances, and to have effectually cleared the ground for the consideration of the causes and preventives of pauperism.

The progress and prosperity of the country, in recent times, may be marked by the following figures. From 1811 to 1834, the sums raised for poor's-rates ranged from £7,800,000 to £4,500,000, decreasing gradually; from 1834 to 1847, the amounts were from £4,000,000 to £5,500,000. The cost of the rates, per head of the population of England and Wales, which had been about 2*s.* 6*d.* per head in the middle of the 18th century, was for the following decades—1801, 9*s.* 1*d.*; 1811, 13*s.* 1*d.*; 1821, 10*s.* 7*d.*; 1831 9*s.* 9*d.*; 1841, 6*s.* Since 1841 there was, until the last three years, a general reduction in the amount, with a regular but not extreme variation, the total ranging from 5*s.* to 6*s.*; subsequently there has been a marked rise of at least 20 per cent., the expenditure having been about 7*s.* per head in each year. The increasing pauperism of the present age has its root in the cities and trade, not in the agriculture of the country. The condition of the farm labourer has been continually progressing since the deplorable period just referred to; from 1800 to 1818 his wages were 11*s.* a week, which purchased two quarts less than a bushel of Wheat at the average price; but at the present time the wages in Kent, Sussex, and Surrey during last winter were from 12*s.* to 15*s.* Taking the lowest district and the lowest estimate of the year's earnings, the wages of day labour will be found now to purchase more than 2 bush. of Wheat per week. It may be noted that in the days of abundance in the last century the agricultural labourer was better off than he has been in any but the most recent years; from 1742 to 1752 his wages were 6*s.* per week, which at the average price of 30*s.* per quarter, purchased rather more than a bushel and a half of Wheat.

IN a recent number we drew attention to the supposition that a change was taking place in the climate of the prairie districts in the Far West of North America, in consequence of the settlements and attendant cultivation that were spreading over them. Taller herbaceous plants are said to be taking the place of the short grasses, imparting more shade to the soil, and a greater amount of rain is said now to fall, and a milder climate with less extremes appears to be the result.

It is premature to say that the amelioration in question is in reality to be referred to these causes; but, supposing it to be so, it suggests a solution for a difficult problem which has of late years occupied a considerable share of the attention of scientific men in Russia, viz., how the steppes in the south of that kingdom should be dealt with, so as at the same time to render them productive and improve the climate.

It is obvious that the barrenness of the Russian steppes has much in common with the treelessness of the American prairies. In neither is it due in the main to any defect or peculiarity in the soil. There are important and vast exceptions, but the soil of much of the steppes is the incrediby rich, deep Tschernosom, and the generality of the prairie soil, if not so exceptionally fertile, is at least of fair, if not of more than average excellence. The one thing wanted by both is water, and how to procure it is the problem. We see how it may be and is being obtained for North America, but something more is needed for the steppes. One very obvious recommendation is the gradual planting of much of the country, beginning near the rivers, where water could be obtained, by irrigation or otherwise, and gradually extending the plantations as, by their influence as a reservoir or sponge, they should enable further planting to be successfully carried on.

But this process is too slow for the Russians. They wish something more rapid in its action—something that will allow the present generation to profit by its operation—something not of a general character, but capable of individual application. We are afraid this will not be easy to find.

There is no royal road to any great success. Time, and much time, is required for every great work, and the alteration of the climate of a vast tract of country is no small one. But we have lately heard that a course of procedure analogous to the stirring of the soil of the prairies by the cultivation of new settlements has been tried with promising results. It consists in very deep trenching. The great difficulty, as we have seen, is want of water. That can only be procured either from the rivers, or from the clouds, or from the soil itself. Here the rivers are distant, and from the dead level of the country irrigation is difficult and expensive. The clouds, from want of mountains or forests, give no rain for long periods. In some districts a year or more occasionally passes without a shower refreshing the earth, and very generally not a drop falls in the whole country from the end of May to the middle of September. It rains no doubt in spring and autumn, and snows in winter, but the country is so uniformly level, and, what is of more importance, the subjacent strata are so uniformly level, never having been disturbed by geological causes, that there are no means by which the water which falls at these seasons can be accumulated and stored up in subterranean reservoirs or fissures (the existence of deep springs depending mainly on the inclination of strata produced by the dislocation of beds). The surface of the ground by long baking, too, is burned as hard as a clay floor, and when rain does fall, it lies on the surface of the ground, scarcely sinking at all until the warm season comes, when it is all evaporated.

By digging deep into the soil, however, and loosening it far down, the rain is allowed to sink and penetrate beyond the reach of evaporation, and so a reservoir is formed which can be reached by the roots of any trees that may be planted. This plan of planting after very deep trenching is said to be beginning to answer.

With such large supplies of water as the Black Sea and the Caspian in their immediate vicinity, and no great mountains intervening, there is no reason why the regions which are now a waste should not be a garden; were the ground even partially clothed with timber, the whole would be changed. There is no reservoir of moisture equal to a forest. It is a sponge which soaks up an enormous quantity of water, to render it back in perennial springs and streams. Moreover, forests not only receive rain and retain it when it falls, but they attract it. We read that already a few trees planted by the engineers employed in the excavation and construction of the Suez Canal, near their temporary residences, have had the effect of attracting clouds, and that the rare event of rain falling in the land of Egypt has already taken place in their vicinity. To do the same thing in the South of Russia is obviously the true means of utilising, fertilising, and rendering productive the vast steppes in question, and an extensive system of planting after deep trenching, combined with other means which have been suggested, may fairly be expected to supply them.

—— To effect sales of English Wheat on Monday in Mark Lane, a reduction of 1*s.* per qr. on the previous Monday's rates had to be submitted to. On Wednesday the tone of the Market was quiet, but there was no material variation in prices.——At the Metropolitan Cattle Market on Monday choice qualities of Beasts did not experience much change in price, but a clearance could not be effected in Sheep, even at lower rates. On Thursday trade was dull, at lower prices for all kinds.

—— The following letter from Mr. CAIRD, on THE HARVEST of 1871, appeared in Wednesday's *Times*:—

"As, in my opinion, some serious misapprehension is entertained regarding the produce of last harvest, I venture to offer an estimate based on my own experience as a considerable grower of Wheat, and after a very extensive observation of the country immediately before and since the close of the harvest. The acreage given in the Agricultural Returns lately published, with the addition of the figures of 1870 for Ireland and the islands, shows a total of 3,850,000 acres. Upon this, after deducting seed, I estimate the produce available for consumption at 11,000,000 qr.

"The annual consumption may now be taken at 22,000,000 qr., which would therefore show the imports required to be 11,000,000 qr. But, owing to the comparative lateness of this harvest, the probability is that not more than eleven and a half months' consumption will be needed to meet the harvest of 1872, so that the foreign supply required may thus be reduced to very little over 10,000,000 qr.

"I am disposed to think this a liberal estimate of our foreign requirements. During the last 10 years it has only once been exceeded. For 1867, which was the worst crop of the 10, and certainly inferior to that of the present year, the import of foreign Wheat within the harvest-year was 9,293,000 qr. It exceeded 10,000,000 only in 1870, and that after an average home crop, but with consumption no doubt stimulated by the low price of 46*s.*, which was the average of the year ending June 30, 1870. The price is 10*s.* higher now, and if for the current year this should be maintained or exceeded, the consumption will thereby to a moderate extent be economised.

"The price must necessarily be more difficult to estimate than the quantity required, for it is largely dependent on the crops and requirements of other countries. To a certain extent it will also be affected by the yield of the Potato crop, which is likely to be seriously deficient. The Wheat crop of our nearest neighbour, France, is said to be very deficient; but as all other crops, and especially vegetable crops, in that country are very abundant, and as her present circumstances must impose great economy, France is not likely this year to import much Wheat. Spain is said to have had a good Wheat harvest With regard to the main sources of supply in Europe and America, there is not, so far as I have seen, any reason to apprehend deficiency, and it is certain that the prices at present ruling have, during the last 12 weeks, sufficed to bring us much ampler supplies than would, if continued at the same rate, be needed to carry us in safety to another harvest. The spring corn crops of all kinds are good, and they are twice the extent of the Wheat, while the grass and green crops for cattle are in general very abundant; so that, notwithstanding the deficiency in the Wheat and Potato crops, I feel very confident that the harvest of 1871 will, when taken altogether, be of full average value."

—— The following preliminary abstract of Agricultural Returns of Great Britain for 1871 has been issued from the Statistical Department of the Board of Trade:—

Extent of Land in Great Britain under

	Wheat.	Barley.	Oats.	Potatos.	Hops.
1869	3,688,357	2,251,480	2,782,720	585,211	61,792
1870	3,500,543	2,371,739	2,763,300	587,661	60,594
1871	3,575,996	2,387,719	2,719,308	628,287	60,028
	Increase (+).		Decrease (—).		
1871	+75,453	+15,980	—43,992	+40,626	—566
over	or	or	or	or	or
1870	2.2 p. ct.	0.7 p. ct.	1.6 p. ct.	6.9 p. ct.	0.9 p.c.
1871	—112,361	+136,239	—63,412	+43,076	—1764
over	or	or	or	or	or
1869	3.0 p. ct.	6.1 p. ct.	2.3 p. ct.	7.4 p. ct.	2.9 p.c.

Total Number of Live Stock in Great Britain on June 25.

	Cattle.	Sheep.	Pigs.
1869	5,313,473	29,538,141	1,930,452
1870	5,403,317	28,397,589	2,171,138
1871	5,339,332	27,132,898	2,499,889
	Increase (+).	Decrease (—).	
1871	—63,985	—1,264,691	+328,751
over	or	or	or
1870	1.2 p. ct.	4.5 p. ct.	15.1 p. ct.
1871	+25,859	—2,405,243	+569,437
over	or	or	or
1869	0.5 p. ct.	8.1 p. ct.	29.5 p. ct.

—— On Wednesday, at the meeting of the East Cheshire Agricultural Society, Lord Vernon thus referred to the Relations of Landlord and Tenant:

"At Liverpool the other week, Lord Derby, in speaking on the question of the tenure of land, stated as his opinion that any tenant who was good enough to be kept permanently should have a lease if he wished it. That started the whole question of leases *v.* agreements. What was the test to be applied in order to ascertain whether a tenant was good enough to keep? Was the test to be one of skill? because if it was, a tenant, after entering a farm, might have all his powers paralysed by ill-health. If it was one of capital, he might die after he had been in possession of his farm a certain time, and his property might be divided amongst his wife and five, or six, or more children, who might be in distant parts of the world. Therefore, he could not think that either skill or capital, or the combination of both, was a sufficient test to secure a landlord's interest in ascertaining whether a tenant was good enough to keep permanently. A man might be the very best tenant in the world at the commencement of his lease, but, owing to physical or moral causes, he might very shortly after entering upon his farm be very much deteriorated in his condition, and the landlord's interest would suffer in a manner which it was not very easy to estimate. As a landlord he had had to do with both systems of letting, and, speaking in the landlord's interest, he had not observed a greater disposition on the part of tenants under lease to improve their farms than on the part of those under annual agreements; and in more than one case he had had to do with farms which had greatly suffered owing to the negligence of tenants who had held leases. In the case of a very large farm he had the condition of the fences valued, and he found that it would have cost £500 or £600 to put them in order. He did not hesitate to say that the present mode of letting land was not as business-like as it might be. Every landlord had a perfect right to propose an agreement which appeared to him to be the best; but, at the same time, he believed that if the conditions of letting were more liberal than they were at present, the landlords' interest need not suffer at all. Were he a tenant, he would infinitely prefer entering a farm under an annual agreement, with proper compensation clauses, to the very best lease which had ever come under his notice.

—— The *Chamber of Agriculture Journal* of last week contains an elaborate Comparison of the Character of the Harvest with that of the previous season during the past 26 years, of which the figures are taken from the past 26 years' returns of the *Agricultural Gazette.* Comparing the harvest, whether average, over average, or under average, with the average temperature and rainfall of the previous August, the previous July and August, the previous June and July, the previous June, July and August, the very laborious and industrious calculator arrives at the conclusion that "the thermometer and rain-gauge together, checked by modifying accidents in the condition of the crop which are known before harvest arrives, constitute an infallible guide to the abundance or deficiency of the yield of Wheat in England, and that an estimate of the crop, based upon this test, and published in August or September, will not be disproved by the results of actual threshing in the autumn or the winter months." We quote the above Table, as giving the substance of the facts on which the conclusion is based.

Year.	June and July.		July and August.		August.		June, July, and August.		Character of the Wheat Crop.
	Heat.	Rainfall.	Heat.	Rainfall.	Heat.	Rainfall.	Heat.	Rainfall.	
1846	+ 4.5	— 3.21	+ 2.8	+ 1.88	+ 3.4	+ 4.45	+ 0.9	+ 1.26	Over average
1847	+ 1.3	— 2.05	+ 2.0	— 2.40	+ 0.3	— 0.92	+ 1.1	— 2.95	Over average
1848	0.0	+ 1.37	— 1.3	+ 2 19	— 2.4	+ 1.98	— 0.6	+ 3.37	Under average
1849	— 0.2	— 1.28	+ 0.4	— 0.55	+ 1.6	— 0.85	+ 0.4	— 2.11	Over average
1850	— 0.5	— 0.36	— 1.4	— 0.64	— 1.5	— 1.07	— 0.9	— 1.41	Under average
1851	— 1.0	+ 1.30	+ 0.6	+ 1.16	+ 2.4	— 1.17	+ 0.3	+ 0.15	Average
1852	+ 2.0	+ 1.61	+ 2.7	+ 1.29	+ 0.5	+ 1.50	+ 1.6	+ 3.13	Under average
1853	— 0.1	+ 2.41	— 1.4	+ 2.28	— 2.3	+ 0.51	— 0.8	+ 2.94	Much under average
1854	— 0.3	+ 0.53	— 0.9	— 0.09	— 0.6	— 1.27	— 0.5	— 0.72	Over average
1855	+ 1.2	+ 3.22	+ 0.5	+ 3.05	+ 0.2	— 0.87	+ 0.9	+ 2.37	Under average
1856	— 1.4	— 2.02	+ 0.5	+ 0.08	+ 2.3	+ 1.32	— 0.2	— 0.68	Over average
1857	+ 0 8	— 0.58	+ 1.7	+ 0.63	+ 1.5	+ 0.28	+ 1.0	— 0.28	Much over average
1858	+ 1.5	— 1.11	— 0.8	— 0.69	— 0.8	— 0.67	+ 0.9	— 1.77	Over average
1859	+ 2.7	— 0.26	+ 1.8	— 0.93	+ 1.1	+ 0.30	+ 1.8	+ 0.06	Under average
1860	— 4.6	+ 3.88	— 4.6	+ 2.50	— 4.6	+ 1.43	— 4.5	+ 5.33	Much under average
1861	+ 0.2	— 0.20	+ 0.3	— 2.14	+ 1.5	— 1.63	+ 0.7	— 1.81	Under average
1862	— 2.9	+ 0 12	— 2.6	— 0.15	— 2.6	+ 0.29	— 2.7	+ 0.33	Much under average
1863	+ 0.6	+ 1.17	— 1.4	— 1.76	0.0	— 0.35	— 1.1	+ 0.84	Much over average
1864	— 1.5	— 1.74	— 2.2	— 2.86	— 3.3	— 1.30	— 2.0	— 3.02	Under average
1865	+ 0.6	+ 0.89	— 1.0	+ 2.31	— 1.7	+ 1.02	— 0 2	+ 1.93	Under average
1866	+ 0.3	+ 1.52	+ 0.1	— 0.07	— 2.0	+ 0.56	+ 1.0	+ 2.10	Under average
1867	— 2.1	— 1.05	0.0	+ 1.95	+ 1.9	+ 1.52	— 0.1	+ 0.49	Much under average
1868	+ 1.4	— 2.30	+ 4.1	— 2.71	+ 7.0	— 1.59	+ 3.6	— 3.87	Much over average
1869	— 1.2	— 1.95	— 0.4	— 2.57	— 2.6	— 1.34	— 1.5	— 3.27	Under average
1870	+ 2.8	— 1.83	+ 0.7	— 1.00	— 1.7	— 0 68	+ 1.4	— 2.49	Average
1871	— 1.7	+ 1.99	+ 1.2	— 0.52	+ 3.3	— 1.27	— 0.1	+ 0.74	Under average

—— At the late meeting of the South Tyne Agricultural Society, the silver cups offered by Mr. Hope Wallace and the Rev. Dixon Brown for the greatest improvement by a proprietor or tenant in previously unreclaimed mountain land or hill pasture, made within the 10 preceding years, and in extent not less than 6 acres in one piece or plot, were awarded: 1st, to Mrs. Winter, Low House; and 2d, to the Rev. Dixon Brown, Unthank Hall. The following is the statement handed in by the judges (Messrs. T. Wright and T. P. Dods):—

"The judges, in obedience to the instructions handed to them by the committee, visited and examined the whole of the reclaimed land entered for competition for the prizes, the number of competitors being 14. After a careful consideration of the schedules handed in by the competitors, together with the notes made by them in the course of their examination, the judges had no difficulty in singling out two of the competitors as standing out from the others, viz., Mrs. Winter, of Low House; and the Rev. Dixon Brown. After a full consideration of the situation, original quality of the land, obstacles opposed to, and the success of the reclamation they agreed to award to Mrs. Winter, of Low House, the 1st prize, and to the Rev. Dixon Brown, of Unthank Hall, the 2d prize. The judges desire to call attention to the fact that the land to which they have awarded the 1st prize was previous to being reclaimed a piece of exceedingly poor, black-topped, heath, lying at a high elevation; and that by quarrying out the stones, ploughing up, liming, cropping twice with Turnips, and sowing away without any corn crop being taken from the land, a most excellent pasture has been obtained at a cost of about £9 per acre, the value of the Turnip crops and the first year's seeds being more than equal to the whole cost. The judges very highly commend the energy and industry of Mrs. Winter in reclaiming so uninviting a subject. They are also glad to find Mr. Brown setting so good an example to the landlords around in so energetically carrying forward the work of reclamation. They would suggest to him that he should in the portion he is now busy with, by way of experiment, follow his first crop of Turnips by a second, and sow away without taking any corn crop. Where corn is taken for a first crop it will rarely pay seed and harvesting; and from many of the places which the judges visited a second crop was taken before anything except lime had been applied. Where corn is taken after Turnips it is very apt to hurt the seed by getting lodged, and the judges cannot but think that wherever corn is taken from weak moor land the pasturage is less or more damaged thereby. As the occupier of a small holding the judges highly commend Mr. Bywell, of Burnstones, for the energy and success displayed by him in reclaiming his piece of common land. They also highly commend Mr. Thomas Little for the extensive fencing, draining, and liming done by him at Far House, Knarsdale. They commend Messrs. Oliver & Snowdon for the manner in which, by means of draining, liming, and feeding on the grass with cake, their heath at Lees Hall has been converted into luxuriant grass; also Mr. Joshua Newton, for the energy with which he is draining and liming at Whiteside. The judges think it right to notice the improvements of Mr. Grieves, of Aller's Hill, at the Green Moss. The field is less than 6 acres, and therefore too small to compete, but the work is very thoroughly done. An exceedingly poor piece of moss has, by levelling, draining, liming, and manuring, been converted into a very good piece of grass; and the judges notice it for the purpose of calling the attention of some of his neighbours, who are taking two and some three crops of corn ere sowing away, to the fact that in this case where the land is naturally poorer the result is better than with theirs. In conclusion the judges desire to express the pleasure they have had in going through the district, and in witnessing the improvements which are being carried out, and they hope that the result of this competition will be to give an impetus to the work of reclamation, for which there is still abundant room, and from which the improvers have every reason to expect a fair return."

OUR LIVE STOCK.

CATTLE.

We blame the postal arrangements for the delay of our notice of the Panton House sale, which took place on Thursday, the 14th inst. The Messrs. Dudding have long been known as the possessors of animals not only of pedigree but of excellence, and they have been for many years successful exhibitors at our largest shows. The recent sale of 84 head, comprising a considerable proportion of calves of the year, realised the very fair average of £48 3*s.* per head: 71 cows made £46 7*s.* each, and 11 bulls £59 15*s.* each, while the grand total amounted to £3948. The highest prices were given for descendants of *Sunflower* by Gracchus, *Blanche* by General Washington, *Fancy* by Pretender, *Alice Buckingham* by Royal Buckingham, *Countess of Wragby, Actress* by Prince Alfred (13,494), and *Symmetry* by Leonard (4210). The following are among the principal prices given:—*Spring Flower* by Vanguard (10,994), 33 gs., Mr. J. C. Pickin; *Countess of Wragby* by Sir Roger (16,991)—(dam of *Countess of Yarborough*, the 2d prize Oxford heifer, sold for 350 gs., to go out to Canada),—56 gs., Mr. Adwick; *Judith's Joy* by Prince Alfred (13,484), 61 gs., Mr. J. Currie; *Ruby* by Colonel Colling (17,587), 80 gs., Mr. Denison; *Agility* by Woodranger (21,128), 61 gs., Mr. T. C. Booth; *Hawthorn Blossom* by Lord Panton (22,204), 52 gs., Mr. P. Brown; *Fancy 14th* by Royal Buckingham (20,718), 51 gs., Earl Brownlow; *Hebe 24th* by Colonel Colling (17,587), 50 gs., Mr. Cruickshank; *Lady Bird* by Royal Buckingham (20,718), 81 gs., Mr. Yarborough; *Raby Rose* by Feudal Chief (21,740), 87 gs., Mr. J. D. Lister; *Rosebud 2d* by Ravenshope (22,681), 50 gs., Mr. R. Taylor; *Amelia* by Ravenswood (22,682), 51 gs., Capt. Pratt; *Ruth* by Ravenswood, 52 gs., Earl Brownlow; *Venetia*, by do., 85 gs., Mr. Yarborough; *Hebe 77th*, by do., 42 gs., Mr. Cruickshank; *Prize Flower*, by do., 51 gs., Captain Pratt; *Fancy 18th*, by do., 70 gs., Mr. J. Beattie; *Summer Flower*, by do., 86 gs., Mr. G. Bland; *Amelia 3d*, by do., 62 gs., Capt. Pratt; *Virginia*, by do., 95 gs., Capt. Pratt; *Attraction* by Robin (24,968), 70 gs., Mr. T. Pears; *Royal Bridesmaid* by Robin, 51 gs., Mr. Knapton; *Pretty Maid* by Robin, 51 gs., Mr. Denison; *Lady Grace*, by do., 81 gs.; Mr. J. Slatter. In the bull sale, Standard Bearer by Ravenswood was sold to Captain Pratt for 81 gs.; British Flag by Robin sold at 155 gs. to Captain Pratt; Lord Hawthorn by Robin became Mr. H. Minter's property at 51 gs.; Adjutant by Robin, was sold at 87 gs. to Mr. J. R. Ealand; and Fancy Stuart by The Stuart (27,650) was secured at 50 gs. by Mr. W. J. Gilliat.

—— The fourth biennial sale at Brailes House, on Thursday, the 21st inst., conducted by Mr. Strafford, resulted in a general average of £91 18*s.* 7*d.* over 38 head: an average of £112 9*s.* 5*d.* over 26 females, and of £47 8*s.* 6*d.* over 12 bulls. The grand total was £3493 7*s.* The accompanying price list will show that some high prices were given, the demand being principally for animals of the *Lally* by EARL OF DERBY (10,177), "Chinchilla," or "Furbelow," and *Asia* by GRAND DUKE 2D tribes. The Darlington cow by DUKE OF GENEVA (19,614), some descendants of *Lalla* by CALIPH, *Polytint* by EARL OF DUBLIN, and *Cathleen* by CALIPH, also sold well :—

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
America	1859	76	Mr. W. W. Slye.
Clarence	1861	51	Mr. Fawcett (Leeds).
Lady Emily 2d	1861	81	
Countess of Barrington 2d	1861	170	Mr. W. W. Slye.
Harebell	1862	135	Mr. Beauford.
Hyampea	1863	110	Mr. Leney.
Darlington 12th	1863	150	Mr. Cheney.
Antoinette	1864	255	Mr. Leney.
Grand Duchess of Barrington	1866	415	Capt. Oliver.
Lucretia	1865	50	Mr. Wilson.
Clarissa	1866	66	Mr. Drewry (for the Duke of Devonshire).
Woman in Red	1866	67	Mr. Wilson.
Autumn Queen	1866	53	Sir C. Mordaunt.
Edith of Fawsley	1866	55	Sir George Philips.
Antonia	1867	180	Lord Skelmersdale.
Giulla	1867	75	Sir G. Philips.
Lady Elizabeth	1867	90	Mr. Leney.
Formosa	1868	90	Mr. Sartoris.
Albreda	..	..	Withdrawn.
Lady Surmise	1869	71	Colonel Kingscote.
Louisa	1869	80	Mr. Wilson.
Aspasia	1869	100	Mr. McIntosh.
Clarice	Jan., 1870	56	Mr. Stratton.
Malmsey	Feb., 1870	60	Mr. Garne.
Leonora	May, 1870	47	Mr. Wilson.
Ada	Nov., 1870	77	Mr. Knowles.
Amata	Jan., 1871	125	Mr. McIntosh.
Bulls.			
EARL OF FAWSLEY 3D .	May, 1870	70	Mr. Stratton.
LORD BARRINGTON ..	June, 1870	150	Mr. Knowles.
LORD OF THE BORDER ..	Sept., 1870	50	Mr. Baker.
JACK SPIGOT	Nov., 1870	..	Passed
EARL OF WARWICKSHIRE	Dec., 1870	42	Mr. Harbage.
ROSICRUCIAN	Jan., 1871	22	Mr. Harbage.
CYMBAL	Mar., 1871	20	Mr. Miller.
EARL OF CLARENCE ..	Mar., 1871	28	Mr Pearson.
EARL OF FAWSLEY 4TH ..	Mar., 1871	34	Sir H. Dashwood.
NUNEHAM	April, 1871	21	Mr. J. Harbage.
LORD SURMISE	May, 1871	22	Mr. Fawcett.
ALBERT VICTOR	June, 1871	16	Mr. Noel.
DUKE OF BARRINGTON ..	June, 1871	67	Col. Gunter.

—— On Tuesday, October 3, Mr. Thornton will sell Mr. W. Angerstein's pure-bred Shorthorns at Ashby Lodge, near Rugby. The herd comprises between 30 and 40 head of cattle from the Branches Park and other good Booth stocks, as well as several heifers descended from the Kingscote herd.

—— Mr. Thornton announces the sale of the Lillingstone Dayrell Shorthorn stock for October 4. The stock comprises 40 to 50 head of bulls, cows, and heifers, about half of which are of the much-admired "Seraphina" tribe; the others being of the "Buttercup" and "Duchess" families, carefully bred for the last 40 years, and latterly crossed with Bates bulls.

AGRICULTURAL REFORM.

[The following correspondence has appeared in the *Times* since Mr. Mechi's letter, given in our columns last week.]

IN the letter which appeared in the *Times* of yesterday from my good friend Mr. Mechi, several important topics are touched upon, on one of which I entirely agree with him—viz., that our land laws and land tenure should be adapted to the altered conditions of the country brought about by our accumulated wealth, our increased population, and the introduction of costly machinery, and greater capital in farm operations. The course, however, which Mr. Mechi recommends to the country—in the breaking up of grass land, the growing of Wheat after Wheat, in adopting the example set by Mr. Prout, in Hertfordshire—is one which I think few men will endorse who have considered what is involved in the whole question.

The increase in our home supply of Wheat is undoubtedly an important one, but by the side of the question of an increased supply of meat, as I showed in my little work on "Continental Farming," it is really an insignificant one. We can draw our supplies of corn from the ends of the earth. England, indeed, has become, under free trade, the great granary for the surplus grain of all other countries, but the area from which we can draw our supplies of animal food is at present limited very nearly to the countries near to our own shores.

Mr. Mechi informs us that he has grown this year 42 bush. of Rivett Wheat (the coarsest kind) on the same land which last year produced 48 bush. of white Wheat.

Now, in addition to such a practice being unsound in principle and opposed to the scientific rotation of crops, what has been gained? By growing Wheat after Wheat, Mr. Mechi has simply sacrificed that portion of his root crop. Had the land been sown with a restorative crop—for instance, Mangel—the result, judging by the statements given of the Tiptree crops, would probably have been a produce of some 30 or 40 tons of roots per acre. These would have furnished food for a large number of bullocks and sheep, a ton of Mangel producing some 18 lb. of beef or mutton. Were any considerable number of farmers to pursue the course recommended by Mr. Mechi, the result would be a considerable increase in the already high price of meat, while the influence upon the Wheat market by the increase in our home Wheat crop would be infinitesimal. Suppose the country were to adopt the system of Mr. Prout, who, I believe, crops the whole of his land every year, and, being near London, sells off the whole of his produce, straw included, few or no animals being kept upon the farm. Why meat, under such a course, would very soon be at famine prices; and, as Mr. Prout's system requires very little labour (scarcely any in winter), the poor would soon lack employment. I think, further, that Mr. Mechi's advice as to ploughing up poor grass land is equally unsound. I should say—try and improve it. No land sooner yields to remedial measures and generous treatment than pasture. Some ten years ago my farm manager strongly urged me to break up a piece of poor grass. I objected, and instructed him to drain it, to harrow it well two or three times a year, and to give the animals kept upon it Mangel, corn, or cake, &c. This field is now as nice a piece of pasture as any in the neighbourhood. Again, every practical man knows that, to breed successfully, a certain proportion of permanent pasture is necessary, if not indispensable, and that more stock can be raised upon farms containing some 20 or 30 per cent. of grass land than on farms exclusively arable. With our ever-increasing population, the people are to be fed, more animals must be bred. The prices of store stock are so enormously high, that many farmers are actually deterred at the present time from buying stock to fatten during the winter, for fear of never seeing their money again, and yet Mr. Mechi recommends a course which would infallibly lead to a diminution of our live stock. I can only account for the erroneous notions my friend has put forward, by supposing that he has always pursued the plan of "buying in" instead of breeding his cattle and sheep.

Mr. Mechi has recommended others "to watch the signs of the times," but the reports he quotes of Mr. Sanderson and Mr. Scott appear to have, for the time, obscured his own, usually, clear vision. *James Howard, September* 21.

I am glad to see in the columns of the *Times* of the 23d inst. the lively ebullition of my good friends in favour of a more abundant production of meat; for that has been, all along, the key-note of my practice, as these gentlemen must have seen or heard had they read my book, or noticed on my farm.

More fat meat to produce more manure, and more Wheat, has ever been my motto, for my annual production of meat for every acre of my farm has been fully £5 per acre, in addition to nearly £6 10*s.* per acre of corn, hay, &c., sent to market and sold for money. The average produce of the kingdom per acre is, according to the best English and foreign statisticians,[*] only £3 15*s.*; so that mine is more than three times that amount. In round numbers, the farmed area of the United Kingdom, 45,000,000 acres, at my average of £11 10*s.* per acre, would give £517,500,000; they only do give, at £3 15*s.*, £168,750,000; balance in favour of my practice, £348,650,000.

These are not imaginative figures, but based on actual facts.[†]

I have reason to believe that our 22,500,000 acres of pasture only make a miserable return of about 45*s.* to 50*s.* per acre of produce. Break them up, cultivate and manure them well, and they would much more than double the yield, and, concurrently, employ more than double the labour and capital. I could give ample evidence on this point, but your readers need only refer to p. 248 of Morton on Soils, and Mr. Woodward's case, vol. 9, p. 54, Royal Agricultural Society's Journal, to be convinced that in England, and even in many parts of Ireland, the continuance of poor permanent pasture is a great national loss and mistake. My own opinion is decidedly in favour of keeping up the fertility of the soil by feeding animals mainly with cake and other produce not grown on the farm, as well as by some of the farm produce—thus making meat and growing Wheat concurrently, using, of course, much deeper cultivation than the ordinary 5-inch agricultural pie-crust.

Mr. Prout uses no less than £3 per acre per annum of artificial manures, and very deep steam cultivation, and of course must be the best judge of what suits his own peculiar soil, but I prefer for many reasons the concurrent production of meat and Wheat.

Your correspondents are mistaken in supposing that I do not breed stock. My success in farming depends upon making a large quantity of meat, and consequent manure. Without this I could not make a profit. Although I grow so much Wheat and other corn, I make as much or more meat per acre as those who have grass land only.

I this year bred 120 lambs from 77 ewes. This is my usual practice, and I sell the lambs as fat mutton at one year old, price from 52*s.* to 63*s.*

For many years I reared 30 calves annually, and sold them as fat bullocks at two years old, price averaging about £22 to £25 each. I only changed my practice in this respect owing to the cattle plague, but I shall now resume it. It is a great mistake to suppose one cannot raise and fatten stock without pasture. There is no difficulty in doing this when you grow great crops of Tares, Clover, Rye-grass, roots, and corn, and purchase plenty of cake, and grow plenty of straw, the latter, especially bean-straw, when properly chaffed and prepared, and mixed with richer food, such as cake, corn, &c., renders us independent of hay. A crop of standing green Beans in July and August affords more food than any pasture, the crop being passed through the chaff-cutter. In some parts of Norfolk sheep are folded on green Beans.

By deeper cultivation and more abundant manure one acre may be probably made to produce as much root crop as two under the ordinary plan. *J. J. Mechi, Tiptree Hall, Kelvedon, Essex, September* 25.

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[*] M. Léonce de Lavergne, in his valuable book, the "Rural Economy of England," published by Blackwood in 1855, and ably translated by Mr. Hope, a Scotch farmer, thus estimates our gross acreable produce :—England, £3 15*s.* per acre; Lowlands of Scotland, Ireland, and Wales, £1 17*s.* 6*d.*; Highlands of Scotland, 8*s.* 4*d.* His total agrees very nearly with mine, £164,000,000. He estimates the acreable produce of France at only half the above amount, although he considers their land as good as ours.

[†] Extract from my books, year ending December 31, 1870 :—Wheat sold for money, £870 7*s.*; hay, &c., sold for money, £226 8*s.* 6*d.*; corn and hay of our own growth sold to live stock, £240 7*s.* 6*d.*; ditto to farm-horses, £146 12*s.* 6*d.*; meat made and sold, £759 5*s.* 7*d.*; wool sold, £11 16*s.* 6*d.*; poultry and eggs sold, £50 4*s.* 5*d.*; meat made in 1870, but not sold, £200.

THE DERBY CHEESE FACTORY.

THE Derby factory, originally a cheesefactor's warehouse, is 60 feet long by 30 feet wide, and consists of three separate floors. It adjoins the Derby canal and Mr. Roe's timber-yard, the ground on one side being on a level with the first floor. The basement, being an excavation, insures an equable temperature, which is conducive to uniform quality in the cheese. A width of 6 feet on the east end, embracing the whole width of the building, was partitioned off and excavated to the depth of 4 feet, lined with blue bricks laid in cement, and converted into a whey cistern capable of holding 3500 gallons.

The evening's milk having arrived at the factory, it is weighed and run directly into the vats in the make-room, which has already been fully described in a former number of this journal.[*] When the morning milk has all been received, and run into vats along with that of the previous evening, the cold water is stopped, and by opening a tap in the bottom of the vat the whole of the water contained between the outer and inner vats is run off and steam turned on. The steam immediately fills the space previously occupied by the water, and the temperature of the milk is raised from 82° to 86°, according to the natural temperature of the atmosphere—the lower in hot and the higher in cold weather. Every experienced cheesemaker knows that coagulation takes place much quicker when milk is set at a high than at a low temperature. A most important point is to have the whole of the milk in the vat of one uniform temperature throughout. By closely covering the vat with a thick cloth, the loss of heat by evaporation is prevented. Inequality of temperature produces curd of different kinds, the greater heat causing the action of the rennet to be more decided, consequently the curd becomes tough. It is no uncommon occurrence to have one part of the curd in the same vat tough and the other part free and open; this difficulty will, however, be readily overcome, as the system of applying the heat is capable of great improvement. When the milk in the vats has been raised to the desired temperature, the annatto is added, if colouring is used, and the whole mass well stirred. The quantity of annatto will depend on the shade desired: this once settled, the rest will be easy; the quantity of milk being always known, the colour can be regulated accordingly. The rennet is now put in and the milk again well stirred and the vat covered over, as before described. Good rennet will coagulate 1500 times its own weight of milk; its action is more rapid when the milk is slightly sour. When this is the case the whole operation should be performed more quickly. The thicking process is accelerated with the increased temperature up to 120°; at 135° it becomes inoperative and loses its vitality. The quantity of the rennet causes more diversity in the taste and flavour of the cheese than anything else. In America filtration has been tried successfully. I have tried some experiments on a small scale: by passing the liquid through wood-charcoal, placed in a flannel bag, the active principle remains unimpaired. I think the adoption of some such simple means may lead to important results. Under ordinary circumstances the curd will be ready to cut in from 30 to 40 minutes after the rennet is added. In many English dairies the curd is still broken by hand, instead of being cut, as is now universally the case in all the American factories. The best time to perform this operation is when the curd has obtained sufficient consistency to break smooth, without whitening the whey and before it becomes tough. The cutting should be done as carefully and evenly as possible, with despatch, but with as little motion as may be. It is first cut into prisms from bottom to top;

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[*] Journal Royal Agricultural Society, 2nd Series, vol. vi., p. 519.

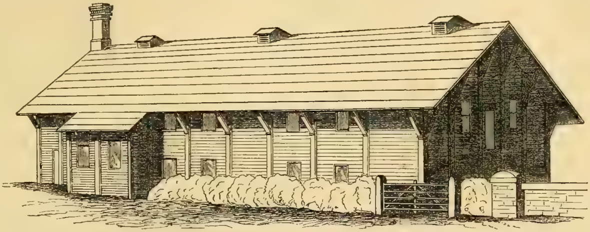

FIG. 284.—NORTH-EAST VIEW OF THE LONGFORD CHEESE FACTORY.

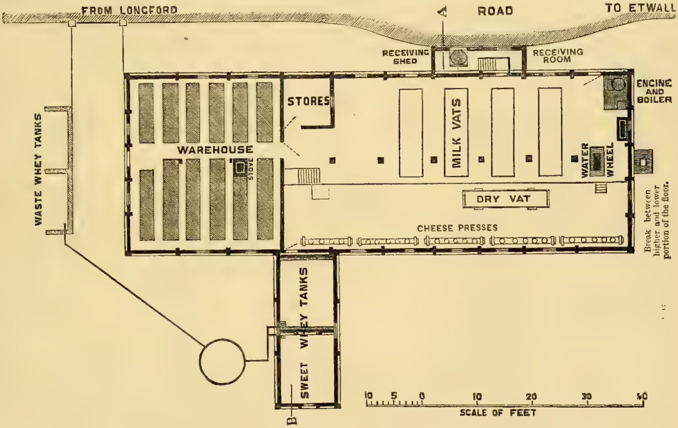

FIG. 285.—GROUND PLAN OF LONGFORD CHEESE FACTORY.

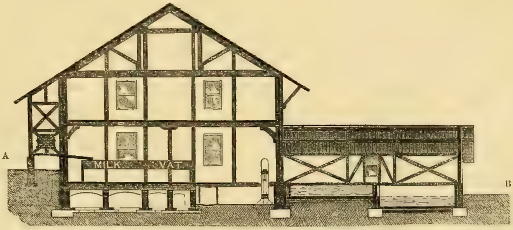

FIG. 286.—TRANSVERSE SECTION, FROM POINTS A TO B IN GROUND PLAN.

it is then cut parallel to the surface, dividing the prisms into cubes. The knives used for cutting the curd are of two kinds; in the one the blades are vertical, and in the other horizontal. In America there is considerable difference of opinion as to whether the curd should be cut into large or small pieces. Coarse curd invariably gives a greater quantity of cheese from a given quantity of milk, as less casein and buttery matter pass off in the whey during the process of making. The objection to coarse curd is its liability to produce open and uneven texture, and inferior flavour, from a portion of whey becoming hermetically sealed in the centre of large lumps of curd during the process of cooking, and thus setting up a fermentation, or an acidity, which greatly deteriorates the flavour. Fine curd insures a more perfect separation of the whey. The quality may be slightly reduced, but the flavour and keeping properties are greatly improved. In England some makers advocate the grinding of the curd: this is quite unnecessary, if not actually prejudicial to the quality of the cheese. The blades of the knives used for cutting the curd should not be more than one quarter of an inch apart. When the curd has been cut it should be allowed to stand for a few minutes for the whey to separate; the heat is then turned on slowly and gradually until the temperature is raised to about 98° to 104°, which must be regulated by the condition of the milk and state of the weather. If the milk is old or has already begun to turn sour, the temperature should be raised as quickly as possible. As soon as the acid in the whey has become sufficiently developed to be perceptible to the taste the whey is run off. The exact degree of acidity is a matter of vital importance, and at present can only be approximated, the maker being entirely guided by the senses of taste and smell. A simple and inexpensive instrument might be constructed that would show the exact acidity: such an instrument would be of great value in the hands of even the most experienced maker. The system of heating the milk in the vats, as is generally practised in America, and now in use in the Derbyshire factories, calls loudly for improvement. The great desideratum is to have the whole of the milk in the vat as near the same degree of temperature as possible. With the present arrangement this cannot be accomplished; but at a small additional outlay the difficulty can be overcome. In America what is claimed as an infallible test of acidity is the application of a hot iron to a lump of curd. The iron should only be searing hot; the whey is pressed with the hand from a piece of curd, which is held on the hot iron until it adheres, when the iron is pulled gently away from the curd: if the curd is raw it will break short away from the iron; as the acid becomes developed the curd will pull out into long threads, often 6 or 8 inches in length before it breaks; it is claimed that the proper degree of acidity is that at which the curd shows the finest and most numerous threads. It is possible to construct a simple instrument that will show the acidity with the same unerring certainty and precision that a thermometer does the temperature. When the exact degree has been attained, the short leg of a syphon is introduced into the vat, and the whey is run off into a pipe which conveys it direct to the whey-cistern. The curd is then transferred into what is called the dry vat: this vat is 16 feet long, 3 feet 10 inches wide inside, and 1 foot deep, having a wooden rack or perforated false bottom, over which a cloth-strainer is spread to facilitate the thorough draining of the curd. The salt is now applied and the curd turned carefully over by hand several times, and the larger lumps broken. In order to insure the salt being distributed as evenly as possible through the mass, some makers apply the salt as soon as the curd is dipped or put into the dry vat; others endeavour to reduce the temperature by turning over several times before salting. The former method insures the most even flavour, but it requires the use of a greater quantity of salt, as a portion is drained off in the whey. The quantity of salt used is 2½ lb. to each 100 lb. of curd when the curd is cold, and 3 lb. when hot. Old cheesemakers, from practical experience, have long since discovered that the salt of one district is much better suited to their purpose than that of another, and that, in fact, by using certain salt, they cannot make good cheese. This question of salt is one of vital importance to the interests of the cheese-producer; the quality of the cheese may be sufficient to satisfy the most fastidious, yet if the flavour be rank and strong it is at once ignored, and its value in the market depreciated accordingly. Curd cannot be dissolved by the action either of cold or hot water; but add a portion of soda, and it immediately returns to its liquid state. Salt contains a greater or less quantity of free soda; this soda, acting on the curd, sets up a chemical action which permeates and taints the whole mass, and to this cause may also be attributed the flecked or spotted appearance so often met with in coloured cheese. In all industrial occupations the first element of success is to produce an article suited to the ruling taste and fashion of the customers. With the cheese-eating public the present taste is for mild clean flavour: to accomplish this the whole of the salt used in curing cheese must of necessity undergo a chemical purification; afterwards there can be no objection to using it in a liquid form. When the curd is salted and cooled it is put into the hoops: these are open at both ends; they are 15 inches in diameter and 20 inches deep, and are made of strong galvanised iron in order to resist the great pressure to which they are subjected. A square movable board fits on to the bottom of the press. This board, when drawn out, is supported in front by two legs, whilst the back rests on the bottom of the press; upon this the hoop is placed, and a square of thin cloth placed over it. The cloth is about 2 inches wider than the diameter of the hoop; the curd is now filled in by means of a filling tube, and carries the cloth with it to the bottom of the hoop; and when full a similar cloth is placed on the top, under the bed or follower; and the board, with the hoop now filled, is slipped into its proper position in the press without the hoop being moved. The pressure is then applied—slightly at first and increasing by degrees for about the space of two hours, when a pressure of 3 to 4 tons is attained. This solidifies the curd and insures sufficient cohesion to enable the maker to remove the cheese from the hoop and put on the permanent bandage, made of a thin cloth called tiffany, in width about 2 inches more than the depth of the cheese. A length sufficient to encircle the cheese is cut off, and the two ends are joined together by an overlay seam; they are then slipped on to the cheese, and the spare inch at each end is carefully turned over the top and bottom. The cheese is then returned to the hoop and the pressure again applied, this time amounting to from 4 to 5 tons. This pressure having been continued from 18 to 20 hours, the cheeses are then taken out and at once conveyed to the curing-room. For the first two or three days after the cheese has been removed from the hoops it should be daily rubbed over with melted whey butter in a hot state. If this is neglected, sudden changes of temperature cause the rind of the cheese rapidly to contract, leaving it full of unsightly cracks and fissures, forming a birthplace and nursery for flies, skippers, and a whole host of insect enemies. It is of great importance that the curing-room should be kept at a uniform temperature; and to obtain fine quality considerable attention should be given to insure free ventilation. The cold air should be admitted only at the level of the floor of the curing-room, and a passage should be provided at the top of the building for the egress of the vitiated and heated air. Both openings should be so constructed as to be entirely under control and capable of being regulated at pleasure. For the first six weeks the cheese should be kept in an even temperature of from 70° to 75°; it should then be gradually cooled down to 65°, at which temperature it should remain for a fortnight; and if clean and well made, it will then have attained that stage of mild flavour so generally appreciated by the best customers. Both in the Derby and Longford factories the heating of the curing-rooms has been accomplished by the use of stoves. This, though the cheapest, is not the best means; for by the use of hot water the heat is more evenly distributed through the room, and the degree of temperature is more easily regulated. The boiler used for generating steam to raise the temperature of the milk during the process of manufacture might also be connected with a system of pipes in which a circulation of hot water would be kept up, sufficient of itself to heat the curing-room. *Mr. G. Murray, in Journal of Royal Agricultural Society.*

[In connection with the subject of cheese factories, we give woodcuts illustrating the buildings at Longford; fig. 284 being a view of the factory, and figs. 285 and 286 a ground-plan and section respectively. Mr. Murray, in his paper, says:—"At Longford, the Hon. Mr. Coke not only devoted his time to practical details, but also sent a large sum of money in the erection of buildings, and in conveying water from a long distance through underground pipes, in order to insure a low and equable temperature. All the internal fittings are on the most improved principle of the best American factories, so that nothing is wanting to give the movement a fair and unbiassed trial. The results have exceeded the most sanguine expectations, and attained a complete success."]

RECENT RESEARCHES IN AGRICULTURAL CHEMISTRY.

UNDER this head we propose to give our readers, from time to time, some account of those chemical investigations which have a direct bearing upon the science of agriculture.

It is now many years since George Fownes showed that phosphoric acid was a constant ingredient of igneous rocks. Previously to his investigation it was supposed that phosphoric acid was only to be found in those rocks which contained the remains of animal life, and that the vast masses of primitive rocks which underlie the fossiliferous strata were practically destitute of this substance. The subject was of considerable importance, since it is clear that only rocks containing an appreciable quantity of phosphoric acid can yield fertile soils by their disintegration.

Dr. Constant Kosmann has recently taken up this subject.* He has examined various granites, porphyries, and syenites from the mountain range of the Vosges. In all of these rocks he finds phosphoric acid, amounting in some cases to nearly 2 per cent. The phosphoric acid is said to occur as vivianite, a mineral ferrous phosphate, generally found more or less oxidised. Dr. Kosmann has at the same time examined the metamorphic grauwacke of the Vosges, and the limestones of the trias and of the oolite. In all cases phosphoric acid, potash, magnesia, lime, and the other essential ash-constituents of plant food were found in more or less notable quantity. It appears, therefore, that the rock masses of our globe may be regarded as capable, without exception, of affording inexhaustible supplies of fertile soil.

An important investigation has lately been made by Dr. Fittbogen, of the experimental station at Dahme, upon the chemistry of the life of the Barley plant.† He has determined, with great care, the composition of the plant in various stages of its growth. The Barley was sown on April 30, in pots containing an artificial soil, chiefly composed of quartz sand, manured with known quantities of phosphate of potassium, chloride of potassium, sulphate of magnesium, nitrate of calcium, oxide of iron, and silica. The crop was taken up in five portions:—1. On May 22. 2. On June 2. 3. On June 16; the tops of the awns were then coming out of the sheath. 4. On June 24; blossoming was then over. 5. On July 16; the Barley was then fully ripe. The composition of each of these portions was carefully ascertained by chemical analysis.

The Table which follows exhibits the results, calculated so as to show the composition of 100 Barley plants, roots included, at each of the five periods:—

COMPOSITION OF 100 BARLEY PLANTS.

	1. On May 22.	2. On June 2.	3. On June 16.	4. On June 24.	5. On July 16.
	Grams.	Grams.	Grams.	Grams.	Grams.
Organic substances	17.979	60.752	129.694	166 823	175.726
Ash	3.860	5.139	6.230	6.436	6.693
Total dry substance	21.839	65.891	135.924	173.259	182.419
Potash	0.978	1.116	1.114	0.847	0.809
Soda	0.163	0.180	0.214	0.227	0.203
Lime	0.875	1.217	1.512	1 649	1.777
Magnesia	0.183	0.288	0.329	0 371	0.350
Oxide of iron ..	0.074	0.074	0.134	0.136	..
Phosphoric acid ..	0.413	0.615	0.729	0.776	0.802
Silica	0.919	1.392	1.930	2.199	2.416
Chlorine	0.252	0.290	0.249	0.215	0.138
Nitrogen	1.134	2.043	2.204	2.254	2.252

In discussing these results it will be well to bear in mind the earlier investigations on this subject. Mr. Lawes refers in his paper "On the amount of Water given off by Plants during their Growth,"‡ to a series of experiments made by himself upon a field of Wheat. Dr. Anderson, in his paper "On the Composition of the Wheat Crop at Different Periods of its Growth,"§ has gone into the same subject at great length. We shall see that the results obtained in these earlier investigations are for the most part abundantly confirmed by Dr. Fittbogen.

It appears very plain that the formation of the ear is a turning point in the life of a cereal plant; this period, in the experiments before us, corresponds pretty well with the third harvesting, that on June 16. Up to this point the increase in the weight of the plant has been very rapid. The Barley gains twice its weight of dry substance in 11 days between the first and second period, and more than doubles its weight again in the following 14 days. But after this critical period the gain in weight is slow. Moreover, it will be observed that the increase which does take place after the formation of the ear is mostly an increase of organic matter, the mineral ingredients of the plant (ash) increasing only to a small extent after that period. Still further, it will be remarked that the amount of nitrogen contained by the plant is after this period all but stationary. So that the gain in weight of the plant, from the formation of the ear to perfect ripeness, is practically a gain in carbonaceous organic matter.

This very important conclusion is amply supported by the earlier investigations of Mr. Lawes and Dr. Anderson upon the Wheat crop. Mr. Lawes says, "There was no appreciable change in the amount of the nitrogenous compounds upon a given area of land after the time of flowering, yet the amount of non-nitrogenous vegetable substance accumulated after this time had been very great." Dr. Anderson's experiments gave 65 lb. of nitrogen per acre on July 23, when the Wheat was in blossom, and 66 lb. of nitrogen on August 27, when the pair was well formed. He obtained, however, some increase of nitrogen in his final interval to September 25, and at the same time a notable increase of ash, chiefly silica. The harvest that year was however much prolonged through wet, and the conditions of the concluding period were far from normal.

The mineral ingredients of the plant undergo but little change after the formation of the ear. We observe in the Table a distinct gain in the silica, and a smaller increase in the phosphoric acid and lime. In Dr. Anderson's experiments with Wheat the phosphoric acid and silica largely increased after blooming; the other ingredients were comparatively little altered in quantity.

We must now look at some other changes which occur in the life of the Barley plant; changes due to the transference of matter from one part of the plant to another. Dr. Fittbogen has separately analysed the roots of the Barley at each of the five periods at which the crop was examined. The roots gained in size and weight as the plant grew, but while gaining in organic matter they kept losing in ash constituents. They contained, in fact, more mineral matter in the first period than at any subsequent time, although they afterwards increased to more than three times their first weight. The roots here act as the first storehouse of the plant. They appear more especially to accumulate potash, magnesia, and phosphoric acid in the early stages of the plant's growth, and then give them up again as the plant developes. Up to the fourth period the roots decreased only in the mineral ingredients just mentioned, but between the fourth and fifth period, during the process of ripening, there was a general transference of matter from the root to the upper part of the plant. The root loses at this time organic matter, nitrogen, and silica in considerable quantity.

In the last two periods of his experiment Dr. Fittbogen analysed the grain separately from the straw, leaves, and chaff; he thus shows the transference of matter from the body of the plant to the grain. His figures are as follows:—

COMPOSITION OF THE GRAIN AND STRAW OF 100 BARLEY PLANTS.

	Period IV. June 24.		Period V. July 16.	
	Straw, &c.	Grain.	Straw, &c.	Grain.
	Grams.	Grams.	Grams.	Grams.
Organic substances ..	99.896	41.250	80.308	74 654
Ash	3.563	1.000	3.767	1.388
Total dry substance ..	103.459	42.250	84.075	76 042
Potash	0.459	0.229	0.495	0.235
Soda	0.112	0.009	0.104	0.012
Lime	0.980	0.058	1.045	0.087
Magnesia	0.237	0.095	0.168	0.149
Oxide of iron	0 035	0.022	0.137	0.131
Phoshphoric acid ..	0.295	0.384	0.159	0.566
Silica	0.242	0.242	1.625	0.308
Chlorine	0.148	0.028	0.102	0.001
Nitrogen	0.951	0.661	0.732	0.937

It is seen that a considerable transference of organic matter and of nitrogen takes place from the straw to the grain, and that among the ash constituents the straw parts chiefly with phosphoric acid and magnesia. Many other points of interest are to be found in the Table.

We have dwelt on only a part of the important observations detailed in Dr. Fittbogen's paper; it will well repay a careful perusal. One practical bearing of the facts established is very obvious. The nourishment of the Barley plant is clearly limited to a very short interval of time. And this is more especially true in respect to its assimilation of nitrogen and ash constituents; the whole of which are practically taken up during the few weeks of actual growth which precede blooming. The farmer has here a caution against applying his spring dressings too late. If manure is to be turned to economical use by the crop, it must have become thoroughly incorporated with the land by the time the active growth of the plant has commenced. Moreover, as the feeding time is so short, the soil must necessarily be in a fine state of division to allow of the largest possible growth of root in the time at its disposal. With Wheat the roots have a far longer time for accumulating plant food, but in other respects the crops are very similar.

THE FOOT-AND-MOUTH DISEASE.

BY J. MOIR, V.S., ARMAGH.

As the above-named disease has become prevalent in many parts of Ireland, I trust it may be considered opportune to present your readers with a brief sketch of its history, nature, causes, and symptoms.

Though calling it a visitor, for the sake of convenience, we cannot, nevertheless, attribute to it a foreign origin, as we would to rinderpost, which constantly smoulders or bursts out on the Russian steppes; sometimes, as of late, overstretching its native boundary, carrying its ravages to the western parts of Europe. It may truthfully be said of aphtha to be as often an occasional visitor of Great Britain as that of any other country, leaving us in most cases quite unable to say with any credible amount of certainty whence it came, how it goes or spreads; notwithstanding, though we have been favoured with much showing of its contagious properties, its conditions of existence and propagation in the majority of instances can only be attributed to spontaneous generation, epizootic, and to unknown causes. Doubtless, there still exists a great diversity of opinion as to its contagious or non-contagious properties, even among many eminent veterinarians; not only those employed by governments to report on its contagious or non-contagious nature, but also by others who have had ample opportunities afforded them in their ordinary professional capacities of studying its character. One thing (remarkable enough), that though it is a disease peculiarly of an eruptive nature, all attempts to communicate it by direct inoculation to another sound animal of the same species have failed. Yet we occasionally hear of people and other animals contracting the disease by the use of the milk of infected cows. Inoculation in these cases can only take place per the mucous membrane of the mouth or digestive canal. But a circumstance I may here mention, that may go some length in explaining the already mentioned division of opinion with this and some other epizootics, is that these morbid forces or agents are endued at birth with complete vigour, at which period we may be able, seemingly, to note many striking instances of infection and contagion; but as their attacks multiply they gradually get benign, which is attributed to the expenditure of their forces, and with foot-and-mouth disease, in proportion to its decline of vigour, leaves us to discover but few or no traces of its contagiousness. Again, in looking at the placards of contagious diseases we cannot but infer from them that the disease is a most infectious one; and to preserve cattle in the shade of immunity it is necessary to bury the carcases of those dying from the disease far under ground, and to have their bones and flesh well calcined; otherwise the plague, like the phœnix, will rise from its ashes, take wings, fly to and fro, discharging its darts right and left, and lastly, being only brought to bay by an armed cordon of police, be quietly consigned with its victims to its last resting-place, being chained down by a heavy load of clay till again called into being by some evil influence or medium.

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* "Archives des Sciences Physiques et Naturelles" [2], xl. 153.
† Versuchsstationen Organ. xiii. 81.
‡ Journal of Horticultural Society, 1850.
§ Transactions of Highland Society, 1862.

It is the duty of every loyal subject to aid in supporting sanitary measures that are productive of good to the country; but it is equally the privilege of the writer to explode ignorant notions or conclusions drawn from incorrect premises. It has never yet been shown satisfactorily that the disease is infectious, or that by experiment it could readily, in the form of gas, be conveyed to another animal; finally, it resolves itself into this, that at most it can only do so by an immediate connection with the spring of infection. Let any one consult some of the most enlightened veterinarians in the world (the French); they will inform you that it is not a disease, like rinderpest, that can by a sanitary police be stamped out, but one calling for their non-interference, and bidding defiance to their efforts of control. Certainly, if a district or country were to be proclaimed as an infected one, and put, as it were, under martial law, all cattle trading and exporting of them stopped, such rigorous measures would not only be disastrous, but quite uncalled for, as they could not have the desired effect of arresting the disease; for, just as it acts independently of topographical and the known atmospherical causes which exercise an influence on epidemics, so will it act in opposition to the present repressive measures in force. It is beyond all contradiction that the causes which give birth, feed and multiply its existence, must be closely investigated, brought forth from obscurity, before any mode of action could with reason and intelligence be brought to bear on its extirpation. In proceding to describe the symptoms of this eruptive or exanthematous disease, we usually may note four well-marked periods or stages. First period: Symptoms of general disturbance or febrile excitement; the animal is dull, hangs his head, off his feed, or if he eats, it is just as if he had parted with his teeth and taste; extends his neck, pokes the muzzle out, rests the head on the manger or trough; the mouth is hot, dry, and injected; grinds the teeth, twitches the lips, the skin is hot, slight tremours with muscular contractions. In a milk cow the udder is hot, with suppression of milk, the breath in some cases has a fœtid odour, back arched, feet hot and tender, with lameness; keeps lying, and feels disinclined to walk; but an allowance must be made, as we do not observe these symptoms with an equal intensity in all animals. The intensity of the malady, and the place it selects to to make its grand attack, has a leading influence which can only be one of the three following: the mouth, feet, and mammæ. If one of these organs is severely attacked, the other two, in the inverse ratio, are but slightly implicated. The duration of this period is from one to two days. The same train of symptoms may be observed in sheep; in the pig slightly different: he lies and gives out a pained, dull grunt. Second period is ushered in by an abatement or complete moderation of the previous phenomena, with the appearance of vesicular eruptions on the muzzle, inside of lips, gums, side of mouth, on the surface of the tongue, rarely on the roof of the mouth. When the vesicle is solitary it is about the size of a small pea, and where the outer skin is fine it has a regular circular outline; but on the muzzle, and where the epidermis is thick, their size and outline vary; they contain a serous fluid, which gradually turns opaque; when let out it is of a stringy and sticky nature. When these are thickly studded on any surface they coalesce, and are said to be confluent, in which case we have large bladders or blotches formed. In all cases the surface beneath the outer pellicle is red and raw-looking. The surface of the tongue, owing to its thick outer coat, presents a bosselated aspect. When the disease has been partially severe in the mouth the vesicles are very plentiful, and about to burst, a happy change of health and rapid recovery take place, but not so with the feet or udder, if severely affected; the symptoms are aggravated, and restoration to their functions more tedious; the feet are swollen, with an eruption between the digits in the space in front, and sometimes around the top of the nails, also behind, extending upwards to the fetlock. The tissue between the hoofs bulges out, is of a bleached colour, and very painful when touched. In some cases the teats are swollen, and if much diseased will not admit of the milk being drawn. In the third period the vesicles rupture, and exhibit raw surfaces, which secrete a samous-like fluid, the cuticular covering peels off in a large slough, as if steeped in boiling water. The patient constantly munches. When the nose has been affected, she keeps touching it with the tip of her tongue. A rusty, frothy saliva flows from the mouth, and commissure of the lips. In bad cases, when the ulcers are large, deep with ragged edges, they cicatrise tardily and unwillingly, but in ordinary cases they readily heal. The feet, generally speaking, are the organs that suffer most, and are longest in recovering; the dermic covering between the hoofs sloughs out, exposing an irritable, raw, and cracked-like surface; lameness increases. Frequently the sole and a portion of the horn is detached; in some instances the whole hoof is cast; but in benign cases the parts remain intact, gradually heal, and lameness disappears. There are exceptional cases, where not only the hoofs, but the soft tissue and bones, have sloughed off. The last stage is the healing of the ulcerated surfaces, which is effected by the sores getting covered over with a scale, which dries and falls off in scales. Foot-and-mouth disease is rarely fatal, from the fact that none of the internal organs are implicated by the eruption; except in some rare cases, when the constitutional disturbance is very intense, causing a great amount of functional derangement in them, which, if not promptly attended to, may result fatally. In ordinary or benign cases without any complication, little treatment is required: give light food easy to be masticated, drinks acidulated with a little nitric or acetic acid; when the mouth gets raw, dress it with a lotion composed of 1 pint of vinegar and 2 ounces of acetic acid, or, in place of the acid, dissolve in it 1½ ounce of alum; keep the feet dry, and clear of dirt; if the slough is tardy in coming away, apply Venice turpentine to loosen it; when accomplished, dress with a weak solution of chloride of lime or carbolic acid, remove detached horn, and cover with Archangel tar; in very complicated cases, have recourse to professional advice. *Irish Farmers' Gazette.*

TURNIP GROWING.

It is under 100 years since Mr. George Henderson, then farmer of the Burgh Muir of Linlithgow, Bonnytoun, and Wester Bonhard, tried to grow Turnips in the fields. His plan was to sow them in rows on level ground, thin them afterwards, draw up the earth about them with hoes (for there were no ridging-ploughs then), the same as is now done with Potatos. He could not get them to grow to please himself; but through a conversation one day with his intimate acquaintance, Provost Clark, of Linlithgow, who was a Dutch merchant, and was often upon the Continent, he was informed how large they grew the Turnips in the fields in Holland, and advised to go over to Holland and learn their method of rearing them. Mr. Henderson took the Provost's advice, and went over and ascertained the Dutch method of growing Turnips in ridges, and when thinning them to take away the earth—the very same way as is done at present. In other words, it was Mr. George Henderson who introduced the proper way of growing Turnips in the fields to perfection, as now generally practised over this country. At that time farmers came from far and near to see his new method of cultivation. Some came too soon, when he was thinning the Turnips, and declared he never would have Turnips by taking away the earth as he was doing; but when they came back a second time, they saw his new plan in a different light, and highly approved of it, and it soon afterwards became general.

> 'Man and his labours pass away,
> But Nature spurns thy power, Decay."

I shall now endeavour to give my experience and observations of field Turnip growing for the last 30 years. At that time Mr. David Roughead, of Haddington, was known in this district to be an eminent grower of Turnip seed, which he obtained only from selected roots, selling only such as he knew to be of the best kinds. All his seeds turned out magnificently, as far as came under my notice. I also knew some farmers who picked the best and largest of Turnips, and transplanted them early in spring in a suitable place for producing seed for their own sowing; indeed, all the seed at that time was produced as above described, and there was no such trouble and defects in growing Turnips then as now. I have seen the green-top Aberdeen and purple-top Aberdeen grown upon my own farm, some of them weighing 26 lb. imperial per Turnip; and all the Turnips at that time that came under my observation for miles distant grew well—scarcely one field being defective, unless too late of being sown. I am quite aware there are some soils more suitable for growing Turnips than other soils. For instance, they all grow both easier and larger upon a light soil than upon a heavy clay soil; and no such difficulty is felt in getting them sown at a proper time upon a light soil as there is of getting them sown at a proper time upon a heavy soil, owing to the difference of seasons, over which man has no control. But that is not what I intended clearly to bring out. I have been asking some farmers if they had any idea of what was the reason that their Turnips did not grow now as formerly, and if they could account for the change. Some thought that there had been Turnips too frequently upon the same ground; other farmers say that some land will not produce healthy Turnips. There are some who will not offer for a farm unless they get a guarantee that the land will not produce diseased-rooted Turnips. Under these circumstances it is becoming a most important matter to have the problem here involved fully inquired into, and, if possible, set at rest. The evil is, in the first instance, injuring the farmer, but ultimately it will extend its influence to all classes in the country. It is only about 18 years back that the root disease of Turnips was first observed by me in this district, and I have noticed its progress since to be very rapid, and I am of opinion I trace it to its true origin. I will, in the first place, describe the Turnip how it is affected. When it is about the size of an Apple it begins to split up from the bottom about one-third of its size upwards at right angles, and throws down four small roots, one at each angle (when a healthy Turnip should only have one strong root so far down till it branches out into numerous smaller fibrous roots). The diseased Turnip thus lingers in misery for a time. I have known a field of 16 acres imperial go down in the course of two weeks to be worth not a twentieth part of what would have been their value had they been good Turnips. I know the disease so described by me goes under different names in different localities. I will, however, continue to call it by the root disease.

In the second place, I entirely blame the seed as being the cause of this root disease. If we condescend to examine the way the Turnip seed is now produced, and compare it with the description of the mode pursued 30 years ago, as above stated, we will have no difficulty in seeing that it is the real and only source from which sprung the failure of the Turnip crop.

In the third place, I give you a true account of how a large proportion of the seed is now produced for field Turnips. Fields of hay are cut down, hurriedly ploughed, and sown with Turnip seed broadcast. They are neither hoed nor cleaned in any way, but allowed to grow as they will, and run to seed when they like the following year. These Turnips are never the size of Apples. How can they be expected to produce proper seeds when there are not the proper juices in themselves? I see this method of raising seed for Turnips is followed in many fields even between Linlithgow and Edinburgh, as well as elsewhere. My experiments have been very numerous, and the whole of them give the same results; therefore, I do not now scruple to offer my humble opinion that I am right.

I now give you an account of the appearance of the good and bad seed when examined with a powerful magnifying glass. The good seed is larger, darker in colour, and glossy. The bad seed is smaller, of a brown colour, and wants the gloss; but this is too fine an observation to depend upon for buying the seed by. If a magnifying glass of sufficient power is used to show every Turnip seed the size of a large Blackberry, the farmer will plainly see that by sowing some seed (such as I have got samples of) he cannot expect a crop of Turnips, but ruin himself by purchasing the trash referred to; and it must be no joke to a farmer to have no Turnips to feed his cattle when he expected to have an abundance.

I would suggest as a proper method of putting an end to this practice, for the agricultural associations to take up the case and acquaint all sellers of seeds that no farmer would buy any Turnip seeds without a guarantee that it was entirely from full-grown Turnips, and that they would hold the sellers responsible. This would make all the growers of the inferior seed give up growing it, for they would not get it sold. *Mr. John Buncle, of Springfield, Linlithgow, in the "Falkirk Herald."*

Home Correspondence.

Farmers' Ills.—Your paper contains, from time to time, remedies for almost all the ills the lands and crops are heir to, but in my frequent perambulations amongst farmers I have noticed the frequency with which they and their farm-labourers suffer from boils. These, I notice, occur most frequently in the spring of the year, and are, no doubt, the result of exposure to wet and cold weather in winter. Very few doctors appear to possess the proper remedial means for curing boils, and, seeing that on most farms the victims to them have the cure growing, perhaps you will kindly make it known. I have recommended it in scores of cases, and have never yet known a case of failure. Take a handful of the herb known as Horehound, a similar quantity of Wormwood, and a third of common garden Rue. Pour on to those half-a-gallon of boiling water, and take half a tumbler of the tea so made previous to retiring to bed, and the same about an hour before breakfast in the morning. This should be accompanied by a generous diet, as the old method of "starving" boils is now exploded. This, taken in the early spring and autumn, is a sure preventive; and the patient will also, in all cases, be astonished to find the wonderful improvemement in his general health. *J. R. R.*

Societies.

MONMOUTHSHIRE.

Compensation to Tenants for Unexhausted Improvements.—At the annual meeting of the members of this Chamber of Agriculture, the following discussion took place on this subject. The President said that when they met at Usk, Mr. Stone had suggested that Mr. Fletcher's paper on this subject should be thoroughly discussed in different parts of the county, and that then a committee should be formed for the purpose of gathering together facts and information as to their requirements in connection with unexhausted improvements, and that the committee should frame some scheme and lay it before a general meeting of the Monmouthshire Chamber in order to elicit the views of all the members, and that they should act in accordance with what the meeting decided. He now asked Mr. Fletcher to resume the discussion on the subject of his paper.

Mr. **FLETCHER** said his paper had now been in their hands for some time, and therefore he thought he should be promoting their interests if he adverted but briefly to the principal heads of that document. He had already, at Chepstow and Usk, gone through the paper, probably in a more detailed form than they would think it necessary for him to do that day, because it had been before them in the public prints, and he had no doubt they were all familiar with its contents. It was a fact that agriculture had taken such vast strides within the past few years, that they, as occupiers and tenants, had arrived at a climax in many ways. He spoke as to the breed of cattle, the application of artificial manures to the soil, the improved method of cultivating their land, and the wonderful and powerful machinery which they brought to their aid in their various operations. Land drainage had improved their poor pastures and arable land—the rough and hard work which had been common to farmers was now exchanged for a life of almost comparative ease and refinement; and they had come to a period when it was necessary to ask, "Is it not time that we should establish among ourselves a system of remuneration for conducting our operations as farmers?" The Chairman of the Scottish Agricultural Society, the Marquis of Tweeddale, had stated that agriculturists had now arrived at the top of the ladder in many respects; and that the period had now arrived when they must devote themselves to the improvement of land with a view of producing more animal food for the purpose of sustaining life. He was told there were proprietors who watched the proceedings of the Chamber with jealousy. There were those in charge of tracts of land in this country who doubted very much the usefulness of these meetings; and, he doubted, there were tenant-farmers who lacked energy and interest in the work of the day. But he had no fear; because, as representing a large estate in another part of England, he had had an opportunity of seeing the necessity for a well-devised and well-arranged rational scheme to do justice to the outgoing and the incoming tenant, and also to the landlord; and that was his ground for now appearing before them. He was sure of one thing, that in asking them to consider the subject, and come to a decision, he was advocating the interest of the landlord. Now, he would briefly allude to the chief points of his paper; and he hoped he should elicit remarks from gentlemen present which would enable them to arrive at some conclusion. The necessity which existed for recognising the acts of the outgoing tenant was so familiar to them, that he did not think he need go into that question. A man in trade or business, if he embarked his capital for the improvement of his landlord's property, secured himself in the event of death or any other casualty, so that his heirs, or those who succeeded him, should derive the benefit. That being the case, a farmer had every reason to expect to get the same right extended to him. It was impossible, as he had remarked in his paper, for a man to advantageously farm in the present day unless he put his hand in his pocket; and he must, therefore, have security that he would get back again a fair and proper interest on what he had laid out. At the present moment that was not secured to them in this county. But it was perfectly feasible for them to devise and carry a measure of the sort he indicated. In Lincolnshire the thing had been common for many years; and it was possible to reduce it to a system, and to be made of use to them without flying to their landlords, or without resorting to leases. If men in Lincolnshire could farm highly under six months' notice, surely men in Monmouthshire could do the same. He had before him the Lincolnshire customs. He would not go through the whole of them, but he would read to them what really was the state of things in that county. Yearly holdings, at six months' notice to quit, were the rule, and leases the exception; and where there was no contract to the contrary, custom allowed the outgoing tenant compensation for unexhausted improvements. He would not go into all the items embraced in the schedule; but the chief thing to prove was that men farmed highly, and up to the mark, under six months' notice, with the existence of customs. The value of the respective operations and treatment of the soil he need not go into; but he might simply tell them that that was the state in Lincolnshire. At some future time they would probably have the opportunity of acquainting themselves more particularly with the matter. They now came to the hindrances to that state of things in this county. There were various causes of hindrance. The hindrance arose in some measure, in the first place, from want of confidence on the part of the outgoing tenant that any operation or investment of his would ever be returned to him. In the next place, it arose from an undoubted dislike to parting with money when they embarked in a new holding, and everything was strange before them. There was a degree of uncertainty about valuations, which he knew full well made a man doubtful. And he was not surprised at it when he had seen what a man had to put down on going into a farm. They knew it was very natural for a man to object to pay for what he could not see and feel. That was one of the difficulties of their case. To be asked to pay £4 an acre for "condition," which they had no earthly evidence to prove was in the soil, was sufficient to make a man hesitate. That was one of the points they would have to consider. He would not go into the method of establishing that fact; but they knew it was one of their chief points—the feeling that mere "good will" generally was paid for, something they could neither see nor touch, but yet something that was there; and if they had a system of compensation throughout, that must be considered and included in their scheme. They might have every confidence in their landlord—in his undoubted feeling towards them, and in his wish to do what was right; but they were not at all confident as to what might arise in the event of the landlord's death, nor were they aware what might be their widow's or children's state in case they themselves should die. It was a serious matter for a man to spend £200 or £300 on bones or artificial manure, and put that on his land, and then to ask himself the question, "In the event of death, will my widow or children be paid for this?" They must therefore consider they had strong reasons for meeting to discuss these points; and he hoped he should succeed in proving that the matter was more between themselves as tenants than between tenant and landlord. Landlords were not all practical men; but they were always accessible through their agents, who ought to be practical men; and if they, as occupiers, should agree to compensate each other, he had no fear with regard to a scheme properly and deferentially placed before them, but that it would be accepted by them. The point was, first of all, that it should be accepted by themselves as tenants. Now, that was one point which the Lincolnshire men had agreed upon; a basis upon which farms at the present time, in Lincolnshire, were held, and on which they changed hands. He had given in his paper, and he would now briefly refer to, what were the customs throughout England. In fact, there were no general customs. There was that common phrase, or agreement, with which they were all familiar—that they must cultivate and amend their farms according to the custom of the country and the improved state of agriculture. That might be well in one locality, but in case circumstances occurred, and they had to change their holding, how did it affect the farmers? Probably the locality to which they were migrating was totally opposed in its customs, or there were no customs. How, then, were they to get over the difficulty? It could not be done in a moment. But if they recognised the necessity for it, and if they followed in the shoes of the Lincolnshire men, and established a similar system in this county—and other counties were watching Monmouthshire, and knew that it was not sleeping—if Monmouthshire took the course indicated, and other counties followed in its footsteps, the system might be made generul. From Northumberland to Monmouthshire, taking the country throughout—from north to south and east and west, with scarcely an exception—there were no two counties possessing the same customs or systems in changing holdings. Every one, as far as his memory served him, who had spoken on the subject in Monmouthshire, had agreed in this—that there was a necessity for a change; but at the present moment they did not see their way clear to effect that change. They knew the state of feeling of the man who received notice to quit his farm. While he could he got out every atom of good that lay therein. And why? Because he had no guarantee that he would be compensated for what was there. And the hardship which, in many ways, arose from the absence of a recognised custom or practice of compensation, fell on incoming tenants as well as outgoing tenants. Many men going out of their farms abused their farms. What did they do? They found opportunity for distributing over the land rubbish and other material, which they expected to be paid for as manure. Material was removed to every available spot, that the valuer might take cognisance of it, and his successor pay for it. That was simply an act of robbery. It was requiring them to pay for goods which were of no use. Far better would it be for the incoming tenant to pay for that which was of some good to him. It was better for him to say he would rather pay for going into a garden than go free into a wilderness. He repeated, that it was more a question for the tenants than the landlords. It was very much the practice to fix the responsibility on the landlords, but he would never fall into an idea of that sort, because he believed it was for the tenants to settle this matter, and then to ask the landlords to endorse their decision. He asked them whether they wanted more evidence? whether they wanted more facts? or whether they wanted more argument? If not, then commence the work at once; and let them be able to state a year hence that Monmouthshire had found its way to the system in existence in Lincolnshire. Let them improve upon that system—and he thought that they could—and then their work for the present would be at an end. Let them adopt a scheme that would have for its results the maintenance of the fertility of their soils—let them feel that they had achieved a scheme that would preserve the "condition" a man had put into his land, benefiting and rewarding him—his labours likewise benefiting the country to which he belonged.

Mr. **HENRY WILLIAMS** had listened with pleasure to Mr. Fletcher; and he would first advert to this point—namely, that the question under consideration was principally a matter among themselves, as tenants. It was a matter which involved great deliberation; and one upon which they should be unanimously agreed before they asked the landlords' sanction to any scheme. It was of no use for one man to go to his landlord and ask, "Will you sanction this idea of mine?"—if by asking that sanction he sought to get on his side something which the man who might succeed him might think unfavourable to his interest. It would then be a one-sided matter, and the landlord, who would naturally wish to be impartial, would not give his sanction unless the scheme was one which would be satisfactory to both parties—outgoing and incoming tenants. Hence he held, with Mr. Fletcher, that in any scheme of this kind they must arrange among themselves what would suit both outgoers and incomers; and, provided it was not prejudicial to the landlord's interest, he had no doubt they would get the landlord's sanction. He thought the more the question was considered the more would it be seen that the discussion tended to promote the interest of the landlords as well as of the tenants. When they looked round and saw the great improvements in Monmouthshire and other counties, within the last few years, in the cultivation of land, how, it might be asked, was that improvement done? To a great extent by companies, who took and carried out the work as a matter of speculation. They said, "We will do this on payment of so much per cent. for so many years." Now, he held, if they could go to their landlords—and he was sure they could—and say, "We will do these things at a considerably less cost to you than these companies will do them for, we will take less time to exhaust our interest, and we are willing to take less percentage, and we are willing to do all the overlooking" (which costs you a great deal of money as part of our ordinary work)—he held, under these circumstances, that the interest of the landlords consisted in encouraging the tenants to do these operations, instead of having them done by other parties, who had not the same interest that the tenant had in doing the work. He spoke now of improvements usually done by landlords. He was aware that many persons held that there was no improvement needed in that respect, but he could not agree with them. The persons referred to said—"If you go to the landlords and get their sanction, you can do the work." But he knew the difficulty was to go to the landlord, and to get his sanction. The landlord did not see the matter with the same eyes that they did; he was not so deeply interested in the *minutiæ* of things as was the tenant; and the matter was overlooked. And, at present, the system was that the tenant was allowed to do these things provided that he had the sanction of the landlord in writing. That was one of the most difficult things with which they had to deal. If the tenant got the permission of the landlord to do certain things at an estimated cost, unless he were forbidden by the landlord to do them they would have a great alteration; and he thought such an arrangement would be very feasible, for in his opinion very few landlords would give a prohibition in writing. But that which belonged to them—that which was in the province of the Chamber—was the increasing the fertility of the land by manuring. That was a difference which was caused by the difference in the relative value of manures. But he did not deny that a committee might arrive at some decision on that point. There were some manures which would increase the fertility for many years; and there were others which were rather deteriorating—which acted simply as stimulants, just in the same manner as if they gave a glass of grog to a man to get extra work out of him for the time being. That was one of the most important parts of the question with which they had to deal. The decrease and the advantage would be easily settled by a committee ; but he did not think that under any circumstances they could lay down a hard and fast rule, which should guide a valuer—or that they could have a system by which valuers were to go over a farm and value simply what they saw.

Mr. R. Stratton said it appeared to him that there were two distinct elements in the question under consideration. First, there were the permanent improvements ; and he would say that this question of permanent improvements was a thing that concerned landlords and tenants. Then there was the question of "cropping," and of compensation for unexhausted improvements—in common phrase, the custom of the country, and that concerned simply the tenants, incoming and outgoing. The first question he did not think they could do much with ; as to permanent improvements, that must be a question between landlord and tenant. It was not likely a man would spend money in draining without consulting his landlord ; or, if he did, it would be ridiculous to ask his landlord to compensate him. What a tenant called permanent improvements, the landlord might not ; and therefore he thought the question of permanent improvements, such as building, draining, cropping, hedging, and that kind of thing, was simply a question between landlord and tenant. It was not a thing on which they could lay down a regular rule, and recommend landlords to adopt it as a system. They must go to the landlords as cases turned up, and must be guided by peculiar circumstances. But what he thought was the point they had particularly to deal with was the question of cropping—the question of unexhausted improvements —in short, the custom of the country. He thought they would agree with him that what they wanted established was a good sound custom of the country—a system which would tend to increase the produce of the land—a system which would encourage high farming—a system by which any man, either by being turned out or giving notice to quit, might leave his farm at a six months' notice without incurring the loss of a penny piece. He maintained that it was not only to the interest of the tenant, but that it was to the advantage of the landlord, that such a system should be established ; and he hoped landlords would deal with them — that they would all see, as a great many already saw, that they would not for a moment suppose that Chambers of Agriculture were in the slightest degree opposed to the interests of landlords. Perhaps he had peculiar ideas of his own about cropping and leaving. However, he did hold this—that vexatious restrictions were simply abominable. He thought that a man should be allowed to crop his land as he liked. Some of their landlords and their agents were practical men, others were not ; and why should they, as tenants, be obliged to put so many acres of Wheat, and so many acres of anything else? If a man chose to grow Cucumbers, let him grow Cucumbers. It was to the interest of the landlords to allow the tenants as much latitude as possible. The more a tenant could get out of the land, the more was it for the benefit of the landlord. He was opposed to absurd restrictions, and he hoped that the committee to be formed would be able to recommend some scheme which would tend to high farming, and to tenants cropping as they liked. He thought something might be done in this way. Some people were very tenacious about selling straw or hay. He had an opinion that an arrangement might be made after this wise : Let no tenant be allowed to sell hay under a certain price—say £4 a ton. He simply mentioned £4 as a hint. Then, as to straw, let them not sell under, say, £2 a ton. But he thought a tenant should be allowed to sell as much hay and straw as he liked above £4 and £2 a ton respectively, on the understanding that he should expend the whole amount of money so realised in artificial manure, or in feeding stock. That he believed would be fair to the landlord and tenant. Then they knew there were certain farmers who mowed their farms year after year, keeping no stock, but always selling their hay, whatever the price might be. He thought it fair to say that a tenant should not mow his land every year, but that he must manure his land or graze his cattle. They must not look at the question from a purely tenant's point of view. His original proposition at Usk was to form a committee to draw up a system which they could recommend to the landlords of the county. He now proposed that a committee of eight be formed—five farmers, two agents, and one landlord.

Mr. Culverwell seconded Mr. Stratton's motion. He was of opinion that compensation to tenant-farmers would supersede leases. A man might take a farm on lease, and he could not leave unless he got some one to buy him off, or the landlord allowed him to go. Moreover, compensation was better than lease, because a tenant might farm well for some years, and during the last four or five years he might do worse to recoup himself for any outlay, and leave the farm in a worse condition than he found it.

Mr. Williams (Wernymellen) paid a high tribute to the worth of the landlords in Monmouthshire, and added that he was a great deal more afraid of the gamekeeper than he was of either the landlord or the agent. The gamekeeper was the greatest cause of discord in Monmouthshire between landlord and tenant. It was no difference what they cultivated—rabbits consumed it, and there was that to be witnessed about their farms which was disgraceful to be seen. They would do very well if gamekeepers and rabbits were out of the way.

The President thought they were all agreed upon one thing—that this discussion should be brought to a close. Likewise, they would all agree that they had nothing to do with permanent improvements—it was for the individual tenant to agree with his landlord whether he would put up buildings or construct drains. Classing himself among tenant-farmers, he held that the landlords should agree upon some system whereby, when the tenants were turned out, or left by accident, they should not leave their property behind them. What they agreed upon was this—that it was a good thing for an occupier to leave his possession in a better condition than that in which he found it. It was good for his successor ; it was good for the country at large. Make it to their interest, and depend upon it the farmers of this county would act upon that principle. All that a committee would have to do would be to ascertain among their neighbours how it could best be made to their pecuniary interest to leave their farm in an improved condition—improved from what they found it. The farm would then go on improving as each tenant left, if they could find out how best to recoup the tenant for his outlay. He thought all they had to do was to encourage one another, under a certainty that they would be recouped for the unexhausted improvements they left behind. Mr. Fletcher and Mr. Stratton had spoken of leaving a farm at six months' notice, and that it was indifferent on a system of compensation whether they left at a six months' notice or not. As to the money question, it might be indifferent whether they left it at a six months' notice or a twelve months' notice. But farming was a peculiar business. A farmer who lost his farm could not go into another business without loss of time. And it was a serious thing to a farmer, who had no prospect before him, to be turned out at the mere whim of the landlord, or of the nation, at a six months' notice. It was a question which had occupied his mind for many years ; and he was glad to find that the farmers were beginning to feel—that the yoke began to gall—and that they were calling on the landlords of England to promote the interests of the tenants, as they expected the tenants to look after the landlords' interest in the management of their farms. When it was looked at in this way, they would get rid of one of the great causes of short notices—they would get rid of—(and he hardly knew how to use a term sufficiently strong without being offensive)—but he meant the political power that the landlords wished to retain in their own hands, and which they could not use without having the power of the short notice. But landlords need not fear that they would lose influence. Tenants, as a rule, would go with the landlords, whether or not they had short notice to quit. He was sure that landlords, in giving up short notice, would not give up any political influence they desired to possess. These remarks were almost foreign to the subject ; but they were so mixed up with it that he could not help giving utterance to them. He himself preferred leases, but compensation would do away with many evils. The President concluded by moving :—

"That four members of each division form the committee proposed by Mr. Stratton, and (—) landlords and (—) agents, selected by the Council, be invited to join it." (The number of landlords and agents to be included in the committee, to be determined hereafter.)

Mr. Fletcher seconded the resolution, which was carried.

Mr. Fletcher said he should not like it to go forth that he was in favour of a six months' notice. He had not intended that his words should bear that construction. He simply stated what was done in Lincolnshire. But if they had compensation for unexhausted improvements, it would not much matter what was their holding. When there was compensation they would get their rights, which was all they wanted. But let him not be understood as advocating a six months' notice, for he deplored it.

CASTLE DOUGLAS.

At a recent agricultural meeting here Mr. J. Caird, C.B., proposed the toast, "The Agricultural Interest," and in doing so said he had heard to his astonishment that although this was an agricultural county, and although there were a great many agriculturists round the table, there were very few farmers present—scarcely any. This was a circumstance worthy of note. There were agriculturists who were landowners. In his own county of Wigtown there were very few landowners who were agriculturists, that was to say, there were men of very large property who depended for success in life, not upon personal exertion, but upon property. In the Stewartry it was different, but he was sorry that there were not more present of that class of agriculturists who had nothing to depend upon but the exercise of their own skill and the proper employment of their capital. In regard to the subject of his toast—the success of agriculture—it depended upon the success of the country in general. It was because the consumers were ever flourishing, increasing, and getting richer—it was for that reason that British agriculture flourished. So long as that continued they might hope for agricultural prosperity, and that would probably continue so long as coal and iron and the means by which our great manufactures were maintained continued to exist. A Royal Commission had lately reported that our coal supply is not so endless as at one time it was thought to be ; it would probably prove sufficient, however, for two or three or even four generations longer, and they might hope that by that time the wit of man would have discovered something to supersede or come in the place of it. That was a very remarkable fact which the census had lately told them—a fact upon which the prosperity of agriculture in this country materially depended—that within the period from 1801 to 1871 the population had exactly doubled. In 1801 it was 16,000,000 ; in 1871 it was 32,000,000 ; and the remakable fact was this, that the agriculture of the United Kingdom, combined with the operation of those measures of free trade which had become law, had made the pressure for subsistence on the part of these 32,000,000 considerably less than it was on the part of the 16,000,000 —that was to say that the 32,000,000 now existing were much better fed than when there were only 16,000,000 of a population. They might hope that state of things would still go on. And let them remember this, it was not at the expense of the consumer that agriculture was prospering. The great staff of life—bread, Wheat —that upon which beyond all others in Scotland now, in England entirely, and in Ireland to a great extent, the great mass of the people depended, had, within 20 years of free trade, actually diminished in price, as compared with the price before free trade was established. Therefore, if agriculture had prospered, it had not been at the expense of the consumer so far as the price of bread was concerned. As to the agriculture of the West of Scotland and their own district, there was this to be said, that it was because they could grow grass well, and grow Turnips well, feed stock well, and produce those articles which could not be very well brought from abroad, that agriculture with them had flourished as it had done. Though he was not the oldest man in the room, he could remember about 35 years ago, when he began farming, so that nobody could say he was not an experienced farmer : he had probably had as much experience as most men in the room. He remembered a meeting which was held in Wigtown in honour of the late Hugh Hathorn, of Castlewigg. Lord Galloway was in the chair, and very properly praised that particular breed of cattle which bears the name of the province from which he takes his title. He (Mr. Caird) also had a very great respect for these black cattle, but he ventured at that meeting to say, from his own short experience, that the Ayrshire cattle, with the shape of a wedge which they possess, when once introduced to the district, would drive their way among all other breeds, the native breed included. Lord Galloway remarked, in a very good-humoured way, that the Ayrshires must have their horns cut off before they could act as a wedge in the way he had mentioned. It was a fact, however, that with the industry, energy, and perseverance exhibited by the dairy farmers of Galloway, the Ayrshires had done great things—the quality of the cheese produced had been gradually raised from Dunlop to Lancashire, and finally to Cheddar, which had largely increased the returns to the farmers of the county without increasing their expense. In another matter, the cultivation of the land by steam, agriculture had made a great improvement. There were many physical impediments to its introduction into that county, and these would probably limit it to localities where there were large farms, and not many stones. Nevertheless, it had a great effect in improving the product of the land, by increasing the workable depth of the soil, and thus increasing the crops, and enabling a man with less capital to conduct the operations of agriculture. He therefore looked forward with great confidence to the future prosperity of agriculture. He felt, after the experience of upwards of 30 years, and after an experience of 20 years of free trade, when they had seen all the gloomy foreboding by which that policy was accompanied—the fears that were held that British agiculture would be ruined by foreign competition—when they had seen these forebodings and fears completely falsified, he felt there was no reason to entertain any alarm for the prosperity of British agriculture. The imports of grain so much apprehended had proved to be for the benefit not only of the consumer, but of the British agriculturist himself, who now used a great deal of foreign grain for the purpose of feeding his cattle ; and, though there had been large imports of meat, cheese, and other food supplies from foreign countries, it was now becoming evident that the people of these countries themselves were becoming more prosperous than they were, and were beginning to find that they could use up more of these commodities than hitherto they had been able to do. Therefore, the British farmer might feel assured that his products would always command a ready market.

Mr. Biggar (Chapelton) was sorry there were so few agriculturists present, but he begged to thank Mr. Caird for the very handsome manner in which he had proposed the toast. Agriculture was at once a healthy and retired branch of industry. Often after visiting on business some of the large and busy towns of England, where you can scarcely thread your way for smoke and fog, or hear the sound of your own voice for the constant roar and din of traffic, he had felt thankful to find himself again at home and find everything as quiet and peaceful as a Sabbath morn. It had been said that the great cities were supplied with their bone and sinew by the agricultural districts, and he believed that to be true, but they also found that Scotchmen who had made fortunes in these cities had a hankering for farming in their own country, and brought large amounts of capital, but without much practical experience, to compete in taking farms with men who had little but experience to help them. After alluding to the scheme of the International Association for taking possession of all the land in the country and farming it by joint commission—in which event he did not think the Government would be troubled with the collection of much Income-tax from farms, and more steamships would be required, because he thought the greater part of our bread would have to come from abroad—he alluded to Mr. Caird's remark about the Ayrshire breed of cattle with their narrow shoulders driving out the Galloways. He had no doubt what Mr. Caird said was perfectly true, but not because the Ayrshires were wedge-shaped. He remembered a dairy farmer once telling him—"We can make more money at dairy farming than you Galloway farmers can do;" to which he replied—"I doubt that; you may pay higher rents, but I don't believe you live better; you dairy farmers can live on curds and whey, while we Galloway farmers like a piece of roast beef." It was a long street that had no turning, and he thought a change was not very far distant. He found that cheese was not bringing the same price in the market that it used to bring; beef and mutton, on the other hand, were increasing in value, and he hoped the time was not far distant when the Galloway breed of cattle would resume its old position in public favour.

Mr. CAIRD requested the indulgence of the meeting for a moment, because he had had the great misfortune to be misunderstood. Mr. Biggar had in the most proper, and he really thought excellent manner, stood up for the Galloway cattle. Long might he have plenty of roast beef. He was sure he could not have too much of it. He (Mr. Caird) had not a word to say against the Galloway cattle, but simply told an anecdote about himself as a young man beginning farming many years ago. Before coming there their worthy Chairman had put into his hands an excellent letter published by his grandfather in 1811, describing the state of agriculture in the Stewartry for the preceding 90 years. Now, with regard to Galloway cattle, he thought Mr. Biggar would confess that a change had taken place in the value of that breed of cattle as well as in the value of Ayrshire produce. In the letter referred to, Mr. Maxwell mentioned that a Mr. Anthony M'Kie of Netherlaw sold at the Bridgend of Dumfries, in 1736, five score of 5-year-old Galloway cattle in good condition to an Englishman for £2 12*s*. 6*d*. a-piece. He wished to know if his friend Mr. Biggar would not like to get more than ten times the money for the same kind of stock? So conscious was he of the great increase in the value of cattle, that in his argument he had gone on to show that in this west country, with the abundance of grass and Turnips, their great business was the growth of beef, cheese, and butter, rather than the cultivation of corn, which could be brought from abroad.

Notices of Books,

The History of the Improved Shorthorn or Durham Cattle, and of the Kirklevington Herd; *from the Notes of the late Thomas Bates,—with a Memoir*. By Thomas Bell, of Brockton House, Eccleshall, Staffordshire. R. Redpath, *North of England Farmer* Office, Newcastle-upon-Tyne.

There were capital herds of shorthorned cattle in the Teeswater district long before the veterans of the Shorthorn Herd Book received their names, and any one who should collect the scattered notes and anecdotes, and even the gossip, of the pre-herd-book period was sure to command the large audience who are now interested in the fortunes of what was once little more than a local breed. Mr. Bell, the author of this little volume, states that Mr. Bates, of Kirklevington, had intended to make such a collection and write a history of this kind, but, he adds,—

> "Mr. Bates' time was so much occupied with his herd, and in receiving and paying visits, generally in connection with Shorthorns, that he made little progress with his history, and he never reduced it into any regular form. My connection with Mr. Bates brought me into constant conversation with him, and I was familiar with all the transactions relating to his own herd, and was generally present both in viewing the cattle and at table when he was talking of Shorthorns. From these advantages, I had long been familiar with all the facts stated, and events referred to by Mr. Bates, and, indeed, he often asked me to write the intended history from his dictation."

The object which Mr. Bell has had in view throughout the preparation of his book is declared by himself to have been—1st, to give Mr. Bates' own statements relating to breeding as nearly as possible as they were written from his dictation; 2d, to state such facts as he had himself collected, to support Mr. Bates' statements; and 3d—

> "To give some details to prove what the Kirklevington herd really was, and what it has been, and now is, that Shorthorn breeders may all see how far Mr. Bates's opinions and predictions have been justified by the experience of above 20 years since his death."

The result is a chatty and agreeable volume, full of anecdote and gossip, with occasional weightier letters, chapters, judgments, chiefly the production of the veteran breeder, who to his many other accomplishments added that of clever literary composition.

From such a collection of fragments as has been thus accomplished, it is hard to select passages for illustrative extract: we take, however, the following pieces, naming the authorities from whom they are quoted:—

> *In-and-in Breeding.* — "'The great obstacle to the improvement of domestic animals seems to have arisen from a common prevailing idea amongst breeders, that no bull should be used in the same herd more than three years, and no tup more than two; because (say they) if used longer the breed will be too near akin, and the produce will be tender, diminutive, and liable to disorders; some have imbibed the prejudice so far as to think it irreligious; and if they were by chance in possession of the best breed in the island, would by no means put a male and female together that had the same sire, or were out of the same dam. But, fortunately for the public, there have been men, in different lines of breeding, whose enlarged minds were not to be bound by vulgar prejudice, or long established modes, and who have proved by many years' experience that such notions are without any foundation.
>
> "'Mr. Bakewell has not had a cross (from any breed than his own) for upwards of 20 years; his best stock have been bred by the nearest affinities; yet they have not decreased in size, neither are they less hardy or more liable to disorders; but, on the contrary, have kept in a progressive state of improvement.
>
> "'This mode has also been frequently practised in breeding the best dogs and game-cocks. A certain gentleman, who produced the best pointers in the North of England for many years, never bred from any other than his own, because, he said, he could not find better to cross them with; and I am informed, from good authority, that a breeder of game-cocks, who was very successful, would never allow his breed to be contaminated by crossing with others, and to this precaution he attributed all his superiority.
>
> "'But one of the most conclusive arguments that crossing with different stock is not necessary to secure size, hardiness, &c., is the breed of wild cattle in Chillingham Park, in the county of Northumberland. It is well known these cattle have been confined in this park for several hundred years, without any intermixture; and are, perhaps, the purest breed of cattle of any in the kingdom. From their situation and uncontrolled state, they must indisputably have bred from the nearest affinities in every possible degree; yet we find these cattle exceedingly hardy, healthy, and well formed, and their size, as well as colour, and many other particulars and peculiarities, the same as they were 500 years since.
>
> "'From these instances it appears there can be no danger in breeding by the nearest affinities, provided they are possessed in a superior degree of the qualities we wish to acquire; but if not possessed of these, then we ought to procure such of the same kind as have, in the most eminent degree, the valuable properties we think our own deficient in. It is certainly from the best males and females that best breeds can be obtained or preserved.'" *George Culley.*

Mr. Bell adds:—

> "In the following pages I hope to point out how Mr. Bates, from his relation to and connection with Mr. George Culley, became imbued with his spirit and maxims, and how he succeeded in realising all his anticipations respecting the breeding of cattle and the improvement of the Shorthorn race."

> *Portraits of Live Stock.*—"A painter, without principle, may make the worst of animals to be all perfection to appearance on canvas, when the animal itself is the very reverse of anything good whatever, and only the result of forced feeding, which to the eye of a real judge shows the deficiency to be altogether the more glaring." *T. Bates.*

Let us add to this, that the portraits (lithographed) with which Mr. Bell illustrates his volume are failures, as we undertake to say nearly all cattle portraits, except those based on photography, have been.

It is, unfortunately, consistent with the gossiping character of Mr. Bell's performance that he has inserted a silly letter on the conduct of the late Lord Ducie at the Kirklevington sale, which owed so much to his lordship's enterprise and pluck, and it appears that Mr. Jonas Webb was associated with his lordship in the transaction referred to! The writer never thought that any English nobleman, much less one of Lord Ducie's character, could be a party, &c., &c.; he had alway looked upon Mr. Webb as a man who would not lend himself, &c., &c.; nevertheless, with Mr. Bell's permission! he tells a story against them both, of which we can only say, that if all the other anecdotes in this volume are equally trustworthy, then nine-tenths of its lines are trash.

Farm Memoranda.

THE YARMOUTH WORKHOUSE LAND.—Having for a long period taken your paper, and read it weekly with increasing attention, I send you a report of the doings of the Workhouse Land Committee, which has appeared in the *Yarmouth Independent*, and which may or may not be of interest. The land in cultivation is about 5 acres. We had this year, on about 1½ acre, 8500 Drumhead Cabbages and Savoys. I have, this day, sold 2500 of the Cabbages for £5 per 1000, reserving the remainder, with the Savoys, for the use of the workhouse. The Cabbages would be worth more for consumption in the workhouse, but, even at wholesale, you will agree that it is a paying crop. *John L. Cufaude, Great Yarmouth, Sept.* 16.

"The Workhouse (Yarmouth) Land Committee report that the sea-sand and sea-beach enclosed by the workhouse walls having been in a comparatively short period of time converted, by the admixture of river mud, an infinitesimal amount of clay and marl, and heavy manuring, into land capable of growing superior crops of roots and vegetables, the time has arrived when it may be desirable to communicate, for the information of the guardians, the rate-payers, and the poorer cultivators of small gardens in this neighbourhood, the mode and course of cultivation in practice; and which resulted in the first prizes being given at the late horticultural show, held in the Park on August 31, to the Potatos, the Cabbages and Savoys, and the kitchen Apples produced on the land. The guardians cultivate root crops and green crops of the most exhaustive kind to the land, and aim at producing three crops on the same portion of the land in every two years. To begin with Beet, which is grown exclusively for sale to townspeople, and carted away by the purchasers. The guardians manure very highly for this crop, with manure purchased in the town. The manure is of inferior quality, being made from lean cattle and mixed with sand, but no better is to be had. The Beet sells readily—at from 18*s*. to 25*s*. a ton. Last year's produce was at the rate of about 32 tons an acre, and was of very fine quality. Potatos are the next crop. The guardians manure for Potatos with the manure made at the workhouse exclusively, such manure having been turned over twice. Although there is a portion of sand in this manure (and sand is not desired for the workhouse land) the manure is valuable from causing humus in the soil—a substance essentially necessary to vegetation, and readily observable in old gardens, giving the dark colour to the land. Vetches succeed Potatos, and are planted as soon as the land can be prepared for the purpose. No manure is used for this crop. The Vetches in the spring fetch from 1*s*. 4*d*. to 2*s*. per rod, and are in great demand. Cabbages and Savoys follow, the land having been first heavily manured with purchased manure. The guardians having taken the first prize for both Potatos and Cabbages and Savoys, grown on land averaging little more than 21 inches in depth (of more or less good quality) resting on sea-beach, the climate not very favourable, and in an exposed situation, the Workhouse Land Committee introduce in this report the mode of culture pursued; and, as the exhibitors were many from the adjacent districts in Norfolk and Suffolk, and elsewhere, it is hoped that the hints offered may prove advantageous to small occupiers. The guardians, it is to be observed, do not pretend to grow prize vegetables, and this report speaks only of general crops. The course pursued, however, is the result of observations and experiments. The guardians make a great point of planting the Potato early in the year. The variety in use must be early, or medium-early, so that Vetches may be planted in September; and, if that were not so, the guardians would plant similar varieties in order to secure a sound crop, for disease rarely sets in to any extent before August. Early varieties will not produce the same quantity and yield as medium-early, and, moreover, many early varieties will not keep. The guardians grow Potatos that will keep the winter. We will now speak of the varieties grown, and the guardians' mode of planting and cultivating the Potato. The guardians rely mainly on, and strongly recommend, Dalmahoy for the main crop. This is a fine healthy grower, seed cheap, and the variety almost refusing to take disease. As these were the prize takers, the guardians need not further enlarge on the size, beauty, and quality of the tubers; and as to the produce, four sacks this year produced, on the first lifting, and without going a second time over the land, 79 sacks of Potatos into the warehouse, of fine quality, and fit for consumption. The guardians planted the sets on February 21; part were whole Potatos about the size of small hen's eggs, and part cut portions of Potatos (whole sets are preferable). These sets were planted in trenches cut by the spade up to a line, to the depth of about 9 inches, the bottom of the trench being then slightly flattened, so that the sets lay on a level surface, with the view to prevent drainage. The top of the Potato when set would be about 7 inches from the level of the land. Generally speaking, and particularly on lands of deeper and better quality of soil resting on clay or similar substratums, it is the better plan to dibble or plant in a hole made by a stick, so as to secure drainage; but the guardians have too little depth of soil and too much drainage at present. As soon as the Potatos appear above ground they should be kept clean, all weeds destroyed, and hoed until the growth of the haulm prevents further action. The committee recommend that on land such as described the crop should be grown upon the flat, and the land should not be ridged. It is believed that Potatos so grown are far less likely to take disease than those ridged up. The guardians plant the sets in rows, 3 feet from row to row, and 16 inches apart in the trenches. With regard to manuring the Potatos, it is a vexed question, but the committee are assured that at any rate on such land house manure, the refuse of ash-pits, and the scrapings and rakings of gardens will be found beneficial. The guardians this season planted, in addition to the Dalmahoy, the Prince of Wales and Dawe's Matchless kidney varieties, and Fortyfold, a round variety. All these varieties were fully ripened and warehoused by September 5, and this warehousing would have been accomplished some days earlier, but from lack of labourers. The committee report that from about an acre and a quarter of land, 151 sacks of good Potatos, free from disease, have been warehoused. About 11 sacks of seed Potatos, on the whole, were planted. With reference to the disease, Dawe's Matchless suffered far the most, next Prince of Wales, then Fortyfold, and Dalmahoy comparatively hardly touched. The varieties were planted on adjoining patches of land. The guardians also cultivate Celery, a small quantity of Onions, and a large quantity of Leeks, for improving and flavouring the soup supplied to the inmates. The guardians formerly cultivated Onions only, being unaware of the superiority of Leeks as a general crop. The committee report that Leeks (a certain crop) are far superior for the above purpose to Onions (a very uncertain crop)—that one well-grown Leek, the green part being used as well as the blanched, will go as far as two well-grown Onions, and Leeks thicken and greatly add to the texture of the soup. The Leek should be cultivated much after the manner of Celery, well manured, and watered in dry weather, when, and after, being planted out; and blanched in due season. The Leek defies frost. Occupiers of small gardens may greatly improve their land by cultivating Leeks; as, from the manuring, trenching, and exposure, such portions of the land as have been used for this crop will be much increased in fertility, and, in time, the whole garden, if so planted, improved, The Leek is far less cultivated in this neighbourhood than the esculent deserves. Well-grown Leeks would probably sell well in the market. Cabbages and Savoys to succeed on the workhouse land, must be planted early, and manured heavily with purchased manure. The prize Cabbages and Savoys were far superior to those shown by any competitors. They were not forced or grown for show, and there are plenty of similarly fine specimens on the land. They weighed respectively about 11 lb. or 12 lb. per Cabbage or Savoy. The seed was placed in the seed-bed on March 3, and the plants set out on the land on June 9, in rows 3 feet row from row, and each plant about 3 feet apart in the rows. Kitchen Apples.—The Lord Suffield is a splendid variety, and took 1st prize. A free grower of the largest size, in season from August to Christmas, and producing freely at two years old. The prize Apples were grown on trees planted in the workhouse land on October 31, 1870, scarcely then a foot and a half high; price of each was 9*d.* They were planted at about the depth they had stood in the nursery, on hardly trodden ground, the roots being carefully extended on all sides, and afterwards mulched with some long manure, to protect them during the winter. The trees should be bush trees on the Paradise stock. The committee would observe that although the workhouse land has been reclaimed at considerable cost, it has already proved a successful speculation, aud is yearly increasing in value. Moreover, the now well cultivated inclosure is not only ornamental to the north end of the town, but affords airing grounds for the imbeciles, and enables the guardians to afford instruction to the boy inmates in agriculture and horticulture. The boys are taught to dig and to cultivate land, acquirements likely to be of advantage in after life. The committee, in conclusion, report that they are fully sensible of the caré and attention given by the schoolmaster and the industrial trainer to the outdoor education of the boys; and to Charles Rushmer's successful cultivation of the workhouse land."

HORTON KIRBY, KENT.—Messrs. Robert and John Russell, of Horton Kirby, have enabled me to give an example of the farming of the upland chalk. Their farm, including 300 acres of wood on the hill and 30 of pasture, consists of 2500 acres, lying partly in the shallow valley of the Darent. It commences on the south side of the railway viaduct at Farningham Road station, and ascends the hill gradually in a narrow belt that stretches from the river side to Kingsdown, at a distance of five miles. The lower half of the farm is adapted for the fattening of sheep in winter; the upper portion is only favourable for grazing at other seasons.

Soil.—The land in the valley is chalk, close to the rock, without flints. In gradually ascending the hill, the thin loamy covering merges into a heavier soil, with flints, and the land on the hill consists of from 2 to 20 feet of stiff clay: 450 acres on this part of the farm have been drained at 8 rods apart. The drains were first ploughed to a depth of 1 foot, then dug 2 feet deeper and 1 foot wide, and filled in with flints. At 8 rods apart, every 20 rods of draining completed an acre, and took all the flints that could be collected on an acre: the cost was 5*d.* a rod for digging, and 5*d.* for gathering flints and filling in, or 16*s.* 6*d.* an acre, exclusive of ploughing. The drainage-water is collected in tanks, which have reduced the cost of carrying water to the flock.

There is one large field of 450 acres. Generally the farm is laid out in fields of 20 acres, divided by narrow quickset fences. On a sheep farm the yard accommodation need not be great. There are outlying barns and yards, a homestead at Kingsdown, and another near the river. To the latter spot a large quantity of Wheat is brought, in order that about a thousand pounds' worth of straw may be dispatched annually to the London market. After harvest, a grand row of stacks (Russell Row) marks the site of this extensive holding.

Cropping and Cultivation.—On so large a farm, where the soil passes gradually from a light chalk into a stiff clay, various means of arriving at the same end must be adopted as regards tillage operations. I shall, however, simplify my account of the fallowing for roots by giving the two systems that prevail—the one on the heavy, the other on the light land. The three courses of cropping to be noticed are:—

A 4-course rotation on light land: 1, roots; 2, Barley; 3, seeds (Trefoil and red Clover); 4, Wheat. *A 6-course rotation, on heavier land*, obtained by extending the former succession, with Peas and Wheat in the 5th and 6th years. And *a 7-course rotation, on the strongest and best land*, viz.: 1, roots (Mangel and Swedes); 2, Oats; 3, seeds; 4, Wheat; 5, Beans (with Turnips between the rows); 6, Wheat; 7, Barley.

Tillage.—The lighter Turnip land is broadshared with the Kentish plough after harvest, ploughed afterwards with three horses, and merely harrowed in spring and drilled on the stale autumn-ploughed furrow, at 12 inches apart. The deeper light land is steam-cultivated in spring, instead of being dressed by horses, and in other respects is treated in the same way. On the light chalks moisture is retained by this process. The cleaning is effected by horse-hoeing. On December 1 all the heavy land in preparation for Swedes and Mangel was in ridges, 27 inches apart, the stubbles having been ploughed immediately after harvest, 8 inches deep, and the land ridged with the double-breasted plough. Early in spring the ridges will be split after sowing 5 cwt. per acre of superphosphate of lime broadcast; they will be levelled with a 1-horse roll and drilled with Mangel and Swedes early in April, with the Suffolk corn-drill, covering three ridges and getting over 12 acres a day. The work is arranged so that the splitting and drilling are completed on the same day: 5 lb. of Mangel and a quart of Swedes are mixed with a bushel of dry sawdust, enabling them to be drilled together. A crop of Swedes or Mangel is tolerably secure. Supposing a plant of each to be obtained, sufficient Swedes would be left, in singling, to manure the land by folding them after the removal of the Mangel.

Peas.—The Wheat stubble is dunged, ploughed, and 3 bush. of seeds drilled, at 27 inches, in November. The land is horse-hoed three times during the spring and sown broadcast with a mixture of Rape and Turnips —2 quarts of seeds, containing half-a-pint of Turnip seed. The mixed crop is folded after harvest by sheep, changed to and from the Sainfoin rowens. On the heavy land Beans are substituted for Peas; but the same green crop is sown, and is afterwards folded, and thus on all the soils an excellent tilth is obtained for the Wheat which follows. Peas for early podding, to be picked green, are drilled after Barley, about December 1, and are followed by white Turnips, after ploughing the land once.

Wheat.—The usual breadth is 500 acres; 3 bush. per acre of White Rough Chaff or Red Browick are drilled in October, after pressing the furrow with either a common presser, or by means of the wheel of a cart loaded on the side next the ploughed land. This is the custom in Kent; and, if the wheel answers the purpose as well as the presser, there is the advantage of having so many implements the less on the farm. Wheat is heavily rolled, and it seldom needs hoeing. With respect to the thick seeding common on the chalk, the crops of some young men—as well as the contents of their pockets—have been seriously diminished, when they have been induced to try experiments on a large scale by the gentlemen who recommend thin seeding, and do not farm on the chalk hills.

Barley.—Three bushels of Chevalier. Oats: one sack of black Tartarians. I may notice here the winter Barley, which is largely grown on the heavy land, and has proved exceedingly valuable under proper treatment. It is sown early in September (3 bush.), eaten off by fatting lambs in spring, up to May, and then allowed to stand for a corn crop. As an instance of the vigour of this plant, a field of winter Barley, eaten off in wet weather late in spring, and left in bad plight, yielded 7 qr. an acre, though a six-weeks' drought followed the folding-off. It proves far more productive under the management described than when it is sown later and not eaten.

Sainfoin.—Eighty acres of the common sort is the usual breadth. It lies four years, and is then sown with Oats after one ploughing. The Oat stubble is ploughed and sown with winter Vetches, and after folding these the land is fallowed during the summer, and roots follow the year after. The two years' fallow cleans the land and destroys the wireworm which would trouble the after crops, though the first crop (Oats) generally escapes. Sainfoin can be repeated on the same land after 14 years. Trifolium may be repeated after four years, and red Clover after eight years. Rye-grass is omitted in the mixture of seeds, in consequence of the injury it does the Wheat crop.

The rotations show that Barley follows Wheat on the better land: according to a practice general in Kent on all good land, though formerly condemned as being "contrary to science." Wheat sometimes follows Oats on this farm, with good results; for example, if Turnips are eaten on the ground with oilcake, and are followed by Oats, the land not being in season for Clover, the Oats may be followed by Wheat, unmanured, after ploughing once. But it is a matter of practical observation that a good crop of corn of any kind cannot be grown on a Barley stubble.

Stock.—A flock of improved Hampshire Downs was established by Messrs. Russell because, as I was told, they could not afford to keep two generations on a hill farm in the month of May. There is certainly no need to do so now, for on December 1, when I saw the lambs which were yeaned in February, their fleeces had been sold at 2*s.* 6*d.* each, and many of the best lambs then weighed from 9 to 10 stones.*

One flock of 440 ewes had reared 620 lambs. These are some of the home qualities of a flock that has taken prizes to the value of more than £550 since Messrs. Russell "went into" improved Hampshire Downs in 1854. There are 800 ewes. About half of the average crop of 1000 lambs is fattened in May, on Rape grown on the heavier land; the rest, except those required for stock, are fattened at a year old on the roots growing on the lighter land. These and the ewes are summered on seeds and Sainfoin rowens. When the root crop is an average one, 300 or 400 lambs are bought during the autumn for fattening; there is also a flock of 100 Kentish ewes, whose progeny (half-bred Cotswold) are fattened at a year old. On this system the seeds are chiefly grazed and the Sainfoin is cut for hay; Pea-haulm is greatly relied on to save the haystacks in winter. The heavy land, which did not formerly get the benefit of sheep, and where winter folding would be injurious both to the land and to the sheep, is now made to carry the ewes and fatting lambs in spring, by means of late-sown Rape, winter Barley, and Trefoil, and by sowing a large breadth of Mangel and Trifolium, which are eaten together by bringing the roots to the fold.

The flock is close-folded on the fallows, as is usual on the chalk. In order to prevent "hoven," to which the ewes are particularly liable when on Rape in gusty weather with a west wind, they are fed with dry food before leaving their fold. Stock sheep, which are not fed with cake, are less liable to "blow" when they enter the Rape early in the morning, before they are hungry.

Cattle.—Thirty cows are kept for suckling. Pigs: about 100 are bred on the farm, and are fattened to 20 or 30 stones.

Horses and Steam Tillage.—There are 60 horses, and this is one of the few farms where the common iron plough is used with two and three horses, instead of the Kentish plough and three or four horses. The steam tillage consists of about 200 acres ploughed immediately after harvest and 100 acres cultivated in spring.

Cake and Corn Bill and Manures.—The following are the usual payments annually in this department:—Cake, £1000; London dung, £1000 (about the value of the straw sold); superphosphate of lime and blood manure, £1000. The produce of about 100 acres of Peas, Beans and winter Barley, besides all tail corn, is also consumed on the farm. Nitrate of soda must be called a mischievous manure on this farm, and generally in the district. It causes great luxuriance in the corn, and an inevitable blight before harvest. Even a piece of late corn, spurred up by a light dressing, will certainly be blighted at harvest. *Mr. Evershed, in the Journal of the Bath and West of England and Southern Counties Agricultural Society.*

Miscellaneous.

THE FOOT-AND-MOUTH DISEASE IN AMERICA.—The following report on the disease as it now prevails in the State of New York was recently presented to the United States Board of Health by the Sanitary Inspector, Mr. Morris:—

"In this State the instructions to the Assistant-Commissioners have been explicit, from the first knowledge of the presence of this disease, both as to placing in quarantine whatever animals may be found sick, and at the same time to prevent the sending of milk to the city from the dairies where the cows are so affected, and as to liberal use of disinfectants in cars and yards. These precautions, it was thought, might prevent the further spread of this disease among cattle, and at the same time protect the public health in the use of unwholesome milk. This has been done rigidly in every instance, as I am informed, by the Assistant-Commissioners, by Dr. Gurnsey in Dutchess County, and by Mr. Dayton in Queen's County. In Dutchess County the doctor informs me he has already quarantined over 10,000 head of cattle, a large proportion of which were dairy cows. At Albany, being a central point for the distribution of stock eastward, the Assistant-Commissioner, Dr. Stimson, has endeavoured to prevent its further spread by great care in watching and quarantining whatever could be discovered passing through it. In our own cattle-yards this disease has been discovered among beef cattle and cows on sale for dairy purposes. The rule has been to allow animals to be killed unless they were badly diseased, as there is as yet no evidence which proves that their flesh is unhealthy as human food; but cows or other cattle are not allowed to leave quarantine to communicate the disease to other herds until they have entirely recovered. Advices received this day inform me that the disease is subsiding in Dutchess County. No milk is allowed to be sent from dairy cows suffering with the disease for 30 days, affording ample time for complete recovery. The symptoms of this disease, as given by Professor Low, of Cornell University, are so obvious, that any person may be able to recognise it at once. An infected animal appears dull and listless for a day or two, with loss of appetite, and in cows, a falling off in the quantity of milk; hot, dry mouth; grinding of teeth and drooling; tenderness of the udder, teats, and feet, producing a lameness in the walk; frequent shaking of the feet, as if to get rid of some irritating matter; on the second or third day abundant frothing at the mouth, smacking of lips, and tongue-lameness, and the formation of blisters of various sizes up to an inch or more across on the mouth, udder, and teats, and between the hoofs. In one or two days more these blisters burst, leaving raw sores and shreds of loose skin inside the upper lip, on the roof of the mouth, the tongue, on the teats, and between

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* Eight sheep, at 23 months old, realised at the Smithfield Club Show, 1870:—

	£	s.	d.
Seven sheep	56	0	0
One sheep	6	10	0
Value of the second prize	15	0	0
Value of the third prize	5	0	0
	£82	10	0

The average annual receipts for "mutton and wool" during the last 10 years, after deducting the cost of cake and shepherd, have been about £1800.

This year some of the fat tegs, under a year old, have been sold (January 27, 1871) at £4 each.

the hoofs. These discharge an irritating fluid for some time, then scab over and heal up, in favourable cases, in from 10 to 15 days. The sick beasts should be well nourished with soft mashes and gruels. Cooling, but not purgative medicines should be given, and the sores washed with some mild carbolic acid preparation, or with a weak solution of sulphate of zinc (white vitriol). The discharges from the mouth, sores and scabs from the udder, teats, and feet, are the sources of infection, therefore the stable, yards, and fences, where sick cattle are kept, should be constantly cleansed and disinfected with heavy oil of coal tar and lime-washing."

The Week's Work.

SEPTEMBER 30.—*Corn Harvest* is seldom finished in late districts of the North, and in elevated and late districts of Wales, before the beginning of October, and in late seasons much corn is often abroad towards its close. The current season has been favourable to most late backlying places, so that corn harvest is now concluded with very few exceptions.

Michaelmas Entries.—Changes of tenants are not frequent in England, but when they do take place entries to farms at this season is favourable for carrying out improvements of a permanent character, as drainage, breaking up poor pasture land to aëration, and such like. And even when no change takes place, but where the yearly tenancy runs from Michaelmas to Michaelmas, it is a favourable period for giving up old plans of farmering and entering upon new. The farmer's year, too, very generally begins with October, which involves the settling of accounts and the balance of the books. Where old-fashioned tenants give up, it is not so easy selling the dead and live stock to the incoming tenant as it was in the olden time, the interest of the latter being to avoid purchasing what is out of date unless at a price sufficiently low to enable him to sell without loss. It may, therefore, be advisable for the outgoing tenant to sell by auction, but in many cases, if not the majority, the old plan of "creeping in at little money" is still the rule, the incoming tenant taking the stock of his predecessor at a lump sum. There are, however, more objections to this plan than formerly, for tenants who enter with limited capital have it in their power in most places to hire contractors to do both field and barn work, and to let their Turnips and strawyards to graziers. On the contrary, nothing is more expensive than teams and implements out of date, or more profitless than stock that will not pay for their keep. It is seldom advisable, however, to start with the most expensive live stock and implements, such being in too many instances the reverse of profitable. When changes are determined on, it requires the exercise of the highest skill to purchase what will prove most profitable under the peculiar management of the purchaser. Much depends upon the state the land is in.

Farm Servants in England very frequently change places at this term, and those who do not change renew their terms. Much has recently been said relative to the management of this class, more perhaps than is consistent with the liberties they enjoy and exercise. There is not a worse plan than to treat servants with a morbid philanthropy, as if they were continually at the mercy of their employers, for the first duty of the latter is to teach the former to stand upon their own feet, which all good servants never fail to do. That there are bad masters and bad servants is a totally different affair, and for either most philanthropic remedies are about the worst that can be prescribed; and yet the man who has neither head nor hands must live, but certainly not on the same terms as the others; and the farther we progress in improvement the more difficult will it be to reconcile the two extremes to the satisfaction of political economists. Our own plan has always been to have nothing to do with bad servants, employing only good hands, who can take care of themselves and families. They cost more wages, it is true, but they are cheaper in the end, more ways than one.

Wheat Sowing continue as root crops are removed and the land got ready. Pickle and drill as directed last month, using rather more seed. October was once counted Wheat seed-time, but thorough drainage, and the growth of root crops, Beans, and Peas on land that used to be bare fallowed, is extending the sowing over a greater length of time. Thus far the season has been favourable for getting Clover, Bean, and Pea stubble ready for early seeding, but it may be otherwise in many places with the harvesting of root crops in the South, should the weather continue favourable and growing; but the threatening approach of an early winter may induce the early harvesting of root crops also. The season has been exceptional in many respects, so that the prudent course is to watch the weather, and store the Potatos, Carrots, Mangels, Kohl Rabi, and Swedes in time, no less for their safety than for the getting of the land ploughed and the Wheat sown with a favourable season. Avoid working in wet weather, as poaching land after roots does immense harm. In fine weather the best plan is to keep the harrows and seed-drill close up to the plough. In Ireland, where a great breadth of Potatos is grown in lazy-beds, the tops are pulled by the hand and removed, when the Wheat is sown broadcast, and covered by the operation of digging the Potatos. A good braird is generally obtained, but at the expense of a considerable sacrifice of seed, *i. e.*, the land requires to be thickly seeded, as much of it is buried too deep. The more economical plan would be to harrow the land after digging the Potatos, and then either dibble or drill in the seed.

Live Stock.—A very serious loss attends the keeping of stock too long at grass, more especially our improved breeds. Even in fine seasons in the South cattle of every kind should have a dry bed in a hovel to go to when the pastures become wet, for when caught lying on a wet bed by a frosty night or morning, the consequences, in the form of inflammatory attacks, black leg, braxy, and so on, are often fatal. Even the hardy Kylo looks out for shelter in his native glen, with a dry bed of long heath; but our lowland herds have no such choice. Sheep folding on Rape, Coleseed, or Turnips, attend to; if the green tops of the latter are consumed more chaff and ground corn will be required than when the roots only are eaten in troughs. In Sussex, Hants, Dorset, and Devon this is early lambing season, and if Italian Rye-grass and Clover seeds are insufficient for ewes, as will be the case in too many instances this year, Belgian Carrot is preferable to Turnips. Put the rams to breeding ewes for lambing the latter week in February or beginning of March. In our highland sheepwalks flocks begin moving down towards their winter quarters in the lowlands. *W. B.*

Notices to Correspondents.

CABBAGE SEED: *E.* writes as follows:—"Will any one be so good as to state the average amount of good seed which is produced from a good Drumhead Cabbage, and from a good Mangel root, well protected." [A quarter of a pound of seed might be taken from a plant of Drumhead Cabbage; and half a pound from a plant of Mangel Wurzel, if grown exceptionably well. Very much depends upon the season, as well as upon the space in which to grow. In some seasons the plants will grow as large again as in others. Such a question is very difficult to answer, and any reply might be misleading, so much have circumstances to do with such matters.]

FLAX STRAW: *Cor.* In answer to your question, on behalf of one of the leading farmers near Carlisle, who has a small field of Flax grown as an experiment, we are unable to name a likely market for the straw when harvested, put on rail there. Probably the notice of his case may procure him a customer.

Markets.

MARK LANE.

MONDAY, Sept. 25.

There was a moderate supply of English Wheat to this morning's market, but to effect sales it was necessary to submit to a reduction of 1*s.* per qr. upon the prices of this day se'nnight. Foreign was held firmly for last week's rates, at which a fair amount of business was transacted. For Barley there was a good demand, at the extreme prices of this day week, Beans and Peans were unchanged in value. Oats were rather dearer. The Flour trade was steady, without change. The few sales of new white Mustard were made at 9*s.* 6*d.* per bushel.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk..White	56—61	Red......	55—59
— fine selected runs ....do.	59—63	Red......	58—60
— Talavera	61—63		
— Norfolk	—	Red......	—
— Foreign	50—67		
BARLEY, grind.& dist.,26*s* to 31*s*..Chev.	—	Malting ..	33—36
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....—*s.* to —*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	—	Suffolk ..	—
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	34—38
MAIZE	—	Foreign ..	29—31
FLOUR, best marks, delivered..per sack	—		
— 2d ditto ....ditto	—	Country ..	—
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Sept. 27.

A quiet feeling pervaded the Corn Exchange to-day. The supplies of both English and foreign Wheat were tolerably good; transactions in both red and white produce were restricted, but prices remained without any material variation. For Barley a fair inquiry prevailed, at fully previous quotations. Malt was purchased cautiously, at about late rates. Oats were in large supply and limited request, on former terms. Beans were not active, but prices ruled firm. Peas sold quietly, at previous prices. Flour was dull, but unaltered in value.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	510	30	—	—
Irish ..	—	—	—	—
Foreign ..	9760	10,390	35,960	— 2680 brls.
	10,270	10,420	35,960	

LIVERPOOL, Sept. 26.—To-day's market was well attended, and a good consumptive business was done in red American Wheat, at an improvement of 2*d.* per cental on the week. White Wheat was held for an advance of 1*d.* to 2*d.* per cental. Prime Flour realised 6*d.* per barrel and 1*s.* per sack more money. Beans are 1*s.* per qr. cheaper. Peas maintained the improvement of Friday. Indian Corn is dull, at a reduction of fully 6*d.* per qr. on the week.

AVERAGES.

	Wheat.	Barley.	Oats.
Aug. 19	57*s* 10*d*	35*s* 9*d*	27*s* 6*d*
— 26	57 4	32 7	26 7
Sept. 2	57 2	35 0	26 4
— 9	56 6	35 1	26 0
— 16	56 7	35 8	24 9
— 23	57 7	35 6	23 6
Average ..	57 2	34 11	25 9

METROPOLITAN CATTLE MARKET.

MONDAY, Sept. 25.

We have a considerable increase in the number of Beasts, but the average quality is not very good; consequently choicest qualities are not much lower. There are a few more Sheep, and the weight of mutton is much larger; prices are lower, and it is difficult to effect a clearance—indeed, this is not likely to be accomplished. Calves are not so plentiful as of late; the demand also has decreased; prices on the average are lower. Our foreign supply consists of 3350 Beasts, 10,970 Sheep, 99 Calves, and 10 Pigs; from Ireland there are 150 Beasts; and 2020 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 6to5 8	Best Long-wools	6 4to6 6
Best Shorthorns..	5 4—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 6	Ewes & 2d quality	5 0—5 6
Best Downs and Half-breds ..	6 6—6 8	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 0
		Pigs	4 0—5 0

Beasts, 5520; Sheep and Lambs, 22,520; Calves, 139; Pigs, 154.

THURSDAY, Sept. 28.

The number of English Beasts on offer is much smaller than last Thursday, but there are a few more foreign; trade is excessively dull, and a clearance cannot be effected, although lower prices are submitted to. The total number of Sheep is larger than last week, but the excess is in foreign; there are very few buyers at market, and the small amount of business transacted is on lower terms. Calves are also lower. Our foreign supply consists of 430 Beasts, 8000 Sheep, and 179 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 4to5 8	Best Long-wools	6 0to6 4
Best Shorthorns ..	5 2—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	3 6—4 4	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 4—6 8	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	3 8—5 8
		Pigs	3 8—5 0

Beasts, 1080; Sheep and Lambs, 11,930; Calves, 276; Pigs, 80.

METROPOLITAN MEAT MARKET, Sept. 28.

Best Fresh Butter	17*s.* per dozen lb.
Second do. do.	15*s.* ,,

Small Pork, 4*s.* 8*d.* to 5*s.* 4*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 4*d.* per 8 lb.

HAY.—Per Load of 36 *Trusses.*

SMITHFIELD, Thursday, Sept. 28.

Prime Meadow Hay,	95*s.* to	105*s.*	Clover, old	130*s.*	145*s.*
Inferior do.	55	80	Inferior do.	60	100
Rowen	40	70	Prime 2d cut do. ..	115	126
Inferior do.	—	—	Inferior do.	60	100
Straw	36	45			

CUMBERLAND MARKET, Thursday, Sept. 28.

Sup. Meadow Hay	105*s.* to	115*s.*	Inferior Clover ..	84*s.* to	120*s.*
Inferior do.	70	92	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	140	160			

JOSHUA BAKER.

HOPS.

BOROUGH MARKET, Sept. 28.

Messrs. Pattenden & Smith report an active demand for all descriptions, prices being about 10*s.* per cwt. dearer since Monday. There is already a great scarcity of choice Hops, and the crops generally fall very short of what was anticipated.

SEED MARKET.

The position of the seed trade shows but little alteration since the date of our last report. All descriptions of Clover seeds continue to be almost quite neglected. Trefoils are firm, without, however, much business passing. Trifolium meets with a retail demand, at the low rates now current. Winter Tares are cheaper, and are in limited request. New Rapeseed experiences a good inquiry, at the recent advance. Mustard seed is without alteration. There is a good trade doing in seed Wheats for France. Sowing Rye is scarce, and must be quoted 1*s.* per qr. dearer. Blue Peas meet with a ready sale.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

COALS.—Sept. 27.

Holywell Main, 17*s.* 6*d.*; West Hartley, 18*s.* 6*d.*; Walls End Harton, 17*s.* 3*d.*; Eden Main, 17*s.* 6*d.*; Walls End Hetton, 20*s.*; Walls End Hetton Lyons, 17*s.* 3*d.*; Walls End Russel's Hetton, 18*s.*; Walls End South Hetton, 19*s.* 6*d.*; Walls End Hartlepool, 19*s.*; Walls End Original Hartlepool, 20*s.*; Walls End South Kelloe, 19*s.*; Walls End Tees, 19*s.* 9*d.*—Ships at market, 38; sold, 33; unsold 5; at sea, 5.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

For Ploughs,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

BENJAMIN LOOKER,
Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.

The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.

They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.

Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from

W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.

WOOL NETTING, 2 yards wide and 1s 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide .. .. 1s. 9d. per yard.
Three yards wide .. .. 2s. 8d. per yard.
Four yards wide .. .. 3s. 6d. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d. to 8½d. p. yard.

HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾d. and 8¾d. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.: and of all Seedsmen in London or the Country.

NOTICE.—Removed from 7, Great Trinity Lane.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Indestructible Plant Terra-Cotta Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

Under Royal Patronage.

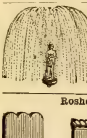
PHILLIPS' ROYAL POTTERY, WESTON-SUPER-MARE.
ESTABLISHED 1836.

JOHN MATTHEWS, late PHILLIPS, Manufacturer of STATUARY, FOUNTAINS, FLORAL ARBORETTES, VASES, EDGING TILES, &c. Plain and Ornamental GARDEN POTS. POTS, with movable bottoms, made to order.

Book of Drawings and Price List on application.

See Specimens in the EXHIBITION, No. 4321, and STAND at the Royal Horticultural Gardens.

JOHN MATTHEWS, Royal Pottery, Weston-super-Mare, Somerset.



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A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

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JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—s.	d.		Each.—s.	d.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 " " ..	0	4½	13 " " ..	2	0
4 " " ..	0	5½	14 " " ..	2	6
5 " " ..	0	6½	15 " " ..	3	0
6 " " ..	0	8	16 " " ..	3	6
7 " " ..	0	10	17 " " ..	4	0
8 " " ..	1	0	18 " " ..	5	0
9 " " ..	1	2	19 " " ..	6	0
10 " " ..	1	4	20 " " ..	7	0
11 " " ..	1	6			

BEE GLASSES, with ventilating hole through knob.

	s.	d.		s.	d.
4 inches in diameter ..	0s.	6d.	9 inches in diameter ..	1s.	8d.
5 " " ..	0	8	10 " " ..	2	0
6 " " ..	0	10	11 " " ..	2	6
7 " " ..	1	1	12 " " ..		
8 " " ..	1	4			

Either flat or conical tops.

CUCUMBER GLASSES.

	s.	d.		s.	d.
24 inches long	2s.	0d.	15 inches long	1s.	4d.
22 "	1	10	14 "	1	2
20 "	1	8	12 "		
18 "	1	6			

WASP TRAPS, 3s. 6d. per dozen

HAND GLASSES, WITH OPEN TOPS.

	Each.—s.	d.		Each.—s.	d.
12 inches	6	6	20 inches	10	6
14 "	7	6	22 "	11	6
16 "	8	6	24 "	12	6
18 "	9	6			

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

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THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

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SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size
Prices from 16s. 6d. [Prices from 35s.
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

One Penny per Square Yard.

TANNED GARDEN NETTING, for Garden purposes, such as Protecting Fruit from Birds, Blossom from light Frosts, &c. Widths, 1, 2, 3, and 4 yards. The Trade also supplied,

HOOPER AND CO., Covent Garden, London, W.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

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Archangel Mats.

J. BLACKBURN AND SONS beg to inform their friends that the First Shipment of NEW MATS has just arrived, and they are of very good quality. Price List on application.

Russia Mat Importers, 4 and 5, Wormwood Street, E.C

No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application.

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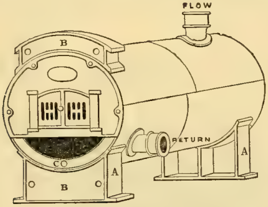
No. 1.—54 inches wide	at 8½d. per yard run.
No. 2.—54 inches wide	at 7d. per yard run.
No. 3.—54 inches wide	at 5½d. per yard run.
No. 4.—54 inches wide	at 4d. per yard run.
No. 5.—54 inches wide	at 5½d. per yard run.

In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

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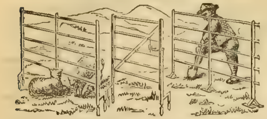

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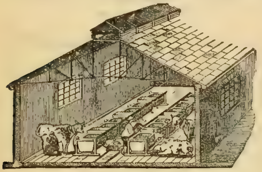

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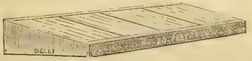

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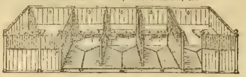

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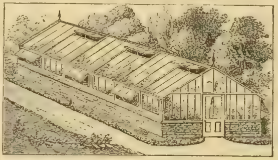

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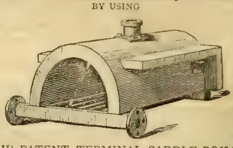

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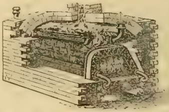

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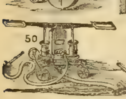

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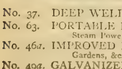

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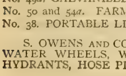

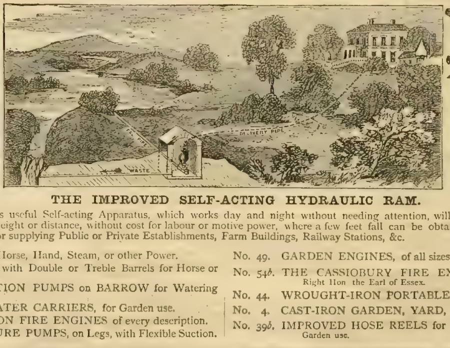

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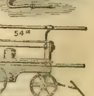

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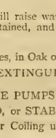

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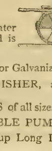

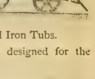

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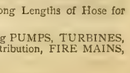

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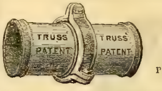

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, September 30, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 40.—1871.]

SATURDAY, OCTOBER 7.

{ Registered at the General Post Office as a Newspaper. } **Price 5d.** POST FREE, 5½*d.*

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3*s.* 10*d.* for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—Notice is hereby given, that an ADDITION to the LIST of PENSIONERS will take place in JANUARY NEXT.

All Persons desirous of becoming CANDIDATES are required to send their Applications and Testimonials to the Committee on or before SATURDAY, November 11. Preference will be given to those Applicants who have been Subscribers for 15 years. By Order,

EDWARD R. CUTLER, Secretary.

14, Tavistock Row, W.C., October 4.

N.B.—Printed Forms of Application may be obtained of the Secretary.

Cinerarias, from one of the very finest Strains of TRICOLORS in ENGLAND.

JOHN STANDISH AND CO. are now able to offer fine strong healthy plants of the above, to flower early in the winter, at 1*s.* each, 9*s.* per dozen, £3 per 100; also seed of the same at 2*s.* 6*d.* and 5*s.* per packet.

Royal Nurseries, Ascot, Berks.

SPRING FLOWERING PLANTS, fragrant and beautiful, should be planted immediately. A fine Collection, at moderate prices; LISTS on application.

R. THORNHILL, Bowdon Nurseries, Bowdon, Cheshire.

WINTER FLOWERS.—Fine bushy plants of all the best varieties of CHRYSANTHEMUMS, knotted for bloom, 5*s.* per dozen. LIST of the above, also of FERNS, VINES, and ROSES, ready in a few days, and forwarded free on application.

KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

CHOICE CUT FLOWERS, &c.—Parties having the above can meet with a ready SALE, in any quantity, at good prices, by applying to the FLOWER MART, 23, Villiers Street, Charing Cross, W.C., where a Wholesale, Retail, and Sale on Commission business is done.

SPIRÆA (HOTEIA) JAPONICA, and LILY of the VALLEY, for forcing.—A few thousands of the above can be had, in good strong tufts, at 50*s.* per 100; the Lily of the Valley each to give from six to twelve and more flower-spikes. Orders to be sent at once to JEAN VERSCHAFFELT, Nurseryman, 134, Faubourg de Bruxelles, Ghent, Belgium.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

Herbaceous and Alpine Plants, Hardy Bulbs, &c.

THOS. S. WARE has much pleasure in announcing that his PERENNIAL LIST for 1871 is ready, and may be had on application.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Succulents.

THOS. S. WARE'S New Priced LIST of SUCCULENTS, containing selections from Twenty of the principal Families, is now ready, and may be had an application.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Spring Flowers.

THOS. S. WARE'S NEW LIST of SPRING FLOWERS (which ought to be planted at once) is now ready and may be had on application. The above is a selection from my GENERAL PERENNIAL CATALOGUE, which may also be had.

Hale Farm Nurseries, Tottenham, Middlesex, N.

Autumn Catalogue.

GEORGE POULTON'S AUTUMN CATALOGUE of PLANTS and CUTTINGS of NEW PELARGONIUMS, FUCHSIAS, CHRYSANTHEMUMS, &c., is now ready, and may be had post free upon application.

GEORGE POULTON, Fountain Nursery, Angel Road, Edmonton, Middlesex, N.

ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., begs to advise his SPECIAL LIST of GARDEN and AGRICULTURAL SEEDS for the present year (of Seeds all the growth of 1871) is now ready, and can be had on application. Samples and stocks are very fine, and prices very low.

SUTTONS' IMPORTED FLOWER ROOTS are now ready. CATALOGUES on application.

For further particulars, see p. 1289 of this day's *Gardeners' Chronicle.*

From Mr. A. WIPF, *Gr. to* A. SHUTTLEWORTH, Esq., *Heighington Hall.*

July 3, 1871.—"The Bulbs procured from you last autumn gave the most complete satisfaction, and were admired by all visitors, in particular by some proprietors of extensive gardens, who could not suppress their disappointment and chagrin at having been at the expense and trouble to get Bulbs direct from Holland, which were nevertheless much inferior to your flowers."

Royal Berks Seed Establishment, Reading.

Extra Picked Dutch Flower Roots.

J. SCOTT'S Priced Descriptive CATALOGUE of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, &c., may be had post free by all applicants.

The Seed Stores, Yeovil, Somerset.

THE PINE-APPLE NURSERY COMPANY'S BULB LIST may be had free upon application. The prices will be found lower than most Lists, for the same quality of Goods, and Bulbs will be added to compensate for carriage.

J. BESTER, Manager, Pine-apple Place, Maida Vale, W.

Bulb Catalogue.

CHARLES TURNER'S Descriptive LIST of HYACINTHS, NARCISSUS, TULIPS, CROCUS, and other imported Flowering Roots is now ready, and will be forwarded on application. It also contains Selections of choice late blooming Exhibition TULIPS of the best strains.

The Royal Nurseries, Slough.

Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived, and have every appearance of being above the average quality, for which they have been noted so many years.

CATALOGUES of the above, also FRUIT TREES and general NURSERY STOCK, post free on application.

Highgate Nurseries, London, N.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received from the most celebrated growers in Holland their First large Importation of the above, and have the satisfaction to say that the BULBS are large, sound, and well ripened

Early orders respectfully solicited.

Descriptive Priced CATALOGUE post free on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

CARTER'S PRIZE DUTCH FLOWER ROOTS.

In Collections to suit Large and Small Gardens.

10*s.* 6*d.* | 21*s.* | 42*s.* | 63*s.* | 84*s.*

No charge for packing. Carriage free.

JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.

EVIDENCE OF QUALITY:—

From Miss J. Smith, *Enniskillen, April* 19, 1871.

"The Hyacinths supplied by you are the admiration of the country."

JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.

In Collections for the Conservatory or Drawing Room

10*s.* 6*d.* | 21*s.* | 42*s* | 63*s.* | 84*s.*

Packing and carriage free.

JAMES CARTER AND CO., 237 and 238, High Holborn, London.

Dutch Flower Roots.

G. M. KEMP-WELCH'S CATALOGUE of the above is just published, and will be sent free by post on application. The Bulbs are of the finest quality, and moderate in price. Early orders will oblige. The Catalogue is of a convenient size for the pocket.

Seedsman and Florist, Cotham, Bristol.

STEPHEN BROWN'S BULB CATALOGUE, Illustrated, Descriptive, and Cultural (free for 6 stamps, gratis to Customers), contains his superb LILIES, in 75 varieties, with several new sorts; GLADIOLI, a large collection, with several of the newest French varieties; and a very extensive collection of DUTCH, CAPE, FRENCH, and other BULBS.

Seed, Bulb, and Plant Establishment, Weston-super-Mare.

Dutch Flower Roots.

B. S. WILLIAMS' ANNUAL CATALOGUE of DUTCH FLOWER ROOTS, containing all the best varieties of Hyacinths, Tulips, Crocuses, Narcissus, &c.; also a Select LIST of FRUIT TREES, ROSES, &c., for autumn planting, is now ready, post free on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

EVERY GARDEN REQUISITE KEPT in STOCK at

CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

Golden Bronze Pelargoniums.

DOWNIE, LAIRD, AND LAING can offer Seed, saved from their unrivalled Collection of PRIZE GOLDEN BRONZE PELARGONIUMS, newly harvested, in packets, at 2*s.*, 3*s.* 6*d.*, and 5*s.* each. Forwarded free by post. Stamps may be sent in payment. Trade price on application.

Nurseries: Forest Hill, London, and Edinburgh.

Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants. CATALOGUES gratis on application.

HUNT'S superb SWEET WILLIAM, in 24 varieties, seed or plants, as per former Advertisement.

Crown Nursery, Reading.

WANTED, a few thousand GERANIUM CUTTINGS, different varieties. State price, &c., to

R. S., General Post Office, Hastings, Sussex.

WANTED, CUTTINGS of DOUBLE GERANIUMS, Scarlet and Rose, for bedding. Send price per 100 and name to

G. PERKINS, Arthingworth, Northampton.

WANTED, a quantity of CRAB, CHERRY, PLUM and PEAR STOCKS. Send sample and price to

JOHN HOUSE, East Gate Nurseries, Peterborough.

APPLES, &c.—WANTED, by a Schoolmaster, near London, the Address of a person in the country who could supply him, at a moderate rate, with APPLES, PEARS, and POTATOS, a sack at a time.

H. F., 1, Seymour Place, West Brompton, S.W.

TEA-SCENTED ROSES, in pots.—The largest stock of Tea-scented Roses in the Kingdom. They may be had in small pots, also established in 6-inch pots, for forcing and greenhouse culture.

WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready Descriptive LIST on application.

Nurseries, King's Acre, near Hereford.

Planting Season.—Roses, Fruit Trees, &c.

W. KNIGHT intimates to intending Planters that his NEW CATALOGUE of HARDY TREES and PLANTS is now ready for distribution, containing faithful descriptions of his stock, which is unsurpassed in the Trade. Catalogues free.

Floral Nurseries, Hailsham, Sussex.

To the Trade.

MANETTI CUTTINGS, made from strong well-ripened wood, ready for immediate planting, 7*s.* 6*d.* per 1000.

Strong STOOLS of the above for stock, with six and seven well ripened shoots, 12*s.* per 100, for cash.

A. GODWIN AND SONS, Angel Road Nursery, Edmonton, London.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in pots. Descriptive Priced LIST on application to

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

GRAPES the FIRST YEAR

Six bunches for 5*s.* | Twelve bunches for 10*s.* 6*d.*

The finest Canes in the Trade.

R. TANTON, F.R.H.S., The Nurseries, Epsom; and Boro' End, London Bridge, S.E.

Vines, Planting and Fruiting.

E. MORSE has the above, very strong and short-jointed this season. The Canes are from 9 to 15 feet in length Price from 3*s.* 6*d* to 7*s.* 6*d.* each.

E. M.'s CATALOGUE of Stove, Greenhouse, and Hardy FERNS is now ready, and will be sent post free on application.

The Original Nurseries, Epsom, Surrey.

Vines.

NOW READY, 5000 VINES, in pots, including 1000 large Hamburghs. CATALOGUE free. Carriage paid to London.

THOMAS RIVERS AND SON, Sawbridgeworth.

Peach Trees in Pots.

NOW READY, 4000 PEACH and NECTARINE TREES (bearing Trees), for Orchard House Culture or Forcing. A CATALOGUE free. Carriage paid to London.

THOMAS RIVERS AND SON, Sawbridgeworth.

FOURTEEN PEACH TREES and SEVEN NECTARINE TREES, in 16-inch and 17-inch pots, and 6 to 8 feet high, all of favourite sorts, and in splendid condition for very early forcing. To be DISPOSED OF, as a Bargain, in One Lot.

Mr. HUNT, Gardener, Davenham Bank, Great Malvern.

TO BE SOLD, cheap, four or five dozen of clean and healthy PINE PLANTS, 2 and 3-yr. old.

Mr. HEPPER, Wern House, Neath.

PINES.—To be SOLD, 100 extra strong fruiting plants, 27 in Fruit; all healthy.

R. ANDREWS, Post Office, Wimbledon, Surrey.

Victoria Red Currants.

J. SANDY AND SON, beg to offer the above to the Trade, at 10*s.* per 100 for cash. Very fine. Samples on application. The Nurseries, Stafford.

PEAR STOCKS, extra strong and of superior quality —JAMES DICKSON AND SONS, Newton Nurseries, Chester

---

Apples.

WM. PAUL respectfully invites all who take an interest in APPLES, to VIEW his COLLECTION of 160 VARIETIES, to which was awarded

THE GOLD MEDAL

At the London International Exhibition on the 4th inst.

PAUL'S Nurseries, Waltham Cross, London, N. Entrance from the platform, Waltham Station, Great Eastern Railway.

Carpet Bedding.

F. E. MADDEN AND SONS, Ballinasloe, offer 18,000 SEMPERVIVUM TINCTORUM (House Leek), at 12*s.* 6*d.* per 100 The Trade supplied.

Railway Clearance.

TO BE SOLD, cheap, large and small Standard and other AZALEAS, FICUS, STEPHANOTIS, BEGONIAS, CAMELLIAS, &c.

374, Kingsland Road, N.E.

SEEDLING QUICK, 2-yr., stiff.—Large quantity of above to offer. Ground must be cleared. Prices extremely moderate. J. GREEN, Garforth Nursery, Leeds.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.

Bardney Manor, Lincoln.—July 6.

CABBAGE PLANTS, Autumn Sown.—Good strong early Battersea, Enfield, and London Market, at 3*s.* per 1000. Robinson's Champion Ox Cabbage, 2*s.* 6*d.* per 1000; also Late Flat Redpole Cabbage, 4*s.* per 1000; cheaper by the 50,000 or 100,000. Remittances to accompany all orders.

J. WOOBERRY, Nurseryman, Billingshurst, Sussex.

Autumn-sown Cabbage Plants.

W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts:—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3*s* per 1000; do. RED PICKLING, 5*s.* per 1000.

The Nurseries, Wonersh, Guildford, Surrey.

CABBAGE PLANTS, Autumn Sown.—Enfield Market and Early York, per 1000, 3*s.*; per 10,000, 25*s.* Drumhead or Ox ditto, per 1000, 2*s.* 6*d.*; per 10,000, 20*s.* Free on rail. Remittances to accompany all orders.

CHRISTMAS QUINCEY, Seedsman, &c., Peterborough.

Seedsmen
to Her Majesty
The Queen.

BULBS
For Autumn Planting.

Seedsmen
to H.R.H. the
Prince of Wales.

JAMES CARTER & CO.

Have the pleasure to offer the following Collections of Bulbs for present planting, containing the most showy and popular varieties required for the purposes mentioned.

BULBS for INDOOR PLANTING.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S "GUINEA" COLLECTION,

For Indoor Planting, contains:—

12 HYACINTHS, in 12 extra fine named sorts.
9 POLYANTHUS NARCISSUS, in 9 varieties.
12 JONQUILS, sweet scented.
50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 ,, Rex rubrorum.
3 ,, La Candeur.
3 ,, Royal Standard.
6 ,, Yellow Prince.
3 ,, Rosa Mundi.
6 ,, Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
6 IXIAS, finest mixed.
6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

Packing and Carriage Free.

All Seeds and Bulbs Carriage Free.

BULBS for INDOOR and OUTDOOR PLANTING.

Collections, price 15s., 30s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S COMPLETE COLLECTION,

For Indoor and Outdoor Planting, price 30*s.*, contains:—

12 HYACINTHS, in 12 extra fine named sorts for pots or glasses.
12 HYACINTHS, in 3 colours for bedding.
12 NARCISSUS, Double, white.
12 ,, Poeticus or Pheasant-eye.
36 TULIPS, extra fine mixed.
6 ,, Tournesol
6 ,, Duc Van Thol.
3 ,, Royal Standard.
3 ,, La Candeur.
3 ,, Yellow Prince.
3 ,, Rex rubrorum.
12 Double DAFFODILS.
12 STAR of BETHLEHEM.
12 SCILLA BELGICA, mixed.
75 CROCUS, blue.
75 ,, striped.
75 ,, large yellow.
75 ,, white.
36 ANEMONES, extra fine mixed
8 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice mixed English.
24 ,, extra fine mixed Spanish.
12 JONQUILS, Campernel.
36 RANUNCULUS, extra fine mixed.
50 SNOWDROPS.

Packing and Carriage Free.

Five per Cent. Discount for Cash.

BULBS for OUTDOOR PLANTING ONLY.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S "GUINEA" COLLECTION,

For Outdoor Planting only, contains:—

12 HYACINTHS, in 3 colours.
12 NARCISSUS, Double, white.
12 ,, Poeticus, or Pheasant-eye.
12 Double DAFFODILS.
12 TULIPS, extra fine mixed, double.
12 ,, extra fine mixed, single.
12 ,, finest mixed, late.
12 ,, Duc Van Thol.
6 POLYANTHUS NARCISSUS, fine mixed
6 CAMPERNEL JONQUILS.
12 STAR of BETHLEHEM.
6 TRITELEIA UNIFLORA.
6 DOG'S-TOOTH VIOLETS.
25 CROCUS, blue.
50 ,, striped.
50 ,, large yellow.
25 ,, white.
24 ANEMONES, extra fine, mix.
6 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice, mixed, English.
12 ,, extra fine, mixed, Spanish.
3 LILIUM CANDIDUM.
3 ,, TIGRINUM.
24 RANUNCULUS, extra fine, mixed.
50 SNOWDROPS.
24 Winter ACONITES.

Packing and Carriage Free.

CARTER'S AUTUMN CATALOGUE

OF DUTCH BULBS, FRUIT TREES, ROSES, &c.,

Is now ready, and may be had Gratis and Post Free on application.

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

Roses—New Varieties for 1871-72.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, &c., 3, Rue Dunois, Paris, has the honour to inform his clients and friends that he will be ready to send out in November next, on the most advantageous terms, all the NEW VARIETIES of ROSES for 1871-72; also those of 1869, 1870, and 1871.

Descriptive CATALOGUE of above can be obtained direct from E. V., or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Gladioli, Gladioli.—To the Trade.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, 3, Rue Dunois, Paris, offers to his Friends a considerable stock of fine BULBS of his unrivalled collection of above; also the following New Varieties (the whole for £2 16*s.*):—Alcyone (Souchet), Antigone (S.), Antiope (S.), Ariane (S.), Arsinöe (S.), Beatrix (S.), Celimène (S.), Didon (S.), Jupiter (S.), Minerve (S.), Ossian (S.), Phœbus (S.), Virginalis (S.).

CATALOGUES, with description, will be obtainable about September 25, by addressing direct to E. V., fils ainé; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, E.C.

Gladioli, Amaryllis, New Roses, Pæonies, Iris, LILIUMS, PHLOX, &c.

EUGENE VERDIER, FILS AINE, trusts that his Clients and Friends will again favour him with their orders, which he assures them will be executed in a manner that will give entire satisfaction.

CATALOGUES will be obtainable direct from him about Sept. 25; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

EUGENE VERDIER, FILS AINE, Horticulteur, 3, Rue Dunois, Paris.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Roses, Pæonies, &c.

CHARLES VERDIER, FILS, NURSERYMAN, 12, Rue Duméril, Paris, begs to announce that his CATALOGUE of NEW ROSES, PÆONIES, &c., is now in the press, and will be ready for distribution early in October.

Apply to the London Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, E.C., who will send it post free directly it appears.

Gladioli.

CHARLES VERDIER, FILS (ex-Partner in and Successor to the late Firm of Victor Verdier, Père, and Charles Verdier, Fils), 12, Rue Duméril, Paris, has just published his CATALOGUE of GLADIOLI, containing all the novelties of the season.

It can be had post free on application to his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London

Camellias, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine plants of CAMELLIAS, without flower bud, best varieties, 1½ to 2 feet high, bushy plants, at £6 per 100.

Fine plants of PANDANUS UTILIS, for table decoration, 15*s.* per dozen; ditto, smaller, 12*s.* per dozen.

CHAMÆROPS FORTUNEI, young plants, with three to four leaves, 42*s.* per 100; ditto, formed plants, 30*s.* per dozen.

CORYPHA AUSTRALIS, nice young plants, 63*s.* per 100.

INDIAN AZALEAS, choice varieties, £5 to £6 per 100.

CAMELLIAS, with flower bud, £7 to £8 per 100; ditto small, £6 per 100.

ARAUCARIA IMBRICATA, in small and store pots, 30*s.* per 100.

FOR SALE, or in EXCHANGE for small plants of EPACRIS, AZALEAS, &c., a few specimen STOVE ORNAMENTAL FOLIAGE PLANTS, consisting of Croton variegatum, 5 feet high, a fine pyramid, beautifully coloured; Alocasia metallica, 4 feet through; Alocasia macrorhiza variegata; Maranta zebrina, 3 feet; Aspidistra lurida variegata; Cissus discolor, 4 feet by 3 feet; Rhynchospermum variegata, 5 feet by 4, pyramid; Allamanda Schottii, a fine plant, &c.—Apply to
The GARDENER, Mark Hall, Harlow, Essex.

"The Best Catalogue."—*Vide "Horticulturist," October*, 1870.

GRATIS and POST FREE, a CATALOGUE of

DUTCH BULBS,

Fruit Trees, Dried Flowers, and General Autumn Requirements.

DICK RADCLYFFE & CO.,
SEEDSMEN, HORTICULTURAL DECORATORS, and GARDEN FURNISHERS,
129, HIGH HOLBORN, W.C.
SEED GROUNDS, ERFURT, PRUSSIA.

PAUL'S HYACINTHS, TULIPS, &c.

"MR. WM. PAUL * * * * well maintained the high reputation he enjoys for the successful cultivation of this class of flowers."—*Journal of Horticulture*, 1871.

"A remarkably fine display of Hyacinths."—*Gardeners' Chronicle.*

WILLIAM PAUL

BEGS TO ANNOUNCE THAT HIS

HYACINTHS, TULIPS, CROCUSES, and other DUTCH FLOWER ROOTS

Have arrived in excellent condition, and he respectfully solicits early Orders.

PRICED DESCRIPTIVE CATALOGUE Free by Post.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR ANNUAL SUPPLY OF

HYACINTHS, AND OTHER BULBOUS ROOTS FROM HOLLAND,

And are pleased to say that they are in splendid condition.

J. V. & SONS were awarded the following Prizes at the London Exhibitions last spring—viz.,

First Prize for 18 Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First Prize for 18 White Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
First Prize for 12 pots Tulips, in 6 varieties, Royal Horticultural Society, March 15, 1871.
Second Prize for 6 New Hyacinths, distinct sorts, Royal Horticultural Society, March 15, 1871.
Extra Prize for Group of Hyacinths and Tulips, Royal Horticultural Society, March 15, 1871.
First Prize for 12 Hyacinths, distinct varieties, Royal Botanic Society, March 22, 1871.
First Prize for 12 pots Tulips, distinct varieties, Royal Botanic Society, March 22, 1871.
Extra Prize for Collection of Hyacinths, Royal Botanic Society, March 22, 1871.

JAMES VEITCH AND SONS also supplied to the Commissioners of Her Majesty's Works the TULIPS, HYACINTHS, and CROCUSES which made such a grand display last Spring in Hyde Park.

CATALOGUES are now ready, and will be forwarded Post Free on application.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

Orchids.

JAMES BROOKE AND CO. beg to invite attention to their splendid stock of ORCHIDS, adapted for supplying a regular succession of the most exquisite cut flowers. The singular beauty, and the long continuance of cut Orchid blooms, recommend them as better suited than any others for high-class ornamental purposes, including use by ladies; and there is no reason why a skilful gardener should not have abundance of them almost always at command, and with little more trouble than is required for select Dutch Bulbs.

Messrs. BROOKE AND CO.'s stock includes all the best sorts for cutting, the Bulbs are well matured, and they are certain to yield plenty of blossom.

16 and 18, Victoria Street, Manchester. Nurseries: Fairfield, near Manchester

Three First Prizes, and One Second (Gold, Silver-gilt,

And SILVER MEDALS), for APPLES and PEARS, at the INTERNATIONAL HORTICULTURAL EXHIBITION at SOUTH KENSINGTON, OCTOBER 4, 1871.

MESSRS. BALTET FRERES, NURSERYMEN, Troyes, France, have the honour to offer to the notice of the Public a large quantity of FRUIT TREES and ORNAMENTAL TREES, of all descriptions, of first-rate quality, and at moderate prices

FRUIT TREES.—Young Trees and Trained Trees. Selected collection of the best fruits for table or kitchen use, and suitable for the climate of Great Britain.

ORNAMENTAL TREES and SHRUBS for AVENUES and PARKS.

ROSES.—Selection of the best Hybrid Perpetual and other kinds.

Young FOREST TREES and FRUIT TREES, &c.

Every plant accurately named, and carefully labelled.

CATALOGUES free, on application

D. S. THOMSON offers the following well grown NURSERY STOCK, in quantity:—

CEERUS DEODARA, 1½ to 2 feet, 2½ to 3½ feet high; WELLINGTONIA GIGANTEA, 1½ and 2½ feet; THUJOPSIS BOREALIS, 1½ to 2 feet, 2½ to 3 feet; THUJA GIGANTEA, 2½ to 3 feet; Double FURZE in 60 pots by the 100. GRAPE VINES for planting and fruiting, best varieties; with a general collection of Stock. Price on application.

The Nursery, Wimbledon, Surrey, S.W.

Rhododendron and Periskia Stocks, and Epiphyllums.

SEEDLING RHODODENDRONS, from the best named varieties:—

2 to 4 inches high, twice transplanted, fine well-rooted plants.
4 to 6 inches high, twice transplanted, fine well-rooted plants.
6 to 9 inches high, thrice transplanted, fine well-rooted plants.
10 to 12 inches high, four times transplanted, fine well-rooted plants, fit for grafting.
PERISKIA, Stocks, strong.
EPIPHYLLUMS, in variety, good.

Prices on application to B. WHITHAM, The Nurseries, Reddish, near Stockport.

Fort Prospect Nursery, Limerick.

WM. ABRAHAM offers for cash, with order:—

LAURELS, 2-yr., 20s per 1000; 3 to 4 feet, 10s; 4 to 6 feet, 15s per 100
LAURUSTINUS, 2 yr., 25s.; 3-yr., 30s. per 1000.
" Transplanted, bushy, 1½ to 2 feet, 15s. per 100.
" Black-leaved, 1½ to 2 feet, 15s per 100.
ARBOR-VITÆ, American, 3 to 4 feet, 15s.; 4 to 6 feet, 20s. per 100.
BOX, variegated, 3 to 3½ feet, 25s per 100.
AUCUBA JAPONICA, 1½ to 2 feet, 40s. per 100.

Through rates, to Liverpool, 30s.; to London, 40s. and 47s. 6d. per ton.

Special Offer to the Trade.

J. MALLER, having a large Surplus Stock of the following really handsome, well-grown, effective, WINTER-BLOOMING PLANTS, offers them at low prices for cash, delivered in London:—

Poinsettia pulcherrima
Solanum capsicastrum, full of berries
Ficus elastica
Epiphyllums, in variety
Erica gracilis
Erica hyemalis, well set with bloom
Bouvardia longiflora alba
Dracænas, in variety
Statice macrophylla, variety
Double White Primula

Prices per dozen or hundred, to be had on application. An inspection respectfully invited.

Brunswick Nursery, Lower Tottenham, N. Ten minutes' walk from Park Station, Great Eastern Railway.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

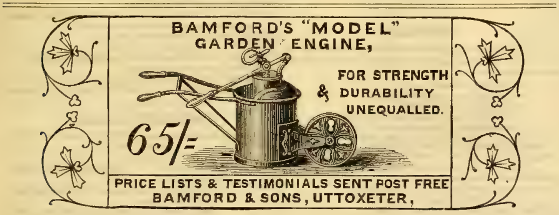
Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.


BAMFORD'S "MODEL" GARDEN ENGINE,
FOR STRENGTH & DURABILITY UNEQUALLED.
65/=
PRICE LISTS & TESTIMONIALS SENT POST FREE
BAMFORD & SONS, UTTOXETER,

THE STEAM-ENGINE TRIALS

OF THE

ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz.:—
First Prize for Horizontal Fixed Engine of 10 H.P.; First Prize for Steam Engine, with Boiler combined.

At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N.B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.

GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN;
78, LOMBARD STREET, LONDON, E.C.; and TARLETON STREET, LIVERPOOL.

DWARF SHRUBS, &c., for FLOWER BEDS During Winter.

PERNETTYA MUCRONATA.
IVY, of sorts
LEDUM BUXIFOLIUM.
ERICAS and CALLUNAS, of sorts.
PERIWINKLE, variegated and plain.
COTONEASTER MICROPHYLLA.
MENZIESIA POLIFOLIA, purple and white.
BERBERIS AQUIFOLIUM.
VACCINIUM BUXIFLORUM, &c.
GAULTHERIA SHALLON.
ARCTOSTAPHYLOS UVA URSI.
ANDROMEDA FLORIBUNDA.
RHODODENDRON FERRUGINEUM and HIRSUTUM.
JUNIPERUS SABINA VARIEGATA.
JUNIPERUS SABINA TAMARISCIFOLIA, &c.

Many beautiful effects produced by tasteful arrangements of the above Plants, by which flower beds are made very attractive during the winter months. Priced LISTS on application.

LITTLE AND BALLANTYNE, Seedsmen and Nurserymen, Carlisle.

New Bedding Plant, Thymus citriodorus aureus

MARGINATUS (Lemon-scented gold-edged Thyme).

MESSRS. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield, are now sending out the above. For Description and Price see former advertisements. The undermentioned have already been supplied:—

Messrs.	Paul & Son	Cheshunt, Herts.
"	J. & C. Lee	Hammersmith.
"	E. Cole & Son	Manchester.
"	P. Lawson & Son	Edinburgh.
"	Backhouse & Son	York.
"	Jas. Veitch & Son	Chelsea, London, S.W.
"	Garraway & Co.	Bristol.
"	Downie, Laird & Laing	Forest Hill, London, S.E.
"	J. Stewart & Sons	Dundee.
"	B. Reid & Co.	Aberdeen.
"	Carter, Dunnett & Beale	London.
"	R. Brown & Son	Stamford.
Mr.	E. Cooling	Derby.
"	R. Parker	Tooting, Surrey.
"	J. Barrett	Bury St. Edmund's.
"	John Fraser	Lea Bridge, Leyton, Essex.
"	H. Cannell	Woolwich.
"	Thornton	Bagshot.
"	William Paul	Waltham Cross.
"	John Shaw	Manchester.
"	W. Cunningham	The Forge, Burton-on-Trent.
"	E. Holmes	Whittington, Lichfield.
"	James Smith	Darley Dale, Matlock.
"	W. Knight	Hailsham, Sussex.
"	Henry Bent	Flixton, near Manchester.
"	J. J. Chater	Cambridge.
"	Thomas Plaxton	Bridlington.
"	William Bull	Chelsea, London, S.W.
"	B. S. Williams	Holloway, London, N.
"	W. Wilson	Bridlington.
"	A. Swanson	Barton-on-Humber.
"	Osborne	Bridlington.
"	J. A. Wright	Hendon Park, London, N.W.
"	T. Clarke	Settle.

TWENTY THOUSAND STANDARD and HALF-STANDARD ROSES, in leading and well-known varieties.
STANDARDS, 60s to 80s. per 100.
HALF-STANDARDS, 40s. to 50s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

10,000 STANDARD and PYRAMID APPLES, in the best varieties for dessert or table, from 50s. to 75s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

50,000 COMMON LAURELS, good bushy plants, 2 to 3 feet, 10s. per 100, or 80s. per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

60,000 PORTUGAL LAURELS.
1-yr. Seedlings, 6s. per 1000.
2-yr. Seedlings, 8s. per 1000.
3-yr. Seedlings, 15s. per 1000.
Transplanted, 12 to 18 inches, bushy, 12s. 6d. per 100.
Transplanted, 18 to 24 inches, bushy, 25s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

5,000 CEDRUS DEODARA, 1-yr., 2 to 4 inches, £9 per 1000, 20s. per 100.
7,000 CEDRUS DEODARA, 1-yr., 4 to 6 inches, £12 10s. per 1000, 30s. per 100.
4,000 CEDRUS DEODARA, 2-yr., twice transplanted, 9 to 12 in., 42s to 50s per 100
3,000 CEDRUS DEODARA, 2-yr., twice transplanted, 15 to 18 inches, 75s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

4,000,000 1-yr. seedling ASH, 1s. per 1000; £4 10s. per 100,000.
2,000,000 1-yr. seedling SPANISH CHESTNUTS, 6s per 1000; £25 per 100,000.
1,000,000 2-yr. seedling QUICK, 2s. 6d. per 100; £10 per 100,000.
50,000 2-yr. seedling OAKS, in drills, ½ to 2½, 10s. per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

100,000 Transplanted ALDERS, 2 to 3 feet, 15s. per 1000.
200,000 Transplanted ASH, 1 to 2 and 2 to 3 feet, 15s. to 25s. per 1000.
50,000 Transplanted BEECH, 1½ to 2 feet, 21s. per 1000.
40,000 Transplanted BEECH, 2 to 3 feet, 25s. per 1000.
100,000 Transplanted SCOTCH FIRS, good, 2 to 3 ft., 25s. per 1000.
60,000 Transplanted HAZEL, 1 to 2 feet, 12s. 6d. per 1000.
50,000 Transplanted HAZEL, 2 to 3 feet, 21s. per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

1,000 ABIES MENZIESII, 5 to 7 feet, £5 per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

10,000 AUCUBA JAPONICA, 12 to 18 inches, 21s. per 100.
15,000 AUCUBA seedlings, from named kinds, 30s. to 75s. per 100.
5,000 AUCUBA, new varieties, from 80s. to 100s. per 100.
AUCUBA, new varieties, in large plants, 18s. to 36s. per doz.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

CRYPTOMERIA ELEGANS, 6 to 9 inches, 21s. per 100.
" " 9 to 12 inches, 50s per 100.
" " 2½ to 3 feet, 24s. to 30s. per dozen.
THUJA LOBBII, 9 to 12 inches, 16s. per 100.
" " 3, 4, 5, and 6 feet, 50s. to 100s. per 100.
" WEAREANA, 1½ to 2 feet, 12s. 6d. per 100.
" " 3 to 4 feet, 50s. per 100.
THUJOPSIS DOLABRATA, 6 to 9 inches, 50s. per 100.
" " 9 to 12 inches, 75s and 100s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

A large stock of Hardy JAPANESE CONIFERÆ and EVERGREENS, at low prices.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

ARBUTUS, grafted, in five sorts, 12s to 24s. per dozen.
ARUNDO CONSPICUA, in pots, 12s. to 25s. per 100
HYDRANGEA OTAXA, the largest flowering Hydrangea known, 50s. to 100s per 100.
HYDRANGEA PANICULATA GRANDIFLORA, a most beautiful deciduous hardy shrub, 9s. per dozen
And a large and varied stock of New Hardy Plants.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

A fine lot of CLEMATIS, PASSIFLORA, IVIES of sorts, and other Climbers, from 50s., 75s. to 100s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

10,000 RHODODENDRON PONTICUM, 1 to 2 feet, 21s. to 30s. per 100.
" " " larger sizes, 50s. to 100s. per 100.
" " " choice named, from £5 to £10 per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

An Inspection of the Stock is respectfully invited.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

PLANTING SEASON.

ANTHONY WATERER

INVITES THE ATTENTION OF INTENDING PLANTERS TO

THE FOLLOWING SUMMARY OF HIS STOCK,

WHICH MAY BE SEEN GROWING IN HIS

NURSERY, at KNAP HILL, near WOKING, SURREY.

The Plants referred to are in the very best state for removal, every one, without exception, having been recently transplanted. Purchasers will find at Knap Hill the most extensive and varied assortment of EVERGREENS and ORNAMENTAL TREES of large size to be met with in any Nursery in the kingdom, the safe removal of which, if they are properly treated, is guaranteed. The advantage of from 20 to 30 years' growth may thus be secured at once, by selecting plants of the bulk and quality here referred to. An inspection of the Stock, which is earnestly solicited, will show that there is no exaggeration in these statements; and A. W. pledges himself that any one favouring him with a visit will find that both Plants and Prices will compare favourably with those of any other house of standing. The Railways now offer such facilities that goods can be sent from Woking Station to almost any other station in England or Scotland, without the expense of packing, and at through rates. Plants will be delivered in our own waggons within a radius of 30 miles of the Nursery, by agreement.

AMERICAN PLANTS.

American Plants are a most important feature at Knap Hill, upwards of 60 acres being devoted exclusively to their cultivation; there are borders miles in length, the plants being of all sizes from 2 feet to 8 or 10 feet high, and it is believed that the stock of Rhododendrons and American Plants generally, in the Knap Hill Nursery, far exceeds anything of its kind to be found elsewhere.

RHODODENDRONS.

The Rhododendrons will be supplied in quantities at the following rates. The plants, are, many of them, raised from layers, and are as sturdy, healthy and bushy as can be desired.

The ordinary PONTICUM, for game preserves, at £10 to £15 per 1000.

Varieties, for mixing, comprising white, pink, spotted, and other colours, from 50*s.* to 63*s.* per 100 and upwards.

Good named varieties, of all the most brilliant colours, from £5 to £10 per 100.

The best HARDY RHODODENDRONS known to A W. will be supplied at from £15 to £20 per 100; 42*s.* to 60*s.* per dozen.

STANDARD RHODODENDRONS.

At Knap Hill will be found the largest number of the finest specimens to be met with in England. The large Standard Rhododendrons planted in Rotten Row during the last few years, were, with few exceptions, all from Knap Hill, where there are many still finer plants remaining. Ordinary sized Standard Rhododendrons will be met with in large numbers, and at fair prices.

HARDY AZALEAS.

HARDY AZALEAS, ordinary kinds, of mixed colours, at 50*s.* to 100*s.* per 100.

AZALEAS, all the finest varieties, at from 18*s.* to 30*s.* per dozen, and upwards.

Large and most magnificent AZALEAS, from 3 feet to 6 or 8 feet high, are grown at Knap Hill in great numbers.

KALMIA LATIFOLIA, good plants at £5 per 100; larger, 18*s.* to 42*s.* per dozen. Some very large specimens, 5 feet to 7 feet high.

HARDY HEATHS.—A selection of the finest and most popular kinds known, at from 30*s.* to 50*s.* per 100.

ANDROMEDAS, and all other AMERICAN PLANTS, will be found in large quantities.

The American Plants exhibited annually in the Royal Horticultural Gardens, South Kensington, are from ANTHONY WATERER.

HOLLIES.

Hollies alone occupy at Knap Hill many acres of land, and comprise thousands of Plants of all the finest variegated and green-leaved varieties, varying in height from 3 feet, to 5, 6, 8, 10, and 15 feet. These plants have been so constantly removed, that with fair play not one in a thousand would fail It is perfectly true to state, that the stock of Hollies in this Nursery is not approached by anything of the kind in Europe.

GREEN HOLLIES, common kind, 3, 4, 5, 6, 7, 8, 10 to 15 ft. high. The

Yellow-berried,
Laurifolia,
Myrtle-leaved,
Scotica,
Hodgins',
Shepherdii, &c.,

Are green-leaved Hollies, and are admittedly some of the most desirable and beautiful of Evergreens. A. W. has together thousands of these from 3 feet, to 5, 6, 8 and 12 feet high.

VARIEGATED HOLLIES, of the ordinary kinds, many thousands of splendid plants, from 3 feet, to 4, 5, 6 8, and 10 feet high.

WATERER'S HOLLY.—This handsomely marked variety originated at Knap Hill, and our plants of it are the admiration of all who see them. No adequate idea of their beauty can be formed without an inspection. There are hundreds grown as Pyramids, from 3 feet, to 4, 5, and 6 feet high, and measuring from 12 to 15 feet in circumference; also as Standards, with fine symmetrical heads.

GOLDEN QUEEN HOLLY.—Large numbers of magnificent plants, from 3 feet, to 5, 6, and 8 feet high; also beautiful Standards of this handsome variety.

SILVER QUEEN HOLLY.—An immense number, from 3 feet, to 4, 5, 6, and 8 feet high.

WEEPING HOLLIES.—Splendid specimens, with 10 feet and 12 feet stems, and magnificent weeping heads, from 15 feet to 30 feet in circumference, and covered with berries.

CONIFERS.

Conifers are extensively grown, and the Stock comprises many of the finest specimens to be met with in Nurseries. The following are especially referred to:—

PICEA NOBILIS, 4, 5, 6, to 10 feet high.
„ LASIOCARPA, 4, 5, to 10 feet high.
„ MAGNIFICA, 3 to 5 feet high.
„ NORDMANNIANA, 3 to 10 and 12 feet high.
„ PINSAPO, 3 to 4, 5, 8 and 10 feet high.

All have been constantly removed, and our stock of these together, comprises hundreds of very fine specimens.

ABIES DOUGLASII, 5 to 10, and 12 feet high.
„ ORIENTALIS, 3, 4, 5, to 10 feet high.
ARAUCARIAS, 4 feet to 8 or 10 feet high.
CEDRUS DEODARA, 8 feet to 12 and 14 feet high.
„ ATLANTICA, 8 feet to 10 feet high.
CEDAR of LEBANON, 8 feet to 10 feet high.
CUPRESSUS LAWSONIANA, 6, 8, 10, to 12 feet high.
CHINESE JUNIPER, 4, 5, 6, 8, to 12 feet high.
THUJA AUREA, 3, 4, 5, to 6 feet high, 12 to 15 ft. in circumference.
„ GIGANTEA, 6 feet to 10 feet high.
„ LOBBII, 6 feet to 10 feet high.
THUJOPSIS BOREALIS, 4 feet to 8 feet high.

CONIFERS.

WELLINGTONIA, up to 8 feet and 10 feet high, in splendid condition for removal.

COMMON YEWS, 4, 5, 6, 8, 10, to 15 feet high.

GOLDEN YEWS.—An immense number of all sizes up to 10 feet high, as Pyramids, Globes, and Standards, and we believe that our stock affords a choice of sizes and varieties not to be found in any other Nursery.

IRISH YEWS, up to 10 feet high.

ORNAMENTAL TREES for AVENUES, &c.

ANTHONY WATERER invites special attention to this part of his stock, as comprising a splendid lot of well-grown Trees adapted for Avenues or Groups in Parks and Plantations.

LIMES.

LIMES, by the thousand, 10 feet, 12 feet, to 15 feet high, and girting 4 inches to 6 inches in the stem at 4 feet from the ground. The stems are straight, and have well-balanced heads, and are splendidly rooted. It would be very difficult to match these anywhere.

ORIENTAL and OCCIDENTAL PLANES.—Splendid plants, 10 feet to 15 feet high, straight in the stem, with nice heads, and finely rooted, by the 100.

These Trees are similar to those planted along the Thames Embankment, all of which were supplied by ANTHONY WATERER.

COPPER and PURPLE BEECH.—Thousands, 5 feet to 6, 8, and 10 feet high; some fine specimens, 12 feet to 18 feet.
COMMON BEECH, 8 to 10 feet high.
SCARLET AMERICAN OAKS, 8 feet to 12 feet high.
SPANISH CHESTNUT, 10 feet high.
HORSE CHESTNUT, 10 feet and 12 feet high, girting 5 inches to 7 inches in the stem, at 4 feet from the ground.
SCARLET HORSE CHESTNUT, ditto ditto.
NORWAY MAPLE, 10 feet to 15 feet high.
VARIEGATED ASH-LEAVED MAPLE, 6 feet to 8 feet high.
SYCAMORE, 10 feet to 18 feet high.
PURPLE-LEAVED SYCAMORE, 8 feet to 10 feet high.
ELMS, 10 feet to 16 feet high. | WALNUTS, 10 feet high, fine trees.

WEEPING TREES,

Of a very ornamental character.—The following are particularly recommended:—

WEEPING SOPHORA JAPONICA.
„ ENGLISH OAK. | WEEPING TURKEY OAK.
„ BEECH, 10 feet to 15 feet high.
„ BIRCH, on 8 ft. and 10 ft. stems, with fine drooping heads.
„ LIMES, splendid trees.
„ ELMS, several kinds. | WEEPING ASH, several kinds.
„ DECIDUOUS CYPRESS, 8 feet to 15 feet high.
„ KILMARNOCK WILLOW.
„ AMERICAN WILLOW.
„ POPLAR, most beautiful.

All these and many others may be seen as handsome well-rooted specimens, and such as are rarely met with in Nurseries.

The **KNAP HILL NURSERY** extends over more than 200 acres of land, and contains an enormous supply of all ordinary EVERGREENS, such as AUCUBAS, BOX; LAURELS, both Common and Portugal; YEWS, PHILLYREAS, BERBERIS, &c.; and of Deciduous Flowering Shrubs, ROSES, FOREST and FRUIT TREES, &c. These will be found of various sizes, and are charged at a special rate to large purchasers.

ANTHONY WATERER'S CATALOGUE of AMERICAN PLANTS, ORNAMENTAL TREES, &c.,

Priced and Descriptive, and containing Illustrations from photographs of Waterer's and Golden Queen Hollies, as standards and pyramids; the Weeping Sophora, the Weeping Deciduous Cypress, the Weeping Beech, Standard Rhododendron, and Cupressus Lawsoniana erecta viridis; will be forwarded on application in return for 12 stamps, or the same Catalogue without the illustrations for 6 stamps. With reference to this Catalogue A. W. has the satisfaction to state, that he has received at least a hundred unsolicited testimonials of a highly complimentary character. Amongst others Mr. H. G. Bohn, whose knowledge of such matters gives authority to his opinions, writes as follows:—"I am delighted with your new Catalogue; it is a great advance upon all that has been done before." The *Gardeners' Chronicle* and other gardening publications have also made frequent allusion to it, as one of the best Catalogues ever issued. The Illustrations have been freely copied, both in this country and in America.

ANTHONY WATERER, KNAP HILL NURSERY, near WOKING, SURREY.

Dutch Flower Roots.

DOWNIE, LAIRD, AND LAING have now received their annual importations of FLOWER ROOTS, consisting of Hyacinths, Polyanthus, Narcissus, Double Narcissus, Crocus, Tulips, Jonquils, Ranunculus, Anemones, Snowdrops, &c., which have all been carefully selected from the most celebrated establishments in Holland.

The Bulbs this season are well ripened, unusually large, and very heavy, and have arrived in splendid condition.

Descriptive CATALOGUES forwarded post free.

Nurseries: Forest Hill, S.E.; and Edinburgh, N.B.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c., is now ready, and may be had gratis and post free on application.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

CROYDON. A. HENDERSON EAST SURREY SEED WAREHOUSE ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon

Established Upwards of a Century.

PRIZE MEDALS, 1851 and 1862.

BUTLER, McCULLOCH AND CO.'S usual Consignment of DUTCH and CAPE BULBS has arrived in excellent condition, and from which the following liberally assorted Collections are offered, carriage and package free:—

FOR CONSERVATORY DECORATION.

No. 1.	No 2.	No. 3.	No. 4.	No. 5.	No. 6.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.

FOR FLOWER GARDEN DECORATION.

No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£3.	£2.	£1 5s.	£1 1s.	10s. 6d.

For CONSERVATORY and FLOWER GARDEN DECORATION.

£5 5s.	£2 12s. 6d.	£2 2s.	£1 1s.	15s.	10s. 6d.

CATALOGUES, containing full details of these Collections, free and post paid.

BUTLER, McCULLOCH AND CO., Covent Garden Market, London, W.C.

Chrysanthemums.

ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6s. and 8s. per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

Brunswick Nursery, Stoke Newington, N.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALCEOLARIA; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1s. 6d. 2s. 6d., 3s. 6d., and 5s. per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester. Nurseries: Fairfield, near Manchester.

CHOICE TRICOLOR GERANIUMS.

Jetty Lacy
Coronet
Pre-eminent
Sunray
Mrs. Dunnett
Sir R Napier
Phœbus
Sunbeam
Miss Burdett Coutts
Italian Beauty
Mrs. John Clutton
Mabel Morris

The 12 for 21s., package included. Terms cash. Remittances requested from unknown Correspondents. A LIST of 250 varieties post free.

ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

New English Rose (Hybrid Perpetual Climbing),

PRINCESS LOUISE VICTORIA.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, the raiser of this Rose, will send it out for the first time in November next, good plants at 7s. 6d. each, or three for 21s. Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

Coloured Drawings will shortly be ready, for 12 stamps, post free.

Descriptive Priced CATALOGUES free on application.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS) beg to draw attention to their DUTCH BULBS, collections of which, amounting to 21s. and upwards, they forward carriage paid to any Railway Station in England and Wales. Their Descriptive CATALOGUE, containing Cultural Notes for the Guidance of the Amateur, sent post free on application.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), supply GARDEN REQUISITES of every description.

14, Tavistock Row, Covent Garden, London, W.C.

THE PINE-APPLE NURSERY COMPANY, Maida Vale, Edgware Road, St. John's Wood, W., beg most respectfully to announce that they have successfully secured Mr. JOHN BESTER, the well-known Horticulturist, who is now permanently engaged as MANAGER of the NURSERY and SEED DEPARTMENT.

The Company having the greatest confidence in their arrangements, pledge themselves to supply the best productions in every department, and to conduct the Business in a spirit of liberality, with a determination of giving satisfaction to their Customers. Applications to be addressed to

Mr. JOHN BESTER, Pine-Apple Nursery, Maida Vale, W.

DISSOLUTION of PARTNERSHIP.—Notice is hereby given, that the Partnership hitherto existing between the Undersigned has THIS DAY been DISSOLVED by MUTUAL CONSENT so far as regards THOMAS BUNYARD, Senior; and that in future the Business will be carried on (as before) at Maidstone and Ashford, under the name of THOMAS BUNYARD AND SONS, by THOMAS BUNYARD, Junior, and GEORGE BUNYARD, who will receive all Debts due to the Firm, and discharge all Liabilities against the concern.

THOMAS BUNYARD, Senior.
THOMAS BUNYARD, Junior.
GEORGE BUNYARD.

The Old Established Nurseries, Maidstone.
The Rose Nurseries, Ashford.

October 2, 1871.

N.B. TRADE CATALOGUE now ready.

SUTTONS'

FRESH IMPORTED

DUTCH FLOWER ROOTS,

CARRIAGE FREE.

IMPORTANT TO PURCHASERS.

☞ Messrs. SUTTON & SONS *visit Holland every season, and personally select their* FLOWER ROOTS *from the best Growers. They are much superior to those usually sent into this country.*

The following Letter is similar to numerous others Messrs. SUTTON have received:—

From Mr. A. WIPF, *Gr. to* A. SHUTTLEWORTH, Esq., *Heighington Hall.*

July 3, 1871.—"The Bulbs procured from you last autumn gave the most complete satisfaction to my employer, and were admired by all visitors, in particular by some proprietors of extensive gardens, who could not suppress their disappointment and chagrin at having been at the expense and trouble to get Bulbs direct from Holland, which were nevertheless much inferior to your flowers."

SUTTONS'

COMPLETE COLLECTIONS

For WINTER, SPRING, SUMMER, and AUTUMN BLOOMING.

For Open Ground Winter and Spring Blooming.	For Pots and Glasses.
No. 1—£2 2s., carriage free	No. 4—£2 2s., carriage free
No. 2—£1 1s., carriage free	No. 5—£1 1s., carriage free
No. 3—10s. 6d.	No. 6—10s. 6d.

For Open Ground Summer and Autumn Blooming.

No. 7—£1 1s., carriage free | No. 8—10s. 6d.

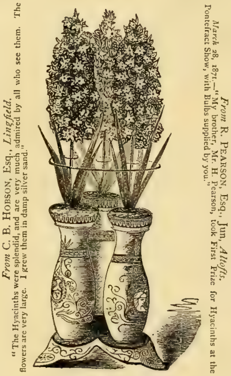
SUTTONS'

CHOICE EXHIBITION HYACINTHS.

Older varieties, best kinds, 6s., 9s., and 12s. per dozen Bulbs.

From C. B. HOBSON, Esq., *Lingfield.*

"The Hyacinths were splendid, and are very much admired by all who see them. The flowers are very large. I grew them in damp silver sand."



New varieties, specially selected for Exhibition, 25 Bulbs for 40s., 12 Bulbs for 20s.

From R. PEARSON, Esq., Jun, *Altofts.*

March 28, 1871.—"My brother, Mr. H. Pearson, took First Prize for Hyacinths at the Pontefract Show, with Bulbs supplied by you."

SUTTONS'

COLLECTIONS OF HYACINTHS

100	HYACINTHS,	in 100 sorts, carriage free	£4	4	0
100	,,	in 50 sorts, carriage free	3	10	0
50	,,	in 50 sorts, carriage free	2	2	0
50	,,	in 25 sorts, carriage free	1	15	0
25	,,	in 25 sorts, carriage free	1	1	0
12	,,	in 12 sorts, extra ..	0	12	0
12	,,	in 12 sorts, choice ..	0	9	0
12	,,	in 12 sorts, good ..	0	6	0

HYACINTHS for Beds, Open Borders, Massing, Ribbon Gardening, &c., 3s. and 4s. per dozen; 21s. and 30s. per 100, carriage free.

For further particulars of Flower Roots and complete Cultural Instructions, see

Suttons' Autumn Catalogue for 1871

Profusely Illustrated. Price 1s. Gratis to Customers.

SUTTONS' SELECT LIST OF BULBS

Is now ready, and may be had Gratis and Post Free on application.

SUTTON AND SONS,

SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN, and H.R.H. THE PRINCE OF WALES,

READING.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

SHOW of FRUIT, FUNGI, &c., OCTOBER 4, 1871.

AWARDS of the JUDGES.

CLASS 1.—Collections of EDIBLE and POISONOUS FUNGI, arranged separately.

(PRIZES OFFERED by W. WILSON SAUNDERS, Esq., F.R.S.)

1st, Messrs. Hoyle & Austin, Reading, £5.

CLASS 2.—Collection of EDIBLE FUNGI. (Open.)

1st, Messrs. Hoyle & Austin, £3.

CLASS 3.—6 EDIBLE FUNGI, cultivated, distinct. (Open.)

CLASS 4.—BLACK GRAPES, Collection of. (Open.)

1st, Mr. T. Bannerman, Gr. to Lord Bagot, Blithfield Hall, Rugeley, Stafford, £3.
2d, Messrs. H. Lane and Son, The Nurseries, Great Berkhampstead, Herts, £2
Extra, Mr. J. Meredith, The Vineyard, Garston, near Liverpool.

CLASS 5.—WHITE GRAPES, Collection of. (Open.)

1st, Messrs H. Lane & Son, £3.
2d, Mr. J. Meredith, £2.
Extra, Mr. E. Morris, Gr. to H. T. Salmon, Esq., Gayton House, near Northampton.

CLASS 6.—BLACK GRAPES, Single Bunch. (Open.)

1st, Mr. E. Clarke, Gr. to J. C. Brown, Esq., Holmbush, Horsham, Sussex, 15s.
2d, Mr. P. F. Le Sueur, Meadow Vale House, Grands Vause, Jersey, 10s.
Extra, Mr. W. Lynn, Gr. to Lord Boston, Hedsor, Maidenhead.

CLASS 7.—WHITE GRAPES, Single Bunch. (Open.)

1st, Messrs. H. Lane & Son, 15s.
2d, Mr. E. Morris, 10s. | Extra, Mr. P. F. Le Sueur.

CLASS 8.—COLLECTION of AMERICAN POTATOS, 6 varieties.

(PRIZES OFFERED by MESSRS. JAMES CARTER AND CO.)

1st, Mr. C. Frisby, Gr. to H. Chaplin, Esq., Blankney Hall, Sleaford, Lincoln, £2 2s.
2d, Mr. J. Garland, Killerton, Exeter, £1 1s.

MISCELLANEOUS—EXTRA PRIZES.

Mr. W. Bull, Nurseryman, &c., King's Road, Chelsea, Collection of Plants.
Mr. W. Paul, Paul's Nurseries, Waltham Cross, Collection of Tea Roses in pots.
Mr. B. S. Williams, Nurseryman, &c., Upper Holloway, Collection of Plants.
Messrs. J. Standish & Co., Royal Nursery, Ascot, Group of Plants.

INTERNATIONAL FRUIT SHOW.

CLASS 1.—The most complete COLLECTION of APPLES, 3 Fruits of each variety.

1st, Mr. William Paul, Paul's Nurseries, Waltham Cross, Gold Medal.
2d, Messrs. Baltet Frères, Horticulteurs, Faubourg Croncels 14, Troyes, France, Silver Gilt Medal.
Extra, Mr. C. Chaff, Wallington, Carshalton, Surrey.

CLASS 2.—COLLECTION of DESSERT APPLES, 3 Fruits of each variety.

1st, Mr. C. Chaff, Silver Gilt Medal.
2d, Mr. R. Webb, Culham House, Calcot, Reading, Large Silver Medal.

CLASS 3.—Collection of CULINARY APPLES, 3 Fruits of each variety.

1st, Mr. S. Ford, Gr. to W. E. Hubbard, Esq., Leonardslee, Horsham, Sussex, Silver Gilt Medal.
2d, Mr. C. Chaff, Large Silver Medal.

CLASS 4.—The most Complete Collection of PEARS, 3 Fruits of each variety.

1st, Messrs. Baltet Frères, Troyes, France, Gold Medal.
2d, Mr. C. Chaff, Silver Gilt Medal.
Extra, Mr. E. Spivey, The Gardens, Hallingbury Place, Bishop Stortford, Essex.

CLASS 5.—Collection of DESSERT PEARS, 3 Fruits of each variety.

1st, Messrs. Baltet Frères, Troyes, France, Silver Gilt Medal.
2d, Mr. A. Moffat, Gr. to H. Allsopp, Esq., Handlip Hall, Worcester, Large Silver Medal.

CLASS 6.—Collection of KITCHEN PEARS, 3 Fruits of each variety

1st, Messrs. Baltet Frères, Troyes, Large Silver Medal.
2d, Mr. W. Earley, The Gardens, Valentines, Ilford, Essex, Bronze Medal.

CLASS 7.—Collection of GRAPES, 2 Bunches of each variety.

1st, Messrs. H. Lane & Son, Gold Medal.
2d, Mr. J. Meredith, Silver Gilt Medal.

CLASS 8.—The LARGEST BUNCH of GRAPES.

1st, Mr. T. Bannerman, Silver Medal
2d, Mr. P. F. Le Sueur, Bronze Medal.

CLASS 9.—COLLECTION of ORANGES, LEMONS, CITRONS, LIMES, &c.

CLASS 10.—MISCELLANEOUS FRUIT, not mentioned in either of the above.—Extra Prizes.

Mr. W. G. Pragnell, Castle Gardens, Sherborne, Dorset, Collection of Fruit.
Mr. W. Jones, Gr. to Earl Vane, Wynyard Park, County Durham, 1 Queen Pine-apple.
Mr. G. T. Miles, Gr. to Lord Carrington, Wycombe Abbey, Bucks, 1 Smooth Cayenne Pine-apple.
Mr. T. Jack, Gr. to the Duke of Cleveland, Battle Abbey, Sussex, 8 dishes of Peaches.
Mr. A. Moffat, 3 Melons.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Professor REICHENBACH, of Hamburgh
Dr. MOORE, of Glasnevin
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES McNAB, of Edinburgh.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, OCTOBER 7, 1871.

IT must be a source of well-earned gratification to the managers of the EXHIBITION just closed to find that their labours have been so thoroughly appreciated. We say *the* Exhibition, because no one but the printers ever thought of giving it its full title, and, whatever other exhibitions there may have been in London this season, and they have not been few, the London International Exhibition of 1871 has, in people's minds, taken precedence of all others. Ushered in gloomily, amid devastating war, with little or none of the *prestige* attaching to former exhibitions of a like kind, encased in brick boxes of irredeemable ugliness, it has literally won its way on its own merits, and few could have ventured with any confidence to predict so genuine a success. When the stranger entered the Albert Hall, he too often made the circuit of its gloomy corridors for some considerable time before he could find his way either into the Hall itself or into the Exhibition galleries proper. Once in the Hall, we imagine none but the most inveterate grumbler, and the most sluggish of perception, could experience at the first glance anything but a feeling of astonishment and bewilderment, speedily to be followed by a sense of unqualified admiration at the boldness and elegance of the lines and proportions of the building. Emerging from this, which we have before called "Scott's triumph," the visitor experienced in many cases considerable difficulty in finding the Exhibition. It was hard to believe that the oddly shaped and disconnected rooms, the floors of which were on different levels, and which were crammed with a miscellaneous assortment of everything, from dolls' houses to theodolites—dark passages lined with maps, and curved corridors filled with strips of cloth of colours manifold enough to have clothed some thousands of little Josephs—really formed part of the Exhibition. It seemed rather as if these were storerooms or places of lodgment for superfluous objects not required in the Exhibition itself. And when, after much ascending and descending of stairs and traversing of glazed corridors, the tired spectator found himself at length in one or other of the picture galleries, and after revelling in its many beauties, arrived at the opposite end of the gallery—then there were more stairs to be encountered, more dark passages, byeways, and tunnels to be traversed, and so the plan which looked so delightfully simple on paper was found to be terribly perplexing in practice. We allude to these matters now, in the hope that ere another season comes round some attempts may be made to obviate the defects we have mentioned, and if a general *coup d'œil* be not attainable, that at least an uninterrupted and sufficiently wide and important channel of communication between one department and another be somehow or another provided. Speaking in the interests of the general public, we should say that the arrangement by which visitors were allowed to avail themselves of the privilege of passing from the Exhibition galleries to the Royal Horticultural Society's garden, and *vice versâ*, were needlessly troublesome and provoking. The privilege of passing from the galleries to the balcony overlooking the gardens was very highly appreciated as a grateful relief by the visitor, and if that privilege can be extended another season so as to allow of a promenade in the garden itself with a little less trouble than was the case this time, we are convinced it will be better for all parties. To be sure the Fellows of the Horticultural Society would to some extent be deprived of their rights, but compensation may be looked for in the very substantial advantages which the Society seems likely to reap from its association with the Exhibition, and in the sundry advantages which the Commissioners would no doubt be prepared to give to the Fellows individually in exchange for the loss of some of their exclusive privileges.

We are disposed to think that the exhibition that has just been closed was, so far as it went, even more instructive than any of its predecessors—take the case of the pottery, so beautifully illustrated this year. Nearly every process of the potter's art, from the crushing of the flints to the shaping of the vase, was carried on under the eye of the spectator. The raw materials were shown, the process of manufacture, and lastly, the finished products, in infinite variety, and of all degrees of utility, beauty, or the reverse, were displayed. Who can doubt the educational value of an exhibition well carried out on such principles? We have alluded to this subject, because we think that the Horticultural Society, charged as it is with the horticultural department of the International Exhibitions, may well, in the coming season of preparation, organise for next year an exhibition of a similarly instructive character. Hitherto exhibitors have contented themselves with showing results—the public come and admire, and say how beautiful! but go away as wise as before. The great fruit show of Wednesday last was a case in point. Pears and Apples were shown by the hundreds, but with no attempt whatever at classification, beyond that of their use for table or kitchen use. The public saw the multitude of fine fruits, and were duly impressed, but they learnt nothing they did not know before. People in general have no conception of the amount of labour, skill, and knowledge required to put a Rose or a bunch of Grapes on the exhibition table. The vast majority even of the educated public have no definite ideas connected with the commonest gardening processes. They know that a garden must be dug, but they have only the vaguest notion why; and as to the question what parts of a garden should be dug and which not, they are in general quite ignorant. Grafting, pruning, training, hybridisation, selection, all these are things of which the general public knows little or nothing, but, as events have shown, it is quite willing to learn if the matter to be learnt be put before it in an attractive and easily accessible form. We would suggest then that, so far as is practicable and possible, the educational idea pervading other departments of the Exhibition be carried out also in the horticultural section.

Specimens showing the various modes of grafting and pruning, illustrations showing the many processes and stages in the life of a pot Rose or of a Peach tree, as treated of in the useful manuals of Paul and Bréhaut respectively, might be exhibited. Tools and implements of all kinds might be shown, and illustrations given where possible of the proper mode of using them. We throw these out merely as crude suggestions to be adopted and improved upon if it be thought desirable, and we speak of them now without reference to that more special work of the Society which we hope it will sooner or later take up in earnest—the education of the gardener and the improvement of his position. This is a large subject, not to be discussed at the fag end of an article, and it is one to which we shall hereafter allude. At any rate we hope the time is now rapidly advancing when the Society will rise to the level of its duties, and show that while flower shows, promenades, bands, and the like, may be important adjuncts, and be serviceable as sources of income, they are, after all, secondary to the main objects for which the Society was founded—the promotion of horticulture proper, and the education of the public in general, and of the gardeners in particular, in all branches of scientific and practical gardening.

The Fruit Show held at South Kensington on Wednesday last, and continued on the following day, was undoubtedly the finest display of the kind seen in London since the International Fruit Show of 1862, although the growers had but scanty notice that it would take place, notwithstanding also the generally unfavourable character of the season. The result has been such as to show that a good exhibition of fruit may always be reckoned upon at this, the natural season of the year for such a display, if only fair encouragement be afforded, as it should be, to those who are the producers of fruit. Exhibitions of fruit have been rather neglected and cut down of late years, at the only season when a good display can be made, while at the season when fruit is usually invited, at least in a collective sense, the article is so valuable that prizes of any possible amount fail to bring it together. We think there ought always to be an autumnal show of fruit, open for some considerable time, in order that all persons interested in it may have leisure to profit by the observations they may be able to make; and as at that season fruit, when necessary, could be returned without much trouble or expense, there should be no obstacle to its remaining on view for a week at the least.

Reverting to the present show, it must be gratifying to English cultivators to find that if the more sunny climes of Continental Europe enable our neighbours across the Channel to grow finer Pears than we can do, England has beaten the foreigner in Apples, while her Grapes are beyond all comparison superior to anything which has been hitherto brought here from the Continent. True, indeed, there was no foreign competition on this occasion, but even had there been, the splendid display made by Messrs. Lane was such that they would have had nothing whatever to fear. Their Muscats, to which we alluded last week, were simply magnificent, and fully bore out all we said in their praise; and doubtless, since there are many more examples of the various kinds remaining behind at Berkhampstead, some of the visitors to London may be tempted to go and see for themselves. The strange point is that, although drainage and heated borders are deemed essential to crack Grape growing, and no doubt are in a general way useful aids thereto, yet Messrs. Lane's Grapes are grown close to, and almost on a level with, perpetually running water, which must necessarily percolate amongst their roots, and keep them constantly damp. May not shanking and shrivelling, after all, be oftener the result of root-drought than root-damp? Messrs. Lane won in a canter the gold medal for the finest collection of Grapes, as well as the medals for the best collection of White Grapes, and the finest bunch of whites, the latter with one of the noblest and most perfect bunches of Muscat ever exhibited, the variety being, we believe, what is known as the Bowood Muscat. The largest bunch of Grapes was a Gros Guillaume from Mr. Bannerman, gr. to the Lord Bagot, of Blithfield Hall, Rugeley, a finely proportioned bunch, of 6 lb. weight, shown in excellent condition. There were some capital Grapes from Chiswick—especially of the Gros Guillaume variety, of the pleasant-eating stoneless Monukka, and of the Madresfield Court; the latter, it may be specially noted, having at Chiswick ripened perfectly beside Frankenthal, which was scarcely as ripe as itself, planted in one of Fountaine's houses, and grown entirely without artificial heat. Of the two thus grown, if there be any difference, the Madresfield Court is the most matured, and is of excellent flavour—better, as it appeared to us, than when grown with Muscats. The property of ripening in a cool house will greatly enhance the value of this novelty.

Of Pears, the collection shown by MM. Baltet was wonderful for its extent and beauty. The samples were good, especially in the group shown in the class for dessert Pears. MM. Baltet of course carried off the gold medal for Pears, but the gold medal for Apples fell to the lot of Mr. W. Paul, of Waltham Cross, who had a collection of about 170 varieties. Mr. Sidney Ford, of Leonard's Lee, Messrs. Lucombe, Pince & Co., of Exeter, and Mr. Gardiner, of Eatington Park, also showed capital Apples, the latter staging an extensive collection on the second day, for which space could not be found on the first day. We noticed amongst them the beautiful little Fairy Apple—so charming for desserts, as well as good Ribston Pippins, and in Mr. Ford's group were some remarkably well-kept French Crabs of the 1870 crop. Messrs. Wheeler & Sons' Brockworth Park Pear, which we figured (p. 1603, 1870), was shown, very large and fine, but not so much coloured as last year.

We have to thank Mr. Gardiner for an idea as to arrangement, which we think should be insisted on in all future exhibitions, and that is to classify the sorts exhibited in the case of all large collections. Glancing over Mr. Gardiner's Apples we found, for example, all the Russets set together, and, turning to other collections, we found them set down promiscuously. Now, the advantage for purposes of observation and compairson, in the case of the classified series, was so obvious, that we believe it only needs pointing out to be at once adopted in all future exhibitions.

—— The First Commissioner of Her Majesty's Works and Public Buildings intends to distribute this autumn among the working classes and the poor inhabitants of London the Surplus Bedding Plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew. If the clergy, school committees, and others interested will make application to the superintendents of the parks nearest to their respective parishes, or to the Director of the Royal Gardens, Kew, in the cases of persons residing in that neighbourhood, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

—— In the recently issued part of the "Transactions of the Botanical Society of Edinburgh," in a notice of an excursion to the Island of Arran, the profuse flowering of some fine Fuchsias is mentioned, and one, referred to as having a stem 22 inches in circumference, is stated in an editorial foot-note to be probably the original Fuchsia coccinea. It would seem likely, however, from some observations made by Mr. Tillery, in the current number of the "Florist and Pomologist," to be rather the Fuchsia Riccartoni, which is well known to cultivators as one of the hardiest kinds of Fuchsias, while F. coccinea is much less so. Mr. Tillery writes:—"Some 36 years ago I introduced the Fuchsia Riccartoni, then named the Port Famine Fuchsia, to the Island of Arran. On visiting the island a few years ago, I found it growing plentifully on the fishermen's cottages. On the south side of the island, where the thermometer in the severest winters seldom registers more than 10° or 12°

of frost, I found some of these Fuchsias with stems 3 inches in diameter, and forming little trees." This Fuchsia Riccartoni is a peculiarly sturdy kind, with broad short flowers, resembling those of F. globosa, and very different from the more slender F. coccinea, which, though superseded by the modern varieties, is still to be found now and then in old gardens. We ourselves met with it during the past summer in the neglected garden of an old farmhouse in the wilds of Surrey. There seems to be some misapprehension abroad as to the usurpation of the name Fuchsia coccinea by F. gracilis, which latter Dr. HOOKER refers back to F. magellanica. The original F. gracilis, which we well remember upwards of 40 years since, before the Fuchsia became a florists' flower, was a plant with pale green foliage, and in this respect unlike the gracilis of the present day, which is the virgata of gardens, and which might be the more readily mistaken for coccinea, inasmuch as its dark green leaves have a purplish tint, which gracilis itself did not possess.

—— The value of IPECACUANHA in the treatment of dysentery is known to be very great; and, in consequence of the partial failure, from various causes—such as the rashness and carelessness of collectors—of the supply from its native country (South America), its cultivation in India has been commenced. A difficulty, however, stood in the way, as it had not been possible to get perfect seed, so that its propagation was but slow. Mr. JAMES MCNAB, of the Edinburgh Botanic Gardens, however, discovered that by cutting the root under the ground surface, numerous new shoots could be got, and that the plant could be so propagated much more easily and plentifully. It has thus been possible to send out a number of healthy plants to India. Mr. MCNAB has also been endeavouring, with fair prospect of success, to get perfect seeds. There are now two varieties of the plant in the Botanic Gardens, one of which has been cultivated there for 40 years, and the other has just been procured from South America, through the kindness of Dr. GUNNING and Dr. CHRISTISON. It is expected, from the union of these two varieties, to get perfect seeds, and to be hoped that the result of this experiment may be as successful as that of the introduction of Cinchona.

—— We have lately met with another instance of VARIEGATION INDUCED by GRAFTING. This occurs in the nursery of Mr. W. PAUL, at Waltham Cross. The tree in the present case is the Chestnut, Castanea vesca. The variegated variety of the Chestnut had been grafted, standard high, on an ordinary green-leaved Chestnut stock; the graft took, but from some cause or other afterwards died off, and subsequently a young shoot with well-marked variegation on its leaves, broke out from near the base of the stem, and was growing in all apparent health when we saw it a few days ago. The variegation is of a creamy white colour, and margined similar to, but probably rather whiter than, that of the variegated Chestnut usually met with.

—— On Thursday evening, the 28th ult., a deputation from the two London establishments of Messrs. PETER LAWSON & SON waited upon Mr. CHARLES GARDENER SIMPSON, at his house, 110, Lilford Road, Stoke Newington, when Mr. SAMUEL MCDONALD, in the name of the *employés* of PETER LAWSON & SON, presented him with an elegant marble timepiece, on the occasion of his marriage, as a mark of their respect and esteem. Mr. SIMPSON is a native of Auchtermuchty, Fifeshire, N.B., and has long been connected with the phospho-guano department of Messrs. PETER LAWSON & SON, both in Edinburgh and London.

—— In a communication to the *Field*, on the subject of FEEDING SEA ANEMONES in AQUARIA, Lieut.-Col. STUART-WORTLEY ventures "to say very decidedly that all experienced persons who say sea anemones succeed well without food know nothing of the subject of keeping aquaria. All sea anemones kept without plenty of feeding dwindle away and become wretched objects; whereas, on the contrary, with good food, they will greatly increase in size and beauty. I have had so much experience in the keeping and management of aquaria that I could not let such an assertion go uncontradicted. There is no better food than the one you suggest—lean beef—and it is remarkable that a meat diet causes the brilliancy of colour in some species to increase, while a fish diet has the opposite effect. As to the ejecting of their food, all sea anemones reject by the mouth the remnants after digestion, but not till they have sucked all the goodness out of it. Large bell-shaped glasses with stands make very nice aquaria."

—— In the current number of the "Journal of Botany," Dr. SEEMANN, referring to PHYTOLACCA ICOSANDRA, states that "in Nicaragua this plant springs up on newly-cleared ground, and on the banks of the river San Juan it is called 'Calalu,' and eaten instead of Spinach. I saw the men bring quantities of it, especially the top parts of the plant, on board the steamers whenever they went on shore, and can endorse the opinion that 'Calalu' is an excellent pot-herb. If I remember rightly, P. icosandra is cultivated in the Vine-growing districts of Southern Germany on account of its black fruit, largely used for converting white wines into red."

—— During the week ending Sept. 30, the MAXIMUM TEMPERATURES of the AIR ranged from 65°.2 at Portsmouth to 52°.5 at Aberdeen and Greenock, with a mean for all English stations of 58°.9, and of all Scottish of 53°.8. The MINIMUM TEMPERATURES ranged from 41°.9 at Blackheath to 33° at Perth. The mean for England was 38°.4, and for Scotland 36°.2. The highest MEAN TEMPERATURE was recorded at Portsmouth, viz., 50°.9, and the lowest, 44°, at Edinburgh, the values decreasing very uniformly from south to north. The mean for the southern country was 47°.6, and for the northern, 44°.8. The RAINFALL during the week over England was very heavy, several stations recording over 3 inches as having fallen, and the mean fall for the whole country was as much as 2.97 inches, which is equivalent to nearly 300 tons per acre. In Scotland the rainfall was much lighter, the maximum fall being only 0.70 inch at Dundee, and the mean for the country being but 0.58 inch.

—— The DIFFERENT EFFECTS PRODUCED upon different persons BY THE SAME PLANT are very remarkable. This is especially noticeable in the Poison Oak of America (Rhus Toxicodendron), and its allies, R. venenata and R. radicans. KALM states that some dare not meddle with R. venenata whilst its wood is fresh, or venture to touch a hand which has handled it, or even expose themselves to the smoke of a fire made with the wood. He adds that the same person may be at one time proof against the poison and not at another. Dr. BROMFIELD, on the contrary, states that he has repeatedly tried experiments with all the above species, under various circumstances, but has failed to produce the slightest symptoms of poisoning in himself. He remarks that a friend of his was so susceptible to the poisonous influence of these plants that momentary contact, or a brush from a branch in passing through a thicket or getting over a fence, was sufficient to induce an irritative inflammation, which lasted for a week or ten days.

New Garden Plants.

EPIDENDRUM CRINIFERUM, *n. sp.*

Spathium spathis pluribus; caule subancipiti pleiophyllo; foliis lineari-ligulatis acutis; spathis pluribus apice obtusatis; floribus paucis subracemosis; ovariis longe pedicellatis; sepalis triangulis; tepalis linearibus apice subulatis; labelli laciniis lateralibus semiovatis retrorsis in crines retrorsos patulosve solutis; lacinia media porrecta lineari angustissima; calli gemini a lateribus compressis antrorsis in basi.

A very interesting species in the way of the Cuban Epidendrum rivulare, Lindl. (Wright, Cuba, 644!), that appears to be very distinct in its longer and narrower leaves, shorter bristles of the lip, and rhomboid apex at the middle part of the lip. The lateral sepals, too, are generally much more rounded and oblique. It is a very interesting fact that it nearly agrees as to colour. The flowers of Epidendrum rivulare are said to be a yellowish green, speckled with red. Our plant has the sepals and petals and column whitish outside, the former organs yellowish green inside with many cinnamon blotches and bars, making one think of the now well-known Odontoglossum odoratum, Lindl. The lip is totally white, without any such "fine specks" as were observed by Mr. C. Wright on Monte Verdean specimens of Epidendrum rivulare. The retrorse fringes are very peculiar. The scales are very unequal both in the garden plant and in wild specimens, while they are so very equal in the Wrightian species that Dr. Lindley placed his plant in the section Amphiglottum; but I prefer to place it in the section Spathium, for the above-mentioned reason. The plant was discovered in Costa Rica, and has just flowered with Messrs. Veitch. I may add that I compared it with the Lindleyan type of E. rivulare, and found it quite identical with my Cuban specimens. *H. G. Rchb. fil.*

THE NATURAL HISTORY OF A FLOWERING PLANT.

[The following remarks are taken from Professor Thiselton Dyer's sixth and last of his series of lectures on "The Natural History of a Flowering Plant," in the Theatre of the Royal College of Science, Dublin. The subject treated upon was "The Seedling."]

PUTTING aside details of structure of less consequence, the most important part of the ovule is a large cell, in the interior of which some of the protoplasm becomes detached in isolated portions, or corpuscles. The pollen-cell, as already explained, developes into a thread-like body, which gradually progresses downwards into the interior of the carpel, following the line or seam where the ovules are produced. Ultimately it comes in contact with an ovule, and at a part of one where the top of the large cell above mentioned is close to the surface. Some influence is in this way communicated to it, the result of which is that one of the corpuscles (very rarely more) gets a cell-wall formed about it, and, in fact, becomes itself a complete cell. It divides, and ultimately a mass of cells is formed, which gradually shapes itself into the form of the embryo plant. As it increases in size it soon fills up the small cavity in which it was produced; it obliterates this, and often all the original surrounding substance of the ovule itself as well. It may happen that there is an additional formation of cells about the embryo in which ultimately it is found embedded in the seed; this becomes a kind of reservoir of nutriment for the embryo plant. The older botanists, who were very fond of seeing analogies between plants and animals where there are often no real ones, compared it to the white of egg, which serves much the same purpose to the chick; both are, consequently, called albumen, but their chemical composition is by no means identical. The albumen of the seed is merely a mass of cells, which may contain starchy, fatty, or even incrusting woody matters. These all pass into a soluble state, and are used up in germination.

The embryo is often very minute, compared with the bulk of the albumen. It is especially noticeable in the Cocoa-nut, where a part of it is hollow, and contains a fluid—the so-called "milk." But many seeds contain nothing but the embryo plant, packed up in a small space till the time of germination. In this state—and it is the same, only more minute, in seeds having an albumen—it consists of a short stem, terminated by a bud, and bearing one or two leaves—cotyledons. The young plant requires no root, and, therefore, has none till it begins to emerge from the seed-coverings. The cotyledons are either elevated by the lengthening of the young stem above the ground when they perform the work of ordinary leaves, or remain below, doing the work of an albumen, and loaded at first with nutritious matters. In any case they are merely temporary organs. An extraordinary plant from Western Africa—Welwitschia—has the unique peculiarity of bearing no other leaves than its persistent cotyledons throughout its life. Usually, only a single embryo is developed from each ovule; only a single seedling is, therefore, produced from the mature ovule or seed. The Orange is, however, an exception, as anyone may see by sowing the pips for themselves. If one kind of plant is artificially supplied with the pollen of another, which must not differ to a degree greater than what is called specific, a cross, or hybrid, is produced. Care must be taken to prevent the presence of the proper pollen, as it has been found that this, in such a case, will overpower the effect of that which is foreign.

It is remarkable, however, that a few instances are known of the very converse of this—that individual plants of some cultivated Lobelias, for example, are more readily fertilised with the pollen of other species than with their own.

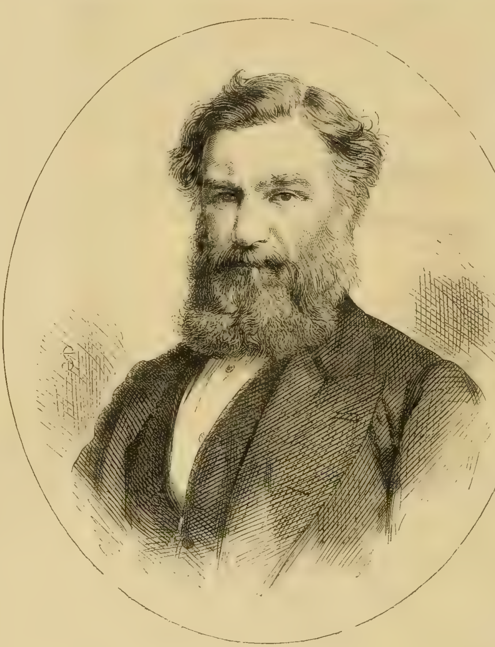
The majority of the seeds that hybrid plants produce will not germinate: this prevents the labours of insects from producing ultimately a complete blending together of every distinct kind of plant. There is no doubt, however, that this does happen with individual plants of the same species, and that small differences in this kind of way become obliterated. A great practical difficulty arises, in consequence, in growing crops of seed of garden varieties. With Turnips, for example, it is necessary to grow the seed crop of any one sort on some farm where no other kind is grown near; otherwise the seed would not come true. In Nature, no doubt, while small variations in plants tend to get obliterated from this cause, the blending of different races compensates by adding to the vigour of the progeny. Our cultivated plants have, no doubt, widely departed from their original natural form, to which, to a great extent, they tend to revert when they run wild. They do not, however, generally return to any form precisely identical with a wild one; some of their peculiarities have become fixed in fact, so as to be retained independently of the artificial conditions of cultivation. This makes it difficult to ascertain their precise origin with more than probability. Many fruit trees, Apples especially, revert almost immediately to a wilding state. Such plants are always propagated by grafting, and no attention has been paid to select those varieties with desirable peculiarities which come true to seed. This, of course, is essential in garden vegetables, and these, accordingly, provided they are not cross-fertilised, are remarkably permanent.

Many of our favourite garden flowers are the descendants of two or more species commingled together. The seedlings of such mixed strains often vary, as well as tend to revert to the type of their parents. Any desirable variations are promptly seized upon by a grower, who, producing the plant on a large scale, is more likely than any one else to meet with them. If they show signs of permanency they are cultivated. Particular shoots of plants, which are not of hybrid origin, will occasionally "sport away," as gardeners term it, from the true type, and such sports may be propagated by cuttings. Many varieties of rose are known to have originated in this way. Grafting is a method of implanting a portion of a plant upon the vigorous growing axis of another, so that the scion is saved the trouble of growing to a large size, and jumps into manhood at once. A portion of a seedling fruit-tree will bear much sooner if grafted than if left upon its own roots. This is not, however, the only effect of the stock; if hardy, it is found to communicate the same good effect to a tender scion. There are other cases which are more obscure, and have been attributed to a kind of hybridisation; the stock and scion are both affected, and react upon one another. Cytisus Adami is believed to have been produced by grafting the purple Cytisus upon the Laburnum; plants of it bear the flowers of both the parents, and a third kind which to some extent combines the two. There are cases also where the scion has been variegated, and has communicated the same peculiarity to the stock, and a case is even on record where a purple hue in the foliage has been communicated in the same way.

ROBERT HOGG, LL.D.

THE occurrence of the fruit show at South Kensington on Wednesday last, and a report of which will be found in another column, affords a fitting opportunity for laying before our readers the portrait of one whose name is intimately associated with British pomology. In his capacity as Pomological Director of the Royal Horticultural Society, and one of the three secretaries concerned with the Horticultural department of the International Exhibition, Dr. Hogg has had no slight share in bringing about the successful issue of this magnificent display of fruit.

To most horticulturists at all conversant with the doings of the Royal Horticultural Society, the main facts of Dr. Hogg's later career are tolerably well known. As one of the Editors of the "Journal of Horticulture," in conjunction with Mr. Johnson, the veteran historian of British gardening, as the author of a standard descriptive work on pomology ("The Fruit Manual"), and of numerous other serviceable publications, and from his connection with the Pomological Society, and after with the Royal Horticultural Society, and specially with its Fruit Committee, Dr. Hogg has been brought into contact more or less directly with the great body of British horticulturists, and we do not overstep the bounds of good taste, when we state that his sterling qualities of head and heart have secured for him the cordial esteem and good will of his fellow workers.



ROBERT HOGG, LL.D.

At an early age Dr. Hogg exhibited a taste for the study of natural science, and especially of botany. The love of these studies induced him first of all to direct his attention to the medical profession, but his short experience of the dissecting-room, and the prospective drudgery of the general practitioner, operated as a deterrent to any great progress in that direction; still, those branches of science which were not strictly medical continued to be the subjects which more immediately engrossed his attention, botany being always the means by which he hoped to attain distinction.

After pursuing his "humanities" at the University of Edinburgh, Dr. Hogg acquired a knowledge of practical horticulture at the establishment of Messrs. Lawson, of that city, and subsequently at that of Mr. Ronalds, of Brentford. Here the taste for pomology showed itself, and here, in particular, were the foundations laid of that interest in, and knowledge of, the subject which have since proved to be the most important features in Dr. Hogg's public career. The intercourse with Ronalds, at that time engaged in the publication of the magnificent "Pyrus Malus Brentfordiensis," gave the impetus to that study which may be said to have become the most absorbing pursuit of his future life.

After remaining for some time at Brentford, Dr. Hogg proceeded to France, stopping for a short time at Rouen, where the fruit garden was then under the management of the well-known Dubreuil, and which still remains a monument of that pomologist's skill and sagacity. From Rouen the subject of our notice made his way to Paris, where he completed his botanical studies under A. L. De Jussieu, Mirbel, and other celebrities of the Jardin des Plantes. Remaining in Paris for some time, he afterwards proceeded to Germany, and passed some time at Bonn. On his return to this country, finding that science held out but little encouragement in the shape of substantial reward, Dr. Hogg turned his attention more particularly to the more remunerative field of practical horticulture, on which he brought to bear that knowledge of botany and vegetable physiology which he had acquired during his pupilage. It was about this period that he became associated with the management of what, a century and a half previously, Evelyn had termed "that great undertaking of Brompton Park." This was an immense fruit tree nursery at Brompton, extending from Brompton Church to Gloucester Road, Kensington, on the one side, and from the Kensington Road to Brompton on the other, thus including the site of the present garden of the Royal Horticultural Society, at what has been called South Kensington only since great exhibitions and museums have given the district in question an amount of public interest of which Evelyn never dreamed.

This nursery was founded in 1681 by Lukar, Field, Cooke, and London; and it may interest many of our readers to know that Lukar was gardener to the Queen Dowager at Somerset House in the Strand; Field acted in the same capacity to the Earl of Bedford at Bedford House, also in the Strand; Cooke held a similar situation with the Earl of Essex at Cashiobury; and London was the fitting servant and friend of Bishop Compton at Fulham Palace, while he was also the grandfather of the first Lord Selsey. The fortunes of the "great undertaking of Brompton Park," after flourishing for a century and a half, were however, when Dr. Hogg joined the copartnership, on the wane. Those with whom he was associated were either enfeebled by age or by want of means, or both, and he soon found himself saddled with responsibilities he had no inclination to sustain, and consequently retired after a few years, and from that time to the present has devoted himself to the literature of horticulture. The advantages of a practical kind which he had derived from his connection with "the great undertaking" were, however, of great value. It was during that time that the first form of the "Fruit Manual" appeared, which remains the text-book of pomologists and nurserymen, and it was not till after its publication that nurserymen adopted the plan of issuing descriptive catalogues of fruits. The "Fruit Manual" is probably the best and most generally known of Dr. Hogg's separate publications; but it was not the first in order of time of his literary productions, for while still a youth he published in Edinburgh a "Treatise on Annuals," with descriptions of those cultivated at that time, and he subsequently issued a "Treatise on the Dahlia, its History and Cultivation."

About 1844 Dr. Hogg commenced a work entitled "British Pomology," but the only portion ever published was the first volume, treating on the Apple. At the time this was published the present rage for the study and cultivation of fruits did not exist. No bookseller would take the responsibility of its publication, and he had to undertake it himself. As a remunerative speculation it was a failure, and, like Lindley's "Guide to the Orchard and Kitchen Garden," published 20 years previously, it was still in advance of the time. Now, we believe, the work is entirely out of print. Not discouraged by the failure of this attempt to excite public interest in Pomology, Dr. Hogg adopted other means of keeping the subject before the public mind. Early in 1853 we find him writing as follows:—

> "There is, perhaps, no country in the world where the study, and consequently the cultivation, of fruits is more neglected than in our own. In America, they have in various States pomological 'societies' and 'institutes,' which meet as regularly as our Royal and Linnean Societies, and discuss pomological subjects. Several excellent works have issued from the press of that country, and are justly popular, and it is to America that we are indebted for some of our finest varieties of fruits. In Germany, too, it is a very popular study, as the numerous pomological societies and publications furnish ample evidence of. In France it has a great measure of support, although perhaps not so great as in those countries already mentioned, but certainly far greater than in our own; and in Belgium it is found not unworthy of Government patronage and support. Need it be wondered, then, that so little is known when so little interest is manifested on the subject in this country. We trust the time is coming when the same vitality and energy will be exhibited as there was at the time when Mr. Knight and Mr. Sabine devoted so much of their attention to it."

And the time speedily came, for in little more than twelve months after this was written the British Pomological Society was instituted, with Sir Joseph Paxton as president, and Dr. Hogg and Mr. Spencer as joint secretaries, the initiative having been taken by Mr. Spencer, of Bowood; Mr. Rivers, of Sawbridgeworth, and Dr. Hogg. After several years of usefulness, and after passing through the vicissitudes which appear to be normal phenomena in the career of societies as well as in that of most individuals, the British Pomological Society was merged in the Fruit Committee of the Horticultural Society, the first meeting of which body was held at the rooms of the Horticultural Society at 21, Regent Street, on July 5, 1858. Subsequently Dr. Hogg has acted as Secretary to the Fruit Committee, and latterly he has taken an active part in the practical business of the Royal Horticultural Society, being now one of the directors (in conjunction with Rev. Mr. Berkeley and Mr. Moore) of the Society's garden at Chiswick. In this latter capacity it has fallen to Dr. Hogg's lot to superintend the replanting of the fruit garden, and to select the varieties to be retained in the diminished space now available for the purpose.

Dr. Hogg's name must also be honourably associated with those who by their zeal and energy promoted the success of the London International Horticultural Exhibition and Botanical Congress of 1866. It was, therefore, a happy coincidence that Dr. Hogg should have been one of those who represented this country at the last International Horticultural Exhibition at St.

Petersburg, on which occasion, as the reception of decorations from foreign potentates, except under special circumstances, is contrary to English practice and etiquette, Dr. Hogg became the recipient of a handsome slab of malachite as a mark of the Emperor's recognition of British Horticulture and of courtesy towards its representatives.

A SUCCESSFUL ORCHARD HOUSE.

I SEND you a photograph of a new form of Orchard-house (figs. 288, 289), which gives great satisfaction. It is an elliptical quadrant, resting on an 18-inch parapet wall of polished ashlar, through which are a series of ventilators 26 by 9 inches in every 2½ feet throughout the entire length of the building (172 feet). The ventilators are moved simultaneously by connecting-rod and brackets, and if required any of them can be rendered inoperative. The top ventilator when full up gives a clear opening of 7 inches, and this is found to be sufficient, the front ones not being opened more than half a dozen times in a year. This consists of fender plate-iron, and is moved by lever and screw the whole length at once. The turn-up behind acts as a gutter for any rain falling on the plate when open.

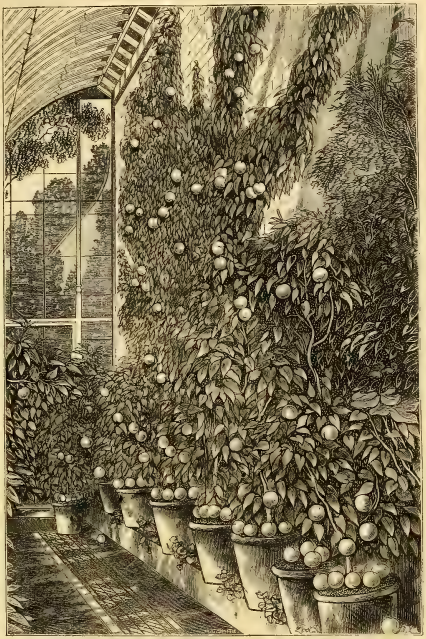


FIG. 288.—ORCHARD-HOUSE AT SCONE PALACE.

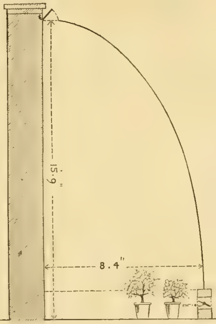


FIG. 289.—SECTION OF ORCHARD-HOUSE.

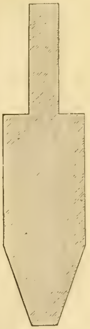


FIG. 290.—SASH-BAR.

The following is an epitome of our management, adhered to with little, if any, variation since the house was put up in 1860-61. Sharp on the fall of the leaf the plants are turned out of the pots, all loose straggling roots being cut away from the bottom and sides. The balls are slightly reduced, and the necessary shift given till a 15-inch pot is required, when they are returned to the same, or others of the same size. The plants on the wall are then unnailed, the roots partially shortened by cutting a trench round them, at a distance of from 3 to 5 feet from the main stems. We then have it undermined—the remaining mass, or ball, being partially loosened, similar to what is done with the pots, and fresh soil given. In like manner, the compost used is two-thirds maiden earth, one-third good rotten dung from a horse, cow, and pigs—when the gardener happens to have the latter. To that portion used for the pot plants a liberal allowance of charcoal from a trash-kiln (specially prepared annually for the purpose) is added to maintain the porosity of the ball and promote the drying process of the same, which we take every means to encourage, finding that the oftener water is required the more certainty there is of well hardened wood, and consequently of the following season's crop.

This done, and the pot and wall Peaches having been carefully rubbed with a mixture of clay and sulphur, the pots are then plunged under their summer stances, mulched over to a depth of 6 inches with dung of any kind to keep them from frost. The roots of our hardiest trees are seldom found above the frost line. The main leaders of the wall Peaches are trained to their places (leaving the feathers till the flower-buds are about to burst, when they are regulated and laid in), and the Figs bundled up in mats for the winter, to protect them from frost as well. I ought to have mentioned that, previous to plunging the pots and temporarily arranging the wall trees as above, every part of the house is carefully washed with soap and water, and the walls thoroughly lime-washed, when the house may be said to be done with for the winter.

The main leaders of the wall Peaches being trained, the Figs bundled up, and the pots plunged and mulched as above, the latter are left unwatered and unattended in any way till they have set their fruits, and the average temperature of the air is above that of the media in which they have been plunged, when they are raised to the surface, top-dressed with 1½ to 2 inches of sheep dung, and watered when required, when the summer routine of management may be said to have begun, which may shortly be summed up in the few words—stopping, watering, hydropulting, and fruit thinning.

With regard to atmospheric management, entrap the sunbeam in its course, hold it fast, and don't let it go until you have the blessing therefrom in the shape of a very high temperature: for the Peach, if kept clean, will stand any amount of natural heat, and revel therein. We have had it range from 11° to 120° Fahr. within the 24 hours, when the plants were in full flower, and shedding their polleniferous dust, and we never had a better crop.

It may be observed, we are still cultivating the same plants with which the structure was first stocked, nine-tenths of which were maiden plants, and all from the Fulham Nurseries. Like Coniferous plants in a close plantation, they have a tendency to lose their lower branches, but they stand cutting down very well, throwing out plenty of spray from which to form a fresh head. *John Halliday, Scone Palace, Perth.*

Home Correspondence.

Diseased Onions. — I have sent you specimens of the Giant Rocca Onions, which you will perceive are affected by a somewhat unaccountable disease. In the year 1870 I manured the ground with the dung from a spent Mushroom bed, and planted with Vegetable Marrows. This year I had the land well trenched, and sowed a large breadth of Onions, part being sown where the Mushroom dung went, and part where the ordinary dung went; and strange to say, those sown where the Mushroom dung went are all diseased or rotten, whereas those sown on where the other manure went are quite sound and good. Could you at all explain why they should rot upon the Mushroom dung and not upon the ordinary dung? Has the Mushroom spawn anything to do with it? as I found several Mushrooms growing from the old dung with the Marrows last year, previous to my trenching the land. The Onions are scarcely fit to pull; but I find I must do so to prevent them all rotting. *G. K.* [It is very true there is fungous spawn about the roots of the Onions, but not all resembling that of Mushrooms, which we believe are perfectly innocent of the affection. The Giant Rocca appears to be a tender variety, and certainly does not succeed everywhere. Our own experience is not in its favour, though we should not suspect that it would fail at Cowes. The truth, however, is, that many Onions this year have been in the condition of those transmitted, especially where they have been affected with Peronospora destructor, which, however, we have failed to detect on the withered leaves, though it may have existed when they were green; still we should have expected to find some traces of it had it once attacked the leaves, or at least to find some of the resting-spores. We are inclined, however, to think that there must have been some parasite, accidentally confined to that peculiar plot of ground; as, if the affection were due to the long-continued wet and absence of sunshine for many weeks, the whole crop must have been equally affected, supposing no seed to have been used besides that of the Giant Rocca. The case, however, is quite worthy of publication. *M. J. B.*]

Viola cornuta Lavender Queen. — Among the foremost of our useful bedding plants of late years, the different varieties of Violas have held an honourable position. During a recent visit to Chatsworth, I saw one raised by Mr. Speed, and which he calls Viola cornuta Lavender Queen; it is a soft lavender colour, and viewed at a distance it produces a fine effect. It was planted in juxtaposition with the old Viola cornuta, and as much eclipsed that old-fashioned, useful variety as Mrs. Pollock Pelargonium does the old Golden Chain. I have seen nothing approaching it in colour during the summer, except a bed of Verbena Lilac Perfection at the Crystal Palace, which I saw a few weeks ago. But there is a softness and a richness about the Lavender Queen Viola that is wanting in the Verbena. The constitution of the plant is good, and it appears capable of withstanding alike both dashing wind or pelting rain, and neither tropical sunshine nor long-continued drought affect it. I hope Mr. Speed will place his new Viola in the hands of some enterprising nurseryman, and I have no doubt but that it will be eagerly sought after by those who have to produce a continuous display in the flower garden. *Quintin Read, Pleasley Vale Gardens.*

Roses from Cuttings.—In a two-light frame, say of the size 5 feet 2 inches long by 4 feet wide, 300 cuttings of Roses might be inserted in November, and by spring most of them would have struck. They might then be put out into nursery ground until autumn, when all the best plants might be put into a prepared bed; or, if it were found that they had not struck generally, then a little mould might be put round the frame, which might be lifted off for any required use. By autumn all the cuttings likely to strike would have done so. What! 250 plants from what would have been thrown away, and such plants as Mr. Frost might injure but could not kill! Sure I am that Roses will, sooner or later, be grown upon their own roots; and what could be an object of greater interest than a bush of this kind, standing on a stem of 6 or 8 inches, with a head of 18 or 24 inches over, covered with beautiful Roses? What a sight would be a bed of three dozen or 300 of such plants, all in health and vigour, and all in bloom! The frame should be placed on the cold ground, with a depth of 8 inches of soil; and with regard to the kind of soil to be preferred, it must be remembered that for some months after the insertion of the cuttings they have no roots, therefore during this time no benefit could be derived from any richness of soil. Sandy soil is considered better for producing roots than for feeding them, hence sandy soil is best for cuttings of Roses; and another thing, it parts more readily from the roots when transplanted than a more adhesive soil. It is thought that the cutting calluses through the winter, and in the spring roots are produced from the callosity by the sheer warmth of the weather; hence the use of a frame with glass over it. By no means give artificial heat if natural heat will do; the latter is steadier and better. It is said, you should never give your reasons for what you do; but I have tried to place this subject clearly before others as I see it, by giving a reason for all I recommend. *R. J.*

Water Weeds.—It may be practicable in some cases to render the work of the swans more effective by cutting off in some measure the supply of food which causes aquatic plants to grow too luxuriantly. In too many instances the streams which feed sheets of water are polluted with sewage or farmyard drainage. The extravagant growth thus encouraged may help to teach us that if we apply not things to their right uses, they will produce effects which occasion annoyance, or worse. That which is disfiguring in an ornamental sheet of water would give satisfaction if rightly applied to the land, by promoting the growth of useful or ornamental subjects. It must not be forgotten that the excessive luxuriance of water plants indicates often a polluted state of the water, or rather a condition which would become a serious evil but for the preventive means appointed by the Creator. One cannot be surprised at the complaints which are heard from fen countries of the increase of weed growth when we know that the sewage of whole towns, as that of Cambridge into the Cam, is (or has been) poured into them, and that there is no current sufficient to scour away the fœtid mass. Water will dissolve the abundant soluble matters thus supplied—hence the low value of pond mud as a manure—and being surcharged with them will decompose and become a source of disease and death instead of health, life, and wealth to man. But here the aquatic plant steps in and takes possession, turning corruption into another form of life. Surely the vegetation which renders so important a service to man is worthy of a better name than that of "weeds." However, a weed being vegetation out of place, your correspondent may rightly call these plants by that name if they are not necessary to keep his lake water pure. But if they are necessary, if the danger of pollution exists without them, they are some of the most useful plants on his property. Their removal in any case should be accompanied with remedial measures, and if only an inflowing source of fœcal or refuse vegetable matter be cut off, and accompanied by partial removal of the mass of vegetation by the agency of swans or otherwise, a gradual diminution of the annoyance would pretty surely take place. If the pollution of an inflowing stream be derived from matters gathered in a long course out of reach of the owner of the water, such stream might be made to pass first through filtering beds thrown across the stream, with holes on the upper sides, in which floating matter might settle, and in dry weather be removed. Or the stream might be used to irrigate some land, and, giving off its impurities to useful plants, enter the lake as pure as from the original spring. Such suggestions may be of use in some cases, though possibly they may not meet the case of inquiry immediately before us. *J. M. Taylor, Seer Green Vicarage, Beaconsfield.*

Cedrus Deodara Coning.—A few days ago I was on a visit to the gardens and pleasure-grounds of John Murray, Esq., Newstead, Wimbledon Park, where I was delighted to see a large Cedrus Deodara, bearing numerous young cones. As it is the first time I have had the pleasure of seeing the Deodar producing fruit, I would recommend those parties having large trees in their posssesion to examine them; many may have incipient cones, but the owners may not be aware of the fact, as they are not visible till the branch is bent down. They are generally arranged along the centre of the main branches, and stand quite upright, not unlike the arrangement of the young cones of the Cedar of Lebanon at this season of the year. *O. M. N., Royal Botanic Gardens, Edinburgh.*

Wheeler's Gloucester Kidney Potato.—In the lists given lately in your columns by Potato growers, I do not meet with this name. Has it other names or *aliases?* We here find it the best of all early kinds. It is very little behind the old Ashleaf in coming, and is certainly a much better cropper; the flavour is also good, and it will keep a long time. I have tried near a score varieties with it, and it beat them all. Rivers' Royal is the nearest to it in every respect, but we fancy Wheeler's is the earliest by a fortnight. A kind called Early May is also very like it, coming in—as also does Wheeler's—in the month of May. I have not put manure with Potatos at planting time for many years. Even with early kinds it has a bad effect, especially in wet seasons. If they are not attacked by murrain, the tubers are swelled until most of them become hollow, or of a coarse texture. *Hy. Mills, Enys, Penrhyn.*

Orchid Cultivation.—Messrs. Brooke & Co., advertising in your columns, request Orchid cultivators to visit their establishment, and see their "plan of supplying moisture by continued precipitation." And your esteemed correspondent, "G. H.," whose letters on this subject I (in common with others, I doubt not) have much valued, says at p. 1229:—"There must be sufficient means of generating the moisture required without the agency of pipe-heat; and the plants must live upon the food conveyed to them by precipitation." Will "G. H." kindly explain this, with more fulness of detail? I have no "means of generating moisture" in my Orchid-houses save pipe-heat and sun-heat evaporating the water in the tanks and pans, and that scattered by the hand and the syringe. And I know of no mode of precipitation but that which contact with the glass produces, and what takes place spontaneously on the surfaces of the plants. But neither of these can be what "G. H.," or what Messrs. Brooke & Co. mean; for these have been coeval with, and inseparable from, cultivation under glass. Therefore, I again respectfully ask your correspondent, what is the mode of generating moisture, and what the plan of precipitating it, that are alluded to? *P. H. Gosse, F.R.S., Torquay.*

Large Horse Radish.—I saw yesterday, in a friend's garden, a root of Horse Radish that weighed 2 lb. 2 oz.; is not that an unusual size? It was straight and well grown, and all dirt washed off before weighing; it certainly was the finest piece that I have seen. *Thos. Woodford, Eastwell Park, Ashford.*

The Seaham Hall Trial of Peas.—Mr. Draper's published tabulated report of his opinions concerning the various sorts of Peas that he has this year grown at Seaham, whilst possessing considerable interest, is robbed of much of its value, not only by the fact that the past season generated a more than ordinary growth of haulm, thus presenting many kinds in an incorrect form, but also because a close scrutiny of his dates and figures seems to me to reveal certain deficiencies that perhaps may not after all exist. First, then, I find that although Mr. Draper's trials are spread over 56 kinds, including earliest and latest sorts, yet he only finds a difference of time in their readiness for gathering of 24 days, with the exception of the Australian Pea, which, however, according to his estimate, does not appear worthy of consideration. Now, my experience of Peas in a southern locality leads me to believe that a much longer period should exist between the incoming of the earliest and of the latest kinds, though sown at the same time, than 24 days; and I believe this is the experience of many more of your readers. But to test the value of late Peas we should know, not so much how early they begin to crop, as the length of time they will continue to produce Peas fit for table, as well as possess capacity to withstand drought and mildew. I have found, even on dry soils, that by sowing at the same time Little Gem, Advancer, Wonderful, Premier, and Prince, I had no difficulty in maintaining a constant supply of first-rate Peas for a period of six weeks—a most important consideration where late sowings were, owing to drought, too often failures. The differences that exist between the periods of "in flower" and "ready for gathering" in Mr. Draper's Table are remarkable, and indicate either some mistakes, or else the fact that period of blooming in Peas affords no real guide as to period of cropping. Thus, Competitor is marked as in flower June 3 and ready for gathering on July 29, a period of just eight weeks, whilst Maclean's Premier is in bloom June 30 and is ready for gathering on July 14—just two weeks. That such a difference of time should exist appears incredible; but the credit, if any, must certainly be given to Premier. To add to this remarkable diversity, we find that the Peabody, growing only 2 feet in height, is marked as in flower on June 1—the earliest day of all; and yet it is ready to gather only one day before Competitor, the latter growing to the height of 8 feet. Mr. Draper affixes his marks of commendation, general and superlative, to a number of kinds, amongst which are several that grow to a height of 8 feet, and yet the very finest and best keeping of all our late tall marrows, Imperial Wonder, that grows to the same height, is declared as being "too large to be recommended;" although whether he means that the pods are too large, or the haulm too gross, I should have a difficulty in apprehending, did I not on referring to a contemporary find that his deprecatory remarks are diversified, and that Imperial Wonder is declared "too tall:" but how he reconciles this declaration of opinion with his high commendation of others that are as tall, is to me matter of wonder. If 8 feet in height is "too tall" for Peas, by all means let him tar all with the same brush, and I shall then not quarrel with his conclusions. I am the more struck with this apparent inconsistency on his part, because he lays such particular stress upon the merits of Little Gem, and describes it as being the best and cheapest Pea to grow, although it averages but 18 inches in height, and is of all Peas the dwarfest. I cannot comprehend the logic that so forcibly commends Little Gem, because it is so dwarf, and yet in the same breath "highly recommends" the tallest of tall Peas "as the best useful kinds." Hundreds of gardeners I know continue to grow tall Peas simply because they have always grown them, but there is a strong current of public favour now setting in towards the dwarf kinds, and which has been not a little accelerated during the past season by the unmanageable height to which tall Peas have been elevated. Dwarf, good cropping kinds are the most satisfactory to cultivate in either wet or dry seasons, for if too much rain prevails the growth will not break down the sticks, and should drought prevail there is much less exhaustion of the soil before the crop is produced than is the case with tall growing kinds. It is a matter both of interest and promise to gardeners to know that whilst we have already a goodly number of dwarf kinds of Peas, there is hope that in a year or two our present lists may be increased by the addition of several new and improved kinds. Multum in Parvo will, by-and-by, supersede Little Gem; but if we could secure a duplicate of the former that was 10 days earlier, we should then possess the best early Pea known. This would be a step in the right direction, and it is one specially deserving the attention of hybridisers. Of later kinds the talked-of trial at Chiswick next year, should it prove a reality, may bring to light some valuable sorts; and I would here express a hope that whenever the Fruit Committee shall meet next year to discuss the relative qualities of the various Peas then growing before them, that there will be found in its ranks no lack of men who are sufficiently acquainted with Peas to be enabled to pronounce whether or not a Pea is really new when they see it; and who will also possess sufficient practical knowledge of the requirements that constitute a first-class Pea to enable them to pronounce a judgment that shall have due force with the outside gardening community. I have not found fault with Mr. Draper's published statement because I wished to discourage private trials of that character; let every gardener do the same in the case of all vegetables from time to time, if possible; but the very fact that they are private and local deprives them of that general interest and usefulness that attaches to trials conducted under the auspices of public bodies, and which are also open to general and frequent inspection. The publication of results so obtained would carry with it weight and authority, and would prove to many a guide safe and reliable. I trust that we shall have plenty of these Chiswick trials in the future, and that they may result in the speedy weeding out of much of the rubbish that now only serves to cram our vegetable seed catalogues. *A. D.*

Miltonia Warscewiczii.—During the time the importations of this beautiful Orchid were being disposed of at Stevens' rooms, we received several pieces here (Ferniehurst), of which some have flowered, by far the most superb variety I have yet seen among them now being in bloom. It has produced a spike with 15 flowers, which are, I think, of an extra size, the lip measuring 1 inch across. The colour is also much deeper than in the others which have flowered. We grow them in the same manner that "F. W. B." mentions. I have not heard of more flowers being produced on one spike, but I should be pleased to hear if such has been the case. *C. J. W.*

The Potato Disease.—I guarded myself by saying that I had no previous knowledge of this disease, therefore I was of course not aware that sulphur fumigation had been tried. But I would point out, that whereas I propose it "to prevent the spread of the disease," Mr. Tillery seems to have tried it to "cure" "diseased Potatos." I propose it as an antiseptic treatment for prevention, he tried it as a medical treatment for cure. I propose to apply it to sound, but presumably infected, tubers, he applied it to diseased tubers. My operation is in every way analogous to "blue-stoning" seed Wheat, his operation is analogous to an endeavour to restore an ear of smut to the condition of grain. I venture to say that my experiment—whether successful or not—is scientific, and his empirical; therefore I shall not abandon sulphur, and I protest most earnestly against Mr.

Tillery's statement, that "as this mysterious visitant is now known to be atmospheric, philosophy and learning are equally impotent to teach us more than we already know of its nature, or how to cure it." This is precisely what I was told when I took the rinderpest in hand, yet I saved by antiseptic treatment every animal (112) that I took charge of (vide *Agricultural Gazette* of Nov. 9, 1867). Such a sentiment would stop all research, all discovery, all progress, in every department of human knowledge. *W. Hope*, *Parsloes*, *Oct.* 1.

Cool Treatment of Orchids.—At p. 1229 your correspondent "G. H." actually confesses that he is not an enemy of cool treatment. After this confession I must be more careful, for, assuredly, I have no desire to whip him; but he must allow me to say that I have no knowledge whatever of his collection of Orchids—consequently I could not forget that the best plants were picked out of it. And, again, I am not aware that I have misrepresented him; if I have, it was quite unintentional, and I sincerely regret doing so. To some of your readers it may appear "strange that such difference should be, 'twixt tweedledum and tweedledee;" but I would remind them that up to a very recent date all epiphytal Orchids, without exception, were considered stove plants—it mattered not in the least where they came from—Mexico or Borneo, Quito, or the Malayan Archipelago, Guatemala, Java, Brazil, or anywhere else; if they were Orchids that was sufficient, and, stove or bark stove treatment was recommended for all. If, at the commencement of this discussion, "G. H." meant anything, he meant that we were to go back to that temperature; but I think it has been abundantly proved that for many Orchids it is quite unnecessary, and to those who love Orchids, but hate "stewpans," I would recommend a few cool Orchids. I shall take the opportunity of noticing the quotation from Professor Dyer at another time. *Ex-Cantab.*

Beetroot Sugar.—I observe a correspondent from Australia is making inquiries as to the growth of Beetroot for the manufacture of sugar, near the precincts of the sea. In A. Barruchson's pamphlet (E. Wilson, Royal Exchange), an excellent authority, we find at p. 46—"As this root takes up 3 to 4 per cent. of mineral salts, lime, potash, and soda, and as the bases of these may interchange one with another, all attempts to make good sugar from the product of salt lands, soils too much manured, or ground recently cleared of timber, are certain to be entirely futile." He does not state in what part of Australia he intends to establish himself, but if within the limits that the sugar-cane, the Sorghum, or Chinese Sugar-cane, or what is known in Australia as the "Farmer's Friend," will grow, I would be inclined to think they would be preferable to the Sugar-Beet. The Otaheite (yellow) cane surpasses all I have seen in saccharine matter. The Bourbon (purple) cane some think is not so liable to burn on shallow soils, but the juice or liquor, not being so rich in saccharine matter, is longer coming to the "tache." These two kinds supply their own fuel; not so the Beetroot. If, on the other hand, the Beetroot is the only plant he can avail himself of, no doubt sugar can be made, although deficient in quality; still we may hope the injurious effects of salt may be reduced to the minimum conjointly in the manufacture and treatment of the plant. In his case, quantity may make up for quality, and I have no doubt the two may be combined by enlisting science into his service. *A West Indian Planter of* 18 *years' standing.*

Trees for Seaside Planting.—If it will be of any service to your correspondent, "Old Subscriber," I down send you a list of trees and shrubs which I noted this autumn as doing well at the beautiful watering place, Bournemouth, on the south coast, and exposed to the full sweep of the south and south-west winds. The soil is peat over deep sandy gravel, and in which, when broken up, most of our ornamental trees and shrubs seem to luxuriate. The first on my list are a double white and a red Camellia, 10 feet high and 10 feet through, in the highest health and beauty; they had formed lots of bloom-buds, and appeared to be just the kind of plant for such a place. If planted in groups through the woods they would form, with the Rhododendrons, which flourish in abundance at Bournemouth, quite a charming feature in this wonderful place. Arbutus thrives amazingly both here and on the Weymouth side; Laurustinus, evergreen Oaks, all the Thujas, most of the Cupressus, many of the Junipers, and Pines. Amongst the last I observed fine plants of Picea Nordmanniana, nobilis, Pichta, cephalonica, Pinsapo, and leioclada, with Pinus insignis, macrocarpa, and sylvestris, which forms the great bulk of the woods here, mixed with that ugly and useless tree, Pinaster. I observed that a great many P. austriaca had been planted, and this is of all trees *par excellence* a seaside one. I observed that Atriplex halimifolia, Tamarix gallica, Frankenia pulverulenta, Spartium junceum, and evergreen Oaks are the best calculated to brave the fury of the winds, and are admirably adapted for advanced guardsmen, with Sea Buckthorn as their captain. Inside of these anything can be made to grow that the nature of the soil will admit of: Elder, in all its forms of gold and silver leaved, cut-leaved, and the handsome green and gold forms of racemosa; Mountain Ash here is truly a lovely plant, quite at home in hundreds of places; I saw many handsome trees of Araucaria, from 10 to 12 feet high and dark as night in their coats of mail; double Furze, the two single sorts for outsiders,—they will not bear shade; Aucuba, Laurel, and Holly, under other trees, are pleasing to the eye, the last has its home here at a place called Middle Chine, where, from some peculiarity in the soil, said to be alum shale, the tree luxuriates, and many large and handsome trees have existed from time immemorial. Euonymus, of sorts, are at home here, so is Thujopsis borealis, and Thuja gigantea, Escallonias, Mahonias, Berberis dulcis and Darwinii, with Planes, Sycamore, Laburnum, Beech, purple and other; Turkey Oak is a fine seaside tree, especially on light soils; Gymnocladus and Robinias, Wych Elm and English, also the Canadian sort, are all adapted for seaside planting. Here at Swanage and Weymouth, also all places with very different soils, and with their own especial botanical treasures, plants adapted to the varied conditions of each place, it is curious to note the difference of the three floras. I made ample notes of the generality of the species found at each place, and if you think they would interest any one I will send you the lists. Among the trees and shrubs about Bournemouth I noticed Hydrangea hortensis and japonica in several gardens, both with fine blue flowers, the last with the outer ray white and the centre blue. The blue tint, I believe, is induced by the iron ore found plentifully in the soil here; I never found any difficulty in changing the pink to blue by planting the bushes in soil impregnated with iron. I may just mention in finishing, that Portugal Laurel and Bay are amongst the most conspicuous shrubs here. I am afraid I have been a little too rambling in my list, but I give it as I made it from time to time. *John Scott*, *Merriott.*

Mixed Bedding Plants.—Had Mr. W. Gardiner paid a visit to Heckfield Place during the past summer, he would have been satisfied to a surety of the great usefulness of Viola Perfection as a "mixed bedding" plant. Mr. Wildsmith had there produced charming effects in some of his beds by using for centres Flower of Spring, silver-edged Pelargonium, edged with Iresine Lindeni, the Pelargoniums being dotted here and there with strong plants of the Viola. The flowers of the Pelargonium were all kept pinched out, thus making the dots of deep mauve-coloured flowers amidst the silver foliage all the more effective. I have an impression that dots of colours for contrasts are much more effective in beds or borders than are regular mixtures. In the case above nothing could be more pleasing and less obtrusive than the carpet of silver with dots of deep mauve and edged with maroon-crimson. Ladies with an eye to tasteful colouring in dressing might take a hint from this combination. I agree with Mr. Gardiner in his estimate of the value of Ageratum Imperial Dwarf for a similar purpose, but probably with nothing does the silvery blue of its flowers better assimilate than with the delicate pink tints of the blooming Manglesii; still it is effective and most useful in almost any company. Fortunately for the gardeners it comes perfectly true from seed, both in character and colour; so that a stock of almost any extent can be raised in a little heat in the spring without the necessity of keeping large stores of it in pots all the winter. *A. D.*

Leptosiphon roseus.—This would be a little gem if the colour of the flower was not so evanescent; opening a bright rosy pink, they too quickly change to a dirty dull pale hue. During the early part of the summer I saw several large clumps, both in the country, exposed to the glare of the sun, and in town, shaded by a brick wall—all were equally dingy. I also saw Godetia Whitneyi, some of the plants being tall and bushy, whilst others were dwarf and spreading. the latter having much the brightest spots. *H. Skelton*, *Fulham.*

"General Wreck" of Apple Stocks.—What can Mr. Scott mean? (See p. 264.) I have been to the east, north, and south of London, and I never saw Apple stocks of all kinds more healthy. As the "general wreck" seems to have occurred in Somersetshire and Devonshire, there must be something unfavourable in these counties to the growth of Apples, as may be observed in the orchard trees, so different from those of Gloucestershire and Herefordshire, which are full of trees with a shiny bark and grand foliage; while in the two former counties the poor damped mossy trees look as if they were tasting of death. By-the-by, why have we retained that unmeaning foolish term Paradise, made into English from "paradis," equally without meaning. These surface-rooting stocks, called Pommier du Paradis, like our English Codling and the Burr Knot Apple, all have a tendency to form roots near the surface; and from these roots being under the influence of sun-heat, they give a premature maturity to the tree, like the Quince to the Pear, or an "oft removed tree" of the Plum. There are many of these dwarfing Apple stocks, and among them two or three varieties of the French Paradise which in France survive so well in tenacious soils; for if planted in light soils, as they may be here, their roots are so near the surface as to become smoked, and the trees unhealthy. I have watched these stocks with some interest, and I find their proportions as follows: An Apple tree on the French Paradise, at three years old, is 2 feet in height, while an Apple tree on the English Paradise, or on a variety of the Doucin—the French name for a stock giving more vigorous growth than the former—is 3 to 3½ feet; but both are equally fertile. Mr. Scott's stock is a good variety—not better than many others—of the Doucin. My trees on his stock are this height, as are others on English Paradise stocks. The latter is the most useful of all, and is likely to lead to a great change in Apple culture, for every cottager may grow his Apples on trees not larger than a Gooseberry bush—planting them 4 feet apart, without having his ground shaded, as is the case with standard Apple trees. Nothing struck me more forcibly, in my last journey through Germany, than abundance of standards and the absence of dwarf trees in the gardens. This is also the case in the North and other parts of England, where standards are planted in the gardens, thus shading valuable ground. A few years since Mr. Robinson told us that our market gardens would be covered with low lateral cordons, trained to iron wires. Your readers would, I think, be glad to know where these gardens are situated, so that they may see the fruits of his prognostication. *Malus.*

Lord Palmerston Peach.—I have gathered from a young tree of Rivers' Lord Palmerston Peach, seven Peaches weighing 4 lb. The tree has been planted two years, on the back wall of an orchard-house. This is a grand Peach; and, according to my experience, seems to be a good bearer. *F. Bell*, *The Gardens*, *Weston Hall*, *Towcester.*

Grafted Potatos.—In the year 1868 I spoke pretty freely in these columns against the folly and waste of time in trying such absurd and useless experiments as Potato grafting, and I must say after my visit to South Kensington a short time since, where these said grafted Potatos were exhibited by more than one disciple, I am more fully convinced that the practice is worse than useless; and I am more than surprised that the report that appeared in these columns respecting them, should be allowed to pass over without some comment from your numerous readers and contributors. You do not believe in the Potato and Artichoke grafting, of course, Mr. Editor. [No.] Neither do I. You believe in Potato grafting. [To some extent.] So do I; but not with the view of procuring new varieties. I should as much believe in the Potato grafted into the Artichoke producing new varieties, as one sort of Potato producing new varieties when grafted into another. Now I admit Potatos can be grafted, having tried the process; but as I can get a Fluke without grafting it into a Regent, and *vice versâ*, why should I bother myself with grafting? If I want to produce new varieties, I sow seed, and in one season I have tubers larger than my first, and from a packet of seed I have red and white rounds, red and white kidneys, &c. What more could I wish for? Potato grafting will not do this; then why try to make people believe the moon is made of green cheese? Some yokels may believe, but other folks know it is all gammon, and you don't gammon me. My last grafting experiment was tried in pots: the pots were half filled with soil, and the grafted tubers placed on the top and not covered, so that I could watch the process thoroughly. As the eye of the graft pushed the roots did the same, and grew into the soil. Alma was grafted into a Regent, I had Alma Potatos. In lifting up some of the sets, or stocks, that I thought I had taken all the eyes out of, I found some growing as well as the graft; here I had Almas and Regents. I might have fancied otherwise, but not having facts I could not believe. Alma grafted into a Carrot produced Alma Potatos, Red Regent grafted into a Turnip produced Red Regents, the same when grafted into a Parsnip. Potato grafts are very accommodating, they will grow grafted into almost anything a little moist, but they are Potatos still for all that, and nothing more. Now, if you really want to get a new variety by the grafting process, graft the stems of two opposite varieties together, and when they are properly united, cut them in two, as you would make a cutting, through the centre of the united part; strike it and plant it out. You may then be rewarded for your pains. I am told by those who follow the tuber grafting, the result is to be seen more in the growth of the haulm than the tuber. Now this is a very poor consolation, and not at all encouraging to experimentalists. No doubt these few remarks will lead to some discussion on the subject of the utility of grafting Potatos; very few believe in it, whilst thousands believe it is all a farce. I reserve some other comments and facts which may be brought out on some future occasion; I merely throw out this hint that some of our friends may enlighten us on the subject—both *pro* and *con.* *Edward Bennett*, *Enville Hall Gardens.*

Trees for a Porous Soil.—What sorts of trees would you advise planting where the soil is loose and gravelly—and where the subsoil is nearly all gravel? Elms seem to do better than Limes, as Limes shed their leaves so soon—some trees at the present time are almost leafless—and what sort of Elms? How would Scarlet Chestnut and the common do? Will Austrian Firs do better on the above soil than Scotch Firs? My opinion is, that Austrians maintain a better outline than the Scotch—am I right? *J. T.* [To this Mr. Ingram, Belvoir, kindly replies as follows:—Your correspondent's description of the soil in which he wishes to plant trees is too general to permit any very precise information. Sandy and gravelly soils vary in character and fertility when derived from primitive rocks, and the gravelly and sandy particles are irregularly broken and dispersed, and more or less decomposed. He may rely on satisfactory results in planting Oak, Elm, Ash, Lime, and Coniferæ. The accumulations of the sands and gravels of the Bunter conglomerate characteristically spread over parts of Sherwood Forest, Notts, are less favourable than the foregoing, but nevertheless good timber may be found on the light lands of this formation; and if your correspondent has land of this character to plant, he may try all the ordinary deciduous trees common to English plantations, as well as Pines both Scotch and Austrian, Larch, and Spruce. The poor siliceous sands and gravels of the Bagshot sand formation are infinitely less satisfactory than the foregoing, and if the land to be planted is of limited extent, and upon this formation, and a healthy and rapid growth desirable, the ground had better be dressed with clay and the peaty accumulation generally found on the surface, and the whole trenched in two spits in depth, he may then plant two kinds of Elm, the narrow-leaved and the Wych, Spanish Chestnot, Sycamore, Oriental Plane, and Turkey Oak, and both Scotch and Austrian Pine. A glance at neighbouring plantations on similar soil to that alluded to by "J. T." will help materially to assist him in the selection of trees for the locality in which he resides. *W. I.*]

Foreign Correspondence.

INDIA: HYLAKANDY DISTRICT.—*A Combination of Diseases in Tea.*—From daily observation the following are the several forms and stages of these diseases. The trees when first showing symptoms have somewhat a spotted mildew-like appearance on the old leaves; on others of intermediate growth the margins are tipped with a brown tinge, which rapidly extends over the surface of the leaves to the axils, and forms a brown and blackened mass. The spots in some instances, on the older leaves, on examination with a lens, are like diminutive brown Fungi, and as thick as the spores of Ferns when ripe; on the same leaves is a crustaceous substance, resembling white scale or Lichen; others having a blotched and blistered appearance, which ultimately perforates them and destroy-their vitality. I have found the same to occur where the plants have a free circulation of air, and the soil is well stirred about their roots, and in those in jungly or shaded situations; also in plants naturally sickly, and in those healthy and strong,—other plants growing alongside them looking the picture of health, by which it seems that situation is no criterion whatever. I also have followed the roots down to their extremities, thinking they might have come in contact with a subsoil detrimental to the functions of the plants, and that from this cause they were not able to supply a due amount of sap for the maintenance of the foliage. The constitution of the trees being impaired might have resulted from that; but I cannot, from this examination, assign any reason, the roots being in perfect health, and the soil of desirable nature. By shaking badly affected trees most of the leaves will drop, leaving them nearly skeletons, the young growths remaining only on the top of the trees, and of stunted character; plants so denuded do not fully recover themselves until after the ensuing season's pruning.

Another distinct form from the foregoing attacks the young succulent roots and leaving buds, sprinkling the leaves over with tiny dots, which eventually so contracts them as to give them the appearance of Pucha or manufactured Tea—this being the most destructive. Some seasons when this epidemic prevails, the manufacture is completely stopped in some parts of the country until a new growth is obtained. On one occasion I was forcibly struck on noticing several trees on a teelah, an eastern aspect; the front parts were brown, damping off, and much curled, the back green and healthful: it would appear that they had received from that quarter a blast. On minute examination, I could not find any insect to which to attribute these results, therefore I am under the impression they are the results of atmospheric causes I am unable to define,—probable excess of moisture combined with lack of sunshine and fluctuating temperature, which seems to be favourable to its spreading. In some parts of the country, where rain has fallen more abundantly, this epidemic is more prevalent than in this locality. *Correspondent.*

[Various productions or conditions occur on or in the Tea leaves which have been submitted to our notice.

One of the most common is that peculiar condition of Lichens belonging to the genus Strigula, which has been described under the name of Cephaleurus, and of which a figure will be found in Berkeley's "Introduction to Cryptogamic Botany," p. 392. On the same leaves occur one or more imperfectly developed Strigulæ. These Lichens in general occur only on old leaves or those which have been slowly developed, and in such latter cases intimate a want of vigour in the plant.

Certain detached thin white gregarious patches, occasionally presenting a fructifying disc, appear to be the stylophorous condition of some Lecanora, perhaps L. epiphylla, Fée. The sporophores are delicate and filiform, bearing thread-like stylospores two or three times their length.

The orbicular white spots with a dark hard border sprinkled with minute black specks, are due to the obscure genus of Sphæroideæ, Depazea. It frequently happens that the spots are developed without any fructification, or it does not arrive at perfection. This appears to be the case in the present specimens, as no sporidia or asci have been detected.

Besides these are several forms of disease, for the most part depending neither on Fungi nor insects.

On the underside of some of the leaves are raised pustules indicated above merely by a little discolored speck. These pustules are composed of brown distorted cells, showing the condition which is so common in vegetable diseases where the cellulose is discolored with ulmates or humates. On other leaves are orbicular spots equally varied, on either side of the leaf, and perfectly flat. In some cases these are confluent, and form brown patches of an irregular outline. These, like the former, consist of diseased brown cells, but more closely packed.

Another form consists of paler thin patches which penetrate to the under surface, where they are more deeply coloured, and only very slightly, if at all, prominent. This, however, may be merely an incipient condition of some Depazea, for in one of the specimens we find myceloid threads.

In another leaf, of which only a fragment was sent, there are subelliptic spots, which are transparent by transmitted light.

We have besides leaves with broad brown patches which extend further on the underside than on the upper, which may be due to water resting on the leaves, and lastly, leaves in which the cuticle is detached in broad patches, very much after the fashion of Holly leaves when their parenchyma is eaten by larvæ.

Such are the various appearances presented by the leaves: the cause in most cases can be determined, if at all, only where the plant is grown. *M. J. B.*]

Societies.

ROYAL HORTICULTURAL: *October* 4.—Major Trevor Clarke in the chair. Among those present were M. André, delegate of the Central Horticultural Society of France; M. Gillekens and M. Spruyt, delegates from the Federation of the Horticultural Society of Belgium. At the termination of the usual preliminary business of the meeting, Mr. Berkeley called attention to the two varieties of Avocado Pear (Persea gratissima), which exactly accorded with the two figures in the "Botanical Register and Magazine," where it is stated that the fruit is deleterious unless ripe; he also explained that the large Gourd sent as a sort of Vegetable Marrow, was in fact a Bottle Gourd, the poisonous qualities of which are notorious, insomuch that when the ripe fruit is used for bottles it is necessary to season them well with vinegar before they are used. He then called attention to some of the wonderful specimens of Fungi, which exceeded far in number and interest any previous exhibition, and especially to a Geaster sent from the gardens at Castle Ashby, which appears to be quite new. After announcing the awards, he gave a short lecture on the Potato disease, illustrated with numerous figures. He adverted especially to the nature of the mould, the two modes of germination of the spores, the rapidity with which the mycelium penetrates the most intimate tissues, whether divided immediately from the spores or from the zoospores, its extraordinary influence in decomposing the cellulose not only in immediate contact, but with that of neighbouring cells; proving incontestably that the well known bran of the diseased cells is due to the action of the Fungus. He then explained the nature of the resting spores in various species of Peronospora, and stated that probably the Artotrogus of Montagne, figured in the Journal of the Horticultural Society in 1846, is the resting spore of the Potato mildew. Major Clarke then pointed out a splendid scarlet-flowered hybrid which he had produced from Begonia Pearcei and B. cinnabarina.

The International Fruit Show was held in the large conservatory, and, considering the shortness of the notice given, it was a great success, nothing having been seen in London like it since 1862, on which occasion the show of fruit was more extensive than this, and the fruit, on the whole, was of a better quality. Nevertheless, on the present occasion, there was ample room for congratulation, seeing that all our best known fruit growers sent immense collections of the best they have, and the foreign element was exceedingly well represented by MM. Baltet, of Troyes, who held their own amongst their English competitors most successfully. A large collection of fruit was also sent from Belgium, but, unfortunately, it did not arrive in time for exhibition—on the first day, at all events. We say the first day, because it was decided almost at the last moment to keep the show open on Thursday, the principal exhibitors heartily co-operating in this direction. To give some idea of the size of the show, we may state, in round numbers, that there were nearly 1500 dishes of Apples, the same of Pears, and 220 bunches of Grapes, to say nothing of a very large miscellaneous class, which included some excellent Pines, Peaches and Nectarines, Plums, Filberts, and Cob Nuts. Taking the International section of the show first, we had in class 1, which was for the most complete collection of Apples, three fruits of each variety, an extensive and very spirited competition between Mr. W. Paul, MM. Baltet frères, Messrs. Lucombe, Pince & Co., Exeter; Mr. Sidney Ford, gr. to W. E. Hubbard, Esq., Leonardslee, Horsham; Mr. Webb, Culham House, Reading; Mr. Moffat, gr. to H. Allsopp, Esq., Hindlip Hall, Worcester; Mr. Chaft, gr. to A. Smee, Esq., Carshalton; Mr. Carmichael, Sandringham; and Mr. E. Spivey, Hallingbury Place, Bishop Stortford, &c.; and the prizes were adjudicated, after a long and careful examination, 1st to Mr. W. Paul, 2d to MM. Baltet frères, an extra prize being awarded to Mr. Chaff. Mr. Paul's collection consisted of 171 of the best culinary and dessert kinds, and gained, as it deserved, much praise, on account of the nice size, cleanly grown, and fairly well-coloured examples staged. Looking over the other collections, which were too extensive to be particularised in the short time which was available, but of great credit to their owners, we noticed that the following were the kinds most often shown, and appear to be the leading varieties in their different classes:—Kerry Pippin, Dutch Mignonne, King of the Pippins, Waterford Nonpareil, Harrow Pippin, Hoary Morning, Blenheim Pippin, Warner's King, Manx Codlin, Adams' Pearmain, Alexander, Rymer, Mère de Ménage, Reinette du Canada, Golden Winter Pearmain, Calville Saint-Sauveur, Rhode Island Greening, President Dufays Dumonceau, Wadhurst Pippin, Belle Dubois, Fenouillet Gris, Bellefleur, Calville Rouge d'Hiver, Archiduc Antoine, Borsdorffer, Alexander, Tower of Glammis, Cellini, Lord Derby, Calville Malingre, Dredge's Fame, the pretty little Lady Apple, Margil, Fearns' Pippin, Lord Suffield, Bess Pool, Winter Hawthornden, Ribston Pippin, Dumelow's Seedling, Beauty of Kent, and Pott's Seedling. In the next class, which was for the best collection of dessert varieties, Mr. Chaff was 1st, and Mr. Webb 2d, the former with a collection of 60 dishes of very fine fruit, and Mr. Webb with a similar collection of 50 varieties. Mr. Scott, Merriott, sent the immense number of 290 varieties; and capital collections were also contributed by Mr. Ford, Mr. Spivey, Mr. Pragwell, gr. to D. W. Digby, Esq., The Castle, Sherborne, and Mr. Moffatt. The best collection of culinary Apples came from Mr. S. Ford, Mr. Chaff being 2d. The former had 80 varieties, all well grown examples, and the latter had 50, his specimens not being quite so large as he usually has them, but very good for the season. Very creditable collections also came from Mr. W. Thompson, Clements, Ilford; Mr. Lydiard, Batheaston; Mr. Spivey, and Mr. Stephenson, gr. to T. C. Barker, Esq., Leigh Hill, Essex. The 1st prize for the most complete collection of Pears, three fruits of each variety, was taken by Messrs. Baltet frères, who put up 350 sorts!—probably the most complete collection ever seen. Many of the fruits were magnificent in size, but a great number were much smaller than usual. The most noticeable kinds were Calabasse Carrefour, very large; Ne Plus Meuris, De Loire, Prince Imperial, Theodore Van Mons, a different Pear from the one grown under that name in this country; Thompson's; Beurré Superfin, very distinct; Passe Colmar, also unlike our variety of that name; Lieut. Poitevin, fine in size, but not in shape; Urbaniste, Bergamot d'Esperen, De Tongre, not unlike a large Beurré Bosc; Passe Colmar Musqué, quite unlike the Passe Colmar form, being nearly round; Emile d'Heys, Doyenné Roux; Sénateur Vaisse, like a large Knight's Monarch; Doyenné Goubalt, very fine; Marie Benoit, fine; Belle de Septembre, large and good; Beurré Diel; and Louise Bonne d'Avranches of Jersey, the same as the old variety. Of certain new varieties of MM. Baltet's raising we shall speak next week. Next to MM. Baltet came Mr. Chaff; an extra prize being awarded to Mr. Spivey. Both contributed capital lots. The competition in this class for second honours was very strong, the exhibitors being Mr. W. Gardiner, gr. to E. P. Shirley, Esq., Lower Eatington Park; Messrs. Lucombe, Pince & Co., Mr. Wildsmith, gr. to Viscount Eversley, Heckfield Place; Mr. Pragnell, Mr. Carmichael, Mr. Webb, Mr. Stephenson, Mr. S. Ford, and Mr. Lydiard, Batheaston; the best varieties shown being Louise Bonne of Jersey, Beurré Magnifique, Huyshe's Prince Consort, Easter Beurré, Gansel's Bergamot, Duchesse d'Angoulême, Beurré de Rance, Beurré Clairgeau, Seckle, Beurré Diel, Knight's Monarch, Forelle, Prince Albert, Huyshe's Bergamot, Huyshe's Victoria, British Queen, Délices d'Aremberg, Beurré Bachelier, Triomphe de Jodoigne, and Beurré Hardy. The best collection of dessert and kitchen Pears also came from MM. Baltet Frères, the first-named being really a grand display. For dessert kinds Mr. Moffatt, and for kitchen sorts Mr. Earley, were respectively 2d, with first-rate collections. G. F. Wilson, Esq., Mr. Chaff, Mr. W. Thompson and Mr. Stephenson also exhibited.

Of Grapes the show was a very good one, and though we had no strikingly sensational examples, those shown both for the International and the Society's prizes were first-class. Messrs. Lane, of Great Berkhamsted, in a collection which took the 1st prize, sent one of the largest and most beautifully finished bunches of Muscat of Alexandria ever seen, as well as magnificent bunches of Black Hamburgh, Black Muscat of Alexandria, Golden Champion, Muscat of Alexandria, and Alicante. Mr. Meredith, of the Vineyard, Garston, who was 2d, sent fine bunches of Black Hamburgh, Madresfield Court, Child of Hale, Lady Downe's, Trebbiano, and Alicante, all of good quality. The largest bunch in the exhibition came from Mr. Bannerman, gr. to Lord Bagot, Blithfield Hall, Rugeley, a finely proportioned bunch of Barbarossa, weighing 6 lb.; and Mr. P. F. le Sueur was 2d. In the class for a collection of Black Grapes, Mr. Bannerman was also 1st, with grand examples of Mill Hill Hamburgh, Barbarossa, Alicante, &c.; Messrs. Lane being 2d and Mr. Meredith 3d. Amongst the varieties well represented were Trebbiano, Child of Hale, Charlesworth Tokay, Bowood Muscat, Mill Hill Hamburgh, Muscat Hamburgh, Madresfield Court, &c. From the Society's Garden, Chiswick, also came a collection of 21 sorts, good both in bunch and berry, and in every respect an interesting exhibition.

In the miscellaneous class were three very fine Pines from Mr. Miles, gr. to Lord Carrington, one Smooth Cayenne, cut from a plant 19 months old, and weighing 9¾ lb., and two Queens, cut from plants 13 months old, and weighing 4½ lb. each; another very fine Queen Pine from Mr. Jones, gr. to Earl Vane, Wynyard Park; and three, weighing 4½ lb. each, from Mr. T. Burnett, gr. to W. Terry, Esq., Peterborough House, Fulham; three splendid specimens of Cox's Golden Gem Melons from Mr. Moffat; fine dishes of Walburton Admirable, Chancellor, Barrington, and late Admirable Peaches, from Mr. Jack, gr. to the Duke of Cleveland, Battle Abbey, Sussex ; a splendid collection of Late Peaches and Plums from Mr. Tillery, gr. to the Duke of Portland, Welbeck ; a nice dish of Guavas (Psidium Cattleyanum), from Messrs. Lucombe, Pince & Co. ; a very nice miscellaneous collection of fruit, including good Melons, Peaches, Plums, Cherries, and nuts ; examples of Belle de Fontenay Raspberry, a very excellent, free bearing, and late variety, from Mr. Turner ; a dozen very fine Salway Peaches from Mr. Colborne, gr. to J. Blyth, Esq., Woolhampton ; a beautiful basket of Coe's Golden Drop Plums, from Mr. Record, gr. to the Marquis of Salisbury, Hatfield House ; a very fine collection of 21 varieties of Nuts and Filberts from Mr. Webb, Calcott ; a dozen very handsome specimens of the new Brockworth Park Pear, from Messrs. J. & C. Wheeler, of Gloucester ; some good Plums and Cherries from Mr. B. Porter, gr. to Mrs. Benham, Isleworth ; and a very large and interesting collection of Apples from Messrs. Rivers & Son, Sawbridgeworth ; a large and very good collection of Pears from Messrs. J. & C. Lee ; and a smaller one, of superior quality, from Mr. Cadger, gr. to J. Shaw Leigh, Esq., Luton Hoo.

Exhibition of Fungus.—Year by year these exhibitions undoubtedly gain in interest and value, and the display of Fungi on Wednesday last was better than that of any of its predecessors. One always finds something new at these exhibitions, either in the display of species new to the British Flora, or in the form of some advance made in the science of mycology. Out of such a vast collection of Fungi, as exhibited on Wednesday, it is almost impossible to note all the novelties, but probably the only species really new to our lists was the undoubted Agaricus clavipes of Fries ; the specimens exhibited were found by Mr. Plowright, of King's Lynn ; but lately this species has heen quite common about the north of London and Epping Forest. The next object of interest was, perhaps, the large group of Coprinus atramentarius, Fr., grown from spores planted in the spring of this year by the writer of this notice. No other competitor appeared under class 3 for cultivated edible Fungi. As this is probably one of the first efforts made in this direction, the following particulars of the experiment may have some interest. This species was selected for trial, because it commonly comes up in garden beds, and because all the Coprini are of very rapid growth. The spores were planted in a common sunny garden bed, near a place where one post of a wooden swing once stood, this position being selected because the plant in question frequently grows about decayed wood ; the spores were deposited by merely placing some ripe plants, gills lowermost, upon the earth. The spores probably germinated at once, for during the present September an abundant crop of Fungi appeared, of the same species as the one placed upon the bed, and in the exact spot where planted. I have observed elsewhere that there are two crops of this species every year, one in May, the other in September. Some other species of Coprinus are very readily grown ; for instance, C. radiatus, Fr., will appear in a day or two after living spores have been placed in tolerably fresh horse-dung. An account, too, has been published elsewhere of the artificial production of Agaricus Loveianus, B. Three species of Geaster were exhibited, one a magnificent species, referred to G. tunicatus, Vitt., found amongst Rhododendrons at Castle Ashby. This has been exhibited here before, but it is a singular fact that neither of the two new species of Lycoperdon exhibited last year were shown again this season. It is also remarkable that the fine Lactarius controversus, P., has at last appeared in the London district, and is now met with in Epping Forest. Hitherto it had only been sent from Hereford and the adjoining districts. It seems quite possible that on these plants being transmitted from one place to another the spores may get disseminated and grow in the new districts. Several striking instances might be cited in support of this ; for instance, two years ago we had specimens of the rare Agaricus popinalis sent us from Bath ; it had never been hitherto detected in the London district, but now it has become quite a common plant about here. We never saw the rare and highly coloured Peziza radiculata, Sow., till a year or two ago, and after bringing some fresh specimens to London, a large bed of it grew shortly after, almost close to our very door. A great many other very curious instances might be given if we had space at our command. Three specimens of Sparassis crispa, Fr., were shown, good specimens of Polyporus intybaceus and P. giganteus, and plants of P. dryadeus from an Oak, and P. squamosus from an Elm, of unusually gigantic proportions. Two enormous groups of Agaricus jumosus, var. polius, were at one end of the room. It is probable that such extraordinary groups of this species were never seen before ; they were each about 4 feet round. There was but one poor specimen of Fistulina hepatica exhibited, showing how impossible it is to depend with any certainty on the appearance of certain Fungi in certain seasons. For our own part, after making every effort, and showing the contents of seven hampers full of Fungi, we could only get one Agaricus rubescens, and no one had Hygrophorus virgineus at all. A splendid plant of Thelephora multizonata, Berk., was exhibited by Mr. English, from Epping Forest, together with Polyporus Schweinitzii, and Agaricus (Flammula) alnicola, Fr., the latter incorrectly labelled as Agaricus conissans. This species (A. alnicola) was exhibited last year, and made out with much care by Mr. Berkeley. It is common in Epping Forest and elsewhere. Mr. English also had Polyporus imbricatus, Bull, which is new to our lists, but we had it at the Horticultural Society last autumn. The exhibition of Boletus castaneus and of a Cordiceps on a wasp, by Mr. Michael Terry, deserve a line of record, as does Agaricus porrigens, from the grounds of the Duke of Argyll, at Inverary, and the beautiful specimen of Cortinarius armillatus from Reading ; this species was very striking, as the stem is furnished with a narrow vermilion zone, bright in colour, like a collar of arterial blood. Some beautiful specimens of Clavaria formosa were forwarded by Mr. Broome, and we observed Agaricus vaccinus and A. obturatus in the room.

It was altogether a most successful and very instructive exhibition, as nearly all the edible and poisonous Fungi, with many plants of great botanical interest, were shown in a living state. The visitors showed the greatest possible interest in the plants exhibited, and it must be conceded by all that the Fungus exhibition is one of the best attended of the year. Fungi at length begin to be appreciated according to their deserts, and are no longer set down as the favourite food only of a mere few famous but fanatical fungologists, and as not fit to take a foremost place in the autumn fare of ordinary people. The weather had been anything but favourable for Fungi for many weeks previous to the exhibition, so that the success of the show, and the many species and specimens displayed, were somewhat unlooked for. The fine sunny weather of harvest time made the hearts of fungologists sink, and their expectations fall to zero. They asked themselves and each other where would Fungi be after such a wretchedly dry and brilliant September. With depressed and despairing faces they scoured the country, to find nothing but melancholy fields of ripe corn. Even the deep woods were speckled with flecks of exasperating sunlight, and the delightfully dank, wormy, and vaporous places of old, were dried with the drought. Fungus eaters were fain to stop at home and hide their mortification, till at last, and just as all the harvest had been gathered in, the rain came down in one continued outpour, but almost too late for the feast. *W. G. Smith.*

As regards the prizes awarded for Fungi, we may say that in the class for a collection of edible and poisonous Fungi, the exhibitors were Mr. English, Epping, Mr. W. G. Smith, and Messrs. Hoyle & Austin, Reading ; and the prizes given by W. W. Saunders, Esq., were in the first instance awarded by the judges to the two first-named ; but, through some informality on the part of these exhibitors, the 1st prize was afterwards given to Messrs. Hoyle & Austin, who also staged the best collection of edible Fungi.

Floral Committee.—W. Marshall, Esq., in the chair. This was a very small meeting, nevertheless it was productive of a few plants which were thought worthy of First-class Certificates — Desmodium penduliflorum, a rather new Japanese shrub, with crimson-lilac leguminous flowers, from Mr. Bull, and which is said to be hardy ; and Macrozamia spiralis, a very handsome Cycad, which has been in cultivation in England for some years, and was certificated on this occasion as a good old handsome greenhouse plant. This came from Mr. B. S. Williams. Mr. Green, gr. to W. W. Saunders, Esq., exhibited a most interesting series of Terrestrial Orchids, from Trinidad, St. Catherine's, New Grenada, and Rio de Janeiro ; and also a plant of Miltonia Morelliana, on which were five of the most magnificent flowers we ever saw. A Special Certificate was awarded. Several collections of plants were shown in connection with the fruit show in the conservatory, and amongst these were a showy group from Messrs. Veitch & Son, which included a specimen of Oncidium macranthum, with eleven flowers ; a fine specimen of Zygopetalum maxillare, and flowering examples of Vanda Bensonæ, Miltonia Morelliana, Vanda cœrulea, finely bloomed ; Pleione lagenaria, and a nice specimen of the new Vriesia brachystachys, &c. Mr. W. Bull and Mr. B. S. Williams also contributed choice groups of Orchids, Palms, Ferns, and other flowering plants. Messrs. Standish & Co. exhibited a nice group of plants, including some fine new Gladioli, hybrids between G. brenchleyensis and G. cruentus, of which latter beautiful plant he also exhibited a flowering specimen. Mr. W. Paul exhibited a dozen of exceedingly well flowered Tea Roses in pots, which attracted a great amount of attention, in such fine condition were they shown for this late season. To most of the above extra prizes were awarded.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair. Though a great number of subjects were brought before the Committee on this occasion, only two awards were made,—Special Certificates to Mr. Cox, Madresfield Court Gardens, for a handsome dish of Rivers' Victoria Nectarine ; and to Mr. Carr, gr. to P. L. Hinds, Esq., Byfleet, for fine specimens of the Avocado Pear, Persea gratissima. From the Chairman came some capital examples of Doyenné du Comice Pears ; from Mr. W. Paul a Pear named Souvenir du Congrés, which was approved of by the Committee, though it was past its best ; from the Society's Garden, Chiswick, came examples of Madresfield Court Black Muscat and Frankenthal grown in a cold house,—the Madresfield Court was fine in appearance and superior to the Frankenthal, thus showing its value for cultivation in cold houses. Mr. A. Ingram, Alnwick Castle Gardens, sent examples of a seedling Grape strongly resembling Mrs. Pince's Black Muscat, but superior to that variety in flavour ; and from Mr. Bannerman, gr. to Lord Bagot, Blithfiled, Rugeley, came a Grape stated to bè a seedling, but which the Committee considered to be the Mill Hill Hamburgh. Mr. Wildsmith, gr. to Lord Eversley, sent a large bunch of Black Hamburgh Grapes grown on a Vine 30 years old, and transplanted last February ; and from Mr. W. Taylor, Southbrook Road, Lee, Kent, came examples of Chenopodium Quinoa, which is recommended as a substitute for Spinach. From Mr. Gardiner, Eatington Park, came a collection of 25 varieties of Potatos ; and Messrs. Carter & Co. sent a fine lot of Onions, including Naseby Mammoth and Nuneham Park, which the Committee considered to be very closely allied ; also good selections of the White Spanish ; and the new White Intermediate and Bedfordshire Champion, considered to be identical. Mr. Hepper, The Elms, Acton, sent fine examples of his Giant Tomato, and Mr. Wildsmith also exhibited some very fine specimens of Veitch's Autumn Giant Cauliflower. Mr. Evershed, Munsted Gardens, Godalming, had a collection of vegetables, consisting of Cauliflowers, Peas, and Vegetable Marrows. Mr. Gardiner, gr. to Lady C. B. Percy, Guy's Cliffe, Warwick, exhibited examples of a seedling Grape, which produces sometimes white, sometimes black, and at others variegated bunches,—the Committee considered it to be the same as the Aleppo or Variegated Chasselas. From Mr. Pearson, Chilwell, came several seedling Grapes of great promise, one named Abram Bass, a large black berry, like Alicante, with a Muscat flavour, being considered highly promising. From Mr. Wells, Southend, came some examples of Grapes grown in ground vineries, not, however, of such good quality as in former years ; the varieties were Golden Champion, Black Hamburgh, Muscat of Alexandria, and Muscat Hamburgh. Mr. Parsons, Ranelagh Nursery, Leamington, exhibited specimens of the Abercairney Grape, which is the true Alicante. Messrs. Lucombe, Pince & Co., also sent a white seedling Grape, having large bunches and oval berries, sweet in flavour. Mr. G. Carnford, gr. to H. D. Streatfield, Esq., Cheddington, Edenbridge, Kent, had some good specimens of Late Admirable Peaches, and some fine examples of Walburton Admirable Peaches also came from Mr. Poulton, gr. to C. S. Dickins, Esq., Coolhurst Park, Horsham. Messrs. Veitch & Sons exhibited a large and interesting collection of Beets, with examples baked and boiled, including Nutting's Dwarf Red, Whyte's Black, Dewar's Dwarf Red, Cattell's Crimson, Dell's Crimson, Pine-apple, Egyptian Turnip-rooted ; also the Improved Silver or Seakale, and the Red Brazilian for decorative purposes, and some very well-grown Endives. Mr. Bland, gr. to Earl Kilmorey, Gordon House, Isleworth, sent a fine basket of Mushrooms ; and from Mr. F. Dancer, Chiswick, came dishes of Belle de Septembre and Sandall's Plum, both valuable late culinary varieties. Messrs. Carter & Co.'s prizes, offered for a collection of 6 varieties of American Potatos, were taken by Mr. C. Frisby, gr. to H. Chaplin, Esq., and Mr. J. Garland, Killerton, Devon.

Notices of Books.

Hardy Flowers : *Descriptions of upwards of Thirteen Hundred of the most Ornamental Species, and Directions for their Arrangement, Culture, &c.* By W. Robinson, F.L.S., author of "Alpine Flowers for English Gardens," &c. London : Warne & Co.

Whatever the causes, and they may be various, there can be no question that the class of plants known as hardy perennials have for some years been neglected by cultivators in the search for materials for the decoration of the flower garden, except in the few instances in which particular genera or species have been taken up as florists' flowers. That our gardens were thus losing much of the interest which should attach to them was becoming evident ; and not all the attractions of masses of brilliant colours, albeit though sometimes arranged with the highest artistic skill, could ward off the inevitable charge of sameness and monotony, while in too many cases the want of skilful arrangement laid the flower garden open to the additional charge of meretricious vulgarity. These facts being patent, and the public taste being ripe for change, our horticultural penmen, and none more sedulously than the author of this book, have set themselves to endeavour to bring about a revival of the taste for hardy flowers, and not without a considerable amount of success.

The book now before us is written in aid of this object, and has, as we happen to know, not been hastily thrown together, but is the result of study and application over a considerable period. Moreover, it is a subject upon which his own personal experience has specially assisted him—a vast advantage even to the most prolific book-makers. Hence we are disposed to regard it as one of the best of the many books its writer has produced, and we may at once specially point to one of its features which will, no doubt, be of especial value to many of those who consult its pages, namely, that of indicating the positions for which each of the plants described is best adapted. These plants comprise, as we are told, "the cream of all the ornamental, hardy herbaceous, alpine, and bulbous plants, at every elevation, from sea-shore to snowy peak, that are now to be had in cultivation."

After an introductory page or two, we come to the first part of the book proper, which comprises chapters on the mixed border for hardy flowers, on the mixed shrubbery border, on beds and groups of hardy perennials, on the isolation of hardy plants, on hardy perennials and alpines as bedding plants, on similar plants in the rock garden, the wild garden, in water, and in boggy ground, on hardy florists' flowers, on hardy flowers in the spring garden, on the culture of hardy flowers, and on the propagation of hardy flowers. We take a passage from the chapter on spring gardens, to show how this part of the subject is handled :—

"The garden depends as much for its beauty in spring on hardy flowers as the spring does for its life on the sun. How the earth is embellished with plant beauty at this season must be apparent to all who can get a glimpse at her where yet even a little free. For countless ages the flowers of spring have been the joy of man. From the time of our first great poet, Chaucer, who forsook his book and his devotion to walk in the mead to see the flowers 'against the sunné spread,' to Milton's 'vernal flowers,' and Shakspeare's 'Violets dim, but sweeter than the lids of Juno's eyes, or Cytherea's breath,' 'pale Primroses,' 'Lilies of all kinds,' and the 'Flower de Luce,' their beauties have been sung by our greatest poets. But beautiful as are our own wildings, we may enjoy a host of continental, American, North Asian and other plants, which, being as hardy and as easily grown as our own, would make the margins, so to speak, of our garden paradisiacal enough to inspire a horticultural Burns. How snowy white, how thoroughly hardy, and how pretty and useful even as tiny evergreen shrubs, are the Iberises !

How they live on or in anything—thrive on rockwork, and luxuriate on the level ground, even if wet and heavy enough to kill some of their pretty allies! Many and beautiful are the spring-flowering plants of the same order, which would thrive if only granted a spot in some outlying half-wild place, and would doubly repay in one spring day the very slight trouble of obtaining and planting them. Where will the Aubrietias not thrive if let alone? and what more beautiful? The numerous beautiful Narcissi-strong, rampant-growing, too—how lovely are they, and how effective in Spring! How sweet is odorus, how pale and graceful tortuosus, how golden and showy maximus! Is there any spring flower that can surpass in beauty or interest poeticus or ornatus, which is very liket he poet's Narcissus, but a week or two earlier in flower? These will all grow in the wildest of shrubbery margins, if only permitted to develope their leaves in peace. In many other orders are there things of beauty suited for the sort of gardening I am advocating: however, it is needless to mention the many plants that may be used in the spring and early summer garden, as that is done in the body of the work. But is there any of this beauty to be seen in eight out of ten of the gardens of England—of the beauty of either choice British or hardy exotic plants? Very little! A chance spray here and there has escaped the incursions of the Vandals, and though people write and talk a good deal of spring flowers and spring gardening, yet, speaking generally, there is no such thing as spring gardening to be seen in English gardens. I do not call the display of a few Forget-me-nots, Wallflowers, &c., stuck in in the autumn to produce a few faint and abortive flowers in spring, and, perhaps to be torn up before they have time to open them fully, 'spring gardening.'

"Leaving out all the fine hardy subjects introduced into botanic gardens during the last 20 years, where are the Anemones of sorts, the double Rockets, the pretty double white Ranunculus, the fine double Wallflowers of sorts, and the numerous 'good things' with which our fathers used to make a garden pleasant during the sweetest months of the year? Frequently thrown away, or so neglected that persons with large gardens, and who spend much money on them, have, during the sweetest months of the year, not half so many floral charms around them as the peasant who happens to live in a good wild flower district!"

Here is one of the several examples of grouping hardy flowers in beds:—

"No 2. This shall be a grand bed of Lilies. Unhappily, the fine hardy kinds of Lilies are anything but as plentiful as they should be, though in a free rich soil they increase readily enough. Few may have them sufficiently plentiful for some time to make beds of them, but when once people know how truly fine they are when seen well-arranged in a large bed in an isolated place, they will hardly rest content without such glorious garden ornaments. With such kinds as Lilium testaceum, and tigrinum Fortunei in the centre, surrounded by the queenly candidum, burnished croceum, spotted canadense, pomponium, colchicum, vivid chalcedonicum, and gradually worked down to the edge with dwarf but beautiful kinds like eximium, longiflorum, and tenuifolium, a large circular or oval bed might be made on the grass, in some isolated spot, which, for the highest beauties of colour, form, and fragrance—for, in fact, almost every quality by which vegetable beauty endears itself to us—could not be surpassed by any arrangement of indoor or outdoor plants. The only precaution that need be mentioned is, that to grow Lilies well they should have 3 feet, or nearly that, of free loamy earth, with a good dash of vegetable mould in it. Even now, such kinds as L. tigrinum, longiflorum, candidum, croceum, bulbiferum, &c., are to be had pretty cheap—although the chief thing that gardeners have been doing with the hardy Lilies for some time past has been to throw them on the rubbish heap, to make way for such glorious 'stuff' as the yellow Calceolaria and the red Geranium."

The second part, which forms the bulk of the book, is devoted to an alphabetical arrangement of the most ornamental hardy flowers, and comprises descriptions of the plants, with brief notes on culture, and observations on the positions for which the different kinds are best suited. An example will best show the character of this part of the book. We select that relating to Spiræas:—

"*Spiræa Aruncus* (Goat's-beard S.).—A vigorous perennial, 3 to 5 feet high. Flowers, in summer; white, small, freely produced in long spikes forming a terminal panicle. Leaves, tripinnate; leaflets in 3 or 4 pairs with an odd one, about 2 inches long and about 1 inch broad, oblong, acute, serrate; the terminal one ovate. Europe, Asia, and America.—Associated with the more vigorous herbaceous plants by wood-walks or banks, &c., and also grouped with the finer herbaceous plants having fine foliage. Division.

"*Spiræa Filipendula* (Dropwort).—A rather common native herb, with pinnate leaves and erect stems, 1 to 2 feet high. Flowers, in summer; yellowish-white, often tipped with red, rather larger than those of S. Ulmaria, in loose terminal corymbs. Leaves, mostly radical or on the lower part of the stem, alternate, smooth, divided into numerous oblong-linear segments, deeply toothed; roots swelling into small oblong tubers here and there. The double variety, S. Filipendula fl.-pl., is a very pretty border-plant. Common in meadows throughout Europe. —Borders, in ordinary soil, or as a Fern-like edging-plant, the flowers to be pinched off. Division.

"*Spiræa palmata* (Palmate Spiræa).—A new and handsome kind, 1½ to 2 feet high. Flowers, in June and July; crimson, in a terminal panicle which is many times divided. Leaves, 4 inches long, alternate, stalked, palmate, with 5 to 7 lobes, smooth, veined and reticulated, pale underneath; lobes oblong, pointed, sharply and twice serrate. Stem herbaceous, striated, erect, smooth. Japan.—Borders, and beds of the finer perennials, in deep sandy loam. Division.

"*Spiræa Ulmaria* (Meadow-sweet).—A common British plant, with erect, reddish, angular, and furrowed stems 2 to 4 feet high. Flowers, in summer; yellowish-white, sweet-scented, small, numerous, in a large, very compound cyme, the outer branches of which rise much above the central one. Leaves, large, pinnate; leaflets 5 to 9, ovate, coarsely serrated, terminal one largest and 3-lobed; stipules roundish, joined to the stalk. There is a variegated variety, and also a double flowered one. Europe and Britain.—Borders, in any soil, and in waste places. Division.

"*Spiræa venusta* (Queen of the Prairie).—A handsome hardy perennial, 1½ to 3 feet high. Flowers, in summer; deep rosy-carmine, in large terminal compound cymes. Leaves, large, pinnate; leaflets palmate-lobed; lobes pointed and irregularly toothed. North America and Siberia.—Borders, margin of shrubberies, beds of the finer perennials, or naturalisation, in sandy loam. Division."

The third part consists of select lists of hardy flowers for various purposes—a very useful section to those who need this kind of help in planting their gardens. Thus we have the best herbaceous plants, the best bulbs, the best alpines, spring-flowerers, autumn-flowerers, shade plants, edging plants, silvery leaves, carpet bedders, aquatics, prostrate or drooping growers, climbers, white flowers, red flowers, blue flowers, yellow flowers, fragrant flowers, &c. There is an index of generic names, giving the natural orders, a glossary, and an index of English names. The whole forms a handy-sized book, of some 340 pages.

Garden Memoranda.

MR. CANNELL'S NURSERY AT WOOLWICH.—Whoever wants to see *multum in parvo* in perfection, should take train (and they start every few minutes), either from Cannon Street, Charing Cross, or London Bridge, to Station Road or Dockyard Station, Woolwich. Arrived at the nursery two things strike a stranger as he enters. The one is the smallness of the place, and the other the immensity of the stock. It seems impossible that so much stuff could be produced or kept in such small compass. Not that the nursery is absolutely a Pandora's box, though relatively—and in regard to its apparently inexhaustible stock of good things—it is much more wonderful. As one gets accustomed to the place, several other facts bore their way into the mind. It is impossible not to be struck with the smallness of the plants, as well as their numbers, and yet every one seems perfectly healthy, models of shape and symmetry—there is no undue proportion, head and heels, root, stem, leaves, flower—all are perfect in health, and properly proportioned the one to the other. The major portion of the stock reminds one of a choice collection of first-class dolls, every member is perfect, and there is not a monstrosity among them. Mr. Cannell seems to have some hidden faculty for calling forth baby plants, with every member perfect, at will. Whole hosts of cultivators have tried to do likewise for many long years, but very often the plants refuse to come. But Mr. Cannell set himself down on this unlikely spot, and his faith and enthusiasm have bidden the waste railway bank to teem with life and glow with beauty. But why keep the plants so small? Want of space might seem to answer the question. But that is not the real answer; this is to be found chiefly in the character of Mr. Cannell's business. A great portion of this is conducted through the post—tiny plants, robust in health, and with the roots laced round rather than wrapped in a modicum of damp moss, are placed between the protecting sides of cards, and sent all over the country, throughout Europe, America, Australia, India, and indeed the whole world. The first condition in such a style of business is the reduction of weight; therefore a maximum of vitality, with a minimum of size and weight, is Mr. Cannell's first object—he packs the utmost amount of vital force and power of endurance in the smallest possible compass, and then despatches them in their fragile cases to do battle with time in all quarters of the globe; and mostly the plants fight bravely for dear life, and come off victorious. Mr. Cannell's testimonials from distant and foreign parts are so many testimonies to the endurance of life under difficulties as well as proofs of Mr. Cannell's skill as a cultivator and packer, for plants are grown rather than packed into safe transit. A great amount of healthy life in a small compass is not only a talisman of safety on long journeys, but a patent method of reducing the cost of transit by other means than by post. The cost of sending heavy plants long distances by steam or rail eats their heads off over and over again. I have often had presents of plants dearly purchased twice over by the cost of conveyance. Mr. Cannell has reduced the expense of transit by rail or boat to the lowest figure. For bulk, that costs much to move from place to place, he offers growing force that costs nothing. Instead of the dead weight of substance already formed, he supplies energies in embryo, or with its first lines vigorously laid down. His stocks are foundations rather than buildings, and the difference of transfer is as that between a load of concrete and the heavy materials of a finished house. I dwell the longer upon this, because it is a most important point, and Mr. Cannell goes almost to extremes in lightening the weight of plant parcels to the utmost. For instance, those who object to the weight of roots, are offered cuttings of all the plants grown, at a lower rate. This reduces the cost of carriage to the lowest limit; and, it need hardly be added, that cuttings of many plants in skilful hands are almost equal to rooted plants.

But it may be asked, What does Mr. Cannell grow? It would take much space to answer this question, and I do not intend to give a mere list of names. Perhaps his *forte* is Pelargoniums. Among these, of all sorts and sizes, of every shade of leaf and flower, he revels. And he is not simply a grower, but a hybridiser and seller of choice seeds. His house of Zonals for seed-saving was a grand sight at the time of my visit. To give names would be merely to skim the cream of all the best varieties extant. I noticed a pretty new class among the Zonals. For some time we have had stray symptoms of a break among the flowers as well as the leaves, and now we have painted or variegated flowers. It is probable that after a time each petal may be as different from the other among the Zonals as the different petals in the show or fancy classes of Pelargoniums. Such varieties as Fairy Ring, with their bright pink eye, surrounded with a pure white disc, will probably break into other markings, as, indeed, some of them are doing already. But one must add a word about Fuchsias. Well, I found a houseful of fine stuff of all the best varieties, while the sensation plants were taking a cooler by the side of the railway at the close of their summer campaign. Mr. Cannell is also very strong in Chrysanthemums, Alternantheras, of which there were very many thousands of amabilis alone; Echeverias, Sedums, Saxifrages, Sempervivums, Verbenas, Pentstemons, Phloxes, Pansies, Violets, Dahlias, Carnations, Calceolarias, Antirrhinums, &c.

Mr. Cannell is an enthusiast in carpet bedding, and keeps a splendid stock of plants adapted for this style of furnishing. His large bed, already noticed in the *Gardeners' Chronicle*, is the finest example of this or indeed any style of bedding that I have seen this season; the plants in that one bed are worth from £50 to £70. There was a wonderful fine stock of Dactylis elegantissima growing close to this bed. Altogether this nursery well repays a visit; it is a grand example of the pursuit of gardening under difficulties and of the gathering up of fragments and patches of land that nothing be lost; it also shows what energy and skill and glass can accomplish in the art of production. Every spot here is made to teem with life, and all that life is produced for distribution. The latter fact is never lost sight of. Hence all plants, with the exception of Fuchsias or those grown for seed, are kept small, in order that they may be cheap to purchase and cheap to transport, and thus certainly largely distributed throughout the world.

Mr. Cannell is filling a most useful niche in the world horticultural, and sending much of the riches of the Old World to gladden places and people in the New, who, but for his prompt and skilful mode of business, would never have heard of nor seen them. Plants or cuttings per post, and at the lowest rates, by road, ship, or rail, to all parts of the world, with safety and despatch—ought to be inscribed in golden letters over the Station Road Nursery, Woolwich. *F.*

THE WEATHER.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, Oct. 4, 1871.

1871. Month and Day.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
Sept. and Oct.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
28. Thurs.	29.07	57.1	56.2	55.4	94	4.9
29. Friday	29.63	50.0	48.3	46.4	86	3.6
30. Satur.	29.52	46.3	44.0	41.5	84	3.0
1. Sunday.	29.07	59.6	53.9	48.8	68	3.9
2 Monday	29.09	51.3	48.9	46.5	83	3.6
3. Tues.	29.17	48.0	46.2	44.2	87	3.3
4. Wednes	29.54	48.8	47.4	45.9	90	3.5

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
Sept. and Oct.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
28. Thurs.	58.1	49.4	8.7	52.3	—1.9	variable	265	0.17
29. Friday	56.9	47.1	9.8	51.3	—2.8	variable	240	0.51
30. Satur.	56.8	45.2	11.6	47.6	—6.4	variable	330	0.34
1. Sunday.	62.1	44.8	17.3	52.3	—1.6	S.S.E. S.W.	350	0.61
2. Monday	59.6	47.2	12.4	52.3	—1.5	S.W.	375	0.01
3. Tues.	58.8	41.6	17.2	49.1	—4.6	S.W.: W.	235	0.00
4. Wednes	58.5	42.7	15.8	49.5	—4.0	variable	135	0.00

Sept. 28.—Overcast throughout. Rain fell during the early morning hours and frequently during the day.
— 29.—Overcast till 8 P.M., variable afterwards. Rain fell almost continuously during the day, and again after 11 P.M.
— 30.—Overcast till noon, and again at night. Variable during the day. Thunder and lightning prevalent about 3 A.M. Rain fell frequently.
Oct. 1.—Very variable. Frequent heavy rain, accompanied by thunder and lightning between 2 and 3 P.M.
— 2.—Large amounts of cloud prevalent throughout. A little rain fell at night.
— 3.—Variable, but fine. Hazy and foggy.
— 4.—Cloudless in morning; variable afterwards. Very fine.

JAMES GLAISHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, SEPT. 30, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg	In.
Portsmouth ..	65.2	35.2	30.0	60.6	43.7	16.9	50.9	2.45
Blackheath ..	65.1	41.9	23.2	57.5	45.4	12.7	50.2	3.34
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	57.6	40.0	17.6	54.6	43.5	11.1	47.8	3.86
Wolverhampton	56.7	40.5	16.2	53.4	43.5	9.9	47.2	2.95
Leicester ..	58.5	38.2	20.3	54.6	42.6	12.0	47.4	3.38
Norwich ..	59.8	40.2	19.6	56.1	45.1	11.0	49.4	3.18
Nottingham ..	62.6	37.9	24.7	56.0	42.5	13.5	48.0	3.20
Sheffield ..	57.0	36.0	21.0	53.6	41.3	12.3	46.2	3.69
Liverpool ..	55.9	40.5	15.4	53.1	43.9	0.2	47.3	2.20
Manchester ..	61.0	35.0	26.0	56.8	40.3	16.5	47.3	2.02
Salford	56.5	34.0	22.5	53.5	39.7	13.8	45.4	2.50
Bradford ..	59.0	38.0	21.0	54.2	42.4	11.8	47.1	2.71
Leeds	60.0	40.0	20.0	54.3	45.0	9.3	48.4	3.53
Hull	56.0	37.0	19.0	54.0	43.0	11.0	46.0	2.47
Newcastle ..	53.0	41.0	12.0	50.6	43.6	7.0	45.9	3.12
Edinburgh ..	52.7	37.0	15.7	..	..	..	44.0	0.60
Glasgow ..	54.6	33.6	21.0	..	..	..	45.2	0.30
Dundee.. ..	53.0	38.0	15.0	..	..	..	45.1	0.70
Aberdeen ..	52.5	36.2	16.3	..	..	..	44.5	0.67
Paisley	..	..	..	..	..	..	..	..
Greenock ..	52.5	38.0	14.5	..	..	..	45.5	0.50
Leith	54.4	37.4	17.0	..	..	..	45.5	0.61
Perth	57.0	33.0	24.0	..	..	..	45.1	0.68
Dublin	59.0	31.8	27.2	..	..	..	47.2	2.03

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

WHETHER *Caladiums* have ceased to be ornamental or not, they should now be collected from cool conservatories, greenhouses, &c., and taken into drier and warmer quarters, so as to ripen their bulbs properly before they enter their season of rest, which, in the case of early grown plants, has already arrived. The first symptoms of a tendency to ripen the leaves must be the sign to withhold water and to give but very little more afterwards. These remarks also apply to the requirements of *Gloxinias*, *Achimenes*, &c. At the risk of repeating suggestions given two or three weeks ago, I advise that all *Heaths* be examined minutely, to detect at the earliest moment possible any symptoms of mildew, which forms and spreads so quickly now. The useful winter-blooming *Ericas*, such as *E. Willmoreana*, *E. hyemalis*, *E. grandinosa*, and *E. gracilis*, should now be placed in as light and airy a position as possible, elevated upon pots turned upside down or otherwise, so that the blooms have every opportunity to form freely and well. With regard to watering, though it is needless to state that none should suffer, such as these need, if anything, even more attention than others whilst actively engaged in flower-bud formation. Bring pots containing bulbs of *Tropæolum tricolorum*, and any other of the section, into the full light of an exposed greenhouse shelf. Those who grow any of the winter blooming varieties of the old *Tropæolum Lobbii*, should shift them at once into their flowering pots, and place them in their winter quarters, so that they may get a good start before winter sets in. With the necessary amount of judgment reduce, by a slight but uniform gradation, the temperature in Orchid-houses. The temperature in the Cattleya-house should now be reduced to a mean of about 60° by night, with an increase, when by artificial means only, of 5° or 8° by day—the *Vanda*, *Saccolabium*, or *Aerides* houses being kept at an increase of 10° or 12° beyond this. Purchased bulbs of the pretty *Sparaxis*, *Ixias*, and clumps of the indispensable *Hoteia japonica*—so useful for forcing—should be potted immediately they come to hand, and be well "watered in" an hour or two subsequently, to settle the soil around the roots. It will be observed that many plants immediately they are "housed," or brought in from the outer air, will begin to ripen off previous to shedding many of their leaves, some varieties of course more than others. More attention will therefore be needed for some weeks to come in regard to keeping the structures free from too marked symptoms of decay. I deem it of some little importance, however, not to remove too violently or quickly such ripening leaves upon any kinds of plants which are at all valued. Rather permit them to ripen off as far as possible naturally, so that their natural functions are not interfered with. The buds upon *Chrysanthemums* may be thinned out as soon as they have made sufficient progress to enable the grower to discern well which should remain and which be removed, especially in instances where fine blooms are desired. In practice I could never see any real benefit gained by the thinning process. The few blooms left become larger, certainly, and are all very well where home decoration is sacrificed for the purposes of exhibition; not so otherwise, with the single exception of the new narrow-petaled Japanese varieties. The petals upon these are so long that the necessity for thinning may sometimes arise to obviate one bloom being unduly mixed up with others, which certainly destroys their individual beauty.

FORCING HOUSES.

Give the necessary attention to pot *Vines* intended for early forcing by removing them to a place where they can be kept perfectly dry, by way of a preliminary to pruning, &c. Where proper coverings are not afforded for outdoor Vine borders, especially those the Vines in which are forced, the best kind of temporary or makeshift protection should be made use of. Bracken Fern being light, and admitting the air with moderate freedom, makes a good base when placed about a foot thick; a proper thatch of straw may be given, which would make all watertight. Next to this, simply straw or stable litter, or both, used as above, should be requisitioned. *Pines* generally will now need much more caution in the matter of watering. Strictly speaking, each plant should now be tested, and watered or not according to its own individual wants. Finally and expeditiously make all right for the winter in regard to the tan-pits, and the materials used to cause the necessary fermentation. Fruiters must, when the fruit has almost finished swelling, be kept in a dry, high temperature, as by these means, aided by as free as possible a supply of fresh air only, is good flavour to be insured, especially at this infelicitous season. Pot *Figs* and all others which cease to produce fruit should be kept as cool as possible, to induce them to assume a state of rest, by laying the former upon their sides under a wall or some such sunny position. Where late *Melons* are still growing, maintain a somewhat dry heat to insure good flavour to the fruit. Wherever vacancies occur in *Peach*, *Nectarine*, or *Fig houses*, these should be made up forthwith by removing the most promising young trees of proper sorts from the outside walls.

HARDY FRUIT GARDEN.

Remove now decisively all young summer or late autumn growths from the wall fruit trees, to stop the activity of the roots, and to admit the light and air more freely around the older shoots which are required to remain. Preparation may be made at any time now for planting young *Fruit Trees* against walls, by properly preparing the ground, such as by adding fresh loam and a moderately good supply of wholesome manure. Those who are intending to plant young *Apricot trees* would do well to add a little chalk to the other soils collected to grow them in, if the natural soil of their district is not of a calcareous nature.

HARDY FLOWER GARDEN.

Lilies of the Valley may now be taken up and repotted for forcing, as well as a first batch of flowering shrubs for a like purpose. When the ground becomes moderately moist, and fit to work, *Anemones* may be planted into the open borders. The scarlet Turban and other *Ranunculuses* may likewise be planted into the border prepared previously. Be careful to plant with the root "claws" downwards, and not more than 2 inches deep, or less if the ground has been recently worked, and is likely to settle down at all. Prune immediately all pot *Roses* intended for winter forcing. Do not cut any fine strong shoots upon "Teas" too severely, but, by leaving three or four eyes upon such, endeavour to secure fine growths and blooms. I have alluded recently to the need of planting hardy bulbs early, and may refer to such as *Crown Imperials*, *Gladioli* of the hardy border kinds, *Fritillarias*, tuberous *Irises*, &c., in addition to those mentioned before. I would proffer another timely warning, *i. e.*, that all plants of any value be potted up forthwith and removed under protection. The time is already short to prepare the roots for winter, independent of the risk run if left out-of-doors any longer.

KITCHEN GARDEN.

I need add little to the suggestions of the past week or two in this department. The rain has come liberally, and the empty spaces are now filled with such subjects as are in demand throughout our trying winters. If suitable space still exists, by all means fill it with more *Lettuces*, *Endives*, *Cabbages*, *Cauliflowers*, &c., even at the risk of having an excess. A poor supply exhibits a weakness on the part of the cultivator, whilst superabundance is never found fault with. Sow a good batch of *Australian* or *Golden Cress* upon a warm southern aspect, as well as more *Turnip Radish* seed. *W. E.*

Miscellaneous.

ENGLISH GRAPES.—Our own country is noted for producing some of the finest Grapes in the world, and the fame of the giant Vines at Hampton Court and Cumberland Lodge, Windsor, is great. On one occasion George III. was so pleased with a performance at Drury-lane Theatre that he gave orders for a hundred dozen bunches of Grapes to be cut off from the Hampton Court Vine, if so many could be found upon it, and sent to the actors. The gardener executed his commission, and informed his royal master that he could still cut off as many more without stripping the tree. *Food Journal.*

Notices to Correspondents.

APPLE SKINS BECOMING LEATHERY: *J. J. S.* It is not uncommon for Apples when stored to turn of a dark colour, the skin becoming leathery. On such individuals Sphæropsis malorum sometimes occurs, but whether it is the cause or consequence of the change it is difficult to say. *M. J. B.*

ARAUCARIA IMBRICATA FRUITING: *F. E. T.* Yes, several times, at Bicton, Kew, and elsewhere.

ARTICHOKE GALL ON THE OAK: *W. W.* You will find an article on this gall at p. 1162.

BOOKS: *J. S.* Mr. W. Paul's "The Rose Garden," or Mr. Cranston's "Cultural Directions for the Rose," will meet your requirements.

DIPLADENIA: *Yorkshire.* Much the finest we have seen. The colour is a clear carmine, as deep on the outside as within, and the clear white sharply defined base of the tube is a distinctive feature. We should be glad to be favoured with your address.

DISEASES IN TEA: *G. L.* See p. 1296.

FIGS: *Sub.* Figs "gape" or split open through too much humidity surrounding them whilst ripening, either too much water at the roots, or too damp an atmosphere in which they are growing. The best sorts for general culture under glass are White Marseilles, Lee's Perpetual, and Bourjassotte Grise, the best of all Figs. There is no good manual on Fig growing yet written.

INSECTS: *Y., Balham.* Blatta americana, small variety. Sink two or three earthenware basins up to the rim in the ground of your Orchid beds, and bait them with bread crumbs. They will scramble in and can't creep out. *I. O. W.*—*McG., Brigg.* Caterpillar of Geometra (Odontopera) bidentata of Stephens; dentaria, Hübner. *I. O. W.*

LONDON AGENT: *F. M. Bilton.* We really do not know whether Mr. G. Classens has an agent in London or not.

NAMES OF FRUITS: *J. E., Dublin. Pears:* 1, not quite certain; 2, Urbaniste; 4, Flemish Beauty; 6, Beurré de Capiaumont. *Apples:* 1, Sops of Wine; 4, Hick's Fancy; 5, Dutch Mignonne; 6, Emperor Alexander; 7, Keswick Codlin; 8, Kerry Pippin.—*J. T. Apples:* 1, Oslin; 2, Warwickshire Pippin; 5, Herefordshire Pearmain; 6, Sturmer Pippin.—*J. C. & Co. Apple:* Cellini Pippin.

NAMES OF PLANTS: *G. D., Newry.* The common Soapwort, Saponaria officinalis.—*J. S. B.* Clematis tubulosa, Turcz., a native of N. China.—*J. S. J., Aberdeen.* Your Heaths are—2, the fine-leaved Heath, Erica cinerea; 1, the white-flowered variety of the same, E. cinerea alba; 3, the cross-leaved Heath, E. Tetralix; 4, the common Ling, Calluna vulgaris.—*J. G.* The flower and leaves both belong to Mutisia decurrens a very ornamental plant, frequently grown as a greenhouse climber, and originally introduced from the Andes of Chili.—*C. B.* 1, Lastrea patens; 2, L. aristata; 3, L. decomposita.—*J. C.* 1, Cheilanthes odora; 2, A very pretty and novel variety of Pteris serrulata, which we will take an early opportunity of noticing again.

NEW GRAPE, ROCKWOOD SWEETWATER: *J. Woodthorpe.* Is this anything else than an abortive sample of the common Sweetwater, or Royal Muscadine, having ripened early in consequence of having produced no seeds? There is nothing new in it, or worthy of being sent out as a new variety.

PALM-NUT MEAL: *C. P. Manchester.* The Palm-nut meal, used for feeding cattle, is the crushed seeds of Elais guineensis.

PERIWINKLE: *J. L., Southport.* If you are anxious to have your banks of this plant green all the winter, you must not cut it down until it shows signs of making new growth in spring, and then it is best only to thin it out.

SELECTION OF KITCHEN APPLES: "*Stewkly, Bucks.*" We would recommend the following:—Lord Suffield, Keswick Codlin, Hawthornden, Beauty of Kent, Tower of Glammis, Waltham Abbey Seedling, Blenheim Orange, Mère de Ménage, Alfriston, and Dumelow's Seedling.

STEWING PEARS: *Ibid.* Catillac.

VINE-LEAVES: *J. D. & S.* They are in a very bad condition. The raised spots on the under-side are extremely common, and are not injurious, but the larger brown spots, which in some cases destroy half the leaves, have arisen from water resting upon them. In one case we find an undescribed Phoma on them, but we do not suppose that it has anything to do with the condition. The roots must be in a very bad state, or there must be some other cause which can only be estimated on the spot to account for so much mischief. *M. J. B.*

WINE MAKING: *Frugylity* asks if some of our readers will inform him what vessels are required to make Grape wine from unripe Grapes, with and without their leaves, of which many, like himself, will have a large quantity this year. He would also be obliged for a recipe for making both still and effervescing wines; quantity, 18 gallons.

CATALOGUES RECEIVED:—George Such (South Amboy, N. J.), Catalogue of some Stove and Greenhouse Plants, including Orchids, Palms, Ferns, &c.—Joseph Tremble & Sons, Catalogue of Dutch Bulbs and other Flower Roots.—Richard Dean, Catalogue of Hyacinths and other Bulbs, Hardy Bedding Plants, Seeds, &c.—Butler, McCulloch & Co., Autumn Catalogue of Dutch and Cape Bulbs, Flower, Vegetable, and Agricultural Seeds, Plants, &c.—Ewing & Co., Catalogue of Dutch Flower Roots, &c.—Harrison & Sons, Autumn Catalogue of Selected Dutch and other Flowering Bulbs.—Wood & Co., Catalogue of Bulbs for 1871.—W. Thomson, Catalogue of Vines and Pines.—Geo. Jackman & Son, Catalogue of Hardy Trees and Shrubs, &c.—Child & Co., Catalogue of Dutch Bulbs, &c. Thomas M'Kenzie & Sons, Descriptive Catalogue of Dutch and other Flowering Bulbs.—George Yates, Catalogue of Flower Roots.—David Gold M'Kay, Descriptive Catalogue of Dutch Flower Roots, Roses, Fruit Trees, Hardy Ornamental Trees and Shrubs, &c.—J. W. Ottolander & Son (Boskoop), Catalogue of Nursery Stock.—Isaac Davies, List of Rhododendrons and Azaleas.—

William Wood & Sons, Catalogue of Roses, and Hardy Trees and Shrubs.

Communications Received :—R. D.—R. C. E.—W. H. R.—J. B.—R. S.—D. E. C.—C. W. D.—W. F.—C. C. H. G.—A. S. K.—W. W.—H. M.—G. McG.—J. D. F.—A. F.

MARRIED.—On the 28th ult., at Selhurst Congregational Church, by the Rev. N. T. Langridge, Goodwin Moginie Shaw, of 56, Cannonbury Park South, and Mark Lane, E.C., third son of John Shaw, of Northampton Park, Cannonbury, to Eliza Christiana, elder daughter of the late William Frederick Farwig. No cards.

Markets.

COVENT GARDEN.—Oct. 5.

A large consignment of foreign produce has reached us during the last few days, comprising Pears and Apples and some late Peaches—the latter, however, very inferior. Home-grown fruit, consisting of the same varieties, has been also more plentiful; and good late Peaches, such as Barrington and Late Admirable, are making better prices. Coe's Golden Drop and Magnum Bonum Plums are both coming very good.

Fruit.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve	2 0	to 4 0	Melons, each	2 0	to 5 0
Cobs, per lb.	0 6	— 1 0	Nectarines, per doz.	4 0	— 8 0
Figs	1 0	— 2 0	Oranges, per 100	12 0	—20 0
Filberts, per lb.	0 6	— 1 0	Peaches, per doz.	6 0	—12 0
Grapes, per lb.	1 6	— 5 0	Pears, per dozen	2 0	— 4 0
Lemons, per 100	8 0	—12 0	Pine-apples, per lb.	2 6	— 6 0

Vegetables.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Artichokes, per doz.	0	to 6 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz.	1 0	— 2 0	Leeks, per bunch	0 2	— 0 4
Brussels Sprouts, p. half sieve	3 0	— 3 6	Lettuces, per score	0 9	— 1 6
Cabbages, p. doz.	1 0	— 1 6	Mushrooms, p. pott.	1 0	— 2 6
Capsicums, p. 100	1 6	— 2 0	Onions, per bunch	0 4	— 0 9
Carrots, p. bunch	0 6	— 0 8	Parsley, p. bunch	0 2	— 0 4
Cauliflowers, p. doz.	2 0	— 6 0	Peas, per quart	10	— 1 0
Celery, red, p. bun.	1 6	— 2 0	Radishes, per bunch	0 2	— ..
— white, do.	1 0	— 1 6	Shallots, per lb.	0 8	— ..
Chilies, per 100	1 6	— 2 0	Spinach, per bushel	2 6	— 3 0
Cucumbers, each	0 6	— 1 0	Tomatos, p. sieve	4 0	— 6 0
— Ridge, p. dox.	1 0	— 2 0	Turnips, p. bunch	0 4	— 0 6
French Beans, p. lb.	0 4	— 0 6	Vegetable Marrows, per doz.	1 0	— 2 0
Herbs, per bunch	0 2	— 0 4			

Potatos (good samples), New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

The Planting Season.

J. SCOTT, The Nurseries, Merriott, Somerset, begs to offer to Gentlemen, who intend Planting this Season, a large and well assorted stock of all the best kinds of TREES and SHRUBS, in various sizes, and at very moderate prices. Now is an excellent time to plant Evergreens. CATALOGUES on application.

J. SCOTT'S extensive stock of FRUIT TREES, covering many acres, are this season fine, and grown in all the usual forms

CATALOGUES free; or the ORCHARDIST and its COMPANION at 2*s.*, describing over 2500 sorts, with Cultural Notes.

DUTCH BULBS, just arrived from Holland, in prime condition. CATALOGUES free on application.

Planting Season.—October, 1871.

LITTLE AND BALLANTYNE, The Carlisle Nurseries, Knowefield, Carlisle.

These old established Nurseries are well stocked with all kinds of FOREST TREES, SHRUBS, FRUIT TREES, &c., orders for which are respectfully solicited. The plants are healthy and well-rooted, and great care is taken in lifting, packing and forwarding. Prices moderate, and special offers made for large quantities.

Seed Warehouse, 44, English Street, Carlisle

Planting Season.

T. W. PILCHER, Station Nursery, Horsham, Sussex, can supply Ornamental TREES, SHRUBS, Standard ROSES, FRUIT TREES, PLANTS and SEEDS of every description.

Imported DUTCH Flowering BULBS.

T. W. P. has for Sale about 50,000 ASH, 3 to 6 feet; 2000 Spruce, Scotch and Austriaca FIRS, 3 to 7 feet; Common LAUREL, 2 to 6 feet, per 100 or 1000; Spanish CHESTNUT, 3 to 5 feet; also good flowering roots of TRITOMA UVARIA, per dozen or 100; ASPARAGUS roots for forcing, per 100 or 1000. Prices on application.

To Railway Contractors and Enclosure Planters.

S. ROBINSON has a very large Stock of fine 3, 4, and 5-yr. Transplanted and Budding QUICKS to offer, at prices varying from 7*s.* to 20*s.* per 1000. Samples, of not less than 250, to be charged.

S. R. has also a quantity of fine bushy SPRUCE, 2 feet 6 inches to 3 feet; about 50,000 LARCH, of a similar size, and 50,000 of a size smaller. A large quantity of fine SCOTCH FIR PLANTS, OAKS, and other FOREST TREES. Fine bushy HOLLIES, 3 to 5 ft. high. Samples and prices upon application.

S. ROBINSON, Shaw House, Melbourne, Derby.

To Planters.

LIMES, 10 feet; POPLARS, 10 to 16 feet; ACACIA, 10 to 12 feet; BIRCH, 10 feet; MOUNTAIN ASH, 9 feet; SYCAMORE, 10 to 12 feet; and other Trees.

AMERICAN and CHINESE ARBOR-VITÆ, PORTUGAL and COMMON LAUREL, HOLLY, RHODODENDRON, BERBERIS, BOX, YEW, THUJA AUREA and LOBBII, THUJOPSIS BOREALIS, and other Evergreens, good and cheap. A large quantity of EVERGREENS, suitable for potting. Priced CATALOGUE on application.

ROYALTY STRAWBERRY, 21*s.* per 100; 4*s.* per dozen.

J. TROTMAN, Spring Grove Nursery, Isleworth, W.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION; ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

CYCLAMEN PERSICUM (from the best growers), strong plants, in 3-inch pots, 3*s.* per dozen, 20*s.* per 100; can be had by the 1000. GERANIUM JEAN SISLEY, 6*s.* per dozen: cheaper by the 100. GOLDEN TRICOLORS, GOLD and BRONZE and ZONALS, all strong plants, in 3-inch pots, at low prices, all package free. A NEW AUTUMN CATALOGUE of GERANIUMS, FUCHSIAS, &c., is now ready, and may be had post free on application to

W POTTEN, Seedsman and Florist, Sissinghurst, Staplehurst, Kent

WILLIAM SCALING, Willow Nurseryman, Basford, Notts, is now booking orders for forward delivery of WILLOW PLANTS and CUTTINGS for TIMBER and ORNAMENTAL TREES for HEDGES and GAME COVERTS, and for BASKET-MAKING purposes. CATALOGUES free upon application as above. In the Press, and will shortly be published,

The SALIX, or WILLOW; a revised and enlarged Edition, containing Instructions for its Planting and Culture, with Observations upon its value and adaptability for the Formation of Hedges and Game Coverts. Post free, 1*s.*

RHODODENDRON HYBRIDUM, from seed, 2-yr. and 1-yr transplanted, 20*s.* per 1000; 4 to 6 inches, 30*s.*; 5 to 7, 40*s*; 8 to 12, 12*s.* per 100; 9 to 15, 15*s.*; 12 to 18, 20*s.*; 18 to 24, 30*s*; 24 to 30, 40*s.*; Stocks, 12*s.*; Splendidum (white), Maid's Blush, 12 to 15, 50*s.*; Jacksonii, Victoria, 12 to 15, 15*s.* to 18*s.* per doz.; Woolneri, 12 to 15, 12*s.*; Caucasicum pictum, 12 to 15, 10*s.* to 12*s.*; all bushy, healthy plants. EVERGREEN PRIVET, 18 to 24, 16*s.* per 1000; 24 to 36, 20*s.* BERBERIS AQUIFOLIA, 15 to 20, 50*s.* AUSTRIAN PINES, 18 to 24, 50*s.* ENGLISH OAK, 18 to 24, 20*s.* WYCH ELM, 24 to 36, 20*s.*; 36 to 48, 25*s.*

ISAAC MATTHEWS, Nurseryman, Milton, Stoke-on-Trent.

GRIGOR'S AQUILEGIA GLANDULOSA.—Strong flowering plants of this, the finest of all the Columbines, are now ready for sending out, at 10*s* per dozen, including basket and package; Smaller Plants, 30*s.* and 40*s* per 100; Seeds, 2*s.* 6*d.* per packet. Cash prices. For editorial remarks on this exquisite flower, see the *Gardeners' Magazine*, June 11 last, and *Gardeners' Chronicle* of the same date. JOHN GRIGOR and CO., Nurseries, Forres, N.B.

LABELS, LABELS.—PARCHMENT or CLOTH LABELS.—Tree or Plant Labels, punched parchment, 4 inches long, 4*s.* per 1000, or 10,000 for 35*s.*, cash on delivery. Sample Label sent on receipt of a postage stamp. Orders delivered free in London by JOHN FISHER and CO., Label Works, Boston, Lincolnshire.

Hot-Water Pipes and Boilers.

J. JONES and SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

6, Bankside, Southwark, London, S.E.

JAMES BOYD and SONS, Horticultural Builders and Heating Engineers, Paisley, N.B

CONSERVATORIES, GREENHOUSES, VINERIES, FORCING HOUSES, PITS, and every description of Horticultural Building, manufactured in Wood or Iron by Steam-power Machinery, and erected in any part of the United Kingdom. Manufacturers of Hot-water Apparatus for Heating Churches, Mansions, Warehouses, &c.

Plans and estimates on application.

BICKLEY'S PATENT HORIZONTAL SASH-BARS require neither Paint nor Putty; an orchard-house or greenhouse, &c., may be easily, cheaply, and quickly made with them by an amateur. Four hundred feet can be firmly glazed or unglazed in one hour. Drawings, &c., for 1 stamp, of the Inventor and Patentee, THOMAS A. BICKLEY, 70, Smallbrook Street, Birmingham.

Proceedings in Chancery will be taken against any person infringing this patent.

Archangel Mats.

J. BLACKBURN and SONS beg to inform their friends that the First Shipment of NEW MATS has just arrived, and they are of very good quality. Price List on application.

Russia Mat Importers, 4 and 5, Wormwood Street, E C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.

CONSERVATORY and ORCHARD-HOUSE GLASS.

Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

SLATE, for Gardening and Agricultural Purposes, &c.

GARDEN BOXES, not liable to rot, can be made of any size. Prices from 16*s.* 6*d.*

MANGERS, easily kept clean, non-absorbent, and not liable to rust. [Prices from 35*s.*

GARDEN STEPS and PAVING, unsusceptible of vegetation.

DUST BINS, clean, take up little space, and do not decay.

CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.

ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S E.

Caution to Gardeners.—When you ask for

SAYNOR and COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, Obtain Warranted, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. and C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

For Double Ploughs,

APPLY TO

J. AND F. HOWARD, Bedford, or their Agents in any part of the Kingdom.

Catalogues free.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER and CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.

For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

HEAD GARDENER, for New England, U.S.—In consequence of the number of applications for above situation, the Advertiser is under the necessity of taking this means of informing Applicants that the SITUATION has been FILLED this week.—London, October 6, 1871.

JOHN CARTER, Nurseryman, Keighley, Yorkshire, is in WANT of a MAN for Laying-out new Grounds, and to take the Management of Jobbing Work; also a YOUTH about 14 years old, under a Propagator of General Nursery Stock. This is an excellent opening for a persevering Lad.—Address, stating wages, &c., as above.

To Gardeners.

WANTED, for the Country, about 30 miles west of London, a practical WORKING MAN, competent to undertake the Management of a Greenhouse, with a knowledge of Rock-work, Ferns, Alpine Plants, and the general work of Ornamental Gardening.—Apply by letter only, stating wages required and other particulars, to E. C., R. H. Smith's Newspaper Office, Great Marlow, Bucks.

WANTED, a steady MAN, used to Nursery Work, to plant Forest Trees, Graft and Grow Fruit Trees and Roses, and to take the Management of the Nursery Work. No glass. A good Workman can have constant employment.—Apply, with references from last employer, to J. W. COLE, Nurseryman, Halton Holgate, Spilsby, Lincolnshire.

WANTED, a steady young MAN, from the country, to do Jobbing Work and assist in Plant Houses. A good opportunity for one wishing to learn Plant Growing. Wages 12*s.* per week.—A. B., Mr. Lewis, Baker, Upper Richmond Road, Putney, S.W.

Working Gardener.

WANTED, a single MAN, accustomed to a Market Garden, and who thoroughly understands his duties. State wages and last place.—A. B., Post Office, Newport, Monmouth.

WANTED, a Working Gardener and Wife (without children preferred), as LABOUR MASTER and MATRON of a small Industrial School.—Miss C., Beckley, near Oxford.

WANTED, a first-class TRAVELLER, well versed in Plants of every description and their value. Journeys will not be limited. If a knowledge of the Seed Trade preferred.—Z. A., *Gardeners' Chronicle* Office, W.C.

WANTED, a SHOPMAN.—Must be experienced, and quick at Counter Work; one acquainted with the Retail, and capable of taking entire Charge of that Department, preferred.—Address, stating amount of experience, and wages required, to C. D., *Gardeners' Chronicle* Office, W. C.

WANTED a JUNIOR ASSISTANT, in the Seed Trade.—To live with employer on the premises.—THOMAS B. THOMSON, 20, High Street, Birmingham.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON and SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (Head).—Age 37, married, no incumbrance; well skilled in all branches of the profession. Good reference.—C. M., 3, Standard Road, Bexley Heath, Kent, S.E.

GARDENER (Head).—Married; understands Early and Late Vineries, Greenhouse, Kitchen Gardening, and every other branch of the profession. Six years' character.—C. S., Sydmonton, Newbury, Berks.

GARDENER (Head).—Age 27, married, three in family; thoroughly understands Flowers, Fruit and Vegetables, also Early and Late Forcing. No objection to a Single-handed place. Three years' character.—A. B., Post Office, Ewell, Surrey.

GARDENER (Head).—Married; thoroughly practical; has had extensive experience in Early and Late Forcing, also the Cultivation of Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Can be highly recommended. Seven years' personal character.—T. B., 4, Park Terrace, Upper Richmond Road, Putney, S.W.

GARDENER (Head).—Age 32, single; understands English and French Gardening, Arboriculture, Forcing, and Orchid and Vine Culture. Three and a half years' experience on the Continent. A knowledge of Agriculture and dependencies. No objection to going abroad. Unexceptionable testimonials, and satisfactory references.—J. JONES, 43, Fish Street Hill, London, E.C.

GARDENER (Head).—Married; thoroughly practical in Forcing all kinds of Fruits, Flowers, and Vegetables; also Kitchen and Flower Gardening. Has had extensive experience in the Cultivation of Stove and Greenhouse Plants, the Erecting and Heating all kinds of Horticultural Buildings, &c. Single-handed place not accepted. Seven years' character.—A. B., 13, Charles Street, Portman Square, London, W.

GARDENER (Head, or Single-handed).—Age 30, single; thoroughly experienced in all branches. Two years' good character.—A. B., 80, High Street, Hampstead, N.W.

GARDENER (Head, Working).—Age 30, married; understands Stove and Greenhouse Plants, Vines and Orchards, and Flower and Kitchen Gardening. Five years' good character.—A. B., Post Office, Stroud, Gloucestershire.

GARDENER (Head), where four or more are kept.—Age 26, single; understands Pines, Vines, Cucumbers, Melons, Stove and Greenhouse Plants, and Orchids; also Kitchen and Flower Gardening.—J. S., Mr. Wooley, Nurseryman, Cheshunt, Herts.

GARDENER (Journeyman).—Age 23; eight years' experience. Two and a half years' good character.—X. Y. Z., Post Office, Sunning Hill, Berks.

GARDENER (Single-handed, or otherwise).—Age 25, single. Four years' good character.—J. J., Mr. Jones, Stationer, Post Office, Upper Clapton, E.

GARDENER (Single-handed, or Second), where two or more are kept.—Age 21; understands Stove and Greenhouse Plants, Vines, Melons, Cucumbers, and Flower and Kitchen Gardening. Four years' good character.—ROBERT ESTCOURT, Brownshill, near Stroud, Gloucestershire.

GARDENER (Second), in a Nobleman's or Gentleman's Garden.—Age 20; two years' good character.—B. A., Post Office, Northampton.

GARDENER (Under).—Good character.—Mrs. SPARKES, Coleshill.

GARDENER (Under), or to take charge of Houses.—Five years' good character.—Address, stating terms, F. C. A., General Post Office, Norwich.

GARDENER, or GARDENER and BAILIFF.—Middle-aged, married, no incumbrance; has had great experience in Forcing of all kinds, and Flower and Kitchen Gardening; also the Management of Land and Stock. Good character and references can be had.—J. H., 3, Elgin Road, Maida Vale, Paddington, W.

ESTATE BAILIFF, or ESTATE BAILIFF and GARDENER.—Age 29, married; understands all kinds of Estate Work, including Fencing, Draining, Road-making, Timber and Plantations, and General Repairs; can Prepare Plans and Specifications for Farm Buildings, &c. Also a good practical Gardener: has had a good deal of experience in Laying-out and Planting New Gardens and Pleasure Grounds. References from present and previous employers.—A. B., Post Office, Devizes, Wilts.

ESTATE AGENCY, &c.—Age 29; has had 14 years' practical experience on some of the largest Estates in the country; thoroughly understands the Value and Management of Land, Stock, Timber, &c.; also all kinds of Estate Work, including Fencing, Draining, Levelling, Land Surveying, Preparing Plans, Specifications and Estimates for all kinds of Building, &c. Small salary accepted. References to present employer.—J. H., Mr. Dennis, White Horse Hotel, Guildford.

FOREMAN and PROPAGATOR, in a Florist's Nursery, to Grow for Exhibition or otherwise.—Has a thorough knowledge of the profession in all its details. First-class references from late employers.—A. B., 6, Upper York Place, St. John's Wood, London, N.W.

PROPAGATOR, or PROPAGATOR and FOREMAN.—Middle-aged; well experienced.—C. A., Bootle Hall (Lodge), Irlam Lane, Linacre, Liverpool.

IMPROVER, where he could gain a knowledge of the General Routine of a good Garden.—A steady, obliging young Man, who has been three and a-half years in the profession. No objection to Market Gardening. Unexceptionable character.—W. S., Post Office, Old Beckenham, Kent.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

To the Seed Trade.

WAREHOUSE MANAGER, or SHOP FOREMAN.—Age 30; 15 years' experience in all the Departments, and first-class references.—M., Box 68, Post Office, Chester.

COUNTER MAN.—Age 32; has been five years in one of the largest London Wholesale Houses. Understands Plants.—C. C., 2, Albert Cottages, Avenue Road, Hackney Downs, N.

To the Seed Trade.

SHOPMAN, or ASSISTANT.—Thoroughly experienced, and willing to be useful in any branch of the business.—For particulars apply to T. T., Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.

Autumn Sowing.

ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.

Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.
Chairman—Robert Leeds, Castleacre, Norfolk.
Managing Director—James Odams.

This Company was originally formed by, and is under the direction of, Agriculturists—circumstances that have earned for it another title—viz.,

"THE TENANT-FARMERS' MANURE COMPANY."

Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.
"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

JOHN MARTIN, DRAINAGE and SEWAGE ENGINEER, undertakes the OVER and UNDERGROUND APPLIANCES for the UTILISATION (Wet or Dry) of the SEWAGE of TOWNS, MANSIONS, &c.; and the IRRIGATION of ESTATES, GARDENS, FARMS (singly or in combination).

Shore, Kincardine-on-Forth, Scotland.

Tredegar Nursery, Bow, E.

TO BE LET, with immediate possession, the above, containing NINE GREENHOUSES, PITS, &c.; also 150,000 PLANTS, adapted for the London Markets.

For particulars, apply to PROTHEROE AND MORRIS, American Nurseries, Leytonstone, E.

SALES BY AUCTION.

SALE THIS DAY and MONDAY NEXT.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY and MONDAY, October 7 and 9, at half-past 12 o'Clock precisely each day, first-class Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, LILIUMS, and other Dutch Flowering Roots, from well-known Farms in Holland.

On view the mornings of Sale, and Catalogues had.

Frimley Park Nursery, near Blackwater.

To GENTLEMEN, NURSERYMEN, and OTHERS ENGAGED in PLANTING.

MESSRS. WEEKS AND WATTS are instructed by the proprietor, Mr. Holder, to SELL by AUCTION, at the above Nursery, on TUESDAY, October 10, at 11 o'Clock (in consequence of the expiration of the lease at Lady Day next), the whole of the thriving NURSERY STOCK upon Ten Acres, including Evergreen, Coniferæ, and Deciduous Shrubs, Ornamental and Forest Trees, Standard and Dwarf Roses, together with some fine Standard Rhododendrons, selected Standard and Dwarf Fruit Trees, &c.; a few Ornamental FLOWER POTS and VASES.

May be viewed the day previous and morning of Sale, and Catalogues had of Mr OVER, York Town, Blackwater; or of the Auctioneers, Wokingham, Berks.

Re Mr. R. Glendinning, Deceased.

ABSOLUTE SALE.

To NURSERYMEN, SEEDSMEN, and FLORISTS.

High Road, Turnham Green, near the Toll Gate, and known as the Chiswick Nurseries.

MR. J. A. SMITH is instructed by the Executrix to SELL by AUCTION, at the Roebuck Inn, Turnham Green, on TUESDAY, October 10, at 4 o'Clock P.M., in TWO LOTS, the valuable LEASES, GOODWILL, &c., of the important Business Premises and Residential Property, known as the Chiswick Nurseries, established in the name of Glendinning for nearly 30 years, extending over or about Eleven Acres of rich Land, in trading cultivation, including the Residence, Shop, Offices, Warehouse, &c., and the 7-roomed Cottage adjoining, having a frontage of about 320 feet to the most attractive portion of the High Western Road, and a depth of about 750 feet to the South-Western Railway. Rent on lease, £84 per annum; and Gore Cottage adjoining, £13 per annum. LOT 2 comprises the Nursery on the West side of Chiswick Lane, with Residence held on Lease at the reduced rent of £60 per annum. The purchaser in each case may arrange to take the Greenhouses and other Erections, Nursery Stock, Utensils, &c., at a valuation, if required. May be viewed.

Further printed particulars, with plans and conditions, of W. H. MARSHALL, Esq., Solicitor, Bridge Avenue, Hammersmith, W.; and of Mr. J. A. SMITH, Auctioneer and Land Agent, Hammersmith.

NOTICE.—The ENTIRE NURSERY STOCK will be SOLD by AUCTION, about the LAST WEEK in OCTOBER. See Advertisements.

Six Greenhouses, a Conservatory, Twenty Pit and LIGHT FRAMES, &c.

MR. F. PRIEST will SELL by AUCTION, the above, on the Premises, 205, King Street, West Hammersmith, on WEDNESDAY, October 11, at 1 for 2 o'Clock, by order of Mr. James Smith, Horticultural Builder (who is relinquishing the Trade); also the valuable LEASE of the PREMISES.

Particulars at the Auctioneer's Offices, 252, King Street, West Hammersmith, London, S.W.

Lee, S.E.

IMPORTANT SALE of a COLLECTION of STOVE and GREENHOUSE PLANTS; about 1500 Winter Blooming HEATHS, &c.; fine Standard and Dwarf ROSES, clean grown FRUIT TREES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Burnt Ash Lane Nursery, Lee, Kent, S.E., on MONDAY, October 9, at 11 for 12 o'Clock precisely, by order of Mr B. Maller, without reserve, a valuable COLLECTION of STOVE and GREENHOUSE PLANTS, the stock of a Private Gentleman, removed for convenience of sale, comprising choice Dracænas, Marantas, Allamandas, Lapageria rosea, Begonias, Exotic Ferns, Light Boxes, Hand Lights, Iron Seats, &c.; also a choice and varied collection of Greenhouse Plants (the property of Mr. Maller), consisting of 1500 beautifully grown Heaths of the best varieties, Cytissus, Acacias, Veronica Blue Gem, Echeverias, Epacris, &c.; 60 specimen Bouvardia longiflora, 3 to 4 feet, extra fine; Solanum capsicastrum, full of berries; double Myrtles, fine Camellias, Azalea indica, Epiphyllum, &c.; also strong Fruiting Vines in pots, selected Fruit Trees, Standard Roses, comprising all the best kinds; choice Succulent and Rockwork Plants, &c.

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

Balham, S.W.

IMPORTANT SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Balham Nursery, Balham, S.W., on WEDNESDAY, October 11, at 11 for 12 o'Clock precisely, by order of Mr. G. Edwards, a large quantity of valuable SURPLUS NURSERY STOCK, the whole of which is in capital condition for removing, including 2000 Green Hollies, 1½ to 3 feet; 1000 Aucuba japonica, 1½ to 2 feet; 800 Chinese and American Arbor-vitæ, 2 to 5 feet; 300 bushy Green Box, suitable for potting; 500 Ligustrum ovalifolium, 500 Berberis aquifolium, Laurustinus, common Laurels; also a large quantity of Ornamental and Forest TREES, comprising Planes, Limes, Birch, Acacias, &c.; 300 fine Standard and Dwarf ROSES, of the best varieties, by name; likewise a quantity of Coniferæ, Evergreen and Flowering SHRUBS, in borders; some large Double CAMELLIAS, and PAMPAS GRASS, in pots, &c.

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

Tottenham, N.

IMPORTANT SALE of about 3000 well-established POT ROSES, consisting of the best Tea-Scented and Hybrid Perpetual kinds for Forcing; also a large quantity of valuable NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, without reserve, on the Premises, The Hale Farm Nurseries, Tottenham, N., on MONDAY, October 30, at 11 for 12 o'Clock, by order of Mr. Thos. Ware, who is relinquishing the cultivation of Pot Roses in order to make room for his increasing stock of Perennials and Succulents.

Full particulars will appear next week.

Tooting, S.W.

MESSRS. PROTHEROE AND MORRIS have received instructions from Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, on WEDNESDAY and THURSDAY, November 1 and 2, at 12 o'Clock precisely each day, many thousands of first-class extra NURSERY STOCK.

Further particulars will shortly appear.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C. on Tuesday, October 10, at half-past 12 o'Clock precisely, a SMALL COLLECTION of ESTABLISHED ORCHIDS, including Phalænopsis, Vandas, Saccolabiums, Aerides, Cattleyas, and Odontoglossums; also a small importation, in fine condition, of Cattleya Dowiana, Odontoglossum Schlieperianum, Phalænopsis grandiflora, Luddemanniana, and rosea; Angræcum, supposed new species, from Madagascar, and Angræcum eburneum.

On view the morning of Sale, and Catalogues had.

Green Lane Nursery, Ilford, Essex.

CLEARANCE SALE of VALUABLE NURSERY STOCK.

MR. JAMES FRASER is instructed by Mr. J. Carter (whose lease expired at Michaelmas last), to SELL by AUCTION, on the Premises, Green Lane Nursery, Ilford, Essex, on MONDAY and TUESDAY, October 16 and 17, at 12 o'Clock each day (without reserve), the whole of the valuable NURSERY STOCK, comprising fine specimens of Wellingtonia gigantea, 6 feet to 7 feet; Irish Yew, 5 feet to 6 feet, Arbor-vitæ, 6 feet; Spruce Firs, 5 feet to 6 feet; Aucuba japonica, 3 feet to 4 feet; Common Laurel, 3 feet to 4 feet; Green Box, 3 feet to 4 feet: Sweet Bay, Lilac, Rhododendron, Ailantus glandulosa, and other Ornamental Trees, Standard and Dwarf ROSES; fine strong plants of TRITOMA UVARIA, FRUIT TREES; also large CAMELLIAS, and other GREENHOUSE PLANTS.

On View two days prior to the Sale, and Catalogues had on the Premises; *Essex Times* Office, Romford; and of the Auctioneer, Mayland's Farm, Romford, Essex.

Heath Bank, Cheadle, near Manchester.

The VALUABLE COLLECTION of ORCHIDS, NEW HOLLAND PLANTS, and a RARE COLLECTION of AZALEAS. Very many of the Plants of the different varieties have taken Prizes at the Royal Horticultural Society's Exhibitions in London, and at all the large towns where exhibited.

CAPES AND DUNN respectfully announce that they have received instructions from Thomas Kendal, Esq., who is changing his residence, to SELL by AUCTION, on WEDNESDAY and THURSDAY, October 18 and 19, at 11 for 12 o'Clock each morning, on the Premises, Heath Bank, the whole of the valuable COLLECTION of ORCHIDS, NEW HOLLAND PLANTS, magnificent AZALEAS, ORNAMENTAL and FLOWERING STOVE PLANTS, FRUITING and SUCCESSION PINES, &c. Among the Orchids are comprised the following specimens, viz.:—Aerides, Vandas, Odontoglossum, Saccolabium, Cattleya, Oncidium, Dendrobium, Cypripedium, Miltonia, in varieties; 36 magnificent AZALEAS, prize plants; two remarkably fine FRANCISCEAS; together with the whole of the collection of GREENHOUSE and BEDDING-OUT PLANTS; an excellent Plant Van or Lorry, with iron-work cover; Garden Tools, &c.; also capital Farming Implements, comprising a Land Roller, Haymaking Machine, Ploughs, Carts, Drill, Barrow, Cultivator, and effects.

Catalogues are in preparation, and will be ready one week prior to Sale.

The Nurseries, Mill Hill, Hendon, N.W.

About ¾ of a Mile and a Mile respectively from the stations on the Great Northern and Midland Railways.

NURSERY STOCK.

MESSRS. HUMBERT AND COX have received instructions from Messrs. Wright to SELL by AUCTION, on the Premises, The Nurseries, Mill Hill, Hendon, on WEDNESDAY and THURSDAY, October 25 and 26, each day at 12 o'Clock precisely, FOUR HUNDRED LOTS of capital NURSERY STOCK, comprising fine specimen Plants, in Thuja japonica, T. Lobbii, T. aurea, T. gigantea, Thujopsis borealis, Cedrus Deodara, Pinus excelsa, P. austriaca, Cupressus Lawsoniana, Abies Douglasii, Wellingtonia gigantea, Arbor-vitæ, Irish and English Yew; a large quantity of Aucuba japonica, Phillyrea, Alaternus, Laurustinus, Arbutus, Portugal and Common Laurel, Tree Box, Spruce and other Fir; Standard and Pyramid FRUIT TREES; Apple, Pear, Plum, Cherry; Standard and Dwarf ROSES; an assortment of FOREST TREES, Limes, Planes, Mountain Ash, Acacia, Chestnuts, &c. All in excellent condition for moving.

May be viewed two days previous to the Sale. Catalogues may be had at The Nurseries, Mill Hill; Warner's Welsh Harp, Hendon; Red Lion, The Hyde; Candos Arms and Bald-faced Stag, Edgware; Green Man, Covent Garden; *County Chronicle* Office, 15, Duke Street, London Bridge; *Press* Office, Barnet; Peahen and George, St. Alban's; Red Lion, Elstree; Abercorn Arms, Stanmore; Three Crowns, Bushey Heath; Bell Inn, Bushey; Queen's Head and Railway Hotel, Pinner; King's Head and Railway Hotel, Harrow; Chequers, Uxbridge; Swan, Rickmansworth and Hemel Hempstead; Crown, Amersham; George, Chesham; Clarendon Arms, Essex Arms, and Rose and Crown Hotels, Watford; and (free by post) of Messrs. HUMBERT AND COX, Land and Timber Surveyors, Drainage Engineers, Land Agents and Auctioneers, 88, St. James's Street, London, S.W., and Watford, Herts.

EXTENSIVE SALE by AUCTION of NURSERY STOCK, consisting of Forest, Fruit, and other Trees; choice Evergreens, Shrubs, and Fancy Plants; Agricultural, Vegetable, and Flower Seeds; Roots, Bulbs, &c., at the noted Meldrum Nurseries and Seed Shops, Kendal.

ORDER of SALE, at 1 o'Clock each day:—

TUESDAY and WEDNESDAY, October 10 and 11—SHRUBS, EVERGREENS, FLOWERS, and FANCY STOCK, in the Castle Street Nurseries.
THURSDAY and FRIDAY, October 12 and 13—FOREST, FRUIT, and OTHER TREES, in the Mints Feet, and Canal Head Nurseries.
TUESDAY, October 17—VEGETABLE and FLOWER SEEDS, ROOTS, BULBS, &c., at the Premises in the Market Place.
WEDNESDAY and THURSDAY, October 18 and 19—AGRICULTURAL SEEDS, SHOP FITTINGS, TOOLS, IMPLEMENTS, &c.

Catalogues may be had on application to M. DEROME, Auctioneer; or Mr. JNO. BOLTON, Solicitor, Kendal.

Elvaston Nurseries, Borrowash, Derbyshire.

HIGHLY IMPORTANT and EXTENSIVE SALE of FIRST-CLASS NURSERY STOCK.

MESSRS. POTT AND NEALE have received instructions from Messrs. Barron & Son to OFFER for SALE by AUCTION, on the Premises, at Borrowash, on OCTOBER 11 and 12, a considerable portion of their most valuable NURSERY STOCK, consisting of rare Coniferæ, Evergreen and Deciduous Shrubs, Golden Hollies and Yews, Roses, Rhododendrons, &c.

May be viewed any day prior to the Sale (except Sundays) after October 1.

Descriptive Catalogues may be had one week prior to the Sale on application, by post or otherwise, to the Auctioneers, Nottingham; and 23, Cockspur Street, London; or to Messrs. BARRON AND SON, Elvaston Nurseries, Borrowash.

White Cross Nurseries, Hereford.

IMPORTANT SALE of TREE FERNS, RARE PLANTS, ROSES, SPECIMEN CONIFERS, &c.

MR. D. SHELLARD is instructed by the Proprietor, Mr. George Davison, to conduct his ANNUAL SALE of NURSERY STOCK, on THURSDAY and FRIDAY, October 19 and 20, each day at 12 for 1 o'Clock, when he will offer 10,000 Standard and Dwarf Roses, 20,000 Laurels, 20,000 Pinus austriaca, 100,000 strong Larch, 100,000 Quick, a large number of Conifers and other Specimen Trees. Together with a large COLLECTION of CHOICE SPECIMEN PLANTS, the property of a Gentleman who has been for many years a successful grower and exhibitor; comprising Palms, Exotic Ferns, Ornamental Foliage Plants, Azaleas, Camellias, Orchids, and about 100 varieties of rare Cacti.

The Nursery Stock will be sold on the first day.

Descriptive Catalogues to be obtained at the White Cross Nurseries or at the Auctioneer's Offices, 13, King Street, Hereford

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871

Great Sale of Pure-bred Shorthorn Cattle,

HEREFORD BULLS, SHEEP, PIGS, and THOROUGH-BRED FILLIES, at Killynon, Killucan, Ireland.

MR. JOHN THORNTON will SELL by UNRESERVED AUCTION, on TUESDAY, October 24 (1 O'clock), at Killynon, co. Westmeath, the very superior HERD of PURE-BRED SHORTHORN CATTLE belonging to R. W. Reynell, Esq. It has been very carefully bred for the last 30 years from two tribes of Shorthorns imported by the late Mr. Robert Holmes and Mr. Thomas Barnes, and crossed for a long period with the best Westland bulls of the Mantalini blood. The Hereford Bulls are young, very promising, and of the late Lord Berwick's strain. The Sheep comprise nearly 200 well-bred Ewes; the Fillies are very handsome, and of first-class blood, and the Pigs are pure Berkshires of the celebrated Throckmorton breed.

Catalogues, with Pedigrees and full particulars, may be had of Mr. REYNELL, at Killynon, Killucan, co. Westmeath; or of JOHN THORNTON, 15, Langham Place, London, W.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—	Form	A.	For an OX or STEER (in any Class).
	,,	B.	For a COW or HEIFER (in any Class).
	,,	C.	For a BEAST in extra Stock.
SHEEP.	,,	D.	For a Pen of three WETHERS.
	,,	E.	For a Pen of three EWES.
	,,	F.	For a SINGLE WETHER SHEEP in Extra Stock.
PIGS.	,,	G.	For a Pen of three PIGS (in any Class).
	,,	H.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 7, 1871.

THE subject of "bolting," or PREMATURE RUNNING to SEED of roots and allied plants has come so prominently before us during this exceptional season, both from correspondents and in our own crops, that we venture a few remarks upon it.

Those who observe crops, however slightly, must have been impressed with the unusual extent of this evil, especially in Cabbages, Mangels, and Carrots. Early or late sown plants have been equally affected, and it would seem that no kind of management has been able to prevent it.

In our own practice the contrast in this respect between 1870 and 1871, has been most marked, for whereas in the former year it was scarcely noticeable, in the latter it has prevailed in crops similarly treated in both seasons so as to be remarkably conspicuous.

Last year a crop of 5 acres of Cabbages, which was drilled and thinned out after the manner of Mangels and Swedes, was remarkable for nearly total absence of "bolted" plants, while from 8 acres of Mangels it would have been difficult to have collected a wheelbarrowful of these dissightly objects.

This year, in looking over crops of Cabbage, Mangel, and Carrots, the tall flowering stems at once attract attention. The following, indeed, is an estimate of the amount of this mischief:—

Crop.	Per cent. of Flowering Stems.	Extent of Crop.
Oxheart Cabbage	5	1 acre of each
Large Drumhead	4	
Small Drumhead	3	
Battersea	0	
London Market	0	
Long Red Mangel Wurzel	1	2 acres of each
Yellow Globe Mangel Wurzel ..	½	
Ditto ditto	1	
Sugar-Beet	1½	
Swedes and Turnips	0	40 acres
Rape	0	6 acres
White Belgian Carrot	7	Small plots
Green-topped Carrot	5	
Parsnips	0	Quarter of an acre

These percentages are not given as being absolutely correct, as it will be understood that from the difficulties of the case they can only be approximations, still as such they afford some points of interest to which we would now advert. The Cabbages were drilled on March 28, and many of the Oxheart had become well hearted at the end of July. At this time many of the bolted examples seem to have burst through a previously formed heart, so that the percentage of these is doubtless put at a higher rate than it ought to be. With regard to the Drumheads, they have fairly bolted to the amount stated, and we may account for this from the want of purity of sort. Drumhead Cabbages are those that have been farmed most, and as their seed is not selected with the care of garden sorts, any crop will show a tendency to run off in different directions. We have this year seen some autumn planted Drumheads very largely sported in this way, and, indeed, when we examined them the bolted specimens had nearly ripened their seed. Now upon our inquiring what would be done with these, we were informed that the seed would be saved. If, then, this is the way in which seed is grown, we need not be surprised at bolting, as we know both from theory and practice that "bolters" will beget "bolters," and a want of trueness to sort will result in a mixed crop, and it is just this want of care in the growth of seeds for the farm in comparison with those for the garden which will in a great measure account for the conditions we have been describing. That there is a difference in crops in the directions indicated may be gathered from our Mangels. Here two lots of Yellow Globe from different seedsmen differ in bolting, the one being double that of the other, and we have no doubt but at lifting other differences will be present.

As regards the Carrots, it should be noted that our garden crops have shown a disposition to bolt, but certainly not to a quarter of the extent of the field sorts, which we account for upon the same principles as those already noted with regard to the Cabbages. We have before pointed out the tendency of the Sugar-Beets to bolting, which is also accompanied by great forkedness of roots; and it should be remembered that this is entirely a field crop, for the seed of which as yet we are wholly dependent upon the foreign grower, who, in as far as we can gather, does not recognise the importance of "selected roots" to the extent that our own seedsmen at least pretend to.

But, if we inquire into this subject, we shall find that there is something more in the matter than can be accounted for from the seed, for it will be seen that it is more prevalent this year than usual. It is then to be presumed that the exceptional season has had something to do with it. Now, if we consider that the produce of our root and allied crops is the result of those cultivative processes which tend to make them so strictly biennial that the first or seeding season is in them devoted to the production of—in roots, an enlarged bulb; in Cabbage, an enlarged heart; which, again, has little to do but to produce seed the following season; if then, as in this year, moisture has resulted in a plethora of the first growth, much of the bolting complained of may be, and doubtless is, due to this cause.

If this be so, seed carelessly grown would be more liable to it than the reverse, and we may then be quite certain that if degenerate seed does not in dry seasons show its effects so readily as in wet ones, yet continuous wet, as in the past summer, will only the more clearly demonstrate to the observant cultivator that seed is not always carefully grown. Against this notion it may perhaps be urged that, judging from the list of crops above given, it will be seen that Swedes and Turnips have not bolted; but as regards this matter, it should be noted that we have heard much of these going greatly to leaf and not bulbing well. It is, however, a little too soon to judge these accurately, though we have observed a tendency to *neckiness*, which in itself is an evidence of degeneracy.

We have been particular in these few notes, on account of the importance of the matter, which has been referred to by some of our correspondents, and in the hope that they may elicit further remarks upon so interesting a subject.

TICKS—that is, the blood-sucking little insects (or crustaceans, to speak by the card), known to agriculturists as dog ticks, sheep ticks, and cattle ticks, and to entomologists as species of the genus Ixodes—have been exceptionally abundant this year, or we have been brought exceptionally often in contact with them. We have received complaints of their abundance, and specimens have been sent to us from various quarters for their names, and a remedy—a remedy not for use on dogs or cattle, but — to protect man himself from their attacks, for they do not confine themselves to the lower animals, and one of our correspondents has informed us, that the lawn where he was employed swarmed so with them as to be a serious annoyance to those making the hay; creeping up their clothes and into their hair, and fastening on them as they do on dogs—an experience which we also have made in person. Our attention has thus been, as it were, compulsorily directed to them, and as we think that an erroneous impression exists as to their habits, we shall state the result to which we have been led by our observations this year.

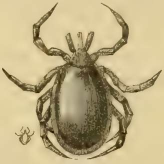


FIG. 291.—IXODES RICINUS—MALE.

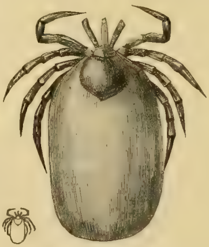


FIG. 292.—IXODES RICINUS—FEMALE.

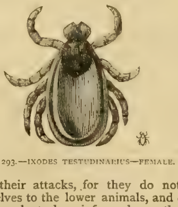


FIG. 293.—IXODES TESTUDINARIUS—FEMALE.

It is usually supposed that these ticks are parasitic on the animals on which they are found, a separate species being appropriated to each animal, and that they breed either upon them or about them. The grounds for this idea are chiefly their occurrence on different animals. Thus Dr. LEACH describes six species, as found in Britain, one from the swallow, one from the hedgehog, one from dogs, another from dogs and hedgehogs, and another from dogs (principally pointers, in autumn). The sixth which he describes appears to belong to another genus (Nycteribia, which infests bats). Again, there are accounts of vast numbers of one species being found in dog-kennels, swarming so in the chinks of the wood as to render it necessary to pull them down and burn them. Lastly, to bring together all that we remember in support of the special attribution of one kind to each animal, there is a species of Ixodes (I. flavomaculatus) described from examples taken from a boa constrictor, which is marked yellow and brown in patches so exactly in harmony with the colours of the boa itself that one is very apt to jump to the *à priori* conclusion that the one is made for the other, and, consequently, restricted to each other's society.

Notwithstanding all this, our own observations decidedly lead to the conclusion that in Britain, at least, there is no specialisation of species to different animals, and that the bloodsucking propensities or parasitism is accidental and temporary, like (although of longer continuance than) that of the mosquito or bed bug, or more analogous still to the attacks of the leech. In the first place, as to LEACH'S species, the characters which he gives do not enable us to recognise any of his species as different from the common one, they being mainly drawn from points (such as the colour of the legs) which are somewhat variable; and we have been unable to confirm the soundness of his species by an examination of his type specimens, for we have failed to discover them in the only place where they were likely to be, viz., the British Museum. For ourselves, we only know two British species of tick, which are exceedingly like each other, but which may be readily distinguished by the characters which we give below. The one we have found only in the south of England, the other in the north and in Scotland. But whichever is the species of a district, all animals are attacked by and suffer from it indiscriminately. On examining the dogs, cattle, and the sheep of a district, we have invariably found them all to be attacked by the same species of tick. Furthermore, the ticks do not reside on the animal itself. We have carefully gone over a dog before taking it out in the morning, and could have sworn that not a single tick was upon it, and on returning in the evening have found several. At first these are small, but if let alone, by sucking the blood the females gradually swell and increase in size for a day or two, when, being now completely full and satiated, they drop off of their own accord. Repeated observation has convinced us that the ticks live in herbage—what is called rough ground, and that it is only when an animal passes through it that they avail themselves of the opportunity of fastening upon it, and that it is all the same what animal passes, it fastens on all indiscriminately.

It may be said, if this be so, then on what does the tick feed until it meets with an animal on which to fasten? It is supplied with an admirable phlebotomising and sucking apparatus, formed out of the converted mandibles, maxillæ, and ligula. And the question is,—for what purpose has it been provided with such a wonderful sucking apparatus for pumping up blood from warm-blooded animals if it can live without it?

To this we must reply *Scottice* by another question: To what purpose has an equally wonderful blood-sucking apparatus been supplied to musquitos, gnats, midges, *Simulia, Tabani et hoc genus omne?* Musquitos in the countries where they occur are in such countless myriads that it would take all the herds in the world to supply a minute fraction of them with blood-food. And in many places, as for example the Canadian swamps, it is only at rare intervals that a solitary mammal intrudes into their haunts. How do they live? One fact peculiar to all the Culicidæ (musquitos, gnats, midges, and *Simulia*) disposes at once of the half of them. It is only the females that have this blood-sucking apparatus. We do not know that the cause of this distinction has ever been ascertained, but we would suggest as a not improbable explanation, that the lives of the males may be shorter. Their part of the great duty allotted to the perfect stage of insect life, viz., the propagation of their species, can be performed in a day, or an hour, after their emergence from the pupa, and Nature does not care what becomes of them afterwards; whereas the female has to mature and deposit her eggs—and that must take time—hence food, and the means of taking it, must be provided for her. Whether, in default of blood, she can feed upon the juice of plants, we have no means of knowing—it is not likely; but what is likely is, that she may have such great powers of abstinence that she can, in case of necessity, do either altogether or for a long time without food. The tick, which we see has a similar apparatus, can live for a long time without it. Prof. WESTWOOD tells of one which he kept alive for twelve months without food, and at the end of that time it laid fruitful eggs and then died. We do not see any difference between the suctorial apparatus of the male and female ticks; we have found both on animals, but we cannot call to mind having found the male adhering with his head buried up to the eyes in the flesh, like the female; the male may do so notwithstanding, but we are sure that he is unable to take in the blood in the quantity that the female does. Her abdomen is a flexible leathern sack, which swells to many times her natural dimensions or those of the male. Four times as long, four times as broad, and eight times as deep, will give the comparative estimate of her relative dimensions when full and fasting in square magnitude, which, according to our imperfect powers of arithmetical calculation, would make the creature hold upwards of 100 times its own size. The male, on the contrary, has not a leathern bag for an abdomen, and it may be that he has the same measure dealt out to him that the musquito has, namely, no power of suction, the female permitted to revel in an unlimited quantity of claret, while he is condemned to total abstinence.

The two British species of tick that we know are:—1, Ixodes Ricinus, of which fig. 291 represents the male.

It is distinguished from the next species by the scutell or carapace of the male being uniformly brown, and by its palpi being elongate and straight on both sides, and by the longer and more slender legs with an acute termination, which, however is rather exaggerated in the woodcut.

Fig. 292 shows the female when about half-full at first; and when only half-filled, her abdomen is pale salmon-coloured, when full, leaden-coloured, whence one of its synonyms (Ixodes plumbeus).—From Scotland and North of England.

2. Ixodes testudinarius (Murray).

We call this species testudinarius in allusion to the scutell or carapace of the male being marked black and brown like the colouring of tortoise-shell. The general appearance does not differ from that of the other, but its legs are shorter, flatter, and broader, and the termination more obtuse, and its palpi are shorter, transverse and flat, and obtusely angular on the external side. Fig. 293 shows the female before she has begun to suck, and represents the natural proportions of her body in this and the other species. The differences in the legs and mandibles are the same in both sexes in both species.—From Devonshire.

This may be one of LEACH'S species; but as, if it be, we cannot determine which, we are driven to give it a new name. *A. M.*

—— THERE was an advance of 1*s.* to 2*s.* per qr. for English Wheat on Monday at Mark Lane; malting Barley also went up 1*s.* per qr.; and on Wednesday, though business was limited, Monday's prices were well maintained.——At the Metropolitan Cattle Market on Monday the average prices for beasts did not improve, and there was a difficulty in effecting a clearance of sheep, though the supply of English was small. The same report will suffice for Thursday's business.——The Hop Market remains very firm.

——The HARVEST FESTIVAL, which commenced at the Crystal Palace on Monday last, and extended over the greater part of the week, may fairly be said to have most appropriately celebrated a harvest which, in many respects, has satisfactorily fulfilled reasonable expectations. From a cultural and strictly utilitarian point of view, the most prominent feature of the week's entertainment was undoubtedly the imposing emblem of modern husbandry—designated "The Harvest Trophy"—erected by Messrs. SUTTON & SONS, of the Royal Berkshire Seed Establishment, Reading, in the northern nave. The Messrs. SUTTON have before made a display of this kind on occasions like the present, but this year they have fairly eclipsed all former efforts in this direction. So large and so varied, indeed, is the collection, and so excellent in quality are the examples exhibited, that the Messrs. SUTTON may take credit for having placed before the public an exhibition, the like of which has probably never been seen before, and which has certainly never been gathered together by one firm. Some idea of the size of this harvest trophy may be formed, when we state that it is 50 feet long by about 20 feet broad, at either end bearing a tower 25 feet high, and in the centre an imposing mass of the plume-like inflorescence of the Pampas-grass (Gynerium argenteum), which is also again skilfully manipulated into a design representing the "Prince of Wales' feathers," proportionate in size to the structure which it helps to adorn. There are also represented some 200 varieties of grasses, a few trusses of capital meadow hay, wonderfully fine specimens of Sutton's Mammoth Long Red and other Mangels; Sutton's Champion Swedes, Pomeranian White Globe and Greystone Turnips, and Kohl Rabi; Wheat, Barley, Oats, and Beans, and an attractive assortment of vegetables. Then come several varieties of Cucumbers, which include examples of the new Chinese variety, named Sooly Qua, and of the Snake Cucumber from Central America (Trichosanthes colubrina), 75 dishes of Apples, 70 of Pears, several of Grapes, and 12 of Nuts; and a most interesting collection of ornamental Gourds. These, tastefully and judiciously arranged, and occupying a very prominent position, make the trophy an exceedingly attractive one, and one which, if the examples may be accepted as a criterion of the state of the crops, leaves ample room for congratulation. Another novel feature to be seen amongst the agricultural implements exhibited, and which for the most part are of American origin, is one of WOOD'S new champion self-delivery reaping machine, the novelty in which consists of its being constructed upon an entirely new principle, the motive power being acquired by the use of a wheel without axle or spokes, which works on friction rollers, and is supported by side plates. The gear is internal,—two shafts, two pinions, and a bevel wheel, complete the parts. The rake and gathering arms are actuated by means of a screw mechanism direct from the main shaft. This implement was exhibited by Mr. W. A. WOOD, of 77, Upper Thames Street. It was exhibited at Guildford and Wolverhampton, and has been most successfully tried in several parts of the country.

—— We learn from the "Augsburg Allgemeine Zeitung" that a PERMANENT AGRICULTURAL PROFESSORSHIP has been established at the University of Giessen, since the commencement of the summer session of 1871. This section has, therefore, been placed on an equality with the other philosophical departments. Dr. ALBR. THAER has been appointed permanent professor, and he has already commenced his lectures. At the same time an Agricultural Institute, similar to the Institute of Woods and Forests, which has already been in existence a long time, was established in the University. For founding this Institute, a fund and trial ground were provided by the States of the Grand Duchy, particularly the town of Giessen, for the trial of manures and machines and the cultivation of plants. The University provides space for the lecture-rooms and laboratory, the latter being already in operation for the benefit of agriculturists. In the botanical garden also there is an agricultural division. All remaining sections of the university are likewise within reach of the agricultural student, if he desire a general as well as technical education. There is, in addition to all this, a very excellent veterinary institute attached to the university. Agriculture is likewise made an integral and compulsory part of the examinations on political economy. As regards the practical education of the agricultural student in the neighbourhood and within a short distance of Giessen by the numerous railway routes, there are farms which have been kindly offered, and upon which the student may receive practical instruction. The varieties of climate here, and the consequently various phases of agricultural life, from mountain cultivation to vineyards, from perennial pasture to luxuriant corn lands, as well as the careful breeding and manipulation of cattle in the district, indicate the great agricultural resources which it offers as a means of practical agricultural education.

OUR LIVE STOCK.

CATTLE.

AT Ellington, on the 28th ult., Mr. Strafford sold 95 head of Shorthorns, bred by Mr. Ladds, for a general average of £45 13*s.* 7*d.*, and a total of £4149. Seventy-two cows made £45 12*s.*, and 23 bulls £37 13*s.* 3*d.*, each. The sale was characterised by a great uniformity of prices. EARL OF BARRINGTON 2D by DUKE OF BRAILES, and of the *Sally* by EARL OF DERBY tribe, was competed for up to 150 gs., but was finally bought in by Mr. Ladds at 200 gs. Mr. Stratton bought a "J" cow by GEORGE 1ST (19,848) for 62 gs., and others of the same family went into Sir George Philip's hands at 66 gs. and 69 gs. each. We append a list of prices and purchasers:—

Name of Animal.	When Calved.	Price.	Purchaser.
Cows and Heifers.		Gs.	
Empress 2d	1859	29	Mr. Burton.
Red Duchess 2d	1861	40	Mr. Statter.
Cress	1861	59	Mr. Fawcett.
Lady Julia	1862	62	Mr. Statter.
War Cloud	1862	40	Mr. J. J. Sharp.
Laurel	1863	35	Duke of Manchester.
Red Duchess 4th	1863	45	Mr. Banyard.
Red Duchess 5th	1863	40	Mr. Burton.
Mantle	1863	52	Mr. Methringham.
Cowslip	1863	43	Mr. Fawcett.
Sandfly	1864	46	Mr. Frudd.
Lady Margaret 3d	1864	38	Mr. Burton.
Pythia 8th	1864	41	Mr. Webb.
Belle	1864	51	Mr. Cock.
Mantua	1864	36	Mr. Brown.
Bella	1864	37	Captain Oliver.
Red Duchess 6th	1864	35	Mr. Brown.
Virgin	1864	81	Mr. Statter.
Red Duchess 7th	1865	43	Mr. Freeman.
Princess	1865	35	Mr. Vipen.
Red Duchess 8th	1865	37	Mr. Burton.
Empress 3d	1865	28	Mr. Vipen.
Cora	1865	42	Mr. Fawcett.
Red Duchess 9th	1866	47	Captain Oliver.
Empress 4th	1866	40	Mr. Eady.
Seraphina	1866	43	Mr. Cock.
Linnet	1866	40	Mr. J. Smith.
Red Duchess 10th	1866	46	Mr. Armstrong.
Jewel	1866	80	Sir G. Philips.
Pythia 9th	1867	40	Mr. C. Day.
Red Duchess 11th	1867	50	Sir T. Whichcote.
Laura	1867	40	Mr. Heathcote.
Pet	1867	38	Mr. J. Milligan.
Laurustina	1867	56	Sir W. Booth.
Pythia 10th	1867	43	Mr. Wythes
Red Duchess 12th	1867	40	Mr. Heathcote.
Venus	1868	60	Mr. Smith.
Pythia 11th	1868	47	Mr. Parker.
Gadfly	1868	41	Mr. Parker.
Jewess	1868	60	Mr. Jervois.
Empress 5th	1868	30	Rev. W. Young.
Red Duchess 13th	1868	42	Mr. C. Howard.
Bella Donna	1868	41	Mr. Frudd.
Coral	1868	55	Rev. J. Storer.
Red Duchess 14th	1868	41	Mr. Parker.
Lilac	1868	42	Mr. Webb.
Pythia 12th	1868	30	Rev. W. Young.
Empress 6th	1869	42	Mr. C. Houard.
Pythia 13th	1869	41	Mr. Frudd.
Matilda	1869	55	Rev. J. Storer.
Red Duchess 15th	1869	41	Mr. Parker.
Maud	1869	43	Mr. Webb.
Jessie	1869	72	Sir G. Philips.
Red Duchess 16th	1869	55	Mr. Smith.
Crocus	1869	57	Mr. Fawcett.
Water Hen	1869	..	——
Comely	1869	47	Mr. Fawcett.
Seraph	1869	60	Mr. Smith.
Blush	Feb., 1870	40	Captain Oliver.
Pythia 14th	Mar., 1870	50	Sir J. Whichett.
Jane	April, 1870	57	Sir J. Whichett.
Janet	April, 1870	46	Mr. Armstrong.
Portia	May, 1870	46	Mr. Smith.
Madeline	Sept., 1870	35	Mr. Lindon.
Red Duchess 17th	Sept., 1870	35	Duke of Manchester.
Red Duchess 18th	Sept., 1870	33	Mr. Sandy.
Red Duchess 19th	Oct., 1870	30	Mr. Wythes.
Cherry	Oct., 1870	30	Mr. Cocks.
Empress 7th	Nov., 1870	23	Duke of Manchester.
Carnation	Feb., 1871	24	Mr. Fawcett.
Empress 8th	Feb., 1871	17	Mr. Turnell.
Syren	Feb., 1871	22	Mr. Morris.
Pythia 15th	Mar., 1871	30	Mr. Senior.
Bulls.			
WELLESLEY (25,421)	1865	52	Mr. Statter.
RED KNIGHT	1869	52	Mr. Edwards.
VOLUNTEER	1869	41	Mr. Burton.
MARQUIS	Mar., 1870	35	Sir W. Booth.
LORD BURLEIGH	April, 1870	23	Mr. Brown.
PENRHYN	June, 1870	68	Sir T. Whichcote.
JEWELLER	Aug., 1870	36	Mr. Frudd.
CRŒSUS	Sept., 1870	41	Mr. Enfield.
DESPOT	Sept., 1870	34	Mr. Selby.
LAUDABLE	Oct., 1870	22	Mr. Knight.
VISCOUNT	Oct., 1870	61	Mr. Chaplin.
BARRINGTON	Nov., 1870	80	Mr. Linton.
WARRIOR	Nov., 1870	40	Duke of Manchester.
REMUS	Nov., 1870	33	Mr. Vipen.
WARESLEY	Jan., 1871	31	Mr. J. Brown.
ROMULUS	Jan., 1871	36	Mr. Davies.
STAMFORD	Mar., 1871	22	Mr. Pashler.
BALA	Mar., 1871	25	Mr. Gifford.
PRINCE	April, 1871	15	Mr. Armstrong.
EDGAR	April, 1871	15	Mr. Laxton.
RUFUS	April, 1871	23	Mr. Lorker.
WATERLOO	April, 1871	15	Mr. Linton.
MENTOR	May, 1871	22	Mr. Percival.

—— Mr. Thornton sold 28 head of Shorthorns, the property of Mr. Ashburner, at Netherhouses, Ulverston, on the 27th ult. The cattle comprised some well-bred animals of Bates blood, several of the favourite "Blanche" or "Sockburn" line that recently commanded such high prices at the Duke of Devonshire's sale, others of the "Cressida" and "Nonpareil" families, whilst a few traced to Messrs. Bell's stock, bred originally at Kirklevington for many years. The remainder included well-known tribes bred and highly esteemed in the district for a number of years, some of them having been successful prize takers at the county and local shows. The cattle were in very fair condition, and had been on grass up to the sale day. The weather was unfortunately wet, and the rain poured down in a manner calculated to damp, not only the clothes, but the spirits of the buyers. The following are among the principal prices given: — *Fairy* by BARON WILD EYES (19,291), 47 gs., Mr. Savage; *Blush Rose* by SPORTSMAN (25,207), 36 gs., Mr. Hawkrigg; *Princess Helena* by BELVEDERE (23,405), 31 gs., Mr. Woodborne; *Orange Blossom* by BARON GENEVA (25,568), 50 gs., Mr. Washburne; *Macco* by PARIS (20,469), 68 gs., Dr. Cranke; *Blanche 6th* by PROVOST (24,878), 33 gs., Mr. Bates; *Buttercup 17th* by MOUNTBARROW (26,931), 31 gs., Mr. Macketh; *Jessy Caroline* by STORRS (25,238), 30 gs., Mr. Parker; *Azalea* by BARON FENNEL (lot 25), 35 gs., Mr. Porter.

—— Mr. Sanday was right in so distinctly pointing out certain errors into which cattle breeders are liable to fall, and his own large experience gives his statements weight, and will insure their grave consideration. He tells us, that "with many, a long pedigree is all that is considered necessary; but unless this pedigree be composed of really good animals, the produce will probably be unsatisfactory." And, again, "there are two other causes which must hasten the deterioration of some of our best herds, namely, first, the artificial manner of rearing calves, and second, the practice of using bulls before they arrive at maturity." How truly does this bear out Mr. Bates' statement, as rendered by Mr. Bell in his history of Shorthorns. At page 184 we are told that Mr. Bates used to say, and indeed truly, "that money-making was the ruling motive that governed the breeders of Shorthorn cattle, and not the improvement of the Shorthorns. Had the latter been the main object, the Shorthorn cattle might have been of double the value they then were in these kingdoms, and have spread over the whole habitable globe." Again, "Mr. Bates might have kept all his calves for bulls, and sold them at high prices. After the advent of BELVEDERE he kept more calves for bulls, but very frequently not by any means the best looking or most promising of the stock, but he frequently had ten or more bulls in his possession which he never used, and had no desire to part with, except when he considered they would improve the herds into which they were going." Also, at p. 219, we learn that "from about 1820 to 1833, Mr. Bates rarely let any bulls, and kept no calves for bulls except what he thought he might require for his own use, or induce his friends to introduce into their own herds for improvement of the stock." In other parts of the volume there are sufficient indications that the weeding process was rigorously carried on at Halton and Kirklevington. The three cardinal points, pedigree, personal qualifications, and treatment, must be kept in view by all breeders of good stock; and we maintain that the, to a certain extent true, idea that pedigree will make up for personal demerits has been pushed too far. It may be foolish to castrate a high, "fashionably" bred young bull, but we can never believe that breeding for pedigree alone, and at the same time neglecting the rigorous selection of the best only for breeding purposes, can be followed by any other than disastrous results.

—— Among recent additions to the Siddington herd are the following:—

Gazell 24th, roan, calved January 19; by 2D DUKE OF TREGUNTER, dam *Gazell 3d*.

Gazell 25th, roan, calved August 27; by 2D DUKE of TREGUNTER, dam *Gazell 11th*.

Minstrel 2d, white, roan ears, calved March 4, 1871; by 2D DUKE OF TREGUNTER, dam *Musical 7th*.

Ruby 4th, rich roan, calved April 21, 1871; by BATES TERTIUS (21,249), dam *Ruby*.

Siddington 9th, roan, calved March 22, 1871; by 2D DUKE OF TREGUNTER, dam *Siddington 2d*.

Siddington 10th, flaked roan, calved March 22, 1871; by 2D DUKE OF TREGUNTER, dam *Siddington 2d*.

Siddington 11th, white, calved March 30, 1871; by 2D DUKE OF TREGUNTER, dam *Siddington 5th*.

3D CAPTAIN TREGUNTER, white, calved February 1, 1871; by 2D DUKE OF TREGUNTER, dam *Gazell 6th*.

Wild Fire, red and white, calved May 10, 1871; by 2D DUKE OF TREGUNTER, dam *Wild Eyes 28th*.

COLONEL TREGUNTER, roan, calved May 20, 1871; by 2D DUKE OF TREGUNTER, dam *Gazell 2d*.

2D COLONEL TREGUNTER, roan, calved June 4, 1871; by 2D DUKE OF TREGUNTER, dam *Sybil*.

3D COLONEL TREGUNTER, roan, calved June 7, 1871; by 2D DUKE OF TREGUNTER, dam *British Queen*.

We have within the last few days visited Siddington, and were much pleased with the calves. They were looking the picture of health, and were exceedingly well haired and of good colours.

—— Colonel Gunter has sold a 3-months'-old Duchess bull for 1000 gs. to Mr. Graham, of Lancashire.

—— Lady Pigot's bull VICTORIOUS, the sire of BYTHIS and SIDUS, is dead.

THE DRY-EARTH SYSTEM v. THE WASTE OF LIQUID MANURE.

HAVING witnessed the application in a rough and imperfect, yet profitable, way of this system for collecting and applying all the refuse matters of a house and a farmyard many years ago; and having long applied dry earth in a very simple manner to my own stable, styes, &c., with great advantage both to field and garden; I may be allowed to record my testimony in its favour.

The deodorising powers of earth, and its admirable fitness for preserving the fertilising properties of manure, are well known, and cannot fail to manifest themselves in the application of this system to the farm. But besides this it offers the special advantage of keeping together the liquids and solids in a form under which their easy removal and application to land is effected by one and the same operation, and with the same implements; so that wherever manure cartage is already in operation, all is ready for the dry-earth system, and more profit will result from the labour.

The dry-earth system meets on the threshold many of the difficulties which the farmer encounters or raises in objection to the attempt at utilising the liquid manure. Being applied in the stables, the cow-sheds, and styes (with a proportion of straw), the urine is at once absorbed, and never appears in the comparatively unmanageable liquid form, and cannot become more unmanageable still by large dilution with water. It becomes at once subject to the control of the fork, shovel, and dungcart. The system may be partly (but cannot be fully) carried out where cattle are kept in open yards, especially where these are, in wet weather, little better than watercourses.

Presented to the labourer in the solid form by means of dry earth, the two forms of manure which Nature presents to man for his use (or abuse) are fully utilised with the greatest advantage to the farm or garden. The simple reason for the neglect of the liquid part no longer exists, which is this:—That liquid manure will not lie in a heap; that a man cannot take it up with a fork and load it; and that, naturally prone to run away, it soon ceases to invite removal by removing itself.

A very simple and elementary process of reasoning will suffice to show that the neglect of liquid excreta is a loss to the farm, and that the loss is not a simple one; telling as it does in more ways than one against the profits of farming.

The loss would be much greater than it is but for one redeeming feature of manure management. By folding sheep on the land, all their liquids as well as solids are rendered up to its use. No wonder that this custom of manuring is highly approved and persevered in. What would be the effect of a dressing of sheep-dung on a rotation of crops were the liquid poured into some ditch instead of upon the land?

Farmers who allow this substance to run to waste admit that it is valuable. They admit, therefore, that there is loss in one way, viz., in the quantity of manure at their disposal. But of equal moment at least, and probably of far greater, is the loss in quality to the solid manure which is saved and used.

The old idea of the untaught tiller of the soil was that manure supplied "fat" to the land. Thus the natural idea is that manure is a simple substance, and that the food of plants is a simple substance. But the first thing we learn of the constitution of a plant is that it is made up of many things, differing from each other and all necessary to its life and vigour. Therefore we infer at once that the food of plants must contain all these necessary things, and that they must all be supplied in sufficient abundance, in manuring the land for a succession of crops.

The absence of one of these things is often fatal to the plant, which, in its ordinary growth, is found to contain it. Thus the old worn-out Cheshire pasture refused to produce (at one time) grass fit for profitable milk-production, until the application of bones secured abundance of phosphate of lime. Clover dies out for want of some essential. I have covered my orchard this year with Clover, without sowing seed, by giving it a dressing of manure which manifestly contained the food required by that plant. I have seen the Wheat plant in a whole field die away without any ordinary cause to account for it, leaving the conviction on the mind of the labourer that the land and manure did not contain the food it required. This was on Bagshot Heath, a soil which contains less of the food of grain crops than any other known; and which food has therefore to be supplied. The same field, without extra manure, would yield an abundant crop of Rye. It was not, then, lack of fertilising matter, but of some special matter which the Wheat crop demands in large proportion, that led to the destruction of that plant.

Now, of the many substances required for plant food, it is unquestionable that the liquid excreta contains some of them in much greater abundance than the solid. The constant draining away of this leaves that portion of manure which is saved and used, with a smaller quantity of these special substances than Nature yields for our use. Hence the danger arises that some crop shall find out the defect, and suffer severely for the deficit. How much more probable this event when that drain upon the food supply is constantly going on in the farmyard—when the stock of manure is always being robbed of the same substances? That liquid manure contains some substances in greater proportion than the solid, is to be inferred even from the difference in appearance, smell, &c., from the solid dung. It is highly probable on the outset of inquiry, it is found to be so on examination. It is also certain that these things (in which the liquid is rich and the solid poor) are necessary to plant life. That they are necessary to the food of the cattle which supply the manure to the farm is most clear; for as those cattle yield up those substances, they must needs have drawn them from the food, the grass, corn, &c., which they have consumed. The waste, therefore—the constant waste, I may say—is waste of some special things necessary to the vigorous growth of farm produce.

Now this waste is sure to be felt; the sin, the abuse of God's gifts, finds us out. We may in many cases fail to detect the true cause and apply the simple remedy; but a remedy the farmer does even in that case apply, the cost of which we shall best appreciate thus. If he went to a grocer to order something in which his stock of grocery is deficient, he would know not only the exact article, but the exact quantity of it required. He can thus supply the loss with economy. Should he, however, have forgotten the exact article required, and yet know that it was much needed, his only way of securing it would be buying a complete stock of goods, in which the special article required would be found.

Now, this is the remedy which he practically adopts, and this the heavy price he pays for the defect in his manure stock. Finding the crops inferior and unremunerative with a certain tonnage of dung, he adds to it. What does he add? The special things required? Yes; this he does indeed, but in a wasteful manner, for, as he cannot know what the exact substance of the manure is which is deficient, he can only remedy it by adding more of the whole stock; and, as this stock happens to be weak in the special things required, there must not only be addition but, therefore, larger addition of it to supply the defect. The effect of such uniform draining away of such essential matters from plant food then takes this simple form, that the quantity of manure applied to the acre is much greater than it need be. The consequence of this is, that a smaller quantity of land must be manured from the yard than would otherwise be the case, and that the deficiency in general bulk of manure for keeping up the fertility of the whole farm must be made up with large purchases of bought food or fertilisers. Such purchase can only indicate extravagance where it is the remedy for waste.

But if the liquid and the solid be preserved together, then this drain of essentials is at once stopped, and flows in upon the produce of the farm. An increase of fertility becomes visible. It soon becomes apparent that a ton or two of the quantity of dung previously employed per acre can be spared for other fields. Then so much is added to the bulk of the manure by the addition of that which before filled ditches, or formed a swamp, that a still greater acreage is benefited.

Another great practical fact in agriculture invites the principle of making the body of manure, applied for general purposes, as complete as possible in all its parts. What lesson do we learn from a rotation of crops, as commonly employed, and found so advisable as to enter into the condition of a lease? The lesson is this, that each crop requires as food the substances which the land and manure supply in different proportions, if it is a different kind of grain, or green crop. After a Wheat crop, the properties of food left in the ground are changed. They no longer exist, in ordinary cases, in that degree which another Wheat crop would require; such a crop would, therefore, starve; but a Barley or Bean crop would find all it wants, and a third, differing from its predecessors, would live and thrive where the others would languish or perish. Thus, then, the object of the succession is, that deficiency in special substances shall be met by growing those things which require much less of them. Manifestly, therefore, it must be the object in supplying manure to give it all the variety of these substances in full quantity. The very fact, therefore, that liquid manure differs in certain essentials from the solid, is a very strong motive for combining it with the other. The combination of the excreta of different kinds of stock promises advantage on the above principles, how much more if the manure be only that of one animal that both kinds should be combined? There will be what is termed a "screw loose somewhere" in the agricultural machine if such waste be not remedied. And though the machine may be patched up, it is a more costly process to keep it going thus than by seeing to the perfect adjustment of parts before setting out.

Mr. Mechi, in his great tank (of which you have already made mention), combines all substances in his plant food, and this, among other important reasons, must be one which enables him to grow Wheat so much more frequently on the same land, and at the same time so abundantly. There is no fear of the food stock giving out when thus enriched at every point.

The dry-earth system has this advantage—that it can be fairly tried without costly outlay for tanks, water-carts, pumps, or even shedding for the preparation of earth, and with very little extra cartage. The cart returning empty from the field can bring back earth. If it be dry already, as in case of removal of some bank, it can be kept so by some thatched hurdles; if moist, it can be spread under an open shed to dry. The small expense of getting it may be lessened by gaining two objects from the one operation, as by digging a watercourse where it is wanted, the earth going to the farm; or sinking a reservoir for watering cattle, where that is needed. Nay, further, the staple of the soil may be gradually but most surely improved without any cost, by using clay as the absorbent of the manure for light soil, and light earth as the absorbent for the manure destined for clay fields.

The waste of this substance obtrudes itself so often and so offensively on our senses, the means of remedying it appear on Mr. Moule's plan so simple, and the prospect of advantage so well grounded, that one may well claim the liberty of adding a few words to the general demand for improvement in these matters. *J. W. Taylor, Seer Green Vicarage, near Beaconsfield.*

INTERNATIONAL EXHIBITION.

Blake's Stone Breaker.—This machine, invaluable to those who require it, has won a greater amount of popularity from spectators than any other machine exhibited. No sooner does it begin to chump up large nodules of various kinds of stone into fragmentary parts of any required degree of fineness purchasers may request, than all who see or hear it flock together to see its simple but powerful performance. Its simplicity of mechanism, upon which its real worth depends, will readily be understood from the annexed diagram (fig. 294), which shows a sectional view of a machine at work breaking flints. The general principle of mechanism of this machine is the same in a series of machines now in use for breaking various kinds of rock for different purposes. We shall notice, firstly, its peculiar mechanism; and, secondly, its adaptation and extended use chiefly in agriculture.

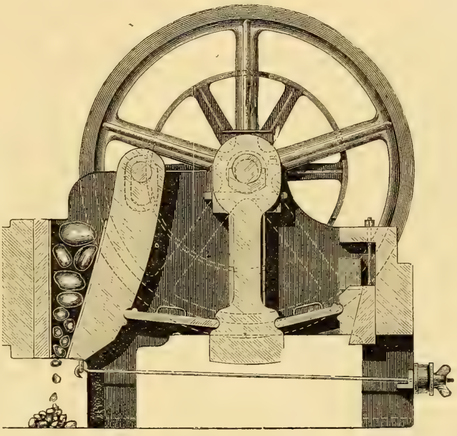


FIG. 294.—BLAKE'S STONE-BREAKER.

The machine, it will be observed from the illustration, is actuated by a strap on a drum or pulley, two powerful fly-wheels being on the same axis. This axis has an eccentric, which actuates a pendent connecting bar or pitman, and which, by means of a double toggle-joint, gives the movable jaw a chumping action against the fixed jaws, between which are seen the nodules of flint, or fragments of any kind of rock, &c. Both jaws have a ribbed surface, the better to produce a breaking, crushing, and grinding action by the peculiar up-and-down movement of the pitman, produced by the eccentric on the common axis of the fly-wheel and motor drum, actuated by a strap from the engine, as already noticed. In the illustration this drum will be seen on the further, or outside of the fly-wheel, its diameter being about half that of the latter (the fly-wheel). The fineness of the material being broken is regulated by a wedge seen in section on the right hand side, which is screwed up or down by means of a screw-nut, shown above the crossbars of the framing. The illustration is sufficiently plain to render a detailed description of this adjusting mechanism unnecessary, for by screwing up the wedge the toggle-block fulcrum is forced nearer the movable jaw, so that the two toggles, in crossing centres, force it closer to the fixed jaw. The two toggles, or cross-bars, can be taken out, and shorter or longer ones substituted in their place, as the nature of the work requires. The form of the jaws is made different for different kinds of work, that shown in the illustration being for road metal, limestone for burning, and the like. In the diagram the broken metal is shown falling into a heap, and for road-making this is generally sufficient, as the fine mixed with the large helps to bind the two together. But for most other purposes the broken materials pass through a rotary screen of perforated zinc or iron, which separates them into three or four sorts of different degrees of fineness, the coarsest, that passes out at the end of the screen, being passed through the breaker a second time, if desirable. The different sizes that pass through the perforations of the screen are each very uniform, more so than can be done in the usual way by hand-breaking with hammers and rings, and at a small fraction of the expense. The large stones are fed in at the top by hand, those larger than the mouth will receive are broken by a sledge hammer, and as they descend between the jaws they are broken finer and finer until they pass out below of the desired size. It will be seen that every revolution of the eccentric gives the pitman an up and a down movement, the toggles crossing centres twice, thus effecting two bites against the fixed frame—250 revolutions per minute making 500 bites, and that the power of each bite is due to the momentum of the fly-wheels. Only one fly-wheel can be shown in section, but the small machine exhibited in the International and the larger ones shown at Wolverhampton had each two fly-wheels, which act more effectually than one would do, and with less strain on the axis. In breaking round metal the movable jaw recedes about a quarter of an inch at the bottom, the distance diminishing towards the top, so that the breaking power is economically distributed, whilst the broken materials cannot fall through until reduced to the required size as adjusted by the cross-bar of iron below, the hook of which forms a movable pivot or centre for the lower end of the movable jaw.

Blake's stonebreaker is now in extensive use in Britain, America, North and South, and the Continent of Europe, and in short in all parts of the world, in roadmaking, railroad ballasting, in breaking pyrites (freestone, &c.), sulphur-stone, emery, furnace cinder, ores, limestone for burning, rock salt, coprolites and native phosphatic rock for manure, materials for concrete, cement, and artificial stone, asphalte pavement, &c. Landowners are interested in all the above appliances— some, it may be, in only one or two, others in all, and even in a more extended use of the machine than is included in the above list. It has long, for example, been a favourite theory with some chemists to break down certain descriptions of granite, lava, &c., for the sake of the potash and other fertilising matters they would yield as manure to the land. Quoting from Professor Johnston's lectures, "It is many years since Fuchs proposed to manufacture potash from felspar and mica by mixing them with quicklime, calcined in a furnace, and then washing with water." He then goes on to notice Mr. Prideaux's proposition for mixing crushed granite with quicklime and slaking them together, and then allowing the mixture to lie in covered heaps for a length of time until fit for application as a top-dressing. He next notices the successful use of decayed trap in some parts of Cornwall and Scotland, and of crushed lavas in St. Michael's, one of the Azores, and also the fertility of the old lavas of Mount Etna, and concludes thus:—"These are all so many natural mineral mixtures, of which we may either directly avail ourselves, or which we may imitate by art."

The conclusion at which Professor Johnston thus arrived some 20 years ago is now being fast reduced to practice, through the instrumentality of Blake's machine, which is in extensive use by all our principal artificial manure manufacturers. Thus Mr. Lawes, Rothamsted, has two of them in use, and in the United States of America, of which Mr. Blake is a native, in Canada and in South America, its use is fast developing their mineral manure resources.

So far well. But Professor Johnston evidently aims at a cheaper class of mineral manures than is yet supplied to farmers, and the practical question is, cannot landowners look around them, and, by means of Blake's machine, supply the grand desideratum in question? The expense of breaking materials to the size of road metal is about 3*d.* per ton, and at the rate of from 8 to 10 tons per hour, or 100 tons in a day of 10 hours. About 50 machines are now in use in granite quarries, breaking up the broken chips for road metal at a cost of 3*d.* per ton, which formerly cost 2*s.* per ton when broken by hand. If put through the machine a second time, and broken finer, the expense would be double or treble, according to the degree of fineness. But granting that the crushing of the granite, according to Mr. Prideaux's process, as recommended by Professor Johnston, costs 1*s.* per ton, the expense of carting and application would remain the same. The other expenses will depend upon the expense of time and coal, if the granite is calcined, and so on, and must be left for experiment to determine; though the total expense, when ready for application, by broadcast distribution, should not cost much per ton. But the rotten rocks to which Professor Johnston refers, in Cornwall and Scotland, can be broken at 3*d.* per ton, ready for application, so that this has only to be added to the price the landowner may charge for the rock, which may be set down as nominal in the outset, like the refuse-hills of the Sheffield bone-cutters in times gone by. If found to pay, the price would rise accordingly.

Two other new uses of Blake's machines have come out during the International Exhibition, viz., the breaking of materials for artificial stone, of which there is a very fine exhibition in the building department, and machinery-in-motion department, by Colonel Scott and others, and for asphalte concrete for roads, streets, farm buildings, garden walks, &c.

For artificial stone various degrees of fineness are used, the granite in some being from 1 to 1½ inch, the cement being poured in to fill up the interstices. This is evidently an offset of the old Pictish process of building in moulds or framing, the stones being first thrown into the frame in such a manner as to allow the mortar to fill up the interstices. In many of these old buildings the mortar is stronger than the stones, the latter yielding to the hammer before the former will break; and so is it in the Exhibition, the cleavage of broken bricks and cubes of artifical stone showing that the stone breaks before the cement. Two common bricks are cemented together, and are shown to break anywhere but at the place they are thus united. Large's small machine for making artificial stone or "concrete bricks" as they are sometimes termed, wiil turn out 5000 or 6000 in a day ready for the builder, and we believe Blake and Large have entered into arrangements for working their patents together on favourable terms; and the greater part of the work of breaking the stone fine, mixing it with the cement, damping, and weighing or measuring into the moulds, can be done by machinery.

The paving of stables and other farm buildings, including the strawyard, with asphalte concrete is now being discussed in the columns of most agricultural and horticultural papers, and were contractors who hire out agricultural implements to employ one of Blake's stone-breakers, they could break down stone at a few pence per ton to those who might employ them. Much of the gravel now used in making and repairing roads should be passed through one of these machines, which might be done at from 1*d.* to 3*d.* per ton. Chalk could be crushed as small as Peas for 3*d.* per ton for applying to the land, and most kinds of stone for asphalte paving at from 3*d.* to 6*d.* per ton; and broken stone is better than screened gravels generally, being of a more uniform quality, and free from nodules of rotten stone, which absorb rain, and break up with frost. *W. B.*

IMPORTED CATTLE DISEASE.

SIR J. JENKINSON called attention, in a recent number of the *Times*, to the extension of foot-and-mouth disease in Gloucestershire, attributable to the Irish cattle imported into Bristol, and sold thence. The Editor of the *Wilts and Gloucestershire Standard* thus refers to the same subject in last Saturday's *Times*:—

> As long ago as October last I called attention to the fact that Bristol was then, as it certainly is now, a centre from which the infection was being spread through the adjoining counties, but more particularly in Somersetshire, which was at that time suffering severely. The disease was then very prevalent in the south and south-east of Ireland, and as Cork, Waterford, and in a smaller degree, Wexford, are the shipping ports of that district, from all of which there is a large trade to Bristol, a considerable number of cattle are sent over to the latter port. On their arrival they are turned out upon the quay at Cumberland Basin, and are all mixed up in glorious confusion for an hour or so before being driven off to the market, thence to distribute the disease over the adjoining counties by mixing with other cattle at the fairs which are so numerous at this season of the year. Who can wonder that Somerset, Wilts, and West Gloucester, being close at hand to receive the first favours, suffered as heavily as they did?
>
> Much the same thing is happening now, and though

the dealers pretend that the disease is only coming from Waterford, and not from Cork, I am rather sceptical on that point. But, be that as it may, if Waterford is dangerous, Cork cannot be very safe in the case of so highly infectious a disease; and it seems to me that common sense demands that a very rigid quarantine should be imposed upon animals coming from either.

Mere inspection is a miserable delusion, and its protective value is absolutely *nil;* and for this reason, that it merely strains off the cases that are already developed, while it passes others with a clean bill of health to carry the seeds of the disease all over the country. For example, on Saturday last the Bristol magistrates imposed a fine of £15 on an Irish dealer for exposing for sale a diseased heifer in Bristol cattle market. The man assured the Bench that he was not aware that the animal was diseased, but the magistrates, of course, replied promptly, that if he dealt in cattle he must learn his business, and make himself acquainted with the symptoms. In this case they were evident enough, but in how many others in the same cargo was the disease latent, to be developed, in the course of a few days, in the midst of the valuable herd at Eastwood Park or else where? Sir George Jenkinson tells us of three having fallen sick of the disease out of the 12 he had just bought, and he has, perhaps, by this time found it in more. And what happened at Eastwood is happening daily in many other places. That diseased heifer which the inspector detected at Bristol Cattle Market came over from Waterford with a number of others. How many of those which were confined with her on the lower deck of the steamer are likely to have escaped the taint to which the heat and deficient ventilation, unavoidable on a sea voyage, rendered them peculiarly susceptible, and yet in a few hours' passage it had not had time to develope itself so that the most lynx-eyed inspector could detect it.

It is this that makes inspection, however carefully conducted, so useless. What we want is quarantine, if the stock is to be imported alive. It will be said that this would interfere with trade; but if trade is a means of disseminating disease it ought to be interfered with. We do not scruple to interfere with any trade when it becomes injurious to the public, and this importation of diseased cattle is highly so, causing a loss of food to the nation, and of the value of that food to the owners of stock, which considerably exceeds the total value of all the foreign cattle we import. Surely, it would be better that an importer should lose the sale of 12 diseased Irish steers than that they should be sent to spread infection among 100 others at Eastwood; for although foot-and-mouth disease may not be so fatal as other complaints, yet we cannot put the deterioration of each animal suffering from it at less than from £2 to £3. Why should a dealer inflict upon Sir George Jenkinson a loss of £200 or £300 merely in order that his own trade may not be interfered with? and as to the carrying trade, it is surely better that the Cork and Waterford steamers should bring less than their usual amount of cargo than that they should scatter disease broadcast throughout the 382,000 head of cattle in the counties of Wilts, Gloucester, and Somerset.

FOOT AND MOUTH DISEASE.

[The following is an abridgment of the reports given in Wednesday's *Times* of the progress of the disease.]

AN amended return as to the cases of foot-and-mouth disease occurring in Norfolk during the week ending September 23 places the total for the week at 2239. On Saturday a return for the week ending September 30 was made up, the total arrived at being 2229, so that the disease is happily not further increasing in the county.

The returns in Cambridgeshire and Huntingdonshire up to Saturday night last are still unfavourable, as not only is the foot-and-mouth disease increasing among the cattle but it has spread to the swine, and the deaths among these latter exceed, in proportion to the number attacked, those among either cattle or sheep. Of sheep scab there are numerous cases on farms at Chesterton and Wicken in Cambridgeshire. The following are the statistics of the foot-and-mouth disease in the two counties up to Saturday night:—Cambridgeshire: Arrington Division, 17 infected farms in eight parishes. Cambridge Division: The disease exists on no less than 52 farms, and on 19 of these is the result of fresh outbreaks. Newmarket Division: Here no less than 416 head of cattle are suffering from the disease. Huntingdonshire: In the St. Ives Division there have been outbreaks on 11 farms; in the Norman Cross Division the disease exists on 13 farms, out of which eight are fresh outbreaks.

The disease continues to spread in the county of Buckingham. The inspector's returns sent in for the past week show an increase of 250 animals affected with the disease. Altogether in the county the disease exists on 134 farms, and 1258 animals are affected.

This disease is spreading to a most alarming extent in the fenny parts of Lincolnshire, and has in numerous instances assumed a very virulent form, producing great prostration in the cattle attacked, and reducing them almost to skeletons. A large number of cases of the foot-and-mouth disease have been reported in the parts of Kesteven during the past week, probably owing to the recent conviction by the magistrates of a farmer for omitting to report the cases that occurred upon his farm. Cases are very numerous still in Leicestershire, Notts, and Derbyshire.

There has been a considerable diminution of the foot-and-mouth disease among cattle during the last fortnight in Staffordshire. The inspector's return for last week showed that 2657 cattle, 177 sheep, and 302 pigs were suffering, against 3361 cattle, 114 sheep, and 292 pigs in the previous week. The number of places where the disease prevailed was 597, against 682 in the preceding week; but while in the latter period the disease appeared in 124 fresh places, the number of fresh places visited last week was 92.

An increased number of new cases of foot-and-mouth disease in Northamptonshire has been reported during the week ending September 29, compared with the preceding seven days, the number being 99, as against 86. The Little Bowden district, which adjoins Leicestershire, has the most cases, there being 37 reported.

In the Malton district for the past week Mr. Superintendent Metcalfe reports four new outbreaks on fresh farms at Amotherby, Huttons Ambo, and Bulmer, and the disease exists on 11 farms.

The foot, mouth, and lung disease is very prevalent in the south-eastern division of Northumberland and North Durham. It is specially felt in Newcastle and the surrounding district, the town cows which graze on the moor having suffered severely from it. Two hundred and fifty cases were reported to the county police in Castle Ward, immediately outside Newcastle, last month, and the disease is spreading very much.

During the past week 48 new outbreaks of foot-and-mouth disease have been reported in Cumberland, and pleuro-pneumonia has appeared on two farms in addition to those on which it previously existed. Scab in sheep is also reported from two farms, and 100 animals are affected. In Westmoreland, foot-and-mouth disease has broken out on eight additional farms. In Cumberland there are now 221 farms affected with the contagion of one or other of the diseases mentioned, and 1368 animals are diseased; while 19 farms and 145 cattle are affected in Westmoreland.

Foot-and-mouth disease among cattle is very prevalent in the neighbourhood of Berwick, where it appeared on several farms last week. The cattle inspector reported on Saturday that at Haggerston a herd of 49 cattle were affected by the disease, and another herd of 39, belonging to Scremerston, were similarly affected.

The reports from the west are still unfavourable. The returns from the constabulary made up to Saturday show that in the county of Dorset there are above a thousand animals suffering from the contagion, about 50 per cent. consisting of sheep. Equally unsatisfactory are the returns from the neighbouring county of Somerset. About 150 cattle, sheep, and swine are affected around Bridgewater, while from Ilminster 13 fresh outbreaks are reported. To keep the malady from the milch cows is a difficult task, especially as such large numbers of Irish cattle bought at the Bristol market are dispersed throughout the county. From Hants nearly 800 cases are reported. No returns for Wilts are published.

This epidemic still continues to spread in the district around Bath, although the number of attacks during the past has been much less than was the case during the previous week. The police are making strenuous and, we believe, successful efforts to stamp out the disease by rigidly enforcing the non-removal system in the infected parishes. Mr. Superintendent Morgan reported to the local committee of the Western (Bath) Division, on Saturday morning, that during the week 34 head of cattle and six sheep had been attacked on eight fresh farms in the parishes of Charterhouse, Hinton, Northstoke, St. Catherine's, Freshford, Englishcombe, Carston, Weston, and Twerton.

The scene at the yearly meeting of the Winchcombe Agricultural Society, held on Friday afternoon on the ridge of hills 8 or 10 miles beyond Cheltenham, gave a melancholy proof of the ravages of the foot-and-mouth disease upon the farms in Gloucestershire. The farmers and visitors tramped over the drenched turf of the Abbey meadow to view only 20 or 30 cart-horses, and roadsters, and hunters. There were neither cattle, sheep, nor pigs. The weekly returns by the cattle inspectors are said to give no real criterion as to the prevalence of the disorder. At the Northleach Petty Session, Mr. William Jones, of Sirsa House, Cheltenham, a magistrate of the county, was charged by an inspector with not reporting to a police-constable that certain cattle on his farm at Pegglesworth were affected with the disease. Mr. Jones pleaded that he had been from home, and that only on the day the inspector came did he fully know that, in the opinion of some, his cattle were affected. However, he was fined £2 and costs.

Home Correspondence.

Thin Seeding.—Your readers are aware that I am an advocate of thin seeding, both of cereals and pulse; but I again emphatically state that thin seeding to be profitable depends upon deep and thorough cultivation, and keeping the land in good working order, as a man who loves his horse would keep his horse. But what is thin seeding? I and the late Mr. Piper, of Colne Engaine, grew Wheat in succession for years, and with success, from half a peck of seed per acre; and I have grown Wheat after Wheat, from a peck of seed per acre, but I would not advise farmers to do the same; and in my subsequent papers I will explain why I would not so advise them. But I here just hint, as I have stated a hundred and one times before, that I should use nearly double the quantity of seed of one kind of Wheat than I should of another kind; and I should use as great a difference in the quantity of seed between my seeding in September and November, that is, I should use double the quantity of seed in November that I should in September. But with this brief explanation I will, Mr. Editor, inform your readers a little of what I did for my last crops. This time last year I asked my churchwarden, who himself owns and farms three extensive farms in my parish, to allow me to put the seed in for him in one of his fields, and I stipulated that if the crop, the seed for which I should drill in by the drill I invented and made, should not be equal to the best crop he had on his farm, I would make up the difference in money. This was agreed to; and so on Thursday, November 24, my churchwarden sent me word that a field was ready for me about a mile from my house, and so on November 26 I went to the field with my drill, and by agreement my churchwarden met me with a man and a horse with the seed, and some of which they measured into my drill, and I myself set to acting as drillman to put the seed in; which having been done, my churchwarden, having left a man with me, returned to the field, and they measured the quantity of seed left in the drill, and which proved that I had put in just 2½ pecks an acre, a fifth more than I intended, but my drill happened to be out of order at that time. Now, my attentive readers, I had never been in that field before, nor had any one of my men, nor have I or they been in it since the drilling it; but the farmer cut the crop and measured it, and what was the result? In coming to a guess, it should be remembered that the season was too late for thin seeding by at least two months, and that nothing was done to the crop during the time it was growing, and yet what was the yield? My friends, the 2½ pecks an acre produced 49 bush. an acre; and let me further add, that the crop was so thick that it became lodged, or, of course, the yield would have been more. *G. Wilkins, Vicarage, Wix, September* 26.

Landowners and Agricultural Labourers.—A very common complaint amongst farmers is that they cannot get a sufficient number of workmen—or at any rate skilled workmen. What is the remedy for this evil, which no doubt exists in many parts of England? It must be confessed at once that it is a question which the landed proprietors must take in hand rather than their tenants—for the latter, although they may do something to help to solve the difficulty, are almost powerless, while their landlords can do (and some have done) much to benefit them in this respect. In some counties men are not scarce, but their education and training have been so very deficient that they make exceedingly poor workmen; in others the labour is done almost entirely by Irishmen, who although in many instances do good work, are, nevertheless, uncertain, and are not to be depended upon; and, in some parts labourers are not to be had in sufficient numbers to meet the requirements of the agriculturists of the neighbourhood. To meet this state of things, it is necessary that in the future some different course should be pursued, if any improvement is looked for. What, then, can be done? First, I would suggest that all landowners and agents should use every endeavour to retain upon the estate the labourers' sons. Now, as a rule, three out of every five country lads find their way to the towns and cities, but if plenty of good cottage accommodation was to be obtained in the country, they would probably remain there. With a lot of boys and young men growing up on an estate, it seems reasonable to suppose that if the owner and his agent took some interest in these youths, and made it their study to retain them, or, at least, the best of them, they would in time become useful labourers. But not only do I advocate their being induced to remain on the estate, but also that care should be taken of their training. If they were thus well looked after, and suitable situations found for them, in course of time they would feel themselves so linked to the estate as never to think of removing. In short, I would have every landowner look upon his cottagers and their families with as much interest as he does upon his farmers. Let there be a feeling of dependence upon one another, and an interest shown in each other's welfare, and that will result in a true bond of friendship and respect springing up between them. Secondly, I would suggest that every cottager should hold direct from the landlord and not under his master. In most cases cottages are leased to the farmers, who sublet them to their workmen as weekly tenants. This arrangement is bad, for in many cases under it the labourer feels himself a sort of slave to his master. He knows perfectly well that if he should offend his employer the consequence is a notice to quit at the end of the week. No doubt under this system many a poor man is trodden down and forced into submission. Besides, a man of any honour feels it a sort of slight to take his cottage from his master, and not from the owner. He appears as part and parcel of the farm—a sort of machine tacked on with the holding, and, it may almost be said, partly included in the rent. Now, if every cottage was let direct to the occupier, under a monthly agreement, and the farmer to nominate the tenant, subject to the approval of the agent, an improvement would be made. A cottager would then feel himself independent, and would pride himself in keeping his place clean and tidy, and would find himself free from the everlasting threat which in many cases now continually hangs over his head. Any man of spirit who is imposed upon is certain to kick, and I believe that a vast number of the squabbles between master and servants arise directly or indirectly from this bad system to which I refer. Thirdly, I would suggest that a good number of small farms be kept for those labourers who have worked longest on the estate. Many a labouring man has gained his aim in life if he can say he holds a farm. It would be a great inducement to labourers' sons to know that such was the reward for the respectable men that had served longest on the property. They should be encouraged to save their money early in life, and thus by perseverance and industry in course of time they would be compensated for their pains. If it was a thoroughly understood rule that the small farms were reserved entirely for the most deserving of the labourers, I believe more would be willing to become farm servants, and the general conduct of all would be influenced thereby. Fourthly, I would suggest that the general education of the families of the labourer be well looked after. The most effectual way to do this now is (provided the district is not under a school board) to insert a compulsory clause in all cottage agreements providing that all children under a certain age shall be sent to school. This is a simple plan, and it would be a matter of no very great difficulty to see that the clause was carried out. The necessity for educated labourers appears more and more every day, and unless the landowners of the country take up the subject, and also use means to provide more workmen, the next generation will suffer in the same manner that many farmers do now. *E. Minshall, Estate Office, Aston, Preston Brook.*

Diseased Cattle Importations.—Allow me to endorse the statement in your able *resumé* of the progress and state of cattle disease in England, "That the country is considerably worse off now than it was this time last year, both in respect of foot-and-mouth disease and pleuro-pneumonia," as also to testify to the truth of the information, that "several cargoes of Spanish cattle have been detained at the outports for slaughter in consequence of the discovery of diseased animals among them." I observe, however, that this intelligence is supplemented by an important qualification—"at least," it is added, "when landed in this country." I therefore request the favour that you will publish the fact that some cattle from the Continent, examined on landing, and passed as healthy by the Government inspectors on Thursday last, proved the following day affected with foot-and-mouth disease? Thus, another instance is added to the many that have come under my notice of the valuelessness of official inspection on the debarkation of animals as a safeguard against the constant re-introduction of contagious disease. *John Waller, Secretary, Home Cattle Defence Association*, 81, *Fenchurch Street, September* 27.

Disaforestry Compensated by Plantations.—I happen to have been in a part of the world where forest conservancy verges on a mania, where conservancy practically shuts out profitable enterprise, defies all the laws of political economy, and "befogs," common sense. I am one of those who believe in the beneficial effect of arborescent vegetation upon climate, and would stoutly advocate the planting of two—ay, ten trees, for every one that is felled, especially in such countries as America and India. It is the latter country, or a portion of it, with which I will more particularly deal. On some of the mountainous tracts much of the indigenous forest has disappeared to make way for Coffee, Tea, and Cinchona plantations, and this disaforestry has caused great apprehension in the minds of various forest officers and others as to the course of the clouds, and the ultimate inches of rain. These gentlemen do not appear to consider the compensating effect produced by the plantations taking the place of the forest, and it must be satisfactory to them to find that even bare mountains and "tall herbaceous plants" have their influence in causing a greater amount of rain to fall. If this point be conceded, it will be easy to believe that trees such as the Cinchona, and shrubs such as Coffee and Tea (all of which impart dense shade to the soil), exert their compensating influences. It also happens that private speculators on the Neilgherries, for instance, have found it profitable to form extensive plantations of Eucalyptus and Acacia, and there is scarcely a villa residence on these hills the grounds of which are not largely planted with these and other trees—a compensating influence which has not been sufficiently taken into account. Now, it happens that comparatively treeless sites were chosen for the hill stations of Ootacamund, Coonoor, Wellington, and Kotagherry, and the consequence of these places being settled by Europeans is, that there are more trees growing within the large area of the stations than probably ever existed before; and it must be gratifying to know that the rainfall has not seriously diminished—on the contrary, the extensive tree planting seems to have resulted in "most wonderful weather;" the rain that used in former days, when seasons were good, to fall (on the Neilgherries) the last 10 days of April, has visited them early in March. Such a phenomenon, says the *Agricultural Gazette* of India, has not been experienced by that mythical person, the "oldest inhabitant." It is for the Government to inquire whether the 60 years' cycle of Hindoo belief accounts for this result, or whether compensating influences, such as I have pointed out, have had their effect. If it be the latter, then by all means let them abandon their profitless forests (they were conserved at a loss a year or two ago) in the accessible districts, to the tree and shrub planting, food-producing planter, and so stimulate the profitable opening out of these glorious hills to the compensating and improving influence of artificial plantations. For a plantation to succeed, it must be formed on good forest land, it must be in a roaded district, it must be near a market, it must have every encouragement; as a means of fostering such encouragement, let the Government considerably abate the operation of Rules I. and XVIII. of the Madras Waste Land Rules. *James MacPherson.*

Facts about Steam and Horse Power.—Said my engine-driver to me to-day (he was formerly my farm-labourer), "My eldest son is 24 years of age next November, and your engine was put up in December, 24 years ago." Well, there it is now threshing away, and likely to do so for many years to come. After 20 years' use of the original boiler, I changed it away for an 8-horse new Cornish boiler, paying the difference. The Cornish boiler is more powerful and economical than the old flue boiler. The engine is of 6-horse power. If agriculturists were to sit down quietly, and calculate without prejudice the relative cost and value of steam *versus* horses, the former would get the favourable verdict. The annexed figures, extracted from my farm account-books, will give unmistakable evidence on this subject. We use our engine about two days out of three throughout the year. From October 1 to June 1 it is at work almost daily, according to our number of live stock. It is often worked long hours, or overtime when required. The facts justify the following conclusions:—That a steam-horse costs less to purchase than a real horse; that it will last more than twice as long; that its annual cost for food (coal) is less than half that of the real horse; that its cost for attendance is only one-third that of a real horse; that it will do twice as much work as a real horse; when my 6-horse fixed steam-engine rests it only costs me 4*s*. per week, or the interest on £200, the amount of its cost and fixing; when my six horses rest, they cost me £3 18*s*. per week for their food, besides manual attendance and interest on their cost; a horse works eight hours, and rests 16; a steam-engine requires no rest except for cleaning or repairing; a steam-engine gets no lameness from kicks or strains, no death or inflammation from gripes, wind, or flatulence, or the other numerous complaints and disasters that befall horses.

Manual attendance per horse per annum ..	£16	10	0
Ditto per steam-horse	6	10	0
Annual food per horse per annum	35	0	0
Ditto per steam-horse (we burn dust coal) ..	10	0	0
First cost of horse	35	0	0
Ditto of steam-horse	34	0	0
Annual wear and tear of horse	3	0	0
Ditto of steam-horse	1	12	0

Extract from the Account Books.

	Cash Paid.		Cash Received.	
	Engine-driver.	Coals for Engine.	Grinding for hire.	Grinding for our own stock and horses.
1866 ..	£25	£31	£32	£16
1867 ..	25	35	32	26
1868 ..	25	44	39	24
1869 ..	25	36	32	18
1870 ..	25	41	63	26
	£125	£187	£198	£104

The engine-driver's time is averaged. He receives 2*s*. 6*d*. a day. The other items are exact receipts and payments. In addition to the grinding, the engine cuts all the hay and straw chaff, breaks cake, pulps roots; works the sack-raising tackle, the grinding-stone, linseed crusher, threshing and dressing machine, irrigator pumps; so that deducting the receipts for grinding, all this is done for nothing, except the wear and tear, and repairs of engine. Cost of corn, hay, and bran for my seven farm horses:—

Extract from the Account Books.

This is independent of the Rye-grass, Mangel, Tares, and Clover, consumed green, and straw chaff.

1866	£158
1867	199
1868	232
1869	187
1870	201
Grinding corn	53
Cutting chaff for horses	50
£31 per horse per annum	£1080
Three ploughmen for 5 years at £33 6*s*. 8*d*. ..	500
Two horses to each ploughman	£1580

Some deduction should be made from the charge for for horsemen's attendance, because they labour during harvest and at other times when the horses rest. My engine and boiler cost £170 without fixing. The engine is of 6-horse power. My horses are always stabled when not at work. They work very hard. All their food is given in the manger: straw and hay cut fine, corn ground, Mangel pulped, rock salt in the manger. Stable ventilated. *J. J. Mechi, Sept.* 1871.

Societies.

SOUTH TYNE.

[We gave last week the report of the judges on moorland improvements in competition for a prize offered by the high sheriff of Northumberland; we now publish speeches relating partly to this subject delivered on the occasion of the annual meeting of the Society.]

The Chairman, Mr. Hope Wallace, proposed "Success and prosperity to the South Tyne Agricultural Society," and in doing so he said that an agricultural society took all classes of farmers under its wing, and gave, or ought to give, prizes for all sorts of farming, and not simply to encourage the breeders of stock. Mr. Brown and himself had given silver cups as prizes in connection with the reclaiming of land. In the South Tyne district there were thousands of acres of land that ought to be reclaimed, and which would, he believed, be reclaimed in a few years time. They should all work together, and face the matter resolutely, and have the land improved in the best way possible. These special prizes were given for two reasons; in the first place to show that the landlords of the district wished to mark their sense and appreciation of the time and labour employed by not only tenants but also small proprietors, in bringing the land under cultivation; and in the second place to get the problem solved with regard to mountain land. There were two sides to the question—as, indeed there were to every question—ought the land to be touched with the plough or not? Ought a farmer to drain and lime his land, then take a rotation of crops from it, and then lay it down to pasture, or ought he never to touch the skin of the land with the plough? That was the problem to be solved. They often heard people talking about the question of the day, and he thought that the real question of the day, which would come home to every one, was the supply of food; and in what way could they better increase the supply of food, and also circulate money, than by bringing land under cultivation, which otherwise would not be brought under cultivation? As a young landlord, he wished to bring a question before the young tenant-farmer, being wishful to find out what kind of a person his future tenant was to be. He expected he would be a well educated man, for he could not help thinking that farmers would farm much better if they had more of what was called book learning. He spoke to a considerable farmer the other day about the education of his son, and suggested that the son should be sent either to some agricultural college—there was a good one now he believed at Brampton—or to some friend who farmed in the south of England or in Scotland; and the farmer replied, "Hoots, what does he want with a better education than his father has?" That was not the question to be considered; the question was, whether that education would enable him to compete with farmers in the future. Home-keeping youth always had homely wits, as Shakspeare said, and a man of that stamp had no chance in competing with men who had been where they had seen farming in all its branches. He recommended the young farmer to get hold of standard works on agriculture and read them up at nights. They generally found that an ignorant and uneducated man was a prejudiced man, and, on the first blush, was always against improvements. The rising generation of farmers, when leases fell out, should make up their minds to drive a hard bargain with their landlord, for in the long run it would answer best. If the landlord was too easy with the tenant, the latter was too hard upon the land, and it was downright injustice to the land to allow too low renting. He did not allude to rack-renting, but a fair and reasonable rent, and if the landlord gave anything back it should be in lime or something of that kind. Referring to the size of farms, he said that where they found one landlord dividing one farm into two, they would find five hundred knocking two farms into one. As tenant-farmers they would have to face all these questions sooner or later. Then there was the awkward question of leases. He believed that what worked best in that part of the country was a 14 years' lease, and two or three years before this lease ran out the tenant generally got the farm again for another seven years. If he was a good tenant the landlord should humour him, but if he was a bad one he should be god rid of at any price, for kindness to the tenant in this way was an injury to the land.

Mr. T. P. Dods, in giving "The Competitors," said—The most interesting features of the competition were the two special prizes for reclaimed land, about which he was desirous of saying a few words. There was a story told of Lord Mansfield, of a brother judge saying to him, upon his appointment to the bench, that he doubted how he would get on, and receiving the reply that if he gave decisions without giving any reasons he had no doubt he would get on very well. One reason why they were asked to write a report was that they might give their reasons for their decisions, and although it might lay them open to a little criticism, he had no hesitation on the part of himself and his friend Mr. Wright in giving the reasons for coming to the decisions which they came to. The terms in which the prizes were offered were for the greatest improvement of mountain or hill pasture. They did not interpret the greatest improvement as being the improvement of the greatest quentity of hill land, else that would have been a simple matter of the number of acres reclaimed and returned to the secretary. They interpreted it, as they were instructed that it was the quality of the improvement and not the quantity, and Mr. Wright and himself visited 16 different parcels of ground belonging to 14 different competitors spread over the district from nearly the head of Knaresdale on the one hand to Whiteside in the north on the other. The reason of their awarding the 1st prize to Mrs. Winter was because—looking at the land round about the improved portion which they considered fair specimens of the land which had been improved—they thought she had made the greatest improvement in her piece of land from a state of Nature to what it was now than had been made in any piece which they visited. Many of the competitors had done a great deal and gone over a much larger area, but Mrs. Winter's was the most thoroughly done, the most economically done, and the most speedily done. They commenced at the head of Knaresdale and came downwards. Mr. Bywell, of Burnstones, had made great improvement in a piece of land through a great deal of labour, and with small opportunities for doing so. He had shown great perseverance in getting up lime over a bad road, or rather no road at all, and that was the case also with respect to many places which they visited. Mr. Brown's was the last place they visited on the first day, and on talking matters over they thought it was very doubtful that they could place any before, but on going to Mrs. Winter's they had no hesitation in placing it first, as being more thoroughly done and cheaper done than Mr. Brown's, and being a tenant and not a landlord, if there had been any doubt in their minds they would certainly have given the tenant the benefit of the doubt; but they had no doubt about it. They then went to Mr. Newton's, who, in the few years he had been at Whiteside, had made a great reformation there, and he was much pleased to see it. The question had been put to him—which was the best way of treating this land, whether to break it up or lime it? He replied that as to breaking it up, it would depend upon the nature of the soil. In reference to Mr. Newton's, he acted more wisely in draining and liming it, while he had no hesitation in saying that in other pieces—Mr. Brown's and Mrs. Winter's—they had done right in putting the plough into it, but he could not approve of taking white crops off poor land. Mrs. Winter had been putting into her land and taking nothing out, and, as a consequence, Mrs. Winter had Rape and seeds. He did not know the value of them there, but in his district there would be no difficulty in getting £4 per acre for the eatage of it. His Knaresdale friends were going on not merely taking two white crops, but repeating after a Turnip crop a third white crop from this peat top sort of land; and their grass was not so good as Mrs. Winter's, who only took one white crop, as far as the schedules informed them. Some person had told him that Mr. Grieves had robbed some other land to improve the piece he had entered in the competition, but he must say that by levelling, draining, and liming it he had made it a piece of very good grass, he thought worth 30*s.*, while the surrounding land was not worth 2*s.* 6*d.* an acre. He could not give them exact information of what it cost him, but he thought it would have cost him a good deal for manure.

There was a great quantity of land in the district quite capable of being improved, and he had no doubt but that the result of this competition would be to cause a very considerable amount of improvement to start and be carried on which was not going on before; and if they had to do anything like feed the population of this island it was not ten thousand, nor a hundred thousand, but hundreds of thousands of acres which could be brought under cultivation, and a still greater portion could be made into good useful pasture which was at present lying in a state of black heath. He was glad that the chairman had called their attention to the subject of education. He did not know if they had had any communication from the secretary of the joint education committee down east, but he hoped some parties had been considering the movement made to utilise—not merely for the sake of farmers' sons but for the use of all middle-class lads — the charity now doing little or nothing at Haydon Bridge. The movement commenced with a paper read by Canon Dwarris at the Hexham Farmers' Club; it was joined by the Newcastle Farmers' Club and by the Committee for Educational Purposes of the University of Durham, and the joint committee thus formed had been trying to rouse the county to do something towards getting this fund utilised. If nothing was done in the course of a year or two, he had no doubt the School Commissioners, who had entire power to deal with this matter, would interfere with this fund, and if it was not made use of in this county it would be made use of somewhere else. The great matter they desired was a large boarding-school to be established at Haydon Bridge, making use of these funds for the partial endowment of it. This school would be one where farmers' sons and those of the middle class could have a sound and thoroughly good education at a reasonable sum. He hoped the people of that district would take home the remarks that had been made on education, and that when this movement had been initiated up there they would support it with all their might.

Farmers' Clubs.

BOTLEY.

The Impediments to Agricultural Progress.—This subject was introduced at one of the meetings of this Club last winter, and we publish Mr. Blundell's paper now.

Mr. BLUNDELL said: I propose to use as little argument as is consistent with the time at our disposal, and shall content myself chiefly with giving my own conclusions upon the various headings under which I propose to illustrate the subject, and leave for the most part the discussion in the hands of the gentlemen whom I see around me.

Leases.—I propose first to allude to the influence which leases and agreements for letting land have upon agricultural progress. It is to be feared that leases and agreements for letting land are often drawn professedly in the interest of the proprietor, but still turn out to be practically against his interest and that of his tenant also; in such cases they are very much opposed to good farming. My experience tells me that it is very difficult to bind a tenant by terms and clauses in order to prevent his lowering and impoverishing the condition of the land in his occupation, and then to accept the highest offer as rent. I should much prefer to take a tenant with sufficient capital, giving him a lease for eight or twelve years, or otherwise an agreement for a term, subject to two years' notice, with liberal covenants as to cropping, and compensation on quitting for unexhausted manures, chalking, &c.; thus giving the tenant an interest in farming well to the last, and the incoming tenant a favourable entry, for which he ought to be willing to pay. By such a plan the landlord will always ensure a fair rental, and there will be none, or very little diminution in production and agricultural progress. I am decidedly opposed to an annual tenancy. I have seen so many changes of tenants by six months' notice to quit, that I do not hesitate to say the uncertainty of such a holding is often the cause of bad farming. Being always at the mercy of the proprietor, how can the tenant feel justified in high farming with a liberal outlay, not knowing, when he sows, who shall reap? Compensation at quitting for unexhausted manures, &c., certainly palliates the difficulty, but does not remove it, because a tenant cannot shift his residence continually without expenses, oftentimes losses, and at great inconvenience to himself and family. The clauses of a lease cannot be too simple if they are calculated to secure the interest of both landlord and tenant, and I will allude to a few of importance. For instance, a tenant should, in my opinion, not be allowed to crop more than half of the arable land with white straw crop on the vale farms, nor more than two-fifths upon the hill or poor stock farms, simply because it cannot answer his purpose, the most practical system being an alternation with pulse crops, &c., or green feeding crops upon the stock farms. The plan of paying for hay at market-price upon entry is adverse to the tenant, he having to invest more capital which lays dead and pays no interest during his occupation. Again: a tenant ought to be allowed to sell hay and straw enough to pay for his requirements in artificial manures every year, except the last, otherwise this expenditure is an actual addition to the rent of the land. Upon such farms as require it a chalking clause should be entered in the agreement, compelling the tenant to dress a portion of the land every year, the unexhausted effects to be charged to the succeeding tenant. Some arrangement should also be made for the manuring, or otherwise improving, grass land, which is usually so much neglected in this county. The four-course, or Norfolk rotation, being the only recognised system, except on the hill farms, where the five-course prevails, should be the course laid down for an off-going tenant, in order that some definite system should form a basis for quitting.

Buildings, &c.—In estate management the want of careful attention to many leading points has much to do with the progress of farming, and in which the whole community are more or less interested. First, let us consider how insufficient are many of the farm buildings in different parts of the country, and my opinion is, that great improvements may be made by re-appropriation and remodelling rather than by new erections or expensive additions. I have seen some homesteads greatly improved by these means, costing but little more than repairing, particularly when (as they usually are) sufficiently extensive. We must not, now we are considering this subject, forget the great advantage and yearly increasing necessity for building a proper number of cottages for labourers attached to the farm, and which should be not less than two tenements per hundred acres; for the system of education now so much extending will render the labourer more independent, and more inclined to emigrate than formerly. It will, therefore, be more difficult in the future for tenants to secure and retain good labourers unless they can offer them good cottages near their work, thus affording them a more permanent home. Again: how can we expect a man to do a fair day's work unless he is situated near his labour? His daily strength is partly expended in travelling to and from his work. We do not build our farm-stables miles away from the farm, and so take work out of our horses by travelling. Why should we act otherwise with our labourers?

Another subject in connection with landed estates also demands a notice, namely, draining, for, although it has been extensively executed within the past three years, few can estimate the extent of land still requiring to be done. Mr. Bailey Denton—a sufficient authority—states that we have in the United Kingdom upwards of nine millions of acres undrained of clay soil alone, besides which there is probably as much more of other land which would pay for being drained. Many of the improvements required upon estates have heretofore been very difficult to accomplish, more particularly in the case of entailed properties, but at the present time there are great facilities offered by different companies by loans for the improvement of landed estates, whereby the cost and charges may be spread over 25 years, and I notice more particularly by advertisement that the Right Hon. Lord Ashburton has recently applied for a loan of £25,000, for the improvement of his estates near Alresford, Hants, thus showing that there is but little or no excuse for the neglect of farm buildings, land, &c., which we see around us, and which proves so injurious to the progress of agriculture.

Any diminution of the agricultural area of the kingdom is necessarily opposed to progress, unless a corresponding or an increasing area can be obtained by the enclosure and cultivation of woods and wastes, &c. It is my firm conviction that we have not at present so much land under culture or grazing as we had 30 years ago. Look at the enormous quantity of land absorbed by railways and their stations, &c.; look at the extension of factories and public buildings of various kinds. Again, look at the increase of towns and villages consequent upon increase of population and extension of trade and commerce. Take our own neighbourhood for instance. The market gardeners are now driven away from the towns, and have absorbed large tracts of land previously used for ordinary agriculture, and I can only come to the conclusion that much more land has been taken from the plough than has been given by enclosure and cultivation of wastes. It is, however, a very natural question to ask—How is more land to be made available for agricultural purposes?

If we look back at the discussion of this Club last session we shall find that there is plenty of land lying idle, or nearly so, in the country; and who is to blame for this when it is proved beyond dispute that a large portion would pay for cultivation? As before observed, money is readily obtainable by loan for the purpose, and, even if it were not, the land may be offered to adjoining tenants, who, in most instances, would be ready to occupy and bring it into cultivation at a nominal rent for a given period, and, as it often pays no rent at present, this arrangement must be a gain and advantage to a proprietor, who would receive a fair rental at the end of a term of years. I have done this myself, and found it answer my purpose and that of the tenants also. It seems a most extraordinary thing, but go which way you will in this country if you find waste land or worthless irregular timber in woods, by just asking to whom it belongs, in nine cases out of ten it is found to be the property of some large or considerable proprietor. Again, where the commons have been enclosed nearly all the smallest allotments have been cultivated, and many of the larger ones neglected. I forbear giving any other reason why this should be the case, except that I believe parties are blind to their own interest. Steam cultivation would also be more generally adopted if proprietors would cut the timber in the hedges and rows and take 4 per cent. for the money, instead of 1½ per cent. which they are now obliged to take in the growth of timber. As it is at present, it is a loss to the owner and occupier, preventing the removal of hedges and the enlarging of fields, diminishing produce, and often totally preventing the use of steam-power and impeding agricultural progress.

Game.—There can be no doubt that the loss by game of agricultural produce, irrespective of impediments to the cultivation of the land, is enormous. As, however, this subject engaged the attention of this Club last year, I intend to confine my observations chiefly to two points, viz., the prevention of game being an impediment to the occupier of land, and the making it profitable as an agricultural production. Firstly, it is not disputed by practical men that at present only one farm in five can be rented free of the game, and probably this freedom applies only to one-eighth of the leased land in the kingdom. It therefore follows that the occupying tenants have no option, under present circumstances, but that of submitting to the reservation of game by the proprietors. The effect of this is notorious—that employment of capital in cultivation is discouraged, that large numbers of occupiers are ruined, and the produce of the land greatly curtailed by the existing state of things; and I can see no other remedy for the evil than that "game be made the property of the occupiers of land whereon it may be found," and "that by legislative enactment any agreement for the letting or reservation of pheasants, partridges, hares, and rabbits shall be null and void in law," and "that game shall be protected by the law of trespass and the same laws which now protect the occupier's poultry, sheep, &c." Secondly, I am not opposed, nor do I believe it opposed, to the interests of the country that large heads of game may be raised with the view to both profit and sport (call it battue shooting, if you like), so long as the occupier confines the ground game by wire netting or otherwise, and the winged game by feeding and careful keeping to his own occupation. There is no reason why it should not be made profitable, afford excellent sport, and injure nobody. Assuming, however, that game shall be protected by the same means as farmyard fowls, ducks, &c., this will, no doubt, involve the repeal of the Game Laws as at present existing. Be it so. No doubt there might be some who would say that they could not move in the matter of these contracts without the interference of Parliament. I want you to notice that I have alluded to this, and that we have already instances where the Government have interfered. Look at the shipping employed in former years to carry emigrants to foreign countries. They made it compulsory that there should be sufficient accommodation for each emigrant, and thus interfered in the contract which had been made between the shipping agents and the emigrants themselves. Did not the legislature interfere in the Factory Act, whereby they said that persons should work so many hours per week and no more, thereby interfering with a contract that was made between man and man? Then, again, I might point to the Elementary Education Act, for the education of the children of the labourer, and which is very likely to work injurious to the labouring man in one way, as it will compel a man to give up his children—the bread earners, who are sometimes of such importance to him in that respect; by legislation they will compel that man to give up his children for so many years, in order that they may be educated. That is an interference between a contract—between man and man. Look, again, at the many clauses in the Irish Land Bill which interfere with the contracts between man and man; but yet how much good do we see done by such a proposal. With regard to the letting of game, it will be of very little consequence to the large landed proprietor, because he can take 400,000 or 500,000 acres off the estate, and have a good preservation of game, and then let off the rest of his farm free of it; but it is not so with the small proprietor, and there are several members of the Club who happen to be so situate. My proposal would deal rather heavily with the small landlord, inasmuch as by letting off the land he would be obliged to forego the sport. He would have to do that by law; but what I think is, that landlords may make a previous arrangement with their tenants whereby they might have a right to kill the game in question equally with the tenant, and I do not hesitate to say that such an understanding would more firmly bind together the landlord and tenant in the bonds of friendship than all the laws in this country. This is my justification for the proposals I have made to you. These are my opinions, and, although I now stand alone, perhaps the time will come when others will join me more friendly than they might now. However, it is my opinion, and I claim the right to express it.

Local Taxation, as now collected, must be considered so unfair in its pressure upon landed property, that, whether we view it as a landlord's or tenant's charge, it is alike adverse to the welfare and progress of agriculture. This subject has recently and still continues to attract the attention of Chambers of Agriculture and Farmers' Clubs; but I have in no instance seen the subject better handled than it was recently by Sir George Jenkinson, the member for North Wilts, at the meeting of the Kingscote Club, and in the course of his observations, he refers to the report of a committee of the House of Lords, which sat in 1850, on parochial assessments, and the sixth resolution of their report says: "That the relief of the poor is a national object, towards which every description of property ought justly to be called upon to contribute, and that the Act of 43 Elizabeth, c. 2, contemplated such contribution according to the ability of every inhabitant." Well, the question then arises, why was real property only specified, and why was not other property named at that time, as liable to be rated to the relief of the poor, and sick, and aged, &c.? The answer is obvious. No other property, such as is now designated personal property, or very little at any rate, at that time visibly existed. No funds or railways, or rich iron mines, or other such personal property then existed. All the mass of wealth which is now possessed by the merchant princes of this rich country has gradually arisen since the days when this tax was first imposed. Then why, I ask, as in process of time it did arise, should it not have taken upon its shoulders its fair share of the burdens of the nation? Can any person say that the wealth of the country, no matter from what source it may arise, ought not to bear its share of the relief of the poor, and sick, and aged; and, still more, that it ought not to contribute to those burdens that are more imperial than local, and, as such, concern every class of the community? As an instance I quote the charges for police, for the gaols, for militia stores, for lunatic asylums, for coroners, and other charges, to say nothing of the charge for maintaining turnpike roads, and soon for the education rate. Who can say that the fundholder is not as much interested in the maintenance of all those institutions I have named—police, gaols, militia, &c.—as the landowner? Now, I will refer to some of the great sources of wealth in this country, none of which contribute to the local taxation charges. The following condensed statement will convey an idea of this enormous capital:—

Funded and unfunded debt	£805,000,000
British railway shares and debentures ..	325,500,000
Indian railway shares held in England ..	26,500,000
Colonial Government securities	16,000,000
Indian Home Bond debt	6,800,000
London Joint Stock banks	15,500,000
Irish and Scotch banks	12,750,000
Bank Stock	14,500,000
Insurance companies	15,000,000
Mines—British and foreign	10,000,000
Steam companies	5,000,000
Telegraphic companies	9,000,000
Docks, canals, waterworks, bridges, &c. ..	20,500,000
Gas companies	6,700,000
	£1,288,750,000

In addition to this immense amount of property, I am of opinion that all Government property (dockyards, &c.) ought to be rated. The extraordinary increase of poor rates within the last few years is beginning to take effect on public opinion. Hence its being taken up by the Chambers of Agriculture, and hence our naming of it to-day. The increase, having been something like three millions annually, is all heaped upon land and house property, the income on which has been estimated at 90 millions; whereas the income assessed by the Income-tax, and which is only half the real income of the country, is nearly 400 millions; so that, in case the property and income of the country were fairly assessed, the rates would be about one-fourth of what they are now. With regard to land let us look at the last 30 years, and see what has happened with regard to it. I wish to know why the owners of funded property should not be called upon to pay taxes in the same way as houses and land! Why, if we look at the newspapers, we find that banking companies in this country, or some of them, pay 15 or 20 per cent., and I want to know—and I confess I think that some of you will go with me—whether it is right for a great man to be receiving that high rate of interest, to be sitting down in his easy-chair, and enjoying his *otium cum dignitate*, without paying out of it one farthing to the local taxation of this country. I believe, if you all put your shoulders to the wheel and work in the right direction, we shall not see the burdens placed so unfairly as they are now.

Farm Capital.—Insufficiency of capital employed is probably the greatest of all obstacles to progressive agriculture, but still it would be difficult to lay down any rule as to the amount of money per acre required to farm to the best advantage, because some districts require much more than others, owing to the variation of soils and situation. It must, however, be admitted that where capital is wanted great losses often occur. In such cases too little stock, too little manure, too little both of animal and manual labour is available, and, from necessity, the produce also is disposed of at the most unprofitable time—in fact, it may be said that the free-trade idea of buying in the cheapest market and selling in the dearest is very often completely reversed. Land, strictly speaking, is only the medium of production, the capital employed in cultivation being the means to an end, and that in proportion to the judicious outlay of money the productions of the soil yield profit or loss. I may also trace to the same cause the want of a well-bred stock of horses, cattle, sheep, swine, &c., which still impedes agricultural progress to a great extent, for although wonderful improvements have been made during the last 20 years, yet if we go into any market we meet with lots of ill-bred animals for sale which never have, and never can, yield a fair profit for keeping. I must, however, say that I think there are more bad farmers through want of means than there are for lack of judgment and practical skill.

In conclusion, I would say that there are many other causes which I could name having a tendency collaterally to impede the progress of agriculture, but I forbear, in the hope that other members will take them up in the discussion which I trust will follow the reading of this paper. I beg to suggest that Mr. Sutton should take up the subject of the loss and waste of the force of cultivation of the land through the bad construction of the implements used. We have to trust ourselves to the manure sellers, and I should be pleased to hear our worthy secretary make a few observations with regard to it, for I cannot but admit that the farmers are very often the dupes of the manure merchants, and only find out that it is bad manure after they have lost their crops. I will leave the matter in the hands of the Chairman, who will no doubt call upon gentlemen who are able to supply the omissions I have made in this paper.

Discussion.

Mr. G. Gater said Mr. Blundell, if he understood him aright, wanted to show that the market gardeners had done harm by taking away a deal of the country.

The Chairman: No, what he wishes to show is that buildings and such like in the towns have driven the market gardeners farther out into the country.

Mr. Gater could not quite understand how it was that Mr. Blundell made it appear that the property he had mentioned paid no taxes, which were paid almost exclusively by houses and land according to his theory. All he (Mr. Gater) could say was that he had got property of every description, and it all paid taxes in one way or the other. Funded property paid the Income-tax, and therefore he could not understand how Mr. Blundell could say that houses and land paid all the burdens. It might be, however, that funded property did not pay its proper proportion.

The Chairman explained that Mr. Blundell was only speaking of local and not imperial taxation. He had alluded to that which escaped local taxation.

Mr. Gater: Every man who has property pays something, but whether he pays enough or not I do not know.

Mr. James Withers entirely concurred with Mr. Blundell in the idea he had brought forward; indeed he and Mr. Blundell's ideas were the self same. He had thought over some of the impediments to agricultural progress, and which he would repeat to them. There were many impediments to which the landlord and tenant might both plead guilty. There were some things which the landlord thinks he has nothing to do with, and the same with regard to the tenant. One thing was, they wanted more convenient farm buildings, and among them labourers' cottages was not the least. He was very badly off indeed with them himself. Then they could not remove timber, also hedges and hedgerows. He could speak of these things because he suffered from them. Then there were short and imperfect leases, and these were impediments to agricultural progress. A great deal depended on the way in which the leases were drawn, for he had known cases where they had been very detrimental to the occupier, and of no benefit to the owner. Some leases were so binding that the tenant was confined to a circle, just like a circus-horse running round a ring, and thus all his power of extension was crippled. Then land suffered much at the end of a lease where there was no compensation for unexhausted or permanent improvements, and this was a very great clog to agricultural progress. Then they had not a just law with regard to tenant-right, and if it was right to make an alteration in Ireland he also thought it was but fair and just to England that an alteration should also be made for the benefit of the English agriculturist.

Mr. John Gater thought many thanks were due to Mr. Blundell for his excellent paper. There was one point in it which struck his attention more than anything else, and one on which they might found a resolution. It was that part where he alluded to the insufficiency of capital employed, and this concerned both the landlord and the tenant. Taking the landlords first, he really thought there were many cases where they were not masters of their own. They saw that many estates were so encumbered as to be almost entirely out of the hands of the owners, and in such cases the owners declined to do anything for the benefit of the community. Then they had another case—where the estates were heavily mortgaged. He thought they wanted some alteration in the law of mortgage, for now a man went and mortgaged his estate privately, not wishing it to be known what he had done, whereas if he had the power he might be inclined to sell it, or deal with it better than he otherwise could. With regard to leases he could not go with all Mr. Blundell had said. He thought he had spoken on one side of the question—the tenants'. He thought much fault rested on the tenants' side as well as the landlords'. It seemed to him that if a tenant was willing to give an increased rent for a long lease, there would be plenty of landlords willing to grant them. He would ask Mr. Blundell whether, as a rule, there were parties who were willing to give an increased rent where long leases were offered. They could not expect that owners would go out of their way and grant leases for 10, 15, or 21 years, at a low rate; for during that time they would be debarred from taking advantage of any rise there might be in the value of land. If tenants were willing to give an increased rent for long leases, he could not help thinking that gentlemen would grant them; and if they would not give more for them they were not entitled to have them. The cottages for agricultural labourers was a matter of very great importance. Mr. Blundell had truly said that they took care of the animals, that they had nice buildings, well drained and ventilated, and everything to make them comfortable; but the labourer and his family were crowded together in a small house. They caused him to sleep in small rooms, with a very few cubic feet of air to breathe, and he went to work the next morning with his physical wants so neglected that he could not do his work properly. Therefore the farmer was deprived of much of his labour, and this was one of the impediments to agricultural progress. It seemed to him that there were many questions which the tenants could settle themselves. The advantages of draining were now so well known, and had been so often alluded to, that he would not now dilate upon them. There was a large quantity of land in every county which could not be properly cultivated without being well drained. If the occupiers were willing to come forward and pay a fair percentage on the drainage—for they must remember that drains would not last for ever, that a new system might come into operation, and that a new tenant might not like what had been done before—if they would pay a fair percentage for the draining, he thought landlords would be willing to meet them. The question of timber, hedges, and wood in hedgerows, was one which might come under the inquiry as to whether a man had a right to do as he liked with his property. It was often the case where a man had the inclination to remove these things he had not the power, and often when he had the right he had not the will to do so. The question of game was a very old subject, and one which had been pretty well ventilated there. Mr. Blundell said in his paper that he would make any agreement between landlord and tenant as to game illegal. He also went on to say that small occupiers should lose their game, but he afterwards recommended that they should make some sort of contract with the tenant afterwards.

Mr. Blundell: I beg your pardon. What I say is, that the agreement with regard to the reservation of the game should be null and void.

Mr. Gater: Then I would ask you in what way the small proprietor could enjoy his sport?

Mr. Blundell replied that, seeing gentlemen like the Messrs. Gater around him he would remind them that what he said was that he would have any agreement between landlords and their tenants as to game reservation null and void in law, but that they might come to an understanding among themselves in a spirit of friendliness, so that both might enjoy the game; and he believed that would cause that spirit of friendship to exist between them and the best bond of union that could ever be made.

Mr. GATER continued: Mr. Blundell had taken up emigration and the Factory Acts, but he did not think that they would say agriculturists were the same sort of people. He thought they had more power of taking care of themselves than the others had. The next part of Mr. Blundell's paper to which his attention had been directed was that with regard to local taxation, and he felt there was much that might be said on that point. With regard to Government properties, he thought they ought to be rated, and for this reason—that many districts were altogether free from them, while there were others which had a large portion. Where the Government property was there was sure to be poor people and distress, and other parts had nothing of this. With regard to joint-stock banks and shipping Mr. Blundell's argument might have weight, but at the same time they must remember that the capital of joint-stock banks was mainly employed in works which paid local taxation, and it was a great question whether, if they were rated, the value of money would not rise, and thus men who wanted to borrow money for the purpose of carrying out works would have to pay a higher percentage. He now came again to the insufficiency of capital employed, which was really at the bottom of all their grievances, and he had no doubt a resolution dealing with it would be submitted before the close of the discussion.

Mr. SPOONER did not think they could complain of the want of latitude for discussion. He thought if the paper had been a little more direct in its aim, and it had not fired so largely, it might have brought down more game. He agreed with Mr. Blundell with regard to leases and agreements, and he thought there should be two modes of dealing with them. There should be leases for a term of years, and there should also be annual lettings, with something like two years' notice to quit, and compensation for improvements. They had one system in one part, and one in another. In Norfolk one system prevailed, and in Lincolnshire another, and in the latter place everyone seemed satisfied without a lease. He thought that both plans were equally good, and that a better arrangement might be made than now existed.

Farm Memoranda.

WISBECH DISTRICT.—Harvest operations being now completed, and threshing having been carried out to some considerable extent, I venture to send you an account of what is the general opinion of practical and intelligent men as to the yield of our corn crop in this neighbourhood. It is universally admitted that the yield of Wheat will be deficient, although opinions vary as to the amount of deficiency. Wherever the threshing-machine has been used the result has been unsatisfactory, the produce in few instances exceeding 4 qr. per acre, and in many not more than 3 qr. have been obtained. Mildew has injured the Wheat to a great extent; indeed, almost all those thin crops that "tillered" after the rains in June suffered severely, and the result will be that much of the corn will not weigh more than 16 and 17 stones per sack.

The crop of Oats has, however, been more encouraging to the growers; and although not many have been threshed, those who have done so are, I believe, satisfied with the result.

I have not heard of any Barley having been threshed, but, as you know, it is not much grown here; however, the few pieces I saw a few weeks ago had the appearance of a good and full crop.

Peas and Beans are, I believe, a fair crop; the former, however, must have made every good farmer's heart ache to see the great amount of weeds which grew among them.

Potatos, of which I suppose 5000 acres have been grown within six miles of Wisbech, have not come up at all well, for where the disease seized them early the affected tubers have rotted in the ground, and the others being deprived of the assistance of the tops, matured before they gained any considerable size. There are, however, few diseased ones to be taken up, as they have rotted quite away.

I will reserve my account of the Mustard crop for a few weeks, until one or two of the usual Mustard markets have been held, when I shall be better able to judge of the yield. I very much fear, however, that it will not average 18 bush. to the acre. *Nemesis, September* 29.

Miscellaneous.

TITHES: WHERE ARE THE FARMER'S FRIENDS? Chambers of Agriculture! what have they done for the tithe-payer? A recent writer commenting on the Tithe Commutation Act (6th and 7th William IV.) concludes in these words:—"In legislating on this subject every care appears to have been taken to guard the interest of the tithe-owner, but it is equally clear that very little concern has been manifested for that of the tithe-payer," and this is shown in various ways, a few of which may be briefly stated, and first as to the annual payments of tithe being governed by the septennial average of corn instead of a yearly average. Secondly, in registering in this seven years' average all the high prices which occur during the period and calculating the tithe average therefrom, instead of introducing and fixing a maximum limit as to price, beyond which the calculation should not extend. Thirdly, in the circumstance that corn buyers and dealers are the persons chosen to furnish the corn returns instead of the growers. Fourthly, in the Act referred to being very defective in another respect, namely, as containing sundry loopholes by which the fraudulent tenant on quitting a farm may leave half a year's tithe unpaid, may escape with impunity, and may saddle his successor in the farm with the onus of paying it, anything in any recent Act of Parliament to the contrary notwithstanding. Fifthly, in the partial and oppressive operation of the Act which admits of a tenant entering upon a farm, when tithe, previously high, is beginning to recede in amount, while the man going out has paid it at the high figure. Sixthly, in the amendment so called, of the Act of 1864, which appears to have been smuggled through "the House" unchallenged, and passed on the plea of "diminishing the expense of collection," and which abrogates altogether the farmer's right to have the corn returns calculated from the prices obtaining in 290 towns large and small as before, and restricts the number to 149, which number includes all the cities and large towns of the kingdom, where prices are, of course, higher than in the small towns, thus raising the averages fictitiously, and foisting on the tithe-payer a rent-charge for the payment of which he is not fairly liable. Recurring to objections first and second in the foregoing series, it may now be remarked that one great evil in connection with the seven years' tithe average is, that there is no maximum limit or other provision made to protect the tenant from the effects of high prices caused by short crops. The argument that because the tithe-owner includes in his calculation all the low prices of corn, that therefore he should be allowed to include all the high prices, could only be valid in the case of the tithe-payer having the same number of bushels to sell at the high as at the low price, and this we know he could not have; it is because he has not got the quantity that the price rises. Moreover it so happens that the price of corn in this country rises to the greatest height when farmers as a body have none to sell; this usually occurs about the month of August or just before harvest in each year: at such a time we have seen Wheat rise to 100*s.* a qr., but who received that high price? Assuredly not the renting farmer in all cases, but the corn speculator, and for corn which probably had been bought and sold two or three times over, each time at an advance of price and each time returned in the averages, raising them fictitiously as before, and proving once more that the returns of corn sales, which are to influence the averages, should be made by the growers only. Amongst the vast quantity of printed matter which year by year is issued from the press of this country, there is, perhaps, no species of composition so involved, contradictory, and unintelligible, as a new-born Act of Parliament. Some time after it has seen the light, some sage also sees strange malformations in the bantling, and forthwith comes Act the Second to amend Act the First, but the second effort not being completely successful, we have, after a short interval, Act the Third to amend Act the Second, and so on; yet it is not until after some years have passed away, during which this amending process has been going on, that we at length begin to get into clear water; in other instances these defects are not observed, and the Act goes down to posterity with all its imperfections on its head. Within the last month a County Court judge, in deciding a case, remarked that he had looked into the Act of Parliament on the subject, but could obtain no light there; the words of the section were so obscure, and the whole so ungrammatical that he could only guess at the meaning. The Act of the 14th and 15th Vict., cap. 25, is called "An Act to improve the law of Landlord and Tenant." It does not improve anything, however, but leaves matters rather worse than it found them. Section 4 has something to say about tithe, and runs thus:—"That if any occupying tenant of land shall quit, leaving unpaid any rent-charge which he was legally liable to pay, the next tenant may pay it, and may sue the man gone out for repayment and recovery." Yes, but how if the man gone out was not "legally liable;" what says the Tithe Commutation Act?—"Such yearly sum or rent-charge shall be payable by two equal half-yearly payments, on the first day of January and the first day of July in each year." Now, if a farmer's term on his holding happens to expire at Midsummer or Christmas, he may walk out, leaving a half-year's tithe unpaid, and it is not recoverable from him because it was not "legally due," though within a few days of it when he left the farm. A case of the following description was decided a short time since in a western county court:—The plaintiffs sought to recover £56, the amount paid by them as tithes for the farm on which they had recently entered, and from which the defendant had departed at the previous Christmas. The judge said, "He must very reluctantly decide against the plaintiffs, because the defendant had quitted the farm a day or two before January 1, when the tithe became legally due. Unless by a special interposition of the Legislature, which no doubt the 14th and 15th Vict. was intended to be, you cannot claim rent or tithe until it is lawfully due, which in this case was not until January 1, as he said before. No doubt the defendant owed the money, and there was a moral obligation on him to pay it; but if he chose to act the rogue, this Act of Parliament afforded him every facility. Here was the Legislature espousing the cause of a cheat, and enabling him to overreach his neighbour to the extent, in this case, of £56. The Act should be altered, and the sooner the better, for he must say he never met with a more gross case of actual injustice"—so far the judge. Messieurs the members of the Chambers, have you looked into this little matter? We have all heard of a certain place that is said to be paved with good intentions, and so no doubt our section was good intentioned, but carelessly worded. It would have been the easiest thing in the world to say—The tithe shall be apportioned according to the last septennial average, and the tenant going out of a farm shall pay up to the day he leaves. It would then have been a simple rule of three calculation—if 12 months' tithe by the last average was so many pounds, how much for the 11 months and 25 days since? So much as regards tithe. Now let us see what section 1st of the same Act of Parliament says about emblements, which we in the West of England ough to know something about, seeing that we have so many holdings with a tenure of 99 years, or three lives—the worst in existence. The following may be taken as a short definition of emblements:—"Those who have an uncertain estate or interest in the land, which estate is determined either by the act of God or of the law between the period of sowing and the severance of the crops, are entitled to emblements or the profits of the sown land." And so the old phrase, as applied to this condition of things, was "Quiet sow, quiet mow;" but the Legislature said—Stand aside; I am wiser than thou in this matter, and the following is my decision on the subject:—14th and 15th Vict., cap. 25, section 1st—"When the lease or tenancy of any farm held by a tenant shall determine by the death of any landlord entitled for his life, instead of emblements the tenant shall continue to hold and occupy until the expiration of the then current year of his tenancy, and shall then quit." Now observe how beautifully and advantageously for the tenant this law acts. Here is a farm which "hangs" on one life; the entry is a Lady-day one. A large part of the farm is in crop with Wheat, winter Oats, spring Oats, early Potatos, Beans, and Clovers. This is the state of things on March 10, when the "life drops," and on the 25th, this being the "end of the current year," the tenant must walk out, leaving all behind him. So much for this Act, which was announced to improve the law of landlord and tenant! How true are Macaulay's words, "Nothing is made so ill in this island as the laws." *Western Times.*

The Week's Work.

OCTOBER 7.—*Threshing* and *Dressing Seed* for autumn sowing, including Wheat, Barley, Oats, Rye, Vetches, Beans, Peas, and grass seeds, is a question which has this year been differently solved in different districts, owing to the varying condition of the harvest. Newly threshed corn out of the stook is an old rule which requires to be observed in late, wet seasons, as more or less injury is sustained when the sheaves are stacked damp. This year, as yet, we have not heard much of heating in the stackyard. Smut and premature ripening are reported from some places, so that seed will require to be thoroughly dressed to as uniform a sample as possible. It may also be advisable not only to wash and pickle Wheat, but the other kinds of seed corn, to remove light prematurely ripened grain and destroy smut and the like: in brief, lay more stress upon dressing and washing than usual. Not enough attention is paid to the selection and cleansing of seed, and for this neglect of duty there is no excuse, as dressing machines and washing apparatus are at the command of every farmer. On the other hand, very fine samples of seed may be obtained from other places, more especially of Wheat and winter Beans, so that a a change may be made by districts subject naturally to degeneracy.

Winter Beans.—If not sown, get in without delay. The plant is a large consumer of lime. Where lime is naturally deficient, the land should be limed previously to sowing. From 50 to 100 bush. of unslaked lime from the kiln is a common dose for applying to a clean Wheat or Oat stubble per acre. When slaked and spread, it should be well harrowed into the surface with a heavy harrow, before manure is applied. Wood ashes, or specific artificial manures, supply potash, of which the plant is also a large consumer. But a good specific manure for Beans, suitable for being drilled in along with the seed, is much needed; and specific manures are favourable to early maturity of seed.

Bean Harvest of spring-sown crops is seldom over in the North before the middle of the month; and when the crop is followed by Wheat, as is generally the case, it is common to remove the sheaves and stook them on pasture, or Wheat, or Oat stubble adjoining, in order to get the land ploughed and the Wheat sown. The value of steam is incalculable in such cases, as the land can be ploughed and sown with Wheat as fast as the Bean crop is removed. If the land has been saturated with rain to the maximum, it is sometimes difficult to get a proper seed-bed, while the horses' feet do immense harm in drilling and harrowing. To avoid this latter, the seed is sown broadcast by hand, and the horses walk in the out-casting furrows, hauling the harrows between them, by means of a long pole or draught-bar the breadth of the ridge, the work of sowing keeping close up to the ploughing.

The Autumn Top-dressing of meadows finish, to get the dressing well washed in with the rains of this and the ensuing month, and a greeen sward before the frost sets in. Rich composts are made by saturating peat-earth, scourings of ditches, vegetable mould of any kind, with the liquid from the homestead, or town sewage; or the earth hills may be mixed with farmyard manure, with lime, if the land requires it, with the refuse of fisheries or gasworks: or a rich compost may be made by mixing 12 or 15 bush. of ashes with 5 or 6 cwt. of artificial manure. Such composts, if properly made, may be applied by a manure distributor, and well harrowed in by a chain-harrow.

Live Stock.—Newly housed live stock require special attention during the change from summer to winter food, as many of the maladies experienced by lambs, calves, and older stock at this season are chiefly due to an oversight of their natural requirements. The familiar old rules, "Only fatten animals that are ripe for the shambles," and "Get rid of an ill-doer at any price," are still in force, as they were prior to the modern theory of early maturity. Much of the complaint that fatting stock do not pay for their keep, arises from the want of due attention being paid to the drafting out of animals that have not attained the ripe age for fatting, for, when the whole herd of the same age is tied up promiscuously, the ripe ones pay but the green ones do not. Stable economy is very diversified. The old rule to keep the bowels right is not more than sufficiently well understood, for a laxative diet to a hard-working horse at this season too often makes "a soft horse softer:" more than a lax diet is needed.

Notices to Correspondents.

BREEDING OF HORSES: *H. T. E.* We do not know of any work which treats specially on the breeding of horses, but all veterinary works have a chapter on the subject. Many papers on breeding are also scattered through the pages of agricultural journals. A pamphlet by Finlay Dun, recently published by Martin Billing, Sons & Co., Livery Street, Birmingham, contains a good deal of valuable information on the breeding of stock.

NOTICE: *A Very Old Subscriber.* Owing to not having your address it has been impossible to write to you at once. We are not learned in the law, but we incline to think that under the circumstances a quarter's notice may be claimed.

SMALL STEAM-ENGINES FOR CHAFFING: *G. D., Hillchurch, Hythe,* writes:—"In your 'Notice to Correspondents' of the 23d inst. 'H. P.' inquires about 2-horse steam-engines. If he writes to me at the above address I can inform him how mine answers (Tuxford), which I purchased 10 years ago."

Markets.

HOPS.

BOROUGH MARKET, Oct. 5.

Messrs. Pattenden & Smith report a steady retail demand for all good healthy samples, prices remaining very firm.

MARK LANE.

MONDAY, Oct. 2.

The supply of English Wheat to this morning's market was very moderate, and was sold at an advance of 1*s.* to 2*s.* per qr. There was a good attendance, and a fair demand for foreign, at 2*s.* per qr. above the prices of this day se'nnight. English malting Barley was 1*s.* per qr. dearer; other descriptions unchanged in value. There was no alteration in the value of Beans. Peas brought an improvement of 1*s.* per qr. For Oats there was a good demand, at an advance of 6*d.* per qr. In the top price of town-made Flour there was no change, but other sorts were 1*s.* per sack and barrel dearer.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s*
WHEAT, Essex, Kent, Suffolk..White	56—62	Red......	57—59
— fine selected runs ....do.	59—63	Red......	58—60
— Talavera	61—65		
— Norfolk	—	Red......	—
— Foreign	50—67		
BARLEY, grind. & dist., 26*s* to 31*s*..Chev.	—	Malting..	33—38
— Foreign .. grinding and distilling	28—31	Malting..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....35*s.* to 38*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	34—38
MAIZE	—	Foreign ..	29—31
FLOUR, best marks, delivered..per sack	45—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Oct. 4.

There was a thin attendance of millers here to-day, and the business doing was of a limited character; prices, however, were well maintained. The supply of English Wheat was moderate, and from abroad the arrivals were good. Trade was slow, but Monday's advanced rates were sustained. Barley was purchased steadily at firm prices. Malt was dull, but not lower. There was a liberal supply of Oats, which sold to a fair extent, at the late improvement. Beans and Peas were in moderate request, at previous quotations. Flour was firm, but not active.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	510	210	—	—
Irish ..	—	—	—	—
Foreign ..	17,690	6570	14,350	{ 300 — brls.
	18,200	6780	14,350	

LIVERPOOL, Oct. 3.—To-day's market presented a more subdued appearance after the recent activity, but there was a fair attendance, and sellers were firm, though it was less easy to make progress with sales. Wheat showed an advance of 2*d.* to 3*d.* per cental. Flour was 6*d.* dearer. Indian Corn was again higher, to the extent of 1*s.* per qr.

AVERAGES.

	Wheat.	Barley.	Oats.
Aug. 26	57*s* 4*d*	32*s* 7*d*	26*s* 7*d*
Sept. 2	57 2	35 0	26 4
— 9	56 6	35 1	26 0
— 16	56 7	35 8	24 9
— 23	57 7	35 6	23 6
— 30	57 3	35 10	23 10
Average ..	57 1	34 11	25 2

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Oct. 5.

PrimeMeadowHay,	90*s.* to	105*s.*	Clover, old	130*s.*	145*s.*
Inferior do.	50	70	Inferior do.	60	100
Rowen	40	70	Prime 2d cut do. ..	115	126
Inferior do.	—	—	Inferior do.	60	100
Straw	36	45			

CUMBERLAND MARKET, Thursday, Oct. 5.

Sup. Meadow Hay	100*s.* to	112*s.*	Inferior Clover ..	90*s.* to	130*s.*
Inferior do.	70	90	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	140	150			

JOSHUA BAKER.

METROPOLITAN CATTLE MARKET.

MONDAY, Oct. 2.

The number of Beasts is smaller than on last Monday, yet it is considerable, and the dead markets are well supplied; consequently, on the average prices are not better. The supply of Sheep is small, especially of English; trade is, however, slow, and it is difficult to effect a clearance at our quotations. Calves are rather more plentiful, but choicest qualities are not lower. Our foreign supply consists of 3420 Beasts, 11,800 Sheep, and 250 Calves; from Ireland there are 150 Beasts; and 1550 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 4to5 8	Best Long-wools	6 4to6 8
Best Shorthorns..	5 2—5 6	Do. Shorn	— ..
2d quality Beasts	3 6—4 4	Ewes & 2d quality	5 0—5 6
Best Downs and Half-breds ..	6 8—6 10	Do. Shorn	— ..
		Lambs	— ..
		Calves	4 0—6 0
Do. Shorn	— ..	Pigs	3 8—5 4

Beasts, 5120; Sheep and Lambs, 20,550; Calves, 262; Pigs, 170.

THURSDAY, Oct. 5.

The number of Beasts is rather larger than last week, and trade is dull; the average quality is by no means first-rate, choicest descriptions consequently find purchasers at very nearly Monday's quotations. The supply of English Sheep is very short, yet it exceeds the demand; the number of foreign is also smaller; a clearance cannot be effected. Choice Calves are in demand. Our foreign supply consists of 450 Beasts, 6500 Sheep, 291 Calves, and 25 Pigs.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 4to5 6	Best Long-wools	6 4to6 6
Best Shorthorns ..	5 2—5 4	Do. Shorn	— ..
2d quality Beasts	3 6—4 4	Ewes & 2d quality	5 0—5 6
Best Downs and Half-breds ..	6 6—6 8	Do Shorn	— ..
		Lambs	— ..
		Calves	4 0—6 0
Do. Shorn	— ..	Pigs	3 8—5 4

Beasts, 1120; Sheep and Lambs, 9920; Calves, 372; Pigs, 90.

METROPOLITAN MEAT MARKET, Oct. 5.

Best Fresh Butter	17*s.* per dozen lb.
Second do. do.	15*s.* ,,

Small Pork, 4*s.* 8*d.* to 5*s.* 4*d.*; Large Pork, 3*s.* 6*d.* to 4*s.* 0*d.* per 8 lb.

ENGLISH WOOL.

The market keeps very firm, but the difficulty found by manufacturers in obtaining an adequate price for manufactured goods causes them to buy very cautiously. Later on, when forward contracts made at low prices have been mostly delivered, buyers will be forced to take goods at a commensurate price to the advance in wools, and we then expect a more active trade, and a further slight upward movement.

COALS.—Oct. 4.

Walls End Hetton, 20*s.* 9*d.*; Walls End Hetton Lyons, 18*s.* 3*d.*; Walls End Hawthorn, 18*s.*; Walls End South Hetton, 20*s.* 6*d.*; Walls End Hartlepool, 19*s.* 9*d.*; Walls End East Hartlepool, 20*s.* 3*d.*; Walls End Kelloe, 19*s.* 3*d.*; Walls End Tees, 20*s.* 6*d.*—Ships at market, 11; sold, 11; at sea, 15.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

The Cheapest and Best Insecticide.
POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

WILKIE'S CONDENSED COMPOSITION,
THE CHEAPEST AND ONLY EFFECTUAL
MEALY BUG, SCALE, and THRIP DESTROYER.
One trial will be sufficient to give it a pre-eminence over all other Insecticides.
Sold in bottles at 2*s.*, 3*s.* 6*d.*, and 6*s.* each.
May be had of all respectable Nurserymen and Seedsmen, and Wholesale of
ALEX. WILKIE,
Oak Lodge Gardens, Addison Road, Kensington, W.

Red Spider. Magnified.

GISHURST COMPOUND.
Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*
Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Wheat Sowing.
DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. A 9*d.* packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.
Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.
Full directions for use are given with each packet.
Prepared at the Manufactory, Woburn, Beds.
CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.
Agents in every Town throughout England, Scotland, and Ireland.

Smokeless Stoves.—No Flues.
NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming; require no attention; with one supply of fuel burn 12 hours.
The new REGISTERED PATTERN STOVE fo Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12*s.* 6*d.* to Six guineas. PATENT FUEL, 18*s.* per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4*s.* 6*d.* and 9*s.*

AMERICAN CHARCOAL BOX IRON.
12 Hours Ironing for One Penny.
Always bright for use without Cleaning. No Dust in use, or trouble in lighting. The Iron is a Miniature Portable Stove with polished surface. Light, Cheap, and Clean. Price 5*s.*, 6*s.*, and 7*s.*
PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21*s.* and 10*s.* 6*d.* Medical Testimonials and Prospectus Free on application.
SWAN NASH, Ironmonger, 253, Oxford Street; and JOYCE'S STOVE DEPOT, 119, Newgate Street.

Notice of Removal.
PHILIP PALMER has REMOVED from his old-established WINDOW and HORTICULTURAL GLASS WAREHOUSE, 118, St. Martin's Lane, W.C., to more extensive premises, at 36, ST. MARTIN'S LANE, nearly opposite.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES,
As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.
Each Box contains 100 feet. The prices only apply to the sizes stated.
SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15*s.* 0*d.*	19*s.* 6*d.*
Third quality..	16*s.* 0*d.*	22*s.* 6*d.*
Seconds	18*s.* 6*d.*	26*s.* 0*d*
English..	20*s.* 0*d.*	27*s.* 0*d.*

The above prices include the boxes, which are not returnable.
HORTICULTURAL GLASS.
Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths. *s. d.*	3rds. *s. d.*	2nds. *s. d.*
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12	16 to 17 oz. to the foot.		
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12*s.* 6*d.*
by 6	8½ by 6⅜	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13*s.* 6*d.*

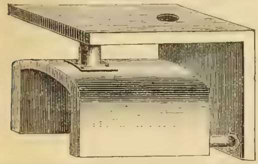
Boxes 2*s.* each, returnable at full price.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.
SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to
JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without E.C.

Horticultural Buildings.

A. SHANKS AND SONS' CATALOGUE of HORTICULTURAL BUILDINGS in IRON and WOOD, including DESIGN of GRAND WINTER GARDEN recently erected by them in Edinburgh, will be forwarded on receipt of 30 postage stamps

Dens Iron Works, Arbroath, Forfarshire; and 27, Leadenhall Street, London, E.C.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



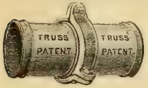
These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4 in. Pipe	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 ,,	18 ,,	24 ,,	450	6 0 0
20 ,,	18 ,,	30 ,,	600	7 0 0
24 ,,	24 ,,	24 ,,	700	8 0 0
24 ,,	24 ,,	30 ,,	850	10 0 0
24 ,,	24 ,,	36 ,,	1,000	12 0 0
24 ,,	24 ,,	48 ,,	1,400	15 0 0
28 ,,	28 ,,	60 ,,	1,800	20 0 0
30 ,,	30 ,,	72 ,,	2,000	30 0 0
30 ,,	36 ,,	96 ,,	4,500	50 0 0
48 ,,	48 ,,	108 ,,	7,000	75 0 0
48 ,,	48 ,,	144 ,,	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees,

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to

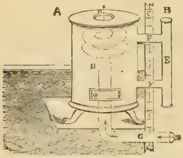
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,

Friar Street, Southwark Bridge Road, London, S.E.

GEORGE'S PATENT GAS CALORIGEN

For WARMING and VENTILATING.

Price £3 3s.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c., and may be inspected at the Sole Manufacturers,

J. F. FARWIG AND CO.,
36, Queen Street, Cheapside, E.C.

A COAL STOVE, constructed upon the same principle, suitable for Warming and Ventilating large Apartments, Halls, Churches, &c. (see notice in "Society of Arts' Journal"), may be seen at the Manufacturers,

J. F. FARWIG AND CO., 36, Queen Street City, E.C.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

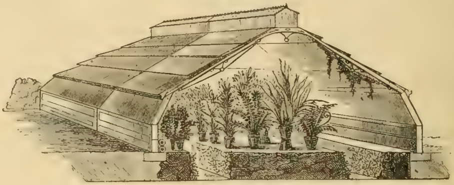
Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

BY ROYAL LETTERS PATENT.



THE PLANT STOVE, WITH STAGE WALLS IN ROCKWORK.

THE MOST PERFECT HORTICULTURAL STRUCTURE IS THE

IMPERISHABLE HOTHOUSE,

Perfectly portable, formed of Glass, Iron and Concrete. No Masonry, no Brickwork, no Putty, and little Paint.

Manufactured under the Patent of Mr. W. P. AYRES by the IMPERISHABLE HOTHOUSE COMPANY

NEWARK-ON-TRENT, NOTTINGHAMSHIRE.

The Company are now in a position to execute orders to any extent, for Plant and Forcing Houses of all descriptions, Railway Stations, Market Halls, Workshops, and Glass Roofs of all kinds.

A BOOK of DESIGNS, with explanatory particulars, will be forwarded in exchange for six stamps, and Special Designs and Estimates will be supplied when required. HEATING by HOT WATER upon the most approved principles. Noblemen or Gentlemen waited upon in any part of the country.

MANAGER—WM. P. AYRES,
IMPERISHABLE HOTHOUSE COMPANY, NEWARK-ON-TRENT.

J. C. & J. S. ELLIS,

HORTICULTURAL ENGINEERS,

NORFOLK FOUNDRY, SHEFFIELD,

MANUFACTURERS and ERECTORS of HOT-WATER APPARATUS

OF EVERY DESCRIPTION, FOR
HEATING GREENHOUSES, CONSERVATORIES, HOTHOUSES, CHURCHES, PUBLIC BUILDINGS, PRIVATE RESIDENCES, WAREHOUSES, &c.

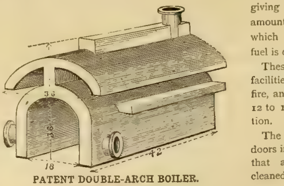
The great advantages of these Boilers are:—

The fire acting directly under the flow pipe, the water begins to circulate immediately.

The Flues all being formed by a continuous water-way, the fire and all the hot gases are brought in direct contact with the heat-absorbing surface of the Boiler, thereby giving a greatly increased amount of power, and by which an immense saving of fuel is effected.

These Boilers offer great facilities for banking-up the fire, and will burn easily from 12 to 14 hours without attention.

The arrangement of Soot-doors in the brickwork is such that all the flues can be cleaned in a few minutes.



PATENT DOUBLE-ARCH BOILER.

TESTIMONIALS.

"The Gardens, Chatsworth, January 19, 1871.

"DEAR SIR,—After using your Patent Double-Arch Boiler for the past 12 months, enables me to speak with a practical knowledge of its merits; and I have no hesitation in saying, out of many Boilers, of all sorts of construction, we have in use, it is the most efficient, and I believe it to be the best Boiler extant; neither do I think there is another that exposes so much surface to the direct action of the fire. Its efficiency, economy in fuel, and the minimum of attention, renders this Boiler a valuable improvement in Horticulture, and it reflects great credit on your good sense in designing it. I shall be glad to show the one I have in use to any person calling at Chatsworth.

I remain, dear Sir, yours truly, "THOMAS SPEED.

"Mr. Ellis."

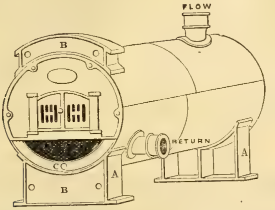
"Westbourne Gardens, Sheffield, October 27, 1870.

"DEAR SIR,—Your Patent Double-Arch Boiler, that you have put down for us lately, to heat the whole of our houses, answers admirably. Its heating surface exceeds all others which I am acquainted with. The small amount of fuel required, the way it is set, and the arangement of soot-doors, renders it the most complete and economical Boiler I have had to do with.—Believe me, Sir, yours truly,

"W. H. BIRD.

"Mr. Ellis, Norfolk Foundry, Sheffield."

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED,
FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

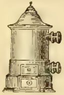
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s. each

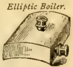
Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s 6d. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60s. each.

Portable Boiler.



Elliptic Boiler.



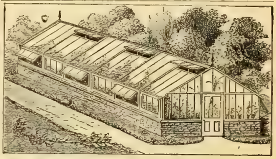
Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,

Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in thick, unglazed..	3s. each
" " glazed, 16-oz. good sheet glass	6s. "
6 ft. " " 2 in thick, unglazed	5s. "
" " glazed, 16 oz. good sheet glass ..	11s. "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. "
Portable box containing two ditto, 6 ft. by 8 ft.	55s. "

Estimates given for Conservatories or Greenhouses to any Design.

On and after July 1, A REDUCED PRICE LIST will be issued for

SIR J. PAXTON'S HOTHOUSES FOR THE MILLION,

Which have been proved, by 10 years' experience, to be the simplest and cheapest made with first-class materials,

As LEAN-TO ROOFS for COVERING PEACH WALLS or for EARLY VINERIES, and as SPAN-ROOFS for ORCHARD-HOUSES, VINERIES, GREENHOUSES, FORCING PITS, &c.

The prices for larger sizes of Sashes, and the shorter lengths of Houses have been materially reduced, and particularly for all those glazed with 21-oz. Glass. Prices given for covering any extent of Wall or Ground, on receipt of particulars as to height, length, and width required. Other systems of construction and ventilation adopted if preferred; but these are usually more expensive and not so readily erected by local carpenters.

"Nothing can be more easy than to build them, nothing more simple than to remove them."—*Daily News*, May 22, 1862.

MANUFACTORIES—LONDON, GLOUCESTER, COVENTRY, ULVERSTONE, PAISLEY, and ABERDEEN *only*.

ESTIMATES given for ORNAMENTAL CONSERVATORIES, GREENHOUSES, &c., to Designs, Sketches, or Specifications; also for HEATING APPARATUS fixed complete anywhere in the United Kingdom.

REFERENCES can be given to works executed in every county of England, and many in Scotland and Ireland.

A PAMPHLET, with views of various styles of Glasshouses and Conservatories, and PRICE LIST of Patent Roofs, Post Free for 3 stamps.

HEREMAN AND MORTON, HORTICULTURAL BUILDERS and HOT-WATER ENGINEERS,
14, TICHBORNE STREET, REGENT QUADRANT, LONDON, W.

(Formerly at Pall Mall East.)

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it s applied

iPROTECTION AGAINST the COLD WINDS and MORNING FROSTS

WOOL NETTING, 2 yards wide and 1s 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1s. 9d. per yard.
Three yards wide	2s. 8d. per yard.
Four yards wide	3s. 6d. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d. to 8½d. p. yard.

HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾d. and 8¾d. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.

NOTICE.—Removed from 7, Great Trinity Lane.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

BENJAMIN LOOKER,
Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

J. TYLOR AND SONS' FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

No. 1, Peel Street, Manchester, 1871.

OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½d. per yard run
No. 2.—54 inches wide	at 7d. per yard run.
No. 3.—54 inches wide	at 5½d. per yard run.
No. 4 —54 inches wide	at 4d. per yard run.
No. 5.—54 inches wide	at 5½d. per yard run

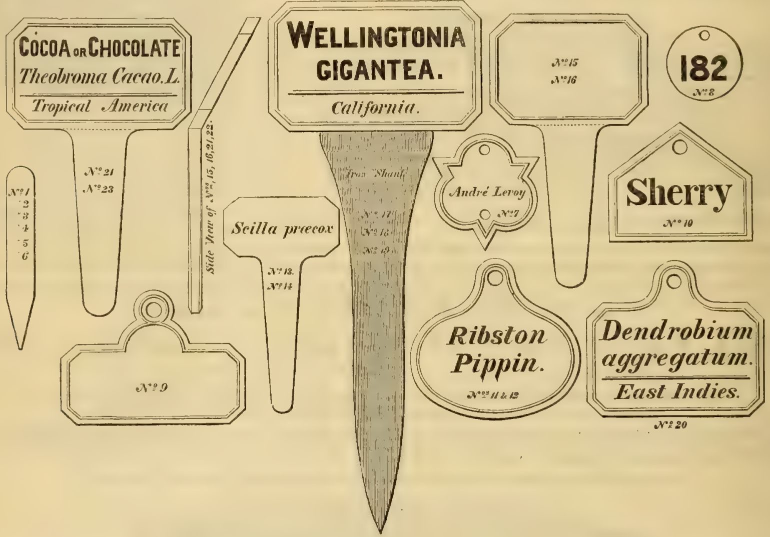
In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

TO MEET A WANT WHICH HAS BEEN LONG FELT BY THE HORTICULTURAL PUBLIC,

MAW & CO.'S PATENT IMPERISHABLE TERRA-COTTA PLANT MARKERS

Are offered as a cheap and permanent substitute for WOODEN and ZINC TALLIES for the Labelling of Plants in Pots and in the Open Border, and for suspending to Roses, Orchids, Ferns, Fruit Trees, &c. These Labels, unlike Wood and Zinc, combine perfect durability with a lasting legible inscription, and form an elegant adjunct in the Garden and Conservatory for the naming of Horticultural and Botanical Collections. They are also invaluable for the labelling of Wine Cellars and for general use to situations where other materials are perishable by damp.



Commended by the Editors of the *Gardeners' Chronicle*, and the Floral Committee of the Royal Horticultural Society. (See *Gardeners' Chronicle*, July 11, 1868.)
Can be procured from the Manufactory, or through any Nurseryman, Seedsman, or Ironmonger.

Specimens sent Post Free on application.

No. 1	3½ by ½ inch.	No. 6	8 by 1 inch.	No. 11	3½ by 3 inch.
No. 2	4½ ,, ⅝ ,,	No. 7	2¼ ,, 2 ,,	No. 12	5 ,, 4½ ,,
No. 3	5½ ,, ¾ ,,	No. 8	1½ inch diam.	No. 13	2 ,, 4 ,,
No. 4	6 ,, ⅞ ,,	No. 9	3½ by 2½ inch.	No. 14	3 ,, 5 ,,
No. 5	7 ,, ⅞ ,,	No. 10	2¾ ,, 2¼ ,,		

Can be seen in use at the Royal Gardens, Kew; the Gardens of the Royal Horticultural and Royal Botanic Societies, Battersea Park, the Royal Botanic Garden at Edinburgh; and Botanic Gardens, Glasnevin, near Dublin, &c.

Directions for Writing on the Labels with Black-lead Pencil.—Apply a little white-lead paint thinly over the part to be written upon, and *whilst wet*, write with a hard fine-pointed black-lead pencil. The writing will be perfectly indelible and unaffected by wet immediately the paint is set.

Black Enamel Writing on the Labels.—All the above sizes can be supplied in several colours, ready written upon, with black enamel, having the appearance of jet black ink, but perfectly permanent. On receipt of Lists of Names, Estimates of Cost will be sent for any quantities of Pot or Border Labels, Suspending Labels for Orchids, Roses, Ferns, Fruit Trees, &c. Consecutive Sets of Numerals printed on the Labels, and Labels for Wine Bins, ready written with Enamel, kept in stock.

MAW & CO.'S ENCAUSTIC TILE and GEOMETRICAL MOSAIC PAVEMENTS and WALL LININGS

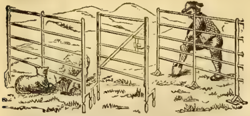
FOR CONSERVATORIES, GREENHOUSES, ENTRANCE HALLS, VERANDAHS, DAIRIES, &c.

Printed Patterns of various Designs suitable for the above will be forwarded on application, and Drawings, free of charge, of any of the Designs adapted to the given dimensions of spaces proposed to be Paved, will be supplied, accompanied by estimates of cost, including the expense of laying or otherwise. Applications for Estimates should be accompanied by an exact plan of the space drawn to scale, with all the dimensions marked in figures, and care should be taken that the size and position of all door-entrances and recesses that have to be paved are correctly represented; and when the walls are not exactly parallel, the measurements between the *opposite* angles, as well as along each wall, should be given. WHITE GLAZED TILES for DAIRIES, &c.

Address—MAW AND CO., BENTHALL WORKS, BROSELEY, SALOP.

The Telegraph and Railway Station at Ironbridge, on the Severn Valley (Great Western) line is within three minutes' walk of the Works.

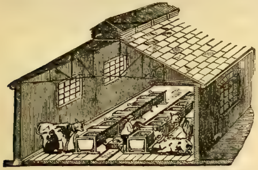
Cottam's Iron Hurdles, Fencing, and Gates.



COTTAM S HURDLES are made in the best manner, of superior Wrought Iron, by an improved method.

Illustrated Price Lists on application to COTTAM AND CO , Iron Works, 2, Winsley Street, Oxford Street, London, W.

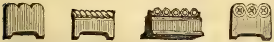
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s*.

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Rosher's Garden Edging Tiles.



THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s*. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s*., Coarse 17*s*. per Ton. In Truck Loads 1*s*. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s*. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.

A liberal discount to the Trade.

Protection from Fire.

THE PUBLIC ARE CAUTIONED AGAINST

DANGEROUS IMITATIONS.

CUTLERY, Warranted.—The most varied assortment of TABLE CUTLERY in the world, all warranted, is on sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

The Blades are all of the finest Steel.		Table Knives.		Dessert Knives.		Carvers, per Pair.	
		s	d.	s.	d.	s.	d.
3½-inch ivory handles	..per dozen	14	.	11	6	5	.
3½ do. balance do.	do.	15	6	12	6	5	.
4 do. do.	do.	22	6	16	6	5	9
4 do. fine ivory do. ..	do.	27	.	21	.	7	6
4 do. extra large do. ..	do.	30	.	22	.	8	.
4 do. finest African ivory do.	do.	34	.	27	.	12	.
Do. with silver ferules	do.	35	.	28	.	13	6
Do with silvered blades	do.	40	.	33	.	13	6
Nickel electro silvered handles	do.	23	.	19	.	7	6

WILLIAM S. BURTON, Furnishing Ironmonger, by appointment, to H.R.H. the Prince of Wales, sends a CATALOGUE, containing upwards of 850 Illustrations of his unrivalled Stock, with Lists of Prices, and Plans of the 20 large Showrooms, post free.—39, Oxford Street, W.; 1, 1A, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard. The cost of delivering Goods to the most distant parts of the United Kingdom by Railway is trifling. WILLIAM S. BURTON will always undertake delivery at a small fixed rate.

THE LANDS IMPROVEMENT COMPANY.
(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT.)
DRAINAGE, RECLAMATION, FARM BUILDINGS, LABOURERS' COTTAGES, TRAMWAYS, RAILWAYS, &c.

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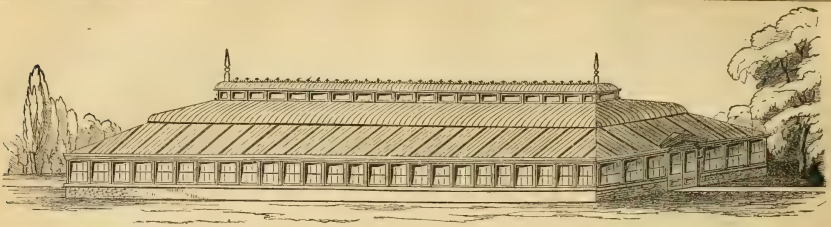

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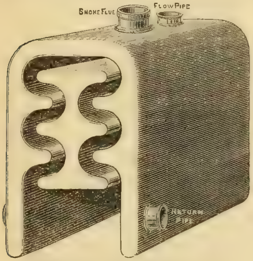

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, October 7, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 41.—1871.] SATURDAY, OCTOBER 14. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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JOSEPH SMITH, JUN., begs to announce that he holds large stocks of FOREST TREES, COVERT and HEDGE PLANTS of a moderate size, suitable for general planting; also EVERGREEN and FLOWERING SHRUBS, &c., of which CATALOGUES will be forwarded free on application, and special offers given for large quantities.

WANTED, 30,000 MANETTI STOCKS.—State lowest price p. 1000, including package, for cash on delivery, to HENRY BENNETT, Manor Farm Nursery, Stapleford, near Wilton, Wilts.

WANTED, a quantity of THORNS and PRIVET; also FOREST TREES, of sorts. State price and particulars to
B. R. DAVIS, Seed Warehouse, Yeovil.
Also LISTS of GENERAL NURSERY STOCK.

STOCKS WANTED.—One or 2-yr. seedlings of the following:—BRUSSEL and MUSSEL PLUMS.
CRAB and PARADISE | PEAR and QUINCE.
COMMON and MALABAR CHERRY.
Send samples and price per 1000 to
JOHN HOUSE, Eastgate Nurseries, Peterborough.

To Gardeners and Nurserymen.

WANTED, about 5000 STRAWBERRY PLANTS, 3000 to be President, and the other 2000 to be any good Market Garden Sorts, but not Black Prince.

Also a FOREMAN for Nursery, wages 18s. per week.
Y. STRACHAN, Seed Merchant and Nurseryman, High Street, Wrexham.

New Soft-wooded Plants, 1871.

H. CANNELL begs to inform his Friends and Customers that his AUTUMN CATALOGUE, containing all the above, is now ready, and will be sent free on application.
New Florist Flower and Florist Flower Seed Merchant, Woolwich.

CZAR VIOLETS.—Strong blooming plants, from open ground, 6s. per dozen; 40s. per 100.
EDWIN COOLING, Mile Ash Nurseries, Derby.

PRIMULA SEED; to the TRADE.—A few ounces for Sale, warranted of the finest Covent Garden strain in cultivation, and seed of 1871, £8 per oz. Post-office Order on Edmonton Green.
EDWARD SAWYER, Hyde Nursery, Edmonton, Middlesex, N.

Carnations, Picotees and Pinks.

J. BOOTH, FLORIST, Pole Lane, Failsworth, near Manchester, is now offering the above, in all the best named exhibition varieties. Trade supplied on reasonable terms.
CATALOGUES now ready.

Cinerarias, from one of the very finest Strains of
TRICOLORS in ENGLAND.

JOHN STANDISH AND CO. are now able to offer fine strong healthy plants of the above, to flower early in the winter, at 1s. each, 9s. per dozen, £3 per 100; also seed of the same at 2s. 6d. and 5s. per packet.
Royal Nurseries, Ascot, Berks.

Spring Flowers.

THOS. S. WARE'S NEW LIST of SPRING FLOWERS (which ought to be planted at once) is now ready and may be had on application. The above is a selection from my GENERAL PERENNIAL CATALOGUE, which may also be had.
Hale Farm Nurseries, Tottenham, Middlesex, N.

British Fern Catalogue.

ROBERT SIM will send, post free for six post. stamps, Part I. (British Ferns and their varieties, 36 page including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

CHEAP CHRYSANTHEMUMS, VINES (1-yr. old Canes from eyes), ROSES, FERNS, and other plants. Priced LIST forwarded on application.
KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Chrysanthemums.

ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6s. and 8s. per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.
Brunswick Nursery, Stoke Newington, N.

Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants. CATALOGUES gratis on application.

HUNT'S superb SWEET WILLIAM, in 24 varieties, seed or plants, as per former Advertisement.
Crown Nursery, Reading.

Golden Bronze Pelargoniums.

DOWNIE, LAIRD, AND LAING can offer Seed, saved from their unrivalled Collection of PRIZE GOLDEN BRONZE PELARGONIUMS, newly harvested, in packets, at 2s., 3s. 6d., and 5s each. Forwarded free by post. Stamps may be sent in payment. Trade price on application.
Nurseries: Forest Hill, London, and Edinburgh.

Autumn Catalogue.

GEORGE POULTON'S AUTUMN CATALOG of PLANTS and CUTTINGS of NEW PELARGONIU FUCHSIAS, CHRYSANTHEMUMS, &c., is now ready, and may be had post free upon application.
GEORGE POULTON, Fountain Nursery, Angel Road, Edmonton, Middlesex, N.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.
Forwarders to all parts of the World.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

EVERY GARDEN REQUISITE
KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

RICHARD WALKER has to offer the following, for cash:—EAST HAM, ENFIELD MARKET, and DRUMHEAD CABBAGE PLANTS, extra fine, all at 3s. per 1000; RED DUTCH PLANTS, 4s. per 1000; WHITE DAISIES, for planting out, 5s. per 100; CARNATIONS, for planting out, 5s. per 100.
Market Gardens, Biggleswade, Beds.

GENUINE DRUMHEADS, DRUMHEAD SAVOYS, IMPERIAL OXHEART, EARLY CABBAGE and BROCCOLI (sorts), well rooted, from light soil; carefully packed in good crates, and delivered to the Railway Station, at 3s. per 1000.
S. WELLAND, Surrey Gardens, near Godalming, Surrey.

Autumn-sown Cabbage Plants.

W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts:—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3s. per 1000; do. RED PICKLING, 5s. per 1000.
The Nurseries, Wonersh, Guildford, Surrey.

CABBAGE PLANTS, Autumn Sown.- Good strong early Battersea, Enfield, and London Market, at 3s. per 1000. Robinson's Champion Ox Cabbage, 2s. 6d. per 1000; also Late Flat Redpole Cabbage, 4s. per 1000; cheaper by the 50,000 or 100,000. Remittances to accompany all orders.
J. WOOBERRY, Nurseryman, Billingshurst, Sussex.

New Lilies.

MR. WILLIAM BULL begs to intimate that he can now supply fine healthy Bulbs, as imported from California, of the following extremely beautiful, rare, and hardy LILIUMS, viz.:—californicum, columbianum, Humboldtii, Washingtonianum, and canadense superbum.

Mr W. B. can also supply nice little sound English grown bulbs of LILIUM AURATUM, at 75s. per 100; and small Bulbs for planting for stock, 20s per 100.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S W

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter-flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them upon terms unusually advantageous. When selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. We invite attention to our Catalogue and inspection of our stock, especially the contents of our new show-house.

Gladioli.

CHARLES VERDIER, FILS (ex-Partner in and Successor to the late Firm of Victor Verdier, Père, and Charles Verdier, Fils), 12, Rue Duméril, Paris, has just published his CATALOGUE of GLADIOLI, containing all the novelties of the season.

It can be had post free on application to his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London

Roses, Pæonies, &c.

CHARLES VERDIER, FILS, NURSERYMAN, 12, Rue Duméril, Paris, begs to announce that his CATALOGUE of NEW ROSES, PÆONIES, &c., is now in the press, and will be ready for distribution early in October.

Apply to the London Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, E.C., who will send it post free directly it appears.

Gladioli Seedlings, by Name, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), offer the following:—

GLADIOLI SEEDLINGS, first-class, 7s. per 100; £3 per 1000.

100 GLADIOLI, by name, 10 sorts | 100 GLADIOLI, by name, 50 sorts
100 " " 25 " | 100 " " 100 "

40s. to £6 and upwards, according to the novelty of the sorts; all in good flowering bulbs.

Standard Tea Roses, and Others, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), beg to offer the largest stock of ROSES ever seen, at the following prices:—

Standard Tea Roses, all the best sorts, £5 per 100. (This stock is beautiful, and very extensive.)
Standard Hybrid Perpetuals and Moss, £4 per 100.
Half-Standard Hybrid Perpetuals and Moss, £3 4s. per 100.
Dwarf Hybrid Perpetuals and Moss, £2 per 100, £18 per 1000.
On their own roots, grown in pots, splendid stock, £2 per 100.
Tea sorts, Dwarfs—Madame Falcot, Devoniensis, Jean Perret, Madame Margottin, and all the best, £3 per 100.
Maréchal Niel, Standards, £5 per 100; Dwarfs, £4 per 100.

Fifteen per cent. discount on the new sorts of 1872.

LISTS on application. CATALOGUES ready next week

Roses—New Varieties for 1871-72.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, &c., 3, Rue Dunois, Paris, has the honour to inform his clients and friends that he will be ready to send out in November next, on the most advantageous terms, all the NEW VARIETIES of ROSES for 1871-72; also those of 1869, 1870, and 1871.

Descriptive CATALOGUE of above can be obtained direct from E. V., or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E C.

Gladioli, Gladioli.—To the Trade.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, 3, Rue Dunois, Paris, offers to his Friends a considerable stock of fine BULBS of his unrivalled collection of above; also the following New Varieties (the whole for £2 16s):—Alcyone (Souchet), Antigone (S.), Antiope (S.), Ariane (S.), Arsinöe (S.), Beatrix (S.), Celimène (S.), Didon (S.), Jupiter (S.), Minerve (S.), Ossian (S.), Phœbus (S.), Virginalis (S.).

CATALOGUES, with description, will be obtainable about September 25, by addressing direct to E. V., fils ainé; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, E.C.

Camellias, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine plants of CAMELLIAS, without flower bud, best varieties, 1½ to 2 feet high, bushy plants, at £6 per 100.

Fine plants of PANDANUS UTILIS, for table decoration, 15s. per dozen; ditto, smaller, 12s. per dozen.

CHAMÆROPS FORTUNEI, young plants, with three to four leaves, 42s. per 100; ditto, formed plants, 30s. per dozen.

CORYPHA AUSTRALIS, nice young plants, 63s. per 100.

INDIAN AZALEAS, choice varieties, £5 to £6 per 100.

CAMELLIAS, with flower bud, £7 to £8 per 100; ditto small, £6 per 100.

ARAUCARIA IMBRICATA, in small and store pots, 30s. per 100.

Established Upwards of a Century.

PRIZE MEDALS, 1851 and 1862.

BUTLER, McCULLOCH AND CO.'S usual Consignment of DUTCH and CAPE BULBS has arrived in excellent condition, and from which the following liberally assorted Collections are offered, carriage and package free:—

FOR CONSERVATORY DECORATION.

No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.

FOR FLOWER GARDEN DECORATION.

No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£3.	£2.	£1 5s.	£1 1s.	10s. 6d.

For CONSERVATORY and FLOWER GARDEN DECORATION.

£5 5s.	£2 12s. 6d.	£2 2s.	£1 1s.	15s.	10s. 6d.

CATALOGUES, containing full details of these Collections, free and post paid.

BUTLER, McCULLOCH AND CO., Covent Garden Market, London, W.C.

Dutch Flower Roots.

CARTER'S AUTUMN CATALOGUE of DUTCH FLOWER ROOTS, FRUIT TREES, ROSES, &c., is now ready, and may be had gratis and post free on application.

JAMES CARTER AND CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

Strawberries.

JAMES CARTER AND CO. have extra fine plants to offer this season of the undermentioned STRAWBERRIES.

Runners, in pots, our selection, 25 of a sort .. 10s. 6d. per 100.
" " " 100 " .. 7s. 6d "
Runners, out of pots, our selection, 25 of a sort. 5s. 0d. "
" " " 100 " 3s. 6d. "

Black Prince
British Queen
Carolina Superba
Comte de Paris
General Havelock
Goliath
Keens' Seedling
Prince Arthur
Prince of Wales
Princess Alice Maude
Princess Royal
The Lady
Victoria
Wizard of the North
Wonderful

Runners, out of pots, per 100, 3s 6d.; Runners, in pots, per 100, 10s. 6d.

Dr. Hogg
Duc de Malakoff
Premier
President
Rifleman
Sir Harry
Vicomtesse Hericart de Thury.

Runners, out of pots, per 100, 5s.; Runners, in pots, per 100, 12s. 6d.

New kinds at a slight advance in price according to our stock. Newest sorts, such as The Amateur, Royalty, Brown's Wonder, and several French varieties of the late Dr. Nicaise's raising, at same prices as advertised by the firms distributing them.

JAMES CARTER AND CO., 237, High Holborn, W.C.; and Crystal Palace Nurseries, Forest Hill, S.E.

THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

IS STILL AT

WILLIAM PAUL'S.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, HERTS, N.

PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

MESSRS. VEITCH & SONS

BEG TO ANNOUNCE THAT THEIR

CATALOGUE OF ROSES FOR 1871

Is now ready, and can be had on application.

They desire to call particular attention to their large STOCK of ROSES, a considerable portion of their

COOMBE WOOD NURSERY, and also their Nursery at KINGSTON VALE,

Being devoted to their culture. All descriptions, either in pots or from the open ground, can be supplied at the most moderate prices.

⁂ *A PERSONAL INSPECTION IS SOLICITED.*

THE ROYAL EXOTIC NURSERY, CHELSEA, LONDON, S.W.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

LEE'S PROLIFIC BLACK CURRANT.

FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY, 1869.

GEORGE LEE,

MARKET GARDENER, CLEVEDON, SOMERSET,

Will be prepared to send out the above Currant in October and November, in not less than one dozen plants at the following rates (orders booked as received):—

1-yr. old Plants, 18s. per dozen Plants.
2 or more yr. old Plants, 24s. to 30s. the dozen Plants.

It will be found a great acquisition on account of its fertility and other good qualities. It is very prolific (name given by the Committee of the Royal Horticultural Society), 600 plants (on 5½ rods of ground) in a Nursery the second year after planting producing over 5 cwt. of fine fruit. The bunches are medium length, of almost uniform size in berry, long-stemmed, so as to be gathered without crushing the upper berries. It is very sweet, much more so than the Black Naples, which, he has grown largely for near 20 years. It is much enjoyed as a dessert. Is very thin-skinned, and makes a fine preserve. Fetches a much higher price in the market. It will be a good variety for the Market Gardener. Plants can also be supplied by the following Nurserymen:—

Messrs. P. LAWSON AND SON, Edinburgh.
Messrs. T. RIVERS AND SON, Sawbridgeworth.
Messrs. J. GARAWAY AND CO., Bristol.
Mr. C. TURNER, Slough.

EAST SOMERSETSHIRE CHAMPION POTATO.

Report of the Royal Horticultural Society's Trial Committee.

"*Late Kidney, allied to the Fluke.*—A most extraordinary cropper, very handsome, and of good quality."

This is a Potato that we confidently recommend, not only as a late but as a second early, quite fit for the table second week in July, but good late-keeping.

This will be sent out in September and October, in not less than 28lb., 6s.; 56lb., 11s.; 112lb., 18s.—bags included. Remittances from unknown Correspondents. ☞ Stock limited. Trade not supplied this Season.

NEW CATALOGUE.

J. WILLS

BEGS TO ANNOUNCE THAT HIS

NEW CATALOGUE of DUTCH FLOWER ROOTS, ROSES, SHRUBS, FRUIT and FOREST TREES, PLANTS suitable for Forcing, &c.,

Is now ready, and will be forwarded Post Free on application. Everything offered is of the best quality, and as cheap as any other house in the Trade. All kinds of Floral Decorations supplied on the shortest notice.

Some idea of the magnitude of J. WILLS' business as an Artistic Floral Decorator and Bouquetist may be obtained from the fact of his having this week received an order for the supply of 1000 handsome Bouquets for Ladies, and 3000 Coat Bouquets for Gentlemen.

ROYAL EXOTIC NURSERY, SUSSEX PLACE, OLD BROMPTON, LONDON, S.W.

GRAVESEND NURSERIES and SEED GROUNDS (Established 1810).

THOMAS EVES (late ENGLAND CLARKE).

These Nurseries have recently been much enlarged by the addition of half those adjoining, and now contain a very large and choice stock of healthy free grown FRUIT and FOREST TREES, SHRUBS, &c., all in splendid condition for removal, and well worthy the attention of intending planters and the Trade. The New Seed Warehouse and Office is at the Wrotham Road Nursery, which adjoins the Mid-Kent Cricket Grounds, and is within five minutes' walk of the Railway Stations.

Special attention is called to the following :—

Large THUJA AUREA and ARBOR-VITÆ.
Fine bushy AUCUBA JAPONICA and COMMON LAUREL.
Strong IRISH IVIES, to 10 feet, in pots.
SPRUCE FIRS, to 10 feet.
Fine strong PAMPAS GRASS and EVERGREEN PRIVET.
FOREST and FRUIT TREES of every description.
1, 2 and 3-yr. old GOOSEBERRIES and CURRANTS.
RHUBARB, ASPARAGUS, &c.

T. E. begs also to offer a quantity of SEEDS, all of which, being home-grown, can be recommended with the utmost confidence, and will be sold at very low prices. LIST on application.

All Orders addressed, THOMAS EVES, GRAVESEND NURSERIES, will receive prompt attention

---

THE TWO BEST NEW PLUMS OF THE SEASON.

DUKE of EDINBURGH.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, roundish-obovate, with a shallow suture; outline very regular and smooth; skin thin; colour light purplish, with an exceedingly dense coating of light bluish bloom; flesh reddish yellow, thick, juicy, and moderately rich, parting freely from the stone; a very prolific bearer, and good for culinary purposes. First-class Certificate, Royal Horticultural Society.

Maidens, **5s.** each.

DRY'S SEEDLING.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large or above medium size, roundish oval, marked with a very slight suture; skin reddish purple, covered with a thin bloom, slighly marbled when fully ripe, stalk long and stout; flesh dull greenish yellow or orange, firm yet melting and juicy, parting freely from the stone; it is of delicious flavour, and will make an excellent early dessert variety.

"The fruit is oval, of light purple colour, fine in size, remarkably good in flavour, and early: it was shown at one of the meetings held last year, and was then considered by the Committee to possess considerable merit, and its qualities having been again tested on this occasion, it was duly honoured with a First-class Certificate."

Standards, **5s.**; Pyramids, **3s. 6d.**; Dwarf trained, 1 year, **5s.**; Maidens, **2s. 6d.** each.

JAMES CARTER & CO.

Have much pleasure in directing the attention of Pomologists to the above splendid Fruits, both of which have been awarded First-class Certificates by the Royal Horticultural Society. *They are without doubt two of the finest Plums in cultivation.* *PRICE TO THE TRADE ON APPLICATION.*

JAMES CARTER AND CO.,
SEEDSMEN TO THE QUEEN AND THE PRINCE OF WALES,
237 and 238 HIGH HOLBORN, LONDON, W.C.

Dutch Flower Roots.

DOWNIE, LAIRD, AND LAING have now received their annual importations of FLOWER ROOTS, consisting of Hyacinths, Polyanthus, Narcissus, Double Narcissus, Crocus, Tulips, Jonquils, Ranunculus, Anemones, Snowdrops, &c., which have all been carefully selected from the most celebrated establishments in Holland.

The Bulbs this season are well ripened, unusually large, and very heavy, and have arrived in splendid condition.

Descriptive CATALOGUES forwarded post free.

Nurseries: Forest Hill, S.E.; and Edinburgh, N.B.

"The best Catalogue."—*Vide "Horticulturist," October*, 1870.

Gratis and post free,

A CATALOGUE of DUTCH BULBS, FRUIT TREES, DRIED FLOWERS, and general Autumn Requirements.

DICK RADCLYFFE AND CO., Seedsmen, Horticultural Decorators and Garden Furnishers, 129, High Holborn, W.C.

Seed Grounds, Erfurt, Prussia.

New Bedding Plant, Thymus citriodorus aureus
MARGINATUS (Lemon-scented gold-edged Thyme).

MESSRS. FISHER, HOLMES, AND CO., Handsworth Nursery, Sheffield, are now sending out the above. For Description and Price see former advertisements. The undermentioned have already been supplied :—

Messrs. Paul & Son	Cheshunt, Herts.
„ J. & C. Lee	Hammersmith.
„ E. Cole & Son	Manchester.
„ P. Lawson & Son	Edinburgh.
„ Backhouse & Son	York.
„ Jas. Veitch & Son	Chelsea, London, S.W.
„ Garraway & Co.	Bristol.
„ Downie, Laird & Laing ..	Forest Hill, London, S.E.
„ J. Stewart & Sons	Dundee.
„ B. Reid & Co.	Aberdeen.
„ Carter, Dunnett & Beale ..	London.
„ R. Brown & Son	Stamford.
Mr. E. Cooling	Derby.
„ R. Parker	Tooting, Surrey.
„ J. Barrett	Bury St. Edmund's.
„ John Fraser	Lea Bridge, Leyton, Essex.
„ H. Cannell	Woolwich.
„ Thornton	Bagshot.
„ William Paul	Waltham Cross.
„ John Shaw	Manchester.
„ W. Cunningham	The Forge, Burton-on-Trent.
„ E. Holmes	Whittington, Lichfield.
„ James Smith	Darley Dale, Matlock.
„ W. Knight	Hailsham, Sussex.
„ Henry Bent	Flixton, near Manchester.
„ J. J Chater	Cambridge.
„ Thomas Plaxton	Bridlington.
„ William Bull	Chelsea, London, S W.
„ B. S. Williams	Holloway, London, N.
„ W. Wilson	Bridlington.
„ A. Swanson	Barton-on-Humber.
„ Osborne	Bridlington.
„ J. A. Wright	Hendon Park, London, N.W.
„ T. Clarke	Settle.

TWENTY THOUSAND STANDARD and HALF-STANDARD ROSES, in leading and well-known varieties.
STANDARDS, 60s. to 80s. per 100.
HALF-STANDARDS, 40s. to 50s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

10,000 STANDARD and PYRAMID APPLES, in the best varieties for dessert or kitchen, from 50s. to 75s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

50,000 COMMON LAURELS, good bushy plants, 2 to 3 feet, 10s. per 100, or 80s. per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

60,000 PORTUGAL LAURELS.
1-yr. Seedlings, 6s. per 1000.
2-yr. Seedlings, 8s. per 1000.
3-yr. Seedlings, 15s. per 1000.
Transplanted, 12 to 18 inches, bushy, 12s. 6d. per 100.
Transplanted, 18 to 24 inches, bushy, 25s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

5,000 CEDRUS DEODARA, 1-yr., 2 to 4 inches, £9 per 1000, 20s. per 100.
7,000 CEDRUS DEODARA, 1-yr., 4 to 6 inches, £12 10s. per 1000, 30s. per 100.
4,000 CEDRUS DEODARA, 2-yr., twice transplanted, 9 to 12 in., 42s. to 50s. per 100.
3,000 CEDRUS DEODARA, 2-yr., twice transplanted, 15 to 18 inches, 75s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

4,000,000 1-yr. seedling ASH, 1s. per 1000; £4 10s. per 100,000.
2,000,000 1-yr. seedling SPANISH CHESTNUTS, 6s. per 1000; £25 per 100,000.
1,000,000 2-yr. seedling QUICK, 2s. 6d. per 100; £10 per 100,000.
50,000 2-yr. seedling OAKS, in drills, 1½ to 2½, 10s. per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey

100,000 Transplanted ALDERS, 2 to 3 feet, 15s. per 1000.
200,000 Transplanted ASH, 1 to 2 and 2 to 3 feet, 15s. to 25s. per 1000.
50,000 Transplanted BEECH, 1½ to 2 feet, 21s. per 1000.
40,000 Transplanted BEECH, 2 to 3 feet, 25s. per 1000.
100,000 Transplanted SCOTCH FIRS, good, 2 to 3 ft., 25s. per 1000.
60,000 Transplanted HAZEL, 1 to 2 feet, 12s. 6d. per 1000.
50,000 Transplanted HAZEL, 2 to 3 feet, 21s. per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

1,000 ABIES MENZIESII, 5 to 7 feet, £5 per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

10,000 AUCUBA JAPONICA, 12 to 18 inches, 21s. per 100.
15,000 AUCUBA seedlings, from named kinds, 30s. to 75s. per 100.
5,000 AUCUBA, new varieties, from 80s. to 100s. per 100.
AUCUBA, new varieties, in large plants, 18s. to 36s. per doz.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

CRYPTOMERIA ELEGANS, 6 to 9 inches, 21s. per 100.
„ „ 9 to 12 inches, 50s. per 100.
„ „ 2½ to 3 feet, 24s. to 30s. per dozen.
THUJA LOBBII, 9 to 12 inches, 16s. per 100.
„ „ 3, 4, 5, and 6 feet, 50s. to 100s. per 100.
„ WEAREANA, 1½ to 2 feet, 12s. 6d. per 100.
„ „ 3 to 4 feet, 50s. per 100.
THUJOPSIS DOLABRATA, 6 to 9 inches, 50s. per 100.
„ „ 9 to 12 inches, 75s. and 100s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

A large stock of Hardy JAPANESE CONIFERÆ and EVERGREENS, at low prices.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

ARBUTUS, grafted, in five sorts, 12s. to 24s. per dozen.
ARUNDO CONSPICUA, in pots, 12s. to 25s. per 100.
HYDRANGEA OTAXA, the largest flowering Hydrangea known, 50s. to 100s per 100.
HYDRANGEA PANICULATA GRANDIFLORA, a most beautiful deciduous hardy shrub, 9s. per dozen.
And a large and varied stock of New Hardy Plants.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

A fine lot of CLEMATIS, PASSIFLORA, IVIES of sorts, and other Climbers, from 50s., 75s. to 100s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey

10,000 RHODODENDRON PONTICUM, 1 to 2 feet, 21s. to 30s. per 100.
„ „ „ larger sizes, 50s. to 100s. per 100.
„ „ choice named, from £5 to £10 per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

An Inspection of the Stock is respectfully invited.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

RENDLE'S PATENT ORCHARD HOUSES,

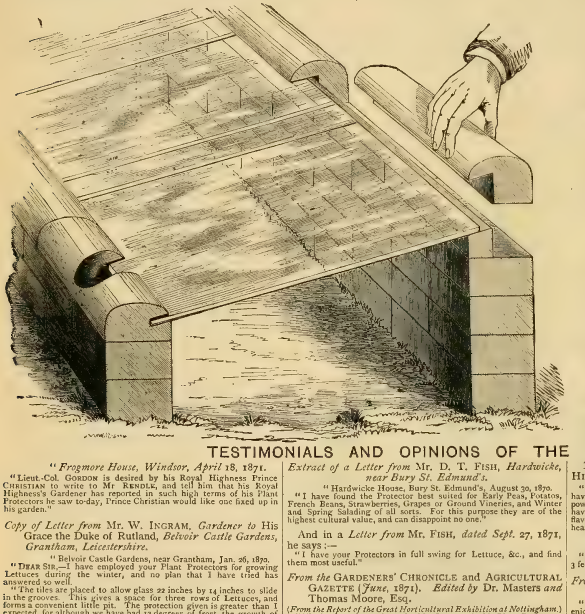
PORTABLE PLANT PROTECTORS, AND GROUND VINERIES.

Secured by Her Majesty's Royal Letters Patent (two separate and distinct Patents, 1869 *&* 1870*).*

Under the Distinguished Patronage of—

H.R.H. the PRINCE OF WALES.
HIS ROYAL HIGHNESS PRINCE CHRISTIAN.
HIS HIGHNESS the MAHARAJAH PRINCE DULEEP SINGH.
HIS GRACE THE DUKE OF RUTLAND.
HIS GRACE THE DUKE OF DEVONSHIRE.
HIS GRACE THE DUKE OF SUTHERLAND.
THE MOST NOBLE THE MARCHIONESS OF ANGLESEY.
THE RIGHT HON. THE EARL OF STAMFORD AND WARRINGTON.
THE RIGHT HONOURABLE THE EARL OF PORTSMOUTH.
THE RIGHT HONOURABLE THE EARL OF DARTMOUTH.
THE RIGHT HONOURABLE THE LORD PORTMAN.
THE DOWAGER COUNTESS OF AYLESFORD.
THE RIGHT HONOURABLE LORD ALFRED CHURCHILL.
THE RIGHT HONOURABLE LORD BERKELEY PAGET.
THE RIGHT HONOURABLE LORD BOLTON.
THE RIGHT HONOURABLE LORD DE L'ISLE AND DUDLEY, &c.

RENDLE'S PATENT PORTABLE PLANT PROTECTORS.



This Engraving represents the New Pattern. It will be seen that the top or grooved Brick is formed in two distinct pieces. The Glass rests on the front piece, and the other part can be instantly removed, so that the whole of the glass can be set free from one end of the Protector to the other in a few minutes.

The under Brick is also made with an opening, so that, with the finger, the glass can be removed or shifted at pleasure.

NEW TARIFF AND CARRIAGE-FREE TERMS.

The following Prices are for the Patent Grooved Bricks and the Glass :—

GROUND VINERIES AND PLANT PROTECTORS.			For Delivery in London or Bridgewater.			Carriage Paid to any Railway Station within 100 miles of London or Bridgewater.			Carriage Paid to any Railway Station in England and Wales, or Edinburgh, Dublin, Cork, or Belfast.		
Ft. long.		Wide.	£	s.	d.	£	s.	d.	£	s.	d.
10	Glass	9 in.	0	12	0	0	14	6	0	17	0
10	Glass	12 in.	0	14	0	0	17	0	1	0	0
10	Glass	18 in.	0	16	0	1	0	0	1	3	0
10	Glass	24 in.	0	18	0	1	2	0	1	7	0
100	Glass	9 in.	5	0	0	5	10	0	6	10	0
100	Glass	12 in.	6	0	0	6	10	0	7	10	0
100	Glass	18 in.	7	0	0	7	10	0	8	10	0
100	Glass	24 in.	8	10	0	9	0	0	10	0	0

A reduction of 20s. *per* 100 *feet will be made if* 500 *feet be taken at one time.*

The Patent Grooved Bricks can be placed on ordinary Kiln Bricks set on the Flat. Full Directions for fixing them will be sent with each Invoice.

TESTIMONIALS AND OPINIONS OF THE PRESS.

"*Frogmore House, Windsor, April* 18, 1871.

"Lieut.-Col. GORDON is desired by his Royal Highness Prince CHRISTIAN to write to Mr RENDLE, and tell him that his Royal Highness's Gardener has reported in such high terms of his Plant Protectors he saw to-day, Prince Christian would like one fixed up in his garden."

Copy of Letter from Mr. W. INGRAM, *Gardener to* His Grace the Duke of Rutland, *Belvoir Castle Gardens, Grantham, Leicestershire.*

"Belvoir Castle Gardens, near Grantham, Jan. 26, 1870.

"DEAR SIR,—I have employed your Plant Protectors for growing Lettuces during the winter, and no plan that I have tried has answered so well.

"The tiles are placed to allow glass 22 inches by 14 inches to slide in the grooves. This gives a space for three rows of Lettuces, and forms a convenient little pit. The protection given is greater than I expected, for although we have had 12 degrees of frost, the growth of the plant does not appear to have been checked.

"The successful application of your plan for securing a supply of Cos Lettuce struck the gentleman (W. B. Ferrand, Esq.) who wrote to you, and led to the order you refer to.—I am, yours truly,

"Mr. W. E. RENDLE. "W. INGRAM."

Important Testimonial from Mr. EDWARD BENNETT, *Gardener to the* Right Hon. the Earl of Stamford and Warrington, *Enville, near Stourbridge.*

"Enville, August 23, 1871.

"SIR,—The more I see and have to do with your various descriptions of Plant Protectors, Cases, &c., the more I am convinced of their utility; and I would strongly recommend those who have not given them a trial to do so *at once.*

"I remain, Sir, your obedient Servant,

"Mr. W. E. RENDLE. "EDWARD BENNETT."

[Mr. Bennett has now in work more than 1000 feet at Enville, and his opinion of their value is of the highest importance.]

From WILLIAM GRACE, Esq., *Wittersham, near Ashford.*

"*Sept.* 4, 1871.—Your new patterns are certainly a great improvement on the old. I have some splendid bunches of Grapes in your Ground Vinery, colouring splendidly."

From the Rev. M. DAVIES, *of Southampton.*

"*June* 9, 1871.—My Strawberries were ripe 14 days before those in the greenhouses."

Extract of a Letter from Mr. D. T. FISH, *Hardwicke, near Bury St. Edmund's.*

"Hardwicke House, Bury St. Edmund's, August 30, 1870.

"I have found the Protector best suited for Early Peas, Potatos, French Beans, Strawberries, Grapes or Ground Vineries, and Winter and Spring Salading of all sorts. For this purpose they are of the highest cultural value, and can disappoint no one."

And in a *Letter from* Mr. FISH, *dated Sept.* 27, 1871, he says :—

"I have your Protectors in full swing for Lettuce, &c., and find them most useful."

From the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE (*June,* 1871). *Edited by* Dr. Masters *and* Thomas Moore, Esq.

(*From the Report of the Great Horticultural Exhibition at Nottingham.*)

"The improvements shown by Mr. RENDLE in his Plant Protectors bring some of them almost within the category of houses. The old forms are still retained, while new facilities for the removal of the glass are afforded by a movable coping, that is simply laid on the upper edge of the glass. Nothing could be more simple. The Protectors are also shown in more pretentious size and form; Glass Walls and Miniature Houses, in which zinc is used for grooves and wood for sides, instead of bricks and tiles. The Peach Case and Amateur's Plant Case have folding backs of wood, which are let down to tend the Trees or Plants, while the top is also movable. The cordon frame has a hole at the end to admit the Tree, and there can be little doubt of their worth, with the efficient shelter these cordon cases provide. We hear a good character of these Protectors on all hands, and no one can doubt their special adaptation for the purposes intended. As lately remarked in these columns, the great want of modern gardening is more glass, and we hail every attempt to provide it cheaply and in useful forms."

Indian Corn Ripening in the Open Ground during the last Summer.

"*Sept.* 6, 1871.—Notwithstanding the coldness and severity of the last Spring (and be it remembered that the weather was exceedingly cold, even in the last days of June), I have succeeded in ripening Indian Corn or Maize. The seeds were obtained from the Rev. Mr. Brehaut, and sown on April 8, in the Protectors. They were nursed and protected all through April, May, and part of June; the glasses were then taken off, and the cobs of Corn were ripe, thoroughly ripe, by September 1. The plants were transplanted, and grew all through the cold weather without the least check. This will prove the simplicity and excellency of the system more than any other experiment.

"WM. EDGCUMBE RENDLE."

The following is an extract of a Letter from FRANCIS HICKS, Esq., *The Priory, Compton, near Plymouth :—*

"*August* 20, 1871.—The Glass Wall has answered excellently, and I have a beautiful display of Peaches under it; they are very fine. The power of shifting, and indeed latterly of entirely removing the glass, I have found very convenient; and to this I attribute the fineness of flavour, as house-grown Peaches are usually deficient in character. I heartily wish you success, and will recommend it wherever I can."

Letter from SHIRLEY HIBBERD, Esq.

"*Sept.* 5, 1871.—Please send me 80 feet of your Span-roof Protectors, 3 feet wide. I want them for protecting Cauliflowers, Lettuces, &c."

From EDWARD BARNWELL, Esq., *Cresborough House, Haverfordwest.*

"*Sept.* 24, 1871.—I think you will be glad to hear that we have been enjoying some most excellent Black Hamburgh Grapes, grown by Mr. Cooke, with the greatest success, under one of your Patent Vineries."

From Mr. C. EDWARDS, *Gardener to* Colonel Coryton, *Pentilla Castle, Cornwall.*

"*August,* 1871.—Your Protectors have been most successful. We had more than 25 degrees of frost last winter, and I had two crops of Lettuces in succession. They are most valuable, and I intend working them thoroughly next winter."

From Mr. G. MUNN, *Gardener to* Charles Meeking, Esq., *Riching's Park, Slough.*

"*June* 9, 1871.—The Protectors have exceeded my expectations. I covered an Asparagus bed (90 feet long) with the 4-feet Span-roof. The produce was larger and more tender than that grown in the open ground, and it grows much faster, and came several weeks earlier. In the Belvoir Castle patterns we grew Early Cauliflowers and Lettuces. They grew amazingly. The protection is much greater than I expected; in fact, they are invaluable for all kinds of early vegetables for early spring.

From the Rev. W. B. CAPARN, *Draycot Vicarage, Weston-super-Mare.*

"The result of my experience in growing Grapes deserves to be known, and I have written to the Editors of the 'Journal of Horticulture' (see 'Journal of Horticulture,' October 6, 1870), as I thought it deserved to be known, and would help in the cultivation of Grapes on a small and inexpensive scale."

The New Illustrated Catalogue of the Patent Orchard Houses, Ground Vineries, and Plant Protectors for the Autumn, 1871, is now ready, and can be had from the Patentee and Inventor, on application to

MR. WILLIAM EDGCUMBE RENDLE, 3, WESTMINSTER CHAMBERS, VICTORIA ST.
Manufactories—Bridgewater, Northampton, and Watcombe near Torquay. Trial Grounds at the Fruit Farm, Ealing, Middlesex.
DUBLIN AGENTS—MESSRS. EDMONDSON, SEED MERCHANTS, 10, DAME STREET, DUBLIN.

Seedsmen to Her Majesty The Queen.

BULBS For Autumn Planting.

Seedsmen to H.R.H. the Prince of Wales.

JAMES CARTER & CO.

Offer the following Collections of Bulbs for present planting, containing the most showy and popular varieties selected from the choicest stocks in Holland.

BULBS for INDOOR PLANTING.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S "GUINEA" COLLECTION,

For Indoor Planting, contains:—

12 HYACINTHS, in 12 extra fine named sorts.
9 POLYANTHUS NARCISSUS, in 9 varieties.
12 JONQUILS, sweet scented.
50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 ,, Rex Rubrorum.
3 ,, La Candeur.
3 ,, Royal Standard.
6 ,, Yellow Prince.
3 ,, Rosa Mundi.
6 ,, Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
6 IXIAS, finest mixed.
6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

Packing and Carriage Free.

All Seeds and Bulbs Carriage Free.

BULBS for INDOOR and OUTDOOR PLANTING.

Collections, price 15s., 30s., 42s., 63s., and 84s.

Packing and Carriage Free.

EVIDENCE OF QUALITY.

From MRS. HOOKINS, *Invermay*. *Sept.* 14, 1871.

"I am so very much obliged to you for sending me such a nice collection of Bulbs. They appear so extremely good, were arranged beautifully, and arrived in good order."

From W. E. MARTIN, Esq., *Hereford*.

"The Bulbs supplied by you last autumn made a glorious show all through the spring. They made a splendid collection of 500 Plants, and were admired by all who saw them."

Five per Cent. Discount for Cash.

BULBS for OUTDOOR PLANTING ONLY.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S "GUINEA" COLLECTION,

For Outdoor Planting only, contains:—

12 HYACINTHS, in 3 colours.
12 NARCISSUS, Double, white.
12 ,, Poeticus, or Pheasant-eye.
12 Double DAFFODILS.
12 TULIPS, extra fine mixed, double.
12 ,, extra fine mixed, single.
12 ,, finest mixed, late.
12 ,, Duc Van Thol.
6 POLYANTHUS NARCISSUS, fine mixed.
6 CAMPERNEL JONQUILS.
12 STAR of BETHLEHEM.
6 TRITELEIA UNIFLORA.
6 DOG'S-TOOTH VIOLETS.
25 CROCUS, blue.
50 ,, striped.
50 ,, large yellow.
25 ,, white.
24 ANEMONES, extra fine, mix.
6 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice, mixed, English.
12 ,, extra fine, mixed, Spanish.
3 LILIUM CANDIDUM.
3 ,, TIGRINUM.
24 RANUNCULUS, extra fine, mixed.
50 SNOWDROPS.
24 Winter ACONITES.

Packing and Carriage Free.

CARTER'S AUTUMN CATALOGUE

OF DUTCH BULBS, FRUIT TREES, ROSES, &c.,

Is now ready, and may be had Gratis and Post Free on application.

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

SUTTONS'

FRESH IMPORTED

DUTCH FLOWER ROOTS,

CARRIAGE FREE.

SUTTONS' CHOICE COLLECTIONS of BULBS.

SUTTON AND SONS can confidently recommend the following Collections. They consist of those kinds which, after careful observation, they have found to be best worthy of cultivation, the MOST SHOWY AND CERTAIN TO THRIVE under ordinary treatment, and for which any good garden soil (not particularly heavy) will be suitable.

COLLECTIONS FOR OPEN GROUND.

No. 1.—£2 2*s.* Carriage free.	No. 2.—£1 1*s.* Carriage free.	No. 3.—10*s.* 6*d.*

COLLECTIONS FOR POTS AND GLASSES.

No. 4.—£2 2*s.* Carriage free.	No. 5.—£1 1*s.* Carriage free.	No. 6.—10*s.* 6*d.*

SUTTONS' COLLECTIONS OF HYACINTHS.

SUTTONS' EXHIBITION HYACINTHS,
"Specially Selected."

25 Bulbs for	..	.. £2	0	0
12 ,,	..	.. 1	0	0

CHEAPER COLLECTIONS.

100 in 100 sorts	..	.. £4	4	0
100 ,, 50 ,,	..	.. 3	10	0
50 ,, 50 ,,	..	.. 2	2	0
50 ,, 25 ,,	..	.. 1	15	0
25 ,, 25 ,,	..	.. 1	1	0
12 ,, 12 ,,	..	.. 0	12	0

Hyacinths, in distinct colours for massing, ribbon gardening, &c., 4*s.* per doz., 30*s.* per 100. Mixed Hyacinths, 2*s.* 6*d.* and 3*s.* per dozen; 18*s.* and 21*s.* per 100. Miniature Hyacinths, 4*s.* per dozen.

SUTTONS' COLLECTIONS OF CHOICE EARLY TULIPS.

SUTTONS' SUPERB EARLY TULIPS.

SUTTONS' SUPERB EARLY TULIPS.

100	EARLY TULIPS,	in	20	choice	varieties,	18*s.*	0*d.*
100	,,	,,	10	,,	,,	15	0
50	,,	,,	10	,,	,,	8	0
25	,,	,,	5	,,	,,	4	0
12	,,	,,	4	,,	,,	2	0

SUTTONS' COLLECTIONS OF CHOICE DOUBLE TULIPS.

100	DOUBLE TULIPS,	in	10	choice	sorts,	17*s.*	6*d.*
50	,,	,,	10	,,	,,	10	0
25	,,	,,	5	,,	,,	5	0
12	,,	,,	4	,,	,,	2	6

For further particulars of Flower Roots and complete Cultural Instructions, see

Suttons' Autumn Catalogue for 1871

Profusely Illustrated. Price 1*s.* Gratis to Customers.

SUTTONS' SELECT LIST OF BULBS

Is now ready, and may be had Gratis and Post Free on application.

SUTTON AND SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN, and H.R.H. THE PRINCE OF WALES,
READING.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—Notice is hereby given, that an ADDITION to the LIST of PENSIONERS will take place in JANUARY NEXT. All Persons desirous of becoming CANDIDATES are required to send their Applications and Testimonials to the Committee on or before SATURDAY, November 11. Preference will be given to those Applicants who have been Subscribers for 15 years. By Order,

EDWARD R. CUTLER, Secretary.

14, Tavistock Row, W.C., October 4.

N.B.—Printed Forms of Application may be obtained of the Secretary.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Professor REICHENBACH, of Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, OCTOBER 14, 1871.

THE season of the year is opportune for inviting the attention of planters to a few HARDY DECIDUOUS TREES and SHRUBS, which are either not well known, or not sufficiently appreciated.

First in our note-book stands Dimorphanthus mandchuricus, a fine Araliaceous tree, which may be compared to the Aralia canescens (so commonly known in gardens by the erroneous name of Aralia japonica), but is even hardier and handsomer. Its erect Palm-like habit and its noble foliage mark it out as a tree exactly suited to stand in some prominent position, where a dark background would throw out in bold relief its fine bipinnate leaves, which are fuller and better furnished than those of the Aralia just referred to, the leaflets being broadly ovate, and more closely set. In this plant the petiole is furnished with short spines, and the rachis with longer ones, which are needle-shaped. From the examples we have seen it appears to grow freely, and to pass through our winters entirely unscathed, as indeed its native habitat might suggest.

Of another style entirely, but a very beautiful tree, is YOUNG'S new Weeping Birch, a finely pendent variety of Betula alba, exceedingly graceful, the slender branches even in young trees falling downwards almost perpendicularly. There are few more attractive subjects amongst hardy trees than a freely grown Birch with pendent spray, and in this new weeping variety we have the pendulous character developed to the full. The tree, which is of course as hardy as its parent, the common Birch, was discovered in the neighbourhood of Milford, creeping on the ground, and when worked, produces long pendent branches, many of them not thicker than string, and several feet in length, so that they are amenable to the influences of the softest breeze, and altogether the appearance of the tree is most pleasing.

The Sophora japonica pendula, of which we gave a portrait at p. 1195, is another extremely graceful and effective tree, which ought to be met with in every pleasure ground, but is actually seen in but few. The compound leaves of this tree, which are of a full rich green, are also very handsome, and as pendulous as the spray itself. It is perfectly hardy.

In Rhus glabra laciniata we have a dwarfer subject, but one in which the foliage may challenge comparison, for beauty of form and composition, with that of any other deciduous plant in cultivation. It has large spreading leaves of a compound character, and which change to crimson in autumn. The remarkable subdivision of the leaf, together with its richly coloured red stalks, give it a peculiar charm, and few plants can, as low growers, compare with it for prominent isolated positions on the lawn. This, too, is perfectly hardy.

We go back to the pendulous group to introduce the Weeping Turkey Oak, Quercus Cerris pendula, which is a well-marked and distinctly pendent tree, producing stoutish drooping branches, which are clothed with the elegantly cut leaves characteristic of this species. It is less graceful and elegant than the Birch and Sophora already noted, and perhaps also slower of growth than these and some others would be, but where Oaks flourish it would be certain to give ultimate satisfaction, on the score of effective contrast with other trees of ornamental aspect.

Next we single out a rare and little-known tree, quite the opposite of pendulous in its habit of growth, and known as the Robinia (Pseud-Acacia) pyramidalis. Its close-growing erect branches render it as taper in figure as a Lombardy Poplar; moreover it is perfectly distinct from all other Acacias, and should be introduced, in suitable positions, into all collections of ornamental trees, the erect pyramidal character being thoroughly well developed.

In Robinia Bessoniana we have another remarkably fine tree, very little known, and but seldom planted, though it deserves a place wherever ornamental trees are prized. It is remarkable for its straight vigorous shoots, its large pinnate deep green leaves, and the almost total absence of spines upon its branches; in which latter respect, as well as in aspect, it differs essentially from the common Acacia. The spines, moreover, when occasionally produced, are very short and stout, instead of being long, awl-shaped, and abundant. It is in every way a commendable tree, from an ornamental point of view.

For colour we may include the novel Catalpa syringæfolia aurea, recently sent out from Tunbridge Wells. This is a truly golden leaved-tree, yellow throughout the season, with the hue of a golden-self Pelargonium, not the hue of decadence and death; so that if kept cut down annually it would make a good golden bed or group in any picturesque arrangement of plants in the flower-garden or pleasure ground. What it may do as it gains size we cannot say, as the plants are yet but young, but its colour is constant to the end of the season, so that a good-sized bush of it would most efficiently light up a recess on the lawn where the background was dark, dense, and gloomy. The plant is evidently as free growing as its type, and is said to be as hardy.

One more subject, and we close up for the present. It is the Pterostyrax hispidum of Japan, a Styracaceous plant, so called from its winged drupes. This stands out perfectly well at Tunbridge Wells, and forms a most distinct-looking shrub, of stout, somewhat erect, but well-furnished growth, bearing large ovate acute pale-green leaves, likely to be effective because of its distinctness in the furnishing of shrubbery borders.

On some early occasion we have a note or two to transcribe having reference to the varieties of the common Laurel.

GASWORKS and GARDENS are mutually antagonistic. Shut up a plant in a close room with gas fumes, and it will speedily be stripped of its leafy and floral embellishments, if it be not killed outright. Set up gasworks near a garden, and let them disgorge their clouds of carbon, and belch out their sulphurous fumes over the fair scene, and it either at once becomes a wilderness, or all healthy, prosperous vegetation is at an end. Under such conditions, the leaves of the unhappy plants become choked with a sooty deposit, and nipped by blighting chemical emanations. The culture of delicate flowers is rendered an impossibility, and half—ay, nine-tenths—of the pure fresh healthy enjoyment of a garden is cut off. This is felt as a crying evil, even by the man of position, who may be able by legal measures to procure relief from the tartarean nuisance; but the more humble gardener, who can only look for protection from the outcryings of public opinion, is in an infinitely worse position, inasmuch as the nuisance may not be sufficiently widely felt to procure relief by this means, until it has ruined either him or his garden

From the local papers we find that something of this sort has been going on at Lea Bridge—a spot which has become noted for allotment gardens, something like those of the Nottingham weavers—where many a man of comparatively humble position may be found spending his leisure hours in the profitable or refining occupations of cultivating his vegetable plot, tending his choice flowers, or dressing up his little greenhouse, anon resting himself and contemplating the results of his labours in the adjacent shady bower or summer-house.

One incensed inhabitant of the district writes in disgust of the "abominable amount of sulphurous vapour emitted from the Lea Bridge Gasworks," and finds that "volumes of dense black smoke roll from the gasworks over the gardens, the air becoming speedily charged with sulphur." Another person, who has been an occupier in these gardens for over 15 years, admitting the smoke and fumes to be bad enough, adds, "they poison our water too," by burying the refuse from the works, so that when pumped up it resembles the washings of a tar barrel. Another writes thus:—

> "It appears that this new company have quite determined to do just as they please. They make us pay what they like, they sell what sort of gas they like, and they send forth their sulphurous fumes whenever they like. A large gas-house has been erected close to our high road and adjoining the railway. Every one can to his horror witness the filthy fumes rolling out at all hours of the day and night, spreading destruction in their course and dismay around. In a very short time vegetation will wither and dry up, and the inhabitants be compelled to find their homes elsewhere. Then will the authorities of Walthamstow and Leyton see their neglect of duty, in allowing such an abomination to exist upon one of the finest high roads in the country. There is much talk about preserving the forest. Are not those who travel to the forest to be protected? Is not our noble high road to be preserved? Are not our homes and our enjoyment of pure air to be preserved? Are the passers-by and the inhabitants to be subject to this frightful nuisance to please an alien company, who have not the least interest in the locality, other than to make the Lea Bridge gas speculation pay a big dividend?"

The tenants of the Lea Bridge gardens, as we learn on good authority, are men in business in London, who occupy them for the sake of the healthful recreation they afford, and also for the intense gratification they experience in growing their pet flowers to perfection. In doing this, large sums, comparatively, are freely expended; and many of the tenants have greenhouses, on which great care is bestowed. They have built themselves commodious summer-houses, or in some cases unique cottages, containing two or three rooms. Seven years since they established a horticultural society, which has, by dint of great perseverance, reached such a point of success that last year it ventured upon a two days' show, and notwithstanding that both days brought a continued downpour of rain, which very much diminished the funds, it this year again stood its ground, and was rewarded with great success.

We are told that "the gas-house, so much complained of, was built in the latter part of last year, and was used for a few weeks only in the depth of winter. When complaints began to be made its use was discontinued, until last July, when it was re-opened with a far greater nuisance. Every two hours the sulphurous fumes are sent forth in abundance, and if the company completes, as it proposes to do, the number of retorts to 54, it will be quite unbearable. When the wind blows eastward from any point between north and south, the smoke and fumes are driven over the gardens, and smother them with dirt; and the tenants further complain that the fumes produce nausea and headache. They fully believe, and positively state, that since the opening of the retort-house their flowers have dried up prematurely, and their Roses have turned dry and brown in the bud."

One of the tenants, who has just erected a new greenhouse, finds that "in a day the glass becomes covered with blacks and grit like the fine dust of ashes and coke." All complain most bitterly that now, after spending so much money for their health and comfort, and the means of growing their flowers, their expenditure should be thrown away to put money into the pockets of a gas company, by whom they are overrun—that they are no longer to have the enjoyment they have been used to after the toils and fatigues of the day, and are to suffer in addition a heavy pecuniary loss, for they look forward with fear upon the ultimate effect of these works upon all garden products.

The spirit of recent legislation has been to drive all such companies into a "no man's land," away from buildings and gardens. The Chartered Company was not allowed to go to Victoria Park, nor the Imperial to Old Ford; and, doubtless, if the matter were carried before the judges, they would not suffer that the Lea Bridge Company should, without, as we are told, any Parliamentary powers, come and place itself as a public nuisance close to a railway, close to one of the noblest high roads in the country, and also within 30 yards of these Lea Bridge gardens. If such, indeed, were to be the case, and the asserted right to go where it pleases were established, it would come to this, that in the end no one engaged, either in horticulture, floriculture, or market gardening, would be safe from such a vexatious injury. That, surely, cannot be the law of the land.

—— WE have received from Mr. CHAMBERS of Beddington a very pretty novelty, in the shape of a greenhouse Fern, which may well bear the name of PTERIS SERRULATA FIMBRIATA. There are now several handsome tasseled varieties of this useful species, all more or less desirable decorative plants. The present appears to be of rather dwarf habit, and the pinnæ terminate in large multifidly-crested apices, the peculiarity of which is that they are split at the extremity into numerous very narrow but irregular divisions, which, from their tenuity and unequal length, give the crests the peculiar fringed appearance which has suggested the name. It will, no doubt, form a very pretty Fern for small cases, and for general decorative use.

—— Among the Pears in the magnificent collection shown at the great Fruit Show at South Kensington last week, by MM. BALTET, of Troyes, the following NEW PEARS are worthy of special notice. For the particulars given we are indebted to M. ERNEST BALTET:—

Beurré Baltet père.—A large fruit, of excellent quality; ripens in November. Raised and sent out by MM. Baltet.

Comte Lelieur.—A delicious fruit, ripening from September 1 to the beginning of October. Raised by MM. Baltet.

Beurré Ladé.—A fine fruit, in form like Bon Chrétien; flesh juicy, finely flavoured; ripens from October to December.

Auguste Mignard.—A large and fine Pear, ripening in November. The two last-mentioned Pears were raised by the eminent Belgian pomologist, M. Grégoire-Nelis, of Jodoigne.

Beurré Van Driessche.—Large and fine; fruit ripening in winter.

Calabasse Oberdieck.—A beautiful elongated Pear, with melting flesh of first-rate quality. It is named in compliment to the celebrated German pomologist.

Incomparable de Beauraing.—Raised by M. Grégoire. A large Pear, having the shape of Beurré Diel.

Souvenir de Leopold 1er.—One of the most remarkable Pears raised by M. Grégoire. This was the largest Pear exhibited on this occasion, and is of good quality.

Sucrée de Montluçon.—A large and fine Pear, very productive. A good variety for market purposes.

Fondante Thirriot.—A fine Pear, of French origin, of excellent quality, and produced on a very free-bearing tree.

It remains to be seen how many of these novelties are suitable to our climate and our soils. It is impossible in most cases to lay down any general rule in this matter, as the same Pear which in one garden is of first-rate quality, may yield but indifferent fruit in another neighbouring garden, placed under slightly different conditions. Of older Pears of long established merit we specially noticed in MM. BALTET'S collection fine examples of Beurré Clairgeau, Beurré Diel, Beurré Bachelier, Belle Angevine et de Livre (for culinary purposes), de Tongre, Duchesse d'Angoulême, Duchesse Panachée, Doyenné du Comice, Passe Crassane, an excellent winter Pear; Triomphe de Jodoigne, Van Marum, or Calebasse Monstre. Among the Pears were also some singular anomalies, in which apple-shaped fruits had been produced on the same branch with elongate fruit of the ordinary form; a sample of Beurré de Capiaumont was very noticeable in this respect. Among Apples MM. BALTET speak highly of a variety known as Transparente de Croncels, a fine fruit, produced on a free-growing and very productive tree. This variety was raised by MM. BALTET. We may also notice the beautiful manner in which the fruit were selected and named, and the air of "finish" manifested by the French Pears—an appearance probably due to more intense solar light, or heat, or both. When next a fruit show of this magnitude is held, we trust means may be taken to classify the varieties more fully than was done on this occasion. It may sound like heresy to suggest that a long flat table covered with green baize, and laden with hundreds of white plates, is not the most ornamental arrangement that could be adopted, and is a trifle monotonous to the paying public. We believe, did time permit, that a much more effective arrangement could be produced with comparatively little trouble and expense, and one which would allow of the classification, comparison, and exhibition of the several kinds better than the present delightfully simple, but most unintelligent and inartistic system, if we can dignify it by such a name.

—— We have been requested to state, in reference to the EYLES TESTIMONIAL, that the subscription list will be closed very shortly, so that those who desire to join in this expression of esteem and regard, should communicate at once with the treasurer, Mr. JOHN FRASER; or the secretary, Mr. THOMAS MOORE. We are informed that the amount now in hand is about £95, contributed by 96 subscribers.

—— The article on HYBRIDITY in WILLOWS, from the pen of the Rev. J. E. LEEFE, which appeared in the August number of the "Journal of Botany," and of which we reproduced a portion at p. 1032, has called forth some remarks from Dr. MOORE, of Glasnevin, who, in a letter to the author, which appears in this month's issue of the same publication, states that his experience coincides with that of Sir JAMES SMITH, as stated in the quotation from "The English Flora." Dr. MOORE, it appears, has also sent Mr. LEEFE some undoubted seedlings, of one and two years old, of S. phylicifolia = S. tricolor, and also one gathered near to a plant of S. triandra. Mr. LEEFE states that he has "not heard anything of seedlings from any other quarter, and has seen none in his own garden this year. It thus appears that Willows do undoubtedly spring readily from seed in the Glasnevin Botanic Garden, where the climate appears favourable to their production; and a good opportunity is presented of ascertaining whether, as stated by Sir J. E. SMITH, the seedlings thus springing up are true to their kind." On the same subject, Professor THISELTON DYER writes:—

> "I was surprised to come upon a passage in LINNÆUS'S 'Amœnitates Academicæ' (vol. i. p. 100), which speaks of the seminal fertility of Willows and Poplars as a thing to be guarded against. 'Ambulacra ex Populo vel Salice formare cupiens, solos mares assumat; si enim feminæ terræ mandentur, multiplicantur, ita ut nemus loco ambulacri forment.' The advice, however, might merely be an assumption deduced from the trees being monœcious. It may, perhaps, be a piece of evidence on the other side that DE CANDOLLE ('Physiologie Végétale,' ii. 724) remarks, 'Nous possédons depuis peu les deux sexes du Saule pleureur (voyez SPENNER, Fl. Frib. iii. p. 1061), mais ils n'ont pas encore produit de graines.' However, that Willows are hybridisable is proved by the existence of a book, by MAX WICHURA, entirely devoted to the experimental investigation of the subject ('Die Bastardbefruchtung . . . der Weiden,' 1865). Mr. DARWIN, quoting from it, remarks in the 'Origin of Species' (4th ed. p. 315), 'It is known that hybrids raised from very distinct species are sometimes weak and dwarfed, and perish at an early age, of which MAX WICHURA has recently given some striking cases with hybrid Willows.' And in his 'Animals and Plants under Domestication' (vol. ii. 267), he mentions that 'MAX WICHURA united six distinct species of Willows into a single hybrid' (by successive crosses)."

The Hon. J. L. WARREN, moreover, announces having seen, about a month ago, in one of the flower beds which occupy the site of the old reservoir near Grosvenor Gate, Hyde Park, a single seedling plant of Salix caprea, which was then about a foot high.

—— As a proof of the growing taste for FLOWERS and FLORAL DECORATIONS, we may mention that M. REVIÈRE'S benefit concert to-night at Covent Garden Theatre is to be made a Floral Festival, and the whole theatre is to be transformed into a luxuriant and beautiful garden—so says the programme. The decorations have been intrusted to Mr. WILLS, of Brompton, who has also, we are informed, to supply 1000 ladies' bouquets, and 3000 gentlemen's button-hole bouquets for presentation to the visitors—one of the largest orders for bouquets, we suppose, that was ever given.

—— The MAXIMUM TEMPERATURES of the AIR during the week ending October 7 ranged from 64°.8 at Blackheath to 51° at Greenock, with a mean for all English stations of 59°.6, and for all Scottish of 53°.9. The MINIMUM TEMPERATURES ranged from 41°.5 at Blackheath to 31° at Perth, the mean for England being 39°, and for Scotland 33°.8. The MEAN TEMPERATURES ranged from 52°.3 at Portsmouth to 44°.2 at Edinburgh. The mean temperature for England was 49°.2, and for Scotland 45°.4. Rain was again recorded as having fallen at all stations, this week the mean rainfall for Scotland (1.32 inch) being slightly in excess of that for England (1.12 inch). The greatest falls in England occurred at Liverpool (2.21 inches), Eccles (2.04 inches), and Manchester (2.23 inches); and in Scotland, 2.09 inches at Aberdeen, and 2.15 inches at Greenock. (See Mr. GLAISHER'S Tables, p. 1330).

—— One of the finest subjects we have seen for the subtropical garden is the PAULOWNIA IMPERIALIS, cut down annually. If protected with mulching in winter the crown and roots remain safe, and in the spring, if the soil be good, it will throw up a shoot of such a robust character as would quite astonish those who have not seen it thus treated. To secure this giant growth a single shoot only should be permitted to grow. We saw it thus treated by Mr. SAGE, at Ashridge Park, during the past summer, and bearing leaves of fabulous proportions, with an aspect quite exotic. Where bold subjects can be introduced, this may be confidently recommended.

—— Dr. F. ARNOUX, of Montpellier, has published a pamphlet of some interest upon the toxicological properties of ANAGYRIS FŒTIDA. The poisoning of two soldiers in 1860 under circumstances which showed the seeds of Anagyris to have been the probable cause, directed the author's attention to the subject. Many quotations from ancient authors, classical and medical, are given, all indicating that the deleterious properties of the plant were known at a very early period, though they are not referred to in modern medical works. A series of experiments (30 in number) were instituted by the author, from which he concludes that the leaves and seeds, with their extracts, are poisonous, and probably all other parts of the plant, and that animals are killed by their action in a very short time. The first effect which is observed is violent sickness, after which respiration becomes impeded, and at length arrested altogether. Dr. ARNOUX suggests that the active principle of the Anagyris will probably be isolated, and, if alkaloid, should be called Anagyrine.

—— One of the most singular and interesting of plants is the DROSERA BINATA of Australia, frequently met with in gardens under the name of Drosera dichotoma, and having, as the names indicate, the lamina of its leaves divided into a pair of long linear lobes, which are often again once or twice forked. As in other species of the genus these leaves are elegantly fringed by red gland-tipped cilia. We noticed the other day a magnificent specimen of this plant in the nursery of Mr. CRIPPS, of Tunbridge Wells; it was in robust health, throwing up its curious leaves freely, and forming a well-furnished mass of some 2 feet across, and about 1½ foot in height. It was cultivated in an intermediate house.

—— It will be of some interest to our correspondents to know that the NEW POSTAL TARIFF is now in operation. The half-ounce weight disappears, and the halfpenny stamp comes into use for letters above an ounce in weight. The lowest letter postage will still be a penny; but the penny stamp will cover all letters not exceeding an ounce; while only an additional halfpenny stamp will be required for every additional half-ounce in weight. At these rates anything may be sent as a closed letter, up to 12 oz. Our correspondents should also remember that the vexatious sample post is now abolished.

—— The Corporation of the borough of Leeds has lately purchased the Roundhay Park estate, which is situated about 2 miles from that town, for a PUBLIC PARK. Altogether, the estate covers 1400 acres, the mansion, park, and lake comprising 600 acres; the price paid was £107,000. Another lot, which will bring the entrance to the park half-a-mile nearer the town, was also bought by the Corporation for £32,000.

—— M. EDWARD PYNAERT, of Ghent, has just introduced some ADHESIVE TICKETS for MARKING FRUIT, which will be found extremely useful in the case of fruit exhibitions. The tickets, of which an example of the natural size is subjoined, are ⅞ of an inch broad by ⅝ in depth; just large enough to contain a number, the name in legible letters, and a note of the ripening season. Here is a sample:—

No. 69. **NOUVEAU** **POITEAU.** *Oct. Nov.*	**No. 70.** **DOYENNÉ** **DU COMICE.** *Oct. Nov.*

Two sheets, each containing the names of 50 sorts of Pears, are now ready, and these are to be succeeded by others, including Apples, and perhaps other kinds of fruit, as soon as the demand is sufficient. For those varieties which are already well known and commonly met with, and which necessarily enter into every collection, special sheets have been drawn up, composed of 50 tickets of one variety. These tickets are gummed and perforated like postage-stamps, so that they may be used with facility, and they are recommended especially to exhibitors of fruit for the sake of securing correct nomenclature, for, says M. PYNAERT, "we are all rather disposed to be gastronomists, and we like quite as much to know the real name of a fruit we are tasting, as to know the name of the place from which a wine of a good vintage comes." Those who intend to adopt this system of ticketing are recommended to use the same set of numbers for their trees, which will be found a great convenience. "The general use of our tickets," adds M. PYNAERT, "not only in pomological exhibitions, but in every fruiterer's window, and at every table, will in a little time spread the taste for, and the knowledge of, the best varieties, and will be a powerful aid in diffusing those sorts that are most to be recommended, and consequently in developing the cultivation of fruit trees in general. This the jury at the recent exhibitions of pomology at Louvain and at Tournay perfectly understood, and wished to make publicly known by granting us a silver medal."

—— In reference to the ORCHARD HOUSE at SCONE PALACE, it should have been mentioned that the photograph from which our illustration (fig. 288, p. 1293) was prepared, was taken in 1869, when the crop was somewhat light. Both previous to and since that date, the Peach crops in these houses have been so plenteous as to be "nothing accounted of," like the gold in Jerusalem in the days of King Solomon.

PORTRAITS OF GARDEN PLANTS.

AGERATUM LASSEAUXII, *Rev. Hort.* 1870, 90, with tab.

A much-branched half-hardy composite plant, requiring greenhouse protection in winter, and suitable for planting out in summer. It is furnished with lanceolate-elliptic leaves, and bears small capitules of rose-coloured flowers, disposed in corymbose heads. It was introduced to the French gardens from Monte Video.

ANTHURIUM ORNATUM, *Bot. Mag.* t. 5848.

This handsome tropical Orontiaceous plant, has smooth green ovate or oblong-cordate leaves on slender terete petioles. The linear-oblong white spathes are 5—6 inches long, on terete green scapes, and enclose cylindrical purplish spadices of about the same length as the spathes, and studded with white points arranged spirally. It is an exceedingly ornamental subject, well worthy of general cultivation in collections of stove plants. It has been exhibited by W. Wilson Saunders, Esq., by whom it was introduced from Venezuela.

CALOCHORTUS LEICHTLINII, *Bot. Mag.* t. 5862.

A dwarf herbaceous Liliaceous plant, with ovoid bulbs, narrow glaucous green incurved leaves, and slender scapes, 4—7 inches high, supporting large white flowers, 2½ inches across, whose petals have a single purple blotch above the nectary. It appears to have been introduced from California by M. Leichtlin, after whom it has been named.

CATTLEYA ELDORADO SPLENDENS, *L'Illust. Hort.* ser. 3, t. 7.

One of the most lovely of all the Cattleyas, belonging to the type of C. quadricolor. It has narrow, compressed one-leaved pseudobulbs, and peduncles bearing about two flowers, which in this variety are very large, of a delicate rose, the lip somewhat quadrate at the mouth, and bilobed, deep orange in the throat, surrounded by a zone of white, and of a rich reddish violet at the tip, this deeper colour extending somewhat along the margin, which is ciliately smoothed. M. Linden has imported it from the Rio Negro.

CATTLEYA SUPERBA SPLENDENS, *L'Illust. Hort.* t. 605.

A very beautiful Orchidaceous epiphyte, of dwarfish habit, with fusiform furrowed pseudobulbs, supporting a pair of short ovate-oblong obtuse leaves, and a peduncle bearing two large showy deliciously scented flowers, of a bright rose; the lip with a roundish oblong terminal lobe, deep violet at the tip, the base white, with four or five elevated golden-yellow lines on the disc, and veined with rosy purple. It comes from the Rio Negro, and we have to thank M. Linden for its introduction.

EPIDENDRUM SERIATUM, *Refug. Bot.* t. 90.

A pretty little stove epiphyte, with pyriform pseudobulbs, narrow linear-lanceolate grass-like leaves, and a slender panicle of olive-green brown-spotted flowers, of which the lip is whitish, with violet spots. It is a native of Guatemala.

HELICONIA GLAUCA, *Rev. Hort.* 1869, 112, with tab.

A fine stove herb, of the Musaceous order, with stems a yard high, having lanceolate tern-green leaves, and supporting a terminal inflorescence, the rachis and pedicels of which are coral-red, the spathes yellowish and the flowers green. It has found its way into the French gardens from South America.

POLYCYCNIS LEPIDA, *L'Illust. Hort.* ser. 3, t. 19.

An elegant stove Orchidaceous epiphyte, with ovate pseudobulbs, broad plaited leaves, and long drooping racemes, the velvety-purple rachis bearing curiously shaped flowers, the narrow sepals and petals of which are of a pale brown or dun colour, while the lip, which has two basal auricles, is cream-coloured, both being dotted with purple. Introduced from New Grenada by M. Linden.

RHODODENDRON LOBBII, *Veitch, Cat.* 1870, 22, with fig.

A brilliant-flowered stove shrub of moderate size, having its oblong elliptic leaves in whorls, and its bright glossy crimson flowers, with a long narrow curved tube, and small spreading limb, in terminal trusses. It was introduced from Borneo by Messrs. Veitch & Sons.

SCUTELLARIA ALBO-ROSEA, *L'Illust. Hort.* t. 584.

A stove shrub, of distinct character, with a tetragonal stem, cordate ovate or oblong undulated leaves, and lengthened terminal racemes of lilac flowers, paler towards the base of the long tube. It is found in woods of the Upper Amazon, and was introduced to Europe by M. Verschaffelt.

TETRANTHERA LHUYSII, *Rev. Hort.* 1869, 368, fig. 78.

A vigorous-growing and very elegantly variegated tree, furnished with entire oblong slightly undulated soft crowded leaves, 6 to 8 inches long, which are glaucous beneath, and above have a broad yellowish-white margin, the rest of the limb being flamed with greenish-yellow, and marked here and there with blotches of deep green. The stalks of the leaves are of a more or less intense red, and the bark is smooth and green. It belongs to the Laurel family, and has been introduced to the French gardens from Japan.

BOX EMBROIDERED PARTERRES.

THE term parterre, I need scarcely say, is borrowed from the French, who have long employed it to designate figures formed on the ground by means of turf, Box, and coloured gravels, with occasional relief in the way of floral tints. In such parterres, therefore, both flowers and shrubs are altogether secondary objects, the main features being the gravel and turf, and the curious scrollwork of Box. Notwithstanding the interest which must always be associated with parterres of this description, when properly placed, they were falling somewhat into disuse until within these last 20 years or so, during which period they have been revived by Mr. Nesfield, who partly employed that style of ornamentation in the decoration of the gardens of the Royal Horticultural Society at South Kensington, as well as in many gardens attached to private establishments in different parts of the country.

Of pieces of scrollwork of this kind one of the most pleasing with which I am acquainted is that represented in the accompanying illustration. It is laid down at Castle Ashby, on one side of the mansion, a glowing flower garden in the way of colour occupying the other. Both suit equally well the places appointed for them, that which is gayest being visible from the drawing-room, while the dining-room or library windows look out upon the comparatively subdued tracery work represented by our woodcut (fig. 295).

Two more opposite compartments, as regards effect, could not possibly be than those to which I have just alluded; but the mansion coming in between them, so dissociates them, that each stands on its own merit, complete it itself, thus creating a charming variety suitable to different tastes. Those who find the one too gay will hardly have to complain of that fault in the other, though as much floral beauty as has been considered admissible in such a garden has been infused into it. The initial monograms and heraldry belonging to the Northampton family, sketched in colour on the grass, cannot fail to excite interest, which is sure to be eminently sustained by the bordering, consisting as it does of the Rose, Shamrock and Thistle, also laid down on grass with a freedom and fitness well calculated to elicit admiration. The design for this garden is said to have been furnished by the late Marquis of Northampton himself, a nobleman who was celebrated for artistic taste of a very high order.

its embroidered gardens of long standing. The point is to avoid extremes—neither to have the one too dull, nor the other too gaudy. In both these respects the Box-embroidered parterre at Castle Ashby recommends itself to notice as a model well deserving attentive consideration.

As regards what may be termed colour gardening, though decried by some, I do not see how, in large and fine places, it can well be dispensed with. Does the herbaceous ground at Kew, replete with botanical variety though it be, have admirers equal in number to those which crowd round the beds of gay half-hardy plants that fringe the principal walks? I say no. I would, therefore, encourage our now fashionable, brilliant colour-gardens; but, where there is room, I would have Box-embroidered parterres as well; ay, and in suitable situations, too, our old-fashioned mixed borders. The latter, however, must be beyond the limits of the terrace garden, which ought to be separated from the scenery by which it is surrounded by some line of demarcation, such as a low architectural wall, with balustrade, and piers, and vases, a dwarf evergreen hedge, a canal, a ridge of irregular rock or root-work, a sunk fence faced either with turf or stone, or a raised grass or gravel walk. In certain localities, however, the boundary must not be of too stiff or formal a character. I remember drawing up my bed-room blind one fine summer's morning in the neighbourhood of the Malvern Hills, when behold! an extensive flower-garden decked out in Flora's brightest colours was stretched out before me. For a while I was lost in admiration of its sparkling beauty—its fine specimens of shrubs and ornamental trees, and its magnificent architectural basins and fountains; but, when I began to criticise more minutely, it soon became painfully apparent that its boundary wall, costly though it must have been, was too stiff by far to associate agreeably with the adjoining park scenery. In forming new flower-gardens, therefore, in hilly districts, where the scenery is somewhat undulating and wild, the most skilful consideration must be bestowed as to the kind of boundary by which they are to be surrounded. Some cheap sunk fence, crowned here and there with masses of rock or root-work, among which grow Rhododendrons, Foxgloves, and other showy flowering plants and shrubs, often answers very much better than more expensive architectural erections.

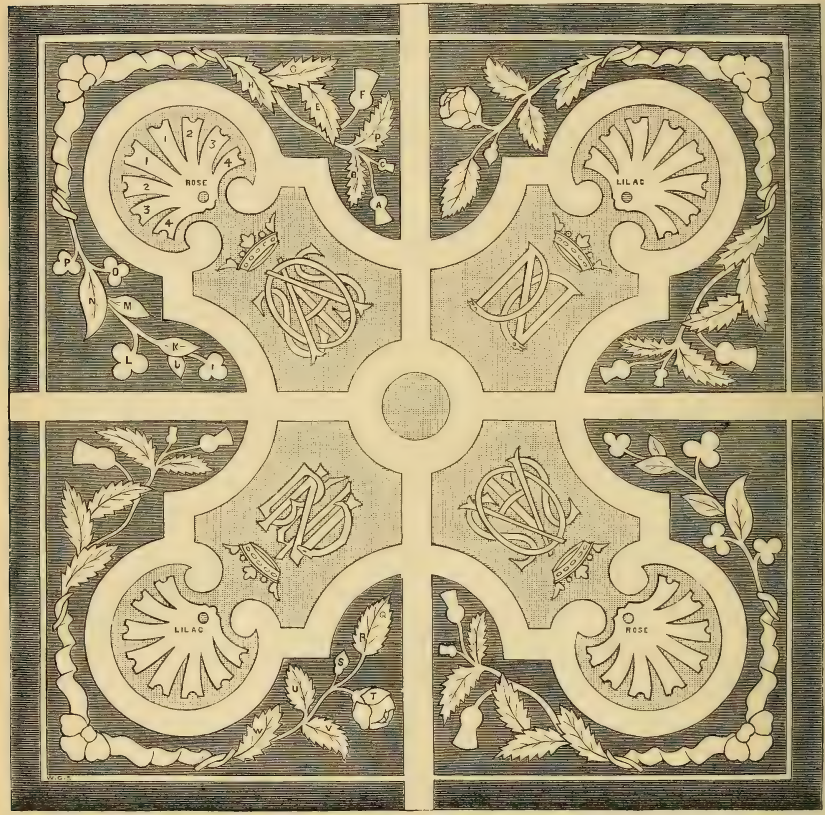


FIG. 295.—BOX EMBROIDERED PARTERRE AT CASTLE ASHBY.

Monogram Letters.—N, N, A, A, Pelargonium Spread Eagle; S, S, S, S, Lobelia Blue King; C, O, T, E, Lobelia seedling, much darker than Speciosa; O, O, D, D, H, Verbena Purple King; I, I, Verbena Russelliana, a bluish grey.

Coronets.—Verbena White Perfection.

Coloured Figures on the shading principle).—Rose shade: 1, Verbena Brillant de Vaise; 2, ditto, Lord Raglan; 3, ditto, rose-coloured seedling; 4, ditto, Diadem. Lilac and purple shade: 1, Verbena Purple King; 2, ditto, Celestial Blue; 3, ditto, Russelliana; 4, ditto, Amulet.

Rose, Shamrock and Thistle.—A, top part, Lobelia Blue King—lower part, ditto, Speciosa; B, Pelargonium Waltham Seedling; C, selected yellow French Marigold, very dwarf; D, Pelargonium Manglesii; E, ditto, Lord Palmerston; F, Calceolaria, top green, lower part Prince of Wales; G, ditto, Prince of Orange; H, Verbena Russelliana. The other figures are all planted in a similar manner. At each of the four corners of the parterre, which is 110 feet square, stands a pyramidal Portugal Laurel, 9 feet high. The white line outside the Rose, Shamrock and Thistle, is a belt of Box 1 foot thick and 1½ foot high; between the Box and the turf is a border of white spar, 4 inches wide, which shows up the pattern very beautifully.

Centuries ago, when garden decoration had not reached the pitch which it has acquired in our day, the mansions of even the most wealthy were associated with but little floral beauty. Parks as magnificent as we have now, surrounded them, and they could boast of massive entrance gates, and often noble approaches; but their clipped Yews and similar quaint arborescent devices scarcely made up for the want of brilliancy such as we have now-a-days. That fine Elizabethan building, Holland House, is none the less interesting because of its bright floral surroundings, nor is Wentworth Castle, in Yorkshire, less attractive because of

Flower gardens or parterres generally associate best with buildings; but there are exceptional cases in which they may be placed advantageously elsewhere. At Saltburn-by-the-Sea, for instance, just beyond Redcar, in the Cleveland district of Yorkshire, I once laid down what was considered by many to be a very pretty parterre in a natural glen, with a high turf bank on one side, and irregular wood plantations on the other. It was not, strictly speaking, a Box-embroidered garden, although a great deal of Box was employed in it in the formation of chain borders; and when the latter were in full dress, and looked down upon from the neighbouring heights, the effect was all that could be desired. Box-embroidered terrace gardens, somewhat amply relieved by colour, may also be formed advantageously on the side of a valley where the slope is not too abrupt. Let the form be a parallelogram made perfectly level, and as long and wide as required. Owing to the sloping character of the ground the back cutting will be the deepest; let this be faced with stone, raised sufficiently high to form a curb to the next terrace, which should be a grass promenade overlooking the garden, in front of which should also be a dwarf wall, which together with the back should be capped and ornamented, at certain distances apart, with vases. Grass neatly mown should then slope away down to the bottom of the valley, in which should sleep a lake with a waterfall at the lower end and a little rivulet at the upper; the opposite bank may be wooded, faced with Rhododendrons, and traversed by walks. Flights of steps may lead on and off the terrace garden, and the back wall should be clothed with choice half hardy climbers or other wall plants, to which protection may be applied in winter. Where a flower garden must of necessity be made at a distance from the mansion, this is by no means a bad arrangement. There are, however, few places in which expedients, such as have just been recorded, have to be resorted to. *Joseph Newton, Oxford Terrace, Hyde Park.*

A NEW SYNOPSIS OF ALL THE KNOWN LILIES.—VIII.

Subgenus 2. LILIUM PROPER.—Bulbs squamose; stigma a thick head to the style, with three blunt lobes—(*Continued*).

Group 4: MARTAGON (Turk's-cap Lilies).—Perianth broadly bell-shaped, always drooping, its divisions lanceolate, broadest about the middle, not distinctly clawed, reflexed (usually from half or two-thirds of the way down) when fully expanded. Stamens diverging much on all sides from the central axis of the flower—(*Continued*).

Key to the Species.

Leaves verticillate. (Three species described in my last paper, p. 1164).	
Leaves scattered.	
Leaves linear-lanceolate, reaching half an inch or more broad, 5—7 nerved.	
Perianth 2½—3 inches deep, reflexed only from above the middle.	22. L. MONADELPHUM.
Perianth 15—24 lines deep, reflexed from below the middle.	
Leaves thick in texture, distinctly ciliated, with very distinct main veins.	
Flowers 1½—2 inches deep, with divisions 5—6 lines broad.	23. L. CARNIOLICUM.
Flowers 1¼—1½ inch deep, with divisions 3—4 lines broad.	24. L. PONTICUM.
Leaves thin, not ciliated, the main veins fine and indistinct.	25. L. POLYPHYLLUM.
Leaves linear, ⅛—¼ inch broad, 3—5 nerved.	
Perianth 1½—2 inches deep, with divisions ⅛—¼ inch broad.	
Leaves close, 50—80 to a stem.	
Perianth bright red, not dotted.	26. L. CHALCEDONICUM.
Perianth bright yellow, dotted.	27. L. PYRENAICUM.
Leaves lax, about 30 to a stem.	28. L. CALLOSUM.
Perianth 2½—3 inches deep, with divisions ¾—1 inch broad.	
Leaves 60—100, perianth dull nankeen-yellow.	29. L. TESTACEUM.
Leaves 20—30, perianth bright yellow or scarlet.	30. L. LEICHTLINII.
Leaves narrow-linear, a line or an eighth of an inch broad, 1-nerved.	
Stem 1½—3 feet high, with 80—100 leaves.	31. L. POMPONIUM.
Stem 2 feet or less high, with 30—50 leaves.	32. L. TENUIFOLIUM.

22. *L. monadelphum*, M. Bieb. Fl. Taur. Cauc., vol. i., p. 267; Cent. Pl. Ross., t. 4; Gawl. Bot. Mag., t. 1405; Kunth, Enum. iv. 260; Spae, Mon., p. 43; Fisch. et Lall. Ind. Sem. Petrop. vi., p. 57; *L. Loddigesianum*, Schultes fil., Syst. Veg. vii. 416; Kunth, Enum. iv. 261; Spae, Mon., p. 43.—Stem stout, erect, 3—5 feet high, glabrous or obscurely downy. Leaves always scattered, 30—50 to a stem, much ascending, linear-lanceolate, the lower ones 3—4 inches long, 6—12 lines broad at the middle, narrowed gradually to the base and an acute point, firm and stout in texture, bright green and glabrous above, distinctly ciliated at the edge, and pubescent all over, especially on the veins beneath, furnished with three veins on each side of the midrib, which are distinctly visible from the base to the apex, the upper leaves growing gradually shorter, and leaving a blank space of 2—3 inches below the inflorescence. Flowers 1—3 in the wild specimens I have seen, but said to reach up to more than 20 in cultivation. Pedicels cernuous, 1½—2 inches long, subtended usually by a pair of lanceolate bracts. Perianth 2½—3½ inches deep, pale bright yellow, tinged round the base with claret-red, the divisions permanently valvate in a funnel-shaped tube in the lower half, spotted down the face up to the top, with a few minute red-brown dots, the divisions only falcate in the outer third in the expanded flower, oblanceolate, bluntish, 6—9 lines broad, narrowed gradually from three-quarters of the way up to the base, glabrous down the groove. Ovary 7—8 lines long; style 16—18 lines, not so much curved as usually in the Martagons; filaments bright yellow, connate towards the base; anthers linear-oblong, 5—6 lines long; pollen yellow. Capsule 18—21 lines long, acutely angled.

Var. *Szovitsianum*: *L. Szovitsianum*, Fisch. et Lall. Ind. Sem. Petr. v. 58; Kunth, Enum. iv. 674; Spae, Mon., p. 42; Flore des Serres, t. 507-9; *L. colchicum*, Stev. Fisch. MSS.—Filaments free to the base. Perianth reflexed from rather lower down, with segments broadest a little above the middle. Pollen said by Fischer and Lallemant to be deeper in colour, and capsule more bluntly angled.

A native of the Georgian slopes of the Caucasus and adjacent regions of Asia Minor. A very fine and very distinct species, connecting the Eulirions with the Martagons, and differing conspicuously from all the other Old World species of the group in the shape of the perianth and the extent to which it is reflexed, in which respect it comes nearest to the typical form of canadense. Like many other Lilies, it has been rather overloaded with names. I cannot see that the plant figured in the "Botanical Magazine" differs in any respect from that of Bieberstein, except that one is taken from a cultivated and the other from a wild specimen, although Schultes founded a new species upon Gawler's plate, which Kunth and Spae have adopted. What is passing about in our gardens and trade lists at the present time as "Szovitsianum" and "colchicum" is, I think, just the same plant, which appears to be no more than a slight variety of monadelphum. Of the two names, "Szovitsianum" is the one which, according to botanical rule, should be adopted.

23. *L. carniolicum*, Bernh. in Mert. et Koch, Deut. Flora, ii. 536; Kunth, Enum. iv. 260; Spae, Mon., p. 33; Reich. Ic. Fl. Germ., t. 990; Parl. Fl. Ital. ii. 404; *L. chalcedonicum*, Linn. Sp. Plant., p. 434, ex parte; Jacq. Fl. Aust. Suppl., t. 20.—Bulb ovoid, with lanceolate scales an inch deep. Stem 2—3 feet high, stout, erect glabrous. Leaves 30—40, always scattered, much ascending, linear-lanceolate, firm and stout in texture, the lower ones 2—3 inches long, 6—9 lines broad at the middle, quite flat, narrowed gradually to the base and an acute point, the lowermost bluntish, the edge minutely ciliated, the lower surface furnished with 3—4 ciliated veins, which are quite distinct from the base to the apex, the upper leaves shorter, lanceolate, generally leaving a vacant space below the inflorescence. Flowers 1—4 in the wild plant, drooping. Peduncles 2—3 inches long, sometimes bracteolate. Perianth 1½—2 inches deep, bright orange-yellow passing sometimes into scarlet, the divisions oblanceolate, 5—6 lines broad two-thirds of the way up, pubescent at the top, slightly spathulate in the lower half, reflexed from below half way down in the expanded flower, with many red-brown dots, some of which in the lower part are raised into papillæ; style and ovary each about half an inch long, filaments 8—11 lines; anthers 5—6 lines; pollen fulvous.

A native of Lombardy, Austria, and Turkey, easily distinguishable from chalcedonicum, with which Linnæus and many later authors have confused it, by its much fewer, broader, laxer, distinctly many-nerved leaves. It is a handsome plant, which our English cultivators seem to have passed entirely over, and which has never been figured, although it well deserves it, in any of the gardening journals.

24. *L. ponticum*, C. Koch in Linnæa, xxii. 234; Boiss. in Balan. Plant. Orient. 1866, No. 1531.—Bulb an inch thick, with numerous fleshy lanceolate scales, nearly an inch long. Stems 1½—2 feet high, slender, faintly pubescent. Leaves 25—30, firm in texture, much ascending, lanceolate, all scattered, the lower ones 15—16 lines long, 4—5 lines broad at the middle, narrowed gradually to an acute point, rather rounded at the base, thickly pubescent and furnished with several distinct veins on each side of the midrib beneath, the upper ones shorter and narrower, ceasing a space below the inflorescence. Flowers solitary in the three specimens I have seen, but said by Professor Koch to reach up to six, cernuous, 15—18 lines deep, much reflexed from below the middle when expanded, yellow, the divisions 3—4 lines broad a little above the middle, narrowed gradually to the base; ovary and style each about half an inch long; filaments 8—10 lines, anthers 3—4 lines.

A native of Asia Minor, gathered by Prof. Karl Koch, and lately by Balansa, in the mountainous region of Lazistan. Whether it be more than a variety of carniolicum, I very much doubt, but it is not known in cultivation, and I have only seen three dried specimens of Balansa's plant named and distributed by Boissier. If distinct the characters to separate it from chalcedonicum must be found in the shorter leaves, and the shorter and much narrower divisions of the perianth, which look like those of polyphyllum.

There is also, belonging to the present group, a very little known Albanian Lily, *L. albanicum*, Griseb. Fl. Rumel, ii. 385, of which I have seen no specimens, but which, judging from the description, comes very near to this in the flower, but is said to have leaves that reach 2 inches long, and are glabrous on both sides but scabrous at the edge. Two specimens only of this were gathered by Grisebach on Mount Scardus, in Albania, at a height of 7000 feet, and it is said to have occurred also in Transylvania.

25. *L. polyphyllum*, D. Don, in Royle Ill. Him. p. 388; Kunth, Enum. iv. 677; Spae, Mon. p. 39; Klotzsch, Reise Wald. p. 53.—Stem 2—3 feet high, moderately stout, glabrous, terete. Leaves all scattered, 30—40 to a stem at the flowering time, much ascending, linear-lanceolate, the lower ones 4—5 inches long, 6—8 lines broad above the middle, narrowed gradually to the base and an acute point, similar to those of Martagon, and much thinner than those of carniolicum in texture, the veins fine and anastomosing, both sides glabrous, the edge not at all scabrous or ciliated, the upper ones ceasing several inches below the inflorescence. Flowers 4—6 in wild specimens, in a lax raceme. Peduncles 2—4 inches long, ascending, stiff or flexuose, subtended by a pair of large leafy bracts. Perianth 18—21 lines deep (colour not known), reflexed from below the middle when expanded, drooping as in the other Martagons, the oblanceolate divisions not more than 2—3 lines broad at the middle, pubescent at the tip, narrowed very gradually to the base. Ovary 5—6 lines deep; style 9—10 lines, much curved; filaments 15—18 lines; anthers ⅜ inch; capsule 12—15 lines deep, rather acutely angled, with a distinct neck.

A native of the North-western Himalayas (Cashmere and Kunawar), at an elevation of from 6000 to 8000 feet, gathered by Royle, Jacquemont, and Thomson. It has never been cultivated, and I do not know even the colour of the flowers. It comes very near the form of Martagon with scattered leaves, but the segments of the perianth are much narrower, and have more of a claw than in any other species of the Martagon group. From the three preceding, the different texture of the leaves and faint anastomosing venation readily separates it. *J. G. Baker.*

THE AMATEUR GARDENER.

Caterpillars.—A few days ago we heard in our garden the exclamation, "What splendid skeleton leaves!" and, on turning round, we found a lady admiring a bed of Brussels Sprouts, denuded of all its verdure, except its stalks and main leaf-ribs. We confess that our fair friend's taste was anything but gratifying to us, and we muttered something to the effect that it appeared to be true that "what was one man's meat is another man's poison." There was certainly a little of the æsthetic about the gaunt remains of what had a month before been the pride of our kitchen garden, but no amount of beauty in the ribs of the leaves of Brussels Sprouts could make up to us for the loss of the delicate and savoury heads we were looking for to accompany our roast beef, &c., in the winter months. And the same remarks would be equally appropriate to the other Brassica tribes at this season; Cabbages, Sprouting Broccolis, Couve Tronchuda, &c., have all had to undergo the sentimental but unprofitable lot of being turned into collections of "skeleton leaves" for botanical ladies to admire. And this sad fate of "winter greens" appears to be a universal one in England, as far as our knowledge extends, for at a large dinner-table a fortnight back we heard a dire lamentation set up on the subject by two bishops, and a host of aristocrats, clerical and lay.

"Some comfort," was one remark *sotto voce*, "that all your wealth and abundant horticultural appliances cannot avert from you the unhappy lot of a country vicar;" and so the conversation went on in a way which clearly showed that episcopal cares extended even to Cabbages. And our talk upon the point settled down at last into expressions of wonder that science had not taken caterpillars under its patronage, and devised methods for the avoidance of this almost oriental pest. But after all, when our experiences were duly collated, we felt we had no one to blame but ourselves, for we made the ingenuous confession that we believed neither of us had ever studied the subject! To compare great things with small, this acknowledgment is about as injurious to our common sense as it would be if, having occasional inroads of barbarians in our island, we yet neglected to study their native habitats, their powers, their objects, and the best methods of repelling them.

However, carelessness in the matter of the safety of our winter crops of "greens," had not proceeded in all cases so far as we may seem to have intimated. For ourselves, we had adopted the rather expensive process of hand-picking, and our man declared, without any blushing or other sign of conscious exaggeration, that in a fortnight he had gathered not less than 2 pecks of these horrid enemies — dark brown, nearly black, spotted green, light uniform green, and almost white, varying in size from some as large as a little finger to others not more than half an inch long. It is doubtless owing to this process of collection that our plants are less injured than those of our neighbours, and that all our Brussels Sprouts are not reduced to a museum of skeleton leaves. One speaker at the *conversazione* said that his gardener had sent a colony of fowls among the Cabbages, but that on going to look at the result of the experiment, he found that the birds had done no inconsiderable damage to other parts of the garden, but had declined to feast on the caterpillars—a matter of taste in the gallinaceous tribe with which we had become familiar years ago. Another had tried salt, and discovered that the enemy seemed rather to like the dose he gave them than otherwise. At length we came to the root of the evil, the confession of a general ignorance of the several kinds of caterpillar, of their habits, of the insects from which they come, &c., some of the company not even knowing that every one of them must have come from eggs deposited by a moth or butterfly, and would soon, if let alone, go through the chrysalis or pupa state again to that of a winged insect. Our criminal ignorance will be manifest from the fact that we were doubtful whether some of the grubs, the large dark kind, did not mount up the stems directly from the soil in order to carry on their predatory operations!

To turn the matter into a most serious one, we come to the fact that most of our gardens are suffering from a plague of caterpillars, while we all, masters and men, are ignorant of the resources or the weak points of our enemies. A gardener should know the natural history of every insect that can mutilate his flowers, gnaw into his fruit, or destroy his vegetables, from the red spider and mealy bug up to the locust-like creatures which soon make a pleasant garden a wilderness. If this knowledge were possessed, we could destroy whole colonies of destructive agents in embryo, instead of looking on in stupid amazement at our skeleton leaves. But all our study of insect natural history will not prevent sudden and unexpected inroads of various tribes, and therefore we should be prepared with effectual methods of destroying them, when they have arrived, in some easy and compendious way. There must be many substances, liquid or in the form of powder, which would check insect ravages without injuring the plants, and we have written this paper partly with the hope that knowledge now confined to individuals may be communicated for the public good to the pages of the *Gardeners' Chronicle*. *H. B.*

ZINNIA HAAGEANA FLORE-PLENO.

We are indebted to Messrs. Haage & Schmidt, of Erfurt, for the accompanying figures of a new Zinnia (figs. 296, 297), which they regard as the best novelty amongst annuals which the season has produced. The typical form of the species, now generally known as the Z. Haageana of Regel, called also Z. aurea by Dr. Lindley, in this journal (*Gardeners' Chronicle*, 1861, p. 1114), and further known in gardens under the names of Z. mexicana and Z. Ghiesbreghtii, is pretty freely cultivated as a neat, low-growing, tufted, yellow-flowered annual, and has long since become a favourite from its usefulness for dried or winter bouquets. The double-flowered variety differs in the form and doubleness of the flower-heads, which are perfectly rosette-shaped, and, moreover, is reported to be constant from seeds. The habit is the same as that of the single-flowered sort, the plant forming densely-branched tufts of about a foot in height, and somewhat more in diameter, and being abundantly furnished with the terminal flower-heads, which, as is usual, are of much longer duration in the double than the single form. The florets are as densely imbricated, and form heads of the same size and outline, as those of the best double Zinnia elegans, than which, however, they are naturally smaller in size. Their colour is a deep orange-yellow, keeping its lustre when dried, and thus rendering this Zinnia an acquisition for bouquet-making. It is likely to be a good bedding plant, blooming continuously till frost sets in. Taking all its points into consideration, this Zinnia appears to be one of the best and most useful of the novelties for the coming season; and to be worth trial as a dwarf orange-yellow bedding plant, especially for late summer flowering. *T. M.*

PLEIONES AS WINTER BLOOMING PLANTS.

The dull season is upon us, and in most places there is very little flower in either the stove, the greenhouse, or conservatory, so that anything that will enliven the appearance of our houses at this particular season is doubly valuable. It is not for lack of flowering plants that so little bloom is to be found just now in the majority of plant-houses, but because so little care is taken to provide the proper plants. We have the choice of a great quantity of Acanthaceous plants, and others belonging to the Gesneraceæ, which would afford us quite a grand display, but in how few gardens do we find many plants of either of these orders? Then, again, what quantities of good old species of Begonia, which would now be in full bloom, have been turned out of our collections.

My principal object, however, in penning these few lines is to draw the attention of Orchid growers to the gorgeous effect produced at this season by the exquisitely beautiful and chaste flowers of the various species of Pleione. These Indian Crocuses, as they are frequently called, have always been great favourites with me, and I have been always successful in growing and flowering them, but such a sight as that presented by the Pleiones at Manley Hall, the residence of Sam Mendel, Esq., has perhaps rarely been equalled in this country. When I saw them some time ago I remarked to Mr. Petch that their strong growths should flower well, and now there are upwards of 600 blooms upon these plants, their richly marked flowers being almost dazzling to the eye; indeed, such a sight as that presented by these plants is worth travelling from the Land's End to John o'Groat's to see.

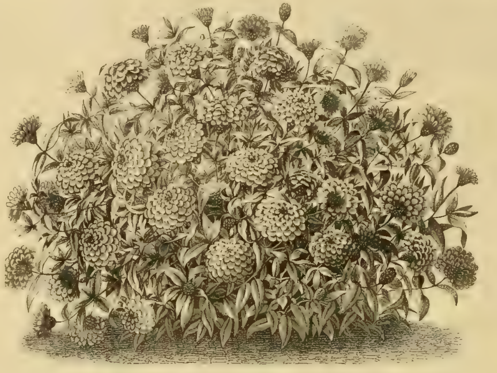


Fig. 296.—Zinnia Haageana flore-pleno (¼ nat. size).

Now I would ask, why are so many Orchid growers indifferent to the charms of these plants? They are not difficult to grow, and they are free to bloom, that is, if treated consistently. The great drawback, no doubt, is the fact of their flowers being produced whilst the pseudobulbs are destitute of leaves, which takes from them some of the grace and beauty which they would otherwise possess. This, however, may be remedied to a great extent. I have always neatly arranged the Pleiones when in flower with dwarf Ferns and other graceful-leaved plants, so that their own leaves were very little missed; and I feel sure if Orchid growers would cultivate these gems more, not separating them, as in many instances is done, but allowing them to form good-sized masses, they would soon reckon them amongst the most beautiful plants in their collections.

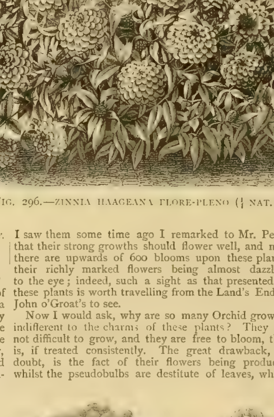


Fig. 297.—Flower-head (nat. size).

Pleiones should have a moderate supply of water as soon as the flowers begin to push up; and directly the flowers have faded they should be potted and placed at the warm end of the Cattleya-house, and a liberal supply of water should be given them until the pseudobulbs are mature, when they should be rested until the flowers begin to show themselves. I have some few more notes of winter-flowering plants from the same garden, which I will send you, if agreeable, at a future time. *W. H. G.* [Our readers will, we are sure, appreciate them, the subject being one of much interest. Eds.]

THE ÆSTHETICS OF ROCKERY.

Hitherto, rockwork has generally been looked upon merely as a means to an end—as the necessary adjunct to a certain class of plants, whose original *habitat* had to be imitated in our gardens in order to ensure their successful cultivation.

There is, however, quite another function appertaining to rockery which no landscape gardener can afford to overlook, and that is its general effect in relation to the surrounding scenery. From this point of view, the rockwork is the main subject of interest; it becomes an important unit in the landscape, and the plants which cover its sides, however delightful in themselves, must be looked on as complementary to it. Here the geologist may have a word to say, and he may possibly help to rectify some of the blunders which are constantly being perpetrated in this respect.

In all cases in which rockwork on a large scale is to adorn well laid out grounds, it may be accepted, as rules never to be departed from—1st, that it should be characteristic of the part of the country in which it stands; 2d, that its form should be that which in Nature is assumed by the particular kind of rock of which it is composed; and, 3d, that in no case should it be constructed in a manner contrary to the broad geological laws to which all rock masses are subject in their natural state.

The first of these three rules, to a certain extent, comprises the two next, and its application must necessarily depend very much in practice on the natural taste of the architect. Still it can be broadly stated, that no rock, foreign to the district in which it is erected, can ever be admitted to a permanent place in a model rockery. In grounds situated on the chalk, miles and miles from any other rock, it would obviously be absurd to construct a rugged mass of granite tors. Again, on the clay and gravel of the Thames valley, where most of the London and suburban gardens stand, any attempt at imitating natural rocks would fail utterly. By this last statement the writer does not intend it to be understood, that in his opinion no rockeries of any kind could, with propriety, be made in such situations—but merely, that as no rock characteristic of the district is obtainable, any attempt at verisimilitude would be unsuccessful. On the other hand, in cases of this kind, honest artificial rockery (such as burnt bricks, slag, &c.), has the best of excuses for being used, so long as it makes no pretence to represent real "live" rock. And, indeed, with the material usually employed for such purposes, attempts of this kind could never be seriously made. It is in cases such as these, where clayey or incoherent matter forms the subsoil, that the notion of rockwork being merely subservient to the culture of some kinds of plants can be admitted, but in no other.

The rule, therefore, must be, that where rock of some sort is to be obtained on the spot, or in the neighbourhood (and here, as throughout this article, the word rock is used not in its more general geological sense, but in its special meaning of stone of a certain degree of hardness), rockeries are to be composed thereof, and of no other. This will ensure an amount of homogeneity and completeness in the landscape which no amount of imported material, however picturesque, could ever attain. For it must be remembered that every feature of the land, every hill and every dell, is, to a great extent, the result, so far as size and shape are concerned, of the nature of the strata or eruptive rocks in which they are sculptured. Thus any departure from the general outline of the country is an æsthetic blunder. If the horticultural engineer raises a crag, let it be where a crag could with probability have existed, not where denudation must have swept it away ages ago. Happy is he who finds natural rocks to work with, native crags to embellish and cliffs to adorn. Such luck is unfortunately the exception, and in its absence attention to the rules laid down here would, it appears to the writer, lead to a more scientific, and at the same time to a more artistic, use being made of the materials available in the various parts of our island.

Of the second rule no more need at present be observed than this: that every rock-mass exposed to the influences of rain, water, and air, assumes a certain shape and form, according to its composition. A crag of basalt is always distinct in outline from one of grit, and a chalk cliff is very unlike escarpments of harder limestones. It follows, therefore, that in building up a crag, albeit it be made of the same material as that of the natural rocks in the neighbourhood, the greatest care should be taken that its form should be as real as its composition. What these forms are with regard to the principal varieties of rocks to be found in Britain, the writer may perhaps describe in a future paper, as also (in those cases where several lithological varieties occur together), what are in his opinion those most suited for landscape gardening.

To the second rule the third is scarcely more than a corollary, and it has been suggested to the writer several times of late by some curious cases of its neglect which have been brought to his notice, as, for instance, in a large rock-garden in the North, where the blocks of sandstone had been with much trouble and expense made to dip at a high angle to the east—the dip of the strata at that spot, and for miles in every direction being due west, and natural crags with the beds having this direction being visible from the newly formed rockery. Such a blunder, though it would naturally remain undiscovered by the uninitiated, is either ludicrous or puzzling to the geologist, and it gives an air of unreality to the scene, which entirely defeats the object for which a rockery is constructed. Rockwork, in fact, should never assume the appearance of a *lusus naturæ*. Care, therefore, should ever be taken that the position of the rocks used in crag building be that which it would be in a natural crag, not an imitation, but only a skilful reconstruction of the geological survey of England. *G. A. Lebour, F.G.S., F.R.G.S.*

Home Correspondence.

The International Fruit Show.—What were the principles upon which the award for the "most complete" collection of Apples was made at the International Fruit Show, held at the gardens of the Horticultural Society on October 4? My collection consisted of 290 sorts, and the winning one consisted of 171 sorts,—just 119 sorts difference. Now supposing that the 290 sorts were in some respects inferior to the 171, yet I cannot think that they were so far deficient as to be overbalanced by a collection 119 sorts less in number. I do not know the points upon which the judges dwelt; I only know that the schedule stated "the most complete collection." As I and many others understood, this meant the greatest number of sorts first, and where two collections ran one another close then the other points by which Apples should be judged would come into play, viz., size, colour, and quality. So much for myself. Now, as to the collection that took 2d honours, there were in it about 150 sorts. Will the judges say that the 21 extra Apples in the winning stand counterbalanced the 150, which had every other point in their favour? Perhaps not quality,—I could not say; I only saw that, as to other qualifications, they were the best in the show, save in numbers. Now follows the arithmetical problem. If 171 could beat 290, why should not 150 beat 171, seeing that they were much larger and finer-looking fruit? I do not write in spleen or vexation, because I know how ready we all are to think our own productions the best—that is, in a general way; but I do think, when a schedule of prizes is published, that it should distinctly state the conditions upon which the fruit is to be judged, and not leave room for any one to say that he thinks himself unfairly dealt with. There is another thing, that your own columns showed was not understood, viz., how the collections were to be made up—whether they should be the *bonâ fide* production of the exhibitor, or whether they were to be got together from all or any quarter, as was the case with some of the collections shown. Had I known that we could beg or borrow, I could easily have shown another 100 sorts of fine fruit, as large and handsome as any in the collection. Some showed fruit that were brought for the purpose from the Continent; I could have had from there also at least 100 sorts, finer, or as fine as any that were exhibited. Therefore, when we have another International Fruit Show, let the authorities make it a *sine quâ non* that all fruit shown be the production of the party exhibiting it, and also let them clearly state the points of qualification necessary to win. I was much gratified with the show, and think it will do an immense deal of good to fruit growers generally; and if it only help us to correct our fruit nomenclature, it will have done a great service to cultivators. It also has shown us that our friends over the water are, at least, alive to Pear growing. M. Baltet left us no room to cavil about that. *John Scott, Merriott, Oct.* 6. [Three fruits of each sort were required, whereas our impression is that Mr. Scott showed only one. Eds.]

Passiflora quadrangularis.—I send you fruits of the Passiflora quadrangularis. The plant which bore them is not yet two years old. It bore 50 fruit last year, and about 60 this season, averaging at least ½ lb. each. I find it does not set its fruit freely when there are any fruit upon the plant approaching maturity. We had many flowers on our plant in July, but they all failed, there being at the time an earlier lot of fruit just colouring. As soon, however, as they were cut off, every flower set. Those sent are some of them. *J. Simpson, Wortley Hall.*

Raising Vines from Eyes.—By way of fulfilling a promise, I send you samples of our late crop of Grapes from the Vines that were raised from eyes last year: they are Black Alicante and Barbarossa. With them is a cane of a Black Hamburgh Vine, grown in a 14-inch pot, from an eye inserted in a sod last March; the sod, you will see, still adhering almost entire to the Vine. It is a fair sample of the lot. A writer, some time ago, who had been experimenting on the "pot" and "turf" systems, declared in favour of the old plan, *i. e.*, pottering from one pot to another. I could understand how a good gardener might easily succeed in growing good pot Vines by this plan, but how he could fail to grow them on the turf beats me; for it is apparent, I think, that a Vine eye inserted in a piece of good fibry turf has all the advantages of a pot and none of its drawbacks. The Vines in question carry about six bunches each, and all are beautifully finished. *J. Simpson, Wortley Hall.* [They are capital samples, the canes strong and perfectly ripened, the clusters about 2 lb. weight, and the berries thoroughly well-swelled and well-finished. Eds.]

Wine-making (see p. 1299).—The only utensils required are a small mash-tub, about 20 gallons, and a smaller underback to run into. Allow the Grapes to hang till thoroughly ripe, then strip them, and break them down in the mash-tub; allow them to stand four days, occasionally stirring them up; run the juice into the other tub, gather the skins into a cheese-cloth, place a board and weights on them to extract the remainder of the juice. Measure the juice, and to every gallon add 2½ lb. of honey; put it in the cask, leaving the bung out, examine it frequently, and when fermentation ceases bung it up, putting in the whites of two eggs to clarify it. This will require drawing off carefully in about a month, leaving the dregs at the bottom; run the dregs through a double fold of flannel to fine it; wash the barrel, and place the whole in with the addition of one bottle of proof brandy. To every 4 galls. of juice, if not quite fine, add a small quantity of isinglass or white of egg; draw this off about March, and bottle in strong bottles, wire and lay down. As the summer temperature increases, you will (if properly attended to) have a beautiful, rich, fruity, effervescent wine, far superior to much that passes for champagne. Taste must direct as to sweetness. If not sweet enough, add honey. To make a dry wine.—Take 6 galls. of Grape juice, weight about 60 lb., then chop up about 40 lb. of raisins, and put them together in a cask, and stand that in a cool cellar 6 months; draw the wine off, and treat the skins as before mentioned; then add one bottle of proof brandy to 4 galls., refine as above mentioned, stand a month, then bottle. You must vary the quantity of raisins according to the richness of the wine you wish to make. My reason for using honey is that it blends better than sugar. If I have not sufficient Grapes I purchase some, the price is generally 2*s*. 6*d*. per 14 lb. quite ripe; honey 6*d*. per lb.; and at this time of year, if you apply to your grocer, the price of year-old raisins is reasonable, the new fruit being in,—my general price is 24*s*. to 30*s*. per cwt. The Malagas are generally used by the London wine maker, but Valencia or Muscatels, &c., will answer. Loaf-sugar will answer if you are unable to procure honey in the villages near you. I have read many recipes for wine-making, all contain more or less water: you will observe I omit it altogether. In Spain, under a more favourable temperature for maturing the Grape, they mix very little, if any, water with their first-class wines. Why should the juice of our fruit require diluting? And considering that the raisins contain all the must or saccharine, the only loss is by evaporation, which you supply by addition of Grape juice. I have produced good wine at 8*d*. per bottle, at the prices specified. If you are a grower of Grapes, the outlay is less. If you want to flavour the raisin wine put some sweet almonds in two bottles of brandy for a month, and then add it to the contents of the cask. *Cantab.*

The Rationale of Hot-Water Circulation.—That heat is a mode of motion has passed into an axiom in natural philosophy, and appears to be a matter of everyday experience. We speak and write of caloric as the driving force of the universe. Heat and motion have become well nigh convertible terms. Exhibit the results of heat and you reveal motion; extinguish or lessen it, and the result is rest. Such, at least, is a brief mode of stating the common belief. Nevertheless, it seems but one side of a truth. The springs of motion are not wholly laid in either heat or cold, using these terms in a popular sense. Were matter of one uniform temperature, that uniformity would prove the grave of motion. Immobility would be the unalterable condition of a world of one uniform temperature. Rest is the nett product of uniformity; motion everywhere and at all times treads in hot haste on the heels of diversity. The great movements we see around us reveal the force of Nature striving after an impossible equality of heat. In this great contest heat and cold are the racers; they run round circular courses that have no end. It is even difficult at times to know with certainty which takes the initiative. Of more moment is it to be assured that both run on without ceasing. Heat and cold are but opposite sides—the negative and positive poles of the same great force. Certainly both are needed to complete the line of motion, and to knit its parts together in a circle of warming force. And the force and speed of the motion will be as the sum of the extreme difference of temperature between any two points that come within circulating range. The greater the disparity, the more energetic the motion; or, in other words, the more work to be done, the greater the force brought forth to do it. And the worker is not only, nor perhaps chiefly, caloric, but the want of it; or rather—and to write with more exactness—motion comes and is sustained by an endless series of exchanges between more heat and less heat. While these diversities exist motion continues. It is less due possibly to the active agency of caloric than it may seem. If heat gives wings to air or water at one end of the scale, it relatively adds to their weight at the other. For every molecule lifted by caloric, others are pushed forward and onward by gravitation. Caloric does not drag matter along, like some fiery steed with invisible rider, but rather is it a sort of outrider to clear the way for heavier matters being pushed forward by the force of gravity, or the strivings for uniformity. Nature is provident of force; she never sets caloric, or aught else, to lift, drag, or drive anything that can find its way to where it is wanted without its aid. In the heating of the world she raises her stores up into the air, or carries them across the surface of the water, at the highest possible levels consistent with her objects. But her returns are placed at the lowest points. By these arrangements gravitation does useful work in the distribution of heat. A vigorous flow of hot air or water once established, the return streams take care of themselves. Elastic fluids, impelled by the force of natural laws, reach the highest points first. From this maximum altitude the descent is simple and easy; it is a mere falling from a higher to a lower point, or rather, like running down hill. At every step of the journey downwards fresh momentum is gained, and the bite of friction is less felt as a hindrance; and finally, the return stream, parting with its heat all the way, contracting in bulk, and growing in weight, plunges into the boiler or source of heat to be at once prepared for a new round, of distribution. But a point or two of considerable moment ought to be noted here; one is, that the hot water cannot remain in the boiler if we would have it so; the general opinion is, that it is driven out by caloric. But this can hardly be the case, else would all the pots on our fires suddenly boil dry, but they do not under ordinary heat; they boil without overflowing, but our boilers overflow long before they reach boiling point—in fact, they ought never to boil. The chief reason for this extreme sensitiveness to motion is the great weight of cold water pressing upon the negative or cold limb of our boilers, if I may so put it. No sooner is the normal strength of the water broken by the levity induced by heat than the strong cold waters rush in, and possibly push so sharply upon the warm water as to help it forward and upwards out of the boilers. There is thus a compound action; the dual forces—levity and weight, heat and cold—act simultaneously to induce motion. There is even a third force developed, which is somewhat difficult to describe. It will be understoood if I call it the upward bound or rush of heat. Caloric in its hot track seems ever to aim at its source—the sun. It hits straights at that mark, and recks not of side issues. Leave several ways open for caloric, and it will always take the highest road. In a current of hot water there are doubtless limits to this law. Beyond a certain height the weight of the water in vertical columns would probably check the energy of the ascending force, but within the limits of horticultural heating this rule may be held as absolute, that the higher the flow-pipe the greater the force of the current. By converting the return or lower pipe into the flow we lose this strong natural help to a vigorous circulation. One other point requires notice. The highest part of the boiler ought to be the hottest, the heating of the water should be cumulative from bottom upwards; if the circulation is rapid, as it ought to be, the boiler kept free of sediment, and the furnace is wisely adjusted, the return current will keep the base of the boiler cool. Our chief concern is to keep the crown hot. In our anxiety to save fragments of fuel we often lose sight of this one thing most needful. By multiplying flues on the crowns of boilers we keep its head cool. Better far waste some caloric up chimney than drag a languid stream of black smoke and spent flame to play around the flow-pipe. The fire here should burn its fiercest, and give its last sharp spur to the departing water, telling it in unmistakeable terms to be off about its master's business, that of heating the houses. That last fillip at starting not only gives a spurt to the flowing stream, but it creates a vacuum or levity, which the whole weight of the returning column bounds forward to fill up. Hence it follows that unless on very short routes indeed, or under abnormal pressure, the greater the difference of temperature between the flow and return pipes the swifter and the more powerful the circulation. For it must be obvious that were the return-pipe to become as hot as the flow, we should lose the great force of gravity as an aid to circulation. But the smallest differences tell upon motion, and in all ordinary arrangements it may be accepted as an axiom that the return water reaches the boiler wholly by its own gravity. We have been invited to follow Nature, and I have adverted to certain examples. But in all such cases it is needful to guard against analogies being taken for identities. Nature's actual modes of heating are somewhat different from ours, though her great systems of distribution are the same. Water is heated from above downwards, the air from below upwards. We find it most profitable to heat water as Nature does air—by suspending it over the fire or source of heat; but because in this point we may diverge from Nature, that is no reason why her grand order of heating by hot-water should be set aside or reversed. Having provided the hot-water stream by the best means at our command, we shall get the most heat out of it with the least expenditure of fuel or force by following Nature's mode of distribution. It is utterly impossible to gain aught by making the lowest pipe the flow, unless our pots, teakettles, and boilers can be made hottest at the bottom —and even then we should gain a loss by the change. Since writing the foregoing I have read the Rev. J. M. Taylor's second letter (pp. 775, 776). I am not sure that I understand it; but this much is certain, that any mode of heating horticultural buildings that requires the water to be kept boiling to bring out its merits is impracticable and useless. It cannot be done, if we would—it ought not, if we could. How the arrangement illustrated in the *Gardeners' Chronicle* by Mr. Cannell, which we were assured resulted in keeping the flow and return pipes at nearly equal temperatures, can likewise fulfil the conditions described in this sentence, I cannot divine. Having gained a high level for the water, he prudently keeps it until the water has acquired all the weight by condensation that the cooling process can give it; he then gives it at its final plunge into the bottom of the boiler all the advantage which altitude, perpendicularity, and directness of descent can confer on it as a motive power! If this were, or is so, then the return-pipe would be almost cold. But, on the contrary, force up the whole mass of cold water by the aid of caloric in opposition to the laws and ways of Nature, the hottest water will still be found at the highest point, that is, just at the upper end of the return-pipe; and instead of being kept there or sent on a circuitous journey to exhaust its heat, it at once returns to the boiler warm, that is assuming, for the nonce, that the circulation flows as the arrow-heads indicate, which, however, I by no means admit. I pass no opinion at present on the suggestion to raise the flow-pipe at starting above the level of the return, so that it may dip into it; nor the other suggestion to raise flow and return to the same level. The Rev. J. M. Taylor seems to attribute undue importance to the verticality of the return-pipe. But the gravitation is from the highest point, how or wherever placed, and the friction of water in pipes of such bore as is mostly used for heating is but little. As far as I understand this gentleman, I agree with him on the importance of gravitation as an aid to circulation; but I don't see how the arrangements suggested can strengthen its force. On the contrary, they seem to me to neutralise or hinder it. *D. T. Fish.*

Mock Spring.—I do not know what other heading to put when treating of budding and flowering, fruit setting, &c., in these autumn days. It shows that the extremes of temperature to which plants have been subjected these last few years, have such an effect on them that some time must elapse before they can recover themselves. Many spring flowers are out, among them the blue Gentian; a row planted next to Mrs. Pollock Pelargonium is in full flower, and the effect is very telling; Laurel, the old Corchorus, or Kerria as it is now called; Apples, Pears, Currants, full grown fruits, to say nothing of Strawberries, which is a more common occurrence, but which this year at some places have been taken regularly to table for a week or more. *H. M.*

Picea grandis and Lowii.—I am an amateur collector of Conifers, and am glad to see that the confusion in their names is attracting attention. I first made the acquaintance of Picea grandis in the nursery of Mr. Standish, of Ascot, who has a large and very healthy stock of it, and from whom I bought a specimen. I know it to be the same as Mr. Barron calls by that name, and I have seen it not uncommonly both in nurseries and in private collections, up to about 8 feet in height. There is a fine specimen at Dropmore, where Mr. Frost calls it amabilis, showing a very handsome true amabilis under the name of grandis. At Aldermaston Court, near Reading, there is a large group of it in one of the plantations in the park; the owner could not tell me where he got them, but believed that they were sent from a neighbouring nursery as Douglasii. I ascertained, however, that they did not come from that nursery, and failed to trace their origin. Mr. Standish has also a large and very handsome stock of the long-leaved Californian Picea, which he calls Lowii to which he assigns in his catalogue the synonyms of Parsonsii and lasiocarpa. I bought specimens of this from him. About two years since Mr. James Dickson, of Chester, sent me several specimens under the name of grandis, which then seemed to me to be intermediate between the grandis and the Lowii of Mr. Standish. I believe them, however, to be the same as I already possessed as Lowii, but of less vigorous and robust growth. Now, let those who study Conifers, and have an opportunity of going to Kew Gardens, verify for themselves what I am going to state. I have been there to-day, and found, just behind the Museum, in a row of Conifers parallel to it, both the varieties which I have bought as grandis, and both labelled Picea grandis (Loudon), California. It would be treason to doubt the correctness of the naming at Kew, nor can I doubt that these trees are the two kinds generally known respectively as Picea Lowii, or lasiocarpa, and Picea grandis. In Brown's "Forester," 4th edition, just published, I find only one long-leaved Californian Picea mentioned, which is called Lowii, and the cones of it are said to be hardly distinguishable from those of grandis. I should therefore not be surprised to learn that, distinct as they appear at first sight, they are only varieties of the same tree. We know that great difference of habit and appearance may exist without characteristics sufficient to constitute a distinct species. For instance, I find that at Kew the Austrian Pine is labelled Pinus Laricio var. austriaca, and the Nordmann's Siver Fir, Picea pectinata var. Nordmanniana. With respect to the latter, I have often tried in vain to find a specific distinction when comparing the foliage with that of the common Silver Fir. Do I rightly understand Mr. Barron when I think he says that he possesses the only seedling tree in the kingdom of the so-called true grandis, from which I infer that all the many which are to be found in collections were raised by layers or cuttings from this specimen? If this is so, it need not be thought to lessen their value as ornamental trees, though some growers are prejudiced against Conifers raised from cuttings. The handsomest Douglasii at Dropmore, which stands by the drive to the western lodge, was raised by Mr. Frost from a cutting in 1827. It is now about 90 feet high, of beautiful proportions, and the finest specimen Conifer I have ever seen. Every admirer of the Fir tribe would like to have its photograph; and it deserves to receive a gold necklace and a guard of honour as a reward for its beauty, like the celebrated Plane tree near Sardis, upon which Xerxes bestowed that distinction. Of the confusion of names in trees many examples might be cited, but I will only mention one more. The British Columbian Hemlock Spruce appears in catalogues under at least four names, viz., Abies Mertensiana (by which it is called at Kew), Albertiana, taxifolia, and Williamsoni. *C. W. Dod, Eton, October* 6.

Recipe for Making Tomato Preserve.—Select firm green fruit, peel as thinly as possible, and to every pound of fruit add 1 lb. of loaf sugar; boil for an hour and a half, allow it to cool, tie down, and store away, as with any other preserve. Tomatos treated in this manner form an excellent preserve, and may be likened to ripe Figs, the seeds of the Tomatos bearing out still further the similitude. As doubtless there will remain large quantities of unripe Tomatos this season, perhaps this recipe may be of some use to your readers, which is my excuse for troubling you. *A. S. Kemp.*

Seaside Planting.—I see that your correspondent "S. J. A. S.," in giving a list of plants for seaside planting, has expressed a hope that other correspondents would add to it. Having a good deal of experience in such matters, I would suggest the Sea Buckthorn (Hippophae rhamnoides) as being at least as hardy as any plant mentioned in the list furnished by your correspondent, and far hardier than most of them. From my experience, it would appear to be entirely indifferent to exposure, and to prefer pure sea-sand to any soil, though it will apparently grow in any. I do not know if it can be had in any quantity from nurserymen in the neighbourhood of London, but know it can be got in any quantity from nurserymen near Edinburgh. I would also suggest the Whitethorn, Blackthorn, Ash, Birch, and Lime as excellent seaside trees —in one place to my knowledge there are Limes in an exposed situation forming dense bushes on their windward side, and thus affording excellent shelter to other trees. I cannot concur with your correspondent as to the hardihood of the common Yew in exposed situations, or in preferring Scotch Fir to Pinaster; it is true that the latter is liable to be broken, but to my knowledge it grows and flourishes, though as a ragged tree, where the Scotch Fir has died out. *C. C. H. G.*

Leptosiphon roseus.—Your readers will, I hope, be duly grateful to your correspondent, Mr. Skelton, for his praiseworthy anxiety to protect them against my attempted imposition in connection with this annual. That the flowers may gradually lose their freshness of tint is no doubt possible, but I entirely deny that they do so to such a degree as to interfere with their utility as spring flowers, or render them open to the charge of being "dirty" in hue. I hope your correspondent may some day enjoy the vision of unfading flowers, meanwhile he must, I fear, in common with all of us, be content with something less perfect and enduring. As I object to the fairness of Mr. Skelton's estimate, neither do I wish your readers to take mine unsupported. Here is an extract from a note just received from a veteran horticulturist, Mr. Atkins, of Painswick, who will, I trust, forgive me for publishing his unsolicited opinion without permission rather than lose a week:— "I quite agree with you as to the value of Leptosiphon roseus; it is one of the very best annuals we have had introduced for years. Many who saw mine were quite charmed with it." I could quote other testimonies to the same effect, but I think your readers will consider it needless. Time will show the real value of this annual, and I confidently appeal to that test. *W. Thompson, Ipswich.*

—— Mr. H. Skelton's remarks about the two new annuals, Leptosiphon roseus and Godetia Whitneyi, require no reply; nevertheless, I beg to observe that these two charming novelties have been grown here extensively, and have become general favourites. Both amateurs and connoisseurs consider them to be the finest introductions amongst annuals for several years past. *F. B., Erfurt.*

Twin Vegetable Marrow.—I take the liberty of sending herewith what appears to me to be a perfect specimen of a double (or twin) Vegetable Marrow, which I cut last week, from an ordinary plant growing in the garden at the rear of my house. I have shown it to several of my gardening acquaintances, all of whom agree that it is a novel production. *J. O. Williams.* [The appearance in question is by no means rare. It arises from the juxtaposition and union of two flower-buds, or from the forking of the originally single flower-stalk into two. Eds.]

The Potato Disease.—Mr. Hope in his communication (p. 1294) says he saved all his cattle during the rinderpest era by antiseptic treatment, and hopes to prevent the spread of the Potato disease by the same method. Could Mr. Hope manage to induce the Potato plant to swallow antiseptics like cattle, or to make them imbibe the healing powers of the fumes of sulphur in the circulation of the sap, he might then stand a chance of being successful with his treatment. The disease always appears first on the haulm of the Potato, and descends to the tubers at a certain stage of their growth, and to prevent this with antiseptic treatment seems to me to be impossible. In the experiments here of fumigating Potato tubers with sulphur and chlorine gas, the apparently sound ones were mixed with the diseased on the shelves, to see if they would keep sound in the pits when stored. As I mentioned before, the Potato tubers not fumigated showed no greater loss than those operated upon, when the pits were opened and examined in the spring. After 26 years' studying and experimenting on a cure for the Potato mildew, I have arrived at the belief that planting the early and second early varieties for the main crop is the only chance of saving a sound crop in wet seasons like the present. If Potatos are ripe enough for lifting and storing by the end of July, they will escape any great loss from disease; and this I have experienced this year with some nice samples of Rivers' Royal Ashleaf, Myatt's Prolific, Mona's Pride, and the second early, Taylor's Fortyfold. Wider planting in the rows is likewise to be recommended for all strong-growing varieties, and the avoiding of rich stimulating manures, especially on strong soils. This year I used for manure the old spent tan from the Pine-pits for all the early varieties of Potatos, and never had better crops, nor the tubers cleaner in the skin. No one will rejoice more than me to hear of Mr. Hope's being successful by his scientific mode of preventing the Potato disease from spreading, and although rather late in his investigation, he will gain all the more renown if he succeeds. *William Tillery, Wellbeck.*

—— The divergence of opinion respecting the Potato disease is certainly very remarkable, but I think if your correspondents would take the trouble to investigate the matter with the view of arriving at truth, and not jump to conclusions too readily, it would, doubtless, save much valuable time. In your edition of September 23, Mr. W. Hope says he is a thorough believer in the "germ theory," because he observed a Fungus growth upon some affected leaves. Of this I have no doubt, but it does not prove that Fungus occasioned the disease. Will Mr. Hope "be surprised to hear" that the disease has appeared equally bad in Potatos that have tubered under ground, without any appearance of haulm above? Ashleaf Kidneys are very prone to do this. Even when the haulm is apparently healthy, at a certain stage of growth, many diseased tubers will often be found. Mr. Hope goes on to speak of the *rationale* of what is known as antiseptic treatment—curing, pickling, salting, smoking,—which he recommends to be tried upon all Potatos after they are dug up, to preserve them from a disease which has already done its work. The *rationale* of all this appears very inconsistent, and is much like locking the stable-door after the horse is stolen. All the curing and pickling in the world will not stay the disease before the Potatos are dug up. Your more recent correspondent (Mr. W. Tillery) falls into the same error in stating the disease to be atmospheric. It is well known that no state of the atmosphere has had any effect in preventing the disease, which is universal. The atmosphere cannot be the cause of the disease, though no doubt the destructive character of the disease is greatly influenced by it. Mr. Tillery recommends the raising of fresh seedling varieties as a means of staying the disease, forgetting that this has been done to an enormous extent, as the Potato lists, containing hundreds of names, will testify; and all, after a few seasons' trial, have become more or less diseased. If the real fact is accepted, that the disease cannot be traced to any preventible causes, and if, as I believe, it is occasioned by "a withering or dying off of the cellular tissue and the vessels, with their contents," it would be much better by good and skilful cultivation to try and ameliorate the disease, rather than to be continually propounding useless remedies for its extinction. The soil in which the Potato is grown will be found to have considerable effect in determining its quality, therefore this should be considered of the very first importance; but, unfortunately, every soil, whether suitable or not, has been called into requisition to produce this ubiquitous esculent, and as a natural consequence a disease has been engendered, which will probably continue so long as such an injurious *modus operandi* is persevered in. *W. H. Rogers, Red Lodge Nursery, Southampton.*

Bedding Plants and Violet Hill Nosegay Pelargoniums.—As some growers find objection to the colour of the above Pelargonium, and a correspondent does not know what it will mix with to make a pretty bed, I give the following arrangement of a large circle planted here this season, which produced a charming effect:—Centre plant, Dracæna australis; next two rows, Centaurea ragusina compacta; then "two" of Iresine Lindeni, one row of Violet Hill Nosegay, two rows of Mrs. Pollock, one row of blue Lobelia, with an edging of Antennaria tomentosa. As a plant of great beauty and good habit to mix with gold and silver Tricolors, I would recommend Heliotrope Beauty of Jersey (a gem), dwarf and compact, most floriferous, of a rich violet-purple shade, Senecio argentea has done well here, and will be a queen among bedders; also Achillea umbellata and A. ægyptiaca, the latter possessing more grace than the finest Centaureas, and of a like silvery-grey appearance. Coprosma Baueriana variegata is a charming thing, and will put in the shade Veronica Andersoni variegata. It can be used in the same way. *Wm. Scott, The Kilne Gardens, Falkirk, October* 9.

Water Weeds.—A very good way to remove water weeds from a lake, is to draw through it a piece of rope, or, better still, galvanised strained fencing wire, fastened to the stern of two boats or fishing punts. Let the boats be about 20 feet, or more, apart, with the wire sunk about 2 feet under water; begin at one end of the lake, row or push the boats parallel with each other across, and after removing to the bank the weeds thus collected, take another drift back to the opposite side. A good many of the weeds will be found to be pulled up by the roots, and all the others broken off a good depth down. Continue crossing and recrossing till the lake is finished. If done about the middle or end of May, or the beginning of June, it would not require doing more than once a year. I think if "W. E." tries this method he will find it answer well. With the aid of the swans, and this annual dredging, the surface of the lake will be kept clean, and the weeds, if carted to a spare corner, would ferment and make excellent manure. *Rustic.*

Orchard Cordons.—I notice your correspondent "Malus" says that "Mr. Robinson told us our market gardens would be covered with low lateral cordons trained to iron wires." I never said anything of the sort, but this—"It should be thoroughly understood that I do not recommend this system for orchard culture, or for the production of kinds and qualities of fruits that may be gathered profusely from naturally developed standard trees." A similar misrepresentation was made in a contemporary journal some time ago, also by an anonymous writer. Discussing the question with persons who write in this way is out of the question, but as such statements may mislead many persons who did not look carefully into the matter, permit me to state that the origin of the discussion in the gardening journals arose from my writing to the *Times* to caution the public against taking the advice of a person who wrote in that journal, advising the cordon system for field and market garden culture, stating that each acre only required 4000 trees or so. *Wm. Robinson.*

Cool Orchids.—"After a storm, a calm;" so says the proverb. There has been a considerable storm among your correspondents, but as yet the calm seems prospective—very prospective, for the little squalls may again wax into a hurricane. However, according to "Ex-Cantab," "G. H." seems desirous of throwing oil upon the waters. Now, Mr. Editor, these above-named gentlemen have occupied a very considerable portion of your space, and I would now ask any one of your readers what results have been arrived at, what impressions have been left upon their minds? I confess I have been a somewhat inattentive reader—in fact, there always seemed to me to be much to read which was not always quite to the purpose, and I would suggest that tabulated temperatures of the rival Orchid-houses would have been quite as readable, and more easy to refer to. These questions of temperature are wide ones, and "tweedledum and tweedledee" may wrangle over their differences from now to doomsday without very materially narrowing them. It would seem to me that some hardworking botanical penman might well occupy his time in compiling an Encyclopædia of Orchids, giving in a tabulated form after each name the range of the plant, and the ascertained range of temperature, &c., through which each is found growing; a work which, could it be done, would probably show your correspondents how very many shifts they are perforce obliged to make in the matter of temperature. Some time ago I endeavoured to show that a given Orchid may well grow under the various temperatures in dispute, viz., cool and cooler (this appears to be the sum total of the correspondence), and if I do not encroach too much upon your space I will now append a Table of temperatures taken at Darjeeling, where I believe various Orchids are found. These observations have been taken at the Government Cinchona plantations, and are probably pretty correct. It will be seen that the mean temperature varies some 7° between the two altitudes given, and I doubt not that Orchids are found growing equally well under both circumstances. I am not able to append the rainfall, but I have understood that it is very considerable, being something like 130 or more inches at the upper, and 100 inches at the lower, station. I am disposed to think that such Orchids as grow upon rocks in subtropical climates or elevations require more heat than such as grow upon trees; these rocks are often exposed to the full glare of a tropical sun, and are either naturally of a dark colour or are blackened by the weather, they must consequently absorb much heat, which undoubtedly has an effect upon the plants. I have noticed that such plants are often very free flowering, provided they are sufficiently nourished by accumulations of vegetable matter; on the other hand, if they are insufficiently nourished they are scorched to death in dry seasons. I am not aware if it has been attempted to suspend cool Orchids on a wall out-of-doors in summer, it might well be tried.

TEMPERATURES AT DARJEELING.*

Months.	Altitude, 3300 feet.			Altitude, 2550 feet.		
	Mean.	Max.	Min.	Mean.	Max.	Min.
January	51	68	40	57	71	42
February	56	69	40	60	78	41
March	65	79	52	69	81	56
April	68	80	59	69	89	51
May	68	81	55	75	91	61
June	70	81	58	78	94	63
July	72	82	64	79	92	60
August	72	83	62	78	90	63
September	73	88	60	78	94	66
October	66	81	49	72	88	53
November	59	75	44	66	84	50
December †	55	68	42	..	..	..
Mean	64	..	..	71	..	..

* A list of the Orchids growing here would be instructive; perhaps they may be found in Dr. Hooker's "Himalayan Journal."

† The temperatures at the lower altitude are not given.

James McPherson.

Dimensions of Conifers.—I think I have seen in one of your late impressions a wish expressed to obtain the dimensions of Conifers in various parts of the kingdom. I therefore send you the measurements which I have taken of some that have been planted here between 1850 and 1860. When planted they were (with the exception of the Taxodium) small plants, from 6 inches to 2 feet in height.

	Height.		Circumference of Stock at base.		Extreme Diameter of Branches.	
	Ft.	In.	Ft.	In.	Ft.	In.
Wellingtonia gigantea* ..	28	4	8	11¼	17	6
,,† ..	26	7½	7	8	17	0
Picea cephalonica	27	2	..		15	0
P. Pinsapo‡	12	10	..		12	4
,,‡	17	6	..		16	0
P. bracteata§	14	0	..		10	0
P. Nordmanniana	19	6	..		11	4
,, .. .	20	0	..		18	0
,, ...	18	10	..		14	6
Abies Douglasii ‖	35	5	5	8	27	8
A. orientalis	17	10	..		8	6
A group of Deodaras, all abt.	24	6	..		..	
P. lasiocarpa, or Lowii, or Parsonsii¶ ..	19	11	..		12	4
,,**	13	0	..		..	
Abies Menziesii	20	4	..		12	6
Cupressus Lawsoniana ..	18	0	..		12	8
,, ..	17	0	..		8	6
Thuja Lobbii	22	0	..		11	8
,, ...	20	0	..		9	6
Thujopsis borealis	18	0	..		10	0
Taxodium sempervirens ..	33	5	..		..	
Picea nobilis (? magnifica) ..	18	0	..		8	8

* Circumference of base has increased 10½ inches during last two years.—† About two or three years younger plant.—‡ Both have repeatedly lost their leaders.—§ Leader killed by early spring frosts for several consecutive years, but for the last three has been untouched.—‖ Seedling from a cone from the Bicton A. Douglasii taxifolia, about 1853.—¶ Bought as grandis.—** Transplanted about four years since, and suffered much from the dry seasons since.

The latter is intensely blue and perfectly regular and dense in growth. This is by far the finest specimen I have ever seen (a seedling, purchased from Mr. Veitch, planted in 1860). P. grandis—well deserving its name at the Rev. G. T. Markers, Uffenlme, only 2 miles distant—here assumes the ragged character complained of by your correspondent, "C. F. P.," from The Grange, Taunton, yet grows rapidly. I have tried, without success, to improve it by transplantation into other soil. Perhaps the fault may be in the health of the individual plant; we know all seedlings are not equally healthy. I have a much larger plant of P. nobilis, but it is a grafted plant, and, as such, I have not thought it worthy of record. I have a broad avenue of Wellingtonias, most of them nearly equal to the two mentioned above; one is certainly a finer plant than either of them in some respects. *J. W. Walrond, Bradfield, Cullompton.*

Veitch's Autumn Giant Cauliflower.—When in Dumfriesshire lately, Mr. Smith, gr. to W. S. Carruthers, Esq., of Dormont, near Lockerbie, showed me a stock of this Cauliflower, with which I was very highly pleased. He cut a head of it for me on Tuesday, October 3, which measured 13 inches in diameter and 34 inches in circumference, and which was in the best possible condition for the table. Like many more, I am often disgusted at the way we are taken in with new things, but I think it right to say that the merits of Veitch's Autumn Giant Cauliflower cannot be too widely known. *Thomas Methven,* 15, *Princes Street, Edinburgh.*

Notices of Books.

Culture of the Chrysanthemum, *as Practised in the Inner Temple Gardens, &c.* By John Newton, Gardener to the Honourable Society of the Inner Temple.

The culture of the Chrysanthemum in the Temple Gardens has gained well-deserved celebrity, which the author of this little treatise, who succeeds Mr. Broome in the superintendence of those of the Inner Temple, intimates it to be his intention to uphold. He gives us, in brief compass, and in plain language, a very readable account of the flower, its properties, and its culture, under the necessary heads. The instructions given seem to be in all cases trustworthy, and founded on practical knowledge. We notice that here, as sometimes elsewhere, the small-flowered Pompon Chrysanthemum is referred to as "the Pompon," as if that were a substantive name, whereas of course it is used in an adjective form, to indicate a particular group of Chrysanthemums, and refers to the knot-like or tufted character of the small and very double flower-heads of the plants to which it is applied. For the same reason the name of Pompon Rose, meaning a rosette or little Rose, is given to the old and almost forgotten, but very pretty Rose de Meaux. At the back of the title Mr. Newton prints the following legend, having reference to the garden over which he watches:—"The Red and White Roses, the badges of the houses of York and Lancaster, are said to have had their origin in the Temple Garden, in the course of an animated conversation, approaching to a brawl, which took place on this spot between the Earls of Somerset, Suffolk, and Warwick; Richard Plantagenet, Vernon, and another lawyer. Plantagenet plucks a white Rose, and Somerset a red one, and Warwick thus prophesies:—

> 'This brawl to-day,
> Grown to this faction in the Temple Garden,
> Shall send, between the red Rose and the white,
> A thousand souls to death and deadly night.'

The Temple Garden was then famous for its Roses, as it is now for its Chrysanthemums."

Taplin's Practical Treatise on the Cultivation of the Onion (Houlston & Sons), is a little brochure, in part reprinted from our columns, explaining the means whereby the writer has attained great success in the culture of this useful bulb, and been frequently enabled to come off victorious at the exhibitions at Banbury, where Onion-growing appears to be made a speciality. Some of Mr. Taplin's points seem to be—to sow the first week in February, to thin with a knife, and to water freely, giving a good soaking, of from 80 to 90 galls., twice a week to a small bed of about 4 yards by 6 yards; this quantity, even in showery weather, being given at least once a week. This is applied after the Onion shows a good strong stem and an indication of bulbing. The tops of the plants are to be kept upright by the use of straight props, about 2 feet long, inserted some distance from the bulbs, but leaning and pressing gently on the foliage, these props being moved as occasion may require. The seed Onions are to be placed on the ground, in a dry, cool room, when they will keep perfectly sound until planting time.

Florists' Flowers.

GLENNY, in his book on the culture of flowers and plants states:—"The RANUNCULUS was once one of the most favourite of florists' flowers, and it has been produced nearer perfection than any other subject that we know of;" and yet it has to a great extent dropped from cultivation. There is hope in store for it, notwithstanding. Prizes were offered for it by the Metropolitan Floral Society during the past summer; and, though the competition was not large, there was in it the promise of something better. Even though the prizes were small in amount, it was a gain to get them offered, for the Ranunculus has been unrecognised by compilers of schedules of prizes for many years past.

The flowers produced in competition for the prizes of the Metropolitan Floral Society were wanting in those qualities of size and finish that were imparted to the flowers in times past by those who grew them specially for exhibition purposes in the days of their greatest popularity; still, they were charming and attractive, notwithstanding some deficiencies. It may be asked—Is there any chance of the Ranunculus becoming as popular as it was wont to be 20 and 30 years ago? There is a chance, though it is at present only as the cloud of the size of a man's hand rising out of the ocean of neglect.

And yet the Ranunculus must be grown to some extent, too, after a certain fashion, if the annual importation of dried roots from Holland affords any criterion by which a conclusion can be reached. That large numbers are sold is an indisputable fact; how they fare would be an item of information of much interest for florists. Many who have attempted the cultivation of the Ranunculus have failed with it, because they did not give the proper attention in one respect or another. That they were struck by the undoubted beauty and symmetrical arrangement of the flowers was not to be wondered at, and this incited them to cultivate it. Its almost perfect form, richness, and great diversity of colours, awakened a desire to possess it, and some roots being obtained, were placed in the garden, without regard to the fitness of the soil or suitableness of position, and it was no wonder they perished, or if they bloomed, were little else than floricultural abortions. Such things as not having the soil properly prepared, planting too late to admit of a vigorous growth and a good head of bloom, planting in a wet and ill-drained situation, and such like—things apparently small in themselves—are important conditions nevertheless, upon the observance of which depends much of the success the grower seeks to attain.

About four years ago, one of the prettiest sights to be seen at Kew, just as spring was gliding into summer, was a bed of Ranunculuses. They represented some of the ordinary double and, as they are termed, turban kinds, sold at the seed shops, but could be seen varying in hue of colour, from dark crimson to white; and it was amusing to stand by the bed listening to the comments made on its occupants by some of the folks the fine bright genial Saturday afternoon had brought from London, in order to take a walk about Kew. What Mr. Smith had done with his Ranunculus bed there is surely capable of being reproduced elsewhere, without much trouble or expense, and yet how seldom is the Ranunculus to be met with in our gardens.

The soil recommended by Ranunculus cultivators as the best for these favourite flowers, is one composed largely of cow-dung, which should be collected and stored away in a heap to get thoroughly decayed. Planting time varies according to the locality; generally the month of February is the one when cultivators plant their roots. With the Ranunculus, as with many other flowers, a generous treatment is a virtue that always brings its own reward; and so the old florists used to give it a sumptuous feast of fat things. In one of Mr. Carey Tyso's treatises he recommends the following compost:—"Decayed stable and cow dung, in equal quantities, constituting together about one-third, added to two-thirds of loam, will, when mixed and thoroughly incorporated, form a compost for the main depth of the bed, reserving a portion of loam sufficient to make a top layer of soil, 2 inches deep, to which about half the above stated proportions of well-decomposed manure may be added. It is of importance that the tubers should not be placed in contact with fresh manure, as it engenders disease of the roots, and consequent injury to the plants." The work of preparing the bed was one of some moment with these men. As early in February as it could be done, the soil of the bed was dug out to a depth of 18 inches, a foundation made of what was termed a rich "hazelly" loam, or the "top spit of a pasture of rather heavy and tenacious but not clayey qualities, with the turf;" this was laid in a ridge, and frequently turned before being used. On the top of this would be a layer of the compost referred to, and the whole was covered with soil till the time arrived for planting the bed. Then advantage would be taken of the first fine weather, and the beds made ready for planting by levelling—a process followed by degrees, so as to allow the soil next to the sides of the beds to be well settled previous to planting. The beds having been levelled, and allowed to remain so for a few days, then planting commenced in favourable weather. Spring planting was the invariable rule, though some, as those in dry warm southern districts, would plant in October, contending that the plants had more time to vegetate and establish themselves. To the many, autumn planting was hazardous, so spring was the time selected. With some of the growers a certain depth at which to plant was as firmly believed in as any one article of their religious belief. One of these wrote as if he was the prime law-maker of the Medes and Persians:—"Keep in mind that it is of the utmost importance, to insure success in the cultivation of this most beautiful flower, that the tubers should be planted exactly 1½ inch below the surface." They observed this admonition as strictly as they did the planting of their Tulip beds on November 9. The same writer (none other than that fine old florist, Mr. Geo. Lightbody, of Falkirk) further stated:—"To insure accuracy, I have wood edges inclosing my beds, and to regulate the depth of the drills I use a piece of polished wood, the width of the bed, with notches cut the requisite depth at the ends—this also serves to mark the rows by gently pressing it on the surface. So soon as the row is marked, cut out the soil with a flat garden trowel, as near the required depth as possible, then by pressing the board into the drill till the notches rest on the wood edge, it will at once be seen whether the bottom of the drill is correct. Press the tubers gently into the soil until the crown is about level with the bottom, taking care not to break any of the claws. So soon as the row is planted return the soil and level it. The distance between the rows may be either 5 or 6 inches; and for a bed 4 feet wide, the number of roots in the row may be, of the strong-growing sorts 10 or 12, of the weaker varieties one or two more. When the bed is planted, look over it, and fill up any inequalities with dry soil, and make the surface quite level." If hard frosts set in during March, a few mats were thrown over the beds at night, to save the tubers from injury, but were taken off during the day if the weather was favourable. Worms had to be guarded against. These subterranean borers would occasionally, with a volcano of soil, send up a root, and that had to be planted again, and sometimes lime water was poured into their runs. Later on, as the leaves began to force their way through, the soil was loosened about the plants, and then on all occasions of fine sunny days there would be frequent stirrings of the surface soil to the depth of an inch or so. Then would follow the genial showers of April and May, as dear to a florist's heart as a thumping legacy, and in default of showers there would be occasional waterings of the beds, for the Ranunculus relishes a moist soil, and especially while the flower-beds are forming must there be no lack of moisture at the roots. Then came the period of bloom; the Ranunculus exhibitions, with all their attendant pleasures and pains, gains and losses, hopes and fears, till the bloom failed and the ripening period was reached. With the failing bloom comes the gradual decay of the foliage and the ripening of the roots. Then heavy rains were kept from the beds, and as soon as the foliage began to turn yellow the roots were lifted, as sometimes they would start into a second growth. It was the practice to remove some of the roots daily till all were gradually cleared away. When the roots were lifted, the flower stem was cut off just above the crown, the fibres pinched away, and the soil brushed off; then they were put away in a bag or drawer, in a cool airy place, to dry gradually.

In such a manner did the old growers follow out their mode of culture, and now, when an attempt is to be made to bring the Ranunculus once more to the fore, the publication of the details of the mode may be acceptable to many. Where a supply of varieties could be obtained cannot be so readily stated: doubtless lists of these will be forthcoming when a demand for collections arises. *R. D.*

Obituary.

We have to record, with deep regret, the sudden death from apoplexy, at the age of 49, of Mr. Frederick Waterer, the senior partner in the well-known firm of John Waterer & Sons, of Bagshot, whose grand annual display of Rhododendrons has for so many years attracted and delighted the visitors to the garden of the Royal Botanic Society in the Regent's Park. Mr. Waterer, who was a man of robust constitution, retired to rest in his usual health on the evening of the 3d inst., and was found the next morning dead in his bed. He leaves behind him a widow and a large family of young children, by whom especially, as well as by his numerous friends, his loss will be severely felt. Mr. Waterer was an occasional contributor to our columns. We add the following from a correspondent:—

"'In the midst of life we are in death.' These solemn yet beautifully descriptive words must have been listened to with awe-stricken hearts by all those assembled round the grave of Frederick Waterer on Saturday last. On the previous Tuesday he was apparently the same strong man he had always been, and nobody who looked at him on that day would have believed they would never see again that vigorous body impelled by that energetic mind; but so it was. He retired on Tuesday evening, October 3, at his usual hour, and seemingly as sound in health as he had ever been, and on Wednesday morning, instead of the robust man, a cold corpse was found. The shock to his family can be better imagined than described, and the manner in which their grief was shared by the whole village of Bagshot showed how well those among whom he had lived and laboured appreciated his many sterling qualities. Frederick Waterer was the eldest son of Mr. John Waterer, who brought the American Nurseries at Bagshot to their present position. He settled down to work early in life, as after a brief course of instruction in the various branches of his profession, by Fancourt at Messrs. Henderson's nursery, whither he had been sent on leaving school, he returned home and threw all his energy into his father's business. His aptitude and skill were only equalled by his devotion to, and love of, his profession. One instance will suffice to show his extraordinary memory. He has been known to look at a seedling Rhododendron, not his own, and after an interval of three years to recognise it again, having never seen it in the meanwhile. In conjunction with his brothers, Michael and John, he carried on the business after his father's death in 1868, and on the retirement of Michael, Frederick and John shared the business between them. He was born in 1822, and was consequently 49 years old. He married Miss E. Rogers, daughter of the nurseryman of that name in Southampton, by whom he has left ten children, all of whom survive him."

—— We have also with deep regret to announce the death of another well-known nurseryman, Mr. Robert Taylor Pince, the highly esteemed proprietor of the Exeter Nurseries, which took place at an early hour on October 9. The deceased gentleman, who was 67 years of age, had been an invalid for more than two years, and succumbed at last to an attack of hereditary gout. He was the son of Captain Pince, R.N., and being originally intended for the law, was articled to an attorney at Liverpool. But in his case Love, which we have poetical authority for saying "rules the camp," ruled, or rather overruled, the law; for during a visit to Devonshire he met the fair niece of the late Mr. Lucombe, the proprietor of the Exeter Nursery, and in due time married her. The young lady is said to have had an invincible dislike to the legal profession, and Mr. Pince in consequence resigned his prospects of distinction in that quarter, and joined his uncle in the pursuit of horticulture and floriculture. He followed his new vocation with all the energy and enthusiasm peculiar to his nature, and soon became an accomplished botanist. He added materially to the variety of the Exeter Nursery's collections by judicious hybridising of well-known species. When in the prime of life he took pride and pleasure in competing with provincial and metropolitan nurserymen for horticultural and floricultural prizes, and was remarkably successful. The Camellias, Rhododendrons, and Orchids of his firm obtained celebrity under his supervision. The Camellia-house in his grounds at Alphington is, perhaps, unrivalled in the kingdom. It is 200 feet long, and the plants in it have been cultivated to the dimensions of trees, producing myriads of blooms, thousands of which find their way annually into London drawing-rooms. During the latter half of his career Mr. Pince devoted his attention to landscape gardening, and in this branch of his pursuit was also eminently successful. He has left the mark of his superior taste and skill upon many a park and garden in fair Devon. His last work, we believe, of this description, was the laying-out of the grounds at Marley. His labours were not confined to his own special pursuits. He was for many years Chairman of the St. Thomas Local Board, and to the energy which he brought to bear upon the management of the sanitary affairs of that district may be attributed much of the success that has attended the board's operations. Difficulties were to him only objects to be surmounted; and his perseverance and resolution were but intensified by obstacles and resistance. He originated the system for St. Thomas by which the sewage of the district is deodorised and converted into a profitable manure, thus avoiding the cost of a law-suit threatened by the railway company, and the construction of a sewer to Starcross. The plan of deodorisation by means of carbolic acid, adopted at St. Thomas, was also adopted by his advice at Bombay, and from the authorities there he received a cordial vote of thanks for his counsel and guidance. He retired from the St. Thomas Local Board, a year or two ago, with the regret of all the members, and with their hearty thanks for his valuable services. Hundreds can bear testimony to his generosity of disposition, and his numerous acts of kindness. It will be long indeed before his name is forgotten in St. Thomas, and it will never be mentioned without the respect due to a man who did his duty in his day and generation.

THE WEATHER.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, OCT. 11, 1871.

1871. Month and Day.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
October.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
5. Thurs.	29.62	53.2	50.3	47.4	81	3.6
6. Friday	29.70	57.6	54.5	51.7	84	4.3
7. Satur.	29.42	59.1	58.3	57.6	95	5.3
8. Sunday.	29.76	49.3	46.5	43.4	81	3.2
9 Monday	30.04	44.0	42.6	40.9	89	2.9
10. Tues.	30.27	46.1	43.3	40.2	81	2.9
11. Wednes	30.08	48.0	45.0	41.7	79	3.0

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
October.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
5. Thurs.	62.6	41.5	21.1	52.0	−1.3	S.W.	250	0.04
6. Friday	64.8	49.0	15.8	56.1	+3.2	S.S.W.	345	0.00
7. Satur.	62.8	47.3	15.5	52.1	−0.4	variable	280	0.11
8. Sunday.	56.8	39.0	17.8	46.8	−6.3	WSW	165	0.00
9. Monday	55.0	35.5	19.5	44.2	−7.6	variable	110	0.00
10. Tues.	58.3	32.4	25.9	44.2	−7.4	ENE: E.	115	0.00
11. Wednes	54.6	36.9	17.7	44.7	−6.7	E	100	0.00

Oct. 5.—A fine day, with but few clouds till the afternoon, when the sky became overcast. Rain fell between 3 and 5 P.M.
— 6.—Generally cloudy throughout. A shower of rain fell in the afternoon.
— 7.—Variable in early morning. Overcast from 8 A.M. onwards. Rain fell frequently till noon.
— 8.—A comparatively cloudless day. Very fine.
— 9.—Generally cloudless till noon; variable afterwards. Very fine.
— 10.—Cloudless and fine in early morning; cloudy during the day, and again cloudless at night.
— 11.—Generally overcast till night; then cloudless. A few drops of rain fell occasionally.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, Oct. 7, 1871.

Names of Stations.	Temperature of the Air.							Fall of Rain.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg	Deg	Deg.	Deg	Deg.	Deg	Deg	In.
Portsmouth ..	63.2	39.2	24.0	61.5	45.3	16.2	52.3	0.99
Blackheath ..	64.8	41.5	23.3	61.3	44.9	16.4	51.9	0.77
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	59.3	40.0	19.3	57.5	44.5	13.0	49.9	0.89
Wolverhampton	59.8	37.5	22.3	56.7	43.2	13.5	48.8	0.89
Leicester ..	60.2	38.5	21.7	58.2	42.3	15.9	49.1	0.47
Norwich ..	60.0	36.0	24.0	57.7	44.0	13.7	49.7	0.89
Nottingham ..	61.4	39.2	22.2	57.1	42.4	14.7	48.6	0.89
Sheffield ..	58.0	38.0	20.0	55.9	42.5	13.6	48.1	0.77
Liverpool ..	59.1	41.4	17.7	56.6	45.7	10.9	50.1	2.21
Manchester ..	59.0	41.0	18.0	57.5	43.9	13.6	49.6	2.23
Salford	59.5	38.0	21.5	56.7	42.3	14.4	48.4	2.04
Bradford ..	57.4	41.2	16.2	55.9	44.0	11.9	48.8	1.04
Leeds	59.0	40.0	19.0	56.6	43.9	12.7	49.1	1.25
Hull	58.0	32.0	26.0	56.3	40.3	16.0	47.2	0.44
Newcastle ..	55.0	42.0	13.0	52.0	43.5	8.5	46.6	0.99
Edinburgh ..	54.7	32.0	22.7	..	..	..	44.2	0.60
Glasgow ..	54.3	31.4	22.9	..	..	..	45.0	0.74
Dundee.. ..	52.0	35.0	17.0	..	..	..	44.8	1.70
Aberdeen ..	53.7	35.1	18.6	..	..	..	45.1	2.09
Paisley	..	..	..	..	..	..	..	..
Greenock ..	51.0	39.0	12.0	..	..	..	45.3	2.15
Leith	55.6	33.0	22.6	..	..	..	46.0	0.66
Perth	56.0	31.0	25.0	..	..	..	47.6	1.33
Dublin	60.0	33.5	26.5	..	..	..	47.0	0.77

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

Hedychiums, which, by the way, flower profusely when planted out into open conservatory borders, will now, where grown in pots, be showing symptoms of ripening, and should therefore be but sparingly supplied with water. As soon as the growths have ripened off, the pots should be removed to a cooler place, where the temperature averages about 53° only. Be very careful in applying water, and as much as possible avoid stopping the floors, stages, or other internal surfaces of the houses, especially during dull sunless weather. *Solanums*, of the scarlet-berried or Capsicastrum type, which have been grown in the open borders, should be immediately potted up and 'placed for a few days in a shady properly protected situation, eventually to be removed into a light warm corner of a cool greenhouse, where the berries formed may have an ample opportunity to ripen into their peculiar deep red tint. Batches of the very beautiful winter flower, *Schizostylis coccinea*, should also be "potted up." To this treatment they readily conform, and progress admirably, not showing the least symptoms of being checked. I may also remark that intermediate and other sorts of *Stocks* potted up now make a good display in the early spring. Be particular to place the several quaint forms of *Lachenalias* upon a light airy shelf during the present and future winter months, as it is only by aiding the leaves at this time, whilst growing up to maturity, that they in their turn are capable of developing the stores which furnish tall fine spikes of flowers. The beautiful *Schizanthus*, potted off into 60-sized pots, should be elevated on light shelves, there to be maintained through the long winter months. Where a sufficiency of glass exists, it will be well now to set a house apart for the flowering plants only. Here a nice, dry, intermediate temperature can be maintained, and the lasting qualities of each sort may thereby be materially developed. As regards bedding-plants, some of the tender kinds will now have to be maintained in this department; it will be necessary to keep the delicate kinds of Tricolor Pelargoniums in an intermediate and moderately dry temperature, especially when potted up late.

FORCING HOUSES.

The heating materials in *Pineries* and *Pine-pits* will now for a few weeks need even more watchfulness than usual, considering that in most instances additions have been made to the tan beds, and that the internal atmosphere is kept somewhat closer, and this with rather more artificial heat. I need not say how quickly roots are sometimes scorched, or how much harm may follow such an oversight as to permit the injury. The general treatment of *Pines* for the next few weeks must be regulated by the state of the weather. If the sun shines, the external atmosphere being warm and genial, let the heat rise freely (with proper air on) to something like its past maximum; otherwise, however, be particular to maintain the mean temperature by night as nearly as possible about 61°—63°. By so doing you readily neutralise the tendency which fine sunny days may have in inducing an unadvisable amount of growth at this particular season. Those *Vines* which are to be started next month, the pruning process being completed, should have the stems painted over with a composition consisting of sulphur, soot, cowdung, and lime. Lay it on somewhat thick, so that it may adhere and form a moderate coating upon rods and spurs alike. In using fire-heat in houses containing Grapes which it is desirable to keep as long as possible, be particular not to over-heat the pipes, as to do so at this time is very likely to cause the berries to shrivel earlier than they otherwise would do. As I have before intimated, *Peach* and *Nectarine trees* intended to be started next month, must have all preliminary preparations completed quickly, so that everything may be in readiness to start at the required time. The trees must be started very gently, and therefore no time should be lost. Commence by simply keeping the house moderately close, without the assistance of fire-heat. See at once that the glass in structures where winter *Cucumbers* are grown, as well as all internal surfaces, are made scrupulously clean. Keep up a nice moderate heat only, both top and bottom, and accustom them to as much air as possible, so as to imbue them with all the hardihood possible at the onset. Prepare beds in the usual manner for forcing *Asparagus*. Do this by turning the fermenting materials over several times, to insure that there will remain no future tendency to fluctuate.

HARDY FLOWER GARDEN.

Put into a cold frame, so fixed as to be handy for covering over completely with mats and other materials when sharp weather comes, all desirable kinds of *Shrubby Calceolarias*, dibbling them in in rows, and making the soil moderately firm around them. Prepare beds for *Pansies*, elevating them somewhat above the surrounding ground. Finish also planting such bulbs as previously suggested. Also pot up finally any *Picotees*, *Carnations*, superior *Pinks*, &c., which as rooted layers are still undisturbed; planting any excess which remains on to sheltered borders in sunny situations. Remove the now fading "bedding-plants," at the earliest time possible, and replant the beds or borders with the usual hardy annuals, biennials, &c., which consist of *Silenes*, *Myosotis*, *Nemophilas*, *Collinsias*, *Clarkias*, *Antennaria tomentosa*, *Ajuga rubra variegata*, *A. orientalis*, variegated *Arabis*, *Stachys lanata*, *Golden Pyrethrum*, *Festuca glauca*, &c., all of which withstand the inclemency of our winters, and make a fine display in very early spring—especially when planted in connection with such spring bulbous plants as the Grand Duc, Lilac Queen, Scarlet Gem, or Citron Queen, single *Hyacinths*; the Rex Rubrorum, La Candeur, and double Duc Van Thol *Tulips*; with sundry *Crocuses*, Turkish *Ranunculuses*, *Scillas* bifolia and sibirica, *Anemones*, *Narcissi*, *Crown Imperials*, and *Snowdrops*, with winter *Aconites*, if you will,—all which tend so greatly to enliven the early garden, and to enhance to the full the charms of springtide.

KITCHEN GARDEN.

Gather up now the leaves of *Cardoons*, twisting a hay band around them, and finish them off by earthing up to their apices. In finally earthing-up, give to the mounds as good a slope as possible, whereby to ward off the rains. Choose a fine dry period to mould-up *Celery*, according to the various stages it is in, in the matter of growth. As I have said before, this process should be done successionally, otherwise a uniform supply of good sticks is not possible. As soon as the upper growth of *Asparagus-beds* is ripened off, cut it down and remove it forthwith; hoeing and cleaning the ground well, subsequently to admit the air freely thereinto. I do not advise manuring them in the autumn, with past experience of their great hardiness, as regards frost, and the knowledge we have that the roots rot when maintained during the winter in a wet soil, which dung coverings tend to insure rather than the reverse. Autumn *Cauliflowers* which are "heading in" should now be regularly attended to in regard to "bending over" the leaves, as a safety against first frosts. It may be necessary very shortly to take up batches of Walcheren, or early winter *Snow's Broccoli* at a sign of a severe night; otherwise an early autumn frost might blight the best prospects. Where bracken can be had, a row might be placed alongside, ready to cover them over as they grow, as soon as the first symptoms of frost occur. Make up the prepared materials for *Mushroom-beds* by placing them about 3 feet high, and in width according to the position to be occupied. Let the heap be lightened up, and remain for a day or so to ascertain if more violent heat is possible. Subsequently beat all down as firmly as possible, and spawn in a declining warmth of not more than 80°, otherwise there will be a risk of destroying the spawn before any advance is made. Look to and sort over Onion and Potato crops, both of which possess this season the germs of a latent disease. *W. E.*

Notices to Correspondents.

ALSTRŒMERIAS: *S. G.* These succeed in rich sandy loam, and their tuberous roots require to be planted rather deeply; hence you had better use 8 or 10-inch pots, in which some six or eight tubers may be planted, and as they produce buds from any part of their surface, it matters little how they are placed. The hardier kinds would do better in a deep, warm border of rich, dry, sandy soil, than in pots. If grown in pots, they should, like Lilies, Gloriosas, &c., be planted at once in those in which they are to bloom.

AMERICAN NURSERYMEN: *Inquirer.* You will find a full list in "Hogg's Horticultural Directory."

A TEMPORARY SKATING POND: *G. R.* would be obliged for a few hints respecting the following scheme for making a provision for skating. He says: "The area (about 4 acres) proposed to be acted upon is grass, and nearly level, there being not more than 4 inches of fall in any part. The ground is heavy clay, but well drained. Will one or two nights frost render the ground fit to carry sufficient water to cover the grass, which is short? Or will the temperature of the water from a reservoir, when turned on, thaw the ground, and allow the water to escape?"

BEDDING FUCHSIAS: *C. W. D.* The following varieties have been successfully grown this year in Hyde Park:—Dark: Prince of Orange, Prince Imperial; Light: Lady Heytesbury, Mrs. Marshall; and the following, which are also good sorts for beds:—light: Rose of Castille, Maid of Kent, Conqueror, Snowball, and Madame Cornelissen; dark: Marquis of Bristol, Sir Colin Campbell, Souvenir de Chiswick, and Prince of Orange.

CAMELLIAS: *D. E. C., Aberdeen.* White: Alba-plena, Alba illustra; blush: Lady Hume's Blush, Jubilee; rose: Duc de Chartres, Henri Favre; pink: Storeyi, Wilderi; crimson: Bealii, Mathotiana; white striped with crimson or pink: Countess of Orkney, Madame A. Verschaffelt; red, or crimson striped with white: Jacksoni, Queen of Denmark. The following are very fine, and, in addition to those already named, possess the qualities of form and habit required by our correspondent:—Archiduchesse Augusta, dark crimson; Cup of Beauty, white, striped carmine; Etoile Polaire, white, striped rose; Grunelli, white; Palmeri, deep rose; Saccoi novi, rosy pink.

CUCUMBER: *Subscriber, Neath.* None better than the true Telegraph (Rollisson's). What do you propose to use the gas-lime for?

CURRANTS: *A. B.* Of course they are "young" trees at the stage you refer to.

DIEFFENBACHIA: *Anxious Inquirer.* Probably the plant is too damp at the root, or is suffering from cold. It needs very little moisture now that it is going to rest, and should be kept in a stove heat.

EPIPHYLLUM: *D. H.* You are surely mistaken as to the "general practice" of grafting this plant on Euphorbia spinosa, and have been no doubt deceived by the mimetic aspect of some of the Cerei and Pereskias, and of the Euphorbias. We must have much better evidence before believing in such an union.

GRAPES: *W. T.* None will suit your purpose better than the Buckland Sweetwater.

MOUNTAIN ASH: *J. D. F.* The jelly prepared from Rowan berries is the proper sweet sauce for venison. The recipe you refer to is as follows:—Put the berries into a stewpan with sufficient cold water to cover them; boil to a pulp; strain the juice through a canvas bag. Then to every quart of juice add 2 lb. of sugar, make it boil, and let it boil for ten minutes.

NAMES OF FUNGI: *A. W. Featherstonhaugh.* 1, Lactarius deliciosus, edible; 2, Russula rubra, poisonous; 3, Agaricus rutilans; 4, Boletus badius; 5, Boletus luteus; 6, Agaricus prunulus, edible. The qualities of Agaricus amethystinus are not known. *W. G. S.*

NAMES OF PLANTS: *K. and S.* Blechnum cognatum.—*W. B. W.* 1, Asplenium marinum; 2, Adiantum Capillus-Veneris; 3, Asplenium flaccidum; 4, Pteris longifolia; 5, Pteris serrulata; 6, Diplazium lasiopteris. All but the last should thrive in a greenhouse temperature.—*R. M.* Tillandsia dianthoidea of Rossi, the Anoplophytum dianthoideum of Beer. We should suppose it to be by no means a well-known plant; the only readily accessible botanical work to which we can refer you is "Regel's Gartenflora for 1854," in which a truthful figure occurs (tab. 85).—*T. Newton, Campsall.* Cyphomandra betacea of Sendtner (Solanum betaceum, Cav.). It is not a native of Madeira, but of Mexico, and not unfrequently fruits in this country, that is to say, in greenhouses. You will find mention of it at p. 380 of our last year's volume.—*Stewkley, Bucks.* Maximowiczia chinensis is a totally distinct plant from the Idesia you mention. It is a member of the order Schizandraceæ, is also known by the names Kadsura chinensis (Turcz.) and Sphærostema japonica (A. Gray). Native of China (of Manchuria and the region of the Amur) and Japan. In habit it is a climber, but we do not know that it presents any feature recommending it to cultivators. We recommend you to adopt the name Idesia polycarpa (of Maximowicz) in preference to I. polygama, as used in our pages as you quote (p. 1342, 1870): the other name, Polycarpa Maximowiczii, appears to be an utter miswriting, almost a parody on its true name, and has no claim to be perpetuated whatever. Of Pyrus dulcis we know nothing.—*J. Dimmick.* The white-flowered variety of Escallonia rubra, native of Chili: E. rubra var. alba).—*J. T. S.* sends a very beautiful variety of the common Sunflower (Helianthus annuus), with all the florets tubular. We know no special name for it, but dare say it possesses one. We should refer to the seed catalogue of Barr & Sugden, or some other seedsman, in order to find it out.—*J. C.* Alstrœmeria edulis, *alias* Bomarea edulis; native of the West Indies.—*Hesperus* sends us a scrap of some monstrous condition of garden flower insufficient for determination; send a better specimen.—*W. H. Horsfall, Manchester.* 1, Juncus triglumis; 2, Phleum pratense (starved); 3, Carex dioica (?); 4, Scleranthus annuus; 5, Hieracium vulgatum; 6, Epilobium palustre; 7, Orobanche rubra; 8, Sagina nodosa.—*J. M.* Goniopteris diversifolia *alias* fraxinifolia.

PENTSTEMON: *J. H.* Your seedling appears particularly rich in colour, but we have not the best new sorts at hand for comparison.

PACKING HOP SETS: *F. M.* The best plan of packing Hop sets to be sent to Australia, is to lay them regularly, and moderately firmly, in powdered charcoal, in a box lined with tin, so that before starting the box may be made airtight. Hop seeds, packed with ordinary care, ought to arrive in Australia in good condition.

POTATOS: *H. H.* Probably the wireworm, or some other insect, attracted by the refuse.

TREATMENT OF FIGS AGAINST WALLS: *F. W.* They must decidedly not be "left to Nature" entirely. Prune your trees, *i. e.*, thin out the branches, so that the bearing shoots are left from 4 to 6 inches apart, and regularly distributed over the tree. Pinch out the points of the growing shoots in summer, when they have attained the length of 3 or 4 inches, and keep every shoot well exposed to the sun's influence. Then you may expect to have good fruit.

VINE PRUNING: *J. B., East Grinstead.* Our correspondent's suggestions on this subject referred only to those Vines which were fully ripened, as a consequence of early forcing. He would not dream of pruning Vines now, which are grown in a cool house.

VINES: *R. S. J.* Plant two Black Hamburgh and one Royal Muscadine; or, if you must have three varieties, let the other be Black Prince. We do not undertake to recommend dealers. Any nurseryman can supply them.

WHITETHORN: *J. Fry.* Transplant at once.

ERRATA.—In p. 1205 *b*, six lines from the bottom, for "smoked" read "scorched." P. 1296, in report of Royal Horticultural Society's general meeting, for "divided" read "derived;" and for "bran" read "brown." P. 1297, for exhibition of "Fungus" read "Fungi;" and in same par. for Agaricus "jumosus" read "fumosus."

COMMUNICATIONS RECEIVED.—R. G.—Anglo-Saxon.—F. W. B.—L. S. E. D.—W. T.—J. McP.—C.—J. R. J.—E. M.—H. J.—R. T.—R. M. W.—W. F.—J. M. T.—D. T. F.—C. D. S. (we don't know).—F. L.—Subscriber.—Old Subscriber.

Markets.

COVENT GARDEN.—Oct. 13.

Large arrivals of choice Pears are continually coming in from France, realising moderate rates for the season. New Brazil, Almond, and Barcelona Nuts are now coming forward—the season for them is a good one. Almeira Grapes are not so good this season as usual; fine samples are making about 36*s.* per cask, inferior about 28*s.* to 30*s.* Hothouse produce is quite sufficient for the trade, and ordinary Apples and Pears are realising last quotations. We have also had considerable arrivals of Nuts from Para, 120*s.* per cwt. being the average rate realised. Oporto Onions of choice quality, exceedingly fine, fetch 12*s.* per case, and new fresh Walnuts 5*s.* to 7*s.* per peck.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve	2 0	to 4 0	Melons, each	2 0	to 5 0
Cobs, per lb.	0 8	— 10	Nectarines, per doz.	4 0	— 8 0
Figs	1 0	2 0	Peaches, per doz.	6 0	—12 0
Filberts, per lb.	0 8	— 10	Pears, per dozen	2 0	— 4 0
Grapes, per lb.	1 6	— 5 0	Pine-apples, per lb.	2 6	— 6 0
Lemons, per 100	8 0	—12 0			

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Artichokes, per doz.	0	to 6 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz.	1 0	— 2 0	Leeks, per bunch	0 2	— 0 4
Brussels Sprouts, p. half sieve	2 6	— 3 0	Lettuces, per score	0 9	— 1 6
Cabbages, p. doz.	1 0	— 1 6	Mushrooms, p. pott.	1 0	— 2 6
Capsicums, p. 100	1 6	— 2 0	Onions, per bunch	0 4	— 0 9
Carrots, p. bunch	0 6	— 0 8	Parsley, p bunch	0 2	— 0 4
Cauliflowers, p. doz.	2 0	— 6 0	Peas, per quart	10	— 1 0
Celery, red, p. bun.	1 6	— 2 0	Radishes, per bunch	0 2	— ..
— white, do.	1 0	— 1 6	Shallots, per lb.	0 8	— ..
Chilies, per 100	1 6	— 2 0	Spinach, perbushel	2 6	— 3 0
Cucumbers, each	0 6	— 1 0	Tomatos, p. sieve	4 0	— 6 0
— Ridge, p. dox.	1 0	— 2 0	Turnips, p. bunch	0 4	— 0 6
French Beans, p. lb.	0 4	— 0 6	Vegetable Marrows, per doz.	1 0	— 2 0
Herbs, per bunch	0 2	— 0 4			

Potatos (good samples), New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application Edinburgh and London, October, 1871.

D. S. THOMSON offers the following well grown NURSERY STOCK, in quantity:—

CEDRUS DEODARA, 1½ to 2 feet, 2½ to 3½ feet high; WELLINGTONIA GIGANTEA, 1½ and 2½ feet; THUJOPSIS BOREALIS, 1½ to 2 feet, 2½ to 3 feet; THUJA GIGANTEA, 2½ to 3 feet; Double FURZE in 60 pots by the 100 GRAPE VINES for planting and fruiting, best varieties; with a general collection of Stock Price on application.

The Nursery, Wimbledon, Surrey, S.W.

The Planting Season.

J. SCOTT, The Nurseries, Merriott, Somerset, begs to offer to Gentlemen, who intend Planting this Season, a large and well assorted stock of all the best kinds of TREES and SHRUBS, in various sizes, and at very moderate prices. Now is an excellent time to plant Evergreens CATALOGUES on application.

J. SCOTT'S extensive stock of FRUIT TREES, covering many acres, are this season fine, and grown in all the usual forms

CATALOGUES free; or the ORCHARDIST and its COMPANION at 2*s.*, describing over 2500 sorts, with Cultural Notes

DUTCH BULBS, just arrived from Holland, in prime condition. CATALOGUES free on application.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W TODMAN, Eltham Nursery, Kent, S.E.

RHODODENDRON HYBRIDUM, from seed, 2-yr. and 1-yr. transplanted, 20*s.* per 1000; 4 to 6 inches, 30*s.*; 5 to 7, 40*s.*; 8 to 12, 12*s* per 100; 9 to 15, 15*s*; 12 to 18, 20*s.*; 18 to 24, 30*s.*; 24 to 30, 40*s.*; Stocks, 12*s.*; Splendidum (white), Maid's Blush, 12 to 15, 50*s*; Jacksonii, Victoria, 12 to 15, 15*s.* to 18*s.* per doz; Woolneri, 12 to 15, 12*s.*; Caucasicum pictum, 12 to 15, 10*s.* to 12*s.*; all bushy, healthy plants. EVERGREEN PRIVET, 18 to 24, 16*s.* per 1000; 24 to 36, 20*s* BERBERIS AQUIFOLIA, 15 to 20, 50*s* AUSTRIAN PINES, 18 to 24, 50*s* ENGLISH OAK, 18 to 24, 20*s.* WYCH ELM, 24 to 36, 20*s*; 36 to 48, 25*s.*

ISAAC MATTHEWS, Nurseryman, Milton, Stoke-on-Trent.

SPECIAL OFFER—ALDER, 3 to 5 feet, very fine, £1 per 1000; ASH and ELM, 2 to 3 feet, 12*s.* per 1000; strong 3 yr. QUICKS, 15*s* per 1000; very strong 4-yr, about 3 feet, 25*s*

5000 capital MAIDEN APPLE and PEAR TREES, 6*s.* per dozen, £2 per 100 Splendid large vigorous STANDARD and PYRAMIDAL FRUIT TREES, 4 to 5-yr, grafted—APPLES, 12*s.*; PEARS, PLUMS, and CHERRIES, 15*s.* per doz; £5 per 100.

Finest TEA-SCENTED ROSES, in pots, 12*s.* per dozen; £4 per 100.

R. THORNHILL, Bowdon Nurseries, Bowdon, Cheshire.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALCEOLARIA; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN All the above at 1*s.* 6*d.* 2*s.* 6*d.*, 3*s* 6*d.*, and 5*s* per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

CHOICE TRICOLOR GERANIUMS.

Jetty Lacy
Coronet
Pre-eminent
Sunray
Mrs Dunnett
Sir R Napier
Phœbus
Sunbeam
Miss Burdett Coutts
Italian Beauty
Mrs. John Clutton
Mabel Morris

The 12 for 21*s.*, package included Terms cash. Remittances requested from unknown Correspondents. A LIST of 250 varieties post free.

ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

New English Rose (Hybrid Perpetual Climbing),
PRINCESS LOUISE VICTORIA.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, the raiser of this Rose, will send it out for the first time in November next, good plants at 7*s.* 6*d.* each, or three for 21*s* Has been awarded Three First-class Certificates See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

It will be figured in the "Floral Magazine" for November.
Coloured Drawings will shortly be ready, for 12 stamps, post free.
Descriptive Priced CATALOGUES free on application.

ORCHIDS.—Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected

JAMES BROOKE AND CO, 16 and 18, Victoria Street, Manchester. Nurseries. Fairfield, near Manchester.

Winter and Spring Flowering Plants.

F. AND A. SMITH offer the following in strong healthy plants, suitable for decorative purposes:—

ACACIAS
AZALEAS
CYCLAMEN
CYTISUS
DEUTZIA
ERICA HYEMALIS
„ WILLMOREA
„ SINDRYANA
EPACRIS
EPIPHYLLUM
HOTEIA JAPONICA
PELARGONIUM
POINSETTIA
PRIMULA
SOLANUM, in fruit
TREE CARNATION, &c.

LIST and Prices on application.
The Nurseries, West Dulwich, S E

Planting Season.—October, 1871.

LITTLE AND BALLANTYNE,
The Carlisle Nurseries, Knowefield, Carlisle.

These old established Nurseries are well stocked with all kinds of FOREST TREES, SHRUBS, FRUIT TREES, &c., orders for which are respectfully solicited. The plants are healthy and well-rooted, and great care is taken in lifting, packing and forwarding. Prices moderate, and special offers made for large quantities.

Seed Warehouse, 44, English Street, Carlisle

DWARF SHRUBS, &c., for FLOWER BEDS
During Winter.

PERNETTYA MUCRONATA.
IVY, of sorts
LEDUM BUXIFOLIUM.
ERICAS and CALLUNAS, of sorts.
PERIWINKLE, variegated and plain.
COTONEASTER MICROPHYLLA
MENZIESIA POLIFOLIA, purple and white.
BERBERIS AQUIFOLIUM.
VACCINIUM BUXIFLORUM, &c.
GAULTHERIA SHALLON
ARCTOSTAPHYLOS UVA URSI.
ANDROMEDA FLORIBUNDA
RHODODENDRON FERRUGINEUM and HIRSUTUM.
JUNIPERUS SABINA VARIEGATA
JUNIPERUS SABINA TAMARISCIFOLIA, &c.

Many beautiful effects produced by tasteful arrangements of the above Plants, by which flower beds are made very attractive during the winter months. Priced LISTS on application.

LITTLE AND BALLANTYNE, Seedsmen and Nurserymen, Carlisle

WANTED, an energetic and experienced young Man, as FOREMAN, for some good Gardens One who understands Pines, Grapes, and Mushrooms preferred.—H. M. B, Post Office, Aldershot, Hants

WANTED, as FOREMAN and PROPAGATOR, a single Man.—Must be a good hand at Soft-wooded Plants—Apply, stating terms, &c, to Mr SIBLEY, Richmond Nurseries, Fairview, Dublin.

WANTED IMMEDIATELY, a PERSON that thoroughly understands the Propagation and Growing of Soft-wooded Plants for Market Every convenience and help will be given. None need apply unless thoroughly capable of carrying on a large concern to employer's satisfaction.—Apply, with particulars, to FILMER AND MONRO, Covent Garden Market, W.C.

WANTED, as GARDENER, a young unmarried Man. One who has been apprenticed to the business preferred. He will be required to Lay out, Plant and Cultivate about 3 acres, and to Grow Fruits, Vegetables, Flowers, Evergreens, &c. Wages, £1 per week No residence.—B S., Post Office, Cambridge

WANTED IMMEDIATELY, a GARDENER (SECOND).—He must be middle-aged, without encumbrance, and understand Vines, Kitchen Gardening, and Nailing and Pruning Wall Fruit; his Wife to assist in the Dairy. Must be thoroughly respectable. Wages 18*s* per week, house, coals, milk, and vegetables, when any—Apply, by letter, addressed to the Housekeeper, 6, Mincing Lane, London, E.C.

WANTED, in a large Forcing Etablishment near London, where Fruits, Plants, and Flowers are extensively grown for Covent Garden Market, a first-rate MAN, who can be depended upon, can work himself, and see that those under him do Free house and fire on the ground. Wages not an object, if a suitable person can be obtained—Apply, with all particulars, to FILMER AND MONRO, Fruit Salesman, Covent Garden, London, W C

WANTED, a young MAN (SECOND), used to Nursery Work. Good Budder, Grafter, and Propagator; to take, when required, charge of Greenhouses. Wages, 18*s*—G. J WOOLLETT, Caterham, Surrey

WANTED, a young MAN, who can write well, make up Bouquets, and fill up his time in the Seed Shop and Glass department of the Nursery.—Mr. CHILDS, Florist, Rye Lane, Peckham, S E.

FARM MANAGER WANTED.—The Croydon Irrigation and Farming Company REQUIRE a MANAGER, conversant with the application of Sewage to Land. Salary £150, with House Applications, by letter, with testimonials, to be delivered by the 20th inst., to the Secretary, at the Company's Offices, 6, Westminster Chambers, London, S W.

To Farm Bailiffs and Others.

BOROUGH of BIRMINGHAM.—The Public Works Committee REQUIRE the services of a competent PERSON, to undertake the charge of the Sewage Farm, of 130 Acres, at Saltley A preference will be given to any person accustomed to Sewage Irrigation. Salary to commence at £2 per week, with a prospective increase, according to the value of the Crops obtained.—Applications, in writing, together with testimonials, to be forwarded to the undersigned, on or before MONDAY, the 16th instant.

WILLIAM S TILL, Borough Surveyor.
Borough Surveyor's Office, Birmingham, October 6, 1871.

NURSERY CLERK.—WM. WOOD & SON are REQUIRING a steady, respectable, single Man, not under 45 years of age, to act as NURSERY CLERK—Address, in own handwriting, stating terms required, to WM. WOOD AND SON, Nurseries, Maresfield, Uckfield, Sussex.

NURSERY CLERK.—JAMES DICKSON & SONS REQUIRE, for their Nurseries, a thoroughly respectable and competent CLERK, accustomed to Correspond, and who has filled a similar situation in a large general Nursery. State age, and all particulars as to experience, salary expected, &c.—"Newton" Nurseries, Chester

WANTED SHORTLY, as SHOPMAN and CLERK, in a country business, an active Man, who can act as Salesman in the Florist Department; correct in Execution of Seed Orders, and with a general knowledge of the Nursery Business. He will be required to keep the Books, and must be of good address, thoroughly respectable, and willing to make himself useful wherever his services may be wanted.—Apply, stating wages required, age, and where last employed, to THOS BUNYARD AND SONS, Maidstone.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Age 37, married, no incumbrance; well-skilled in all branches of the profession. Good reference—G B, 3, Rose Cottages, Albert Road, Lessness Heath, Kent, S E.

GARDENER (HEAD), to any Nobleman or Gentleman—Age 33, Scotch; thoroughly practical—Thirteen years' constant experience in Fruit, Flower, and Kitchen Gardening.—H., McLaren's, North End, Hammersmith Road, S.W.

GARDENER (HEAD).—Single; understands the Growing of Pines, Vines, Cucumbers, Melons, and general Forcing; also Stove and Greenhouse Plants and Orchids, and Flower and Kitchen Gardening. Good character.—A. B., Mr. Wooley, Nurseryman, Cheshunt, Herts.

GARDENER (HEAD).—Age 32, married; has had many years' experience in all branches of Gardening, Can be highly recommended by his present employer, with whom he has been 12 years, and is leaving in consequence of the place being given up.—WM. GREENWOOD, Alderwasley Hall, Derby

GARDENER (HEAD, WORKING).—Age 45, married, no incumbrance; has taken many Prizes, but is not desirous to show unless employer wishes. Any Lady or Gentleman requiring a really good practical Man, active, intelligent, and trustworthy, will find Advertiser worthy of confidence. Ten years in present, and seven in last situation. Wife could undertake Dairy or Poultry, or would assist in house occasionally if required—BOX, Midford, Bath.

GARDENER (HEAD), or GARDENER and FORESTER.—Has great experience in the Formation of Plantations, and the Rearing of young Forest Trees; a first-class Pine and Vine Grower; good Plantsman, unsurpassed as a Kitchen Gardener. Would have no objection to look after Land and Stock. Ten years' excellent character—W. WOOLLEY, Tower, E C.

GARDENER (HEAD, WORKING).—Age 30, married; understands Stove and Greenhouse Plants, Vines and Orchards, and Flower and Kitchen Gardening. Five years' good character.—A B, Post Office, Stroud, Gloucestershire.

GARDENER.—Age 25; thoroughly understands Pines, Roses, and all Indoor Work, also Flower and Kitchen Gardening. Seven years' experience in a large establishment. Good reference—A. P., Birch Hall, near Colchester, Essex.

GARDENER, or otherwise.—Age 27, married; thorougely practical.—R. PRYOR, Trafalgar Cottages, Old Windsor, Berks.

GARDENER (SINGLE-HANDED, or SECOND where two or more are kept).—Age 26; eight years' experience. Good character.—G N., 4, Royal Oak Place, Peckham Rye, S E

GARDENER (UNDER).—Seven years' good character.—W. B, 10, Bridge End, Warwick.

GARDENER (UNDER), in a Gentleman's place, or as IMPROVER, in a Nursery—Age 18; two and a half years' good character.—H. C., Charlton Post Office, Dover, Kent.

GARDENER (UNDER), or to Assist in the Nursery.—Used to Fires and general Management of Houses.—H., Elizabeth Cottage, King William Street, Wandsworth Road, S.W.

FOREMAN, or SECOND, in a good place.—Age 24; good Plant Grower, also understands Vines, Melons, and all branches of the profession. Nine years' experience.—B., 2, Fortune Gate, Harlesden, N.W.

PROPAGATOR (GENERAL), or GROWER for Market—Age 26, single; large experience in London and Provincial Nurseries.—L. P., Sunny Bank Nurseries, Lindley, Huddersfield

BAILIFF, or BAILIFF and to SUPERINTEND a Gentleman's Garden and Grounds.—Age 35, married; experienced, fully understands Farming in all its branches, both Heavy and Light Land; also the Breeding, Grazing, Buying, and Selling of Stock. Many years on a large farm in Norfolk; 1¾ year in present situation. Satisfactory reasons for leaving. Good references as to character and capabilities—L. S. D., Addiscombe Farm, Croydon, Surrey.

ESTATE BAILIFF, or ESTATE BAILIFF and GARDENER.—Age 29, married; understands all kinds of Estate Work, including Fencing, Draining, Road-making, Timber and Plantations, and General Repairs; can Prepare Plans and Specifications for Farm Buildings, &c. Also a good practical Gardener. has had a good deal of experience in Laying out and Planting New Gardens and Pleasure Grounds. References from present and previous employers.—A. B., Post Office, Devizes, Wilts.

To Head Gardeners.

IMPROVER (Age 17).—THOMAS SIMPSON, The Gardens, Broomfield Lodge, Chelmsford, can with confidence recommend a very respectable and pushing young Man as above; would pay a small Premium

IMPROVER, under a Foreman, in a first-class Nursery, near London.—A young Man, who has had some experience in Landscape Gardening, can Draw Plans, and will make himself generally useful. Can be well recommended.—H. K, Hale Farm Nurseries, Tottenham, N.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

TO SEEDSMEN.—A young Man, age 26, desires a permanent re-engagement in Writing and Executing Orders. Eight years' character.—E. W., 32, King Street, Portman Square, W.

SHOPMAN, or WAREHOUSE FOREMAN.—Age 35, married; twenty years' experience. Highest testimonials.—A. B., 66, Bridge Road, Battersea, S W.

SHOPMAN.—A young Man, who has had nearly six years' experience in the Seed Trade, is now open for an engagement.—J. C., Post Office, Perth.

Seed Trade.

SHOPMAN, or otherwise.—Age 32; understands Plants. Five years in one of the largest London wholesale houses.—C. C., 2, Albert Cottages, Avenue Road, Hackney Downs, N.

SHOPMAN (SECOND), or BOOK-KEEPER.—Age 22; eight years' experience Thorough knowledge of Seed Trade Can be highly recommended.—W. T., Mr. D. H. Higgins, Seed Merchant and Nurseryman, Clonmel.

To the Seed Trade.

COUNTERMAN, ASSISTANT SHOPMAN, or BOOK-KEEPER.—The Advertiser (age 25) has served several years in each of the above capacities in one of the largest London houses. Satisfactory references.—C. H. S., *Gardeners' Chronicle* Office, Wellington Street, W.C.

Carter's Prize Seed Wheat.

JAMES CARTER and CO. offer choice samples of the following:—

CLUB-HEADED ROUGH CHAFF WHITE WHEAT.
HALLETT'S HUNTER'S WHITE PEDIGREE WHEAT.
BROWICK RED WHEAT.

Samples and lowest price on application

JAMES CARTER and CO., Seedsmen to the Queen and the Prince of Wales, 237 and 238, High Holborn, London, W.C.

THE PINE-APPLE NURSERY COMPANY, Maida Vale, Edgware Road, St. John's Wood, W., beg most respectfully to announce that they have successfully secured Mr. JOHN BESTER, the well-known Horticulturist, who is now permanently engaged as MANAGER of the NURSERY and SEED DEPARTMENT.

The Company having the greatest confidence in their arrangements, pledge themselves to supply the best productions in every department, and to conduct the Business in a spirit of liberality, with a determination of giving satisfaction to their Customers. Applications to be addressed to

Mr. JOHN BESTER, Pine-Apple Nursery, Maida Vale, W.

DISSOLUTION of PARTNERSHIP.—Notice is hereby given, that the Partnership hitherto existing between the Undersigned has THIS DAY been DISSOLVED by MUTUAL CONSENT so far as regards THOMAS BUNYARD, Senior; and that in future the Business will be carried on (as before) at Maidstone and Ashford, under the name of THOMAS BUNYARD and SONS, by THOMAS BUNYARD, Junior, and GEORGE BUNYARD, who will receive all Debts due to the Firm, and discharge all Liabilities against the concern.

THOMAS BUNYARD, Senior.
THOMAS BUNYARD, Junior.
GEORGE BUNYARD.

The Old Established Nurseries, Maidstone.
The Rose Nurseries, Ashford.

October 2, 1871.

N.B. TRADE CATALOGUE now ready.

Seed Warehouse: 16, Market Place, Kendal.

NURSERY: MINTS FEET, KENDAL.

THE UNDERSIGNED, having now entered upon Possession of the Old Established SEED and NURSERY BUSINESS so long carried on by his late Father and his Executors, respectfully requests a continuance of the support so liberally accorded to them. He will continue to conduct the business as already announced, and will endeavour to merit confidence of the Public by a close personal superintendence in every department of his business.

October 12. JAMES MELDRUM.

HOWCROFT and WATKINS, Seedsmen (Successors to Charlwood & Cummins) keep a choice assortment of EVERLASTING and DRIED NATURAL FLOWERS and GRASSES, arranged in Baskets, Wreaths, Bouquets, &c.; FRENCH IMMORTELLE WREATHS and CROSSES, for Funeral Decoration.

HOWCROFT and WATKINS, Seedsman (Successors to Charlwood & Cummins) keep a large stock of various articles in PLAIN, ENAMELLED, and ETRUSCAN TERRA COTTA, consisting of Vases, Garden Seats, Window-Boxes, Fern-Stands, Flower-Pots, &c.

14, Tavistock Row, Covent Garden, London, W.C.

Northampton Nurseries.

JOHN PERKINS, Sen., begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his extensive STOCK of the following, the whole of which will be offered at very low prices:—

Whitethorn or Quick, extra fine, 3-yr. transplanted
Spruce Fir, 2½ to 4 feet
Scotch Fir, 1½ to 2 feet
Larch Fir, 1½ to 2, 2½ to 3, and 3 to 4 feet
Pinus austriaca, 1½ to 2, 2 to 3, and 3 to 4 feet
Birch, 3 to 4 feet
Hazel, 2 to 3 feet
Hornbeam, 2 to 3 feet
Evergreen Privet, 1½ to 2, 2 to 3, and 3 to 4 feet
Berberis aquifolia, 1 to 1½ foot
Green Box, 1½ to 2, and 2 to 3 feet
Portugal Laurel, 1½ to 2, and 2 to 3 feet
Common Laurel, 1½ to 2, and 2 to 3 feet
Black Italian Poplar, 4 to 6 feet
Blackthorn, 1½ to 2, and 2 to 3 feet
Roses, &c., &c.

J. P.'s stock of all kinds of FRUIT, FOREST, ORNAMENTAL TREES, &c., is very extensive, and in the best possible condition for removal, having been frequently transplanted. Descriptive priced CATALOGUES free by post, or on application.

52, Market Square, opposite the Corn Exchange, Northampton.

Versailles Nursery, William Street, Hammersmith.

THE REMAINING STOCK of Mr. SALTER'S noted collection of CHRYSANTHEMUMS, Double PYRETHRUMS, CHINESE PÆONIES, GERMAN IRIS, PHLOX, &c., is now being SOLD at reduced prices. Several GREENHOUSES are also for sale.

Apply to Mr. STONE, at the Nursery; or to Mr. CHANDLER, Horticultural Agent and Valuer, Underhill Road, Dulwich, S.

MR. LEWIS S. WOODTHORPE, Horticultural Auctioneer and Valuer, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

MR. JAMES FRASER, Horticultural and Agricultural Valuer and Auctioneer, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

JOHN MARTIN, Drainage and Sewage Engineer, undertakes the OVER and UNDERGROUND APPLIANCES for the UTILISATION (Wet or Dry) of the SEWAGE of TOWNS, MANSIONS, &c.; and the IRRIGATION of ESTATES, GARDENS, FARMS, &c. (singly or in combination).

J. MARTIN, Kincardine-on-Forth, Scotland.

Tredegar Nursery, Bow, E.

TO BE LET, with immediate possession, the above, containing NINE GREENHOUSES, PITS, &c.; also 150,000 PLANTS, adapted for the London Markets.

For particulars, apply to PROTHEROE and MORRIS, American Nurseries, Leytonstone, E.

Whittington Nursery, Highgate Hill, N.

TO BE SOLD, by Private Contract, the whole of the NURSERY STOCK on 2¾ acres walled-in ground, including the Span-roof Greenhouses, 50 feet by 13 feet, and other Erections; also Seed Shop and Dwelling-house, with unexpired Lease of 20 years, situated in a very improving neighbourhood, about four miles from the City.

Further particulars may be obtained at the Nursery; and of Mr. JAMES FRASER, Horticultural Valuer and Auctioneer, Maylands Farm, Romford, Essex.

SALES BY AUCTION.

Heath Bank, Cheadle, near Manchester.

The VALUABLE COLLECTION of ORCHIDS, NEW HOLLAND PLANTS, and a RARE COLLECTION of AZALEAS. Very many of the Plants of the different varieties have taken Prizes at the Royal Horticultural Society's Exhibitions in London, and at all the large towns where exhibited.

CAPES and DUNN respectfully announce that they have received instructions from Thomas Kendal, Esq., who is changing his residence, to SELL by AUCTION, on WEDNESDAY and THURSDAY, October 18 and 19, at 11 for 12 o'Clock each morning, on the Premises, Heath Bank, the whole of the valuable COLLECTION of ORCHIDS, NEW HOLLAND PLANTS, magnificent AZALEAS, ORNAMENTAL and FLOWERING STOVE PLANTS, FRUITING and SUCCESSION PINES, &c. Among the Orchids are comprised the following specimens, viz.:—Aerides, Vandas, Odontoglossum, Saccolabium, Cattleya, Oncidium, Dendrobium, Cypripedium, Miltonia, in varieties; 36 magnificent AZALEAS, prize plants; two remarkably fine FRANCISCEAS; together with the whole of the collection of GREENHOUSE and BEDDING-OUT PLANTS; an excellent Plant Van or Lorry, with iron-work cover; Garden Tools, &c.; also capital Farming Implements, comprising a Land Roller, Haymaking Machine, Ploughs, Carts, Drill, Barrow, Cultivator, and effects.

Catalogues are in preparation, and will be ready one week prior to Sale.

SALE THIS DAY at HALF-PAST 12 O'CLOCK PRECISELY.

Dutch Flowering Roots.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 14, at half-past 12 o'Clock precisely, choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, LILIUMS, and other Bulbs, just arrived from Holland; 200 AZALEA INDICA, 50 CAMELLIAS, 146 DRACÆNAS, 12 CRYPTOMERIA JAPONICA, and several thousand roots of LILIES of the VALLEY, &c., from Belgium.

On view the morning of Sale, and Catalogues had.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY and WEDNESDAY, October 16 and 18, at half-past 12 o'Clock precisely each day, first-class Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, LILIUMS, GLADIOLI, and other Bulbs, just arrived from well-known Farms in Holland.

On view the mornings of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 17, at half-past 12 o'Clock precisely, 250 PENS of first-class POULTRY and PIGEONS, including many promising young Birds, from the yards and lofts of well-known Breeders and Exhibitors.

On view the morning of Sale, and Catalogues had.

Importation from Holland.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, on WEDNESDAY and SATURDAY, October 18 and 21, at half-past 12 o'Clock precisely each day, 50 Cases of First-class HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, JONQUILS, ANEMONES, RANUNCULI, GLADIOLI, LILIUMS, and other Bulbs, just arrived from well-known Farms in Holland, and lotted to suit the Trade and private Buyers.

On view the Morning of Sale, and Catalogues had.

Sale of Imported Orchids.

MR. J. C. STEVENS will submit for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 24, at half-past 12 o'Clock precisely, a recent importation of the ONCIDIUM BIFOLIUM, all good plants, in fine healthy condition.

On view the morning of Sale. Catalogues may be had of Mr. J. C. STEVENS, 38, King Street, Covent Garden, W.C.; if for the country by enclosing two stamps.

Choice Orchids and Specimen Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 24, at half-past 12 o'Clock precisely, 200 plants of DENDROBIUM DEVONIANUM, 30 D. FALCONERI, 50 D. heterocarpum, 50 D. transparens, 30 D. Cambridgeanum, 30 Vanda cœrulea, 30 Cypripedium hirsutissimum, 16 Oncidium bifolium, and many other rare and valuable varieties; about 30 large fine specimen STOVE and GREENHOUSE PLANTS, including grand examples of Verschaffeltia splendida, Cycas revoluta, Pandanus utilis, Allamandas, Ixoras, Bougainvilleas, &c.

On view the morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 31, at half-past 12 o'Clock precisely, a collection of valuable established ORCHIDS, in fine condition; also about 100 lots of Imported Plants.

On view the morning of Sale, and Catalogues had.

English-grown Roots and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the month of OCTOBER, 50,000 SCILLAS, NARCISSUS, OXALIS, ORNITHOGALUMS, ALLIUMS, IRIS, CAMASSIAS, LEUCOJUMS, MUSCARIAS, &c., from one of the most renowned English growers. The Bulbs are lotted so as to suit the Trade and private Buyers.

On view the morning of Sale, and Catalogues had.

Green Lane Nursery, Ilford, Essex.

CLEARANCE SALE of VALUABLE NURSERY STOCK.

MR. JAMES FRASER is instructed by Mr. J. Carter (whose lease expired at Michaelmas last), to SELL by AUCTION, on the Premises, Green Lane Nursery, Ilford, Essex, on MONDAY and TUESDAY, October 16 and 17, at 12 o'Clock each day (without reserve), the whole of the valuable NURSERY STOCK, comprising fine specimens of Wellingtonia gigantea, 6 feet to 7 feet; Irish Yew, 5 feet to 6 feet, Arbor-vitæ, 6 feet; Spruce Firs, 5 feet to 6 feet; Aucuba japonica, 3 feet to 4 feet; Common Laurel, 3 feet to 4 feet; Green Box, 3 feet to 4 feet: Sweet Bay, Lilac, Rhododendron, Ailantus glandulosa, and other Ornamental Trees, Standard and Dwarf ROSES; fine strong plants of TRITOMA UVARIA, FRUIT TREES; also large CAMELLIAS, and other GREENHOUSE PLANTS.

On View two days prior to the Sale, and Catalogues had on the Premises; *Essex Times* Office, Romford; and of the Auctioneer, Mayland's Farm, Romford, Essex.

White Cross Nurseries, Hereford.

IMPORTANT SALE of TREE FERNS, RARE PLANTS, ROSES, SPECIMEN CONIFERS, &c.

MR. D. SHELLARD is instructed by the Proprietor, Mr. George Davison, to conduct his ANNUAL SALE of NURSERY STOCK, on THURSDAY and FRIDAY, October 19 and 20, each day at 12 for 1 o'Clock, when he will offer 10,000 Standard and Dwarf Roses, 20,000 Laurels, 20,000 Pinus austriaca, 100,000 strong Larch, 100,000 Quick, a large number of Conifers and other Specimen Trees. Together with a large COLLECTION of CHOICE SPECIMEN PLANTS, the property of a Gentleman who has been for many years a successful grower and exhibitor; comprising Palms, Exotic Ferns, Ornamental Foliage Plants, Azaleas, Camellias, Orchids, and about 100 varieties of rare Cacti.

The Nursery Stock will be sold on the first day.

Descriptive Catalogues to be obtained at the White Cross Nurseries, or at the Auctioneer's Offices, 13, King Street, Hereford

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Notice of an Important and Extensive Sale of Nursery Stock.

Brox Nurseries, Chertsey, Surrey; within 1½ mile of the Chertsey, Addlestone, and Woking Stations, on the South-Western Railway.

J. WATERER and SONS have been instructed by Messrs. Gray & Son, in consequence of the Dissolution of Partnership, to SELL by AUCTION, upon the Premises, on MONDAY, October 30, and following days, at 12 o'Clock precisely each day, the whole of the very valuable NURSERY STOCK on 16 acres of Land, consisting of 400 dozen fine Standard and Dwarf Roses, comprising all the most approved varieties, lotted to suit private Buyers and the Trade; upwards of 70,000 choice Conifers, from 6 inches to 5 feet, including Cedrus Deodara, Pinus excelsa, Pinus Laricio, Cedrus atlantica, Cupressus Lawsoniana, Pinus Nordmanniana, Picea nobilis, Wellingtonia gigantea, Pinus austriaca, Araucaria and Thujas; 1000 Acer Negundo, 2 feet to 6 feet; 3000 American, Chinese, and Siberian Arbor-vitæ, from 1 to 6 feet; 1000 Aucuba japonica of sorts, from 1 foot to 2½ feet; 3000 Laburnums, 5 feet to 7 feet; 5000 Acacias, from 5 feet to 7 feet; 2000 Poplars of sorts, 5 feet to 6 feet; 2000 Limes, from 2 feet to 7 feet; 20,000 Green Hollies, 50,000 Seedling ditto, 1000 Variegated ditto; Horse Chestnuts, from 5 feet to 9 feet; 1000 Kalmia latifolia; 3000 Common Yews, from 1 foot to 4 feet; 50,000 Quick of sizes; 10,000 Common Laurels, 10,000 Portugal ditto; 25,000 Rhododendrons, from 1 foot to 2 feet; 18,000 clean grown Standard, Pyramidal, Dwarf, Trained and Maiden Fruit Trees, consisting of Apples, Pears, Peaches, Nectarines, Cherries, and Plums, of the most approved kinds, all of which are true to name; about 150 lots of very choice mixed Shrubs fit for immediate Ornamental Planting, and a great variety of other Stock. The Auctioneers beg to call the special attention of Gentlemen, Nurserymen, and others, to this Stock, the whole being in a most perfect and safe condition for removal.

May be viewed ten days previous to the Sale, and Catalogues had on the Premises, at the principal Inns in the neighbourhood, and of Messrs. WATERER and SONS, Auctioneers and Valuers, Chertsey, who will forward them on application.

N.B. There is direct railway communication for goods from Chertsey Station to all parts of the United Kingdom.

Tottenham, N.

IMPORTANT SALE of about 3000 well-established POT ROSES, consisting of the best Tea-Scented and Hybrid Perpetual kinds for Forcing; also a quantity of valuable NURSERY STOCK.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, without reserve, on the Premises, The Hale Farm Nurseries, Tottenham, N. (adjoining the station, Great Eastern Railway, Cambridge Branch), on MONDAY, October 30, at 11 for 12 o'Clock precisely, by order of Mr Thos. Ware (who is relinquishing the cultivation of Pot Roses in order to make room for his increasing stock of Perennials and Succulents), about 3500 choice TEA and other ROSES, in 48 to No. 16 pots, consisting principally of Devoniensis Safrano, Madame Falcot, Mrs. Bosanquet, and the best varieties, strong established plants for Forcing; also a quantity of valuable NURSERY STOCK, comprising 1500 common Laurels, 3 to 5 feet; Euonymus, Green Hollies, Portugal Laurels, Privet, Box, &c.; a large quantity of fine standard and dwarf Roses, embracing the most approved varieties; selected Fruit Trees, a quantity of fine Limes, 6 to 10 feet; Acer Negundo variegata, Thorns, Sycamores, Laburnums, Maples, &c., Ivies, Loniceras, and other hardy Climbers, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

N.B. Frequent trains to South Tottenham from all stations on the Metropolitan Railway.

Sutton, Surrey.

IMPORTANT to NOBLEMEN, GENTLEMEN, NURSERYMEN and others engaged in Planting.

MESSRS. PROTHEROE and MORRIS have received instructions to SELL by AUCTION, on the Premises, The Grange, Sutton, Surrey, three minutes' walk from the Railway Station, on TUESDAY, October 31, at 11 for 12 o'Clock precisely, by order of the Proprietor, a large quantity of valuable and well-grown CONIFERS and EVERGREEN SHRUBS, fine STANDARD ROSES, selected FRUIT TREES, &c.

Further particulars next week.

Tooting, S.W.

MESSRS. PROTHEROE and MORRIS have received instructions from Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, on WEDNESDAY and THURSDAY, November 1 and 2, at 12 o'Clock precisely each day, many thousands of first-class extra NURSERY STOCK.

Further particulars will shortly appear.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871

Waresley Park, near St. Neots, Hunts.

EXTENSIVE SALE of PURE-BRED SHORTHORN CATTLE.

MR. JOHN THORNTON will SELL by AUCTION, without reserve, on FRIDAY NEXT, October 20 (1 o'Clock), at Waresley Park, the valuable HERD of PURE-BRED SHORTHORNS, the property of the Hon. Col. Duncombe, M.P. It comprises between 60 and 70 head of Cows, Heifers, and choice young Bulls, among which are many representatives of the Fame (Mr. Booth's), Finella, and Countess tribes, the others descended from the celebrated stocks of Messrs. Crawley, Marjoribanks, Fawkes, and Dudding. The Sires have always been very superior bulls of high pedigree, inheriting the fashionable Bates and Booth blood; Colonel Kingscote's General Wetherby (24,026), and Windsor Lad (27,823), being the latest in use.

Catalogues, with Pedigrees, may be had of Mr. CHANDLER, Waresley Park Farm, St. Neots; or of JOHN THORNTON, 15, Langham Place, Regent Street, London, W.

NOTICE.—The SHORTHORN HERD, belonging to R. W. Reynell, Esq., will be SOLD at Killynon, Killucan, Co. Westmeath, Ireland, on TUESDAY, October 24, when a number of pure-bred HEREFORD BULLS, about 200 SHEEP, several BERKSHIRE PIGS, and thorough-bred FILLIES, wil also be offered.

Catalogues, with Pedigrees and particulars, may be had of JOHN THORNTON, 15, Langham Place, London, W.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS. will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A. For an OX or STEER (in any Class).
" B. For a COW or HEIFER (in any Class).
" C. For a BEAST in extra Stock.
SHEEP. " D. For a Pen of three WETHERS.
" E. For a Pen of three EWES.
" F. For a SINGLE WETHER SHEEP in Extra Stock.
PIGS. " G. For a Pen of three PIGS (in any Class).
" H. For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 14, 1871.

THE autumnal half of the year's volume of the Agricultural Society's Journal has appeared, with praiseworthy punctuality. The Wolverhampton meeting is reported in it fully. That portion of the report which relates to the implement trial is extremely well done; the remainder, which relates to the live stock show, is also a fair comment on the scanty notes which the judges of the various classes supply. After the report of the annual exhibition, that of the prize farms will probably be read with the most interest. The story is simply told, and the points which must have led the judges to their awards are described in an unpretentious manner. The farms, however, though described, are but little contrasted; and the reader will probably find some difficulty in appreciating the grounds on which the decision of their relative merits has rested.

We shall give the official reports from time to time in our columns, and to-day we also give our own report of the 2d prize farm, which had been written for us by Professor WRIGHTSON immediately after the Wolverhampton show. Both the farms were visited as soon as the decision was known. A short account of Mr. FORESTER'S farm appeared indeed in this journal during the week of the meeting, but the second report was written under the express condition that it was not to be published till after the official report had appeared, and we have not been able, therefore, to let it appear till now. The remainder of the volume, though well filled, will hardly command the attention which these, its first and last, articles will receive.

Mr. J. DENT DENT, M.P., contributes a thoughtful review of the condition of the English agricultural labourer, compiled chiefly from the reports of the Commission appointed to inquire into the condition of the employment of women and children in agriculture. There is a very well writen report on sewage farming, by Mr. H. J. LITTLE, of Thorpelands, Northampton; and Mr. EVERSHED contributes a good paper on market gardening, from which it is probable that energetic farmers may learn as much as they can from the official account of the ordinary management which has been followed on the prize farms of the Wolverhampton district. Dr. VOELCKER'S account of field experiments, and sundry veterinary contributions, make up the volume, which may be pronounced good, useful, and substantial reading—perhaps less seasoned than usual with matter of very lively interest.

There is indeed one piece of almost "sensational" news in its pages, for which we have to thank two such sober-minded men as Mr. CAIRD, C.B., and Mr. NASMYTH, C.E. It is proposed, by the aid of a steam hammer or its equivalent, to waken up the nitrogen of the atmosphere! Any one who should succeed in inducing this mere diluent of the oxygen of the air to enter into such chemical union as it exhibits in ammonia or in the various nitric acid salts, would put into the hand of the farmer an exhaustless source of artificial fertility. It is known that nitric acid exists in the rain-water of a thunder shower, and believing that this may be owing to the influence upon the mixed nitrogen and oxygen of the air of the "violent percussive compression" produced by the passage of the lightning, Mr. NASMYTH thinks it possible by artificial means "to knock into combination the constituent elements of the atmosphere, and so produce a fertilising agent of the most potent efficacy from an inexhaustible source at home." He even contributes a sketch of the machine which may be able to effect this grand result. By its means "x tons" are to be lifted "x feet," and let fall upon a plug over and within a chamber whose air-contents will be thus violently compressed upon a sufficient quantity of lime to take up the nitric acid which may be formed. When we consider the small weight of air which in all probability is all that can be operated on at once, and the cost of lifting "x tons" for the operation it is to undergo, we fear there is not much chance of a profitable result from Mr. NASMYTH'S experiment. It is, however, satisfactory to find more than one powerful mind engaged upon matters of agricultural interest, though at present entirely outside the circle of agricultural experience, and their thoughts conveyed to us in a volume, of whose contents it may be generally said that they are—almost to the extent of common-place—decidedly within the circle in question.

—— SOME few sales of English Wheat were made in Mark Lane on Monday, at a decline of 1*s.* per qr., a quantity remaining unsold at a late hour. The condition and quality varied considerably. On Wednesday the supplies were liberal, but prices experienced no further alteration —— At the Metropolitan Cattle Market on Monday trade in beasts was dull, and the prices of the previous Monday were realised with difficulty: for sheep, prices were not much altered, and choice calves were scarce and dear. Thursday's trade in beasts was dull, at Monday's figures.

—— The matter which seemed to engross most of the attention of Irish agriculturists last week was the TRANSFER of the "MARTIN ESTATES" in Connaught, from the Law Life Assurance Company to two enterprising English capitalists. The Irish daily papers are quite joyous over the expected Arcadia that is to be created in the wild district which was once held and maintained in almost regal state by the old Irish family. There can be little doubt that by judicious expenditure the gigantic undertaking may turn out to be one of the most profitable enterprises of modern times. The resources of the district have been completely undeveloped. The new proprietors will be aided by the spirited Midland Railway Company; and they have secured the services of an accomplished agriculturist. The whole of Ireland is in the transition state towards prosperity, so that everything at present augurs well for success. The *Irish Times* thus describes the estate:—

"There are now on the property above 1600 tenants and a large number of labourers. The estate contains over 200,000 acres of every variety of land. There are the rich alluvial soil, the short, crisp, sheep pasture, the mountain sward, and the peat moss, both black and yellow. To superintend the extensive agricultural and drainage works contemplated, Professor BALDWIN has been engaged, and here he will possess an ample field for the display of that scientific skill and practical ability which rendered his services so extremely valuable to the Government.

"The estate is the largest in the British dominions held by individuals—the purchase money is enormous, the enterprise gigantic. The progress of this effort to improve and open up a magnificent but hitherto comparatively unknown region, should be the subject of national interest. The country abounds with tarns, lakes, and rivers, teeming with salmon and trout. The mountains and heaths are the favourite haunts of game and wild fowl, and shooting lodges will be constructed in suitable places. The scenery is romantic, and the air unsurpassed for purity. The people are most orderly and courteous. We think that no long period will elapse before capitalists and sportsmen from all parts of the empire will seek the wilds and pastures, the lakes and rivers, of the ancient realm of Connemara, and, enjoying the loveliness of the region, become enamoured of the country of which it forms a part."

—— A letter from Mr. BIDDELL, of Lavenham Hall, has been published, in which he strongly recommends the Sugar-Beet industry to the attention of English farmers. After three years' experience, he gives an estimate of the total cost of the crop as amounting to £11 15*s.* per acre. The receipts are—for 15 tons of roots, £15; for tops, 7*s.*; total, £15 7*s.*; leaving a profit of £3 12*s.* per acre over and above the interest of capital. As to the state in which the land is left, he says, "I have grown Sugar-Beet side by side with Beans, and have not at present noticed any appreciable difference in the after crop." He recommends that the crop should take the place of Beans, Peas, and a portion of the ordinary breadth of roots. "To supersede white straw crops by Sugar-Beet would, I think, be a mistake; for assuming the fertility of the farm to be maintained by grazing, it would be a great inconvenience to diminish the quantity of straw grown. The conclusion at which I have arrived is that, where a farmer is situate within 2 miles of a Sugar-Beet factory, it will answer his purpose to grow from one-eighth to one-fourth of his arable land in Sugar-Beets, if he can obtain £1 per ton for them, and have the pulp back at 12*s.* per ton, which will amount to about one-sixth the weight of the Beetroot, and, if fed liberally with corn and cake, will in great measure replace the waste caused by removing so much produce from the farm." The effect upon the locality is intimated by the fact that the Beet costs in labour £1 per acre more than the crops which it displaces.

—— The letter of our correspondent, "Kboda Bux," on the TREATMENT of CATTLE by the RAILWAY COMPANIES, will be read with interest. It can hardly fail of attention from the authorities of the Great Western Company, who are responsible for the experience it describes: and the history of suffering and injury which it relates must, one would think, lead them at once to direct the very obvious improvements and corrections which are at present needed in all that relates to their cattle train service.

OUR LIVE STOCK.

CATTLE.

TWO very well bred young bulls have recently been consigned to Messrs. William & Frederick Fanning, of Wooroowoolgen, Richmond River, New South Wales, per Sobraon. The first of these animals is WEAL LORD, calved September, 1870, bred by Mr. W. Torr, of Aylesby Manor; sire LORD NAPIER, dam *Weal Royal* by BOOTH ROYAL (15,673), and of the *Waterloo* by WATERLOO (2816) tribe. We have, therefore, in this bull that combination of Booth and Bates families which so often yields first-rate animals. His sire, LORD NAPIER, of the "Mantalini" tribe, was by Mr. Booth's RAVENSPUR (20,628), dam *Alpine* by BRITISH PRINCE (14,197), g.d. *Sylph* by HOPEWELL (10,332), &c. A yearling, daughter of *Alpine*, was sold at the late Mr. Barnes' sale at Westland, August, 1871, for 750 gs. BOOTH ROYAL was by Mr. R. Booth's HOPEWELL, from Mr. J. Booth's *Gertrude*, of the "Bracelet" tribe, and his portrait is given in the 13th volume of Coates' Herd Book. BRITISH PRINCE and CROWN PRINCE were two of Mr. R. Booth's most noted bulls, and were the sires of the well-known Warlaby prize animals for many years. The "W" tribe of Shorthorns, descended from *Waterloo 3d*, bred by Mr. Bates at Kirklevington, has been in Mr. Torr's possession for a great number of years, and his herd at Aylesby Manor is considered the best large herd in Britain. He has hired the best Booth bulls bred at Warlaby, Killerby, and Westland, for more than a quarter of a century. *Weal Royal* is one of the handsomest cows in the Aylesby herd; a yearling heifer from her was sold to go to Canada for 200 gs., and *Warrior's Plume*, a cow of the same tribe, was sold by Mr. Torr two years ago to Mr. Beattie, of Annan, who exhibited her at the shows of the Highland Society of Scotland and the Royal Agricultural Society of England, and at both places she won the 1st prizes. The second bull, NEWBURGH 3D, also a yearling, was bred by Sir G. O. Wombwell, of Newburgh Park, Easingwold, Yorkshire, and is by THE BARD (25,276), and out of *Georgina* by VESUVIUS (21,017). In a proof catalogue with which we are kindly favoured by Mr. Thornton an account of his successes and breeding is given, from which we abridge the following:—NEWBURGH 3D won the 1st prize in his class and silver cup as the best bull of any age at the Easingwold Show, 1871; the 1st prize of £25 as the best yearling bull, beating several noted winners, at the Great Yorkshire Society's meeting at York, in August, 1871, and the first premium at the Ryedale Show. He is full of the blood of the late Mr. Bates' Oxford tribe of Shorthorns, which has always commanded high prices, and was used as a cross with the celebrated Duchess family. His sire, THE BARD, bred by Lord Feversham at Duncombe Park, was got by PHOTOGRAPH (20,492), dam *Barefoot* (prize heifer at the Royal Agricultural Society of England's meetings in 1862) by CHANTICLEER (17,530), g.d. *Ballad Singer* by 5TH DUKE OF OXFORD (12,762), &c. PHOTOGRAPH was by SKYROCKET, a son of 5TH DUKE OF OXFORD, and CHANTICLEER was also by 5TH DUKE OF OXFORD, out of *China*, by Mr. Bates' 4TH DUKE OF YORK. SKYROCKET won the 1st prize at the Royal Society's meeting in 1861, and at the Yorkshire Society's Show in 1862. NEWBURGH 3D'S dam by VESUVIUS, who was by VICE CHANCELLOR, g.d. (a son of 5TH DUKE OF OXFORD) out of *Valetta* by 5TH DUKE OF OXFORD (12,762), &c. This 5TH DUKE OF OXFORD (by DUKE OF GLO'STER, out of *Oxford 11th* by 4TH DUKE OF YORK) was bred by Earl Ducie, and sold when five months old for 300 gs. to Lord Feversham. He won the 1st prizes both at the meetings of the Royal Agricultural Society of England and at the Yorkshire Society in 1868.

—— The Waresley Park sale, which we mentioned three weeks since, takes place next Friday, under the direction of Mr. Thornton. The catalogue comprises 71 head, of which 47 are females. The herd contains representatives of several choice and well-known tribes, among which may be named the Fames, Countesses, and Finellas. The "Fame" tribe, bred originally by Mr. Booth, has produced CROWN PRINCE (10,087), HOPEWELL (10,332), HARBINGER (10,297), and many other celebrated animals; also Mr. Foljambe's *Lady's Slipper* and her noted descendants, Mr. Grove (Wood's) "Norman" family. The Countesses, bred on Tyneside, trace to stock in Northumberland, going directly back to Mr. Jobling's TRAVELLER (655), and the Finellas, bred from a cow by Mr. Bates' 3D DUKE OF NORTHUMBERLAND (3647), were originally from noted stock in Nottinghamshire. The other animals are bred from the herds belonging to Mr. Crawley, of Stockwood Park; Mr. Dudding, of Panton; the late Mr. Fawkes, of Farnley; and Mr. Stewart Majoribanks, of Bushey Grove. CLEVELAND LAD 3D (14,283), (son of 2D CLEVELAND LAD, sire of the 1000 gs. GRAND DUKE), was one of the earliest bulls used; SYLVESTER, by a son of DUKE OF GLOUCESTER (11,382), came from Lord Feversham; and VOLUNTEER, bred from the Cobham Park herd, was by MARMADUKE, also a son of the old DUKE OF GLOUCESTER. Sons of these sires, bred from the best cows, have also been used, imparting to the herd a great similarity of character. The sires latest in service, or now in use, are Colonel Kingscote's GENERAL WETHERBY (lot 48), a son of 2D DUKE OF WETHERBY, bred by Captain Gunter from the prize cow *Duchess 77th*, and WINDSOR LAD (lot 49), from a cow by Colonel Towneley's ROYAL BUTTERFLY 5TH, and whose dam was by Mr. Booth's WINDSOR 2D. The animals are spoken of as exceedingly useful, as regular breeders, and good milkers.

—— Mr. Thornton sold the late Mr. Elias Clarke's herd on the 4th inst. The stock, which was of useful character, was brought out in good order. The top price, 50 gs., was given for *Serade*, a 6-year-old, by Mr. Robarts. Mr. Beattie, of Scotland, also secured several animals of good families at low prices. An average of £26 10*s.* was realised over the 46 head offered for sale.

—— Mr. Angerstein's herd was dispersed by Mr. Thornton on the 3d inst. at Ashby Lodge, Rugby. The stock was principally collected from well-known herds. Thirty-seven head were sold at an average of £31 11*s.* 2*d.* Among the principal transactions were the following:—*Princess Patrick*, eight years old, 37 gs., W. Morley; *Blossom*, six years, 41 gs., A. Ashworth; *Pele*, three years, 41 gs., E. Worley; *Lady of Branches* and calf, 78 gs., Captain Senhouse; *Buxom Maid*, two years, 40 gs., E. Wortley; *Strawberry*, two years, 57 gs., Captain Senhouse; *Duchess* *of Hazlewood*, 42 gs., J. Smith; *Princess*, yearling, 40 gs., W. Cropper; *Azalea*, yearling, 41 gs., S. Beattie. The bulls sold at fair good prices, BRITISH VICTOR went for 32 gs., Mr. Nunneley; UTILITY, 40 gs., J. Riddey; and LORD OF BRANCHES, 43 gs., J. Smith.

LABOURERS' COTTAGES.

THE accompanying illustrations (fig. 298) represent a block of three cottages under one roof, and they have been contributed by Mr. Bailey Denton, jun., as an additional illustration of the advantages that may be obtained from the grouping together of cottages of varying accommodation.

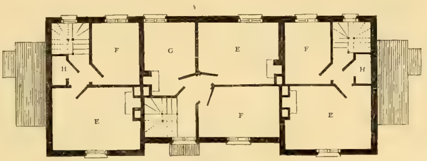
It will doubtless be remembered that a block of three cottages is shown upon a preceding page (p. 1023) of this journal, in which two of the cottages were provided with three bedrooms, while the third had but two bedrooms. In this instance the amount of accommodation is reversed, for while the centre cottage has three bedrooms the cottage on each side of it has only two bedrooms.

That there is advantage in building a certain proportion of cottages with a diminished number of bedrooms, especially on large estates and in districts where cottage accommodation is plentiful, is obvious when we consider that the census returns show that where one family exists with parents and five children, there are two with three children and three with one child only, and a fraction more than two with no children at all. This is a state of things which perhaps is too much overlooked, and which proves that in many cases strict rules with regard to the number of bedrooms may be relaxed, to the benefit not only of our pockets but of the labourer himself.

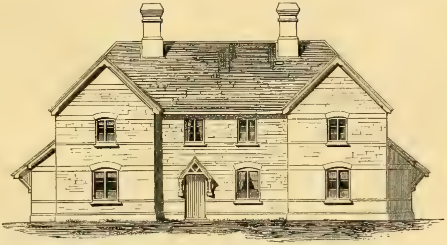
In the present instance the object has been to reduce the cubical area afforded within the cottages, as far as is consistent with the provision of the requisite breathing space, and thereby to reduce the cost in equal ratio.

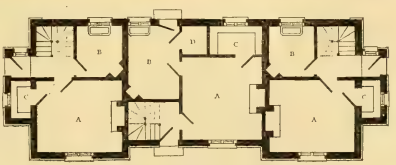
That this has been done will be seen by comparing the cubical contents of these cottages with preceding examples; they are as follows:—The centre cottage contains—in the living-room, 1200 ft. cube; in the scullery, 704 feet; in the pantry, 254 feet; in the fuel store, 136 feet; in the first or parents' bedroom, 877 feet; in the second bedroom, 670 feet; in the third bedroom, 630 feet; and in the porch, staircase, and landing, 713 feet cube. The two outside cottages each contain—in the living-rooms, 1186 feet cube; in the sculleries, 448 feet; in the parents' bedrooms, 942 feet; in the second bedrooms, 498 feet; and in the porches, staircases, closets, and landings, 858 feet cube each; making a total of 13,336 cubic feet altogether.

The average cost of the cottages, without any outbuildings, may be said to be about £118 each, or £354 for the block.



CHAMBER PLAN.





GROUND PLAN.

FIG. 298.—BLOCK OF THREE COTTAGES.

A, A, A, Living room; B, B, B, Scullery; C, C, C, Pantry; D, Fuel; E, E, E, Bedroom No. 1; F, F, F, Bedroom No. 2; G, Bedroom No. 3; H, H, Closet.

AGRICULTURAL NOTES.

BY MR. MECHI.

The Steam-driven Pulper, Chaff-cutter, Grinding Mill, &c.—It does astonish me exceedingly that farmers of 400 or 500 acres of land, having plenty of capital and live stock, are so blind to their own interest as to be without steam-power (fixed or movable) for the purposes of stock feeding. On my little farm of 170 acres, with some 20 or 30 bullocks and 200 sheep, I should be completely at sea without steam. My Bentall's pulper, with some 160 steel teeth revolving rapidly on an Archimedean screw, chews up, in an instant, a great Cabbage or Mangel, and as it is spread out, on comes a layer of steamed chaff, malt combs, bran and cake, piping hot, brought from the coppers, so that it ultimately all forms a sandwich, several feet high, ready for Sunday's dinner. How people can endure anything slower than steam, I cannot comprehend. Then there is the "millering"—such a packing up and fetching back sacks of corn, waste of time and money, that I really think my farming friends are not half so sharp in these matters as they are in the matters of buying and selling. I have worked my fixed steam-engine for 24 years, and Bentall's pulper for 15 years, so I sent it to have 160 new teeth in. They were all put in mathematically true, and properly wedged up by machinery in about ten minutes. I should estimate the human labour to accomplish this at under *2d.* What a lesson for agriculture! When our teeth are worn down they won't bite properly, and so it is with the teeth of harrows and pulpers. Nothing like keeping everything sharp, including the mental or calculating faculties. Just start the riggers and down come showers of chaff, lots of broken cake, pulped food, water for stock, and all this while the great millstones are filling your sacks with bean meal and ground Oats for your horses and cattle. Even the grindstone is at your service, so your scythe or other tools may be always in proper order. Every young farmer should receive a steam education, if I may so call it, and no doubt he will, as the old folks die out. He will have grown up in a steam age, and not under the old slow-coach *régime* of dear hand and horse power. The cheapest arrangements for steamed food are some great cast-iron pans or coppers, deep and wide enough for a man or boy to stand in and mix up the baskets of chaff, malt combs, bran, and cake as they are brought and thrown into the copper. Mine have been in use more than 20 years and are of cast-iron, of the following dimensions—3 feet deep, 4 feet wide, inside measure. We fill them until they are piled up like a cone. They are surrounded by 4½-inch brickwork, waste steam passing around them on its way to the atmosphere. The advantages, as regards the well-doing of the stock, are unmistakable. The pulped food alone, without steaming, is far superior to cut roots—and especially when given warm, as ours is. The animals fill themselves quicker and better, are less liable to flatulence, and are entirely free from the risk of choking. Is it not very desirable to communicate such facts to each other? I think it is.

My Rotation of Crops on Heavy Land.—1st year. Red Clover after Oats once mowed for hay, afterwards top-manured with 10 loads of shed manure, then close folded with sheep, eating cake, corn, malt combs, and bran. 2d. White Wheat, drilled 9 inches apart; 4 pecks of seed per acre; horse-hoed twice, and well hand-hoed in spring. 3d. Rivett Wheat, same quantity of seed as white Wheat, but manured with 2 cwt. of Peruvian guano, and 1 cwt. of salt. 4th. Mangel; land broadshared after harvest; weeds, &c., harrowed and burned. Twenty-five loads of shed manure spread in October or November. Land trench-ploughed, two horses in front plough, followed in same track by iron plough (breast taken off), drawn by four strong horses. Land lies until early in April, then broadshared; 3 cwt. of Peruvian guano and 2 cwt. of salt worked in, and Mangel seed drilled in rows at 28 inches from row to row. Time of drilling, April 15 to 20. Seed previously soaked in the wet sand for a few days. 5th. Wheat. Sow in November, with 2 cwt. of guano and 1 cwt. of salt. Land scarified after harvest; weeds and stubble collected and burned. 6th. Beans. Twelve loads of shed manure carted and spread, and land ploughed very deeply, with three horses abreast; drilled at 18-inch intervals,—the pressure put on to the drill, so that the coulters should cut through the furrow slice, and deposit the Beans deeply in the solid subsoil. 7th. Wheat, either white or red, drilled in October or November, with 1 cwt. of guano, and 1 cwt. of salt, the Bean stubble having been cleaned, cross-ploughed, and then ploughed into form ready for the Wheat. 8th. Winter Tares. Wheat stubble scarified and cleaned, and 2 bush. of Tares drilled per acre. No manure applied. Tares cut in May and June, passed through the chaff-cutter, and given to horses and cattle; rest made into hay. 8A. Cattle Cabbage same year after Tares. Land heavily manured with 25 loads of shed manure, then deeply ploughed and trench-ploughed, same as for Mangel. Cabbages planted out at intervals of 28 inches, the lines being drawn by the drill. Cabbages consumed in early spring by ewes and lambs, and some pulped for the cattle. All, however, taken off the land. We generally have 2 or 3 acres of Cabbages planted in March, and consumed in September and October. 9th. Oats; 2 bush. per acre, drilled at 6-inch intervals, sown down with red Clover. Manure: 2 cwt. of guano and 1 cwt. salt. The Beans and Wheat, Mangel and Cabbage, are all horse-hoed with Garrett's patent horse-hoe, two or three times, and also hand-hoed. The knives are changed according to the width of drill. A man and pair of horses do 12 acres per day.

My Rotation on Light Land.—1st year. Red Clover mowed for hay and then fed as on the heavy land; sometimes manured after first cutting. 2d. Wheat. 3 cwt. salt sown early in spring. 3d. Barley (sown down with Italian Rye-grass); 2 cwt. guano, 3 cwt. of salt. 4th. Italian Rye-grass, well sewage-irrigated, and cut several times. 5th. Italian Rye-grass, fed and mowed. 6th. White Peas, sown in January, and picked green for London market. The Pea haulm removed to another field for making, and the land cleaned and sown with —6A. White Turnips, fed off, with cake, corn, &c. 7th. Wheat, sown in December, 3 cwt. salt in spring. 8th. Barley, sown with red Clover, and manured with 2 cwt. guano and 6 bush. of salt.

Reform in Live Stock Management. — Venerable agricultural customs, be they as dear to us as they may, by long indulgence and use, must give way to a more modern and different practice if the latter is proved to be the most profitable. I therefore predict that the days of open farmyards, exposed dung-heaps, and the roaming at large of farm animals, are numbered. Their abolition will be a long and big job, but we must keep pegging away for the individual and general good of the country. One of the great advantages of this change will be the removal of those great fences that were considered necessary for the shelter and restraint of animals roaming at large. Our cattle will be in covered and enclosed yards with paved floors, and amply ventilated roofs, and our sheep, including breeding ewes, will be fenced in with iron hurdles on wheels. A patch of pasture or Italian Rye-grass will be permissible in fine weather for our breeding cattle and sows. Dung-heaps, except an occasional one for odds and ends, will not be required, for the manure will be taken out of the covered and paved yards in a fit condition for spreading and ploughing, neither too wet nor too dry. Cattle will never be without free access to water, and also to rock salt in the mangers. Their food will be composed of a considerable variety, intermixed and prepared, and seasoned with condiments. I use Simpson's Cattle Spice. The same remarks as to water and feeding will apply to sheep in the fold. When cattle are grazing they take much exercise, especially if the land is poor and the food sparse; but in the cattle shed they stand at the manger, fill the first stomach quickly, lie down, and ruminate, thus making the best use of their food. Animals will grow and fatten faster this way, and consume less food, than when roaming at large. They are more healthy, they lie on a warm and dry bed (for straw is a non-conductor of heat), in a well-ventilated shed, and they are free from those atmospheric changes, and dangerous lying on wet grass (damp sheets). They are infinitely less subject to death or disease under cover than roaming at large. This I have proved by 25 years of practical experience. At present we are rather in the dark as to causes of disease, but I have found when I did have any losses it was by animals exposed to atmospheric vicissitudes. The east wind, that blights our hedges with caterpillars, often produces disease in our sheep and cattle. Sheep should never feed off grass or Clover without cake, corn, or other food. The rot, or fluked liver, is prevented by giving to each sheep a pint or less of Barley daily, even when on pastures or meadows known as causing rot. Old short-woolled, broken-mouthed ewes will fatten rapidly in a warm, ventilated shed or stable, if fed on pulped roots, chaffed grass, cake, meal, &c.; but they might ramble a long while on poor pastures, in autumn or winter, without fattening. Old folks like warmth and shelter, and so do young ones in wet or cold weather. Long-woolled sheep can best withstand cold if the weather is dry and the ground not wet. Fatting sheep do well on sparred floors, or on burned clay ashes.

Beware of a Savage Stockman or Groom.—The losses arising from a severe or brutal treatment of animals is considerable, therefore quietly satisfy your mind as to the treatment the stock receive.

Straw for Thatching.—Never, if you can help it, use new, reedy wheat straw for thatching. Thatchers will tell you that the water will find its way between the circular glassy sides of the straw; but old wheat straw is squeezed flat, and often split, by pressure in the stack, so that it forms a compact and safe covering. I always thatch all my straw, and have a handy parcel of old straw for thatching. Many farmers had their stacks unthatched on September 29, with a week's heavy rain, because they had no old straw, and have not yet threshed any corn. Straw stacks are too often left to rot unthatched.

Tiptree Hall Farm (see p. 1209).—Good Mr. Fish, in his zeal, has greatly over-valued both my land and my exertions. As to honours, all I desire is the honour of having been useful to the agriculture of my country. *J. J. Mechi, October.*

TREATMENT OF CATTLE BY RAILWAY COMPANIES.

When a person has a grievance, the fashion is to write to the *Times*. I prefer writing to you, simply because all your readers are in some way connected with agriculture, and the grievance I am about to complain of affects them, as it has affected me. My cause of complaint is the treatment of cattle by railway companies. I shall simply state facts, and leave your readers to draw their own conclusions as to whether Mr. Martin's Act should not occasionally be called into requisition in the matter of the treatment of cattle whilst in the hands of the railway companies for the purpose of transit.

Feeling the force of Mr. Mechi's remark, that the more cattle the more meat, and the more meat the more corn, I determined to stock my small farm; and having been recommended to try Bristol market, accompanied by my bailiff, I went there, and purchased, on the 25th of last month, a lot of Irish Shorthorns—about 30, and finer animals I never cast eyes on; and although they had, owing to strong head-winds in crossing from Ireland, been 12 or 14 hours longer on the voyage than usual, they were as fresh as could be desired. For these animals I paid in the Bristol market £700. They were driven immediately to the cattle wharf of the Great Western Railway, where they arrived a little after 9 in the morning. On bespeaking trucks for Salisbury, I was told the cattle would be trucked at 7 P.M., and remain in the trucks until 3 A.M. next morning, when they would arrive at Salisbury at 8 the same day.

Whilst standing at the cattle wharf I saw a number of sheep, pigs, and cattle trucked: all of them were said to be for Reading or London. They received dispatch within a reasonable time. The unfortunate purchasers residing on branch lines, like Salisbury, had to leave their cattle in the so-called pens provided by the railway company for the receipt of stock. I do not hesitate to say that the pens are a disgrace to civilisation; a simple strip of ground, the site of an old quarry, up and down, in parts too steep for an animal to stand comfortably, uncovered, undrained, and, when I saw them, 2 or 3 inches deep with sludge. Such is the accommodation afforded by the railway company for cattle to be detained for their convenience a whole day and the best part of the night. Having luckily taken the precaution to leave my bailiff with the cattle, I started on my journey homewards, some 20 miles west of Southampton. At Salisbury I discovered that my unfortunate beasts would be retrucked at Salisbury at 2 P.M. next day, sent on to Southampton, where they would remain a night, and go on to their destination (a few miles out of Southampton) next morning, reaching it about 8 A.M.; the total distance from Bristol being rather less than 90 miles, involving 48 hours from time of delivery to railway. On my arrival at Bishopstoke I was accosted by a salesman, who asked me whether I was the gentleman who had purchased a lot of fine beasts which he saw in the railway pens; on my answering in the affirmative, he expressed a hope that I had left some one to take care of them, as he would wager two to one that the animals would never leave Bristol before Saturday morning; that he and others had been served that way at Bristol, and that one of his friends had shortly previously lost a bullock, which from exhaustion had fallen down in the truck and been trodden to death by the others. That the animals were so knocked about with the everlasting shuntings and joltings, by reason of the trucks never being properly screwed up, and fatigued with the delay, that for his part he would never send by rail but road by easy stages. Feeling uneasy ater what he told me, in the place of going home I returned next morning to Salisbury, and on arrival there, at 10 A.M., I discovered that my animals had never left Bristol on the Friday morning, and that they would have to stay until the following morning; and as I found that if I sent them *viâ* Southampton I should not get them until Monday morning, I gave instructions by telegraph to my bailiff to truck them only to Romsey, and road them some 16 miles across country to their destination. Personally, I make no complaint of a single railway official; they were simply the servants of a vicious system. To cut a long story short, I got my animals home on Monday afternoon, by no means in the state in which I delivered them to the railway; and had not my bailiff found a field a little out of Bristol, into which he turned them on Thursday afternoon, and kept them until trucked on the Friday evening, I believe I should have scarcely had one beast alive. Had I left my beasts, as others did, to be forwarded by the rail in the way the railway company forward them in their course of business, not one would have survived. The failure to truck them on the Friday morning would have involved their delay from Saturday evening to Monday morning in Southampton, had I "railed" them to the station nearest my home. My bailiff informs me that when he delivered them on the Friday evening into the trucks, the animals were as fresh as he could wish, and that they had quite recovered from the effects of their voyage during the 24 hours they were at grass—that when he saw them at Salisbury he could not believe them to be the same animals. The continual shunting and knocking about had taken all the bloom from off them. Two heifers had fallen, or laid down; one nearly killed (certainly damaged to the extent of £5); the other much knocked about. On Saturday afternoon my bailiff walked them about three miles out of Romsey, and turned them into a meadow for 24 hours, and then marched them about six miles on the Sunday, when he gave them another rest for the night, and the next day brought them about seven miles home, but in very different condition from what they were when driven out of Bristol market. They are now doing well in a sheltered meadow, but all are at least £1 sterling apiece worse than they were when finally delivered to the Great Western Railway at Bristol. Such are the plain facts. If it should be asked, "Why parade my woes in the columns of your journal; my answer is that what has happened to me may happen to others less able to run the risk in such a case; that what has happened to me need not happen if the railway companies performed their duties to the public, as they are morally, if not legally, bound to do. It would pay a railway company well to have proper accommodation for the benefit of cattle at their stations, even if they charged so much per head: I, for one, and I have no doubt buyers of stock generally, would willingly pay it. They might have sufficient wharfage frontage for trucking at once without those innumerable shuntings, the trucks loosely linked together, jerking the very souls out of the bodies of the poor beasts at least a dozen times before departure, and they might so arrange their trains that animals were not kept nine hours penned in a truck exposed to the weather. Corresponding lines might also manage their times for goods and cattle trucks, so as not to keep animals waiting six or eight hours before they were forwarded. At all events, if they do, they ought to have accommodation for feeding the cattle during such detention. All these things they might reasonably do, and do them they would if they studied their own interests. Such are what railway companies might do.

Nothing, however, can justify a railway company, professing to carry cattle, and knowing the average requirements for each market day at Bristol, not having sufficient cattle-trucks for the day, and not having proper lairs for the reception of animals. If there be on the direction of the Great Western Railway any gentleman who, like myself, feeds a number of beasts, if he would only go to Bristol *incog.* and see what goes on there, I am certain he would never trust a beast of his own to the care of his railway.

As I am a humble follower of Mr. Mechi, and a devout believer in the creed of "More cattle more beef, and more beef more corn," I am compelled to buy my beasts where I can have a pick from a number of those best suited to make meat and manure. I have visited several fairs, and never had so good a choice as I saw in Bristol market. To Bristol market I shall go again, and, provided there be no foot-and-mouth disease, I shall "road" them the whole way by easy stages of 8 or 10 miles a day, leaving them in green fields at least 18 out of the 24 hours. It may cost me more in the first instance, but I shall have not only the satisfaction of knowing that my poor beasts are not tortured, but also of finding them at least £1 a-head in better condition than if sent by rail. One swallow does not make a summer, nor is the withdrawal of the traffic of one stock-feeder sufficient to cause the Great Western to relinquish their carriage of cattle. As I have shown, I am by no means the only one who has cause of complaint; possibly the publication of this letter may bring to the front others who have suffered in like manner; under any circumstances it will be a warning to others never to leave their stock until they see them trucked and despatched, and if they have to go over another line on a different guage, to attend and see them retrucked and dispatched, or they may find their cattle damaged.

The noble-minded Baroness Burdett Coutts has tried to do much for the unfortunate ox consigned to the tender mercies of railway companies. In some things she has succeeded, but much requires to be done. All attempts to feed in a railway carriage have failed; the animals will not eat. There is nothing, however, to prevent railway companies, if cattle must be detained to carry on the ordinary traffic of the rail, to detain them in sideways in country places, and to have accommodation land close at hand, charging for the same; and in a place like Bristol, with such a large and increasing cattle market, and the improbability of getting sufficient accommodation immediately about the town, common sense would suggest the establishing a station a mile or two out of town, and in the vicinity of green fields. Whether common sense, or even common humanity, will prevail is doubtful, until public opinion is strongly directed against the present system. I send you my name and address and subscribe myself as heretofore, *Kboda Bux.*

HEADS.

By Henry Corbett.

> "From the cradle to the grave, in all conditions and ages, throughout all nations, from Adam to the last existing man, from the worm we tread on to the most sublime of philosophers, physiognomy is the origin of all we do and suffer."—Lavater.

At a dinner-table one evening at the Farmer's Club, a discussion incidentally arose as to the chief points to be taken into consideration in judging an animal; when there was a very unanimous opinion in favour of heads and shoulders, Narrowing the argument, again, to any one particular point to go by, there was a clear majority amongst the half-dozen or so of us, who joined in the conversation, in favour of heads. The shoulder, no doubt, answers very much for shape and symmetry of frame, but the head answers for everything. If you go for breed, you look above all to the head; if your aim be style or fashion, you must seek this in the head, as nine times in ten that very accomodating phrase known as quality should prove itself by a good head. You get at the very purpose of an animal by a look at his head. The calm placid countenance of a naturally thriving beast; the noble, masculine, well-defined features of a sire of any character; the several uses of the horse, the instincts of the dog, and the mere gluttony of the pig, how safely you may arrive at a conclusion by studying the head. A scale of points for one or two certain breeds has already been drawn out; but, in none of these is sufficient importance, at least as I am led to think, attached to the head of an animal, as the main index to his purity of blood, strength of constitution, and actual fitness for that service for which he is intended. Who would take to himself a bull with a mean, delicate, "cowy" head? And yet I have seen such distinguished in a Royal show-ring. Or who would crave for his own riding the sour-visaged, vicious-eyed hack? Or care to breed, or try to breed from the steery-looking heifer, which has lost the very semblance of her sex, from the misdirected zeal employed in feeding her up for show? A man may save himself a deal of money, trouble and disappointment, by making the head a first principle in establishing a flock or starting a herd.

So strongly have I felt the necessity for more attention being given to this matter, that I have during the last year or so made it my business to collect from some of the best authorities, either as breeders or judges, as it were, a standard series of Heads, with the why and the wherefore any one feature should be regarded as an excellence, or another rejected as a drawback. In doing so, it may be as well to observe the herald's order of precedence, and in bringing under review the several breeds or varieties of stock, to begin with that citizen of the world, the Shorthorn. Mr. Booth, of Warlaby, we are told, "attached much importance to the heads of his animals." Conforming, as regards cows, to the popular opinion that they should be moderately small and tapering, he contended that the bull should not only be broad across the brows, but with a lusty horn, especially stout at the base. Mr. Booth would not use a bull in which these substantial evidences, as he regarded them, of vigorous constitution and procreative power were wanting. And, indeed, sound physiology teaches that the more or less luxurious growth of the horn is the result of constitutional operations. The marked influence of ill-health or castration on the growth of the horn, is sufficient proof of this. That the use of sires exhibiting these indications of a masculine character has no influence on the female progeny prejudicial to their feminine mien and character, a glance at the Warlaby cows and heifers will show. They are remarkable for their lady-like aspect, and graceful well curved waxy horns; those inextinguishable tell-tales of some otherwise unsuspected jump *in* the dark *out of* the dark—inky horns and dingy noses being unknown amongst any of the leading families at Warlaby. The mild, prominent eye is expressive of that equable contented temperament so favourable to the attainment of ripe condition; a tendency further indicated by the double chin-like appendages of pendulous fat beneath the root of the tongue, which, however objected to by some admirers of the more horse-like conformation of the head, gives, in the opinion of others, an engaging piquancy of expression, and is always regarded approvingly by the knowing grazier as an earnest of aptitude for kindly feeding. So say the records of Killerby and Warlaby, while this description may be supplemented by something more in detail.

The head of a Shorthorn bull should be broad and moderately lengthy, with a full open countenance, a large prominent eye, and plenty of width between the horns, where there should be a good covering of hair. The horns themselves must be strong and slightly backward with a very gentle inclination upwards, positively upright horns being the worst of all kinds. From being broad above, the head should taper gradually towards the nose, but not too decisively, as nothing is worse than a bull with an "egg-sucking" frontispiece, as a houndsman would say; and the muzzle itself should be of a clear cream or flesh-colour. Writing, a quarter of a century since, Mr. Wright says of the Shorthorn's head, that "some prefer it to be long and lean, whilst others approve of its being thick and short;" but the long and lean head for a Shorthorn would never do in these days. Mr. Day, speaking to the merits of the famous Durham ox, says, "the head was rather long and the muzzle fine, eyes bright and prominent, with the ears long and thin." According to the print the head of the Durham ox, although refined and high-bred, is too weak and delicate even for a steer, that is, to pass muster in these times.

But the perfection of the improved Shorthorn's head is to be found in the female. The very expression, so calm, so sweet, and so dignified, is of itself a delightful "study;" and when old Homer, in the way of compliment, applied so continually the epithet *bo-opis*, or ox-eyed, to his matron goddess, he must have drawn upon the future, and have pictured to himself the noble, self-assured, full blown beauty of one of our modern "Duchesses." The tranquil beaming eye, so full, so mild, and yet so prominent, the fairly broad forehead, running down in that graceful line to the muzzle, where we drop the goddess or we shall have Jupiter resuming his masquerade, intent on the conquest of another Europa. The horns of the Shorthorn cow should, then, be slightly curved and spreading, bright and clear in complexion, with a bronze, tapering tip; the nostrils wide, with the ears large, and fringed with that fine delicate hair, "only to be found," according to an enthusiast, "on a pure-bred Shorthorn." Still, good though the head may be, this loses nearly all its fascination if it be not properly set on. It should run elegantly into the somewhat full, firm neck, with plenty of play and style in its carriage. Any animal which droops its head in a half-guilty, hang-dog fashion, can never show to thorough advantage, and, of the two, it would be better to have them as the dandy described his partner in the quadrille, "with her head buckled up like a four-in-hand leader." But the naturally, nicely-arched neck is the thing to go for, be it in a woman, a heifer, or a horse. That 'cute observer Sam Slick felt this when he was fastening the hooks and eyes, "I never see such a neck since I was raised. It sprung right out o' the breast and shoulder, full and round, and then tapered up to the head like a swan's."

There are cerain Shorthorn tribes or herds that have always been known for good heads. Noticeably enough, although fed terribly high for exhibition, the Athelstaneford heifers never lost their beautiful expression of countenance, and Rose of something's head was thought to be nearly perfect. I had opportunity of seeing a great deal of these animals for a season or two, occasionally crossing with them as they went the rounds of the national meetings, from England back again to Scotland, or over to Ireland. Then, as they have demonstrated at Towneley, the Barmpton Roses throw handsome and blood-like heads, and the Hertforth Cherries, as I am assured, were a family renowned for the grandest heads, which came very beautiful and high-bred, with a certain whiteness of the eye, very "taking" in its way. Old Cherry was the dam of Gainford, and Gainford was the sire of all Mr. Crofton's best stock. *Bath and West of England, &c., Society's Journal.*

(*To be Continued.*)

THE PRIZE FARMS.

[The following report on the Second Prize Farm was drawn up for this Journal, immediately after the Wolverhampton show, by Professor Wrightson, who was, however, not allowed to publish it till the official report had appeared.]

FOUR-AND-A-HALF miles north of Lichfield, and nine miles west of Burton-on-Trent, lies Alrewas Hays, the property of Lord Lichfield, and in the occupation of Mr. Thomas Winterton—the 2d prize farm in the recent competition between the two counties of Shropshire and Staffordshire. Having seen both the first and second prize farms, we confess to a sense of thankfulness that the decision, as to which was really the best, was not left to us. The exterior in both cases is highly prepossessing, but the judges had opportunities for investigating the results of the two managements, as to profits, which, of course, are not open to ordinary visitors. We may be permitted, however, before giving a short account of the management of the second prize farm, to contrast its appearance and management with that of Mr. Forester's 1st prize farm. Mr. Forester's occupation is smaller, and the soil is of better natural quality. Both are, we should say, easy working farms, although the heavier land will be found at Sherlowe. On both farms, also, the arable land is in better condition, and appears more suited to its purpose, than the grass land. Fences are very neat in both cases, but Mr. Forester has had the advantage of a residence of above 30 years, during which term he has devoted much attention to this department. Mr. Winterton's fences, having been only under his supervision for 16 years, are scarcely so good. So far as root cultivation goes, the 1st prize farm is the best; the Wheat crop is decidedly better on the 2d prize farm, and the Barley is a shade heavier, and is certainly more beaten down upon Sherlowe, than upon Alrewas Hays. In live stock we must also give the first place to the first prize farm, for its really good and uniform stock of Hereford cattle and Shropshire sheep. The 2d prize farm cannot boast such a breeding stock, but of course, even here, the profit might easily lie on the side of the business-like grazier of Alrewas Hays.

We were very kindly received and hospitably entertained by Mr. Winterton, and, although time was limited, we were "all round," and saw and heard as much as we could. Magnificent corn crops, well kept fences, clean land, thriving root crops, healthy, lazy cattle, and sheep between nets and hurdles, on Vetches and corn, with salt provided; luxuriant water meadows, which do much for the farm; a perennial flow of water which "makes the farm," and useful buildings;—such are the images reflected on the retina in driving round Alrewas Hays. There was nothing offensive or slovenly, but all bespoke intelligent and continual supervision.

We must, however, enter a little more into detail. Alrewas Hays is 553 acres in extent, of which 145 acres are permanent pasture. It is let from year to year, and has been in the occupation of Mr. Winterton for 16 years. The land is variable in quality, much of it being light, black, and peaty, abounding in round water-worn stones, and apparently, though light, holding water with inconvenient tenacity. Much of this is underlaid with "Fox-bench," a term which appears to be synonymous with "pan," and relates to a hard concretionary mass of earth and stones at some few inches beneath the surface. Other of the land on this farm is of stronger character, and is cropped in a different manner. The rotation of crops followed varies with the land. On the lighter portion Turnips are followed with Barley, seeded down for two years, and then broken up for Wheat, which is followed with Barley or Oats. On the heavier portion the cropping is as follows:—Swedes and Turnips, Barley or spring Wheat, seeds, seeds, Oats, Wheat.

In glancing briefly at the management of this farm, we shall first make a few remarks on the cultivation of the crops, and afterwards upon the stock, management of labour, &c. In describing the detail of cultivation and management we must be brief. We commence with "roots," of which there are usually 72 acres; 40 or 50 acres are Swedes, 5 to 6 are Mangel, and the remainder white Turnips and Cabbages. The cultivation of roots consists in autumn cultivation with steam or horses, both means being used. The land is left as rough as possible, is cultivated with horses in the spring, say in March; 10 loads per acre of good manure are carted on and ploughed in at the latter end of April. It is also worthy of notice that on both the 1st and 2d prize farms and in the neighbourhood around, it is the custom to sow the artificial manure used for the root crop broadcast, either before ploughing for the last time or before ridging-up, as in the case of Mr. Forester's land. Knowing the importance which is attached in many districts to the drilling of manure with the seed, and thus securing it under the plant, it is interesting to find the plan of broadcasting manures followed by farmers of such undoubted merit. When the above dressing of dung is given, 1½ cwt. of guano and 2 cwt. of Griffin & Morris' manure is applied. The amount of hand manures per acre, however, varies according to circumstances, rising in the case of some poor land lately taken into occupation, to 6 cwt. of bone-dust or ½-inch bones, and in another case to 2 cwt. of guano and 3 cwt. of superphosphate, with farmyard manure. Salt is also largely used, as much as 25 tons having been this year employed, both for roots and for cereals. It is also noteworthy that salt is considered to be more beneficial on the light than upon the heavy soil. The farmyard manure is partly expended upon the root crops and partly upon the second straw crop (see rotation). A fair crop of Swedes is said to be 20 tons per acre, and Mangel is not extensively grown. The roots are fed upon the land with plenty of cake and corn, and thus the land is prepared for its somewhat arduous course of cropping. It does not seem out of place here to state that food and manures purchased (including a certain small proportion of corn valued at two-thirds of the market price) amount to 43*s.* per acre over the entire farm, and that the cake bill alone is equal to from £560 to £600 per annum.

Roots are followed with Barley—a remarkably good crop this year, but inferior to Mr. Forester's crop. We noticed nothing special in the cultivation of Barley, save its goodness, and we pass on to the next, namely, seeds. Never since 1855, when he entered his present occupation, had Mr. Winterton's "seeds" failed till last season. Last year, however, they did fail, and, as a consequence, we saw a considerable breadth of land under Beans and Peas, and about 12 acres of Vetches had been planted upon the fallow land, in order to provide summer food for sheep. This, we were told, was exceptional practice, as usually the sheep are grazed upon seeds. The Beans and Peas just spoken of were very "strawy," one Pea haulm which we took home with us measuring 7 feet 10 inches in length. The Beans were sown in the spring, 13 inches apart, and at the rate of 3 bush. to the acre. This was too thick for such a season, and we fear the crop will suffer in consequence. Seeds are not broken up for Wheat before the beginning of September, and Wheat is planted at the end of October and beginning of November. Mr. Winterton is a strong advocate for seeds being allowed to lie for two years, as both saving labour and bringing the land into order. On the lighter land Wheat is followed with Barley, top-dressed with 3 cwt. of superphosphate or 1½ cwt. of guano, and on the stronger land Oats are sown upon the broken-up seed-land, and are followed with Wheat. In either case, farmyard manure or the above artificials are employed.

The number of horses varies from 10 to 12. These are at present receiving green food without corn. In winter they have 1 bush. of mixed Beans and Oats, and sometimes a little Indian Corn; at other times a little Barley broken in a mill. After Christmas, a small quantity of bran is mixed with their corn and chaff, and the whole mess is moistened with a little water. No "wrack-stuff" is given, and the horses are comfortably housed. Three or four cows are kept. The remaining cattle were all grazing beasts, mostly nice heifers, two or three years old, and many of them almost "ripe" for the butcher. There are 55 head of cattle now on the farm, and 100 were bought and fatted and sold last winter.

A small ewe flock of 80 is kept just to "clear up," and then all go off fat, and are replaced by others every year. The general sheep management consists in buying in stores as they are wanted, and selling them as they become fat. Eight or nine hundred sheep go off this way in the course of the year.

White Staffordshire pigs are usually kept, and we saw some nice Berkshire sows.

The labour bill amounts to 24*s.* per acre, and to an average of about £9 per week. An ordinary man will receive 12*s.* per week, a cottage, and one quart of beer per day during winter. Shepherds and waggoners have more. Again, as much as 13*s.*, and 3*s.* per week as beer money, with a cottage, will represent the summer wages of a good man. When work is let by piece the following prices are paid:—Spreading manure, 1*s.* 4*d.* to 2*s.* per acre; hoeing Wheat, 5*s.* to 5*s.* 6*d.*; singling and hoeing Turnips, going over the land twice, 9*s.* to 10*s.* per acre; tying up and stooking Wheat after the machine, 4*s.* 9*d.* to 5*s.* 3*d.*; mowing Barley, 2*s.* to 2*s.* 6*d.*, with beer; mowing meadows, 3*s.* 6*d.*, with beer.

After looking over a prize farm one naturally reflects as to whether any lesson has been learnt, anything which may guide us in our own management. Such lessons cannot be numerous on any one farm. It is not indeed for originality but for excellence that one looks, and if we can see one or two points worthy of consideration as new, it is as much as we can reasonably expect. On Alrewas Hays we would submit that the rotation in which two white crops are taken in succession is worthy of the attention of landowners and agents. An antiquated prejudice still exists against this plan of cropping, but any one visiting Mr. Winterton's farm will see that such a course is consistent with heavy crops and clean land. The broadcasting of the Turnip manures is also worthy of attention, and teaches us that on much land the crop can succeed without the aid of superphosphate placed immediately beneath it. The use of salt on the light land is instructive; the high value set upon autumn cultivation *versus* spring cultivation for roots, although generally agreed to, yet in this case has additional support. Lastly, the system of feeding horses with cut food placed in the manger is one which is worthy of being more generally followed than it is. Such are some of the points in the management of the 2d prize farm. It is, however, difficult to convey an idea of the real excellence of Mr. Winterton's farming by words. The true way to appreciate it is to go and see the farm.

AGRICULTURAL STATISTICS, IRELAND, 1871.

The following is the substance of Mr. Donnelly's report to his Excellency the Lord Lieutenant of Ireland.]

THE collection of the statistics, which commenced on June 1, occupied nearly two months. The enumerators, of whom upwards of 3700 were employed, were selected from the Royal Irish Constabulary and Metropolitan Police, and discharged this duty with their usual efficiency. About 600,000 separate holdings were visited by them, and the names of the various parties from whom they obtained the particulars of tillage and live stock for each holding are stated in the returns.

The abstracts have been compiled from summaries made by the enumerators for their respective districts, and will probably differ in some degree from the revised figures which will be hereafter published; but I do not apprehend that any change of importance will be necessary in the numbers now given.

	Acres.
The total acreage under all crops this year was	5,620,226
The total acreage under all crops in 1870 revised numbers)	5,641,140
Showing a decrease in the extent under crops in 1871 of	20,914

The crops which increased in extent this year are—

	Increase.	
Cereals –	Acres.	Acres.
Beans and Peas	..	225
Green crops—		
Potatos	14,704	26,763
Mangel and Beetroot	6,505	
Carrots, Parsnips and other green crops ..	2,224	
Vetches and Rape	3,330	
Meadow and Clover	..	53,882
Total increase on the foregoing crops ..		80,870

The crops which decreased in acreage in 1871 are—

	Decrease.	
Cereals—	Acres.	Acres.
Wheat	12,892	49,802
Oats	16,079	
Barley	20,570	
Bere and Rye	261	
Green crops		
Turnips	11,897	13,955
Cabbage	2,058	
Flax	..	38,027
Total decrease on the foregoing crops		101,784
Making a nett decrease in the area under all crops of		20,914

It appears from the foregoing summaries that, compared with 1870, Wheat shows a decrease of 12,892 acres, Oats of 16,079 acres, Barley of 20,570 acres, and Bere and Rye of 261 acres. In Beans and Peas there is an increase of 225 acres. In green crops, Potatos show an increase of 14,704 acres; whilst Turnips exhibit a decrease of 11,897 acres. There is an increase in the extent under meadow and Clover of 53,882 acres, and a decrease in Flax of 38,027 acres.

ABSTRACT OF CEREAL CROPS.

	1870.	1871.	Increase in 1871.	Decrease in 1871.
	Acres.	Acres.	Acres.	Acres.
Wheat	259,846	246,954	..	12,892
Oats	1,050,039	1,633,960	..	16,079
Barley	241,285	220,715	..	20,570
Bere and Rye ..	11,797	11,536	..	261
Beans and Peas ..	10,689	10,914	225	..
Total ..	2,173,656	2,124,079	..	49,577

Decrease in cereal crops in 1871, 49,577 acres.

ABSTRACT OF GREEN CROPS.

	1870.	1871.	Increase in 1871.	Decrease in 1871.
	Acres.	Acres.	Acres.	Acres.
Potatos	1,043,583	1,058,287	14,704	..
Turnips	330,059	327,162	..	11,897
Mangel Wurzel and Beetroot	25,400	31,905	6,505	..
Cabbage	34,979	32,921	..	2,058
Carrots, Parsnips, and other green crops	27,712	29,936	2,224	..
Vetches and Rape	27,990	31,320	3,330	..
Total	1,498,723	1,511,531	12,808	..

Increase in green crops in 1871, 12,808 acres.

GENERAL SUMMARY OF CEREAL AND GREEN CROPS, &C.

	Acres.	Acres.
Decrease in cereal crops in 1871	49,577	87,604
Decrease in Flax in 1871	38,027	
Increase in green crops in 1871	12,808	66,690
Increase in meadow and Clover	53,882	
Total decrease in the extent of land under crops in 1871		20,914

THE EXTENT UNDER CROPS, GRASS, FALLOW, WOODS AND PLANTATIONS, AND BOG AND WASTE UNOCCUPIED, IN 1870 AND 1871, IS GIVEN BY PROVINCES IN THE FOLLOWING TABLE:—

Provinces.		Extent under Crops.	Grass.	Fallow.	Woods and Plantations.	Bog and Waste Unoccupied.	Total.
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Leinster	1870	1,599,710	2,490,448	7,414	101,974	638,375	4,837,921
	1871	1,604,538	2,482,803	7,383	102,144	641,053	
Munster	1870	1,358,336	3,304,609	3,549	108,108	1,160,187	5,934,789
	1871	1,358,342	3,324,593	4,560	108,748	1,138,546	
Ulster	1870	1,922,650	2,115,272	5,334	60,067	1,216,464	5,319,737
	1871	1,904,837	2,178,335	7,783	63,791	1,165,041	
Connaught	1870	760,444	2,056,526	2,359	50,704	1,363,163	4,233,196
	1871	752,509	2,083,117	2,597	49,602	1,345,371	
Total	1870	5,641,140	9,966,855	18,656	320,853	4,378,180	20,325,693*
	1871	5,620,226	10,068,848	22,323	324,285	4,290,011	

* Exclusive of the larger rivers, lakes, and tideways.

The acreage under the head of "bog and waste unoccupied," had not any live stock on it at the period of the enumeration.

THE AREA UNDER THE SEVERAL CROPS IN EACH YEAR FROM 1867 TO 1871, INCLUSIVE, WAS AS UNDER:—

Crops.	1867.	1868.	1869.	1870.	1871.
	Acres.	Acres.	Acres	Acres.	Acres.
Wheat	261,034	285,150	280,460	259,846	246,954
Oats	1,660,511	1,701,645	1,685,240	1,650,039	1,633,960
Barley	171,001	186,318	221,710	241,285	220,715
Bere and Rye	9,602	9,006	11,183	11,797	11,536
Beans and Peas	13,552	9,960	9,955	10,659	10,914
Potatos	1,001,781	1,034,681	1,041,902	1,043,583	1,058,287
Turnips	335,728	320,034	322,072	330,059	327,162
Mangel and Beetroot	18,797	10,109	21,129	25,400	31,905
Cabbage	24,018	32,875	32,265	34,979	32,921
Carrots, Parsnips, and other green crops .	25,506	20,622	26,501	27,712	29,936
Vetches and Rape	20,550	22,993	25,305	27,990	31,320
Flax	253,257	206,483	229,252	194,910	156,883
Meadow and Clover	1,658,335	1,692,135	1,670,716	1,773,851	1,827,733

RETURNS OF LIVE STOCK.

It appears from the following Table that the returns of live stock for 1871 when compared with 1870 show an increase in the number of horses of 4976; of cattle, 173,190; and of pigs, 155,539. Sheep exhibit a decrease of 108,163.

THE FOLLOWING ARE THE NUMBERS OF LIVE STOCK FOR EACH YEAR FROM 1861 TO 1871, INCLUSIVE:—

Years.	Number of Horses.	Number of Cattle.	Number of Sheep.	Number of Pigs.
1861 ..	614,232	3,471,688	3,556,050	1,102,042
1862 ..	602,894	3,254,890	3,456,132	1,154,324
1863 ..	579,978	3,144,231	3,308,204	1,067,458
1864 ..	562,158	3,262,294	3,366,941	1,058,480
1865 ..	548,339	3,497,548	3,694,356	1,305,953
1866 ..	535,799	3,746,157	4,274,282	1,497,274
1867 ..	524,180	3,707,803	4,835,519	1,235,191
1868 ..	524,703	3,646,796	4,901,496	869,578
1869 ..	528,201	3,733,675	4,651,195	1,082,224
1870 ..	532,657	3,799,912	4,336,884	1,461,215
1871 ..	537,633	3,973,102	4,228,721	1,616,754
Difference in numbers between 1870 and 1871.				
	Increase. 4,976	Increase. 173,190	Decrease 108,163	Increase. 155,539

The total estimated value of horses, cattle, sheep, and pigs this year, is £36,798,763, being an increase of £1,240,988 when compared with 1870, as appears by the following Table:—

ESTIMATED VALUE OF LIVE STOCK IN IRELAND IN EACH YEAR FROM 1861 TO 1871, INCLUSIVE, calculated according to the rates assumed by the Census Commissioners of 1841, viz.: – For horses, £8 each; cattle, £6 10*s.*; sheep, 22*s.*; and pigs, 25*s.* each. [These rates have been retained since 1841, in order to facilitate a comparison of the value—one year with another. A percentage may be added by any one at pleasure on account of the increased value of live stock since that period.]

Years.	Horses.	Cattle.	Sheep.	Pigs.	Total Value.
	£.	£.	£.	£.	£.
1861 ..	4,913,856	22,565,972	3,911,655	1,377,552	32,769,035
1862 ..	4,823,152	21,156,785	3,801,745	1,442,905	31,224,587
1863 ..	4,639,824	20,437,501	3,639,024	1,334,322	30,050,671
1864 ..	4,497,264	21,204,911	3,703,635	1,323,100	30,728,910
1865 ..	4,386,712	22,734,062	4,063,792	1,632,441	32,817,007
1866 ..	4,286,392	24,350,020	4,701,710	1,871,593	35,209,715
1867 ..	4,193,440	24,100,719	5,319,071	1,543,989	35,157,219
1868 ..	4,197,624	23,704,174	5,391,646	1,086,972	34,380,416
1869 ..	4,225,608	24,268,888	5,110,314	1,352,780	34,963,590
1870 ..	4,261,256	24,699,428	4,770,572	1,826,519	35,557,775
1871 ..	4,301,064	25,825,163	4,651,593	2,020,943	36,798,763
Difference in value between 1870 and 1871.					
	Increase. 39,808	Increase. 1,125,735	Decrease. 118,979	Increase. 194,424	Increase. 1,240,988

Scutching Mills.—The number of mills for scutching Flax in each province in 1870 was, in Ulster, 1409; Leinster, 39; Munster, 39; Connaught, 31; making in all 1518.

Emigration.—In the first seven months of 1870 the returns of emigrants from the several ports of Ireland show that 53,854 persons left this country. In 1871, the number for the same period was 49,155, being a decrease of 4699 persons in this year.

Weeds.—On several occasions I have called attention to the injury arising from the unchecked growth of weeds which is, unhappily, so apparent throughout almost every part of the country. On this subject that distinguished agriculturist the late Sir John Sinclair has given the following experiments, which prove the great advantage of carefully weeding cereal crops:—

"1. Seven acres of light gravelly land were fallowed, and sown broadcast with Wheat; 1 acre was measured off, and not a weed was pulled out of it; the other six were carefully weeded. The unweeded acre produced 18 bush.; the six weeded acres 133 bush., or 22½ per acre, which is 4½ bush., or one-fourth more produce in favour of weeding. 2. A 6-acre field was sown with Barley, in fine tilth, and well manured. The weeding, owing to a great abundance of Charlock, cost 12*s.* per acre. The produce of an unweeded acre was only 13 bush.; of the weeded, 28. Difference in favour of weeding, 15 bush. per acre, besides the land being so much cleaner for succeeding crops. 3. Six acres sown with Oats; 1 acre ploughed but once, and unmanured, produced only 17 bush. Another 6 acres ploughed three times, manured, and weeded, produced 37 bush. This experiment proves that Oats require good management, and will pay for it as well as other crops. Ten bushels of the increased produce may be fairly attributed to the weeding, and the other ten to the manure."

Labourers' Dwellings.—It is scarcely possible, both on social and sanitary grounds, to exaggerate the importance of improving the dwellings of the labouring classes; the Legislature has enabled the Treasury to grant loans for this most desirable object through the medium of the Board of Public Works. According to the census of 1861, the number of fourth-class houses in Ireland, each of which had but one room for the entire family of every age and sex, was 89,374,* and in these were living nearly half a million of persons.

I have the pleasure of stating that the information from which the abstracts were compiled has been most readily afforded to the enumerators by all ranks and classes in this country; and I here venture to observe to your Excellency, that intelligence, such as is shown in Ireland by the voluntary assistance given to the enumerators, presents an example well deserving of imitation in England and Scotland, where it may be stated—I trust without giving any offence—that agricultural statistics have as yet made but little satisfactory progress, owing, no doubt, to a want of due consideration of the importance of the subject.

I now beg to repeat my respectful acknowledgments to the landed proprietors, tenant-farmers, the clergy of all denominations, and the public press, for a continuance of the generous and valuable assistance which I have for so many years experienced in connection with these statistics. *William Donnelly, Registrar-General, General Register Office, Dublin, September* 20, 1871.

THE GARDEN OF THE FARM.—VIII.

HAVING furnished the walls of the farm garden, and occupied all the vacant spaces, and fences, and farm buildings with fruit trees, the next step is to fill the fruit tree borders. Perhaps there is no form of tree so useful for this purpose, so ornamental alike in flower and fruit, and from no other, unless it be the cordon, can so much fruit be gathered from so small an area, as the pyramid.

The trees may be packed closely together, from 3 to 6 feet apart, according to their size, and, properly managed, they are studded with fruits from pointed top to earth-sweeping base. The pillar is but a type of the pyramid. It is kept as near as may be of one uniform size from top to bottom. The weeping pyramid has all the extreme points of its side shoots bent towards the earth, by being tied down to hoops, or weighted with lead or small stones. Some prefer the weeping form for Pears—I do not; while for

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* The number of fourth-class houses, according to the Census of 1871, has not yet been compiled.

Apples, Plums, Cherries, nothing can be better than the true cone. A pyramid 9 feet high, with a base 3 or 4 feet through, is a beautiful object at all times. A row of them on a secondary fruit border 4 or 5 feet wide, opposite to the wall-tree border, gives the garden an uncommonly dressy stylish appearance. Even Gooseberries and Currants can be trained in a similar manner, but in their case three leading shoots may be taken up to a stout stake instead of one, to hasten the production of the pillar or pyramid. Planted thus in single file, a yard or four or more feet apart, they have a stately appearance, highly unique, and very favourable to easy gathering. In double file the rows ought to be 5 or 6 or more feet asunder. It is astonishing how much fruit may be gathered off a Gooseberry pillar on good soil and with rich feeding. It seemed needful to make these observations concerning those to most farmers novel forms of fruit trees, but I hasten on now to resume the answers to the query of what to furnish with, by giving the names of some of the best varieties of each class of fruits. These will be arranged in the order of their ripening, beginning with the earliest.

In addition to the Apples already named, all of which would do well as bushes or pyramids, the following may also be grown if space can be found for them:—Red and white Juneating, Kerry Pippin, Red Quarrenden, King of the Pippins, Sam Young, Wyken Pippin, Golden Reinette, Cockle Pippin, Cornish Gilliflower, Winter Peach, Spring Ribston Pippin, Allen's Everlasting.

For *kitchen Apples*, Keswick Codlin, Nonsuch, Gloria Mundi, Manx Codlin, Blenheim Orange, Gravenstein, Warner's King, Bess Pool, Striped Beefing, Bedfordshire Foundling, Greenup's Pippin, Northern Greening, and French Crab—the latter keeping for two years if need be, and as good, or better, when Apples come again as when gathered.

Dessert Pears.—When Pears are wanted in July and August, one each of Doyenné d'Eté and Citron des Carmes should be grown. The Jargonelle on a wall will succeed the latter. It also does pretty well as a pyramid in sheltered warm gardens, and this, again, is succeeded by Williams' Bon Chrétien, a noble delicious Pear. This carries the Pear season from July to near the end of September. Beyond this a whole host of good Pears prolong the season to the end of March. These early Pears do not keep many days, and consequently a tree, or part of a tree of each, is sufficient. Several trees of the following may be grown without much risk of their rotting before they can be consumed:—Beurré d'Amanlis, Louise Bonne of Jersey, Beurré Superfin, Seckle, Marie Louise, Winter Nelis, Glou Morceau, Josephine de Malines, Beurré de Rance, Huyshe's Princess of Wales, Huyshe's Victoria, Ne Plus Meuris, Easter Beurré.

Stewing Pears.—Most of the best kitchen artistes of late years prefer the best dessert Pears for stewing; but where stewing Pears are in great demand, as they are in many farm households, it may be well to grow a few trees for this purpose. Uvedale's St. Germain, grown on a wall, is undoubtedly the best of all Pears for stewing. It will sometimes reach a weight of 2 lb., and keeps sound till April. It will also grow as a bush or pyramid. The Vicar of Winkfield is a noble Pear, does well as a pyramid, and is good either for eating or stewing. Catillac and Bellissime d'Hiver, are handsome free growing sorts, and the Beurré Capiaumont is a small, showy, extraordinarily fertile variety, good for stewing, as well as juicy and agreeable for eating in October.

Plums.—In sheltered positions all those recommended for walls, with the exception of the Impératrice and the Magnum Bonum, will do well as pyramids in the open ground. The following might be added to or substituted for some of those:—July Green Gage, Denniston's Superb, Oulins' Golden, Woolston Black, and Rivers' Late. Cooking and preserving Plums: Victoria, Prince Engelbert, Diamond, Goliath, Early Orleans, Autumn Compote, and Damson.

Cherries.—To those recommended for walls, the following might be added:—May Duke, Early Purple, Early Prolific, Waterloo, Black Eagle, Büttner's Yellow, Coe's Late Carnation, and Belle Agathe—the three last carrying the Cherry season through September. For cooking and preserving the Belle Magnifique, Kentish, and Morello.

Medlars.—These make a splendid jelly. The Dutch and the Nottingham are the best varieties: they can be grown as bushes.

Mulberries.—These can be kept small by root pruning, and are generally prized; the black is the only one commonly grown, but there is also a large white-fruited variety.

Quinces.—Where these are valued in pies as flavouring for Apples one or two of them should be grown. The apple and pear-shaped are the best for the kitchen garden. The Portugal is a grosser grower, and its flesh turns red when cooked.

Walnuts.—The meadow or orchard is the place for the common Walnut, but the dwarf prolific variety will fruit at a height of 3 or 4 feet, and is quite admissible into the kitchen or fruit garden of the farm.

Filberts and Nuts.—These are a source of great amusement and pleasure on winter evenings, and no farm garden should be without them. They are best and most prolific grown as small standards with a clear stem of 3 or 4 feet in height. The Cosford is a thin-skinned variety of great excellence; the Cob-nut every one knows, but several new varieties of it have recently appeared which are great improvements on the original. These are the red and white skinned Prize Exhibition Cob-nuts; then there are the white, red, and frizzled, and purple leaved, and Prolific Filbert, the latter a prodigious bearer in a small, young state.

Currants.—Black: Naples, this is far superior to the common black. Red: In addition to those named for walls, Knight's Sweet Red, The Grape, Mammoth, and Raby Castle, are good varieties; the cut-leaved White Dutch is also a very fine Currant.

Gooseberries.—Several of the best flavoured varieties have already been specified for walls, to these add—Red: Wilmot's, Early Red, Old Rough Red. White: Early White, Snowball, Whitesmith, Bright Venus. Green: Overall, Keepsake, Model, Green Gascoigne. Yellow: Early Sulphur, Yellow Ball, Leader, Broom Girl. The following are a dozen of the largest Lancashire prize sorts, each berry weighing from ½ oz. to 1½ oz.:—White: Hero of the Nile, Queen of Trumps, Antagonist. Green: Thumper, General, Telegraph. Yellow: Duckwing, Catherina, Mount Pleasant. Red: London, Wonderful, Conquering Hero.

Raspberries.—Carter's Prolific and Fastolf, red; and Yellow Antwerp. Autumn Raspberries should be cut right down in winter, or in February; they then produce strong canes; about four only should be left to each stool. These fruit from the end of September till the frost finishes them. The October Red and October Yellow are by far the best varieties, much superior to the common double bearing.

Strawberries.—Among the best varieties are the Black Prince, the earliest of all; Keens' Seedling, British Queen and Sir Charles Napier, Dr. Hogg, President, John Powell, Crimson Queen, The Lady (a good white), and Elton Pine, the latest of all, and sharply acid, but a refreshing Strawberry after the others are gone. Plant in rows 2 feet or 30 inches apart, and the plants at least 18 inches from each other, on rich deep soil, and top-dress in winter with 4 or 6 inches of strong manure, leaving its bleached surface as a clean resting place for the large fruit in summer.

Grape Vines (for a vinery or greenhouse roof).—As Grapes are grown in several farm gardens, and will very soon be cultivated in all, I give a list of varieties for furnishing a cool vinery. Suppose there is space for eight plants, the following would be a useful selection:—1 Buckland Sweetwater, 1 Royal Muscadine, 3 Frankenthal, or the best variety of Black Hamburgh, 1 Burchardt's Prince, 1 Black Alicante, 1 Lady Downes'—the three last being late good keeping sorts, and the whole easily grown and sure croppers.

To some these lists may seem needlessly full, but room may be found for all in good farm gardens. And those who have less space at command may safely dip into them anywhere without risk of drawing a worthless blank. Farmers, as a class, know little of such matters, and it seems desirable to open out pretty freely the treasures of fruit that invite their growing and gathering. Good varieties take no more space, require no greater attention, than bad or indifferent sorts, but the difference at eating time is immense. The first cost of a fruit tree is a mere fraction of its absolute worth; the value or worthlessness of its produce measures its worth. Neither is there any excuse now for growing worthless sorts; the very best are almost equally cheap.

Good maiden trees, that is, untrained plants of all the above varieties, can be purchased at the following prices per plant:—

Prices of Fruit Trees, Bushes, &c., of the best quality.

	s. d.—s. d.		s. d.—s. d.
Grape Vines each	1 6 to 3 6	Currants, each,	0 3 to 0 6
Peaches ,,	1 6 ,, 2 6	Raspberries ,,	0 3 ,, 0 4
Nectarines ,,	1 6 ,, 2 6	Best Nuts and	
Apricots ,,	1 6 ,, 2 6	Filberts ,,	0 4 ,, 0 6
Cherries ,,	1 0 ,, 1 6	Medlars ,,	1 6 ,, 2 6
Figs ,,	1 6 ,, 2 6	Quinces ,,	1 6 ,, 2 6
Apples ,,	1 0 ,, 1 6	Mulberries ,,	3 0 ,, 5 0
Pears ,,	1 0 ,, 1 6	Strawberries, per	
Plums ,,	1 0 ,, 1 6	100	3 6 ,, 5 0
Gooseberries ,,	0 3 ,, 0 6		

Larger fruiting plants of all the foregoing trees, trained into form as pyramids, bushes, cordons, single, double, oblique, vertical, or as fan or horizontal trees for walls, range in price from 1*s.* 6*d.* to 5*s.* or 7*s.* 6*d.* each, according to their size; strong fruiting canes of Grape Vines, in pots, from 4*s.* to 7*s.* 6*d.*, and very strong 10*s.* 6*d.* each. Excellent standard fruit trees for orchards, a list of which I propose giving in a supplementary chapter on farm orchards, can be purchased at prices ranging from 2*s.* to 3*s.* 6*d.* each, and even less if several dozens are taken. *D. T. Fish.*

FOOT-AND-MOUTH DISEASE.

BY PROFESSOR POLLI, MILAN.

THE following article, written by Professor Polli, of Milan, was found among the papers of the late Sir J. Y. Simpson, and furnished to the *Midland Counties Herald*, by Mr. Lawson Tait:—

Directions for employing the sulphites in the foot-and-mouth disease (epizootic aphtha), the carbuncular fever or charbon, the Hungarian pest or cattle plague, by Dr. Giovanni Polli, extracted from the "Bollettino Industriale del Regno d'Italia," published under the auspices of the Ministry of Agriculture.

The pathological principle on which the treatment by the sulphites rests, is the admission of an altered condition of the blood in epizootic diseases as its principal factor or cause, induced by the reception into it, or by the development in it, of a particular morbific ferment. The dyscrasix or faulty condition of the blood, against which both animal functions and nutritive processes are stirred into reaction, originates or sets up the malady. The cure may be said to consist in arresting this decomposition of the blood, of which what we call the prophylaxis is nothing else than the prevention. For this purpose, we avail ourselves of a remedy that is very well borne by the economy, with no inconvenience attaching to it. It has also the property of rendering the organism refractory to the influence of morbigenous ferments, and, moreover, of arresting their operations, and so allowing the animal organism to work itself clear of their effects by customary eliminations. This remedy is no other than the combination of sulphurous acid with alkaline and earthy bases. The sulphite of soda, by its solubility, and also by its low price, is the most convenient of these for curative operations, while the hypo-sulphite is most appropriate for prevention of the disease.

Preventive Treatment.—Whenever a healthy herd of cattle, goats, pigs, or a flock of sheep, have in their neighbourhood an infected animal, stalled, penned or herded with them, where contact with such has been possible, direct or indirect, you may dread the coming of the disease. You will then employ the preservative method, subjecting all animals alike to the following process of treatment:—

For every head of beast you make a solution of 3½ oz. (100 grammes) of hypo-sulphite of soda, dissolved in a small quart of water (a litre), and add to it 1 oz. or so (20 to 30 grammes) of common culinary salt, to make the drench more palatable, and also to assist its action. This solution to be taken daily, divided into two doses, that is to say, half the quantity to be taken in the morning by the animal, and the other half in the evening by way of drench with the horn, or in the same way morning and evening; the same quantity of the salts may be given with flour mixed up into a paste in ball, taking care to make the animal drink some quart or quarts of water soon after taking the balls or bolus. From the time the physic is given, no food should be allowed for an hour, and after taking the food the space of two hours should elapse before the salts are administered. This treatment should be persevered in so long as, from the existence of epizootic disease in the neighbourhood of the animals, there is danger of its diffusion to non-infected stalls.

If the animals so treated by the hypo-sulphites have too much looseness of the bowels, it is best, on alternate days, at least, to give but half the morning dose; or even you may find it necessary to cut down all doses to one-half, for purging is not desirable—far otherwise, that so the salts should be absorbed and taken up into the system so as to confer upon it the faculty of thorough resistance to all morbific ferments.

For the use of sheep, goats, and swine, the dose that has been mentioned for cattle may be reduced to one-third or thereabouts of the quantity already stated, *i.e.*, rather more than half an ounce (20 grammes), to be given in the morning, and the same again in the evening, or rather more than 10 drachms during the day of hypo-sulphite of soda, in watery solution or bolus. The addition of a little common salt may be at any time made, whenever it is thought advantageous to make the animal better savour the lump of paste or solution with the salts. Extreme cleanliness in the stalls, frequent aëration of the shed, a good selection of food, great purity of the water drank, all these should be scrupulously attended to.

Curative Treatment.—When in any herd or stall of cattle—and the same with sheep, goats, and swine—there is present the epizootic disease, to every healthy head of animal you will continue the preservative treatment, that is to say, with the hypo-sulphite of soda, in manner above described. Any animal that is affected with the disease should be subjected to treatment with the sulphite. For cattle, the daily dose of the sulphite should be 3½ to 5 oz. (100 to 500 grammes), dissolved in a quart or somewhat less of water (a litre), with addition of 1½ oz. (50 grammes) of common salt, one-half of this quantity to be given in the morning, and the other half in the evening, either in solution, by means of the horn, or the salt may be mixed into a bolus or ball with flour in paste, in which latter case it is necessary that the animal should imbibe soon after some quart or quarts of water.

Between the taking of the salts and any kind of food one full hour must be suffered to elapse; so, again, after food has been taken, two hours' interval should be enjoined before the physic may be given.

The utmost cleanliness of the stall, removal of dirt and litter, great freshness of the bed, purity of water drunk, and ventilation of the premises, are wholly indispensable to success in treatment.

For the epizootic aphtha (the foot-and-mouth disease), the pustules and ulceration that is found about the mouth and lips, on the tongue, and dugs, and cleft of the hoof, should be all well washed and dressed with tow that is well wetted in solution of the sulphite, one part of it to 10 in water, to be made fresh every day. The best preparation and most useful detergent, when the skin displays any raw, is a concentrated solution of the sulphite, one part to six of water.

If from the severity of the complaint, or aggravated condition of the mouth, the animal resists very much the employment of the drench or ball, we must then have recourse to clysters, giving the salt in solution as before, but increasing the sulphite in quantity for the purpose by a quarter or a third, and doubling the quantity of the water. Let it be divided into four equal parts, to be given at regular intervals, so as to be better retained, and purging in that way avoided.

During all employment of the sulphites, it is necessary to refrain absolutely from the use of acid substances, whether internally or externally, such as vinegar, cream of tartar, lemon juice, wine, &c.

The dose of sulphite of soda for the smaller class of animals (sheep, goats, swine, &c.) should be reduced in due proportion, according to the size of the animal, as low as 1 oz. daily, or perhaps a little more (30 or 40 grammes), divided into two doses, and administered with the same set of rules. With these smaller animals we use the clysters just the same as with the cattle.

The droppings of animals that have been under treatment with the sulphites and hyposulphites are apt to give off strong exhalations of sulphuretted hydrogen. This odour is not deleterious, however disagreeable it is, but rather is it depurative and beneficial to the cattle in the stalls, since it permits a part of the sulphurous principles to enter the organism by the channel of the breath, where they give opportunity to the production of the sulphurous acid and the sulphites.

If complained of as inconvenient to those who tend the cattle, it may be mitigated by freer ventilation, or a thorough fumigation with chloride of lime and oil of vitriol in an earthenware pail, once or twice during the day. When the apprehension of epizootic disease has lasted for a considerable time, necessitating the use of the hypo-sulphites for some time by way of prevention, there is no cause to fear about the milk, nor yet for the flesh of the animals that have largely partaken of the salts. Both, indeed, are so far improved that they resist the ordinary decomposition. Under equal circumstances and conditions, the milk that is taken from these animals continues fresh for a longer time than is the case with ordinary milk, and it does not pass so rapidly through the customary changes. When such milk is used for making cheese, it requires but a little more pressure. The flesh of oxen slaughtered after a long use of the hypo-sulphites, will keep sweet and free from taint for a notably longer period than is the case with the flesh of animals that have been treated by the sulphitic medication. The same is true of other flesh, as that of sheep, goats, or swine.

Note.—The foot-and-mouth disease, the carbuncular fever or charbon, the cattle plague, or foreign pest, are three several diseases, having each its specific cause, and consequently are unlike in character or in the amount of alteration produced by them in the economy. But, as the treatment of the sulphites does not do away with that cause (nor could it be hoped that one single thing could destroy such various causes), but rather by a particular action, which is termed catalyptic in chemistry, it arrests and paralyses their effects; the organic components of the body are thus protected and rendered impregnable to the assault of the morbific fumes through the chemical property of the salts. One can understand, then, how the same treatment may apply to the several diseases, and also to such other maladies as have for their common character a morbific fermentation. The nature of the morbific principle is more or less one of virulence; the predisposition or aptitude of the animal that may be exposed to its influence will instruct us how far we may modify, according to case or circumstance, the curative and preservative treatment. In this way, either prophilactically or curatively, you may raise or lower the dose, keeping in view the standard quantity, endeavouring — for such should be your aim — to make it enter the circulatory current, by whichever path administered, in such proportion as is indicated by the strength of the morbific principle you have at the time to contend with. In allowing yourself any such change, it is always best to bear in mind that the hypo-sulphite of soda is more purgative in character than is the case with the sulphite; and that the gastro intestinal mucous membrane, in blood infection, generally is disposed to an extraordinary secretion (diarrhœa or eliminative dysentery); and when you have for your aim to have retained in the body the drench of sulphitic injection for so long a time as is needed to ensure the absorption of the same into the blood current of the animal, it may be better to give the salts, in preference to a watery solution, in a starchy or feculent fluid of non-purgative character, better, perhaps in decotion of poppies, or something a little binding and sedative.

The description of the salts is omitted in translation, as now they are tolerably well-known, but they should be of sound chemical constitution. It is to be observed that the foreign weights quoted are original, and therefore the more exact.

Home Correspondence.

The Crops in North Lancashire.—I am glad to be in a position to attest to the truth of the remarks I hazarded in your journal in July last, under the head of "A Walk in Westmoreland," as to the crops in this part of the country. Although the hay harvest was very unsettled and showery, a more than average crop of hay was secured in good condition, and I never saw, at the time of year, a better or fuller crop of after-grass. The pastures are also in first-rate condition, and should the ensuing winter be an average one, we shall have such a sufficiency of grass on the fields, that indoor keep will scarcely be required; but, in the event of a severe winter, we have a most excellent green crop. Turnips and Mangel Wurzel, with rare exceptions, are large crops, and remarkably sound and heavy on the ground. In fact, we have a plethora of winter keep. Beans and Peas have been equally good. For some years past we have not known a better harvesting season; and, although Wheat may not be a full average, yet, I think, when the weight of straw is taken into consideration, farmers will find the money value of their crops scarce, if any, inferior to what are acknowledged to be "average" years. As regards Barley and Oats, the yield of the district will be found in the threshing to be an average, and the straw over average. With the introduction of machinery, many agriculturists in our neighbourhood now fully recognise and avail themselves of cut straw as a valuable admixture for feeding stock, and its intrinsic worth as such cannot this year be overlooked in estimating the pecuniary value of the corn crops of 1871. In common with other portions of the country, our second early Potatos suffered a good deal from the disease, and in some instances for every three loads taken up scarce one could be found fit for the market. First earlies were a good and productive crop, and the market price was only 5*d.* per stone of 14 lb.; but when the disease made its appearance the price was doubled, and remains so. I am glad, however, to find that the winter sorts, such as scurries, flukes, &c., enjoy immunity from the ravages which, owing, no doubt, to the wet weather, rotted the more delicate esculents; and acres of fine healthy Potatos are now being stored, with scarce a diseased one amongst them. The yield, also, is all that the most sanguine and expectant grower could wish. Should other parts of the country be equally fortunate with the winter growth, there need be no fear to dread a Potato famine. Foot-and-mouth disease has not quite left our cattle free; but cases are few, and generally speaking, the attacks have been slight, rarely ending fatally. In the important agricultural districts of Lonsdale North of the Sands, and West Cumberland, the number of cattle affected might be counted on the fingers of the hands, and, owing to the precautions taken, there does not seems to be any reason to fear its further spread. Agriculture, within the past few years, has made, and is making rapid progress for the better with us. District exhibitions are springing up on all sides, and large tracts of country, the occupiers of which a few years ago went quietly plodding on in the ways of their forefathers, have caught the fever of progress, and show a manifest improvement both in land and stock. It has been the fashion to decry small or district shows, and at the Whitehaven meeting last week the county members were of opinion that they were hurtful to the county exhibitions. My own experience is the reverse of this. District shows make exhibitors, and act as feeders to the larger ones, and hundreds of farmers, who but for them would never have brought their stock into competition at all, are emboldened by local success to try conclusions at more pretentious meetings. On the whole, then, the farmers of the North are to be congratulated on their prospects; inasmuch as the greatest want they have experienced this year, or are likely to experience, is a lack of labourers, owing to the large number of men now engaged in iron mining, and iron working generally. *J. R. R.*

Michaelmas Averages: Corn Rents.—For the information of those interested in corn rents, I beg to state that the average prices of British corn for the 52 weeks ending September 30, 1871, are—Wheat, 55*s.* 1⅛*d.*; Barley, 36*s.*; Oats, 25*s.* 2*d.* per imperial quarter. As fractions of a penny are not included in the Board of Trade Returns, the correct averages are each about a halfpenny higher than the above. *Montague Marriott*, 26, *Montpelier Square, S.W., October* 3.

Short of Water.—Let me recommend our heavy-land friends, who have no springs, to make some large underground tank or tanks, well arched over, and have a pump fixed in them. Into these let all the water from the roofs enter during winter, and having once got them full you will never be short again, because, as our average rainfall in Great Britain is 26 inches, at this rate there will be more than 12 gall. fall on every square foot of roofing, reckoned as flat roofing. This remark holds good for private houses, and particularly for labourers' cottages, which are too often short of water. The underground tanks should be of brick, well cemented, and very carefully so if on a sandy, chalky, or porous soil. The tank, being a close one, will lose no water by evaporation in hot weather. The roofs must not be lime-washed under these circumstances, otherwise the lime being detached by the frost will spoil the water. A friend of mine made this mistake, which caused much annoyance and some expense. When the fall will permit it, the rain-water from the land-drains will afford ample supplies to your tanks. I consider that my drain-water from springs (35 gall. per minute) has added £40 value to the annual rent of the farm. Some of my neighbours have to keep a horse and cart constantly employed in summer going a mile or more for water. I have reason to believe that excessive heat and want of sufficient water tends much to fever — that is, foot-and-mouth disease. We know that bad water or a scanty supply ruins the health of many cottage families. *J. J. Mechi, Sept.* 1871.

Flowering Stems. — Your comprehensive leader in last Saturday's paper on a subject which is exceedingly interesting will, I hope, provoke a correspondence. That this has been one of the most remarkable seasons no one can doubt, and that it is in connection with early sowing I have no hesitation in attributing so many of our root crops "bolting." Seed saved from selected bulbs, as well as those saved from unselected bulbs, have alike run away; but with this difference—the seed saved from selected bulbs have produced a very good sized root, but the unselected no roots at all of any value; and those who sowed early with cheap seed, which costs only 3*d.* or 6*d.* per lb. less than seed that could be depended on will bitterly repent of it, for if ever there was a season when it has proved "penny wise and pound foolish" to buy cheep seeds, this is the one. We have been "going a-head" very rapidly of late in sowing our seeds. Taking the Mangel crop, the experience of the last two or three years has caused us to sow Mangel in April (which, five years ago, we never thought of doing till the second week in May); this was in consequence of the dry weather setting in so early that we could not get a good seed-bed in May, and what we sowed did not come up until June, and sometimes July. This year, however, has proved that we must not always sow early, for it is the early sown seeds which as a rule have run. Carrots sown the second, and Mangels the third week in April, have, as a rule, "bolted," while those sown a fortnight later have none of them gone. You refer to Cabbage having bolted. Can it be that the same insect, which has this year attacked the Swedes, especially on the eastern coast, has also taken the Cabbage? I have seen Swedes with as many branches to them as a standard Rose, and was at first disposed to blame the seedsman, but on a closer examination, I found that an insect had established itself in the crown of the Swede when in its young state, and eaten it away to such an extent that the Swede could not throw up its leaves in the centre, but in its vigorous growth pushed forth bushy heads in the manner I have described. There is another feature of the present season which you do not refer to, but which is equally remarkable, and that is the presence of Dodder in the young Clover plant sown this spring. I have always been led to suppose that this noxious weed, truly named "Devil's Guts," did not show itself until the second year; but on examining the young Clover plant the other day, judge of my surprise to see patches of Dodder all over the piece. I immediately had it mowed down before it came to flower, which I believe will kill it. The question is, how are we to account for it? Some would say, blame the seedsman for sending it with the seed, but I never find fault with any one without I am convinced they are to blame; and as I know that the Clover seed sown was "home saved," and from a field which never had Dodder in it, I conclude, and I think reasonably too, that there must have been Dodder previously in the soil, that it had remained dormant during the past two or three dry summers, and the wet spring and summer of the present year brought it up. If any of your readers can give any further explanation, he will very much oblige *Observer.*

Small Steam-engine for Cutting Chaff.—In answer to "H. P.," who inquires about a small steam-engine for chaff-cutting and pulping purposes, I beg to say that nine years ago I bought a chaff-cutter, with small steam-engine attached to it, from Messrs. Cockey & Son, iron founders, of Frome. It has been in constant use during the winters ever since, cutting chaff for about 80 head of cattle, and several horses; in addition to this it has been connected with a 2-horse power threshing-machine, and has machined all the corn grown on the farm, viz., about 60 acres of Wheat, Beans, and Oats. I examined this machine last spring, and found it in perfect working order, having had no important repairs during the time it has been set up. Messrs. Cockey & Son would give "H. P." any information he might require. *H. C. P. G.*

Rape.—Professor Thiselton Dyer has pointed out in a paper published in the "Journal of Botany" (vol. ix., p. 193), that the Rape, Brassica Napus, is probably unknown in this country. He uses Boswell-Syme's name, Brassica polymorpha, for the species, which includes such well marked sub-species or races as B. campestris, B. Rapa, and B. Napus—Brassica campestris including the Rape or Colza cultivated in this country, and the Swede; B. Rapa, the dwarf; and lastly B. Napus, the Rape proper. While examining samples of the seeds of Rape, Swede, and Turnip, I found that Professor Dyer's views were correct as to the absence of Brassica Napus. Twelve samples of seeds were examined, with the following results: Of six examples of Rape seed, five were referable to B. campestris; one only I take to be B. Napus. The seeds of Brassica campestris are about one-third larger than those of the common Turnip, with a finely reticulated surface, there being also a faint large reticulation. In B. Rapa, Turnip, you have the seeds about one-third smaller than those of the Swede, but with the same markings; while in a sample of spring Rape, from Runia, the seeds are of the same size as those of the Turnip, but with a larger honeycomb reticulation in addition to the fine reticulation of the surface. This reticulation is so large that it can be easily seen with a hand lens. The Rape cultivated in this country seems, therefore, to be Brassica campestris var. oleifera. Of five samples of Rape or Colza examined, two were British, one Italian, one French, and the fifth from Hungary. The Swede is also a variety of B. campestris, the var. Napo-Brassica. Brassica Rapa, var. rapifera, is the Turnip, four samples of which were examined. Brassica Napus var. oleifera is probably the Spring Rape from Runia, only one example of which I have seen. It seems, therefore, that two plants are mixed up, both in this country and abroad, under the name of Rape. *W. R. McNab, M.D., Royal Agricultural College, Cirencester, Oct.* 2, 1871.

Societies.

SOCIAL SCIENCE CONGRESS.

Leeds: *Oct.* 8.—*The Sanitary Care of Villages and Cottages.*—In the Health Section, under the presidency of Mr. Godwin, F.R.S., Dr. Acland, of Oxford, stated:—

In any well-ordered modern town the poor have the cleaning and scavenging of the surroundings of their homes done for them. In a village or an isolated cottage the labourer, often ill fed, always hard worked, either performs this duty himself, or it is left undone. He has to do it before his day's work, after it, or by losing it. What this implies if a man be not strong those who know the people well can alone judge. The effect of this one circumstance is more injurious than can be readily estimated. The condition of the closet accommodation in some villages and cottages is such as is virtually inconsistent with a sense of domestic order, and is productive not seldom of the most injurious effects on the health of the family. The water is poisoned. Fevers are originated, and permanent ill-health is engendered through recurring bowel attacks. A generally untidy and miserable state of the surroundings becomes the habit of the family. The children grow up with these associations, having no other home standard of decency. They have known and desire nothing else. I could tell many facts to show the extreme gravity of this matter in our rural districts—grave from its effects on the health of individuals—grave, more grave, from the effect on the moral nature by engendering indifference, and on the intellectual powers of observation and reasoning by breeding ignorance and consequent false opinions upon common matters of every-day life. We need not now consider the causes of such things in this age; we have nearly done with that kind of inquiry. We seek now practical remedies for the past and reasonable prevention for the future.

Now, the remedy seems to be this, that, *mutatis mutandis*, the same sanitary care should be bestowed on a cottage in the country as on a house in a town. In the case of a well-ordered town the community provides water for its members, and removes their refuse for them. Not so in a village. The chances are in many districts that every cottage, or every other cottage, has its well, and, there being of course no sewers, has its own cesspool. The expense and the risk from want of organisation are both multiplied. It may be said that our scattered populations are not worth the care, or that, if worth the care, then the supervision would in practice be too costly, so that the care of hamlets and villages is either impracticable or visionary. Issue may be joined on both these objections. The rural populations are becoming nurseries for town populations. They cast into the towns either a strong, decent, manly people, or an enfeebled progeny, brought up unwisely. The rural districts contain no less than 9,803,811 persons, having increased in the last ten years by 668,428. They increase in great measure, as is justly remarked by the Registrar-General in the last census, by going into towns, and therefore by carrying their habits, good or bad, with them into the towns, and electing as their administrative officers persons conformable to themselves. The immigration of the rural into the urban population is noticed on the Continent also, and is, in fact, a necessary law of modern civilisation, depending on various causes—some obvious, some recondite. The case of the villages is, therefore, apart from special humanity towards the individuals, truly a national question. As to the executive who are to guide them, the great measure of last session, which undertook to harmonise into a whole all existing powers bearing on the public health, and which has assigned to one minister the duty of consolidating and improving the law, wherever improvement and consolidation are needed, has virtually decided this question. With respect to the purely rural districts, the great powers of the Public Health Acts at present reside with vestries and guardians. In many cases, therefore, they are indirectly in the hands of the very class of persons who require guidance and help. Herein lies a great part of the strength of the Local Government Board. It enlists in the cause of public health, understood in the widest sense, every ratepayer who votes on matters of parish organisation, and the medical men of the poor. Will they act? Will they apprehend their own material interests? We may not doubt that, with the progress of education and self-government they will. What has to be done in these difficult cases must often, I am convinced, be done by the people, with the aid, but not by the compulsion, of the law.

To revert to the specific proposition from which I started, that the cottages in rural districts should be scavengered by the community and not by the occupier. There are two ways in which this can be done. The one, in villages where regular sewers and water supply can be provided and maintained. The other, in isolated cottages, where, from the expense, these methods are practically inapplicable. In Broad Clyst the former has been lately tried. In Stanton Harcourt, in Oxfordshire, the latter plan had been put in operation on the dry-earth system by Colonel Harcourt, the son and successor to the venerable and scientific Canon Harcourt, owner of Nuneham. An inspector, paid by Colonel Harcourt, goes weekly to the cottages on the estate to examine and report on the condition of the closets, and if they are in a bad state he removes the manure as a fine, because then the owners lose it from their gardens. An account of thorough administration of this kind by Baron Rothschild is given by Dr. Buchanan in the Privy Council Reports of 1870. The first of these methods cannot pay interest on the outlay, and can only be done by persons who have capital at their command. Neither the parish nor the union can be called on to contribute to a purely local improvement, except on the principle on which a great landowner has to act—that he must have good houses for those who till his land, the outlay being calculated as for the whole of his property; or on that principle which makes the whole country pay some apparently metropolitan charges because they are part of the Imperial expenditure. On the whole, there is no doubt that an arrangement can be made in every rural district, whereby the poor labourer may have the necessary surroundings of his home kept in order for him, like his fellow artisan in the town. It would conduce to his health and energy, and it would be both just and politic, since all who believe in the existence of national health and national morality feel that the agricultural labourers deserve the utmost care of the nation.

Mr. Rawlinson, C.E., said that the question of providing the best form of human habitations had been neglected, so far as his knowledge went, from the very earliest dawnings of history. He knew of no nation that paid attention as it ought to do to the dwellings of the lower class population. He spoke with a full knowledge of the habitations of this country, and he spoke also with some knowledge of the houses of the labouring classes upon the Continent, even in America and in India; and the sum total of the story was one of utter and gross neglect, which generates a mass of misery, crime, and disease that was indescribable. That being the case, whether Socialism were to come into play, whether the rich were to take something from their wealth to aid the poor, he was not there to tell, or to speak of the form in which the work should be done. He was simply there to say that there was no safety for any people, there was no security for any Government until the statesman had learnt that lesson from his work, and had worked out the problem of how it was to be applied. One of the great evils of the construction of dwellings in this country was, first of all, the utter regardlessness of the site, and the subsoil, and the material, and the mode of construction, and then the mode of management subsequently. Now, whether people were going to build cottages for themselves, or cottage or villa residences, or palaces, the first necessity was to have a dry subsoil. If not naturally dry, the soil must be dried by the best means. The second necessity was, that the area upon which the buildings are about to be erected must be isolated from the subsoil, and the cheapest and best means was to use concrete. The next thing was, that there should be a damp-proof course to prevent the damp rising into the walls. Then, if there was a basement story, it should be isolated from the ground; the earth should not come in contact with the walls. With regard to the arrangement of the rooms, the last speaker had told them briefly and admirably that means must be applied to give ventilation. He spoke in the presence of the chairman, one of the ablest sanitarians that this country had produced, one who had spent his life in studying these questions, and one who probably had tended to do more good than any man that it had been his pleasure to come in contact with, by studying the questions, and teaching, as the editor of the *Builder*, what it was that should be done. In that paper every information could be obtained on the subject. He might first, however, say briefly that domestic houses had two purposes to serve as we use them. They had the domestic purpose for the family—that for the cottager was the entire purpose the house served, as they had few visitors—and the more ornamental purpose. But there was the time when sickness came. People ought to be taught that they could not live healthily within the four walls of their dwelling, whatever the arrangement might be, if they did not open their windows and admit air. Those who visited the dwellings of the poor should see to it that the windows of the bedrooms were opened, and, if they did not open, the landlord should be asked to make the requisite alterations. If the outside air were let in, Nature would do the rest; she would oxidise and purify. If there was a window on a staircase, and there was no other means to procure ventilation, he recommended that the window should be let down some 3 inches from the top and screwed fast, so that none of the servants or any one else could ever close it by day or night. He knew of cases where great benefit had been done by this simple expedient. Then as to closet arrangements. He had had to inspect Windsor Castle, and one would imagine, if ever there was perfection to be found, it would exist where Her Majesty had to reside, In 1821, Parliament voted £500,000 to fit Windsor as a place of residence for George IV. Up to the end of William IV.'s reign he found that £750,000 had been expended upon the Castle. When the Queen had come to occupy the Throne, and in the year 1844, the state of the Castle had become so bad and was so offensive that it was almost impossible to live in it, and it was found upon examination that there were no fewer than 53 cesspools within the basement, all of them full and overflowing. It took some years to remedy the evils that existed, but they had been overcome, and now, probably, Windsor Castle was one of the healthiest places in the world.

PLYMOUTH.

The Lamb Disease.—At a recent meeting, the Chairman (Sir Massey Lopes, Bart., M.P.) said: There was not a single man or woman in the country who was not in a large degree interested in at all events preventing, if possible, a recurrence of this as well as other diseases, which he was sorry to say were now raging throughout the country. They had met there to consider more particularly the lamb disease, but he could not help saying just a word or two with reference to two other diseases which were now rapidly spreading. It was a serious fact that the foot-and-mouth disease at this moment existed in no less than 73 British counties, and he had been informed officially that at the present time there were 25,000 cattle suffering from it. This was a very serious matter, and required that the most careful attention should be paid to it. They all knew that pleuro-pneumonia and the foot-and-mouth disease had been imported into this country by foreign cattle, and he strongly felt, as he always had done, that Government had not been sufficiently alive to the injuries and dangers that were inflicted upon agriculturists by these two diseases. Furthermore, he was of opinion that every head of cattle imported into this country should be slaughtered at the port of entry, and he looked upon the 12 hours' system of inspection to be a humbug, a delusion, and affording no security whatever. Lamb disease was not, however, an imported disease. It had existed in the districts throughout Devon and Cornwall, more or less, for many years past. Years ago some Cornish agriculturists subscribed together and gave £30 for the best essay on lamb disease. The prize was taken by Dr. Crisp, whose opinion was that it arose from parasites in the lungs, and recommended good and generous diet as a preventive. Mr. Crisp further thought the turning of lambs into Clover or coarse grass when dews were upon it was very likely to bring about the complaint, and that the disease was in some measure owing to the land being overstocked with sheep, to the exclusion of other kinds of cattle.

Mr. Tucker (Molenick, St. Germans) read a short paper on the disease, in which he said it was not infectious, or indigenous to the land. There was no doubt that the disease had prevailed in the country from time immemorial, appearing in the same form, and as fatal as at present. With every August came the disease. Greater loss has been sustained in Cornwall from it than from all other diseases combined to which sheep were liable. The highest authorities were agreed that it was a parasitic disease. Through these parasites the lungs were prevented from oxidising the blood; hence great debility, and always diarrhœa before death, this being the effect of debility. He knew of no means of removing these parasites with safety to the life of the animal, but he believed much could be done by preventive means. One great mystery of the disease was, that while on one farm it was known, on a farm with the same soil it was not known. This was proof that it had its origin in some local cause, and he believed that lambs were annually liable to it when fed on certain pastures, and that a single field or a small portion of land often diseased a large flock. Experience pointed to old and broken land, especially where the pasture was coarse from want of drainage. Here they wanted science to distinguish between healthy and unhealthy pastures, and if such could be done it would be a great boon to the farmers of this country. If they took their lambs entirely off pasture land, he thought they would hear very little of this disease.

Mr. Bickford (veterinary surgeon, Totnes) followed with a short paper, agreeing that prevention of the disease should be their first object. But he must confess that the measures just recommended would not at all times avert these calamities; each season seemed to give birth to its special disease among their domesticated animals; but while foot-and-mouth disease, pneumonia, and cattle plague were eminently infectious, the disease among lambs was neither one nor the other, but a parasitic disease. The effect of the disease was a direct loss of blood, reduction of vital action, and an insufficient conversion of food into blood for the repairs of the body. He was certain that the disease would not be so widespread as it is were it not for the great antipathy farmers had to administer medicine to their flocks. As a rule, sheep were most unsatisfactory patients, due in a great measure to the character of the disease which generally prevailed amongst them, and the resistance they usually offered to its effects; but the prevailing disease among lambs was a specific disease, which could be rendered perfectly harmless if treated at the outset by a specific remedy. This he impressed strongly upon them. Parasites were undoubtedly taken in with food. If veterinary surgeons received more encouragement from agriculturists there would not be so much loss of life among our domesticated animals as at present. There was a remedy to this disease.

Mr. PAGE was disappointed with the papers read, because they gave them no specific remedy. His remedy would be to leave the disease to Mother Nature. They must invigorate the system as far as possible, and let the lambs run along with the ewes till August, after weaning. If they did this, he was certain the lambs would be well.

Mr. PRATT thought the disease arose from the absence in the soil of the necessary constituents to keep up a healthy system and healthy constitution in the lamb. Their object should be to supply the deficiency. It was too much the rule to have a disproportionate amount of sheep compared with the horned cattle. They should also plough, use lime freely, and largely admixture grasses, and import a little new blood from the mountains. He knew Dartmoor sheep would not pay, but they should be obtained in order to renew the blood. Field Rape would be a most valuable auxiliary in the beginning of August. In allowing sheep to eat a crop after sheep, he believed farmers were doing themselves a great mischief. He proposed a resolution embodying these views.

Mr. DEWDNEY could not agree with Mr. Tucker that new pasture was the best thing for sheep. He had not lost a lamb in the old pasture.

Mr. SOWDEN had always found his flocks thrive better on new pasture. He frequently changed his sheep. If they had rich lambs they should be careful not to allow them to remain in low ground in foggy weather. While with ewes they should give lambs artificial food, and when they saw anything the matter with them they should apply a remedy at once.

Mr. COULTON (Buckfastleigh) thought the dry season had something to do with it. He believed the lambs were not born in their usual healthy state. To find out the cause of the disease they must look to the breeding animal.

Mr. NEHEMIAH STEPHENS had changed lambs as often as most other men. He had tended them so that no other man could tend them better. Had given them every kind of food, and had introduced the different kinds of grass—had tried Mustard, Rape, white Turnips, everything he thought would be beneficial to the lambs—and yet he had failed either to prevent or cure. By generous diet he had waded them through the disease, but they had so depreciated in value that it was just as ill in a pecuniary point of view if they had died. As regarded overstocking, he would rather overstock with bullocks than sheep. He had imported fresh breeds of sheep, but to no good purpose.

Mr. THOMAS (veterinary surgeon) had found chlorine gas the best remedy.

This, Mr. STEPHENS said, he had tried, but not successfully.

The CHAIRMAN here suggested that the matter should stand adjourned until the next meeting of the Devon Chamber of Agriculture, which was agreed upon.

LONG SUTTON.

LAST week this Society held its 35th anniversary. There is no other merely local association where the programme is so diversified, and where so many really good objects are kept in view. The rewards for labourers and servants and the educational prizes for children are leading characteristics, but that which most draws the company are the poultry, pigeon, und rabbit shows, and the exhibition of live stock. The railway companies this year were liberal in providing excursion trains, and there was a very large attendance of visitors, especially on the first day of the show. Some £400 were given in prizes, besides 35 silver cups, namely, two for farmers' sons, two for roots, and the remainder for poultry, &c. Along the east side of the showyard was stretched a strongly-built wooden structure 320 feet long by 33 feet broad, sufficiently large to hold the poultry, pigeons, rabbits, labourers' vegetables, and flowers, and the amateurs' horticultural show. On the west side boarded stalls and pens were erected for the live stock, and at the north end the sheep and pigs were penned, whilst the south was occupied by the extensive exhibition of agricultural implements. The orchestra for the Grenadier Guards' band was placed in the centre of the field, and Mr. D. Godfrey and his talented corps never had a more appreciative audience than that which surrounded him during the day. The ploughing took place on the Hall Marsh Farm of Mr. John Brown, and being near the town, the work was criticised by large numbers of practised eyes. There were 52 competitors, amongst whom were seven farmers' sons; and it was generally acknowledged that the quality of the work was unusually good. The work of the boys was again admirable. Three double-furrow ploughs were at work, but the land was not in a suitable condition, for indeed the late rains rendered it impossible to clear away the stubbles, as was intended. A Potato drill was also at work in the field, and considerable interest was excited by the working of double-furrow and three-furrow ploughs, shown by Mr. Perkins, of Hitchin, and the preference of the revolving mouldboard-plough. In the live stock classes there were 101 entries, most of them very valuable animals, especially the 2-year-old class, which was altogether a rare one. Hunters were not well represented as regards numbers, there not being more than seven entered for competition; but the animals that were shown were fine specimens of their class, the 1st prize taker being a splendid animal, and executing his leaps with the greatest ease. Twenty-nine beasts were entered, comprising some of considerable merit, but the number was no doubt affected by the prevailing foot-and-mouth disease. For sheep there was a fine show in every class; those exhibited by Captain Catling, which took the cup, were exceedingly fine animals, and attracted a great deal of notice. The pigs were numerous, and contained some good specimens of the best breeds; the decision of the judges in some of the swine classes did not appear to give entire satisfaction. As might be expected from this neighbourhood, the show of Turnips, Mangels, and other roots was unequalled. Specimens of three varieties of Sugar-Beets (varying in weight from 1 lb. to 4 lb.—the 48 roots averaging 2¼ lb.) were exhibited by Mr. J. Algernon Clarke; and samples of beet-sugar in its different stages of manufacture, and also of beet-root spirit, potash and other products, were shown by Mr. Arnold Baruchson, of Liverpool.

There were 112 different entries of cottagers' garden produce, of great merit. The great attraction of the day—the pigeon and poultry show—had 485 entries, and the quality and standing of the birds is guaranteed by the names of the exhibitors.

There was a most extensive show of agricultural implements.

At the dinner, at which Mr. John Clarke presided, Mr. Swain gave the leading points in connection with the rise and progress of the Society. Its object in the first instance was to offer rewards to the industrious labourer. Last year there were 52 competitors among the ploughmen, and during the 35 years of the Society's existence 2000 men had competed in the ploughing and £700 had been distributed amongst them in prizes. Besides prizes for stacking, prizes to female servants, £350 had been distributed among those who had worked the longest time in service. There was but little given to those who cultivated the allotments, yet nothing could tend more to the advantage of the labourer. The amount that could be produced in this way on a rood of land was most remarkable. Then there were the educational prizes, which tended so much to the improvement and advancement of children, and various other prizes, which he had not time to particularise. Mr. Swain further remarked that he possessed a curious document which showed the origin of the association; this was a small account book, in which were entered the minutes and subscriptions of the original "Prosecution Society" some 35 years since, from which sprang and grew the present well established Long Sutton Agricultural Association. *Chambers of Agriculture Journal.*

Notices of Books.

The Daily Life of Our Farm. By the Rev. W. Holt Beever, M.A., Oxon. London: Bradbury, Evans & Co., 10, Bouverie Street.

The best way to describe Mr. Beever's book is to take an extract from his introduction to it:—

> "It is a twisted, round-about, in-and-out sort of place, our homestead. Such Robinson Crusoe contrivances exhibited in the sheds, stables, storehouses, pens, ponds, and appurtenances thereto. In part we found it so, in part we made it so. It would have been, perhaps, in some respects better (pre-eminently as concerns our purse), to have pulled down the old eccentric buildings altogether, and have set them up anew on approved modern principles. But we should not, I am convinced, have had the enjoyment we have now. It is so much more refreshing to pop in and out of all sorts of unlikely place, by unexpected doors and bridges, and sudden short cuts, and find, here a finely-shaped colt or heifer, there a sleek selection of symmetrical Black Diamond porkers, here a wild duck sitting, and there a hatch of game fowl: all irregularly intermixed, and mutually helping to produce one charming general effect, as the tinted worsteds of a Turkey carpet do. Personally, beyond a doubt, it doth yield us a far more varied and greater gratification in our daily, nay hourly, rambles of inspection, than if the lines had been ruled severely in accordance with modern improvement. Large spacious barns, stone-tiled and straw-thatched, with lancet slits and iron-stanchioned windows, yards of old-fashioned type, high-walled and wide, suggesting all a period when the owner's wealth was stored upon the premises and banks were yet unknown; when the housewife spun amidst her handmaidens her lord's attire, and all cloth for household use; when the domestics were born and reared, and wrought and died, upon the premises; and he was a travelled man who had been 20 miles from the scene of his nativity: when the wines and cake were all home-made, and the condiments compounded in the kitchen; when gold was scarce, and subject to be stored, and the yeoman literally lived off his land; when the witch was yet wont to come down, and toss into high air the haycocks, during the makers' mid-day meal; and when there was no bye-road or ruin untenanted by a ghostly inhabitant of some sort."

Like our homestead, "it is a twisted, round-about, in-and-out sort of affair our"—book. And, like the visitor to the homestead, the reader of the book has the refreshment of popping in-and-out, and finding in all sorts of unlikely places all sorts of conversations, discussions, descriptions, exclamations, "irregularly intermixed and mutually helping," we very cordially admit, "to produce one charming general effect, as the tinted worsteds of a Turkey carpet do."

Mr. Beever is an agreeable rattle on agricultural subjects—and a sensible man, with a fluent tongue and good-natured disposition, makes a pleasant companion.

Farm Memoranda.

FARM BUILDINGS ON THE ESTATE OF MR. JOHN TOLLEMACHE, M.P.—For many years now, this gentleman has taken the warmest practical interest in the household accommodation of his tenantry; and by a considerable expenditure of capital has replaced the cramped and inconvenient dwellings which served as farmhouses, by large, and in every way commodious, blocks of buildings. Inside one of these fine specimens of the English farmhouse, there is no doubt that the skilled cheese-maker would enter upon a formidable competition with the most costly factory. All that he wants for his business operations he has immediately about him, with ample ventilation and complete protection from the weather. A strong argument of the promoters of the factory system is, that by resorting to it the farming population are relieved from much of the "dairy slavery" they have been subjected to for generations. The reproach is just; but no little share of the laborious work to which this name has been given results from the rule-of-thumb system, which has been tenaciously persevered in, and the ill-contrived habitations in which the manufacture has been carried on. The plan of heating the whey in huge boilers to get "fleetings," for instance, caused a tremendous expenditure of physical strength, and, from the great heat which had to be maintained, almost certainly injured the health of the women regularly engaged in the work. It is now abandoned, and in most of Mr. Tollemache's new buildings, slate cisterns have been erected capable of holding ample quantities of whey, where the method of cooling efficiently substitutes that of heating to which we have just referred, and by this simple alteration relieves the operators of all the severe exertion attendant upon the other process. The refuse whey is conveyed to the piggeries outside by a pipe running from the bottom of the cistern in the same way as at Tattenhall. The supplying of water for the various operations, again, used to be heavy work, as everybody knows how much scrubbing and cleaning has to be done in order to keep a dairy in a proper state. Here, however, a pump has been erected in each yard, connected with which are pipes running to every necessary part of the milk house, so that the men on the farm, by working at the pump occasionally, can provide sufficient water for daily use inside, the taps only having to be turned on in the same way as when the supply is derived from a water company's main. Ovens for keeping newly-made cheese at a high temperature in order to extract the remaining whey have been constructed with the most careful regard to convenience, and the work of moving the cheese in and out is perfectly easy. Further to facilitate this lifting of the cheese after it has taken a solid form—a part of the work which used to be slavish enough—hoists have been put up between the press-room and the store-room, so that by the simple winding of a small crank, that operation is at once accomplished. We have heard of a stalwart dame who showed her contempt for these machines by invariably carrying the cheese upstairs in her arms, though she had a hoist in the house; her reason being that while she was going up to wind the apparatus, she could do the whole business; but few even of our robust dairymaids have such an uncontrolable love for hard work as that. The store-rooms are, of course, ample in proportions, and sufficiently airy. Let us mention, too, that downstairs, where much of the work used to be performed in the open air a zinc roof has been put up, which excludes the rain and moderates the heat. In every possible way, indeed, the comfort of the workers has been consulted, and the result is the banishment of a great deal of drudgery which used to be the invariable accompaniment of cheesemaking. There has been much ingenuity expended in the rebuilding of these farmhouses, both by Mr. Tollemache and his agent, Mr. Cawley, and they might serve as no mean pattern for landlords equally inclined to do the best for their tenants. That the member for West Cheshire is so, one further illustration will show. He does not preserve ground game, for the one reason, that he is conscientiously disinclined to encourage the breeding of animals who get their living on his neighbours' produce. Rabbits, of course, are entirely at the mercy of the tenants' guns. There would be an end of the game question very quickly if all landed proprietors were equally considerate. *Chester Chronicle.*

Miscellaneous.

Gamekeeper's Trespass.—*Bicester*, *Sept.* 15.—Thomas Haydon, under-gamekeeper to the Earl of Effingham, Tusmore Park, was charged with doing wilful damage to growing Wheat, the property of Mr. John Sanders, farmer, Kiddington, who occupies the Tusmore Park Farm, on August 30.—Mr. Small said the facts were, that this field of Wheat was being cut by machine, and the under-gamekeeper was in the field, and sent his dogs into the Wheat to drive out the game that might be in the corn. Complainant came up and objected to this, but the man, having orders to see that the game was preserved, and thinking that he had a right to do it, kept on urging his dogs. The head-gamekeeper believed he had a right to see that the game was hunted out, as the game was frequently killed by the machine; and he considered it his duty to get them out. He did not do his work with malicious motives. Lord Effingham distinctly claimed the right to prevent his game being killed.—Mr. T. Mallan stated that Mr. Sanders had on the Wednesday in question borrowed his neighbour's machine, as his corn was so thoroughly ripe that it was ready to shed. He rode into the field on his pony in the middle of the day, and saw Haydon and a boy with two dogs, which they were hunting into the corn. Mr. Sanders spoke to the boy, telling him to call the dogs out, and the boy did so, but Haydon hunted them in again, and Mr. Sanders went to him and told him that he should not have his corn spoilt in that way. Haydon never made any reply. If he had desisted then there would have been no further action in the matter. As to the lien set up by the defence, that it was the man's duty to protect the game, it might have stood, only it was his own perquisites he was looking after, and not his master's game. What disproves the lien set up is the fact that any pheasants that might have been in the corn would have gone off at the first alarm, and there was no need for the man to hunt his dogs into the corn for three or four hours at that place. The man was warned by the farmer not to do it, yet for the sake of earning himself 3*s*. or 4*s*. by preserving the rabbits that were his own perquisites, and taking to himself any that might have been killed, he remained in the field and did this damage.—[Evidence was given of the facts.]—Mr. Small thought the Bench would at once see that this was no case for a criminal court. The man's express business was the protection of game. He thought they would see that if complainant had suffered damage he had his remedy in a civil court, and had no cause to bring a criminal charge against the man.—Dr. Marsham thought that if he had only once sent the dogs in it might not have been considered wilful damage, but, after having been warned, to continue the offence aggravated the case.—Mr. Clarke read an extract from the lease, which said "also preserving all game, rabbits, or fish, and liberty for servants or friends to sport over the farm."—Mr. Small contended that though this was not sport, it was for the purpose thereof. The man was ordered to do it in order to protect the game for future sport.—The Bench decided that a conviction must take place, and fined the defendant 5*s*., costs 11*s*., damage 50*s*., and police fees 4*s*.—in all £3 10*s*.

Proposed Doomsday Book.—We hope Lord Derby's suggestion of the expediency of a new Doomsday Book for England will in the end come to something. In the present state of the controversy about land, when strong allegations as to the small numbers of landowners are met by flat contradictions, it is obviously expedient to provide some accurate means for getting at the truth. If a complete Doomsday Book is impossible, it should not be very difficult to get a return of the number of owners and the average of their holdings. But there are one or two points in making up such a return which it will be important to attend to, or in the present social state of the country it will be worse than valueless. One is that the return should not be merely of "owners" in the strict legal sense of the word, but of all who have permanent interests of any kind carved out of the soil. It is no doubt important to know what is the number of legal owners, but the bearing of that fact socially is apt to be misunderstood, unless we can ascertain what other people have real interests in the visible property of the country—whether as copyholders, leaseholders (say) for terms of more than 20 years, and even mortgagees, if it were possible to include them. The order for the return will therefore require to be carefully worded. Another important point will be to distinguish above all between house property and unbuilt-upon land. We anticipate that a return of the kind we describe will bring out the fact that an immense number of people have a stake in the country as the owners of houses; but though this is an important fact socially, it would be a misfortune if it should give rise to an erroneous belief as to the ownership of agricultural land. It might give the impression that England is a country of small proprietors as regards land in cultivation as well as houses, which is far from being the case. For ourselves, we should hope to see that the ownership of agricultural land, which is really a difficult business, suitable only for considerable capitals, is neither in a very few hands nor yet very widely diffused. But it will be interesting to see what the distribution really is, and whether it is possible by legislation that would not be worse than the disease to improve it. *The Economist.*

The Requirements of the Age.—The *Aberdeen Free Press* intimates the sort of *régime* we are rapidly coming to. "What the age demands of the owner of land is that he shall be something more than a mere recipient of its profits, that he shall turn his possessions to the best account for the country by the full development of its resources, or that, if he is unable from want of cash or otherwise to do so himself, he shall make way for some one who will." Upon which we remark, that when "the age" has ordered every useless and injurious tree to be felled, every hedge-row to be kept low, close, and clean, every drainable acre to be drained, and every field to be grazed or cultivated in the best and highest style possible (and "the age" will be good enough, perhaps, to find not only the necessary money, but the equally indispensable and absent intelligence and resolution for carrying out such an enormous scale of improvement), the agricultural class will take care that all other classes in the community shall similarly "turn their possessions to the best account for the country by the full development of their resources." Not a ten-pound note shall be vainly spent, not an hour's opportunity for labour shall be voluntarily lost, not an article shall be fabricated except in the most economical manner. In a word, on the day that "the age" interferes with our free right to manage our farms as we please, "the age" shall also oblige every holder of capital, every possessor of stock-in-trade, every citizen having physical strength, trained skill, or a sound mind, to toil like a slave, or to contrive with ceaseless ingenuity and watchfulness so that his "talent" shall yield its utmost forthe good of the State. *Chambers of Agriculture Journal.*

Development of Machinery.—The extent to which labour-saving implements have been introduced in agriculture we saw illustrated a day or two ago in Wisconsin. A farmer was seated on a reaper, with gloves on his hands, and with an umbrella over him, and with as much comfort as driving a buggy, he was cutting Oats, the reaper throwing them into regular and convenient sheaves for binding and stacking. We remember the time when, 20 years ago, we cut Oats without an umbrella or gloves, and let the grain lie where it fell from the scythe. Yet here was a man with a pair of horses, in comparative comfort, doing more in one day than 25 men could have done by hand 20 years ago. *Chicago Tribune.*

Lime as a Manure.—The editor of the *Chelmsford Chronicle* is publishing weekly extracts from former numbers of the same journal 100 years ago; and the following is a letter thus republished from the *Chelmsford Chronicle* of January, 1765:—

"*To the Printer of the 'Chelmsford Chronicle.'*

"The navigation of the river Chelmer, from Maldon to Chelmsford, is a subject in which many of our inland neighbours seem greatly interested, and whose thoughts you have promised to encourage, in your paper, by communicating them to the public. I have a remark or two to offer, upon one of its imports; the utility of which, as a manure, upon cold and heavy lands, such as the country west of Chelmsford, chiefly consists of, has been disputed. As a back-carriage, from Maldon, I, some years ago, brought a load of lime, for a gentleman near the Roothings; which, owing to a circumstance not worth reciting, was left upon my hands; and, with some of it, for want of other application, I made the following experiments. I broke up a ley for Oats, but before ploughing, I sprinkled it a little with lime, sowed the ground, and harrowed the Oats in. The effect was, that part which I sprinkled with lime produced me a very considerable crop; the remainder, indeed the far greater breadth of the field, was, in a manner, all devoured by the worm; it was a sort of millipedes, but the body of it was red, lank, and long; and, for some years following, when the land was in tillage, I could distinguish, by the goodness of the corn, where the lime had been laid. The same year, I sprinkled also a small quantity upon a piece of Barley fallow, which had no advantage, that I was sensible of, in point of richness or dryness, over any other part of the field. That part which was limed, went off, as we call it, in May, but soon recovered its colour; that which was not limed, went off also, much about the same time, but never recovered that depth of green, in the blade, as the other did. And laying the crops apart, measure of ground for measure, that part that had been limed produced me one-third more of corn than the other did. Another year a great deal of the plaster scaled off my house, I had a mind to try what this would do of itself, and carried it upon my fallow for Wheat; but neglecting to check it in the spring, because I durst not venture my sheep upon all the field, which, except the limed part, was all over weak and thin, I suffered in the crop, which had too much straw to produce good grain. The lime might not possibly be the only ingredient in the plaster, but it was the principal one; and, if I had mowed it, as they do in Kent, would, I have reason to think, have answered well. The land bore Clover afterwards, and answered in proportion.

"From these experiments, I judge, that lime meliorates and pulverises the soil, destroys grubs, and, by its absorbent qualities, contributes very greatly to the healthfulness and soundness of the grain, even upon cold and wet lands, such as mine, to my great prejudice, are. The virtues of lime upon light land, are, I think, confessed and acknowledged, either for corn or grass; but would answer, I believe, rather better for grass, as there is no common manure, or compost, to be got in quantities, at any distance from large towns, which will breed, either more, in fineness, or quantity, or continue to promote vegetation so long; but, perhaps, if mixed with sludge, or drift out of ponds, or drainings of yards, it would do best of all. This way of using it is much in practice from 10 to 20 miles round London, and, I make no doubt, would be in very common use, if fairly and judiciously tried. But the great charge of land-carriage, at present, forbids the mere farmer to go so deep into his purse, to serve one purpose, which must be called upon to answer so many. Pray, sir, inform the public, if it reaches your knowledge, whether, by the aid of the river Chelmer, it could be bought at Chelmsford for 6*d*. a bush.? or what chalk could be landed at there, per ton? That too is not without its great virtues, which the landholders in the hundreds experience; and which could not cost much at the pits; the tonnage would be, in a manner, all. If the landlord expects his rent, and the farmer a decent livelihood, it will be necessary, in a few years, to look out for something that may succeed the digging up of doles (so very destructive to fuel and timber) which, it is easily foreseen, cannot long afford a sufficient improvement, with all the dung and ditch-earth the farmer can rake and scrape together.

"If these hints may be of any use, to promote the navigation, or instruct my brother farmers, they are at their and your service. *A. Roothinger, Jan.* 2, 1765."

The Week's Work.

October 14.—*Mangel Wurzel* is harvested in sundry places about this time, but the work may be deferred to November if the weather is fine and open and the bulbs growing. The crop should, however, be secured before frost sets in, otherwise it is liable to rot where stored. In tailing, remove only the small rootlets and earth, also the branch rootlets of the tap-root, but the tap-root should not be cut, as the exudation of sap is liable to produce rot, &c. For a similar reason, the tops should not be cut so close as to bleed the bulb. Some twist off the leaves to avoid this, but the process is too dilatory, and if hurriedly and rudely done, twisting is worse than the knife. The bulbs are stored in pits and barns like Potatos and Carrots, though in some cases in narrow lines between hurdles stuffed with straw is preferred. The bulbs in the bins above the hurdles are raised in the form of a roof, and thickly thatched with straw, and the bins are placed alongside each other in a yard, sufficiently close to keep out frost, but not so close as to prevent the escape of steam from the bulbs. Of course dry settled weather is that for harvesting.

Autumn Fallowing and Manuring for spring crops should be proceeded with as speedily as possible.

Manuring for Spring Beans is done either on the flat or in narrow ridges, as for winter Beans, but the land may be left more cloddy, open, and exposed to the winter frost. In dry seasons farmyard manure may be carted on to the land with comparatively little harm, and even in wet seasons the harm done is greatly rectified by the winter frosts, especially when the ploughing, smashing, and ridging is done by steam. Whether the land is thus manured on the flat or in drills, it is in a better and more forward state to receive the seed in early spring, the fine winter-made mould forming a fine seed-bed either for dibbling or drilling, and staple for the after operations of horse and hand hoeing. The reverse of all this is the case when manuring is deferred to spring, and the work is much more heavy to the horses as compared with autumn.

Parsnips are partial to a dry but rich friable sandy loam, deeply cultivated, and in a high state of fertility. Farmyard manure should be applied at this season, as it requires to be thoroughly incorporated with the land before the seed is sown, and the seed should be sown in a fine seed-bed. The land should be deeply fallowed 18 to 20 inches. For drilling on the flat the manure should be ploughed in 4 to 6 inches deep, and for drilling in ridges it should be finely broken in the open furrows, and in covering the drills should be well ridged up against the winter frost.

Carrots.—The land requires to be fallowed and manured for Belgian and common field Carrots as for Parsnips. The Belgian varieties, which are grown on a greater diversity of soil than the common sorts, are proving a more valuable crop, both as to weight per acre and feeding properties, and are therefore fast superseding the other; but the common Carrot is still largely grown on sandy soils.

Potato land is fallowed and manured at this season in the same way as that for Parsnips and Carrots. Opinion is somewhat divided on the manuring of the main crop,—some maintaining that the more economical plan is to manure at the time of planting, doctoring farmyard manure with artificial fertilisers, so as to insure its immediate incorporation with the land, as by this plan it yields a more abundant supply of food for young plants. Much may be said in favour of both plans for late spring planting. Autumn manuring with farmyard dung does not do away with the economy of artificial fertilisers at the time of planting. For early Potatos the balance is wholly in favour of autumn manuring; and the fact that autumn manuring obviates much of the waste farm dung sustains in the strawyard, while it renders the farmer independent of wet and bad weather in spring, is also in favour of autumn manuring.

Mangel Wurzel, Kohl Rabi, and Swede.—The practice is becoming more common of applying farmyard dung at this season to land intended for the growth of these crops next year, artificial manures being applied at the time of sowing by seed and manure drills. The relief which it affords to spring cultivation is greatly in its favour.

Steam Culture.—In the above examples of autumn fallowing and manuring, the ploughing, smashing, ridging, and covering of the manure is best done by steam; and subsoiling, where required, may be done at the same time. Thus in opening the drills for the manure, the ground or open furrows into which the manure is spread is subsoiled in opening, and in covering the manure by splitting the drills the open furrows left are subsoiled in the same way by a pendent subsoiler under the double-mouldboard plough, thereby leaving the land under the manure, and in the open furrows between the drills, in the best possible state for successful winter drainage.

Brood Mares require attention, both for themselves and for their fœtal offspring, so to speak, which now begin to draw heavily upon their physical resources. Foals also require special care, otherwise their growth will experience a check, and their symmetry, beauty, health, and future usefulness be impaired. What they gather in the pastures is no longer fit to support them, and although outdoor exercise is needed, the essentials of the dietary must now be supplied indoors.

Markets.

HOPS.

BOROUGH MARKET, Oct. 11.

Messrs. Pattenden & Smith report an active demand for the best descriptions, and firmness for all others; fully four-fifths of the new crop is already sold. Currency:—Mid and East Kents, £8 to £17 17s.; Weald Kents, £7 7s. to £11; Sussex, £7 to £9 9s. per cwt.

MARK LANE.

MONDAY, Oct. 9.

There was a moderate supply of English Wheat to this morning's market, the condition and quality of which varied considerably; some few sales were made at a decline of 1s. per qr., and some quantity remained unsold at a late hour; for foreign the demand was limited, and holders not being disposed to accept lower prices but little business was transacted, except in American ex ship, at a reduction of 1s. per qr. Malting Barley was rather dearer, other descriptions steady. Beans and Peas firm, at last week's quotations. Oats fully as dear. In the value of Flour there was no change.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk..White	55—61	Red......	55—58
— fine selected runs ....do.	58—62	Red......	57—59
— Talavera	60—64		
— Norfolk	—	Red......	—
— Foreign	50—69		
BARLEY, grind. & dist., 26s to 31s .Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14 19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign................			
BEANS, Mazagan.... 35s. to 38s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —s. to —s. ....Grey	—	Foreign ..	34—38
MAIZE	—	Foreign ..	32—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Oct. 11.

The grain trade to-day ruled quiet. The supplies of both English and foreign Wheat were liberal; trade was inactive, but prices were without further alteration. Fine Barley sold steadily, at full prices. Other descriptions not much inquired for. Malt changed hands slowly on former terms. There were large arrivals of Oats on sale. The demand was not animated, but prices were well maintained. Beans and Peas were steady in sale, with a limited inquiry. Flour experienced a dull sale, at about Monday's quotations.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	1080	210	—	—
Irish ..	—	—	—	—
Foreign ..	26,830	4990	52,160	1070 2040 brls.
	27,910	5200	52,160	

LIVERPOOL, Oct. 10.—The market was but thinly attended, and the feeling was dull. The demand for Wheat was languid, and the business transacted was to a limited extent, red descriptions being obtainable at a reduction of 1*d*. per cental. Flour was slow, and previous prices were not maintained. Beans were unchanged. Oats and Oatmeal were quiet. Indian Corn in rather more request, but values showed no material alteration.

AVERAGES.

	Wheat.	Barley.	Oats.
Sept. 2	57*s* 2*d*	35*s* 0*d*	26*s* 4*d*
— 9	56 6	35 1	26 0
— 16	56 7	35 8	24 9
— 23	57 7	35 6	23 6
— 30	57 3	35 10	23 10
Oct. 7	56 3	35 8	23 8
Average ..	56 11	35 5	24 8

SEED MARKET.

The seed trade exhibits but little variation since the date of our last report. A few samples of new German red Clover are to hand, but the high prices asked prevent business. White Clover and Trefoil are both firm. Perennial Rye-grasses meet with a good inquiry, chiefly from abroad, at the recent advance. For Rape and Mustard seed values are steady. Canary seed is dull. Hemp seed is in improved request. New French Italian is exceedingly firm. We have a brisk trade for Blue Peas. Winter Tares experience a slow sale, at the recent decline.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Oct. 12.

PrimeMeadowHay,	85s.to	100s.	Clover, old	125s.	140s.
Inferior do.	45	65	Inferior do.	55	95
Rowen	40	65	Prime 2d cut do. ..	110	120
Inferior do.	—	—	Inferior do.	55	95
Straw	36	45			

CUMBERLAND MARKET, Thursday, Oct. 12.

Sup. Meadow Hay	100s.to	112s.	Inferior Clover ..	84s.to	120s.
Inferior do.	70	90	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	43	48
Superior Clover ..	140	150			

JOSHUA BAKER.

METROPOLITAN CATTLE MARKET.

MONDAY, Oct. 9.

The number of Beasts is not quite so large as last week; however, trade is dull, and it is difficult to realise last Monday's quotations. The supply of English Sheep is rather shorter, but of foreign larger; altogether there are more than last week, but choice qualities are by no means plentiful, and prices are not much altered. Choice Calves are scarce and dear, but other kinds are lower. Our foreign supply consists of 3350 Beasts, 14,130 Sheep, 180 Calves, and 20 Pigs; from Ireland there are 200 Beasts; and 1470 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. .	5 4to5 8	Best Long-wools	6 4to6 8
Best Shorthorns..	5 2—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	3 6—4 4	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—6 10	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	3 4—6 0
		Pigs	3 8—5 8

Beasts, 5020; Sheep and Lambs, 22,070; Calves, 208; Pigs, 215

THURSDAY, Oct. 12.

Although the number of Beasts is much smaller than last Thursday, it is quite equal to the demand; trade is dull, at about Monday's quotations. There are very few English Sheep on offer, and scarcely as many foreign as last week; prices are rather better for choicest descriptions, but on the whole there is little alteration from Monday. Choice Calves are in demand. Our foreign supply consists of 530 Beasts, 5800 Sheep, 207 Calves, and 10 Pigs.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 6to5 8	Best Long-wools	6 4to6 8
Best Shorthorns ..	5 2—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	3 6—4 4	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	3 10—6 0
		Pigs	3 8—5 4

Beasts, 925; Sheep and Lambs, 7230; Calves, 276; Pigs, 20.

METROPOLITAN MEAT MARKET, Oct. 12.

Best Fresh Butter	17*s*. per dozen lb.
Second do. do.	15*s*. „

Small Pork, 4*s*. 8*d*. to 5*s*. 4*d*.; Large Pork, 3*s*. 4*d*. to 4*s*. 0*d*. per 8 lb.

ENGLISH WOOL.

The rise in the rate of discount has increased the caution displayed by buyers, who are now acting very much on the hand-to-mouth principle, but the wool trade is so intrinsically sound, and stocks so small, that holders are very confident, and in no way inclined to sacrifice their property by trying to force it off in a dull time.

COALS.—Oct. 11.

Holywell Main, 17*s*. 6*d*.; Wylam, 17*s*. 6*d*.; Eden Main, 19*s*.; Walls End Elliott, 20*s*.; Walls End Haswell, 21*s*.; Walls End Hetton, 21*s*.; Walls End Hetton Lyons, 18*s*. 9*d*.; Walls End Hartlepool, 20*s*. 9*d*.; Walls End Ludworth, 20*s*. 6*d*.; Walls End Heugh Hall, 20*s*. 6*d*.; Walls End East Hartlepool, 20*s*. 3*d*.; Walls End Original Hartlepool, 21*s*.; Walls End South Kelloe, 20*s*. 6*d*.; Walls End Tees, 20*s*. 9*d*.; Brancepeth Cannel, 18*s*.—Ships at market, 55; sold, 52; unsold, 3; at sea, 10.

THE LONDON MANURE COMPANY.
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing.
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.
REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.
"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.,
"London, January 15, 1870.
"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,
(Signed) "AUGUSTUS VOELCKER.
"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

Autumn Sowing.
ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.
MANUFACTURED BY THE
PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.
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Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.
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The Cheapest and Best Insecticide.
POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

TRADE MARK
EPPS'S SELECTED PEAT for Choiec Plants, Ericas, Azaleas, Ferns, &c.—Superior to anything of its kind yet sold, fit for immediate use; tightly packed in new 4-bushel cask (inclusive), 8s., free to any Station or Wharf in London. Fifteen shillings off five Casks and upwards. Specially selected for Orchids, 1s. extra.
Post Office orders to W. JAS. EPPS, Horticultural Depôt and Peat Stores, Lewisham, S.E.

Weeds Eradicated from Lawns.
WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30s. per cwt.; 36-lb. tins, 10s. Directions and testimonials on application.
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GISHURST COMPOUND.
Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.
Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Wheat Sowing.
DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. A 9*d*. packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.
Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.
Full directions for use are given with each packet.
Prepared at the Manufactory, Woburn, Beds.
CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.
Agents in every Town throughout England, Scotland, and Ireland.

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No. 1.—54 inches wide .. .. at 8½*d*. per yard run
No. 2.—54 inches wide .. .. at 7*d*. per yard run.
No. 3.—54 inches wide .. .. at 5½*d*. per yard run.
No. 4.—54 inches wide .. .. at 4*d*. per yard run.
No. 5.—54 inches wide .. .. at 5½*d*. per yard run.
In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.
JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

Archangel Mats.

J. BLACKBURN AND SONS beg to inform their friends that the First Shipment of NEW MATS has just arrived, and they are of very good quality. Price List on application.
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E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.

WOOL NETTING, 2 yards wide and 1*s*. 6*d*. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1*s*. 10*d*. per yard.
Three yards wide	2*s*. 10*d*. per yard.
Four yards wide	3*s*. 10*d*. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d*. to 8½*d*. p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d*. and 8¾*d*. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.
NOTICE.—Removed from 7, Great Trinity Lane.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.

They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.

Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

IMPORTANT PRIVATE SALE

OF

WINTER AND SPRING FLOWERING CONSERVATORY AND ORNAMENTAL DECORATIVE PLANTS AND FRUITING VINES.

J. & R. THYNE,

SEED MERCHANTS AND NURSERYMEN, GLASGOW,

Respectfully beg to offer the largest, best selected, and most superbly grown Collections of the above they have ver cultivated for Sale, and especially request a personal visit from intending purchasers.

Any parties leaving the selection to J. AND R. T. may fully depend on receiving their most careful attention.

DETAILED PRICE LIST under offer as follows:—

	Per dozen.—*s. d.*	*s. d.*		Per dozen.—*s. d.*	*s. d.*		Per dozen.—*s. d.*	*s. d.*
AZALEAS, well budded	21 0 to	42 0	EPIPHYLLUMS, in variety ..	30 0 to	60 0	PRIMULAS—Cortusoides ..	6 0 to	9 0
BOUVARDIAS, in variety ..	18 0 ,,	30 0	ERICAS, in variety	18 0 ,,	30 0	,, ,, amœna	18 0 ,,	36 0
BEGONIAS, in variety	12 0 ,,	24 0	EPACRIS, in variety	18 0 ,,	30 0	,, japonica .. each	7 6 ,,	10 6
CAMELLIAS, well budded ..	21 0 ,,	42 0	FERNS, in variety	12 0 ,,	60 0	ROSES, in pots	18 0 ,,	30 0
CROTONS, in variety	18 0 ,,	42 0	GARDENIAS, in variety ..	30 0 ,,	60 0	SPIRÆA JAPONICA	12 0 ,,	18 0
CINERARIAS, named sorts ..	9 0 ,,	18 0	IXORAS, in variety	18 0 ,,	60 0	,, PALMATA .. each	2 6 ,,	5 0
CHRYSANTHEMUMS, in variety	9 0 ,,	18 0	LILY of the VALLEY, in clumps	18 0 ,,	21 0	SOLANUMS..	18 0 ,,	24 0
CYCLAMENS, in variety ..	9 0 ,,	30 0	PALMS, in variety	42 0 ,,	105 0	TREE CARNATIONS	24 0 ,,	30 0
DEUTZIAS..	9 0 ,,	18 0	PANDANUS, in variety ..	42 0 ,,	60 0	VINES, strong fruiting, best sorts in cultivation .. each	10 6 ,,	12 6
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			,, nivalis	12 0 ,,	21 0			

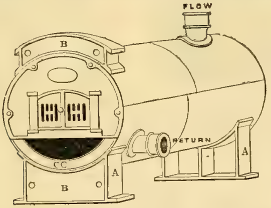
Five per cent. discount allowed for prompt cash.

Special quotations for large and specimen ORCHIDS, PALMS, FERNS, and STOVE, GREENHOUSE and ORNAMENTAL FOLIAGE PLANTS.

60, BUCHANAN STREET.

STEVENS'

"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,
"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

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"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.
"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used.
"H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

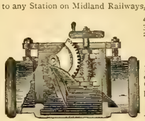
SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

T. G. MESSENGER, HOT-WATER ENGINEER, Loughborough, is delivering HOT-WATER PIPES, &c., free to any Station on Midland Railways, for cash, as under (nett):—



4-in. Hot-water Pipe, 2*s*. 2*d*. p. yard
3-in. Hot-water Pipe, 1*s*. 9*d*. ,,
2-in. Hot-water Pipe, 1*s*. 1*d*. ,,

Connections at proportionate rates.

The Heating of all kinds of Buildings by hot water, direct or exhaust steam, undertaken by Contract, and satisfactorily completed, in any part of the country.

MESSENGER'S PATENT VALVES for Water, Gas, or Steam, shut off perfectly, are full bore, and cheaper than any other made. Form a cheap and excellent Chamber and Valve for Pumps. Thousands at work.

Prices:—4-inch, 21*s*.; 3-inch, 17*s*. 6*d*.; 2-inch, 15*s*.

MESSENGER'S PATENT HOT-WATER BOILER is more powerful and economical in fuel than any other Boiler.

Further prices and descriptions on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
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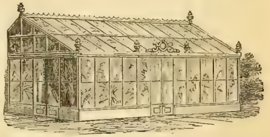
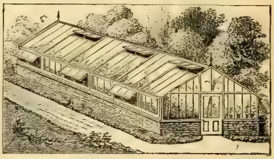


200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s*. each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C., W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

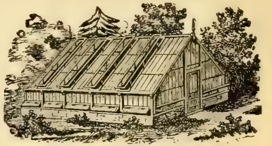
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

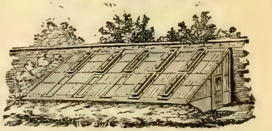
GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s*. each
,, ,, glazed, 16-oz. good sheet glass	6*s*. ,,
6 ft. ,, ,, 2 in. thick, unglazed	5*s*. ,,
,, ,, glazed, 16 oz. good sheet glass ..	11*s*. ,,
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s*. ,,
Portable box containing two ditto, 6 ft. by 8 ft.	55*s*. ,,

Estimates given for Conservatories or Greenhouses to any Design.

RICHARDSON'S PATENT HORTICULTURAL BUILDINGS





Are STRONG, DURABLE, ORNAMENTAL, and CHEAP. The MOST PERFECT SYSTEM OF VENTILATION, combined with COMPLETE PROTECTION FROM THE WEATHER. A free and copious circulation of air in any length of range obtainable instantaneously through every part, or at the top alone, by a single handle.

These Houses are PORTABLE, and most easily fixed, without the disturbing of any glass, the use of nails, or a screw-driver.

Improved Portable and other kinds of GREENHOUSES, CONSERVATORIES, &c., of the best construction, designed and supplied, carriage paid, to any part of the country.

Illustrated Price Lists free on application to the Makers, enclosing a stamp for postage.

Apply to W. RICHARDSON AND CO., Horticultural Builders, Darlington.

Horticultural Buildings.

A. SHANKS AND SONS' CATALOGUE of HORTICULTURAL BUILDINGS in IRON and WOOD, including DESIGN of GRAND WINTER GARDEN recently erected by them in Edinburgh, will be forwarded on receipt of 30 postage stamps.

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The Patent Imperishable Hothouse.

AYRES'S PATENT.
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the

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MANAGER—W. P. AYRES, C.M.R.H.S.,
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Plans, Specifications and Estimates supplied upon the shortest notice.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

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HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

Improved Conical.

Tubular Boiler.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s. each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s. 6d. each.

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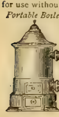

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INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

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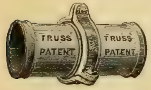
Portable and Fixed Hot-water Apparatus



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TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

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BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

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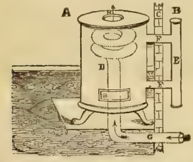
For WARMING and VENTILATING.
Price £3 3s.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c., and may be inspected at the Sole Manufacturers,

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A COAL STOVE, constructed upon the same principle, suitable for Warming and Ventilating large Apartments, Halls, Churches, &c. (see notice in "Society of Arts' Journal"), may be seen at the Manufacturers,

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Smokeless Stoves.—No Flues.

NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming; require no attention; with one supply of fuel burn 12 hours.

The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12s. 6d. to six guineas. PATENT FUEL, 18s. per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4s. 6d. and 9s.

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Price 5s., 6s., and 7s.

PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21s. and 10s. 6d. Medical Testimonials and Prospectus Free on application.

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FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
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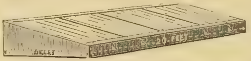
Illustrated Catalogues on application.

W. S. BOULTON AND CO., Norwich, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES.—Carriage paid to any station within 200 miles of Norwich when orders amount to £3 and upwards.

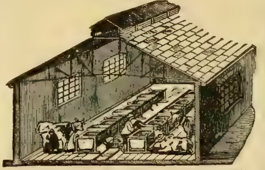
8 feet long by 6 feet wide	£2 15	16 feet long by 6 feet wide	£5 0
12 feet long by 6 feet wide	£3 17	24 feet long by 6 feet wide	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10½ feet long by 6 feet wide	£3 0	24½ feet long by 6 feet wide	£7 0
17½ feet long by 6 feet wide	£5 0	31½ feet long by 6 feet wide	£9 0

Other sizes at prices in proportion.
PLANT PRESERVERS.
Illustrated Catalogues free on application.
Rose Lane Works, Norwich.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

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Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

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Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

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ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

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SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

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F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

Indestructible Plant Terra-Cotta Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

LABELS, LABELS.—PARCHMENT or CLOTH LABELS.—Tree or Plant Labels, punched parchment, 4 inches long, 4s per 1000, or 10,000 for 35s., cash on delivery. Sample Label sent on receipt of a postage stamp. Orders delivered free in London by JOHN FISHER AND CO., Label Works, Boston, Lincolnshire.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.

The above can be had, of all sizes, wholesale of
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Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

THE ACME GARDEN FRAME and GROUND VINERY

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

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Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size
Prices from 16s. 6d. [Prices from 35s.
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
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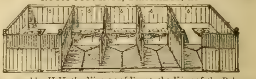

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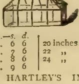

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2 Salt Spoons, gilt bowls	.	3	.	.	4	.	.	4	.	.	4	6
1 Mustard Spoon, gilt bowl	.	1	6	.	2	.	.	2	.	.	2	3
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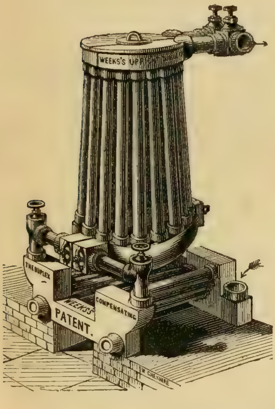

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, October 14, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 42.—1871.]

SATURDAY, OCTOBER 21.

Registered at the General Post Office as a Newspaper.

Price 5d. POST FREE, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

THE PETERBOROUGH CHRYSANTHEMUM and FRUIT SHOW will be held on NOVEMBER 15. Schedules and Forms of F. G. BUCKLE, Secretary.

MR. WILLIAM BULL begs to intimate that he has a magnificent lot of handsome bushy well-grown specimen CAMELLIAS, ranging from 2 ft. to 3 ft. high, and about 2 ft. through. An inspection is invited.

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E. COOLING, Mile Ash Nurseries, Derby.

TO BE SOLD, CAMELLIAS.—One Imbricata, 7 to 8 feet high, by 4 feet wide; one very fine, striped, 6 feet by 3 feet 6 inches, well set with buds. For price, apply to
JOHN JONES, Goldthorn Villa, Wolverhampton.

CZAR VIOLETS.—Strong blooming plants, from open ground, 6s. per dozen; 40s. per 100.
EDWIN COOLING, Mile Ash Nurseries, Derby.

THE PINE-APPLE NURSERY COMPANY, 32, Maida Vale, Edgware Road, W.
JOHN BESTER, Manager of the Nursery and Seed Department.

The Company guarantee to their Customers Punctuality, Liberality, and Genuine Articles.

Autumn Catalogue.

GEORGE POULTON'S AUTUMN CATALOGUE of PLANTS and CUTTINGS of NEW PELARGONIUMS, FUCHSIAS, CHRYSANTHEMUMS, &c., is now ready, and may be had post free upon application.

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W. HEATH has to offer, at a cheap rate, fine specimen plants of the following kinds:—ALLAMANDAS, ALOCASIAS, CROTONS, FERNS, IXORAS, PALMS, PANDANUS; also a few GREENHOUSE PLANTS, EXOTIC FERNS, by the dozen or hundred. The whole of the above are in the finest condition. W. H. will be happy to forward a printed priced LIST with dimensions on application.

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PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

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SEEDLING SEAKALE, 1-yr. old.—30,000 of these to offer. Prices extremely moderate.
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RICHARD WALKER has to offer the following, for cash:—EAST HAM, ENFIELD MARKET, and DRUMHEAD CABBAGE PLANTS, extra fine, all at 3s. per 1000; RED DUTCH PLANTS, 4s. per 1000; WHITE DAISIES and CARNATIONS, 5s. per 100 for planting out; ASPARAUS ROOTS, strong, for forcing, 30s. per 1000.
Market Gardens, Biggleswade, Beds.

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W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts:—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3s. per 1000; do. RED PICKLING, 5s. per 1000.
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SUTTONS' GUINEA COLLECTIONS of SHOWY FLOWER ROOTS, for OUTDOOR and INDOOR CULTIVATION. For particulars, see p. 1353 of this day's *Gardeners' Chronicle.*

SUTTONS' CHOICE DUTCH RANUNCULUS. For particulars, see p. 1353 of this day's *Gardeners' Chronicle.*

Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived, and have every appearance of being above the average quality, for which they have been noted so many years.

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In Collections to suit Large and Small Gardens.
10s. 6d. | 21s. | 42s. | 63s. | 84s.
No charge for packing. Carriage free.
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EVIDENCE OF QUALITY:—
From Miss J. Smith, *Enniskillen, April* 19, 1871.

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In Collections for the Conservatory or Drawing Room
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Packing and carriage free.
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

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ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.
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100 varieties, Show Flowers, 50s. | 100 varieties, Offsets, 25s.
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KEPT in STOCK at
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Prince of Wales	Mrs. Dunnett	Sunray
Princess Beatrice	Sir R. Napier	Italian Beauty
Coronet	Phœbus	Mrs. John Clutton
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WM. ABRAHAM offers, for cash, LAURUSTINUS, 6 to 12 inches, 25s.; 18 inches, 30s. per 1000; transplanted, bushy, 1½ to 2 feet, 15s. per 100.
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ENGLISH YEW, 1, 2, 3, 4, and 5 feet.
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RICHARD SMITH, Nurseryman, Worcester.

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J. BYE, Oaklands House, Shepherd's Bush, W.

WANTED, a few thousands of good CUTTINGS of CALCEOLARIA AUREA FLORIBUNDA.
Apply, by letter only, stating quality and price, S. W., Mr. Hook, 107, Hereford Road, Westbourne Grove, London, W.

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PEAR STOCKS, extra strong and of superior quality. —JAMES DICKSON AND SONS, Newton Nurseries, Chester.

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A DESCRIPTIVE CATALOGUE of FRUITS for 1871. By THOS. RIVERS, of Sawbridgeworth. Free.

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Six bunches for 5s. | Twelve bunches for 10s. 6d.
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J. STANDISH AND CO. have an unusually large and fine stock of the above, which they can with great confidence recommend, having been recently transplanted. See CATALOGUE.
Liberal terms to large purchasers.
Royal Nurseries, Ascot.

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CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in pots. Descriptive Priced LIST on application to
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TEA-SCENTED ROSES, in pots.—The largest stock of Tea-scented Roses in the Kingdom. They may be had in small pots, also established in 6-inch pots, for forcing and greenhouse culture.
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Roses—New Varieties for 1871-72.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, &c., 3, Rue Dunois, Paris, has the honour to inform his clients and friends that he will be ready to send out in November next, on the most advantageous terms, all the NEW VARIETIES of ROSES for 1871-72; also those of 1869, 1870, and 1871.

Descriptive CATALOGUE of above can be obtained direct from E. V., or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

TO ROSARIANS.—The Advertiser, a very successful Exhibitor, requiring for other purposes the ground occupied by about 1200 STANDARD and 300 DWARF ROSES, will SELL them in One Lot for £40, or in Lots of not less than 100 at 65s. per 100 for Standards, and 35s. for Dwarfs. This is about 50 per cent. under Trade prices. They are chiefly H.P.s of the best kinds, have good heads and roots, and are perfectly healthy.

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J. BOOTH, FLORIST, Pole Lane, Failsworth, near Manchester, is now offering the above, in all the best named exhibition varieties. Trade supplied on reasonable terms.
CATALOGUES now ready.

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A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.
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CATALOGUES free; or the ORCHARDIST and its COMPANION at 2s., describing over 2500 sorts, with Cultural Notes.

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The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

Planting Season, 1871-72.

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NEW and RARE PLANTS
CONIFERÆ
STOVE and GREENHOUSE PLANTS
FOREST TREES and SHRUBS
HARDY PLANTS and CLIMBERS
RHODODENDRONS
ROSES, CAMELLIAS, and GLADIOLI
FRUIT TREES, STRAWBERRIES, and VINES, &c.

The whole of the outdoor stock has been recently transplanted, and is in the finest possible condition for removal

The Nurseries are situated within 1 mile of the Ascot Station on the London and South-Western Railway, from whence conveyances can always be obtained. Intending purchasers are solicited to make an early inspection.

Royal Nurseries, Ascot, Berks

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F. AND A. SMITH offer the following in strong healthy plants, suitable for decorative purposes :—

ACACIAS
AZALEAS
CYCLAMEN
CYTISUS
DEUTZIA
ERICA HYEMALIS
„ WILLMOREA
„ SINDRYANA

EPACRIS
EPIPHYLLUM
HOTEIA JAPONICA
PELARGONIUM
POINSETTIA
PRIMULA
SOLANUM, in fruit
TREE CARNATION, &c.

LIST and Prices on application.

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TWENTY THOUSAND STANDARD and HALF-STANDARD ROSES, in leading and well-known varieties.
STANDARDS, 60s to 80s. per 100.
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MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

10,000 STANDARD and PYRAMID APPLES, in the best varieties for dessert or kitchen, from 50s. to 75s. per 100.
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60,000 PORTUGAL LAURELS.
1-yr. Seedlings, 6s. per 1000.
2-yr. Seedlings, 8s per 1000.
3-yr. Seedlings, 15s. per 1000.
Transplanted, 12 to 18 inches, bushy, 12s. 6d per 100.
Transplanted, 18 to 24 inches, bushy, 25s. per 100
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5,000 CEDRUS DEODARA, 1-yr., 2 to 4 inches, £9 per 1000, 20s per 100
7,000 CEDRUS DEODARA, 1-yr., 4 to 6 inches, £12 10s. per 1000, 30s per 100.
4,000 CEDRUS DEODARA, 2-yr., twice transplanted, 9 to 12 in., 42s. to 50s. per 100.
3,000 CEDRUS DEODARA, 2-yr., twice transplanted, 15 to 18 inches, 75s. per 100.
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4,000,000 1-yr. seedling ASH, 1s per 1000; £4 10s. per 100,000
2,000,000 1-yr. seedling SPANISH CHESTNUTS, 6s. per 1000; £25 per 100,000.
1,000,000 2-yr. seedling QUICK, 2s 6d. per 100; £10 per 100,000.
50,000 2-yr. seedling OAKS, in drills, 1½ to 2½, 10s. per 1000.
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100,000 Transplanted ALDERS, 2 to 3 feet, 15s. per 1000
200,000 Transplanted ASH, 1 to 2 and 2 to 3 feet, 15s. to 25s. per 1000.
50,000 Transplanted BEECH, 1½ to 2 feet, 21s. per 1000.
40,000 Transplanted BEECH, 2 to 3 feet, 25s. per 1000.
100,000 Transplanted SCOTCH FIRS, good, 2 to 3 ft., 25s. per 1000.
60,000 Transplanted HAZEL, 1 to 2 feet, 12s. 6d. per 1000.
50,000 Transplanted HAZEL, 2 to 3 feet, 21s. per 1000.
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1,000 ABIES MENZIESII, 5 to 7 feet, £5 per 100.
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10,000 AUCUBA JAPONICA, 12 to 18 inches, 21s. per 100.
15,000 AUCUBA seedlings, from named kinds, 30s. to 75s. per 100.
5,000 AUCUBA, new varieties, from 80s. to 100s. per 100.
AUCUBA, new varieties, in large plants, 18s. to 36s. per doz.
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CRYPTOMERIA ELEGANS, 6 to 9 inches, 21s. per 100.
„ „ 9 to 12 inches, 50s. per 100.
„ „ 2½ to 3 feet, 24s. to 30s. per dozen.
THUJA LOBBII, 9 to 12 inches, 16s. per 100.
„ „ 3, 4, 5, and 6 feet, 50s. to 100s. per 100.
„ WEAREANA, 1½ to 2 feet, 12s. 6d. per 100.
„ „ 3 to 4 feet, 50s per 100.
THUJOPSIS DOLABRATA, 6 to 9 inches, 50s. per 100.
„ „ 9 to 12 inches, 75s. and 100s. per 100.
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A large stock of Hardy JAPANESE CONIFERÆ and EVERGREENS, at low prices.
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ARBUTUS, grafted, in five sorts, 12s to 24s per dozen.
ARUNDO CONSPICUA, in pots, 12s. to 25s. per 100
HYDRANGEA OTAXA, the largest flowering Hydrangea known, 50s to 100s per 100.
HYDRANGEA PANICULATA GRANDIFLORA, a most beautiful deciduous hardy shrub, 9s per dozen.
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A fine lot of CLEMATIS, PASSIFLORA, IVIES of sorts, and other Climbers, from 50s., 75s. to 100s. per 100.
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10,000 RHODODENDRON PONTICUM, 1 to 2 feet, 21s. to 30s. per 100.
„ „ „ larger sizes, 50s. to 100s. per 100.
„ „ choice named, from £5 to £10 per 100.
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An Inspection of the Stock is respectfully invited.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

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WHITE NUN, 2s. 6d. each | MAIDEN'S BLUSH, 2s 6d. each

Also good plants of the leading kinds, and of various colours, at 12s. per dozen.

PINKS.

LADY BLANCH, fine, pure white, 1s 6d. per plant; and a variety of other kinds for forcing. Also a fine collection of named varieties for exhibition, from 9s. to 18s per dozen pairs.

CATALOGUES on application.

The Royal Nurseries, Slough.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS
Address, 26, Seed Market, Mark Lane, E C ; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds"

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J. MALLER, having a large Surplus Stock of the following really handsome, well grown, effective, WINTER-BLOOMING PLANTS, offers them at low prices for cash, delivered in London :—

Poinsettia pulcherrima
Solanum capsicastrum, full of berries
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Epiphyllums, in variety
Erica gracilis

Erica hyemalis, well set with bloom
Bouvardia longiflora alba
Dracænas, in variety
Statice macrophylla, variety
Double White Primula

Prices per dozen or hundred, to be had on application. An inspection respectfully invited.

Brunswick Nursery, Lower Tottenham, N. Ten minutes' walk from Park Station, Great Eastern Railway.

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JOHN PERKINS, SEN., begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his extensive STOCK of the following, the whole of which will be offered at very low prices :—

Whitethorn or Quick, extra fine, 3-yr. transplanted
Spruce Fir, 2½ to 4 feet
Scotch Fir, 1½ to 2 feet
Larch Fir, 1½ to 2, 2½ to 3, and 3 to 4 feet
Pinus austriaca, 1½ to 2, 2 to 3, and 3 to 4 feet
Birch, 3 to 4 feet
Hazel, 2 to 3 feet
Hornbeam, 2 to 3 feet

Evergreen Privet, 1½ to 2, 2 to 3, and 3 to 4 feet
Berberis aquifolia, 1 to 1½ foot
Green Box, 1½ to 2, and 2 to 3 feet
Portugal Laurel, 1½ to 2, and 2 to 3 feet
Common Laurel, 1½ to 2, and 2 to 3 feet
Black Italian Poplar, 4 to 6 feet
Blackthorn, 1½ to 2, and 2 to 3 feet
Roses, &c., &c.

J. P.'s stock of all kinds of FRUIT, FOREST, ORNAMENTAL TREES, &c., is very extensive, and in the best possible condition for removal, having been frequently transplanted. Descriptive priced CATALOGUES free by post, or on application.

52, Market Square, opposite the Corn Exchange, Northampton.

LIMES, PLANES, 10, 12, and 15 feet high, stout, straight, and splendidly rooted, by the dozen or hundred.
HOLLIES, common green, 3, 4, 5, 6, 7, 8, and 10 feet.
„ Variegated „ „
☞ Purchasers may select from many thousands of these Hollies, which are finely grown plants, and will be guaranteed.
GOLDEN QUEEN, SILVER QUEEN, and WATERER'S HOLLIES.—Hundreds of handsome specimens, 4, 5, 6, 7, and 8 feet high, guaranteed
HODGINS, YELLOW-BERRIED, LAURIFOLIA, MYRTIFOLIA, and other varieties of Green Hollies, 5, 6, 7, 8, and 10 feet high, large number of splendid plants, guaranteed.
YEWS, Common, many thousands, 3, 4, 5, 6, 7, 8, 10, and 15 feet high, guaranteed.
YEWS, GOLDEN and ELEGANTISSIMA, as globes, standards, and pyramids, up to 8 and 10 feet high.

ANTHONY WATERER'S CATALOGUE of AMERICAN PLANTS, ORNAMENTAL TREES, &c., Priced and Descriptive, and containing Illustrations from photographs of Waterer's and Golden Queen Hollies, as standards and pyramids; the Weeping Sophora, the Weeping Deciduous Cypress, the Weeping Beech, Standard Rhododendron, and Cupressus Lawsoniana erecta viridis; will be forwarded on application in return for 12 stamps, or the same Catalogue without the illustrations for 6 stamps. With reference to this Catalogue A. W. has the satisfaction to state, that he has received at least a hundred unsolicited testimonials of a highly complimentary character Amongst others Mr. H. G. Bohn, whose knowledge of such matters gives authority to his opinions, writes as follows:—"I am delighted with your new Catalogue; it is a great advance upon all that has been done before" The *Gardeners' Chronicle* and other gardening publications have also made frequent allusion to it, as one of the best Catalogues ever issued. The illustrations have been freely copied, both in this country and America.

ANTHONY WATERER, Knap Hill Nursery, near Woking, Surrey.

New Perpetual Strawberry, L'Inépuisable.

(The Inexhaustible.)

M. MABILLE begs to announce that he has succeeded in raising a description of STRAWBERRY long desired by growers, viz., a perpetual Strawberry with large fruits produced from May to October, and belonging to the American section of Strawberries. It is the result of crossing Trollope's Victoria with the Pine-apple Strawberry. The plant was exhibited on the 4th inst. at the International Fruit Show, where it attracted great attention. It is of exquisite flavour, a perpetual bearer, quite hardy, and the fruit is of fine form. Price per 100 Plants, 12s.

M. MABILLE, Horticulteur, Place du Champ de Foire, à Limoges (Hte. Vienne), France.

Strawberries.

JAMES CARTER AND CO. have extra fine plants to offer this season of the undermentioned STRAWBERRIES.

Runners, in pots, our selection,	25 of a sort	..	10s. 6d. per 100.
„ „ „	100 „	..	7s. 6d „
Runners, out of pots, our selection,	25 of a sort.		5s. 0d. „
„ „ „	100 „		3s. 6d. „

Black Prince
British Queen
Carolina Superba
Comte de Paris
General Havelock

Goliath
Keens' Seedling
Prince Arthur
Prince of Wales
Princess Alice Maude

Princess Royal
The Lady
Victoria
Wizard of the North
Wonderful

Runners, out of pots, per 100, 3s. 6d.; Runners, in pots, per 100, 10s. 6d.

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New kinds at a slight advance in price according to our stock. Newest sorts, such as The Amateur, Royalty, Brown's Wonder, and several French varieties of the late Dr. Nicaise's raising, at same prices as advertised by the firms distributing them

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ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected

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REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

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ODAMS'S DISSOLVED BONES.
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PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
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MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
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PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.

WOOL NETTING, 2 yards wide and 1s. 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1s. 10d. per yard.
Three yards wide	2s. 10d. per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d. to 8½d. p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾d. and 8¾d. per yard.

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OUR HORTICULTURAL SHADINGS form a thorough Protection from Winds, Frost, and Hail, whilst at the same time they admit Light and Sun. They are used and strongly recommended by the most successful Exhibitors and Scientific Horticulturists in the kingdom, as well as on the Continent; in fact, are pronounced the only "proper shadings" ever offered to the public against Birds, Wasps, Blight, &c. As a covering for Strawberries, Tulips, Hyacinths, Seed-Beds, Greenhouses, &c., they have no rival. The price, being very reasonable, brings them within the reach of every one. With ordinary care they will last for many years. Samples post free on application. DANIEL COLLINGE AND SON.

No. 1.—54 inches wide	at 8½d. per yard run.
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In pieces of about 30 yards each, or any longer lengths when specially ordered. Nett cash in 30 days from date of Invoice.

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IS STILL AT
WILLIAM PAUL'S.

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PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

THE PINE-APPLE NURSERY COMPANY,

Maida Vale, Edgware Road, St. John's Wood, W.,

Beg most respectfully to announce that they have secured MR. JOHN BESTER, the well-known Horticulturist, as Manager; and that they are now making extensive arrangements, which will enable them to execute Orders to any extent in the Horticultural profession. They guarantee Genuine Productions, and to transact all Business in a spirit of Liberality, which they trust will give general satisfaction to their Customers.

CATALOGUES of the respective Classes, and Designs for Improvements, on application.

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THE "OLD" NURSERIES, CHESHUNT, HERTS, N.,

HAVE TO OFFER THE HEALTHY STOCK UPON 20 ACRES OF WELL

CULTIVATED STANDARD, PYRAMID, and TRAINED FRUIT TREES,

AT THE USUAL ESTABLISHED PRICES.

To Planters of New Gardens they can recommend an inspection of the many Thousand PALMETTE TRAINED TREES, and the well formed PYRAMIDS. Intending Planters of large Orchards would do well to see the many Thousands of fine straight-stemmed good-headed STANDARDS.

Their New Descriptive LIST contains all, or nearly all, of the English and Continental Fruits exhibited at Kensington; Post Free on application.

THE TWO BEST NEW PLUMS OF THE SEASON.

See ILLUSTRATIONS, *p.* 1319 "GARDENERS' CHRONICLE," *Oct.* 14, 1871.

DUKE of EDINBURGH.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, roundish-obovate, with a shallow suture; outline very regular and smooth; skin thin; colour light purplish, with an exceedingly dense coating of light bluish bloom; flesh reddish yellow, thick, juicy, and moderately rich, parting freely from the stone; a very prolific bearer, and good for culinary purposes. First-class Certificate, Royal Horticultural Society.

Maidens, **5s.** each.

DRY'S SEEDLING.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large or above medium size, roundish oval, marked with a very slight suture; skin reddish purple, covered with a thin bloom, slightly marbled when fully ripe, stalk long and stout; flesh dull greenish yellow or orange, firm yet melting and juicy, parting freely from the stone; it is of delicious flavour, and will make an excellent early dessert variety.

"The fruit is oval, of light purple colour, fine in size, remarkably good in flavour, and early: it was shown at one of the meetings held last year, and was then considered by the Committee to possess considerable merit, and its qualities having been again tested on this occasion, it was duly honoured with a First-class Certificate."

Standards, **5s.**; Pyramids, **3s. 6d.**; Dwarf trained, 1 year, **5s.**; Maidens, **2s. 6d.** each.

JAMES CARTER & CO.

Have much pleasure in directing the attention of Pomologists to the above splendid Fruits, both of which have been awarded First-class Certificates by the Royal Horticultural Society. *They are without doubt two of the finest Plums in cultivation.* *PRICE TO THE TRADE ON APPLICATION.*

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JAMES CARTER & Co. SEED FARMERS, 237 & 238, HIGH HOLBORN, LONDON
CARTERS GRASS SEEDS PREPARED TO SUIT ALL SOILS CARRIAGE FREE
TO HER MAJESTY THE QUEEN & H.R.H. THE PRINCE OF WALES
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CARTER'S PRIZE SEED WHEAT.

CLUB HEADED ROUGH CHAFF WHITE.
HALLETT'S HUNTER'S WHITE PEDIGREE.
BROWICK RED. | RED NURSERY.

Samples and Lowest Price of the above and other Standard sorts on application.

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Indestructible Plant Terra-Cotta Markers.

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FOUNTAIN JETS.

A large variety to be seen in action at
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Illustrated Catalogues on application.

Notice of Removal.

PHILIP PALMER has REMOVED from his old-established WINDOW and HORTICULTURAL GLASS WAREHOUSE, 118, St. Martin's Lane, W.C., to more extensive premises, at 36, ST. MARTIN'S LANE, nearly opposite.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultura Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15*s.* 0*d.*	19*s.* 6*d.*
Third quality	16*s.* 0*d.*	22*s.* 6*d.*
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The above prices include the boxes, which are not returnable.

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Stock sizes, 16-oz., in 100 feet boxes, boxes included.
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				4ths. *s.* *d.*	3rds. *s.* *d.*	2nds. *s.* *d.*
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12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
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16 by 14	20 by 13	18 by 13	..			
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16 to 17 oz. to the foot.

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	12*s.* 6*d.*
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London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manu facture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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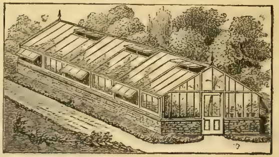

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Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in. thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

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Improved Conical.

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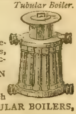

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Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

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Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

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Goods, of the very best manufacture, delivered at Railway or Wharf in London.

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THIRSK FLOWER SHOW, September 29.

The following is a LIST of the AWARDS:—

GARDENERS' CLASS

STOVE and GREENHOUSE PLANTS.

Six Stove and Greenhouse Plants in bloom.—1st, Sir G. O. Wombwell; 2d, Earl Cathcart Four fine foliage Greenhouse Plants.—1st, Mr. F Bell; 2d, Sir G O Wombwell Three Stove or Greenhouse Plants in bloom —1st, J Walker; 2d, Mrs Hincks Six Exotic Ferns.—1st, Sir G. O Wombwell; 2d, J Hutton, M P, Sowerby Hill. Three Lycopodiums —1st, Mr. F. Bell, Thirsk Hall; 2d, Mr H. Coore, Scruton Hall Three Achimenes —1st, Major Stapylton; 2d, Sir G O Wombwell Four Cape Heaths —1st, Sir G O Wombwell; 2d, Mr Shenessey, Darlington Four Fuchsias —1st, Mrs Hincks Two Fuchsias —1st, Sir G O Wombwell; 2d Mr Bell Six Garland or Zonal Geraniums —1st, Sir G O Wombwell; 2d, Snowdon & Son Three Tricolor or Variegated Geraniums —1st, Major Stapylton; 2d Sir G O Wombwell Three Bronze Geraniums. —1st, Snowdon & Son; 2d, Sir G. O Wombwell. Two Double Geraniums —1st, J Walker, Mount St John; 2d, Snowdon & Son. Two Petunias —1st, Snowdon & Son; 2d, Mrs Hincks. Two Liliums —1st, Mr. H. Coore, 2d, Mrs Hincks Four Coxcombs —1st, Snowdon & Son; 2d, Mrs Hincks. Four Balsams —1st, Snowdon & Son; 2d, Mr. J Walker. Four Celosias —1st, Sir G. O. Wombwell; 2d, Snowdon & Son. British Ferns, 10 varieties. —1st, J. Hutton, M.P.; 2d, J. Shenessey.

CUT FLOWERS.

Twenty-four Dahlias, distinct varieties. —1st, H. May, Bedale; 2d, W. Elsworth, Burniston. Twelve Dahlias, distinct varieties.—1st, W. Elsworth; 2d, J. Pratt. Twelve Fancy Dahlias, distinct varieties —1st, H. May; 2d, J. Walker. Twenty-four Hollyhocks, single bloom.—1st, J. Pratt; 2d, J. Hutton, M.P. Twelve Hollyhocks, single bloom —1st, J. Harman; 2d, J. Pratt. Twelve Roses, single bloom.—1st, Mrs. Hincks; 2d, Mrs. Coates. Twelve Verbenas, single trusses.—1st, Snowdon & Son; 2d, Major Stapylton. Twelve Geraniums, single trusses —1st, Snowdon & Son; 2d, Mrs. Barnes. Pansies.—1st, R. Yates, Bradford. Asters —1st, Snowdon & Son; 2d, Mr. Bean, Clifton, York. French Marigolds.—1st, Snowdon & Son; 2d, R Yates. African Marigolds.—1st, Mrs. Hincks; 2d, Major Stapylton Gladioli.—1st, J Hawman; 2d, Major Stapylton. Stocks.—1st, Mrs. Hincks Twelve Herbaceous Plants, varieties.—1st, Mr. Barnes. Twelve Annuals, varieties —1st, Snowdon & Son; 2d, Major Stapylton. Six Hand Bouquets.—1st, F. Bell; 2d, Mr. Barnes. Four Hand Bouquets.—1st, J. Walker; 2d, Rev. C. Johnstone. Two Hand Bouquets.—1st, Major Stapylton; 2d, F. Bell. For the best Model of a Flower Garden and Pleasure Grounds —1st, W. Atkinson; 2d, J. Walker. For the best Device in Cut Flowers.—1st, Sir G. O. Wombell; 2d, J. Walker.

FRUITS.

Collection of Fruit, 10 varieties.—1st, Mr. Clarke; 2d, Mr F. Bell, Thirsk Hall. Collection of Fruit, 6 varieties —1st, Earl Cathcart; 2d, Rev. J. Overton. Two Bunches of Grapes, black —1st, Mr. Baxter; 2d, Mr. F Bell. Two Bunches of Grapes, white.—1st, Snowdon & Son; 2d, B. P. Ascough. Peaches.—1st, J. Shenessey; 2d, Rev. J. Overton. Nectarines.—1st, W. Clark; 2d, Major Stapylton. Plums, light.—1st, Mr. Barnes; 2d, Rev. Canon Johnstone. Plums, dark —1st, Snowdon & Son; 2d, Rev. J. Overton Apricots.—1st, F. Bell; 2d, Mrs. Newbald. Plums, Green Gages.—1st, Snowdon & Son; 2d, F. Bell. Figs.—1st, F. Bell. Melon.—1st, J. Walker; 2d, Mrs. Coates. Dessert Apples.—1st, Rev. Canon Johnstone; 2d, F. Bell. Kitchen Apples.—1st, Rev. Canon Johnstone; 2d, T. Barnes Dessert Pears.—1st, Earl Cathcart; 2d, Rev. Canon Johnstone. Cherries —1st, Rev. Canon Johnstone. Gooseberries —1st, Snowdon & Son; 2d, Major Stapylton. Red Currants —1st, J. Walker; 2d, Snowdon & Son. White Currants.—1st, F. Bell.

VEGETABLES.

Tray of Vegetables.—1st, Snowdon & Son; 2d, Mr. Bean, York; 3d, Mrs. Hincks Tray of 8 Varieties of Vegetables. —1st, J. Pratt; 2d, Rev J. Overton. Brace of Smooth Cucumbers. —1st, Snowdon & Son; 2d, Rev. Canon Johnstone. Brace of Prickly Cucumbers.—1st, Snowdon & Son; 2d, J. Walker. Peas —1st, Snowdon & Son; 2d, J. Walker Cauliflower.—1st, Major Stapylton; 2d, Snowdon & Son. White Celery —1st, Mrs Coates; 2d, Major Stapylton. Red Celery.—1st, J. Harman; 2d, Mrs. Hincks Kidney Beans.—1st, Snowdon & Son; 2d, Rev. J. Overton. Cos Lettuce.—1st, Snowdon; 2d, Major Stapylton. Cabbage Lettuce.—1st, Snowdon; 2d, F. Bell. Vegetable Marrow.—1st, J. Pratt; 2d, Snowdon. Beetroots.—1st, Sir G. O. Wombwell; 2d, Rev. Canon Johnstone. Spring-sown Onions. —1st, Snowdon & Son; 2d, Mrs. Hincks. Carrots.—1st, Snowdon & Son; 2d, Mr. Bean. Turnips —1st, Mrs. Hincks; 2d, Sir G. O. Wombwell. Parsnips —1st, Snowdon & Son; 2d, Major Stapylton. Tomatos.—1st, Snowdon & Son; 2d, Rev. J. Overton. Kidney Potatos.—1st, Snowdon & Son; 2d, J. Walker. Round Potatos.—1st, Snowdon & Son; 2d, J. Walker.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter-flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them upon terms unusually advantageous When selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. We invite attention to our Catalogue and inspection of our stock, especially the contents of our new show-house.

New English Rose (Hybrid Perpetual Climbing),
PRINCESS LOUISE VICTORIA.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, the raiser of this Rose, will send it out for the first time in November next, good plants at *7s. 6d.* each, or three for 21s. Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

It will be figured in the "Floral Magazine" for November.
Coloured Drawings will shortly be ready, for 12 stamps, post free.
Descriptive Priced CATALOGUES free on application.

Standard Tea Roses, and Others, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), beg to offer the largest stock of ROSES ever seen, at the following prices:—

Standard Tea Roses, all the best sorts, £5 per 100. (This stock is beautiful, and very extensive.)
Standard Hybrid Perpetuals and Moss, £4 per 100.
Half-Standard Hybrid Perpetuals and Moss, £3 4s. per 100.
Dwarf Hybrid Perpetuals and Moss, £2 per 100, £18 per 1000.
On their own roots, grown in pots, splendid stock, £2 per 100.
Tea sorts, Dwarfs—Madame Falcot, Devoniensis, Jean Pernet, Madame Margottin, and all the best, £3 per 100.
Maréchal Niel, Standards, £5 per 100; Dwarfs, £4 per 100

Fifteen per cent. discount on the new sorts of 1872.
LISTS on application. CATALOGUES now ready.

Gladioli Seedlings, by Name, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), offer the following:—

GLADIOLI SEEDLINGS, first-class, 7s. per 100; £3 per 1000.

100	GLADIOLI, by name,	10 sorts	£0 8 0
100	„ „	25 „	0 14 0
100	„ „	50 „	£1 to 2 0 0
100	„ „	100 „	£4 to 6 0 0

And upwards, according to the novelty of the sorts; all in good flowering bulbs.

Gladioli.

CHARLES VERDIER, FILS (ex-Partner in and Successor to the late Firm of Victor Verdier, Père, and Charles Verdier, Fils), 12, Rue Duméril, Paris, has just published his CATALOGUE of GLADIOLI, containing all the novelties of the season.

It can be had post free on application to his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London

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Gladioli, Amaryllis, New Roses, Pæonies, Iris,
LILIUMS, PHLOX, &c.

EUGENE VERDIER, FILS AINE, trusts that his Clients and Friends will again favour him with their orders, which he assures them will be executed in a manner that will give entire satisfaction.

CATALOGUES will be obtainable direct from him about Sept. 25; or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

EUGENE VERDIER, FILS AINE, Horticulteur, 3, Rue Dunois, Paris.

RHODODENDRONS, FINEST NAMED VARIETIES.

BEAUTIFULLY SET WITH FLOWER BUDS.

MESSRS. VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE

A SPLENDID STOCK OF THE ABOVE,

WELL SET WITH FLOWER BUDS, AND ARE ENABLED TO OFFER BEAUTIFUL PLANTS, SUITABLE FOR FORCING OR PLANTING IN BEDS, AT

30s. to 42s. per dozen.

MESSRS. VEITCH AND SONS have a large stock of named sorts in other sizes, and also of HYBRIDS and PONTICUM RHODODENDRONS, and will be happy to send samples and quote Sizes and Prices by the Hundred or Thousand.

ROYAL EXOTIC NURSERIES, CHELSEA; and COOMBE WOOD, KINGSTON, S.W.

PAUL & SON'S ROSES; 71 First Prizes in 1871.

PAUL & SON,

THE "OLD" NURSERIES, CHESHUNT, HERTS, N.,

ARE NOW PREPARED TO EXECUTE ORDERS FOR

STANDARD, HALF and DWARF STANDARD ROSES on Briar;
DWARF ROSES on Manetti and on Own Roots;
Extra-sized ROSES in Pots, for Forcing or Greenhouse Culture;
Extra-sized NOISETTE and the Climbing TEA ROSES for Conservatory Climbers.

All the above are in splendid health and condition for Sale, and are at old "plentiful season" prices.
PAUL AND SON solicit an inspection of the stock offered above, feeling assured it is unequalled by any in the country

AMONGST THE 71 FIRST PRIZES WERE—

Nottingham Show of Royal Horticultural Society, Rev. S. Reynolds Hole's Cup for 12 Roses, and 3 others.
National Rose Show Royal Horticultural Society, Premier Prize for 72 cut Roses, and 7 others.
Royal Botanic Society, July Show, for 48 varieties of Roses.
Crystal Palace, First Rose Show, Premier Prize for 72 cut Roses, and 3 others.
Crystal Palace, Second Rose Show, Premier Prize for 60 cut Roses, and 2 others.
And the Premier Prizes at the Manchester, Stamford, Hereford, Oxford and Wolverhampton Rose Shows.

Priced Descriptive CATALOGUE Post Free on application.

"The Best Catalogue."—*Vide "Horticulturist," October*, 1870.

GRATIS and POST FREE, a CATALOGUE of

DUTCH BULBS,

Fruit Trees, Dried Flowers, and General Autumn Requirements.

DICK RADCLYFFE & CO.,
SEEDSMEN, HORTICULTURAL DECORATORS, and GARDEN FURNISHERS,
129, HIGH HOLBORN, W.C.
SEED GROUNDS, ERFURT, PRUSSIA.

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J. WILLS

BEGS TO ANNOUNCE THAT HIS

NEW CATALOGUE of DUTCH FLOWER ROOTS, ROSES, SHRUBS, FRUIT and FOREST TREES, PLANTS suitable for Forcing, &c.,

Is now ready, and will be forwarded Post Free on application. Everything offered is of the best quality, and as cheap as any other house in the Trade. All kinds of Floral Decorations supplied on the shortest notice.

Some idea of the magnitude of J. WILLS' business as an Artistic Floral Decorator and Bouquetist may be obtained from the fact of his having last week received an order for the supply of 1000 handsome Bouquets for Ladies, and 3000 Coat Bouquets for Gentlemen.

ROYAL EXOTIC NURSERY, SUSSEX PLACE, OLD BROMPTON, LONDON, S.W.

Seedsmen to Her Majesty The Queen.

BULBS For Autumn Planting.

Seedsmen to H.R.H. the Prince of Wales.

JAMES CARTER & CO.

HAVE THE PLEASURE TO OFFER THE FOLLOWING

COLLECTIONS OF BULBS

FOR PRESENT PLANTING,

Containing the most showy and popular varieties required for the purposes mentioned.

CARTER'S
BULBS for INDOOR PLANTING.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.

Packing and Carriage Free.

CARTER'S "GUINEA" COLLECTION,
For Indoor Planting, contains:—

12 HYACINTHS, in 12 extra fine named sorts.
9 POLYANTHUS NARCISSUS, in 9 varieties.
12 JONQUILS, sweet scented.
50 CROCUS, finest named.
1 DIELYTRA SPECTABILIS.
1 LILIUM SPECIOSUM.
6 SCILLA SIBIRICA.
24 SNOWDROPS, extra large selected.
6 TULIPS, Tournesol.
3 ,, Rex Rubrorum.
3 ,, La Candeur.
3 ,, Royal Standard.
6 ,, Yellow Prince.
3 ,, Rosa Mundi.
6 ,, Duc Van Thol.
1 AMARYLLIS FORMOSISSIMUS.
6 IXIAS, finest mixed.
6 SPARAXIS, finest mixed.
6 TRITELEIA UNIFLORA.

Packing and Carriage Free.

All Seeds and Bulbs Carriage Free.

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Of CHOICE FLOWER ROOTS for the DECORATION of the DRAWING-ROOM and GARDEN.

12 HYACINTHS, choice named
12 ,, mixed bedding
36 NARCISSUS—Poeticus
6 ,, Double Roman
6 ,, Paper White
36 ,, Van Sion
12 ,, Incomparable
24 TULIPS, extra fine mixed, Double
24 ,, ditto, Single
24 IRIS, ex. choice mixed, Spanish
50 CROCUS—Blue
50 ,, Striped
50 ,, White
12 GLADIOLUS BRENCHLEYENSIS
12 TRITELEIA UNIFLORA
12 SCILLA BELGICA
24 WINTER ACONITES
4 CROWN IMPERIALS
6 LEUCOJUM ÆSTIVUM

Price **25s.** *Packing and Carriage Free.*

HALF the ABOVE, *including Packing,* **10s. 6d.**

Five per Cent. Discount for Cash.

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For Outdoor Planting only, contains:—

12 HYACINTHS, in 3 colours.
12 NARCISSUS, Double, white.
12 ,, Poeticus, or Pheasant-eye.
12 Double DAFFODILS.
12 TULIPS, extra fine mixed, double.
12 ,, extra fine mixed, single.
12 ,, finest mixed, late.
12 ,, Duc Van Thol.
6 POLYANTHUS NARCISSUS, fine mixed.
6 CAMPERNEL JONQUILS.
12 STAR of BETHLEHEM.
6 TRITELEIA UNIFLORA.
6 DOG'S-TOOTH VIOLETS.
25 CROCUS, blue.
50 ,, striped.
50 ,, large yellow.
25 ,, white.
24 ANEMONES, extra fine, mix.
6 GLADIOLUS BRENCHLEYENSIS.
12 IRIS, extra choice, mixed, English.
12 ,, extra fine, mixed, Spanish.
3 LILIUM CANDIDUM.
3 ,, TIGRINUM.
24 RANUNCULUS, extra fine, mixed.
50 SNOWDROPS.
24 Winter ACONITES.

Packing and Carriage Free.

CARTER'S AUTUMN CATALOGUE

OF DUTCH BULBS, FRUIT TREES, ROSES, &c.,

Is now ready, and may be had Gratis and Post Free on application.

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

SUTTONS'
FRESH IMPORTED
FLOWER ROOTS,
CARRIAGE FREE.

IMPORTANT TO PURCHASERS.
☞ Messrs. SUTTON & SONS *visit Holland every season, and personally select their* FLOWER ROOTS *from the best Growers. They are much superior to those usually sent into this country.*

The following Letter is similar to numerous others Messrs. SUTTON have received:—

From Mr. A. WIPF, *Gr. to* A. SHUTTLEWORTH, Esq., *Hughington Hall.*

July 3, 1871.—"The Bulbs procured from you last autumn gave the most complete satisfaction to my employer, and were admired by all visitors, in particular by some proprietors of extensive gardens, who could not suppress their disappointment and chagrin at having been at the expense and trouble to get Bulbs direct from Holland, which were nevertheless much inferior to your flowers."

SUTTONS'
CHOICE COLLECTIONS of BULBS.

For Open Ground Winter and Spring Blooming.
No. 1—£2 2*s.*, carriage free
No. 2—£1 1*s.*, carriage free
No. 3—10*s.* 6*d.*

For Pots and Glasses.
No. 4—£2 2*s.*, carriage free
No. 5—£1 1*s.*, carriage free
No. 6—10*s.* 6*d.*

SUTTONS'
GUINEA COLLECTION

For Indoor Cultivation, contains—

12 fine HYACINTHS, by name
6 Miniature ditto ditto
6 POLYANTHUS NARCISSUS, ditto
6 Single SWEET JONQUILS
6 SCILLA PRÆCOX
6 SCARLET DUC VAN THOL TULIPS
6 Double TOURNESOL ditto
25 Early TULIPS, 5 sorts
3 PERSIAN IRIS
3 PEACOCK IRIS
50 fine CROCUS, by name
6 choice IXIAS
3 choice SPARAXIS
3 choice OXALIS
1 LILIUM LANCIFOLIUM ALBUM
1 ditto ditto RUBRUM
1 TROPÆOLUM TRICOLOR

And will be sent Carriage Free on receipt of cheque or Post Office order value 21*s.*, payable to SUTTON & SONS.

SUTTONS'
CHOICE DUTCH RANUNCULUS.

Choice Assortment of 100 named varieties, 14*s.*
,, ,, 50 ,, 7*s.* 6*d.*
,, ,, 25 ,, 4*s.*
,, ,, 12 ,, 2*s.*

SUTTONS'
GUINEA COLLECTION

For Open Ground Cultivation, contains—

25 fine mix. border HYACINTHS
12 ditto POLYANTHUS NARCISSUS
12 PHEASANT'S EYE ditto
12 Double WHITE ditto
25 Double DAFFODILS
6 large CAMPERNELLE JONQUILS
25 fine mixed Double ANEMONES
25 do. do. do. RANUNCULUS
200 CROCUS, 4 sorts
50 SNOWDROPS
50 WINTER ACONITES
12 DUC VAN THOL TULIPS
12 mixed Single Early TULIPS
12 fine mixed Double TULIPS
6 fine mixed Parrot TULIPS
6 GESNERIANA TULIPS
25 fine mixed TULIPS
6 DOG'S TOOTH VIOLETS
3 CROWN IMPERIALIS

And will be forwarded Carriage Free on receipt of cheque or Post Office order for 21*s.*, payable to SUTTON & SONS.

For complete Cultural Instructions, see
Suttons' Autumn Catalogue for 1871
Price 1*s.* Gratis to Customers; or
SUTTONS' SELECT LIST OF BULBS
Gratis and Post Free.

SUTTON AND SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN, and H.R.H. THE PRINCE OF WALES,
ROYAL BERKS SEED ESTABLISHMENT, READING.

Established Upwards of a Century.
PRIZE MEDALS, 1851 and 1862.

BUTLER, McCULLOCH AND CO.'S usual Consignment of DUTCH and CAPE BULBS has arrived in excellent condition, and from which the following liberally assorted Collections are offered, carriage and package free:—

FOR CONSERVATORY DECORATION.

No. 1.	No 2.	No. 3.	No. 4.	No. 5.	No. 6.
£5.	£2 10*s.*	£1 5*s.*	£1 1*s.*	15*s.*	10*s.* 6*d.*

FOR FLOWER GARDEN DECORATION.

No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£3.	£2.	£1 5*s.*	£1 1*s.*	10*s.* 6*d.*

For CONSERVATORY and FLOWER GARDEN DECORATION
£5 5*s.* | £2 12*s.* 6*d.* | £2 2*s.* | £1 1*s.* | 15*s.* | 10*s.* 6*d.*

CATALOGUES, containing full details of these Collections, free and post paid.

BUTLER, McCULLOCH AND CO., Covent Garden Market, London, W.C.

CROYDON. A. HENDERSON EAST-SURREY-SEED-WAREHOUSE ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Professor REICHENBACH, of Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL D.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W C.

The Gardeners' Chronicle

SATURDAY, OCTOBER 21, 1871.

WHAT the ART of seeing is to sure shooting that of THOUGHT is to SUCCESSFUL GARDENING. It keeps us abreast of opportunity, and enables one to hit duty, and overtake work at the right moment and in the most effective place. That fancy is full of deepest meaning, that describes Opportunity with flowing locks in front and bald-pated behind. The thinking man grasps opportunity fearlessly as it approaches, the thoughtless ever runs fruitlessly in its rear. He will bag the richest prizes, either in sport or horticulture, who thinks most wisely and promptly. More evil is wrought, more failures occur for want of thought, than lack of will or knowledge. Knowledge, in fact, apart from nimbleness of thought, the facility of its instantaneous application to each case as it is needed, is of comparatively little use. It is like water in a deep well, a valuable reservoir of refreshment it is true, but incapable of strengthening, gladdening, without the draw-bucket to bring it up as we need it. The capacity of thinking is such a draw-bucket. It brings up the wisdom of the past to the level of present duty, providing at once a safe guide and a sure help for our everyday work. It can never be too often repeated that the value of our work depends upon the amount of thought put into it. There are those who attempt to separate thinking from working horticulturists — the first they call theorists, the second practicals. Such distinctions are as untenable as they are mischievous. The best practicals are those who think most—the only true theorists those who have verified all their classified truth by the test of practice, their own, or that of other men. Neither is there anything to hinder one man reading the true lesson taught by another man's practice. On the contrary, there is a strong probability that he may be able more fully to interpret its lessons than the practitioner himself. The careful observer may see further, marshall more correlated facts, weigh their meaning with more exactness, than the mere worker.

There is a strong tendency amid the working bees in the hive horticultural to be jealous of their natural leaders, that is, those who think more and do better than the average. Each bee intent upon its own work is apt to think its doings the most perfect. But the queen bee alone probably surveys and comprehends the whole structure and complicated use of the entire hive. To its larger, stronger eye all the cells are marvellously alike. It is very much so with those distinguished by most thought amid the ranks of gardeners. Thinking clears their mental horizon of the mists of conceit, egotism, ignorance; and, looking out upon their craft from the vantage ground of wider truth and broader charity, they learn to esteem the character and work of others as equal to or better than their own, and to measure everything — success, failure, or mediocrity—at its true worth.

Thus the art of thinking, so helpful to our working, becomes the very bond of charity to bind the workers together. All our misunderstandings are born of the mists of ignorance; sweep this clear with a healthy breeze of right strong thought, and the craft would bound up at once to a higher, happier level. Like the cords that fix a balloon to the earth, is the ignorance and weakness begotten of want of thought, and they answer the same purpose, that of keeping horticulturists close to the ground. The first step upwards is to think more and to better purpose. Even genius itself has been defined as an immense capacity for taking thought. Whether this definition is accepted or not, there can be little doubt that thought-taking is the only genius that commands success in horticulture; for what is the art of horticulture from first to last but an incarnation of thought?—life cultured and nourished, utility enlarged and improved, and beauty enhanced, by thought. All the discoveries of man, all the resources of Nature are impressed, by thinking, into the service of production. Science measures the distance and determines the size of the sun; cultivators have to apportion its energy and weigh out its force, to suit the varied capacities of plants. Natural philosophers separate and analyse the constituents of the air—cultivators have to adjust its marvellously exact balances. Geologists classify rocks, earths, salts —cultivators have to mix and use them. Anatomists dissect life—cultivators preserve, nourish, perfect it. Entomologists point out enemies innumerable—cultivators have to attack and subdue them all. In one word, all things that affect life, from the dewdrops that rise to the stardrops that fall, ought to be studied —mastered if possible, by those who would penetrate its mysteries or control its wondrous issues.

Nor is it in these so-called higher walks of horticulture alone, or chiefly, that thought is needed. It is equally or more essential in the every-day operations of common practice. For instance, a tree or plant is transplanted late in the season; the young leaves are soft and tender, and scarcely fully developed; the roots receive a sudden check; the flow of juice to the leaflets is suddenly interrupted. The thoughtful cultivator takes in the whole case; the leaves must be shaded and kept moist, the entire plant developed in a still and moist atmosphere, if possible, and the roots moderately watered. Under such thought-taking conditions the life of the plant is preserved. After a short interregnum it starts afresh, and grows as if nothing had happened to it. But the cultivator with one idea only, would merely water the root, or probably go a step further, and dash water on to the leaves when the sun shone, but at no other time; and for want of thought, deep and wide, to take in all the facts of the case and all the needs of the plant, it would perish. Here is another case of everyday occurrence among young gardeners. It is early spring. The night has been severe, the sky is bright and cloudless, the cold has done its utmost before the break of day; the temperature of the glass structure is low. The thoughtful young man takes in all the facts; he scans the face of the sky, notes the direction of the wind, registers time, calculates probabilities—a clear day or a cloudy one; and then starts his fires, or damps them accordingly. On the contrary, the thoughtless youth rushes out, notes only two facts—the low temperature outside and inside, makes a rush at the fires, heaps on the coals, draws out the dampers, and in an hour possibly has the inside temperature up to its proper standard; when lo! the sun, which has been gradually rising in strength all the while, comes forth to unite his strength with that of the coal, and the sorely tried plants have to battle for hours with the fierce, exhausting, juice-stealing force of the fire, to their certain exhaustion, and often to their irremediable injury.

We cannot give more illustrations at present, but the everyday practice of horticulture is full of them. And it may safely be accepted as an axiom, that the value of all horticultural work is as the thought put into it. As we sow so shall we reap. The most valuable seeds sown in gardens are thoughts, and nothing yields so full and rich a harvest. The golden age of gardening will date from the time when every worker is also a thinker, and all thinkers sow their best thoughts without stint in the garden.

—— MR. TYERMAN, who till recently most efficiently filled the post of Curator of the LIVERPOOL BOTANIC GARDEN, has, we learn, resigned that appointment, and is now occupying himself in amateur and experimental gardening, at Penlee, Tregoney, Cornwall, a locality which has been chosen as being well suited for the cultivation of hardy and half-hardy perennials, &c., the climate being mild and moist, and the soil favourable. Long may he enjoy his honourable retiremeut!

—— For the encouragement of the Saturday half-holiday in London, in connection with the FIELD EXCURSIONS for NATURAL HISTORY PURPOSES which have sprung out of it, prizes to the amount of 30 guineas are offered by the Duchess of SUTHERLAND, the Countess of DUCIE, and the Marquis of WESTMINSTER, for competition among members of botanical, microscopical, and geological clubs, and the unprofessional naturalists of London generally. The subjects selected by the prize-givers require from the competitors a knowledge of the Mosses, pond microzoa, and fossils of the London district, obtained by Saturday afternoon excursions during the next twelve months. The prizes are offered through the Early Closing Association.

—— Every fruit-grower, amateur and practical, alike experiences in the autumn months a sore amount of trouble and annoyance, from the havoc committed by WASPS, and many and diversified are the methods adopted for protecting fruit from the ravages of these pertinaceous depredators. In the case of Grapes, muslin bags are largely called into requisition, but against the use of these there are many objections, the greatest of which consists in the amount of labour involved in examining the bunches for the detection and removal of decayed berries, in consequence of the fineness of the material employed in their construction not admitting such an amount of fresh air as is absolutely necessary to keep the Grapes in a good state of preservation. These drawbacks, however, we are glad to observe, are now in great measure obviated, inasmuch as Messrs. DICK RADCLYFFE & CO. have just introduced, under the title of MEDICATED FRUIT and GRAPE BAGS, an article which will doubtless satisfactorily answer for the purposes intended. These bags are made of several sizes, the material employed is sufficiently strong, and large enough in the mesh to admit of a free circulation of air, without admitting the enemy. The means of fastening them at the neck, by a simple catch of India-rubber, is very efficient. We append an illustration (fig. 299), and recommend them to the notice of our readers.

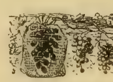

FIG. 299.—GRAPE BAG.

—— We have lately received from Mr. FENWICK, of Well Head Gardens, Halifax, samples of a very beautiful seedling Dipladenia, which we propose to call DIPLADENIA INSIGNIS. It is, we are informed, a seedling from D. amabilis, and has flowered for the first time this summer. The plant has now been in flower for several weeks, and thus promises to be of free blooming habit. It is quite distinct from the other fine varieties produced within the last few years—D. amabilis and amœna, and is not only fine in colour, but has more substance in the flowers than any of the other sorts. The colour is a rich, deep, rosy carmine, deeper towards the throat, and as dark on the outer as on the inner surface, the tube having a sharply defined white base. The flowers at this late season, and from a plant in a 7-inch pot, are upwards of 4 inches in diameter. The leaves are smooth, dark-green, oblong, with a cordate base and acuminate apex. It is a very fine thing, and a decided acquisition amongst stove climbers.

—— At a recent meeting of the French Academy of Sciences, M. DUMAS, the perpetual Secretary, gave some interesting details of a report written by a committee, of which he is a member, describing the PHYLLOXERA VASTATRIX, the pest of the Vine. The French Government has offered a substantial prize, to be awarded in 1873, for the discovery of practicable means for its destruction. According to M. DUMAS, but two candidates have as yet proposed means which are thought to be good. M. FAUCON suggests putting the whole Vine garden under water for two days, which he considers sufficient to suffocate the insects without injuring the plants. In cases where this remedy cannot be applied, M. BLANTHOU would water the Vines with a liquid composed of 1000 parts water to one part of impure phenic acid. Mr. DUNN'S remedy of washing the roots, mentioned in our volume for 1870, at p. 1277, would seem still more likely to be effectual.

—— The *Villa Gardener* says there is a plant of CLEMATIS LANUGINOSA growing on a garden wall at St. Boswells, having a western exposure, and on which, at the time of a recent visit from the writer, there were 1249 fully expanded flowers. It was one of the grandest sights of its kind the writer had ever witnessed. It must have been grand indeed.

—— The MAXIMUM TEMPERATURES of the AIR during the week ending October 14 ranged from 61°.3 at Eccles to 55° at Hull and Dundee, with a mean for the English stations of 58°.2, and for the Scottish of 57°.3. The MINIMUM TEMPERATURES of the AIR ranged from 38° at Portsmouth to 27° at Hull, the mean for the southern country being 32°, and that for the northern 30°.4. The highest MEAN TEMPERATURE was recorded at Portsmouth, viz., 49°.1, and the lowest, 42°.2, at Glasgow. The mean for all English stations was 44°.9, and for all Scottish 43°.5. RAIN fell sparingly over the country during the week, the greatest falls being 0.35 inch at Sheffield, 3.58 inch at Glasgow, and 0.40 inch at Aberdeen. The mean fall for England was 0.12 inch, and for Scotland 0.17 inch. (See Mr. GLAISHER'S Tables, p. 1362.)

—— The visitor to Woolverstone, as he traverses the drive from the Holbrook road entrance to the pretty church in the park, catches sight of a picturesque block of buildings in the Swiss style of architecture. This is the new MODEL DAIRY. The grounds around this building have been laid out in a very tasteful manner by Mr. SHEPPARD, the gardener at Woolverstone; and it is pleasant to have occasion to mention, in connection with this fact, that his efforts were so highly appreciated by his employer, JOHN BERNERS, Esq., that he has presented Mr. SHEPPARD with a handsome silver teapot as a token thereof. Such an expression of kindly feeling by an employer must always be grateful to those who serve, and we are happy to place this instance on record as an example worthy of imitation.

—— We have been trying some experiments with the new insecticide, called PHYTOSMEGMA, and have reason to be satisfied with the results. Thrips and red spider, as well as white and brown scale, are all killed readily, if the plants get a thorough dressing through the showerer or vaporiser. Mealy-bug is not so easily killed, but we have found that while the first dose clears away much of the mealy matter which protects the insects, a second dressing effectually kills them also. One recommendation of this novel preration is that it is cleanly, and can be applied, by means of the vaporiser, with great facility, to any part which may be colonised by insects.

—— We understand that the vacancy in the BOTANICAL DEPARTMENT of the BRITISH MUSEUM, caused by the promotion of Mr. W. CARRUTHERS, has been filled by the appointment of Mr. JAMES BRITTEN, late assistant in the Royal Herbarium, Kew.

—— The *Athenæum* records the fact that "DYNAMITE has been most usefully employed in France, in rending the roots of timber trees. In the Forest of Haye (Meurthe-Moselle), where an immense quantity of timber was blown down by storms, the roots remained encumbering the ground. A hole being drilled from 9 inches to 15 inches deep, a dynamite cartridge of 50 grammes (about 800 English grains), provided with a fulminating cap and safety fuse, was placed in it. When the charge was exploded, the root was rended into pieces which were easily removed."

—— M. DUMAS has recently reported to the French Academy upon the results obtained by microscopical selection, for curing the silkworm plague known as PÉBRINE, as suggested by M. PASTEUR, and practised by many French breeders of SILKWORMS. The results were stated to be so far satisfactory, that the plague may be considered as almost entirely suppressed.

—— Mr. THOMAS MEEHAN some time since exhibited to the Academy of Natural Sciences at Philadelphia fruits of an APPLE-LIKE PEAR, gathered from a Tyson Pear tree growing in the garden of Dr. LAWRENCE, of Paris, Canada. Dr. LAWRENCE had a Rhode Island Greening Apple near the Pear tree, and branches of the latter interlaced with it, this interlacing portion alone bearing fruit, though the whole was full of blossoms. The fruit had all the appearance of Apples, and Mr. MEEHAN, to whom specimens had been sent, regarded them as Apples, but on cutting them open, he found the seeds to be those of the Pear. The granular matter characteristic of the pulp of the Pear was present on the carpels, but none in the pulp, which was wholly fibrous, as in the Apple. The fruit, in fact, had the pedicel, carpellary walls, and seeds of the Pear, with the granular Pear pulp wanting, but with the fibrous pulp and epiderm of the Apple. Mr. MEEHAN suggested that there were two ways to account for these strange productions. They might be produced by a natural evolution of form, independent of sexual influence, such as plants at times exhibit, or they might arise from cross-fertilisation with the Apple. If the latter, the case would have an important bearing on the question, often mooted, whether cross-fertilisation effects a change immediately in the fruit, or whether change only appears after the germination of the fertilised seeds. In the case of the varieties of Indian Corn, Mr. MEEHAN observed, we know that the change is immediate, and it is generally believed that some Cucurbitaceous fruits are similarly affected; but he was not aware that it had been observed in other plants, especially in the case of species as distinct as the Apple and the Pear.

—— We may soon expect a new edition of the very useful THESAURUS LITERATURÆ BOTANICÆ of PRITZEL, considerable progress having been made in printing the second edition of this catalogue of the books published in all departments of botanical literature.

—— A correspondent of *Nature* thus describes a GREAT PALM AVENUE in the Jardin d'Essai, at Algiers, an establishment which, in 1867, was ceded to the Société Générale Algérienne, and is now under the superintendence of M. AUGUSTE RIVIÈRE:—"This avenue was planted in 1847, and is formed of about 80 trees of the Date Palm, nearly as many of the Latania borbonica, and about 150 of the Dragon's Blood tree (Dracæna Draco). The avenue is about 10 yards wide, and between every two of the Date Palms there are two of the Dragon's Blood tree and one Latania. It terminates in a clump of Palm trees, which are planted almost to the border of the sea. When it is borne in mind that the Date Palms are from 20 to 50 feet high, the Latanias averaging about 12, and the Dracænas about 8 feet in height, the general effect of this splendid avenue may be imagined. All the trees were, in December last, in full flower or fruit, the golden trusses of the Date Palm contrasting well with the more brightly-coloured clusters of Latania berries. There are other smaller avenues, the most remarkable of which is formed of Bamboo (Bambusa arundinacea), planted in 1863, and forming a mass of foliage, the stems supporting which are from 40 to 50 feet high."

—— The Indian Andromeda Leschenaultii, it appears, yields an essential oil (methyl-salicylic acid) almost identical with the oil of wintergreen, and from which CARBOLIC ACID can be prepared. Specimens were exhibited at the meeting of the Pharmaceutical Society, which had been prepared by J. BROUGHTON, Esq., the Indian Government Quinologist. The carbolic acid obtained from this source is equal to the purest kind obtained from coal-tar; and though Mr. BROUGHTON thinks it can scarcely be prepared at a cheaper rate than that produced from coal-tar, yet should circumstances render the supply of the English product difficult or uncertain, it may be well to know that a practically inexhaustible source exists in India.

—— Her Majesty's Consul at Messina reports, that the DISEASE of the LEMON TREE continues its ravages, and nothing has yet been discovered to arrest its progress. Last year both Oranges and Lemons, but especially the latter, were badly tainted, and a large proportion, being unfit for shipment, were converted into juice.

—— Referring again to the ACTION of FROST on VEGETATION, we may call attention to the circumstance that Professor GOEPPERT has lately published some observations relating to the period when a plant that has suffered from the frost dies, and has sought to ascertain whether the process of freezing kills or whether thawing completes the destruction of a plant. According to the theory and practice of many horticulturists, the gradual thawing of a frost-bitten plant is of the utmost importance; hence it follows that frost is less dangerous than a sudden thaw effected through the direct action of the sun's rays upon the plant. Now we, from our own observations, are inclined to agree with GOEPPERT in the view that the sun does not exercise the pernicious influence usually attributed to it, and that the damage sustained by vegetation is almost wholly due to the power of the frost. Of course, decisive experiments for or against this position are almost impracticable, on account of the diverse agents and independent circumstances to be considered. A plant will bear a certain degree of cold under certain conditions without sustaining any injury, whereas if that degree be exceeded the plant suffers more or less according to the excess, and nothing can remedy the mischief. Moreover, it is extremely doubtful whether sudden thawing caused by the direct action of the sun's rays increases the injury. The differences in the extent of damage sustained by the same species under different conditions, with the same exposure to the sun's rays, admit of another explanation. If the resisting powers of plants were so narrowly circumscribed we should yearly experience enormous losses, instead of the comparatively exceptional damage that actually does occur. In the numerous experiments instituted by GOEPPERT, the effects were the same on plants covered with snow after being frozen and allowed to thaw very gradually, and those left exposed. Nevertheless, experiments (KARSTEN, SACHS, &c.) are not wanting which led to contrary results. These conflicting opinions—for as such they must be regarded—induced GOEPPERT to seek the means of observing the unfailing signs of death in a frozen plant during the progress of the frost, and after some casting about, he hit upon the plan of watching the chemical changes. Some years ago, CLAMOR MARQUARDT detected the presence of indigo in Calanthe veratrifolia and Phajus grandifolia, which, as will be remembered, exists in the living plant as a colourless liquid, and which does not appear as a blue dye until after the death of the plant. If we take the milk-white flower of the former, and crush it between the hands, it will instantaneously assume a blue colour; and, if we allow the flowers to freeze, it is immaterial to what degree—Dr. GOEPPERT submitted them to —3° to —16° R.—they gradually colour to a dark blue. The labellum and operculum attain the deepest colour, whilst the pollen-masses, and these alone, retain their characteristic yellowish tint, even after thawing. From this it would appear that the pollen-masses contain no colouring matter, which is likewise the case in Phajus grandifolia and P. Wallichii. Leaves of these plants exposed to a high degree of frost change at first to a light green, and then to a deep steel blue, and ultimately, when thawed, to a very dark blue; and leaves that had not been frozen, placed between paper to dry at a temperature of +14° R., did not show this deep colour for about the space of eight days, so that the chemical influence of the cold must have been exceedingly intense. Flowers withering naturally exhibit the same peculiarities. Dr. GOEPPERT accepts this as the most striking proof in support of his argument, that death does not take place before the thaw sets in; and this seems equally applicable as a rule to all parts of a plant.

—— The species of Euphorbia from which the gum-resin, known as EUPHORBIUM, is produced, has long been uncertain. Various species have been mentioned as producing it, especially E. canariensis; but Dr. COSSON, in a paper published in the last number of the "Bulletin de la Société Royale de Botanique de Belgique," identifies with E. resinifera, Berg., a species allied to E. canariensis, and belonging to BOISSIER'S section Diacanthium, as defined in the "Prodromus," in which work, however, it is not noticed. Some fragments found in various samples of Euphorbium enabled Dr. COSSON to identify the species, and he has seen a living specimen in the succulent house at Kew. A full account of the plant is given by Jackson, in his "Empire of Morocco," where it is figured as E. officinarum. Although much used among the ancients, and referred to by PLINY, its gum is now seldom, if ever, used in medicine, on account of its violent action.

New Garden Plants.

SAXIFRAGA (§ DACTYLOIDES) MAWEANA, *Baker*.

Caulibus dense cæspitosis copiose ramosis purpureis tenuiter glanduloso-pubescentibus, surculis floriferis e basi decumbente erectis; foliis 6—8 laxe dispositis cordato-reniformibus ultra medium ternatim-palmatipartitis divisionibus 3—5 dentibus oblongis subobtusis instructis; petiolis complanatis dimidio superiore anguste alatis limbo sæpe 2—3-plo longioribus; gemmis axillaribus robustis copiosis; floribus 4—9 in corymbum laxum dispositis, pedunculis dense puberulis, calycis dentibus ligulato-lanceolatis subobtusis tubo dense puberulo duplo longioribus; petalis albis obovato-cuneatis pro genere magnis (8—9 lin. longis).

An inhabitant of the Beni-Hosmar range of mountains, near Tetuan, Morocco. This interesting new Saxifrage, of which the characters for horticultural purposes may be best summed up in a single phrase by saying that it is a member of the hypnoides group with flowers as large as granulata, was discovered and brought to England two years ago, by Mr. Geo. Maw, and has been gathered again this spring at the same place by that gentleman, in company with Dr. Hooker and Mr. Ball, during their recent expedition. It has been grown at Broseley and Kew since its first discovery, and produces axillary buds so profusely that no doubt it will hold its ground, and become one of our popular favourites for rockwork decoration, for which it is specially adapted from the superiority of its flowers in size to those of all its immediate allies.

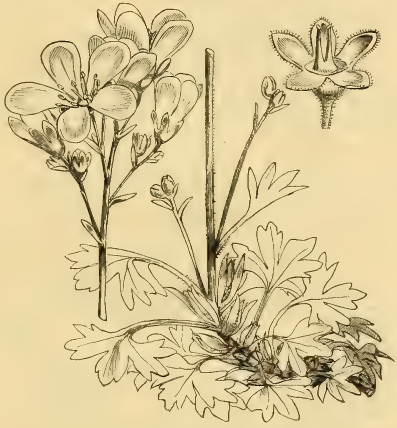

FIG. 300.—SAXIFRAGA MAWEANA.

General habit of S. hypnoides, the flowering branches ascending in just the same way from an intertangled mass of old stems and barren shoots; new shoots purple in the lower half, finely hairy and glandular. Leaves 6—8 to a shoot, spread over a space of 1½—2 inches, on spreading petioles 6—18 lines long, narrowly winged in the upper half, each with a strong leafy bud in its axil; the blade cordate-reniform, 8—9 lines broad, half an inch deep, with three primary divisions reaching more than halfway down, each primary division furnished with 3—5 broad oblong bluntish teeth, the texture rather fleshy and coriaceous. Flowers 4—9 in a lax corymb, the peduncles densely puberulous. Flower-calyx 3—3½ lines long, the ligulate-lanceolate bluntish teeth exceeding the tube. Petals pure white in the upper half, 8—9 lines deep, greenish at the base, distinctly 3-veined, obovate, 4 lines broad, cuneately narrowed in the lower half, the expanded corolla quite three-quarters of an inch across. Flowers in England in the last week in May.

Of the known forms, nearest the Algerine S. oranensis, Munby, Bull. Soc. Bot. France, ii., 284, which differs by its rhomboidal leaves, cuneate in the lower half, cut about half way down into three entire lobes, and more numerous much smaller flowers; and the Spanish S. cuneata, Willd. (S. cuneifolia, Cav. non Linn.), which has leaves just like those of oranensis, but narrowed gradually into a very short flattened petiole, and flowers not more than half the size of Maweana, arranged in a narrow panicle or simple raceme. The general shape of the leaf recalls that of S. geranioides, but there the divisions are much more numerous, sharper, and irregular, and the profuse axillary gemmæ are absent. *J. G. B.*

ON THE RADIATING ROOT-SWELL AT THE BASE OF A TREE,

AND HOW WE MAY DEAL WITH IT, IN ORDER TO MODIFY THE COURSE OF VEGETATION.

THERE is no part of the whole organisation of a tree more delicately sensitive than the apparently rough and sturdy masses formed by the main root-limbs where they diverge from the central ground axis. This last is indeed the very midmost knot, and interjoining where root, stem, and branches find their union. Life is here most full of vigour, but also highly responsive to every variation of heat, cold, drought, evaporation, nay of light itself. Great command may be acquired over the growth of a tree by a knowledge of the functions of its base, and its leading root-limbs diverging therefrom. And the study of vegetable physiology will quickly enable any intelligent man to master the simple principles with which these functions have been found to harmonise, and to test and try them by his own independent observations.

It happens, not unfrequently, that some fine half-grown tree upon a lawn or foreground, or in the middle of a field, or near a building, or in front of a garden, is threatening to become very soon inconveniently high and large for its place. The owner and his friends are ever admiring it, but yet bewailing the vigour and rapid growth that must soon condemn it to the axe, amidst general regrets. But far worse—a whole line, or double line of trees, may be felt by every one to be on the point of outgrowing their proper size in reference to surrounding objects.

We cannot practically have recourse to root-pruning in the case of a great half-grown forest tree. It would not only be a costly operation, but exceedingly uncertain in its effects. If done cautiously and tentatively, at a distance from the trunk, equal to that of the extremities of the side branches, it might have but little effect, even though numberless fibres were divided. If performed 2 feet nearer to the centre, and a dry summer supervened, it might prove too violent a remedy. At best it is a rude and harsh operation, such as ought not to be allowable in skilful tree-surgery, if the same end can be attained by milder means.

If, however, we apply a check, not to the extremities of the roots by cutting them, but to the sensitive surface of the main roots, just where they part from the central axis at the bottom of the stem, and admit air and light, heat, cold, and evaporation there, by removing, perhaps, but a single barrowful of turf and soil, we shall soon perceive very remarkable effects. No unsightly weakness of foliage will be visible the following summer, but the terminal shoots will be more or less shortened and arrested, and they will prepare themselves for forming flower-buds to be developed in the next ensuing spring. If we turn our eyes downward to the base of the trunk, and look at the root-space which we laid bare but a few months ago, we shall be struck by its visible enlargement from fresh deposit of bark and woody matter over the exposed surface of the root-limbs, so that they are already bulkier than before. The great plant, whose economy we had disarranged by taking away but a few spadefuls of earth and herbage, has applied itself first and foremost to make good that loss and to guard its most important central organism from evaporation and sudden alternations of temperature, by depositing a fresh layer of bark and alburnum, of more than ordinary thickness, upon the main root-space. To do this, it has transferred its vegetative energies from the upper spray, and bestowed them on more needful work below. Such is the wonderful providence which guides arboreal vegetation.

When summer again comes round, flower and seed will probably be found upon the tree, even if it never bore any before; and, if it formerly bore some, there will henceforward be considerably more, whenever the seasons permit. This free-flowering and seeding will again tend greatly to keep the upper growth under check, and the extension of the head and banches at a minimum.

I do not say that the loss of a single barrow of soil withdrawn will always produce the full effect desired; but two or three certainly will.

If the site be protected from cattle, and the tree be a Lime or an Elm, ten to one but it puts forth many vigorous sucker-like shoots from the exposed surfaces. If so, let them remain. This, again, is owing to the same grand effort to deposit ligneous matter as rapidly as possible upon the denuded parts, and to augment their weight, and bulk, and power to resist evaporation. Every one of those shoots will deposit its contribution of matured descending sap and alburnous matter upon the main root from which it springs; and every one of them will at a future time intercept its proportion of ascending sap from rising towards the head, and will so help to prevent the tree from becoming taller than we wish.

Every one must have observed that where high hedge-banks have been thrown down, but the hedgerow trees have been left standing in a park or paddock, how bold and majestic and picturesque the development of root-swell in such trees has often become. There are old Ashes and Sycamores of this description in Yorkshire and Northumberland that are worth going miles to examine. The mighty moss-grown knobs upon the aged Sycamores of ponderous base, and the still grander proportions of many of the Ashes with their hoary reticulated bark, clad with countless Lichens, would reward a photographer for all the pains he could bestow in order to represent them worthily. But only an accomplished painter could convey the views of the cryptogamic growths, as seen on a fine day in February. Every one of such trees has had a hard struggle for a time, to replace by deposit of fresh wood the weight and protection of the hedge-bank, which formerly shielded its base from the elements. In time its balance of vegetation was restored, and then it went ahead again at the summit, as of yore.

But when we wish to keep a tree permanently at a minimum of upward growth, we must from time to time repeat the removal of some earth from its base and main root-space. And happily we shall soon perceive that this said root-space is becoming itself a most interesting feature of rugged and unwonted character, with curious interstices, inviting the insertion of Mosses, Golden Saxifrage, and small Ferns. But a whole line of trees may have to be so dealt with, if circumstances compel us either to fell or to arrest the upper growth.

Enough, however, for the present. Many must be well aware that the denudation of root-space would afford new resources to skilful gardeners, when called on to give an opinion in the park or forest. Yet the topic has not been discussed, so far as I have seen, since Matthew wrote his admirable work on the Cultivation of Naval Timber, and counselled the exposure of the main roots of Larch trees in Scotland, to cause them to acquire abnormal proportions, and become fit for knee timber to be used in ship-building. Others will doubtless take up the ball which he then threw down, though it has so long been lost among the grass. And perhaps I may also have a few more words to add and examples to adduce. *R. Carr Ellison.*

CRANBERRIES.

THE Cranberry (Oxycoccus palustris), whether in flower or in fruit, is one of the most elegant of British plants. It is thinly scattered, though widely diffused, throughout Britain, but is rare in the south. The peculiar, but to most persons pleasant, flavour of the fruits has caused them to be largely imported from Russia for domestic purposes; and the gradual extermination of the plant in the places where in this country it was formerly most abundant, favours this importation. Before the draining of the Lincolnshire bogs, Cranberries were brought by cartloads into Norwich market; and Lightfoot states that at Longton, on the borders of Cumberland, £20 or £30 were realised by the sale of them each market day, for five or six weeks together. The Cranberries which we see exposed for sale, are, however, more frequently the produce of an American species (O. macrocarpus), which, although native, has only been brought into cultivation during the present century, and until 20 or 25 years since was grown on a very limited scale. A recent report of the Washington Department of Agriculture gives some interesting details of this branch of fruit culture, from which we extract some of the following statistics.

Cranberries grow wild in boggy land throughout the northern provinces of the United States, in the adjacent parts of Canada, both on the marshes of the coast and the glades of the Alleghanies, and as far south as Virginia and North Carolina. The first experiments in culture were in the neighbourhood of Cape Cod, Massachusetts, and the result has been an increased productiveness in the plant. There are now cultivated Cranberry fields in many parts of Massachusetts, as well as in Maine, Connecticut, and New Jersey. In Maine the cultivation is limited, as the crop seems to be attended with much risk from frost, except when grown in fields which can be readily flooded, or upon the sea-coast, where the sea-breezes modify the severity of the climate. It is chiefly in New Jersey that Cranberry culture is carried on, that State supplying two-thirds of the whole amount marketed, of both wild and cultivated, and over three-fourths of the total of cultivated fruit. In 1869, Maine produced 1000 barrels; Massachusetts, 8000; Connecticut, 2000; and New Jersey, 50,000. Some notion of the rapidity with which the trade is growing may be gathered from the fact that while, in 1868, 3220 barrels were freighted at 19 stations on the La Crosse northern division of the St. Paul and Milwaukee Railroad, 14,585 barrels were freighted from the same stations during the berry season of 1869.

Considerable outlay is necessary in preparing the ground for Cranberry culture, as it has to be cleared and levelled, supplied with sand, drained, and planted, and dams for flooding have to be erected. The cost of preparation is seldom less than 200 dols. per acre, and sometimes very much more; but when a field thus prepared has been brought into bearing there is but little further expense incurred except that of securing the annual crop, while the profits are such as attend few other branches of agricultural industry. About a hundred bushels, or 35 barrels, per acre is a fair estimate of production from the time when the "vines" come well into bearing, and the profits per acre are from 100 to 300 dols., sometimes more.

Several varieties are now cultivated, of which three are most in request, known respectively as the Cherry, or round-fruited variety; the Pear, or bell shape; and the Bugle, or oblong. The colour varies from white to dark red, some are mottled red and white. The darker the colour the more valued, as they sell more freely and at higher prices.

The insect enemies of the Cranberry are varied and numerous. The "vine worm" (the larva of Anchylopera vaccineana) is, perhaps, the most serious; it produces two broods a year, and can only be effectually destroyed by flooding. A small beetle, Anthonomus suturalis, has the unpleasant habit of selecting blossoms about to expand, making a hole in them and depositing an egg; and there are other foes, the history of which is imperfectly known. In spite, however, of these drawbacks, Cranberry culture is rapidly on the increase, and bids fair to become a very important branch of agricultural industry.

A TROPICAL FOREST.

[We extract the following graphic account from the Rev. C. Kingsley's "At Last," already noticed at p. 1233.]

IN the primæval forest; looking upon that upon which my teachers and masters, Humboldt, Spix, Martius, Schomburgk, Waterton, Bates, Wallace, Gosse, and the rest had looked already, with far wiser eyes than mine, comprehending somewhat at least of its wonders, while I could only stare in ignorance. There was actually, then, such a sight to be seen on earth: and it was not less, but far more wonderful than they had said.

My first feeling on entering the high woods was helplessness, confusion, awe, all but terror. One is afraid at first to venture in fifty yards. Without a compass or the landmark of some opening to or from which he can look, a man must be lost in the first ten minutes, such a sameness is there in the infinite variety. That sameness and variety make it impossible to give any general sketch of a forest. Once inside, "you cannot see the wood for the trees." You can only wander on as far as you dare, letting each object impress itself on your mind as it may, and carrying away a confused recollection of innumerable perpendicular lines, all straining upwards, in fierce competition, towards the light-food far above; and next of a green cloud, or rather mist, which hovers round your head, and rises, thickening and thickening to an unknown height. The upward lines are of every possible thickness, and of almost every possible hue; what leaves they bear, being for the most part on the tips of the twigs, give a scattered, mist-like appearance to the under-foliage. For the first moment, therefore, the forest seems more open than an English wood. But try to walk through it, and ten steps undeceive you. Around your knees are probably Mamures [Carludovica], with creeping stems and fan-shaped leaves, something like those of a young Coco-nut Palm. You try to brush through them, and are caught up instantly by a string or a wire belonging to some other plant. You look up and round: and then you find that the air is full of wires—that you are hung up in a network of fine branches belonging to half-a-dozen different sorts of young trees, and intertwined with as many different species of slender creepers. You thought at your first glance among the tree-stems that you were looking through open air; you find that you are looking through a labyrinth of wire-rigging, and must use the cutlass right and left at every five steps. You push on into a bed of strong sedge-like Sclerias, with cutting edges to their leaves. It is well for you if they are only 3, and not 6 feet high. In the midst of them you run against a horizontal stick, triangular, rounded, smooth, green. You take a glance along it right and left, and see no end to it either way, but gradually discover that it is the leaf-stalk of a young Cocorite Palm [Maximiliana caribæa]. The leaf is 25 feet long, and springs from a huge ostrich plume, which is sprawling out of the ground and up above your head a few yards off. You cut the leaf-stalk through right and left, and walk on, to be stopped suddenly (for you get so confused by the multitude of objects that you never see anything till you run against it) by a grey Lichen-covered bar, as thick as your ankle. You follow it up with your eye, and find it entwine itself with three or four other bars, and roll over with them in great knots and festoons and loops 20 feet high, and then go up with them into the green cloud over your head, and vanish, as if a giant had thrown a ship's cables into the tree-tops. One of them, so grand that its form strikes even the Negro and the Indian, is a Liantasse [Schnella excisa]. You see that at once by the form of its cable—6 or 8 inches across in one direction, and 3 or 4 in another, furbelowed all down the middle into regular knots, and looking like a chain cable between two flexible iron bars. At another of the loops, about as thick as your arm, your companion, if you have a forester with you, will spring joyfully. With a few blows of his cutlass he will sever it as high up as he can reach, and again below, some 3 feet down; and, while you are wondering at this seemingly wanton destruction, he lifts the bar on high, throws his head back, and pours down his thirsty throat a pint or more of pure cold water. This hidden treasure is, strange as it may seem, the ascending sap, or rather the ascending pure rain-water which has been taken up by the roots, and is hurrying aloft, to be elaborated into sap, the leaf, and flower, and fruit, and fresh tissue for the very stem up which it originally climbed; and therefore it is that the woodman cuts the Water-Vine through first at the top of the piece which he wants, and not at the bottom; for so rapid is the ascent of the sap that if he cut the stem below, the water would have all fled upwards before he could cut it off above. Meanwhile, the old story of Jack and the Bean-stalk comes into your mind. In such a forest was the old dame's hut: and up such a Bean-stalk Jack climbed, to find a giant and a castle high above. Why not? What may not be up there? You look up into the green cloud, and long for a moment to be a monkey. There may be monkeys up there over your head, burley red Howley [Mycetes], or tiny peevish Sapajou [Cebus], peering down at you; but you cannot peer up at them. The monkeys, and the parrots, and the humming-birds, and the flowers, and all the beauty, are upstairs—up above the green cloud. You are in "the empty nave of the cathedral," and "the service is being celebrated aloft in the blazing roof."

We will hope that as you look up, you have not been careless enough to walk on; for if you have you will be tripped up at once: nor to put your hand out incautiously to rest it against a tree, or what not, for fear of sharp thorns, ants, and wasps' nests. If you are all safe, your next steps, probably, as you struggle through the bush between tree-trunks of every possible size, will bring you face to face with huge upright walls of seeming boards, whose rounded edges slope upward till, as your eye follows them, you find them enter an enormous stem, perhaps round, like one of the Norman pillars of Durham nave, and just as huge; perhaps fluted, like one of William of Wykeham's columns at Winchester. There is the stem: but where is the tree? Above the green cloud. You struggle up to it, between two of the board walls, but find it not so easy to reach. Between you and it, are half-a-dozen tough strings which you had not noticed at first—the eye cannot focus itself rapidly enough in this confusion of distances—which have to be cut through ere you can pass. Some of them are rooted in the ground, straight and tense; some of them dangle and wave in the wind at every height. What are they? Air-roots of wild Pines [Tillandsia], or of Matapalos, or of Figs, or of Seguines [Philodendron, Anthurium, &c.], or of some other parasite? Probably: but you cannot see. All you can see is, as you put your chin close against the trunk of the tree, and look up, as if you were looking up against the side of a great ship set on end, that some 60 or 80 feet up in the green cloud, arms as big as English forest trees branch off; and that out of their forks a whole green garden of vegetation has tumbled down 20 or 30 feet, and half climbed up again. You scramble round the tree to find whence this aërial garden has sprung: you cannot tell. The tree-trunk is smooth and free from climbers; and that mass of verdure may belong possibly to the very cables which you met ascending into the green cloud 20 or 30 yards back, or to the impenetrable tangle, a dozen yards on, which has climbed a small tree, and then a taller one again, and then a taller still, till it has climbed out of sight, and possibly into the lower branches of the big tree. And what are their species?—what are their families? Who knows? Not even the most experienced woodman or botanist can tell you the names of plants of which he only sees the stems. The leaves, the flowers, the fruit, can only be examined by felling the tree; and not even always then, for sometimes the tree when cut refuses to fall, linked as it is by chains of liane to all the trees around. Even that wonderful Water-Vine which we cut through just now may be one of three or even four different plants.*

Soon, you will be struck by the variety of the vegetation; and will recollect what you have often heard, that social plants are rare in the tropic forests. Certainly they are rare in Trinidad; where the only instances of social trees are the Moras (which I have never seen growing wild) and the Moriche Palms. In Europe, a forest is usually made up of one dominant plant—of Firs or of Pines, of Oaks or of Beeches, of Birch or of Heather. Here no two plants seem alike. There are more species on an acre here than in all the New Forest, Savernake, or Sherwood. Stems rough, smooth, prickly, round, fluted, stilted, upright, sloping, branched, arched, jointed, opposite-leaved, alternate-leaved, leafless, or covered with leaves of every conceivable pattern, are jumbled together, till the eye and brain are tired of continually asking "What next?" The stems are of every colour—copper, pink, grey, green, brown, black as if burnt, marbled with Lichens, many of them silvery white, gleaming afar in the bush, furred with Mosses and delicate creeping film-Ferns, or laced with the air roots of some parasite aloft. Up this stem scrambles a climbing Seguine [Philodendron] with entire leaves; up the next another quite different, with deeply cut leaves†; up the next the Cerimen‡ spreads its huge leaves, latticed and forked again and again. So fast do they grow that they have not time to fill up the spaces between their nerves, and are consequently full of oval holes; and so fast does its spadix of flowers expand, that (as indeed do some other Aroids) an actual genial heat, and fire of passion, which may be tested by the thermometer, or even by the hand, is given off during fructification. Beware of breaking it, or the Seguines. They will probably give off an evil smell, and as probably a blistering milk.

Look on at the next stem. Up it and down again, a climbing Fern [Lygodium] which is often seen in hothouses, has tangled its finely-cut fronds. Up the next, a quite different Fern is crawling, by pressing tightly to the rough bark its creeping root-stalks, furred like a hare's leg. Up the next, the prim little Griffe-chatte [?] plant has walked, by numberless clusters of small cats'-claws, which lay hold of the bark. And what is this delicious scent about the air? Vanille? Of course it is; and up that stem zigzags the green fleshy chain of the Vanille Orchis. The scented pod is far above, out of your reach, but not out of the reach of the next parrot, or monkey, or negro hunter, who winds the treasure. And the stems themselves: to what trees do they belong? It would be absurd for one to try to tell you who cannot tell one-twentieth of them himself.* Suffice it to say, that over your head are perhaps a dozen kinds of admirable timber, which might be turned to a hundred uses in Europe, were it possible to get them thither: your guide (who here will be a second hospitable and cultivated Scot) will point with pride to one column after another, straight as those of a cathedral, and 60 to 80 feet without branch or knob. That, he will say, is Fiddlewood [Vitex]; that a Curapo [Carapa guianensis]; that a Cedar [Cedrela]; that a Roble [Machærium] (Oak); that, larger than all you have seen yet, a Locust [Hymenæa Courbaril]; that a Poui [Tetoma serratifolia]; that a Guatecare [Lecythis]; that an Olivier [Bucida]; woods which, he will tell you, are all but incorruptible, defying weather and insects. He will show you, as curiosities, the smaller but intensely hard-Letter wood [Brosimum Aubletii], Lignum vitæ [Guaiacum], and Purple-heart [Copaifera]. He will pass by as useless weeds Ceibas [Eriodendron], and Sandbox-trees [Hura crepitans], whose bulk appals you. He will look up, with something like a malediction, at the Matapalos, which every 50 yards have seized on mighty trees and are enjoying, I presume, every different stage of the strangling art, from the baby Matapalo, who, like the one which you saw in the Botanic Garden, has let down his first air-root along his victim's stem, to the old sinner whose dark crown of leaves is supported, 80 feet in air, on innumerable branching columns of every size, cross-clasped to each other by transverse bars. The giant tree on which his seed first fell has rotted away utterly, and he stands in its place, prospering in his wickedness, like certain folk whom David knew too well. Your guide walks on with a sneer. But he stops with a smile of satisfaction as he sees lying on the ground dark green glossy leaves, which are fading into a bright crimson; for overhead somewhere there must be a Balata [Mimusops Balata], the king of the forest; and there close by is his stem—a madder-brown column, whose head may be 150 feet or more aloft. The forester pats the sides of his favourite tree, as a breeder might that of his favourite race-horse. He goes on to evince his affection, in the fashion of West Indians, by giving it a chop with his cutlass; but not in wantonness. He wishes to show you the hidden virtues of this (in his eyes) noblest of trees—how there issues out swiftly from the wound a flow of thick white milk, which will congeal, in an hour's time, into a gum intermediate in its properties between caoutchouc and gutta-percha. He talks of a time when the English gutta-percha market shall be supplied from the Balatas of the northern hills, which cannot be shipped away as timber. He tells you how the tree is a tree of a generous, virtuous, and elaborate race—"A tree of God, which is full of sap," as one said of old of such—and what could he say better, less or more? For it is a Sapota, cousin to the Sapodilla, and other excellent fruit trees, itself most excellent even in its fruit-bearing power; for every five years it is covered with such a crop of delicious Plums that the lazy negro thinks it worth his while to spend days of hard work, besides incurring the penalty of the law (for the trees are Government property), in cutting it down for the sake of its fruit. But this tree your guide will cut himself. There is no gully between it and the Government station; and he can carry it away; and it is worth his while to do so; for it will square, he thinks, into a log more than 3 feet in diameter, and 80, 90—he hopes almost 100—feet in length, of hard, heavy wood, incorruptible, save in salt water; better than Oak, as good as Teak, and only surpassed in this island by the Poui. He will make a stage round it, some 8 feet high, and cut it above the spurs. It will take his convict gang (for convicts are turned to some real use in Trinidad) several days to get it down, and many more days to square it with the axe. A trace must be made to it through the wood, clearing away vegetation for which an European millionnaire, could he keep it in his park, would gladly pay £100 a year.

The cleared stems, especially those of the Palms, must be cut into rollers, and the dragging of the huge log over them will be a work of weeks, especially in the wet season. But it can be done, and it shall be; so he leaves a significant mark on his new-found treasure, and leads you on through the bush, hewing his way with light strokes right and left, so carelessly that you are inclined to beg him to hold his hand, and not to destroy in a moment things so beautiful, so curious—things which would be invaluable in an English hothouse.

(*To be Continued.*)

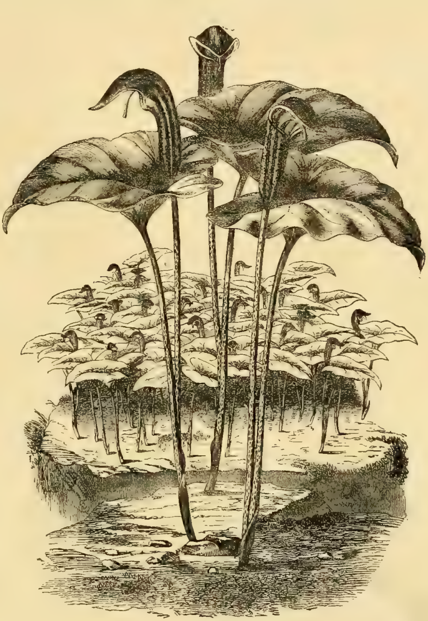

FIG. 301.—ARUM CORSICUM.

ARUM CORSICUM.

THE Arums form a group of tuberous-rooted herbs, several of which are hardy, and are occasionally seen in gardens. Their foliage is in some cases ornamental; as, for example, in A. italicum, and in the subject of the present notice, A. corsicum (fig. 301); while their singularly-formed and peculiar-coloured spathes invest them with a degree of interest which renders them worth a place in the herbaceous border. Arum corsicum, also called A. pictum, being a native of Corsica and the Balearic Isles, should, however, be planted in a very sheltered position, or wintered in pots. It is, as the accompanying figure (from Messrs. Haage & Schmidt) shows, a species of curious and by no means inelegant aspect; its leaves are cordiform or hastate, of a deep green colour, marked with veins of a greenish white, and its spathe, which is produced towards autumn, is green, and inflated at the base, and ovate, acuminate, inflexed, and of a dark purple hue above. The whole plant is not more than 4 or 5 inches high.

The Arums, as well as the allied genera, are well known to be extremely acrid plants; but it is singular that in the case of those producing tuberous roots a wholesome farina should be produced in combination with the acrid juice, and that the latter may be driven off by heat, or removed by washing. In this way the leaves of some of the tropical species are made to form a harmless Spinach, when properly cooked with a change of water; and a kind of Arrowroot, called Portland Arrowroot, is prepared in the Isle of Portland, from the starchy tubers of the common Arum maculatum.

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* It may be a true Vine, Vitus caribæa, or Cissus sicyoides (I owe the names of these Water-Vines, as I do numberless facts and courtesies, to my friend, Mr. Prestoe, of the Botanic Gardens, Port of Spain); or, again, a Cinchonaceous plant, allied to the Quinine trees, Uncaria guianensis; or possibly something else; for the botanic treasures of these forests are yet unexhausted, in spite of the labours of Crueger, Lockhart, Purdie, and De Schach.

† Philodendron lacerum: a noble plant.

‡ Monstera pertusa: a still nobler one; which may be seen, with Philodendrons, in great beauty at Kew.

* To know more of them, the reader should consult Dr. Crueger's list of woods, sent from Trinidad to the Exhibition of 1862; or look at the collection itself (now at Kew, which was made by that excellent forester—if he will allow me to name him—Sylvester Devenish, Esq., Crown Surveyor.

Home Correspondence.

Hot-water Circulation.—There is a time for all things, and the time is surely come when inventors and constructors of hot-water apparatus must not be content to allow the principles which govern the circulation of hot-water to remain a matter of doubt or indifference. This, so far as the expression of opinions from practical men is concerned, is the present position of the matter in the pages of the *Gardeners' Chronicle*, and the results of the experiment near Forest Hill go far to show what confusion may arise in construction and improvement on this account. Men, who give a plain and fair statement of the phenomena which present themselves in such trials as these, render a great service. The immediate result is inquiry, and inquiry properly commences with the consideration of elementary principles, and the question whether, and to what extent, the failure is due, to their violation. The time for inquiry seems to be arrived at, because competition is invited between inventors, and it is most undesirable that invention should have longer to struggle with difficulties arising from doubt as to the nature of the motive powers to be employed; also because the same kind of apparatus seems to give rise to complaint of inefficiency in one place, and to satisfaction in another, and both views are often justifiable by appeal to facts. A good thing may thus get a bad name, while perhaps a trifling alteration, dictated at once by a clear knowledge of first principles, would speedily convert a useless apparatus into one thoroughly efficient. How often may it have already occurred that the fault has been laid to the boiler, costly changes made, new forms invented, when not the boiler but the manner of using it has been at fault? In short, reasons for moving in this direction might be multiplied. Such a stage must commonly attend the history of many appliances which belong to a state of civilisation. The immediate wants of man call upon him to light fires before he invents a chimney. We cannot wait for an accurate knowledge of principles before we begin to move. We must therefore build the chimney, whether or not we understand the principles of draught, however many failures we may experience, however clumsy or inefficient the construction may prove. We must improve chimneys with no other aid to guide us, in the way of theory, perhaps, than an erroneous one; perseverance, with observation and tact, guiding us to a tolerably successful issue, and common sense imitating what has thus been proved to be useful. But leisure arrives in due time for the more accurate investigation of principles. I cannot agree with the idea lately expressed, that mere elementary points are not matters to be brought forward in the later stages of improvement; on the contrary, it often happens that they are never duly applied until such stages are attained, and are of immense value at that juncture. Agriculture and horticulture bear ample witness to the correctness of this view. True theory, then, enables us to profit by all the past, its errors and failures, as well as by its successes. It directs the present and future, enabling us to arrive at good results without the necessity of costly tentative processes, inspiring confidence in the operator and improver. It enables him to keep what has already been attained, and to improve in the most economical and efficient manner that which needs only correction, while a new invention, under the guidance of this indicator, is characterised alike by simplicity, economy, and efficiency. The new circulator, lately tested by Mr. Fish, near Forest Hill, would seem to illustrate these views, all the details of the phenomena presenting themselves going surely to prove that the nature of the motive power has been misunderstood. This system was quoted, I think, not only as an example of the application of the expansive power of hot water, but of that power as producing unusually rapid circulation. An "enlarged edition" of the system first used at Woolwich has resulted, as I apprehended it would, in failure. Mr. Fish's description shows that the action of gravitation has been interfered with in a twofold sense. It also shows that expansive power has been called into operation, and has failed to establish circulation. In a twofold sense, I say, gravitation has been interfered with, for firstly, as a motive power it has been needlessly loaded, and its lifting force so far wasted; and, secondly, the force itself has been diminished by the heating of the return-pipes close to the boiler. It must be quite clear that if a gallon of boiling water is very much lighter than a gallon of cooled water, it is easier to lift the former than the latter. To insure this, it is necessary to lift it to the full height required while close to the fire, and while yet the fire continues to act upon it; for the moment it ceases to boil it shrinks in bulk, and a column of it containing a larger quantity of water is at once very much increased in weight. To utilise the lifting force to the utmost, then, full advantage must be taken of the light and expanded condition of the water, whatever the power employed to raise it may be. It must not be at a distance from the fire, therefore, that this work must be done, but even while the fire acts upon it: it must be taken by the shortest and most direct route, *i. e.*, vertically. Mr. Cannell raises it by a long and circuitous route, allowing it ample time and means, by contact with the cooling atmosphere of the plant-house, to contract and regain its weight; and the gradual upward inclination of the flow-pipe at the same time insures the reflex pressure of all this increasing weight upon the motive power. If he will raise the water to the highest point at once, when it is in its lightest condition, and let it flow over a circular bend just above the general level of the flow-pipe, it is impossible then that this reflex action upon the motive power can come into operation, for the water will not have regained its weight until that weight becomes of use to the circulation. But this needless loading of the weight is not the only interference with the action of gravitation. Whether it is in itself sufficient to stop the circulation in the Forest Hill case it is difficult to say, but obviously it is only a question of yards, feet, and inches. There is the second point of interference with gravitation to be noticed, which, conjointly with the other, conduces in this case to the failure. When the return-pipes, as Mr. Fish informs us, rest upon the fire-flue, we safely infer that the pipes are sooner or later heated by that contact. We are also actually informed that these pipes with their contents were much hotter than the return of the hot water from the plant-house would account for. Now, these pipes being heated, the water within them was comparatively lighter (being more expanded) than it would otherwise be. The pressure, therefore, on the contents of the boiler would be less, and the motive power, whatever may be its nature, lessened. Thus the candle is burned at both ends. The cart receives an extra load, and a weaker horse to draw it. The work is needlessly increased, and the power to do it diminished. Meantime the very cessation of circulation exposes the water in the boiler to a prolonged action of the fire. Elastic vapour is thus produced and confined, and elastic force called into operation. Yet no uniform circulation ensues; an active power is called into exercise, but it is like that of a restive horse left at liberty to kick and plunge inside a travelling van. Its action threatens the upset of the whole machine, but is perfectly useless as regards imparting any aid to the forward advance of the carriage. So the expansive force produced, not the circulation desired, but a fitful motion, which by the aid of valves can be set going either to or fro at the will of the operator, but which cannot be coaxed into a uniform and established circulation. This fitful motion admits of easy explanation, but the entering upon it would needlessly cumber this article. A pseudo temporary circulation may be easily got up by the aid of the valves, but no treatment of it can result in a real and useful one, because an important law of motion is violated in the attempt. It is undoubtedly a law of motion when the elastic force of a fluid or vapour is employed to produce it, that that expansive force shall be confined and resisted in every direction of its pressure, save in that direction or in those directions in which its force is to be actively employed. Now in a hot-water apparatus we want the force to act in one direction only, in order to establish circulation. In the boiler we provide two orifices connected with two pipes. Let us for the moment call them two, and suppose they are not connected with each other externally. Then the law of motion is violated, for while we intend the elastic force to act as a motive power in one direction, we have another orifice which will at once relieve the pressure and destroy the power. But if we connect the two pipes externally, then we have no opening left for the exercise of motive power, for that circuitous pipe is full of water, and closes up both orifices against the action of circulation as effectually as if they were plugged with iron. The circuit of pipes connected with the opening is a part of the boiler itself. *J. M. Taylor, Seer Green Vicarage, near Beaconsfield.*

Cedrus Deodara Coning.—We have a tree here nicely covered with cones. It is one of the smallest in an avenue of 24 trees, and is, I believe, the first which has produced cones. *J. H. Wallace, Redland Lodge, Bristol.*

On the Culture of Verbenas.—In a place where I once lived I had splendid beds of Verbenas, but when I removed to another neighbourhood about 100 miles off I had a miserable failure. My Verbenas were a disgrace and a disgust to me, from what cause it was impossible to say. However, I determined to turn over a new leaf in Verbena growing—for the better, I hoped. Well, I had a dozen of nice plants from the nursery (I never see such now) of good sorts, but not new, 18*s.* the dozen; and having a one-light frame in famous condition for them, I lost no time in giving them the benefit of it. They seemed to enjoy it much, for they started into rapid growth, and I was not slack in lending a helping hand to things which gave me so much pleasure. Soot and soot-water I knew to be excellent for them, and I strewed a little of the former all round the inside of the frame, and just wetted the plants over-head with the latter ere I closed up for the night. My soot-water resembled the highest coloured ale and the finest wine for clearness, and I could make 100 gallons of it in two hours if I had a receptacle for so large a quantity. My plants became so strong that their leaves in some cases looked like Nettle-leaves, and the branches were fine indeed. Now for a race. Talk of races! Well, a boat-race is a very pretty sight, but my race was with my Verbenas, and fairly I got beaten. They grew more quickly than I could grow them, though I was the winner of a fine lot of plants. Let me say I had a frame in nice condition for my cuttings to be placed in, and my cuttings were made thus:—The end of every branch found in a fit state was taken off with about an inch or an inch and a half of stem, but with no joint at the bottom, none being required. These cuttings were struck in pure sand, common building sand passed through a fine sieve and washed clean, the pans to receive it being about 7 inches over and 2 inches deep. I filled these with cuttings, and about nine days were sufficient to allow them to strike, which they did nicely, and they would come away just holding enough soil to cover each little root in a way which nothing that I know of but sand will do. All the pots I could spare were quickly filled with the newly-struck plants, but having some open draining tiles, out of which I had just turned some Peas, I determined to press them into the service of my fast increasing stock, and I ultimately filled two large lights of a long pit with my young family of Verbenas. By this time many of my first struck plants wanted stopping to make them bushy; both old and young plants seemed perfectly hydra-headed, and here I got fairly beaten. I could not keep up with them, and was obliged to call in help. This I believe to be the key to my success—my sweet dung-heap keeping my plants and cuttings in a vigorous growing state, and (what I learned from dear old Donald Beaton) the manner of taking the cuttings so young and striking them in sand. I never saw any plan equal to it, and I do not remember to have lost a single cutting. I had a fine display at a local show in July from plants struck in the spring, but this must form the subject of another paper. *R. T.*

Hornets.—During the past summer we have been much troubled with hornets? which have attacked several fine Oaks and Elm trees, having eaten large holes in them, causing the sap to flow out in large quantities. We have had trees attacked in the same way before, which have since died. Would the death of these trees be caused by the hornets? and what means could be used to prevent the death of those already attacked, or to prevent the insects from attacking others? Any information under the above circumstances would be thankfully received. *Fred. Lee, Tynford Hall, Brandon.*

Diseases in Tea.—I have been pleased and interested to find that the attention of your pathological authority, "M. J. B.," has been directed to the so-called blights in Tea. It is, indeed, difficult to determine the causes of these diseases even on the spot; if, however, you can afford me a little of your space, I should be glad to induce "M. J. B." to give the Indian planters the benefit of a little more of his observation. Now, the Tea plantation soils are mostly full of humus, or decaying vegetable matter, and I should be glad to know if the wood ashes which are mixed with this soil after the burning of the forest, or the application of any artificial manure containing great proportions of potash, would be likely to produce any action in the soil detrimental to the well-being of the plants? How are the brown spots and edges of the Tea-leaves to be accounted for? It may happen that only one plant in a thousand is attacked in dry climates, but this plant is sure to be the seed-bed of various parasitical growths, and as your Hylakandy correspondent remarks, the evil is still more marked in moist dripping climates; indeed, I have heard of losses, amounting to 50,000 lb. of Tea, occurring, which were attributed to these so-called "blights" alone. This is a very serious matter, and if it can be shown that the roots and leaves of the Tea shrub are first decomposed through the agency of any alkali in the soil, although it might not be possible to apply any practical remedy, yet Tea planters would be in possession of a valuable scientific fact, and they would certainly be nearer a solution of the difficulty. My observations agree in the main with those of your correspondent as regards the greater prevalence of the diseases in moist climates, but in addition I have fancied that the brown spots appeared first, and then the leaves speedily became covered on the underside with the mycelium of some Fungus, together with Lichen, &c. I am also certain that these attacks are more prevalent on dirty ill-used estates than upon such as are better cultivated. In fine, the causes are so indefinite that any articles you can afford for the purpose of elucidating the matter are pretty sure to be largely copied by the Indian papers. I cannot learn from your Indian correspondent's letter if the leaves on the eastern side of the plants he alludes to, were attacked by any parasitical growths. *James MacPherson.*

Successful Melon Culture.—Calling on a brother gardener recently in Berkshire, I was astonished at seeing a first-rate crop of Melons (Rowden's Superb) then ripening, which was, as the gardener informed me, the second crop from the one plant. There were on this plant when I saw it 20 fruits, nearly all ripe, and one had been previously cut, which weighed over 3 lb. The first crop, which was cleared on July 6, I was told, was as fine as the one under notice; but it must be mentioned that the gardener, Mr. Keefe, has every convenience afforded him, his worthy employer, E. H. Morland, Esq., West Ilseley, near Newbury, sparing neither trouble nor expense in anything connected with his garden. *H. J.*

Fruiting of Pteris scaberula.—The fruiting of this elegant little half-hardy Fern is of sufficient interest, I think, to be recorded, for I believe that it has very rarely, if ever, borne spores in this country. This is the first that has come under my observation, and I have heard many experienced growers remark that their plants produced no fertile fronds. It is so readily propagated by means of the creeping rhizomes that this circumstance, though noteworthy, is of no particular moment to the gardener. The plant I allude to is in the fine collection at Hassock's Gate, belonging to Mr. Parsons. Probably some of your correspondents may have seen fruiting plants. *H.* [It is very rarely seen in fructification, according to our experience. Eds.]

Orchid Cultivation: Feeding by Precipitation.—Mr. Gosse asks me to explain with more fullness of detail what I intended to convey when I wrote at p. 1229, "In all cases where Orchid cultivation is successful, there must be sufficient means of generating the moisture required without the agency of pipe-heat, and the plants must live upon the food conveyed to them by precipitation." As I fully explained in that letter my reasons for objecting to atmospheric moisture being generated by pipe-heat, I will now confine myself to the two points, "the means of supplying our Orchids with food and water." Upon this subject I wrote you once before, which letter you published at p. 203 of this year, and it was in reply to that letter that the Rev. Charles Kingsley used the expression "constant precipitation," which Messrs. J. Brooke & Co. have adopted in their advertisement. Mr. Gosse would do well to refer to that letter at p. 417; it greatly delighted me, as confirming views I had often advocated in your pages, and as often had to regret that the subject was not considered worth the notice of our Orchid cultivators. Mr. Kingsley calls the food conveyed by precipitation in a tropical forest carbonic acid; what the food precipitated by the plan adopted in the house alluded to by Messrs. James Brooke & Co. is, chemically described, I do not know, but I can speak confidently of the result from several years of experience. The house is about 20 feet wide, and is divided by two footpaths, thus forming a centre and two side tables, in the usual way. Under these tables the soil has been taken out to a depth of about 3 feet below the level of the path; the table feet rest upon the walls forming the sides of the path, which are carried up a brick higher than the flags, so that the paths can be made to hold water during the night if required. The space under the tables is used to put fermenting material in, and the height of the tables above the path added to the depth of the pit below, gives sufficient height for a man to work without disturbing the plants. The material used is spent tan, or refuse bark, some stable manure being added; this material was put in by degrees as required till the pits were full, and it is the best way to prolong the process as much as possible, or, in other words, thoroughly to work out each portion before leaving it to exhaust its fermenting qualities, as the labour of putting such materials in and taking them out is of course important. The means are, turning over and adding nitrogen in the form of manure, or strong manure water, always covering this with a little that has not been so mixed, to prevent the ammonia rising in too rank a form; the atmosphere will dictate when such a change is required, and the saving of labour in damping, &c., will amply compensate for any extra trouble in putting the material in. Now some will say that they have tried putting liquid manure in the evaporating pans, and sprinkling it on the paths, and found that it injures Orchids. I should certainly agree with them in that opinion, for I have found that such means will kill thrips, therefore why should I doubt its injuring Orchids? Watering plants with strong liquid manure, with a little water added, will kill most plants, but that is no reason why watering them with a good deal of water and a little manure should not do them good. I counsel no man to rashly risk a valuable plant, but there are thousands, I was going to say, whose experience in Pine growing will enable them to understand this fully, and no one should try such a plan even upon a Cucumber without he does understand it. I am not explaining a little fancy experiment, but a pushing, business way of making Orchids grow into money, without wasting their time; and Mr. Gosse will remember that he kindly confirmed my opinion, that my Cattleyas were only doing in my house what they do in their own country, where they grow twice each year. Must I also add that this is a treatment for the growing season, and that I am not describing a house for resting Orchids in? By this means the atmosphere can be kept nearer to saturation than by any other plan I know of, certainly than by the two contending forces, pipe-heat and evaporating pans; and as the moisture is thrown up equally regardless of the temperature of the house, it must follow that at night, when the heat is the lowest, the condensed precipitation will be the greatest, thus coming as near as we can to Nature's dew-dropping rain. Mr. Kingsley speaks of the forests being so wet in a morning, that a run among the trees confers all the advantages of a bath. Dr. Hooker and Mr. Holton speak of dripping forests; Mr. Wallace and Mr. Bickmore give a like testimony. Mr. Orton and Mr. Bates, I think, express their surprise that it is possible to be in good health in such humid climates. I need not give you a string of quotations, for it is sufficiently obvious that at the right season we cannot have too much moisture in our houses, even after we have used to the utmost all the means at our disposal. I often say that Orchids are true weeds; the answer I get is, so is every plant in its own country. But this is not strictly an answer, for what country supplies plants so little susceptible of cultivation as Orchids? The Mistleto is our only example; and though this question is so directly contrary to the traditions of the gentle craft that I hardly expect any gardener to admit it, yet I ask it for the purpose of drawing attention to the important part the atmosphere has to play in their well-doing. *G. H.*

Veitch's Autumn Giant Cauliflower.—I think ample proof has been given in these pages to convince the majority of your numerous readers that this Cauliflower is really what it is represented to be, viz., an invaluable acquisition to our gardens. Nevertheless, by way of seconding previous remarks, I send a few heads for your inspection, one of which has been in bloom upwards of a month, measuring 17 inches over, and 33 inches in circumference, and comparatively speaking quite white and solid, and fit for table. I sowed a packet of seed in March, also a packet of the Walcheren, in case of disappointment; planted them out side by side, about 200 of each, and the result has been in favour of the Giant; for out of the 200 plants there were only two intruders, all the rest producing heads in proportion to the samples forwarded, whilst from the Walcheren I have scarcely been able to cut one worth sending to the table. *E. Morgan, Harrow-on-the-Hill.* [A fair sample, Eds.]

Onions.—Having heard a few complaints respecting the lightness of the Onion crop this season, I send you the weight of three out of four varieties which I have grown. I sowed them on March 1, in drills 39 feet in length and 1 foot apart, and had 36 rows—12 of Nuneham Park, 12 of White Spanish, and 12 of James' Long Keeping. They were taken up on September 22, and, after allowing them time to dry, I had them cleaned fit for the storing-room, and on weighing them then I found I had of Nuneham Park 21 stones, of White Spanish 24, and of James' Keeping 27 stones. I think I may be satisfied with the crop. *Edward Evans, Gr. to the Rev. Thomas Staniforth, Storrs, Windermere.*

Water Weeds.—There is in this locality a small sheet of water, 4 feet deep, and about an eighth of an acre in extent. It is fed by a river close at hand, and was, 12 months ago, so densely packed with Anacharis Alsinastrum that it appeared almost possible to walk upon it. At the beginning of this year four Aylesbury ducks were placed on the pond, which was surrounded with wire-netting. They took possession of a small island in the centre, and so frequently did they visit, and so thoroughly did they appreciate, their delectable food, that there is not a particle of it to be found at the present time. They are in capital condition, notwithstanding that they have had very little of other food. Is not this an economical method of keeping ducks? and would it not be well to convert our would-be ornamental waters into duckeries of three or four dozen birds to the acre, and thereby save the enormous annual cost expended by many in trying to cleanse them, but in reality making, in many instances, bad only worse? But I have been told that ducks and swans are dreadful enemies to the fisherman; so that I fear there is no alternative but to continue mowing, hoeing, dragging, and forwarding on this Yankee gift to our neighbours below, with a sincere wish that they may get rid of it easier than we; also with a fervent hope that our worthy commissioners may eventually succeed in directing that precious *pabulum* at the bottom of our rivers, in which the Anacharis diabolicum thrives so spendidly, into a more safe and serviceable channel. Then, and not till then can there be any shadow of hope that this vile foreigner will die the death of exhaustion, of which some are so sanguine. I fear, however, that day is far, very far distant. *Thomas Challis, Wilton.*

The Certificating of New Grapes.—It is said that "burnt bairns dread the fire," but the pith of this proverb seems ignored by the Fruit Committee of the Royal Horticultural Society. Within a few years they have certificated several Grapes of doubtful merit, if not wholly worthless. A few weeks ago one of their certificates was returned, and that most honourably, by the raiser of a new Grape. But, Mr. Rivers says, "Why was it ever given?" We can afford to wait until the merits of new varieties are sufficiently tested, but we cannot afford to be deceived. Just when most of us are smarting under the utter collapse of that splendid deceiver, Golden Champion, we have another new Grape certificated—Dr. Hogg. This is a serious matter. What does the committee know of this new Grape, and how long have they known it? And why does not the Society test such fruits as Grapes in their own garden at Chiswick before certificating them? Hundreds of pounds have been squandered of late years upon new Grapes, not half so good as old ones. And the cry is still, they come. We have heard of A 1 and Emperor of Morocco, and others, *ad libitum*; I myself saw a lot of mostly coarse-looking, unripe, new Grapes at Kensington recently, and believe that one of them was certificated. I cannot conceive of a greater service that the Royal Horticultural Society could render to horticulture than the actual trial of new Grapes in their garden at Chiswick. They can try Peas, Lettuces, bedding plants, and a host of other things; surely for very shame they will not tell us that they cannot devote time and space to the testing of this king of fruits. It requires two seasons at least to establish the true character of seedling bedding plants; and it will need at least three or four possibly to test fully the merits of new Grapes. But, I repeat, we can afford to wait, but not to be deceived. If things go on as they have done, we shall soon look upon the certificate of the Fruit Committee as good and sufficient reason why we should not purchase a new Grape. Does this language seem too strong? Look at the facts. Can any one in his senses doubt that had the Fruit Committee exercised proper caution, they could have found out the spotting, rotting propensities of the Golden Champion Grape? And yet not till hundreds of pounds have been spent, time and space wasted, patience and temper tried to the utmost, has the utter worthlessness of this Grape been proved by bitter experience. These are strong words, and nothing but a conviction of their truth, and the duty of uttering it fearlessly, would have wrung them from me. I sympathise deeply with the raiser, who may readily have deceived himself, and with the respectable firm who distributed this Grape; but it is essentially necessary to speak out when we find it written in the "Gardener" of last month that the prospects of this Grape are improving. What, then, could it have been before? I have seen this Grape at many places lately in the hands of good Grape growers, and at each it was either going—going—or utterly gone. The "Gardener" cites Keele Hall as a grand example of success. I have seen it there lately, and probably Mr. Hill will be good enough to inform your readers how many perfect bunches or berries of Golden Champion were safely landed on his employer's table? The Grape is not simply capricious—it is virtually worthless. In some positions it won't grow, while in others it grows freely enough, either grafted or on its own roots. These peculiarities might be condoned, but its vital faults are, that it is sour until it is ripe, and that it cannot be ripened without discoloration and patched spots of absolute decomposition. At times, too, it does not stone. I have met with some fine bunches on strong rods, with never a perfect seed in the entire bunch. But why dwell upon the faults of this specious deceiver? Why, for this—to add that the Fruit Committee of the Royal Horticultural Society had better give up certificating new Grapes, or exercise more skill and caution in determining quality. Most of us were considerably astonished at the views propounded by the pomological director at the Congress of Oxford, when he, in vulgar parlance, put the cart before the horse, by placing size before quality as a test of merit. Possibly this is how the Golden Champion won its spurs. If so, it is the more needful to put in a reminder that bigness and worthlessness often go together. Morally I feel I have a claim against the Fruit Committee of the Royal Horticultural Society for damages in the matter of the Golden Champion. Were our courts of law likewise courts of moral equity, I ought to recover the six guineas spent upon it. Possibly such a *finale* would arrest the reckless granting of certificates to unknown and, it may be, utterly worthless new Grapes and other fruit. Since writing the above I have seen "R. D.'s" careful estimate of the comparative merits and demerits of the Madresfield Court and Golden Champion Grapes. I endorse all he says in favour of the first, and condemn the second more decisively. To every one intending to plant the Golden Champion I would say—don't. *Lynx Eye.*

Helianthus annuus fistulosus.—Lovers of the gigantic and grotesque among flowers, and of the Sunflower in particular, cannot fail to be interested in this fine quilled double form of the common Sunflower. I recently saw a large patch of it growing in the trial grounds of Messrs. Sutton & Sons, at Reading. One would not care to have a big bed of it just outside a drawing-room window, but away along the fringes of shrubbery borders, with a dark background of evergreens to throw it up, it might be introduced among Hollyhocks with excellent effect. The flower-heads consist of a dense symmetrical mass of golden-coloured quilled florets. *R. D.*

Melons, at this season, of any contour or size, are most useful and valuable for the dessert, and especially when Peaches and Plums are getting scarce, and when every week brings additional difficulty in getting up a variety of fruit for a large company. We have just now some dozens of Melons in various stages of ripening, and of various shapes and sorts, from the small close-netted Lord Peter to the largish Cantaloup Prescot. We have long oval-shaped fruits, as the Cassaba, to a variety between the Trentham Hybrid and the Cantaloup, with the latter's flesh and colour, and the former's flavour and contour,—one of many hybrids I raised in France some years ago. Out of all these Melons, a dozen or more sorts, I could not give the palm to either one or the other; they all get their share of praise, so varied are Melons in flavour, and so varied are palates. As a rule two or three go to the table every day, and are valuable one and all alike. I consider the Melon the best of all fruits for breakfast or lunch, and for this purpose a scarlet and a green-fleshed should be dished together in an oval dish. Green-fleshed Melons on the Continent are not considered so *recherché* as the scarlet, and *vice versâ* in this country, as a rule; yet there are many now-a-days who think as the foreigners, and prefer the scarlet to the green. The truth is, it is all a matter of taste, as with black and white Grapes—all are good, and good's best. I have a notion that too much artificial bottom-heat produces hollow, large, light fruit, and bad keepers. I may here observe that we grow our late Melons in a span-roofed pit in which Potatos are planted in February, the whole being cleared off by the beginning of May, in time for the pit to be prepared for the reception of potted-off bedding stuff, this again being removed by the time our Melons are ready to plant. As I have remarked, the pit is 9 feet wide, with one hot-water pipe running round on brackets close under the bottom of the light. It was filled with dry leaves and a layer of soil three years ago, at the time it was built, for Potatos, and has never since received any more additional leaves. A large mound of good loam is placed under each alternate light in the middle of the pit, forming a cone 2 feet in depth; on the top of this we plant our Melons, and this is all the bottom-heat they get, or it may strictly be called top-heat, as it is derived from the heated air from the pipes, or the sun. When levelled down, these heaps of soil form a grand compost for our spring-forced Potatos. This pit is 88 feet long, and has a maximum of light, and being at an angle of 45°, or about half a square, is as dry as a bone inside, though drenched with rain outside. Sun-warmth is, I believe, all that is necessary to ensure crops of good late Melons, which, on the whole, we find more valuable than early ones, which appear at a time when Strawberries, Figs, and Peaches in large gardens are in use. I may remark further that Melons grown on mounds in this way and ripened now, will keep better and longer than Melons ripened in a more artificial manner. Some of our fruits will be as good a month hence as now. *H. K.*

Picea lasiocarpa.—Mr. Dod has somewhat misunderstood me; if he refers to my letter (p. 1257) he will find me to say "that the only plant in England of Picea lasiocarpa of Professor Balfour is in my nursery here," and that I took credit for conserving to the country the only plant of Picea grandis raised from Douglas' seeds. I raised a number from two cuttings, taken from the original tree when about 18 inches high, a good number of which I scattered over the country for the fifth Earl of Harrington, and sold them at two and three guineas each. One was returned from a nurseryman "because it was not the true kind!" I then kept it for myself, after paying for it. I enclose you nine specimens, all taken from plants growing in my nursery:—1, from Douglas' original plant of P. grandis; 2, Picea grandis, from imported seed from Vancouver's Island; 3, P. lasiocarpa, from a cutting off Sir William Craig's original plant raised from Jeffrey's seeds. All these a practical eye will see at a glance are only varieties of the same species, namely, P. grandis; 4 to 9 are from trees varying in habit, yet even to a common observer evidently the same species, viz., Picea Parsonsii. I think you will bear me out, that the specific difference between this and grandis is self evident. *William Barron, Elvaston Nursery, Borrowash.* [Nos. 1, 2, and 3, are identical, as are Nos. 4 to 9, the two sets being evidently distinct. EDS.]

The Rev. John Fountaine's Vinery at Chiswick.—At this season of the year your pages are often occupied with the results of success or otherwise of different individuals in fruit growing by various processes. I wish to be allowed to make a few remarks on my "new method" as carried out in the vinery erected for that purpose at Chiswick. An article upon these gardens appeared in the *Gardeners' Chronicle* a few weeks since (p. 1130), in which your correspondent was kind enough to mention my vinery, with a few cursory remarks upon the system. He says he did not consider "the trees looked in any great degree the better for the appliance," adding, however, that it was "well carried out to the end in view." Like many persons taking only a casual view of the system, he appears to have lost sight of that "end." As regards the appearance of the trees, they could not look much better than those in the large fine orchard-house did, when I saw them in the summer under the superintendence of Mr. Barron, nor could I expect that they should do so, beyond perhaps the foliage being a little darker in colour and stouter to the touch, especially as the fruit, being retarded, had probably not begun to swell when that in the orchard-house was ripe. But "the end in view" is to have a sure crop of fruit, of finer colour and finer flavour than other houses produce, and that from a vinery built and managed to the best advantage for Grapes. Whether this object has been attained, I leave your readers to judge, by giving the answer to my inquiries on the subject of Mr. Barron, the superintendent of the Royal Horticultural Society, who can have no interest whatever in the matter beyond a simple statement of facts. In a letter dated September 22, he writes as follows:—"Peaches we are still gathering off your trucks, and some of them very fine, truly splendid in flavour, better than any others in pots in the orchard-houses." As regards the Grapes, I would refer your readers to an article in your journal, p. 1263, on "The Madresfield Court and Golden Champion Grapes," wherein your correspondent speaks of the former Grape as grown in my cold vinery at Chiswick. "Here" (he says) "the Madresfield Court has the appearance of being a valuable hardy Grape, capable of bearing as much exposure as the Black Hamburgh, but very superior in every respect. Here is a robust growth, good bunches, fine berries, a capital bloom, and well flavoured; while the Black Hamburgh, which has borne some very fair bunches, is comparatively flavourless." This trial will no doubt establish the Madresfield Court (previously considered as only fit for the Muscat-house) as a valuable Grape for cold houses: not that I claim any credit for the discovery—it was entirely Mr. Barron's good judgment which appreciated the fitness of this Grape for the position. I believe he showed some of the Grapes at the last fruit exhibition. The house is, of course, a cold vinery in the proper acceptation of the term, but any amount of forcing may be applied to ripen the Grapes, or such portion of early Peaches as it may be desirable to bring forward, when the other trees and flowers are out in the summer. I never saw a more beautiful display of mixed fruit than my own house exhibited this year when at the best, but it is unnecessary to expatiate upon it, when the house at Chiswick was erected for the express purpose of standing a fair test with other first-rate houses. *John Fountaine, Southacre Rectory, Brandon.*

Trees for a Dry Soil.—I should be very glad to know what quick-growing trees answer best on a dry gravelly soil. Beech and Larch planted some years ago have not succeeded; the former die from the tap as soon as they attain to a moderate diameter, and the Larch are but poor specimens. Being in a locality where ornamental trees are desired, I propose clearing them off and planting entirely afresh. *G. T. E. D.* [We sent your letter to Mr. Ingram, Belvoir, who obligingly answers as follows:—"In reply to the inquiry addressed to you by a correspondent, I have to remark that as health, vigour, and rapidity of growth in trees may, according to all experience, be expected when they are planted in suitable positions in regard to climate, and in soils of ordinary fertility, so the opposite consequences may be expected when trees are placed in poor hungry soils or dry gravel beds, which cannot yield the amount of support essential to a healthy development in vegetation. Exposed to such circumstances trees remain stunted in growth, and exhibit signs of premature decay, such as your correspondent describes. A dressing of lime might possibly renovate the Larch. I have known that tree to thrive on the oolite limestone formation, where the soil was scarcely a foot in depth. In replanting the same ground, if that course be pursued, trench it, turning in all the surface soil, grass, rubbish, and vegetable *débris;* add, if possible, a dressing of clay, marl, or any good soil obtainable, and add further lime, road-scrapings, and old mortar rubbish. The dry gravel bed thus treated will become moderately fertile, and may be expected to support trees and assist them to make a rapid growth. The Scotch and Austrian Pines and Pinus Pinaster may be planted; Siberian Elm (a variety grown by Mr. Pearson, of Chilwell, which grows well and rapidly on the gravelly soil of Nottingham Park); Planes, Sycamores, Ailantus, and Spanish Chestnut, might also be tried with a chance of success if the ground is made suitable for their reception, by the addition of any of the materials I have suggested. *W. I.*"]

Abies Douglasii.—There is a slight error to correct in the letter respecting the cutting-plant of Abies Douglasii, by the Rev. C. W. Dod. The tree he alludes to was raised from a cutting in 1833, by myself, and planted in 1835, 18 inches high. I consider the parent tree, which was sown by myself in mid-winter, 1827, and is now more than 100 feet high, with a trunk, 3 feet from the ground, 8 feet 10 inches, to be much the finest tree; but in my estimation, both are magnificent specimens—I should think not surpassed in this country. *Philip Frost, Dropmore.*

Brains and Muscles: Theory and Practice.—The men at the tops of the trees consult the buds and leaves; useful botanists, no doubt, and nurserymen to boot. The men below, as far as they go, look at the roots, as far as the shoots, to know how they grow. The Germans adopt the more expressive terms; they call their nurseries tree schools—"Baumschullen." I am afraid most of us will have to go to school again to learn the proper names. It is to be feared the trees have nursed us, instead of our having nursed the trees; and as youngsters are very apt to forget their nurses, no doubt this may be the reason why we have forgotten the right names. Mr. Dod, with his keen eyes, saw some puzzling things at Kew. Another odd specimen declares that a man with three eyes, not many days since, saw three different collections of trees standing at the Royal Horticultural Society's Gardens at Kensington with wrong names. Can this be true? If so, how sad that the Scientific Committee have not been told of it, and more especially as these trees have been there throughout the summer, in order to teach the Fellows the true names. I, for one, should like to be a Fellow properly taught, and shall not be ashamed to go to school again, if I can only find out where the right schoolmaster lives. *A. B. C.*

Primroses.—A large handful of Primroses was picked on October 17 in a hanging wood above Petersfield. *M. G.*

Foreign Correspondence.

NATAL.—Favourable reports reach us from this colony of the appearance of the Sugar-cane, Coffee, and Cotton crops. The early months of the year were warm, supplied with copious rains, and the prospect of the dry season setting in towards the end of April or the beginning of May was looked upon as most favourable for the sugar and Coffee. The Cotton crop also promised well, a disease which had appeared in a few plantations not having spread. This disease appears to attack the plants very suddenly. A correspondent states that, upon going over his plantation, he "found a considerable number of the best bushes all blasted in the ground, every leaf and flower drooping, and wilted, just as if in the morning the bush had been cut from the root and exposed to the sun all day." These plants were carefully examined; there was abundance of moisture in the ground for the roots. Careful search was made for any worms or grubs, both below and above ground, but none were discovered. The roots were apparently as sound and healthy as those of the unaffected bushes growing next to them, but in cutting into the wood of the stem and branches a discoloration of the ligneous part was perceptible.

This kind of disease appears to have been previously quite unknown to Cotton growers, and from observations it appears only to have affected the plants growing in plantations which have been made upon old cattle-kraals, where the manure was in too great excess, and was consequently too stimulating. This theory is borne out by the opinion of a Coffee planter of some experience, who says that Coffee trees grown in plantations similarly situated have been affected in like manner. It is said that in cutting the diseased stem lengthwise a number of rusty-red, irregular, isolated streaks are seen running into one another; in the cross section this reddish discoloration appears to be confined to the soft vascular portion between the medullary rays.

ASCENSION.—A correspondent in this island writes:—"Many of the Indian Pride trees (Melia Azedarach), are larger than I can encircle with my arms. The tree produces an immense quantity of seed, which, in falling, is carried to the lower part of the island, and so is rapidly increasing. The Australian Wattle, too (Acacia sp.) is increasing so fast, that it threatens soon to cover the whole mountain. Of course all these trees bring down the rain; so much so, indeed, that one of the officers who has been here five years says, that even in his time vegetation has extended for a mile further down the side of the mountain, while the 'little scattered grass,' of which Darwin speaks, has now extended to within 3 miles of the garrison. Last year the Wild Ginger, Briar, and Wattle, grew so fast as to completely block the path to the peak. These facts show how fast introduced plants are spreading. The clinker is rapidly breaking up, and, as in all volcanic places, thus forms good soil. The clinker first becomes heated by the sun, and then when the rain comes, it falls to pieces, or a quantity crumbles off; and when even a thin coating of vegetation is once established on this so as to retain the moisture, almost anything will grow. At the rainy season the grass is as green as any in England. It is, however, twice as long, and so rank that cattle will not eat it."

Societies.

WOOLHOPE CLUB: *Oct.* 10.—The Royal Horticultural Society's exhibition of edible and poisonous Fungi was immediately followed (on Tuesday, Oct. 10) by the annual foray for, and exhibition of, Fungi at Hereford. This congress really commenced on the previous day (Monday), when the members of the Club and many visitors flocked into Hereford. Foremost amongst these were Frederick Currey, Esq., F.R.S., C. Edmund Broome, Esq., of Batheaston, the Rev. W. Allport Leighton, of Shrewsbury, M. C. Cooke, Esq., of London, Edwin Lees, Esq., President of the Malvern Club, and many others too numerous to name, from all parts of the country. On Monday, the day before the great foray, there was a short excursion to Dinedor Camp, near Hereford, preceded by a trial of the comestible qualities of what has been aptly termed the "poor persons' procerus pie." This was a most delicious and appetitious pie, produced, we believe, under the direction of a lady from London. This pie simply contained two barn-door fowls and 30 specimens of Agaricus procerus, the "Parasol Agaric." There were no two opinions about this culinary triumph; it was pronounced by all who were fortunate enough to get a portion of it, to be at once and in every particular perfect. This substantial embodiment of gastronomic botany disappeared all too soon, leaving, however, an expression of its pleasant recollections stamped on the consumers faces, seldom seen, except, perhaps, in the figures illustrating the cartoon advertisement of "Batty's Nabob Pickles." Returning to the preliminary excursion to the Fir woods of Dinedor Camp, we will simply say that the party consisted of ten persons who met with the success usual on such occasions in procuring an abundance of specimens for the next day's exhibition. Towards dusk one of the party was certainly lost, and had to be searched for by three gentlemen for half an hour or so, amongst the dense growth of Firs, Larches, and underwood; but at last he came to light in an adjoining field, and all the party returned to Hereford with light hearts in a curling fog. By this time hamper after hamper of Fungi had arrived, and one or two devoted gentlemen were busily engaged all the evening (and till late at night) in arranging and naming the specimens by candle-light at the "Green Dragon." Although the writer of this notice retired to bed near midnight, tired almost to death, yet he had to submit to a rude awakening to be told in the dark that there was "a splendid collection of Fungi over at the 'Green Dragon,'" and another awakening long before cockcrow in the morning to be told "to be quick up and help to arrange and name the Fungi over at the 'Green Dragon.'" This was the morning of the "Foray" and "Exhibition," and as this notice may be conveniently divided into two parts, we will take the pleasant "Foray" first, and the somewhat drier "Exhibition" next.

By the 9.20 A.M. train from Hereford, 40 gentlemen and two ladies started for Dinmore Hill. The morning was foggy and fungous, and the excursionists were in the best of spirits, one gentleman even sporting an Agaricus in his button-hole. On arriving at Dinmore the search began in earnest, and here it need hardly be said that the members and guests of this Club by no means confine themselves to the study of the gastronomic qualities of Fungi, but pursue the study of British mycology with such zeal and success that, for instance, Mr. Plowright alone, of King's Lynn, has since the last annual excursion added several excellent new species to the British lists, and detected others new and at present only waiting to be published with figures. Dr. Bull's work in discovering several new things, and Dr. D. M. M'Cullough's, of Abergavenny, in lighting on that noble addition to our Flora, Lactarius controversus, are known to all our readers. The first rarity was met with by Mr. Phillips, of Shrewsbury, in Marasmius fœtidus, a remarkable Agaric, with a disgusting and potent odour of putridity and garlic; Mr. Plowright found the same species next day. Helvella crispa (fig. 302), and H. elastica were soon found, and we were not a little surprised to see a gentleman eating one of the former species raw. Some discussion took place as to the proper mode of preparing this plant for the table, as when not properly cooked it is apt to be tough. A good way is to allow the plants to simmer over a gentle fire for three quarters of an hour, add pieces of ham, or some good beef gravy, and the Fungi will be found both tender and delicious. High on the branches of a noble Beech one of the members espied the lovely Agaricus mucidus (fig. 303), unfortunately out of reach of arms and walking-sticks. Owing, however, to the kindness of a gentleman from Wernddû, who allowed a clergyman to stand upon his shoulders, specimens of this plant were procured for the exhibition. This exquisite Agaric is seldom seen so far north as Hereford, being far more common in the southern counties of England; it is peculiar to the Beech and Beech-mast, and is remarkable not only for its extraordinary beauty, but its very large white spores. Mr. Lees soon after this found a good specimen of the rare Polyporus cuticularis. The party during the day crossed the River Lug, to see the unsurpassed lawn, stretching for miles in front of the mansion at Hampton Court. Here, and elsewhere, in grassy places, the Hygrophori claimed special attention. Hygrophorus virgineus, and H. pratensis, were abundant; the former, mixed with H. ceraceus and H. coccineus, looked like so much gold and silver money strewn all over the fields—a regular "Tom Tiddler's ground," where any amount of mycological "gold and silver" might be picked up. H. conicus, H. niveus, H. puniceus, H. psittacinus, were also seen in abundance, and H. cossus, with its strong odour, exactly like the larva of the goat-moth. Amongst the edible species found were Hydnum repandum, the vegetable oyster; Lactarius deliciosus, the Red-milk Agaric; Agaricus orcella, the vegetable sweet-bread; Boletus edulis, Russula heterophylla, and Agaricus rubescens.

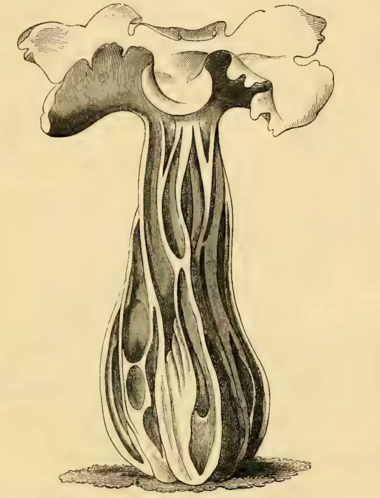

FIG. 302.—HELVELLA CRISPA.

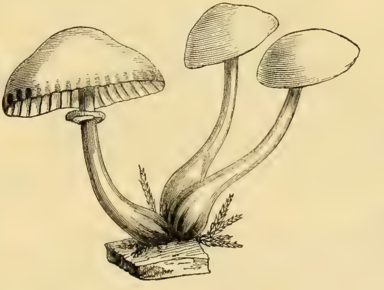

FIG. 303.—AGARICUS MUCIDUS.

Amongst the most notable poisonous species were Boletus piperatus, Lactarius torminosus, "the slayer," L. turpis, L. blennius, L. vellereus, L. piperatus—and many others, too many to mention. The different species of Cortinarius were everywhere most abundant, a genus which is at present far too little known in this country, and one which it would be well if the Woolhope Club would work up in earnest.

The exhibition of Fungi at the "Green Dragon" hotel was better and more extensive than the one in London. Especially to be mentioned were the collections from Whitfield and that of the Rev. W. Houghton, from the Wrekin, Shropshire. Most attention was, perhaps, paid to the numerous specimens of Agaricus clavipes, the Agaric new to our lists, and Merulius tremellosus, brought by Mr. James Renny from an old Apple tree at Wernddû. Sparassis crispa was well represented by the two beautiful specimens brought by Mr. Houghton, and various curious Fungi were kindly brought by Mr. Broome, viz., Clavaria formosa, Cortinarius diabolicus, a minute Truffle, and many other interesting species. Amongst Mr. Plowright's plants we noted Cordiceps (=Torrubia) ophioglossoides, parasitic on Elaphomyces muricatus. The beautiful specimens of Agaricus Bloxami, Hydnum zonatum, and Agaricus cucumis, the latter smelling powerfully of stinking fish, must not be allowed to pass without a word of notice. Added to these, and to many other Fungi of great botanical interest, were specimens of nearly all the known edible and poisonous species; two of the former were served at the dinner (of 52 guests), viz., Lactarius deliciosus and Coprinus comatus, cooked from the club recipes. After dinner, Mr. Edwin Lees read a paper "On the Nomadic Growth of Fungi, with reference to the Germs that are found in Snow and Rain," which subject, though offering a wide field for discussion, was not seriously taken up by any member present. Later in the evening (at the house of Thomas Cam, Esq., the President), an excellent paper was read by Mr. James Renny, of London, "On Saprolegnia and its Alliances," which excited some discussion, and was certainly listened to with the greatest attention by all present. This brought the second day to a very pleasant close. The morning of the third day was devoted to taking notes of, and sketching Fungi by some members, whilst two or three others went again to the Dinedor plantations. Whilst botanising there the party was overtaken by rain, and there was a party of sportsmen shooting, so that what with the rain trickling down, shots flying about, and dogs barking, the party thought it better to return at once, and join the eight or 10 other gentlemen who were going to Haywood Forest, where Strobilomyces had been previously found; here the party met with all sorts of Fungi, notably once more Marasmius fœtidus, Agaricus acerosus and Coprinus picaceus. The Fungi about here, however, though plentiful enough, were of no special interest, they were mostly of the commoner sorts, the genus Cortinarius prevailing. In the evening of this the third day, Mr. Cam, the President, most hospitably entertained at dinner some of the botanists visiting Hereford. On Thursday Mr. Renny acted as guide to a party to Abergavenny, where they were received with the greatest kindness by Dr. D. M. M'Cullough, who conducted them to the celebrated Lactarius controversus rings: this was entirely fresh ground, and in the hilly woods about Abergavenny all sorts of excellent Fungi were found. Mr. Broome returned to Hereford the same evening, Mr. Cooke to London the next day, whilst one or two botanical enthusiasts from London were still there on the following Monday afternoon, making altogether a week's delightful holiday. At Abergavenny three species of Geoglossum were at once found, viz., G. difforme, G. hirsutum, and G. glutinosum; a new set of Hygrophori were met with, viz., the rare Hygrophorus calyptræformis, H. unguinosus, H. murinaceus, H. Colemannianus, and H. leporinus. Agaricus cuneifolius and A. jubatus were also abundant. Polyporus quercinus was met with on an old Oak, and near Llanellen a bank was lighted upon covered with one of the starry Puff-balls, viz., Geaster fimbriatus, mixed with Mr. Berkeley's Agaricus undatus.

Taking all things together, this year's Woolhope meeting must be considered a most successful one. The number of species of Fungi observed was very large—perhaps larger than in any former year; the edible species during the Woolhope week were unusually abundant. As for Agaricus procerus, whole cartloads might have been easily gathered in the open places about woods. During the week, and especially at Abergavenny, the edible kinds have been served with every meal, and always with the happiest results. No one deleterious species has once crept in; and should one ever creep in, why,—*experientia dose-it.* *W. G. Smith.**

Notices of Books.

The Salix, or Willow; *a Series of Papers*. By William Scaling, ten years Basket-maker to Her Majesty and the Royal Family. London: Simpkin, Marshall & Co. Second Edition.

This little *brochure* deals with the Willow from a cultural point of view, and will be very useful to those who desire information concerning the production of osiers for basket-making. We gather from its pages that, with proper care, Willows will pay the cultivator quite as well as any crop usually grown in this country, and that land of little value for ordinary culture can be made remunerative by this means. It is a mistake, however, that Willows will only grow in wet boggy ground. To grow them successfully there must be an adaptation of the variety to the soil on which it is planted. The soft-wooded kinds of Willow, known in the trade as osiers, will grow in much damper soil than the hard-wooded sorts, which are generally called fine tops.

Some idea of the importance of Willow culture may be gleaned from the fact that the land under cultivation as Willow or osier holts in Great Britain and Ireland is estimated at from 6500 to 7000 acres, or more; and that notwithstanding this, between 4000 and 5000 tons, with a gradually increasing demand, are annually imported from France, Belgium, Holland, and Prussia. In 1866 the quantity imported was 4400 tons, of the estimated value of £48,609, as well as baskets to the value of £45,840. The best basket Willows are obtained from France and Belgium; the worst from Holland, where the rapid growing kinds, such as S. alba, viminalis, and decipiens, are principally grown.

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* In the report of the Fungus meeting at Kensington we omitted to mention the extremely rare Rhizina undulata, shown by Mr. Austin, of Reading.

In making a Willow plantation, Mr. Scaling advises that the cutting should be thrust entirely under ground, and he gives very good reasons for so advising, namely, that when so planted they send out straight shoots directly from the ground, and do not grow curved at the base, as they do when they shoot out around exposed and pollarded stools. Besides, when the crop is cut, manure can be more readily got on to the land, which can moreover be ploughed and harrowed, and in this way be kept as clean as an arable field. Such is not the case under other conditions of planting. Willows grown straight are more valuable than when bent or crooked at the butt, and they cannot be grown straight if the stools stand above the ground. The Bitter Willows only must be planted where hares and rabbits abound.

The best and finest qualities of Willows, Mr. Scaling tells us, are grown in Nottinghamshire; these always realise a higher price than any others either of home or foreign growth, not by reason of any superiority of soil or situation, but on account of the sorts or varieties grown, some four or five kinds in particular taking the lead of any grown elsewhere.

The average weight of a crop of the best and harder kinds of Willows in the green state is stated at about 6 tons per acre, and of the soft sorts, or osiers, 7 or 7½ tons; the value of the former, if green (£3 10*s.* per ton), being £21, or if peeled, £25 nett; and of the latter, £17 10*s.* green, and £22 nett if peeled. These quantities refer to beds which are properly cultivated, not to those which are weedy and only half planted.

Mr. Scaling specially recommends the Bitter Willows for game coverts and for hedges. Of these he indicates S. monandra as a strong grower, suitable for coverts, but not of much use for basket work; S. Forbyana, equally suited to form a covert; and S. Kerksii, nearly as vigorous as the others, and more secure against the attacks of game or cattle, and also a really good basket Willow. Mr. Scaling's collection of Willows appears to be one of the finest in this country.

—— Under the title of *The Flowering Plants of Tunbridge Wells*, Dr. Deakin furnishes us with a somewhat novel type of local flora. The speciality consists in the illustration of nearly all the 782 species described with a small woodcut, which, although somewhat roughly executed, is in most cases very characteristic of the plant portrayed. These figures have already appeared in the "Florigraphia Britannica" of the same author. Each species is briefly but satisfactorily described, and notes on habit, use, &c., are added, with the localities; in the latter respect, however, the work is scarcely so complete as might be wished. Critical forms are left unnoticed, or but very briefly referred to, and the scientific names, especially in the index, are singularly ill-spelt. In spite of these drawbacks, however, the work is one which might well be put into the hands of a beginner in botany, who would find in the woodcuts a very useful appendix to the descriptive portion of the work.

—— Messrs. Cassell issue a little book upon *The Uses of Plants*, which appears from the preface to be intended both as "a handbook for teachers," and for "reading lessons for schools." It contains a good deal of information, often well put, and usually correct; but the author has a tendency to "baby talk," which will scarcely be appreciated by those who use the book. Occasionally, and quite at random, the long words are divided for the use of the unlearned, and in many details there is a tendency to descend below the level of a child, whose intelligence would enable it to understand the better portion of the book. We are surprised to find a statement that the "Indian Cress or Nasturtium" belongs to the same family as the Garden Cress and other Cruciferæ; and hope that this and one or two other glaring errors will be corrected in a future edition.

Garden Memoranda.

THE KNOWEFIELD NURSERIES, STANWIX, CARLISLE.—These nursery grounds, which have lately passed out of the hands of Messrs. Little & Ballantyne, occupy 130 acres, and have been most happily chosen for situation, quality, and variety of soils. The site is directly north of the "merry city," on an open and elevated situation. Fewer hedges are seen here than in most nurseries, which is considered a great advantage to hardy trees and shrubs, particularly in reference to late spring frosts. The young wood is also much stiffer and better matured, and is preferred both for home and foreign trade. The grounds are within ten minutes' drive of the central station, and would well repay a visit. The carriage entrance is strikingly beautiful, and the borders, for nearly half a mile in length, are planted near the margin with bedding plants the entire length, on the ribbon system; this is backed up with mixed evergreen shrubs specially selected for the purpose. We noticed here good specimens of the Gold and Silver Queen Hollies. These are backed up again with fine specimens of weeping and other trees, suitable for immediate effect. The American Weeping Willow is here very fine; also handsome specimens of Weeping Ash and Elm. Altogether, the visitor cannot fail to be interested on once entering the grounds. At the termination of this road we come to the residence of the present spirited proprietors, Messrs. Smith & Watt, where a nicely laid out flower garden meets the eye. Here new bedding plants are tested by the side of older favourites. In the centre of one of these beds is a very handsome specimen of Wellingtonia.

A short distance from this is a newly formed Pinetum, filled with well selected specimens evidently arranged by a master hand. From the Pinetum we turn to the trial ground for garden and farm seeds (not previously sent out), which are conducted with great care. From this part of the grounds about 50 acres of seedling and transplanted forest trees, Thorn Quicks, &c., are seen; this stock is very superior, and well worthy the attention of extensive planters. In close proximity were some ornamental trees for avenue planting, with fine stems and heads, which had been repeatedly transplanted, ranging from 10 to 15 feet in height. They consist chiefly of Limes, Elm, Sycamore, common and purple Beech, Chestnut, &c. We also noticed large tracts of Rhododendrons, hardy Azaleas, Hollies (green and variegated), Yews, Box, Arbor-vitæ, and numerous other dwarf growing deciduous and evergreen shrubs.

We now pass through a portion of the ground which has been set apart for Dahlias and Hollyhocks. This portion is well hedged round for shelter. We were too late (October 9) in the season to see these in prime condition, as the frost had already told on the Dahlias. Roses and fruit trees are grown extensively; these collections are most complete and of the healthiest description, the latter occupy about 8 acres. The firm has long been famed for its ability in selecting and sending out fruit trees to suit different soils and situations. The pyramidal and bush trees are not only calculated to furnish a garden at once, but are thickly set with flower-buds, and if planted early would give a crop the first season.

We now retrace our steps towards the greenhouses, and, by the way, we notice the California Bunch-grass (Elymus condensatus), of which about half an acre will be devoted next season to testing the forage qualities of this new introduction. The glass erections (seven in number) are mostly span-roofed, of modern construction, and are well arranged. The first house we enter is 70 feet by 20, and contains a large stock of Camellias well set with flower-buds. In this house we noticed a fine plant of Rhododendron Falconeri furnished with several flower-buds. The stove, 35 feet by 20, contains a splendid lot of Palms, Ferns, &c. Amongst the latter were good specimens of Todea superba and pellucida, also nice plants of Aphelandra aurantiaca Roezlii. In the centre of this house stood Dracæna australis, conspicuous for its size and beauty. The next house (same size) contains a collection of pot Vines in fruit, bearing from six to eight good bunches each, of fine quality; especially fine were Golden Champion and Mrs. Pince. The show-house, 70 by 15 feet, for flowering plants, &c., was very gay, and contained good specimens of Coleus, Fuchsia, &c., but the most attractive features here were the gold and silver Tricolor Pelargoniums. Achievement, Prince of Wales, Sophia Dumaresque, and Lady Cullum were prominent for colour. One hardy propagating house, and two others of large dimensions for general purposes, were well filled with useful stock.

The seed business is conducted in commodious and convenient premises in English Street, whence many novelties, of their own careful selection, are yearly sent out. Chief amongst those of the coming season will be their Knowefield Purple Swede, which has been exhibited very fine this autumn at local and other shows. This variety is of immense size, thoroughly hardy, of beautiful shape, and likely to become a favourite with the agriculturist for general crop, if not with the gardener for late sowings for winter use. In conclusion, we must remark, that Messrs. Smith & Watt bid fair to follow in the steps of the late much-respected proprietor, Mr. John Little. *J. T.*

Obituary.

WE have to announce the death of that veteran horticulturist, Mr. GEORGE MILLS, formerly gardener at Gunnersbury Park, Acton, which took place at his residence at Ealing on September 30, at the ripe age of 84 years. Mr. Mills was a native of Hampshire, and the son of a farmer, and leaving home early in life, owing to his father having married a second time, he came to London, and obtained employment at Roehampton in the gardens attached to the residence of Mr. Goldsmith, the gardener under whom he served being a Mr. Carter, a Cucumber grower of considerable renown in his day. After remaining here some time, he went into the nurseries of Messrs. Lee & Kennedy at Hammersmith, and eventually became gardener at Cranbrook Park, Ilford, the seat of Mrs. Hall Dare, during her lifetime, and continued to hold the same post under her son, R. W. Hall Dare, Esq., M.P. for Essex. On the death of Mrs. Hall Dare, Mr. Mills became entitled to a pension of £30 per annum for life, left him under the will of that lady. After being about seven years at Cranbrook Park, and on the death of the farm bailiff, Mr. Mills also undertook those duties, and as gardener, and successively farm bailiff and head gamekeeper, remained at Cranbrook Park for something like 22 years. Then came a reduction of salaries on the estate, which induced Mr. Mills to seek a change, and his advertisement for a gardener's situation being seen by Mr. Copeland, then proprietor of Gunnersbury Park, Mr. Copeland at once drove over to Ilford, saw Mr. Mills, and engaged him as gardener at Gunnersbury. Subsequently the Gunnersbury estate was bought by the Rothschild family, who, when they removed to Gunnersbury, contemplated taking their gardener with them. At that time Mr. Mills had a house of magnificent Muscat of Alexandria Grapes at Gunnersbury, and so much were the purchasers pleased with the appearance of this house that they resolved to continue Mr. Mills in the post of gardener. He was gardener at Gunnersbury Park from 1833 to 1853, as nearly as can be ascertained; and on leaving there went to reside in the Uxbridge Road, Ealing, where he continued to his death, growing cut Roses for market. While at Gunnersbury he wrote his treatises on "An Improved Mode of Cultivating the Cucumber and Melon," and on "The Cultivation of the Pine-apple," both of which were dedicated to the late Baroness de Rothschild. The former passed through three editions. He was buried in the Kensington Cemetery at Hanwell.

—— We have also to announce the decease, after a short illness, of M. JEAN VAN GEERT, of Ghent, which took place on the 14th inst. M. Van Geert was in his 78th year. He was well known as a successful and highly-esteemed nurseryman of long standing, and occupied a prominent position amongst his horticultural *confrères* of that peculiarly horticultural city.

THE WEATHER.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, OCT. 18, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
October.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
12. Thurs. .	30.23	42.4	41.8	41.1	95	3.0
13. Friday .	30.33	43.4	42.6	41.6	94	3.0
14. Satur. .	30.13	51.3	48.3	45.3	80	3.4
15. Sunday.	29.92	48.1	47.2	46.2	94	3.5
16 Monday	29.82	53.9	52.7	51.5	92	4.3
17. Tues. .	29.83	57.0	54.9	53.0	86	4.5
18. Wednes	29.75	54.4	53.4	52.4	93	4.4

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
October.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
12. Thurs. .	57.8	33.0	24.8	44.3	—6.9	Calm.	95	0.00
13. Friday .	59.2	31.2	28.0	45.0	—5.9	S.	120	0.00
14 Satur. ..	58.8	36.8	22.0	47.5	—3.1	S E.	130	0.00
15. Sunday.	59.8	34.5	25.3	46.2	—4.1	S.	120	0.00
16. Monday	60.3	50.3	10.0	54.3	+4.3	S.S.W.: S.	120	0.01
17. Tues. ..	64.8	49.4	15.4	56.1	+6.3	S.S E.: S	160	0.00
18. Wednes	68.4	48.1	20.3	57.3	+7.7	E.S.E.: S. by E.	165	0.03

Oct. 12.—Fog in morning. Generally cloudless. Very fine.
— 13.—Dense fog previous to 9 A.M. Generally cloudless and fine.
— 14.—A very fine day. Dense fog in early morning. A little thin cloud present at times during the day.
— 15.—Dense fog in morning. Very fine day. Nearly cloudless throughout.
— 16.—Generally cloudy. Thin rain fell during the morning. Foggy and hazy.
— 17.—Cloudy till night; then cloudless. Very fine.
— 18.—Overcast during the early morning, and rain fell between 1 and 2 A.M. Variable during the remainder of the day. Very fine.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

(DURING THE WEEK ENDING SATURDAY, OCT. 14, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth ..	59.2	38.0	21.2	58.0	40.3	17.7	49.1	0.07
Blackheath ..	59.2	31.2	28.0	57.2	35.1	22.1	45.5	0.00
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	58.6	33.0	25.6	57.0	36.6	20.4	45.8	0.00
Wolverhampton	57.3	32.1	25.2	55.6	37.6	18.0	45.6	0.24
Leicester ..	58.0	29.7	28.3	56.2	33.5	22.7	43.8	0.00
Norwich ..	55.8	31.0	24.8	54.2	34.6	19.6	43.4	0.15
Nottingham ..	59.4	30.1	29.3	57.7	33.8	23.9	44.7	0.02
Sheffield ..	59.0	30.5	28.5	55.9	35.7	20.2	44.8	0.35
Liverpool ..	58.7	38.2	20.5	54.9	40.4	14.5	46.6	0.20
Manchester ..	61.2	30.0	31.2	57.5	36.2	21.3	45.8	0.30
Salford	61.3	30.2	31.1	57.0	34.9	22.1	44.9	0.34
Bradford ..	57.0	34.6	22.4	54.3	35.5	18.8	43.9	0.02
Leeds	57.0	32.0	25.0	54.6	35.1	19.4	43.8	0.01
Hull	55.0	27.0	28.0	54.0	33.0	21.0	42.5	0.11
Newcastle ..	56.0	33.0	23.0	51.0	36.8	14.2	42.9	0.00
Edinburgh ..	59.7	28.0	31.7	..	..	..	42.4	0.20
Glasgow ..	56.2	27.1	29.1	..	..	..	42.2	0.38
Dundee.. ..	55.0	31.0	24.0	..	..	..	43.2	0.15
Aberdeen ..	56.1	34.7	21.4	..	..	..	44.9	0.40
Paisley	..	..	..	..	..	..	..	..
Greenock ..	57.0	34.5	22.5	..	..	..	44.1	0.00
Leith	59.0	29.7	29.3	..	..	..	43.7	0.06
Perth	58.0	28.0	30.0	..	..	..	44.3	0.00
Dublin	..	..	..	..	..	..	..	..

JAMES GLAISHER.

Miscellaneous.

MICHAELMAS DAISIES.

DAISIES on the emerald lawn,
Daisies rosy-white for dawn,—
Rosy-white for summer's dawn;
Michaelmas Daisies grey and drear,
Dusk in the dusky close of the year:
Michaelmas Daisies for close of the year.

The year is old, and the weary wind
Withers its glory leaf by leaf;
Gone is the garland that April twined,
Gone June Roses, and August sheaf.
The Apples are gone from the orchard boughs,
Faded the creeper's tangled grace;
The bitter blast from its rest must rouse,
For Winter comes on apace, apace.
The old year yearns for its daisied dawn,
All golden bright and rosy-white:
Dreams of the Daisies, like stars on the lawn,
And makes them again in the dusk of its night.

Daisies on the emerald lawn,
Daisies rosy-white for dawn,—
Rosy-white for summer's dawn;
Michaelmas Daisies grey and drear,
Dusk for the dusky close of the year:
Michaelmas Daisies for close of the year.

M. V., in "Spectator."

THE TOUCAN'S BEAK. — The question has often been asked, "Why has this bird such a remarkable beak?" It seems, says a correspondent, that his method of feeding explains the whole riddle of his long, heavy, serrated mandibles. Like the shovel-nosed tribe, or the digger-like tribe, or the curved-beak tribe, shape, form, size, is everything for their peculiar method of obtaining rations. The Toucans feed on insects which lie deep in the corolla of flowers; it especially delights in tubular corollas, and has a great fondness for the rich, scarlet, Fuchsia-like clusters of the Rose de Monta, of Guayana. These clusters he seizes near the calyx, and by longitudinal movements of his powerful mandibles, aided by their serrated edges, saws them off, and then, by his horny and fimbriated tongue, separates the insect portion from the vegetable, and swallows that of which his palate approves, like any other sensible bird. To see him hop from branch to branch, reach out his long, ponderous jaws, seize his breakfast, saw it off, as one sees a butcher in his stall, to see the parts rejected fall to the ground in petaliferous showers, and he maintain his equipoise, has been one of the most pleasant studies of my ornithological curriculum. I have made frequent post-mortem examinations of his injestæ, and have always found the shields and remains of insects the most abundant in his craw.

"WILD ANIMALS."—At the last Exeter Assizes there was a case in the calendar which strikingly illustrated the uncertainty attending the legal definition of a wild animal. The prisoner, a fisherman, was charged with stealing a lobster, by abstracting it from the "pot" of a fellow fisherman, the said "pot" being sunk in the English Channel, off the coast of Devon. The counsel for the defence raised the objection that a lobster was a wild animal, and that, therefore, a criminal information could not be maintained. The Judge ruled that a lobster was not a wild animal, but considerable time was wasted in argument before the legal status of the crustacean was fixed. A still more curious instance of the difficulty has arisen in the same county. A swarm of bees alighted in a lane near the residence of a farmer named Pidsley, who straightway hived them. A neighbour named Glenville declared that the bees were his, and shaking them out of Mr. Pidsley's hive into his own, carried them away. Pidsley sued in the county court for the recovery of the value of the bees, and the Judge, Mr. Serjeant Petersdorff, after hearing all the evidence, said he must withhold his judgment till next court, "there being a variety of points that suggested themselves to his mind with reference to the ownership of wild animals." The possibility of bees being regarded as wild animals was a new light for the Devonshire bee-masters.

LILIES.—The hardy border Lilies are amongst the most useful garden plants known. They are peculiarly hardy and accommodating, requiring no support from sticks or ties: several of them are green all the winter, and capable of resisting any amount of frost, and, if left alone, they increase rapidly, and become more and more valuable every year. We will say nothing of their beauty, for that is proverbial, but it may be proper to add, that many of the most lovely Lilies, that are regarded as only suitable for the greenhouse, and grown with great care under glass, are really as hardy as the old common white Lily, and may be grown with it in the same border. To grow the Liliums well requires a deep, moist, rich loam. A stubborn clay may be improved for them by digging deeply, and incorporating with the staple plenty of rotten manure and leaf-mould. They all thrive in peat, or rotten turf, or indeed in any soil containing an abundance of decomposing vegetable matter. The autumn is the proper time to plant Lilies, but they may be planted at any season, if they can be obtained in a dormant state, or growing in pots. They should be planted deep for their size, say never less than 6 inches. When they have stood some years, they should be taken up and parted, and the borders should be deeply dug and liberally manured before they are planted again. If the stems of Lilies become leafless and unsightly before the flowers are past, it is a sign the roots are too dry, or that the soil is impoverished, and therefore, as soon as the stems die down, they should be lifted and replanted. Lilium auratum, the grandest of all the Lily tribe, is as hardy as our common white Lily, and like it will grow with vigour in good loam, though, in common with the rest, it loves peat. Since it has been cheap, it has been plentifully planted out, and proves to be a remarkably beautiful, and indeed noble border flower; but its distinctness will always ensure it a high degree of favour as a conservatory plant. When grown in a pot, the best soil is sandy peat, but it will flower finely in a rich light mixture, such as Fuchsias require. It is advisable to begin with the smallest size pot in which the bulb can be placed, and then to shift to larger and larger pots as the plant progresses and the flower-buds appear, when, of course, there should be no further shifting. In respect of temperature, this is an accommodating Lily, but as a rule a cool house is better for the plant than one which is maintained at a high temperature. The supply of water should be plentiful during the growth and flowering, but should be reduced when the flowering is over. *Suttons' Bulb Catalogue.*

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

To conservatories proper the application of a little fire-heat will now be necessary, if for no other purpose than to aid in dispelling any excess of damp, which if not neutralised in its effects by such artificial means, in connection with as much fresh air as can possibly be given, will become deposited, with an injurious effect, upon the more delicate flowers, to the deterioration of the general display. It will also be necessary to thoroughly warm through all flues during such time as the sun shines and the ventilators can be opened freely, to get rid of any dampness that may be contained in them, and subsequently to lay the fires ready for eventualities. Already here, in Essex, the thermometer registered 2° of frost on the 13th inst., and such an indication of what we may expect cannot be treated lightly by those who value the health of their plants. *Cape Pelargoniums* of the Rubens and Gauntlet type, of moderately good forcing varieties, should now be placed into a moderate growing temperature, such as an average of 56° or 58°. In such a temperature, and kept in the full light, they will come into bloom at a very acceptable date. Be particular not to place lifted plants of *Bouvardias*, and especially B. longiflora, too near to the heating medium, as a dry arid atmosphere is very injurious to them at this season. Give to *Salvias*, which are about to flower in pots, frequent applications of liquid manure. The first batch of *Show Pelargoniums* should now receive the smallest shift possible into a free open fibrous compost. Crock the pots well, and maintain the plants subsequently as near to the glass as possible. *Fuchsias* which have ceased to be attractive should now be placed aside into any situation where the balls may readily become dry enough to cause them to shed their leaves and cease growing, after which they can be stored away in any dark place, where severe frosts cannot reach them. Specimens of *Luculias*, *Poinsettias*, *Euphorbias*, *Thyrsacanthus*, and *Begonias*, which are about to flower, should be brought out prominently, so that they may catch all the light possible, to enhance thereby the brightness of their subsequent display. Sometimes *Chorozemas*, *Cotton-plants* (*Gossypium*), *Pimeleas*, *Bossiæas*, and *Tree Violets* especially, will at this season show signs of the attacks of red spider. Such plants should therefore be well looked into, and if necessary have the usual antidote applied. This is with many a favourite season for tying-in and restaking *Indian Azaleas*. Be particular to well twist each strand of matting used, and which should be the best of its kind. If matting of an inferior quality is employed, or the operation of tying is indifferently performed, the plants may be expected to become quickly deranged again. Messrs. Wrench & Sons, of London Bridge, possess a very soft and endurable kind of reed-grass for tying purposes, which, though a light material, may be procured at something like 1*s*. 6*d*. per lb., and it will I have no doubt prove a great boon for such purposes as the above when sufficiently known. Be careful to keep *Cinerarias* which are intended to flower later than the ordinary stock, as cool and as moist as possible, to neutralise their natural tendency to flower at this time.

FORCING HOUSES.

Attend incessantly to the tan-beds in *Pineries*. It may be that in some instances the heat has not been violent, and is now reduced to a very moderate mean. It may therefore be advisable to fill in the tan around the sides of the plunged pots, which had been drawn away for safety. In other instances the pots may be let down to the rim, or a little more old or mixed tan may be placed over the surface to keep the heat steady. Additional care will be necessary in watering *Pines*, as we have now fully entered the dull season: if given about twice a week all their wants will have been met. Still admit air freely between 10 A.M. and 1 P.M. on every fine day. A good addition of mats must be used upon those *Pine pits* which are heated for the nonce mainly by fermenting materials, as the night temperature might at any date be expected to fall to a somewhat low minimum. Those late *Vines* which are now denuded of their crops, and the wood and foliage of which are obviously ripening kindly, may have the top portion of their branches, such portions, in fact, as are immatured, cut away. By these means not only will the light and air be admitted more freely to the more permanent wood, but by removing such as is not matured a further expenditure of strength on the part of the Vines will be saved. Make a point of covering the outdoor *Vine borders* at the earliest moment possible, for during even a day's delay a deluging rain may fall, which will prove adverse to the real interests of the future. Continue to examine hanging Grapes and to remove carefully all signs of decay. To prevent this decay, the houses should now be quite free from drip and the air should be kept scrupulously dry, to which end the outer air should not be admitted with any great freedom when highly surcharged with moisture, as it often is at this season. Prune and dress successional *Peach* and *Nectarine houses* as soon as the wood is sufficiently ripened for the former process to be undertaken with safety. It is advisable now to replace the lights upon any from which they have been removed, as though the air will do them good, excessive rains will not at this juncture; at the same time, if the lights are re-fixed, all the air possible must be given by other means. Keep young plants of *Cucumbers*, progressing for mid-winter fruiting, pinched in at all points but where leaders are required to extend. Do not let them fruit until such time as it becomes quite necessary in regard to supply. It is too frequently the case that if fruits show, no matter how young the plants may be, they are permitted to grow, often to the loss of much of the vigour, and consequently of the fruit-bearing capacity of the plants. Be most particular not to unduly force them just at this particular time.

HARDY FLOWER GARDEN.

Finish transplanting such biennials and perennials as *Rockets*, *Delphiniums*, *Wallflowers*, *Sweet Williams*, *Geums*, *Phloxes*, *Canterbury Bells*, *Foxgloves*, *Antirrhinums*, and any other of the hosts of such kinds raised from seed, and which may require, for various reasons, to be transplanted before winter sets in. The varieties of edging *Thrift* should now be transplanted permanently. Hardy deciduous and evergreen *Shrubs* may also be transplanted with safety.

KITCHEN GARDEN.

All vacant spaces of kitchen-garden ground should be manured and thoroughly well dug, or trenched, turning the top spit over loosely, and so laying it that the air and subsequent frosts may permeate through it to the utmost. It is an excellent plan to throw it up into ridges where the soil is at all tenacious, though, in the case of light soils, very rough digging is nearly as good. *Herbs*, such as stand the winter, may now be divided or transplanted, as the case may be. All herb-beds should, besides, receive a dressing with good manure. Give to the crops of *Winter Spinach* another thorough good hoeing, and hoe well amongst the young crops of *Winter Onions*, *Carrots*, *Lettuce*, and *Endives* upon a fine day if possible. Earth-up well early winter *Collards*, and moderately for the present transplanted beds of early spring *Cabbages*. Transplant another batch of small late *Endive* and *Lettuce* on to a sunny southern aspect, to succeed the April stocks. Take up and store *Scorzonera*, *Salsafy*, *Beet*, and *Carrots*. At the risk of repetition, I again advise that *Parsnips* should be left in the ground till required for use, and not be taken up to dry. *W. E.*

Notices to Correspondents.

ALPINE RHODODENDRON: *G. W.* Sow it at once in a pot or pan of sandy peat, and let it stand in a cold frame till it vegetates. Being fine, the seed must be lightly covered, and must be kept moist without washing. Lay a pane of glass over the pot, to prevent evaporation. By-and-by, when the plants are large enough to handle, have them pricked off into other pots in similar soil.

APIARY: *R. H.* writes:— "Would some of your numerous subscribers kindly inform me how I could best line a bee-box? I am intending to construct a frame-hive somewhat similar to the sketch you gave in September, 1870—one alteration being a ridged top and cover, the other a feeding drawer. To prevent the internal heat from escaping so rapidly I thought of lining the inside (1st) with strong brown paper, which is an excellent retainer of heat, but it would require oiling to prevent the paper from pulping by the condensed vapours; or (2d), with leather,—but would not this be sure to mildew? or (3d), with woollen cloth or closely woven flannel. I should be glad to learn which of these is best, or what is best."

BLACKBERRY PLANT: *E. J. W.* What you call the Blackberry plant is, from your description, evidently one of the Phytolaccas—probably P. decandra.

CLIMBING ROSES: *Subscriber.* Omitting whites, you may plant the following sorts on your exposed south wall. Put in two of each:—Gloire de Dijon, Maréchal Niel, Belle de Bordeaux, Climbing Devoniensis, Céline Forestier, Belle Lyonnaise, Fulgens, Vivid, Prince de Joinville, Laura Davoust, Flora, Red Rover, Glory of Waltham, and Fellenberg.

CUCUMBER FOR WINTER FORCING: *E. J. W.* You cannot do better than grow Telegraph, if you can get it true.

ENCEPHALARTOS: *Subscriber, West Gorton.* The scale on your Encephalartos is a common enemy, many of the plants being infested with them when imported. We suspect that you have kept your plants in too cold a house, and that their roots are in a bad condition. Turn them out, and if such be the case, repot them into as small-sized pots as you can get them into, and subsequently plunge in bottom-heat.

GRAPES WITHOUT COLOUR: *X. Y.* Most likely the want of colour is owing to the "good crop." It is either through overcropping, *i.e.*, more fruit than there should be in proportion to the foliage; or through a want of air whilst ripening.

NAME OF FUNGI: *T. S. P.* Polyporus sulfureus, very destructive to Oaks, Yews, &c. We do not know what Fungus the Rev. J. G. Wood refers to in "Homes without Hands," not having the book at command.

NAMES OF PLANTS: *An Old Subscriber.* The Caper Spurge (Euphorbia Lathyris). We are well aware that the seeds are much used as a substitute for Capers, but the milky juice contained in all Euphorbias is of a very deleterious character. It is most probable that in this case the saturation in vinegar may correct the acridity of the milk. For your better guidance we make the following extract from Syme's "English Botany," (vol. viii. 113):—"The capsules of this species of Spurge have been used as a substitute for Capers, but are extremely acrid, and not fit to eat till they have long been macerated in salt and water, and afterwards in vinegar; indeed, it may be doubted whether they are even then wholesome as a condiment." — *Cork.* 1, Quercus Pseudo-Suber; 2 and 3, Q. Ilex, the evergreen or Holm Oak; 4, Cneorum tricoccum; 5, Cassinia leptophylla; 6, Pernettya mucronata; 7, Coronilla valentina.—*J. Cocker.* Your Heaths are—5, 6, and 8, E. vagans; 5, the red variety (rubra), 6 and 8, the white variety (alba); No. 7, the common Ling, Calluna vulgaris.—*A Devonian.* Sedum spectabile.—*A. B.* 1 and 5, Erica stricta (*alias* E. corsica); 2, Calluna vulgaris alba; 3, Hypericum hircinum; 4, Galium, probably G. linifolium; 6, Sidalcea oregana (*alias* Sida malvæiflora).—*E. H.* Apparently a starved example of Athyrium Filix-fœmina crispum. — *Mrs. Chaloner* and *Twenty Years' Subscriber.* Not recognised from the leaves alone, possibly an Euonymus or Cornus.—*Old Subscriber.* Prunus Padus.—*J. Smith.* The Pteris is similar to, but not quite identical with, the one we noticed as fimbriata. That is more completely and more evenly fringed.—*R. Bowen.* 1. Cyrtomium caryotideum; 2. Platyloma rotundifolium; 3. Litobrochia aurita; 4. Blechnum occidentale; 5, some multifid variety of Scolopendrium, too imperfect for identification; 6, Onychium japonicum; 7, Asplenium bulbiferum.—*W. E. R.* Pyrus Aria, the white Bean.

PICEA LASIOCARPA: *Working Gardener.* The literal meaning of the name lasiocarpa, is woolly-fruited, from two Greek words, respectively signifying "wool" and "fruit."

ROSES: *Hortus Rosarum* must be more explicit. Does he want Roses to plant against a low south wall, 3 feet high, or to plant in a border in front of the wall? How many? Is it a south or a north aspect which is intended? Querists cannot state their wants too distinctly, as it is often impossible for us to know what is meant by an inquiry, briefly put. Such a question may be plain enough to the writer, who knows all the circumstances, but is an enigma to us if we have to guess at any of them.

TANK HEATING: *Subscriber.* Slates form the best covering for a hot-water tank used for supplying bottom-heat.

TARTS: *J. T.* asks the name of a plant with clear shoots, like those of the Balsam, and which are generally used in winter for tarts. He supposes it to be a trailing plant. Can any reader help him?

VINEGAR PLANT: *R. H.* would be obliged to any of our readers if they would inform him how "Grevielle" describes the Vinegar Plant. He has not the opportunity of seeing this work, and all the information he has been able to find is in "Loudon's Chemical and Economical Botany."

CATALOGUES RECEIVED:—F. G. Godwin, Catalogue of Dutch and other Flower Roots.—Godwin & Sons, Abridged Catalogue of the Best Roses in Cultivation.—Louis Van Houtte, Catalogue of Stove and Greenhouse Plants, Conifers, Roses, Rhododendrons, and Fruit Trees, &c.—Charles Turner, Catalogue of Roses, Fruit Trees, Conifers, Hardy Trees and Shrubs, Climbing Plants, &c.—W. E. Rendle, Illustrated Catalogue of Orchard-houses, Portable Plant Protectors, and Ground Vineries.—Thomas Perkins, Trade Catalogue of Nursery Stock.—Jean Verschaffelt, Catalogue of New and Rare Plants.—Stuart & Mein, Catalogue of Select Gladioli.—Lévêque & Sons (Ivry-sur-Seine, near Paris), Catalogue of Roses, Gladioli, Camellias, Azaleas, Orange Trees, Fruit Trees, &c.—William Chater, Catalogue of Double Hollyhocks and Roses.—Maurice Young, Trade Catalogue of Coniferæ, Hardy Ornamental Trees and Shrubs, Roses, Fruit Trees, &c.

COMMUNICATIONS RECEIVED.—H. B.—G. E. O.—E. D. S.—J. M.—A. B.—W. A. M.—G. W.—W. S.—L. H. G.—T. G.—C. F. P.—J. A. L.—A. C.—J. J. M.—J. H.—J. B.—H. J. V.—W. C.—W. W.

Markets.

COVENT GARDEN.—Oct. 20.

Rather more activity has been observed in the markets the last few days, first quality fruits being in much better demand. The northern towns, too, have been sending orders more freely than usual; prices, however, have but slightly advanced, except in the case of good dessert Apples, which are now making 8*s.* to 12*s.* per bushel. Heavy goods in bulk under the hammer remain at last week's quotations.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½ sieve	2 0	to 5 0	Melons, each ..	2 0	to 5 0
Cobs, per lb. ..	0 8	— 10	Nectarines, per doz.	4 0	— 8 0
Figs	1 0	— 2 0	Peaches, per doz. ..	8 0	—15 0
Filberts, per lb. ..	0 8	— 10	Pears, per dozen ..	2 0	— 4 0
Grapes, per lb. ..	1 6	— 5 0	Pine-apples, per lb.	2 6	— 6 0
Lemons, per 100 ..	8 0	—12 0			

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	6 0	to 8 0	Horse Radish, p. bun.	3 0	to 5 0
Beet, per doz. ..	1 0	— 2 0	Leeks, per bunch ..	0 2	— 0 4
Brussels Sprouts, p.			Lettuces, per score..	0 9	— 1 6
half sieve.. ..	2 6	— 3 0	Mushrooms, p. pott.	1 0	— 2 6
Cabbages, p. doz. ..	1 0	— 1 6	Onions, per bunch..	0 4	— 0 9
Capsicums, p. 100..	1 6	— 2 0	Parsley, p. bunch ..	0 2	— 0 4
Carrots, p. bunch ..	0 6	— 0 8	Peas, per quart ..	10	— 1 0
Cauliflowers, p. doz.	2 0	— 6 0	Radishes, per bunch	0 2	— ..
Celery, red, p. bun.	1 6	— 2 0	Shallots, per lb. ..	0 8	— ..
— white, do. ..	1 0	— 1 6	Spinach, per bushel	2 6	— 3 0
Chilies, per 100 ..	1 6	— 2 0	Tomatos, p. sieve ..	4 0	— 6 0
Cucumbers, each ..	0 6	— 1 0	Turnips, p. bunch..	0 4	— 0 6
— Ridge, p. doz.	1 0	— 2 0	Vegetable Marrows,		
French Beans, p. lb.	0 4	— 0 6	per doz.	2 0	— 3 0
Herbs, per bunch ..	0 2	— 0 4			

Potatos (good samples), New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

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4-4 Scrim, from 2*d* to 5*d* per yard, advancing ¼*d*.
54 inch Hessian and Scrim, 3*d*, 3½*d*, 4*d*, 4½*d*. and 5½*d*.
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WANTED, a GARDENER (SINGLE-HANDED).—Must understand Stove work; a permanency to an active, industrious Man. Not to live on the premises—Apply, by letter only, stating age, length of service, what work used to, wages, &c., F. J. H., Tarven House, Forest Hill, near Sydenham, Kent, S.E.

WANTED, two MEN well accustomed to Planting and Laying-out Gardens. Wages, 18*s*. per week.—Apply to Mr. LOCK, The Nurseries, Sutton, Surrey.

NURSERY CLERK.—JAMES DICKSON & SONS REQUIRE, for their Nurseries, a thoroughly respectable and competent CLERK, accustomed to Correspond, and who has filled a similar situation in a large general Nursery. State age, and all particulars as to experience, salary expected, &c.—"Newton" Nurseries, Chester

WANTED, in a London Wholesale Seed House, a young MAN, of experience, who Writes a good hand, is quick at figures, and accustomed to Invoice and general Counting house Work.—Apply by letter only to HURST AND SON, 6, Leadenhall Street, London, E.C.

Second Shopman.
E. P. DIXON is REQUIRING a respectable young Man, of good address, as SECOND SHOPMAN. One who has had some experience, and accustomed to Counter Work, with a Knowledge of Plants.—Apply, stating salary expected, &c, to E. P. DIXON, Yorkshire Seed Establishment, Hull.

WANTED, a young Man as UNDER-SHOPMAN, in a Nursery and Seed Business. As he would occasionally have to act as Salesman of Nursery Stock, it is necessary that he should have some knowledge of the Names of Plants and their value.—Apply by letter only, stating age and salary required, to Mr. JOHN FRASER, The Nursery, Lea Bridge Road, E.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENERS.—THOMAS KENNEDY & Co., Seedsmen, Dumfries, can recommend a few good MEN in WANT of SITUATIONS, and will be glad to answer any inquiries respecting them. No charge.

GARDENER (HEAD).—Age 37, married, no incumbrance; well skilled in all branches of the profession. Good reference.—C. B., 3, Standard Road, Bexley Heath, Kent, S.E.

GARDENER (HEAD).—Age 37, no children; thorough practical knowledge of the profession generally. Good character.—W. J., Pine-apple Nursery, Maida Vale, W.

GARDENER (HEAD).—Age 27, married, three in family; thoroughly understands Flowers, Fruit and Vegetables, also Early and Late Forcing. No objection to a Single-handed place. Three years' character.—J. B. BELMONT, Ewell, Surrey.

GARDENER (HEAD).—Age 29; thoroughly understands the profession in all its various branches. No single handed place accepted. Good character.—A. B., 92, Widmore Road Bromley, S.E.

GARDENER (HEAD).—Age 30, single; thoroughly understands the profession in all its branches; can be well recommended from present and former employer, also by Mr. J. H. Ley, Exotic Nursery, Croydon, S.E., where letters can be addressed. N.B. No objection to go abroad

GARDENER (HEAD).—Married; has had extensive experience in Early and Late Forcing, the Cultivation of Stove and Greenhouse Plants, and Flower and Kitchen Gardening; also Land and Stock. Can be highly recommended. Seven years' personal character.—T. B., 4, Park Terrace, Upper Richmond Road, Putney, S.W.

To Noblemen and Gentlemen.
GARDENER (HEAD, WORKING).—Age 29; thoroughly understands Vines, Pines, Melons, Cucumbers, Mushrooms, Stove and Greenhouse Plants, and Flower and Kitchen Gardening; Land and Stock if required. Six years' good character from present and previous employers. References to Mr Stevenson, Cobham Park, Cobham, Surrey.—J. JONES, address as above.

GARDENER (HEAD).—Married; thoroughly practical in Forcing all kinds of Fruits, Flowers, and Vegetables; also Kitchen and Flower Gardening. Has had extensive experience in the Cultivation of Stove and Greenhouse Plants, the Erecting and Heating all kinds of Horticultural Buildings, &c. Single-handed place not accepted. Seven years' character.—A. B., 13, Charles Street, Portman Square, London, W.

GARDENER (HEAD).—Age 43, married, and has five children: open for engagement on or after November 11; has a thorough practical knowledge of Early and Late Forcing of Fruits, Laying-out Gardens, and Erecting all sorts of Glasshouses; also the Planting and Thinning of Woods; could take Charge of a Small Farm. Twenty years' certificates from late employers.—Apply stating particulars, "W. G.," care of Messrs. Milligan & Kerr, Nurserymen and Seedsmen, Dumfries, N.B.

GARDENER (HEAD, WORKING).—Age 42, married, no incumbrance; steady, energetic and practical. Is well acquainted with the Cultivation of Grape, Melon, Cucumber and Orchard-house Fruits, Stove, Greenhouse, Conservatory Plants, and Bedding Stuff, also a knowledge of Meadow Land and Stock if required. Good references.—W. H., Stratton House, Westerham, Kent.

GARDENER (HEAD, or good SINGLE-HANDED), to any Lady or Gentleman.—Married; good practice in all branches. Steady and trustworthy. Good character given.—S. S., Post Office, Windlesham, Bagshot, Surrey.

GARDENER (HEAD, or SINGLE-HANDED).—Age 29, married, one child; thoroughly understands Flower and Kitchen Gardening, Forcing, &c. Highest personal character.—W. B., Dood's Road, Reigate, Surrey.

GARDENER (HEAD, or SINGLE-HANDED).—Age 28; thoroughly understands Forcing Vines, Peaches, Cucumbers, Melons, Stove and Greenhouse Plants, and Flower and Kitchen Gardening.—W. S., Awre Post Office, near Newnham, Gloucestershire.

GARDENER (HEAD), where one or more are kept.—Age 32; well understands the profession in all its branches. Good character from present and former employers; upwards of five years in last situation.—A. B., D. Taylor, Mead Vale, Redhill.

GARDENER.—Single; used to the House and Kitchen Garden. Can have four years' excellent character from a good family.—H. W., Post Office, Framingham, Norfolk.

GARDENER (SINGLE), in the Houses preferred.—Age 23, single; eight years' experience. Good character as to abilities.—Address, stating all particulars, C. D., Post Office, Sunninghill, Berks.

GARDENER (UNDER), in a Gentleman's Establishment.—A steady, respectable young Man, with good character.—A. B., 5, St. John's Cottages, Penge, Surrey, S.E.

FORESTER (HEAD): will be open to an engagement in a few weeks.—Age 29; has had extensive experience on some of the largest Estates in Scotland and Ireland, and thoroughly understands the Management of Woods and Valuation of Timber, Wire Fencing, Road Making, Draining, &c. First-class testimonials and reference to present employer. Is leaving at his own request.—FORESTER, Gibson & Reid, 19, Lower Ormond Quay, Dublin.

ESTATE BAILIFF, or ESTATE BAILIFF and GARDENER.—Age 29, married; understands all kinds of Estate Work, including Fencing, Draining, Road-making, Timber and Plantations, and General Repairs; can Prepare Plans and Specifications for Farm Buildings, &c. Also a good practical Gardener: has had a good deal of experience in Laying-out and Planting New Gardens and Pleasure Grounds. References from present and previous employers.—A. B., Post Office, Devizes, Wilts.

BAILIFF, or FARM-BAILIFF and GARDENER combined.—Age 40, Scotch, married, with a small family; thoroughly understands the Management of all description of Soils; the Breeding, Rearing, and Feeding of all descriptions of Stock; Building, Draining, Fencing, and general Estate Improvements; the Management of Planting, and after Management of Plantations; also extensive experience in Early and Late Forcing, the Cultivation of Stove and Greenhouse Plants, and Kitchen and Flower Gardening. Can produce satisfactory testimonials from past employers.—C. A., Clark Brothers & Co., 36, Lowther Street, Carlisle.

ESTATE AGENT, or STEWARD and GARDENER.—Age 29, unmarried; has Managed, with success, a Home Farm of 500 Acres, large Gardens, Timber and Plantations, and the general Repairs of a considerable Landed Estate; is a first-class Accountant, Correspondent, &c. Highest references.—E. F., Mr. H. Slater, High Strees, Uttoxeter.

ESTATE AGENCY WANTED, by a Gentleman who has a thorough knowledge of all matters relating to Estate and Farm Management. Highest references.—A. B., Post Office, Appleby, Westmoreland.

To Landed Proprietors.
LAND STEWARDSHIP WANTED by a Gentleman of independent means; a practical Agriculturist, good Accountant, thoroughly acquainted with Stock and Feeding, who is also an Engineer and Practical Chemist; experienced in Erecting Farm Buildings, and in Improving and Draining, and the economical application of Steam-power to the Cultivation of Land. Can Erect Chemical Works or Manure Manufactory, and make Manures for Roots, Cereals, and Grass economically. Understands the Cultivation of Sugar-Beet; can Erect Works for Extracting the Sugar, or a Distillery for converting the Sugar into Spirits. Has a thorough knowledge of Commercial matters.—Apply to Messrs MILLER, ALLARDICE AND ROBSON, W.S., 8, Bank Street, Edinburgh.

To Seedsmen.
COMMISSION WANTED, by a Man who Travels all Ireland. Has a first-class Connection amongst Seedsmen, and knows the Seed Trade well. Agricultural Seeds on Commission from a first-class house only. The highest references can be given, and full particulars, by applying to B. C. D., *Gardeners' Chronicle* Office, W.C.

To the Seed Trade.
TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

TO SEEDSMEN, &c.—A young Man, age 28, single, Scotch, with eleven years' experience, is open for an engagement either at home or abroad. Has a thorough knowledge of the Seed and Bulb Trade, with part knowledge of the Fancy Flower and Plant Trade. No objection to Travel occasionally.—Address full particulars to C. B. A., Post Office, Newcastle-on-Tyne.

To Horticulturists, Florists, &c.
WANTED to APPRENTICE a YOUTH, in his 15th year (lately from school), where he would have an opportunity of learning all branches of the business.—M. E., 6, Water Gate, Woolwich.

SALESMAN, to a Market Gardener.—Age 25; ten years' experience in Covent Garden Market.—SALESMAN, 27, James Street, Covent Garden, W.C.

Seed Trade.
MANAGER, or HEAD SHOPMAN.—Age 35; thoroughly acquainted with the Trade, also the Nursery Business. No objection to Travel. Highest references.—C. B. W., Messrs J. Carter & Co., Seed Merchants, High Holborn, W.C.

SHOPMAN.—Fourteen years' experience in the Seed trade, and a good knowledge of the Nursery and Florist business.—D. E., 3, St Andrew's, Uxbridge.

SHOPMAN.—Age 27; over eight years' experience, wholesale and retail; first-class references.—B. T. L., *Gardeners' Chronicle* Office, W.C.

SHOPMAN, or WAREHOUSEMAN.—Age 35; good experience. Highest testimonials.—T. W. B., Messrs. Thomas Gibbs & Co., corner of Half Moon Street, Piccadilly, W.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

MR. R. GAINSFORD, AUCTIONEER, AGRICULTURAL and GENERAL VALUER, after many years' practical experience in Nursery, Market Gardening, and Agriculture, begs to offer his services to his Friends and the Public in general, and hopes, by strict attention, to merit their support.—Park Farm, Hanwell.

LAND DRAINAGE.—Estates and Farms Drained by Contract, or on Commission, with private capital, or public loans, by

THOMAS O. SCOTT, Land Agent, 19, King's Arms Yard, Moorgate Street, London, E.C.

Early arrangements are specially recommended.

To Market Gardeners.

TO BE LET, by Tender, about SEVENTEEN ACRES of very fertile LAND, with good old Farmhouse and Outbuildings, situate 2 miles from Brentwood, Essex.

Apply, by letter, to D. C. THOMPSON, Esq., Squirrel's Heath, Romford, Essex.

Whittington Nursery, Highgate Hill, N.

TO BE SOLD, by Private Contract, the whole of the NURSERY STOCK on 2¾ acres walled-in ground, including the Span-roof Greenhouses, 50 feet by 13 feet, and other Erections; also Seed Shop and Dwelling-house, with unexpired Lease of 20 years, situated in a very improving neighbourhood, about four miles from the City.

Further particulars may be obtained at the Nursery; and of Mr. JAMES FRASER, Horticultural Valuer and Auctioneer, Maylands Farm, Romford, Essex.

SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST 12 O'CLOCK PRECISELY.

Dutch Bulbs and Hardy Plants.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 21, at half-past 12 o'Clock precisely, First-class Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, LILIUMS, and other Bulbs, from Holland; LILY of the VALLEY roots, from Belgium; and a variety of Hardy TREES and SHRUBS, from a well-known English Nursery.

On view the morning of Sale, and Catalogues had.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY and WEDNESDAY, October 23 and 25, at half-past 12 o'Clock precisely each day, 50 Cases of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, LILIUMS, GLADIOLI, ANEMONES, RANUNCULI, and other Bulbs, just arrived from well-known Farms in Holland.

On view the mornings of Sale, and Catalogues had.

Sale of Imported Orchids.

MR. J. C. STEVENS will submit for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 24, at half-past 12 o'Clock precisely, a recent importation of the ONCIDIUM BIFOLIUM, all good plants, in fine healthy condition.

On view the morning of Sale. Catalogues may be had of Mr. J. C. STEVENS, 38, King Street, Covent Garden, W.C.; if for the country by enclosing two stamps.

Choice Orchids and Specimen Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 24, at half-past 12 o'Clock precisely, 200 plants of DENDROBIUM DEVONIANUM, 30 D. FALCONERI, 50 D. heterocarpum, 50 D. transparens, 30 D. Cambridgeanum, 30 Vanda cœrulea, 30 Cypripedium hirsutissimum, 50 Oncidium bifolium, and many other rare and valuable varieties; about 30 large fine specimen STOVE and GREENHOUSE PLANTS, including grand examples of Verschaffeltia splendida, Cycas revoluta, Pandanus utilis, Allamandas, Ixoras, Bougainvilleas, &c.

On view the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 31, at half-past 12 o'Clock precisely, valuable ORCHIDS, including fine plants of Aerides, Vandas, Cattleyas, Saccolabiums, Oncidiums, Odontoglossums, Dendrobiums, Cymbidiums, Cypripediums, &c.

On view the morning of Sale, and Catalogues had.

Chislehurst, Kent.

To NURSERYMEN, GARDENERS, and OTHERS.

MR. WILLIAM HODSOLL is instructed by R. B. Berens, Esq., to SELL by AUCTION, at the Bull Inn, Chislehurst, on FRIDAY, October 27, at 2 for 3 o'Clock, about FIFTEEN HUNDRED YARDS of excellent PEAT, in convenient Lots of about 10 Yards each, situate close to Paul's Cray Common, near Chislehurst.

May be viewed three days prior to the Sale on application to Mr. ELLIS, the Gamekeeper, near Paul's Cray Common, of whom Catalogues may be had; also at the place of Sale, and of the Auctioneer, Farningham, Kent.

Notice of an Important and Extensive Sale of NURSERY STOCK.

Brox Nurseries, Chertsey, Surrey; within 1½ mile of the Chertsey, Addlestone, and Woking Stations, on the South-Western Railway.

J. WATERER AND SONS have been instructed by Messrs. Gray & Son, in consequence of the Dissolution of Partnership, to SELL by AUCTION, upon the Premises, on MONDAY, October 30, and following days, at 12 o'Clock precisely each day, the whole of the very valuable NURSERY STOCK on 16 acres of Land, consisting of 400 dozen fine Standard and Dwarf Roses, comprising all the most approved varieties, lotted to suit private Buyers and the Trade; upwards of 70,000 choice Conifers, from 6 inches to 5 feet, including Cedrus Deodara, Pinus excelsa, Pinus Laricio, Cedrus atlantica, Cupressus Lawsoniana, Pinus Nordmanniana, Picea nobilis, Wellingtonia gigantea, Pinus austriaca, Araucarias and Thujas; 1000 Acer Negundo, 2 feet to 6 feet; 3000 American, Chinese, and Siberian Arbor-vitæ, from 1 to 6 feet; 1000 Aucuba japonica of sorts, from 1 foot to 2½ feet; 3000 Laburnums, 5 feet to 7 feet; 5000 Acacias, from 5 feet to 7 feet; 2000 Poplars of sorts, 5 feet to 6 feet; 2000 Limes, from 2 feet to 7 feet; 20,000 Green Hollies, 50,000 Seedling ditto, 1000 Variegated ditto; Horse Chestnuts, from 5 feet to 9 feet; 1000 Kalmia latifolia; 3000 Common Yews, from 1 foot to 4 feet; 50,000 Quick of sizes; 10,000 Common Laurels, 10,000 Portugal ditto; 25,000 Rhododendrons, from 1 foot to 2 feet; 18,000 clean grown Standard, Pyramidal, Dwarf, Trained and Maiden Fruit Trees, consisting of Apples, Pears, Peaches, Nectarines, Cherries, and Plums, of the most approved kinds, all of which are true to name; about 150 lots of very choice mixed Shrubs fit for immediate Ornamental Planting, and a great variety of other Stock. The Auctioneers beg to call the special attention of Gentlemen, Nurserymen, and others, to this Stock, the whole being in a most perfect and safe condition for removal.

May be viewed ten days previous to the Sale, and Catalogues had on the Premises, at the principal Inns in the neighbourhood, and of Messrs. WATERER AND SONS, Auctioneers and Valuers, Chertsey, who will forward them on application.

N.B. There is direct railway communication for goods from Chertsey Station to all parts of the United Kingdom.

Continuation of Great Nursery Sale.

MR. HENRY WALTERS will CONTINUE the SALE of choice NURSERY STOCK, at the Wetley Rocks Nurseries, on OCTOBER 30 and 31, and NOVEMBER 1 NEXT, when upwards of 50,000 Rhododendrons in variety, a large quantity of Hollies in variety, Acuba elegantissima, English and Irish Yews, and almost every kind of Evergreen; with a choice selection of FRUIT TREES, will be Sold, without reserve, as the owner is declining business.

Catalogues may be had from the Proprietor, Mr. A. B. FOX, The Nurseries, Wetley Rocks, near Leek, on and after the 22d inst.

City Auction Rooms.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, 38 and 39 Gracechurch Street, E.C., on TUESDAY and THURSDAY, October 31 and November 2, at half-past 12 o'Clock precisely each day, a first-class COLLECTION of DUTCH BULBS, 300 fine Standard and Dwarf ROSES of the choicest varieties, HARDY AMERICAN PLANTS, beautifully set with bloom-buds, &c.

On view the morning of Sale. Catalogues may be had at the Rooms, as above; and of the Auctioneers, Leytonstone, E.

Tottenham, N.

IMPORTANT SALE of about 3000 well-established POT ROSES, consisting of the best Tea-Scented and Hybrid Perpetual kinds for Forcing; also a quantity of valuable NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, on the Premises, The Hale Farm Nurseries, Tottenham, N. (adjoining the station, Great Eastern Railway, Cambridge Branch), on MONDAY, October 30, at 11 for 12 o'Clock precisely, by order of Mr. Thos. Ware (who is relinquishing the cultivation of Pot Roses in order to make room for his increasing stock of Perennials and Succulents), about 3500 choice TEA and other ROSES, in 48 to No. 16 pots, consisting principally of Devoniensis, Safrano, Madame Falcot, Mrs. Bosanquet, and the best varieties, strong established plants for Forcing; also a quantity of valuable NURSERY STOCK, comprising 1500 common Laurels, 3 to 5 feet; Euonymus, Green Hollies, Portugal Laurels, Privet, Box, &c.; a large quantity of fine standard and dwarf Roses, embracing the most approved varieties; selected Fruit Trees, a quantity of fine Limes, 6 to 10 feet; Acer Negundo variegata, Thorns, Sycamores, Laburnums, Maples, &c., Ivies, Loniceras, and other hardy Climbers, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

N.B. Frequent trains to South Tottenham from all stations on the Metropolitan Railway.

Sutton, S.

IMPORTANT to NOBLEMEN, GENTLEMEN, NURSERYMEN and OTHERS.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from the Proprietor to SELL by AUCTION, without reserve, on the Premises, The Grange, Sutton, Surrey, three minutes' walk from the Railway Station, on TUESDAY, October 31, at 12 for 1 o'Clock precisely, a large quantity of VALUABLE NURSERY STOCK, consisting of well-grown specimen Coniferæ and Evergreen Shrubs adapted for immediate effect, comprising a large stock of beautiful compact Chinese Arbor-vitæ, 5 to 8 feet; handsome Cupressus macrocarpa, 5 to 8 feet; fine English and Irish Yews, 5 to 9 feet; Pinus, Cedrus Deodara, Wellingtonias, Red Cedars; bushy green Hollies, 7 to 10 feet; Euonymus, Laurustinus, Box, Standard Lilacs, fine Weeping Elms, choice named and hybrid Rhododendrons, handsome specimen Andromeda floribunda, and other miscellaneous Shrubs suitable for borders; also a quantity of fine Standard and Dwarf ROSES, clean-grown FRUIT TREES, comprising Standard Apples, Pears, Plums, Dwarf-trained Peaches and Nectarines, Apples, Plums, and Cherries, Gooseberries and Currants; some Iron Guards, &c.

On view the day prior to the Sale; Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

Tooting, S.W.

IMPORTANT SALE of EXTRA THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, S.W., on WEDNESDAY and THURSDAY, November 1 and 2, at 11 for 12 o'Clock precisely each day, many thousands of first-class extra NURSERY STOCK, remarkably well grown, and in excellent condition for removal, comprising 7000 choice Evergreen and Coniferæ Shrubs in specimen borders, including Picea Nordmanniana, Pinsapo, and nobilis, Thujopsis borealis, Thujas in variety, Pinus of sorts, Cupressus, Wellingtonias, Arbutus, Aucubas, Hollies, Portugal Laurels, &c.; also a large quantity of handsome specimen Coniferæ, beautifully grown; likewise 1700 Spruce Firs, 2 to 4 feet; 1000 Green Hollies, 1500 Lygustrum ovalifolium, 1000 Berberis, 500 Rhododendron pontica, 600 Euonymus, Cotoneaster, bushy green Box, English Yews, Arbor-vitæ, common and Portugal Laurels, fine Standard Acer Negundo variegata, and other Ornamental Trees; 3000 fine Standard and Dwarf Roses; clean grown Pyramidal Fruit Trees, in bearing condition; 400 Currants, 1500 Poplars, Sweet Briars, 1000 Iris fœtida variegata, 2000 Sempervivum of sorts, Tulips, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, Leytonstone, Essex, E.

Gravesend Nurseries.

EXTENSIVE SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Thos. Eves (successor to the late Mr. England Clarke) to SELL by AUCTION, on the Premises, the Gravesend Nurseries, Gravesend, Kent, on MONDAY, November 6, and following days, at 11 for 12 o'Clock precisely each day, without reserve, in consequence of a portion of the land being required for building purposes, a large quantity of first-class NURSERY STOCK. Full particulars next week.

Re Mr. R. Glendinning, Deceased.

IMPORTANT NOTICE of NINE DAYS' ABSOLUTE CLEARANCE SALE of the entire and very extensive Nursery Stock, Conservatories, Greenhouses, Tools, Trade Erections, valuable Horse, Market Cart, and Complete Plant, on the Premises, Chiswick Nurseries, High Road, Turnham Green, and Chiswick Lane.

MR. J. A. SMITH is instructed by the Executrix to SELL by AUCTION, on the Premises, near the South-Western Station, and Toll Gate, Turnham Green, on MONDAY and TUESDAY, October 30 and 31; WEDNESDAY, THURSDAY and FRIDAY, November 1, 2 and 3, and continuing on November 6, 7, 8 and 9, commencing each day at 11 for 12 o'Clock punctually, the extensive and beautifully varied NURSERY STOCK, in fine condition for effective planting after removal, including many prize specimens. The Catalogue will comprise all the Trade Fittings and Erections, 33,298 Evergreen Trees, 21,450 Deciduous or Forest Trees, 2000 Standard and Dwarf Perpetual and other Roses, 7000 Stove and Greenhouse Prize Specimen and other Plants, 30,000 Fruit Trees, 600 Vines, &c., &c., as described in Catalogue.

May be viewed the Thursday, Friday and Saturday prior. Catalogues, showing the arrangement of each day's Sale, to be had at the places of Sale, and of the Auctioneer, 58, King Street East, Hammersmith, W.

The LEASE of CHISWICK LANE NURSERY to be SOLD by PRIVATE TREATY, 4¼ acres, rent £60 nett.

To Gentlemen, Nurserymen, and Others engaged in PLANTING.

IMPORTANT and EXTENSIVE SALE of NURSERY STOCK.

MR. POYSER will SELL by AUCTION, without reserve, at the Tansley Nurseries, Matlock, Derbyshire, on TUESDAY, November 7, and three following days, at half past 11 o'Clock each day (Mr. J. Smith, Sen., having decided on clearing off a portion of his extensive stock), EVERGREEN and FLOWERING SHRUBS and TREES, suitable for planting; FOREST TREES, RHODODENDRONS, IRISH YEWS, of large and small sizes, in large quantities; also large quantities of the following,—THORN QUICKS, SCOTCH FIR, LARCH, SPRUCE, OAK, ASH, and Mountain ASH. Upwards of 1000 Lots.

Catalogues may be had 10 days prior to Sale, and further information obtained, from Mr. SMITH, sen.; or from Mr. POYSER, Auctioneer, Wirksworth, Derbyshire.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871.

The Nurseries, Mill Hill, Hendon, N.W.

About ¾ of a Mile and a Mile respectively from the stations on the Great Northern and Midland Railways.

NURSERY STOCK.

MESSRS. HUMBERT AND COX have received instructions from Messrs. Wright to SELL by AUCTION, on the Premises, The Nurseries, Mill Hill, Hendon, on WEDNESDAY and THURSDAY, October 25 and 26, each day at 12 o'Clock precisely, FOUR HUNDRED LOTS of capital NURSERY STOCK, comprising fine specimen Plants, in Thuja japonica, T. Lobbii, T. aurea, T. gigantea, Thujopsis borealis, Cedrus Deodara, Pinus excelsa, P. austriaca, Cupressus Lawsoniana, Abies Douglasii, Wellingtonia gigantea, Arbor-vitæ, Irish and English Yew; a large quantity of Aucuba japonica, Phillyrea, Alaternus, Laurustinus, Arbutus, Portugal and Common Laurel, Tree Box, Spruce and other Fir; Standard and Pyramid FRUIT TREES; Apple, Pear, Plum, Cherry; Standard and Dwarf ROSES; an assortment of FOREST TREES, Limes, Planes, Mountain Ash, Acacia, Chestnuts, &c. All in excellent condition for moving.

May be viewed two days previous to the Sale. Catalogues may be had at The Nurseries, Mill Hill; Warner's Welsh Harp, Hendon; Red Lion, The Hyde; Candos Arms and Bald-faced Stag, Edgware; Green Man, Covent Garden; *County Chronicle* Office, 15, Duke Street, London Bridge; *Press* Office, Barnet; Peahen and George, St. Alban's; Red Lion, Elstree; Abercorn Arms, Stanmore; Three Crowns, Bushey Heath; Bell Inn, Bushey; Queen's Head and Railway Hotel, Pinner; King's Head and Railway Hotel, Harrow; Chequers, Uxbridge; Swan, Rickmansworth and Hemel Hempstead; Crown, Amersham; George, Chesham; Clarendon Arms, Essex Arms, and Rose and Crown Hotels, Watford; and (free by post) of Messrs. HUMBERT AND COX, Land and Timber Surveyors, Drainage Engineers, Land Agents and Auctioneers, 88, St. James's Street, London, S.W., and Watford, Herts.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A. For an OX or STEER (in any Class).
„ B. For a COW or HEIFER (in any Class).
„ C. For a BEAST in extra Stock.
SHEEP. „ D. For a Pen of three WETHERS.
„ E. For a Pen of three EWES.
„ F. For a SINGLE WETHER SHEEP in Extra Stock.
PIGS. „ G. For a Pen of three PIGS (in any Class).
„ H. For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 21, 1871.

IN one of our brief leading paragraphs last week but scant justice was done by Mr. BIDDELL to the profits of SUGAR-BEET GROWING. The Beet was saddled with the entire cost of its tillage and manure, and it speaks well for its profitableness to the farmer that it was able to bear the burden and show a nett profit of £3 12*s.* per acre. Try any other of our green crops in the same way, and most of them would reveal a loss. Hence the common remark that green crops do not pay, and the common practice of charging part of the expense of manures, &c., to the succeeding grain crops. The fact is, those crops perform most of the offices of a bare fallow to the land, and when thoroughly worked and managed, the latter sometimes costs as much as from £8 to £10 per acre. In that case the returns are *nil.* Even the feeding value of Turnip or Mangel does not often exceed £6 or £8 per acre, while the expense of their production is certainly within a pound of that of Sugar-Beet. In fact, it is difficult to see how this extra pound of expense is incurred. A shilling or two on the hoeing and the pulling is easily accounted for, but an entire pound extra per acre for labour on the Beet crop is not. Still, taking it so, is there any other green crop, or proper preparation for Wheat, which can show such a profit as the Sugar-Beet?

Now, before discussing the returns from Sugar-Beet, let us remark upon the estimated yield of 15 tons per acre. It is a low yield, and there seems no reason why it should not be increased. We have had a succession of critical seasons since the introduction of sugar-growing at Lavenham — two seasons excessively dry, and this one wet and changeable; yet 24 tons per acre have been grown at Lavenham, and five of the best crops of roots in 1869 weighed 24, 21½, 19, 15, and 14½ respectively; the tops of the same crops were 6, 9½, 11, 8, 8½ tons per acre. With such facts actually accomplished, it is rather discouraging to be tied down to 15 tons per acre. It has never been denied that three or four roots of Sugar-Beet may be grown on the same space occupied by a large Mangel; and as the Sugar-Beet is much more dense, and consequently weighty in proportion to its bulk, than the Mangel, it follows that the yield ought to equal it. It was found to do so in Ireland, and it was the opinion of the *Norfolk Farmer* that it will also do so in England.

Then, again, in Mr. BIDDELL'S return for Sugar-Beet there is an item of 7*s.* put down for the tops. This is the valuation for 6 or 7 tons! The very least that the best growers, according to the returns hitherto published, have been able to grow, is 6 tons per acre. Juicy, crisp, sweet green food, greedily devoured by stock, for 1*s.* a ton! and beef and mutton still 1*s.* a pound. No doubt the difficulty is to use them while they are good; but if we take them at only 4*s.* a ton, then, at 7 tons per acre, another guinea would have to be added to the profits of the Beet crop. Then the matter would stand thus:—

15 tons of Beet	£15	0	0
7 tons of leaves, at 4*s.*	1	8	0
	£16	8	0
Total cost of production, including rent, rates, interest on capital, and allowing no drawback for unexhausted manures, &c., that go to benefit the Wheat and succeeding crops	11	15	0
Profits per acre	£4	15	0
But raise the produce to 20 tons per acre	£20	0	0
Grow less leaf, say 6 tons	1	4	0
	£21	4	0
Expenses, as before	11	15	0
Profits per acre	£9	9	0

And this is by no means the maximum yield of this crop.

By overweighting the crop with the entire cost of production, and underestimating its yield, some seem to think that higher prices may be screwed out of the sugar factors for the roots. It may be so; but it is much more probable that by putting on 20 per cent. on the price of Sugar-Beet, as was suggested at Stowmarket the other day, this new industry will be strangled in its infancy, to the injury of British agriculture and the impoverishment of the country. A grand project to build a factory, costing £25,000, and to take the produce of 600 acres for five years at £1 per ton, with so much pulp or Beet bread back at 12*s.* per ton, or without pulp £1 1*s.* per ton for the roots, is in abeyance for the present, as the farmers declined to guarantee the roots. It seems worthy of the most serious consideration of agriculturists whether their true interest does not lie rather in increased production than in a higher price for the Sugar-Beet. With the latter ranging from 13*s.* to £1 a ton on the Continent, it does not seem probable that the sugar-maker can afford to pay 25*s.* in England; and with the feeding value of Mangels, Swedes, or Turnips ranging from something like £6 to £12 per acre, surely it must pay better to grow Sugar-Beet, returning from £15 to £25 or £30 per acre; the latter leaving as good a tilth and as large reserve of productive force in the ground for the succeeding crop as the former.

No difference has been found in the Wheat crops after Sugar-Beet, and those after Mangels, or other green crops. It is by no means an exhausting crop, such as Kohl Rabi or Cabbage. Its extra percentage of sugar is manufactured from the atmosphere, and not drawn up out of the ground.

THE experience of so good an observer and so practical a farmer as Mr. EDMONDS, of Southrop, Lechlade, is well worth recording, especially when the circumstances were difficult or unusual. Mr. EDMONDS, like all other English stock-owners, was in difficulties last autumn, owing to the unusual drought of 1870, and the consequent scarcity of cattle food. There was no hay—no aftermath—no Turnips: there was, however, straw of unusually excellent quality. "It soon became evident, not only that the hay must be most sparingly used, but also that the oat and barley straw would be by no means sufficient for fodder through the winter. These also must be largely supplemented by the use of wheat-straw, and the question arose as to how to make the latter most palatable and most digestible. By some, treacle was given, and with good results: 1 lb. or 1½ lb. per day, besides meal, being allowed to each beast. By others, Linseed was used (I was one of those who did so), boiled or steamed, and thrown over the chaff."

Mr. EDMONDS, whom we are quoting, describes in the current number of the Agricultural Society's Journal, his own management, as follows:—

"I do so," he says, "not because I consider that my plan was better than others, but because I can describe it more minutely. I must plead guilty to great indiscreetness in the previous summer, for, finding some of my intended mowing ground too bad a crop to cut, I bought grazing cattle to stock it, disliking to do so with those I already had, and depending upon rain to give a sufficient supply of grass. The consequence was that the former, later in the season, robbed my others of some hay, and those others were obliged to be brought to the yards early in October, none the better for their summer's keep. Nothing daunted, however, by this piece of bad luck or bad management, I ventured—stock being very low in price—to purchase more cattle, tempted the more to do so by having had built some new cattle boxes, which I wanted to fill. To find Lent corn straw for them was out of the question. I began to do so, mixing it with a little wheat-straw, but soon found that my sheep would be *minus* straw if I continued the plan, so determined to feed them upon wheat-straw—some wholly so; for others, mixing it with oat-straw. We had it cut into chaff, and for the yearlings we added 1 lb. of Linseed and 1 lb. of bean and barley meal per beast per day, at a cost of 1*s.* 9*d.* per week, the Linseed and meal being steamed and thrown boiling over the chaff and well mixed with it. At one place I steamed the straw-chaff, but I hardly know that we found sufficient difference in the thriving of the animals to warrant the expense. Truly, that was not very much. The smell, especially when mixed with one-tenth hay, was like that of new hay; the knots in the straw were softer, and its feel altogether so in the hand, which would lead to the conclusion that it must have been more easily digested; but practically I cannot say that there was enough difference for either me or the feeder to remark it. With this food, assisted by artificials (corn and Linseed), I succeeded in grazing oxen, which not only paid for what they ate, but realised a handsome profit as well. After selling these fat cattle, just before and just after Christmas, I had left my yearlings, milking cows, in-calf heifers, and between 50 and 60 young beasts coming two years old. From these last I selected 20 of the best of the heifers and the six best steers to keep round, leaving about 30, with regard to which came the question, What must I do with them? I could sell them, but only at a very low price—so low as to lose money upon their cost to the time; I could possibly keep them upon wheat-straw and 2 or 3 lb. of corn and cake, but then they would probably pay nothing for the winter's keep; or I could try and fatten them for the June market on wheat-straw and boiled Linseed and meal. From among these courses capable of being adopted I elected to try the last, and put them into my cattle-pits just after Christmas, having given them before that time mixed straw and a little meal. From that time until the middle of March each animal had 3 lb. of meal and 2 lb. of Linseed per day, at a cost of about 4*s.* per week; after which, until May 7, they had 7 lb. of meal and 2½ lb. of Linseed, at a cost of about 7*s.* per week. From that time until they were sold their cost was about 9*s.* per week. They consumed daily about 2 bush. of chaff each, part of them having one-tenth hay and nine-tenths wheat-straw, and the others no hay at all. They have paid from the beginning of January, on the average, from about £8 10*s.* to £9 per head; 14 of them being sold in May and the last three on July 25. One went wrong, and made only £3. I had reason, so far, to be satisfied with the result. As to my remaining cattle, fed as before stated (1 lb. Linseed and 1 lb. meal), the yearlings I had to spare went out at £9 each, and I never had my 2-year-old heifers and steers look better; their allowance of artificials had been a little more liberal, costing about 3*s.* per week; still they had no hay, but only mixed straw (wheat and oat) for their chaff. I learnt, too, what I dare say many have long known—that Linseed is an exceedingly good thing for milking cows. I gave it them until April, when, having some grass, I substituted it and meal for the boiled Linseed, and the milk was immediately reduced in quantity and in richness. I cannot conclude without saying that I believe that pits or boxes for feeding cattle are very much better than any other description of stall. They save litter, prevent any waste of valuable manure, and the cattle are quieter and feed quicker."

Our readers will, we believe, thank us for thus bringing prominently before them such a well advised and successful piece of good management.

—— A PORTION only of a fair supply of English Wheat was disposed of on Monday at Mark Lane, but at the extreme prices of that day se'nnight. On Wednesday a slow demand prevailed for all qualities, though at Monday's rates.——Choice beasts sold at higher prices than in the previous week at the Metropolitan Cattle Market on Monday; choice sheep also secured higher prices, as also did calves. Thursday's trade was on the whole dull: supply and demand were fairly balanced.——There is a steady demand for all descriptions of Hops.

—— The HEREFORDSHIRE AGRICULTURAL SOCIETY has held its annual meeting during the past two days. The show was a full average one, notwithstanding the fear of cattle breeders as to the foot-and-mouth disease, which no doubt kept many first-class animals at home which otherwise would have been in the showyard. The principal feature was the collection of Hereford stock, and especially of bulls. The best lots of sheep were of the Shropshire breed; pigs were of average quality, but horses were a very poor show. The winners of 1st prizes in cattle were Mr. Tanner, of Frodesley, Salop; Mr. Roberts, of Pembridge, Leominster; Mr. Morris, of Madeley; Mr. P. Turner, Pembridge; and Mr. Edwards, of Broadward, Leominster. Sir J. R. Bailey, M.P., took the 2d prize for the best pair of heifers. In the sheep classes Mr. R. Farmer, of Frodesley, Mr. Downing, of Holm Lacey, and Mr. Jowett, of Old Weir, were the successful competitors; and in pigs the best of the premiums were awarded to Messrs. Wheeler & Son, of Long Compton, Shipston-on-Stour. Premiums for horses came to Mr. Sherratt, of Ocle-Pitchard, Mr. Edwards, of Broadward, and Mr. Gibbons, of Hampton Bishop. There was a fair lot of agricultural implements in the showyard.

—— The SUGAR-SORGHUM (Sorghum saccharatum), about the value of which so much was said in this country a short time since, appears to have attracted a similar amount of attention in India,—the interest of the authorities in Madras having been excited by a paper read before the Asiatic Society by an agent of the United States Government, who was sent to China to observe the cultivation of Sorgho and the mode of manufacturing sugar from its juice. Colonel BODDAM, the honorary secretary of the Agri-Horticultural Society of Madras, communicated the following substance of this paper in a letter addressed to the secretary of the chief commissioner of Mysore. He says:—

"This remarkable plant is a native of the north of China. Its giant growth, and its beautiful and graceful appearance, and refreshing greenness in the driest season, and the expectation of finding it a rival to Sugar-Beet, induced the French Consul at Shanghai to send some Sorgho seed to his Government. In 1854 Mr. BROWNE, agent of the United States' Patent Office, took to America some French seed, which was distributed by the Government. The plant was cultivated by a few farmers, but it received little attention until an ex-governor of South Carolina reported the results of his trials to a farmers' club, which brought Sorgho into notice. Since 1855 its cultivation has steadily increased, and it is now one of the great crops of the country. It is grown in France and Algeria for alcohol chiefly, and in America for seed, forage, sugar syrup, alcohol, vinegar, and beer. In the 10 North-western States, where it flourishes, there were in 1864 366,670 acres of Sorgho, and Sorgho sugar was selling at Chicago at 4½*d.* per lb. But for sugar Sorgho has turned out a failure. Its great merit as a forage plant is its principal recommendation, and on this point an official report of the United States' Agricultural Department has declared that the value of Sorgho for feeding stock cannot be surpassed by any other crop, as a greater amount of nutritious fodder can be obtained from it in a shorter time within a given space, and more cheaply. While grass yields a ton or a ton and a half of hay, Sorgho will yield from 2 to 9 tons of dry fodder. Sorgho flourishes wherever Indian Corn flourishes. The seed is sown for transplanting on warm ground, finely broken, in the middle of April. The young plants are watered with liquid manure as soon as they appear, and in three or four days watering is repeated night and morning if the weather is dry. They are picked out when 6 inches high in rows 3 feet wide and 6 inches from plant to plant, and are again watered with liquid manure when a foot high. Weeds are kept down by hoeing until the cane matures, about November. The crop begins to come to market, however, early in September, or as soon as the stalks are sufficiently sweet for chewing. A Chinese labourer earning 10*d.* per day can cultivate about 2 acres during the six months that the crop needs his labour. In America it is found that Sorgho can be successfully grown on all lands where a fair crop of Indian Corn can be grown. Deep loose warm soil, even of poor quality, produce the sweetest and most juicy stalks. Irrigation is recommended, but can seldom be attained in the United States. In deep black loam Sorgho reaches a height of 16 or 18 feet; what will it not do in our future sewage farms? The juice of the giant growth is not so sweet, nor is it easily crystallised. The seed should be soaked 24 hours in tepid water, in which 1 oz. of saltpetre is dissolved to every six gallons. It is then dusted with gypsum, and drilled 2 feet apart and 20 seeds per foot (for forage). In seven or eight days a horse subsoil plough is put between the rows, up one side and down the other. This cultivation is repeated as the crop advances, but the plants must not be earthed up. The upper roots spring from the stalk above the ground, and they must be left exposed. The first cutting may be made as soon as the crop is large enough for stock, and in ordinary seasons two others will follow. To dry the crop it should be set up in shocks, and the shocks built with precaution for ventilation. One man with a subsoil plough can cultivate 10 acres."

The seeds of Sorghum saccharatum have been distributed and sown in several districts of India, and the results of the experiments, which were chiefly conducted with the view of ascertaining the capabilities of the plant as a sugar producer were anything but satisfactory. In some cases the seeds did not germinate freely, and in most instances the plants were small, and contained little or no saccharine juice, and that of an inferior quality.

OUR LIVE STOCK.

CATTLE.

BESIDES the two Shorthorn bulls, noticed last week, the Sobraon carried out some first-rate Hereford cattle, selected by Mr. Duckham. Among these were the 1st prize yearling heifer, from Wolverhampton, a grand animal from the Marlow herd, bred by Mr. J. B. Green, and two young bulls, ST. THOMAS 3D by the celebrated ST. THOMAS (2228), from Mr. Rogers, The Grove; and AVONBURY by AVON (2393), from the Baysham Court herd. Messrs. Dangar & Co. have sent COMMANDER and KNIGHTLEY KING, two Shorthorn bulls, the former bred by Mr. Grove, of Castle Grove, Letterkenny, Ireland; the latter from the herd of the Rev. J. Storer; *Queen Duchess 2d* from the same herd, and *Alexandra* from that of Mr. Barnard, Harlowbury. Their Herefords consist of two bulls and two heifers; the bulls are, ROYAL HEAD, a winner of first Royal honours at Wolverhampton; and FAIRFAX by AVON (2393), from Baysham Court: together with two heifers by that grand bull STANWAY, winner of first honours at Oxford, bred by Mr. Rogers, The Rodd. The 1st prize Hereford yearling bull, PEARL DIVER, accompanies this lot, for Mr. Nowlan, West Maitland.

—— Mr. R. W. Reynell's sale, which was some time since indefinitely postponed, is to take place next Tuesday at Killynon, Killucan, Ireland. Mr. Thornton informs us that the herd has been bred for 30 years from two tribes of Shorthorns imported by the late Mr. Robert Holmes and Mr. Thomas Barnes, and crossed for a long period with Westland bulls of the Mantalini blood. There will also be offered some good Herefords, bulls of the late Lord Berwick's strain, about 200 well bred ewes, some pure bred Berkshire pigs of the Throckmorton sort, and several thoroughbred fillies.

—— The Shorthorn herd of the late Mr. Stratton, of Burderop, has been divided between two of his sons, Mr. Richard Stratton, of the Duffryn, Newport, Monmouthshire, and Mr. Joseph Stratton, Alton, Devizes.

—— GRAND DUKE OF KENT 2D by LORD OXFORD 2D (20,215), and from *Grand Duchess 9th*, the property of Mr. W. W. Slye, has been sold to Lord Bective, of Underley Park, Kirby Lonsdale, for 1000 gs.

—— There is something charming in the simple and yet autocratic utterances of the "Kirklevington Philosopher." No qualifying expressions render his teaching indistinct, and dissent from his opinions does not appear to have been contemplated by him as in the least degree possible. "* * No other breed of Shorthorns," he writes, "show a family likeness except my own. Nor has any other breed of Shorthorns the same hair and handling as mine have; nor can it be obtained but through my strain of blood; for it runs in the blood, and none now can be found that have the old Hubback blood, and that of his predecessors, and of Mr. James Brown's old Red Bull, and these two bulls were the last remains of those breeds, which had been so long eminent as Shorthorns * * * which was before the time when the Messrs. Colling began breeding," This is speaking with authority: dogmatic teaching more positive than usually falls from human lips. Still there is a relief even in dogmatism, and we cannot doubt that on many points Mr. Bates had a right to hold strong opinions. Hear him explain the origin of his best tribes, and mark the care with which parents were selected for the coming Duchesses, and also the test of merit applied—utility:—

"I should mention here that, previous to Mr. C. Colling's HUBBACK, the prevailing characteristics of the best Shorthorns were high hooks, and the fore-quarters small, and very lightly lyred, as shorthorned cattle so shaped were the very reverse to the objectionable coarse-fleshed variety. But HUBBACK gave a fore-quarter much heavier, and the hooks, though not so high, were wide and pointed forward, making a much longer hind-quarter. This was particularly the character of my cattle, bred between the best Shorthorns and the West Highlander. When I began to use my bull KETTON, the produce from him made both my Shorthorns and mixed blood very superior to what they were from the *Daisy* bull and STYFORD, the best two bulls I had used before I had KETTON. When KETTON ceased to procreate, I then felt severely the contrast, even with the best which had descended from him. I then did not know that any of the Princess blood was left, nor did I know how the Princess tribe was bred, direct from HUBBACK to FAVOURITE. This I did not learn till I made inquiries to assist old Mr. Coates in preparing the first Herd Book, and I saw no way of restoring the pure Duchess blood but by putting the 3*d Duchess* to her mother's own brother, DUKE (226), sold at the Ketton sale in 1810. This I accomplished in 1820. THE EARL (646), so bred, was calved in November, 1820, and putting him to the Acklam *Red Rose* cow produced my second HUBBACK (1423), January 25, 1823. This union answered most admirably, and gave me a uniformity of character possessing every excellence. I used 2D HUBBACK till I got BELVEDERE, in June, 1831. My best stock are descended from 2D HUBBACK'S daughters, put to BELVEDERE, a union that answered again most admirably; so that I have combined in my breed of Shorthorns the only three tribes that were all bred direct from HUBBACK to *Favourite*; there are no Shorthorns that have now any pure blood of any of those three tribes, excepting my own herd. It is the union of those three bloods — 'Duchess' tribe, Yarborough's dam, and 'Princess' tribe—to which my cattle owe their superior excellence. Having united these three tribes through so large a herd as I and my tenants, the Messrs. Bell, possess, and those who have got the blood through my herd, extending through six tribes in my own hands, and eight of my tenants, we have every means not only of preserving their excellent qualities, but of improving them more and more every fresh cross. We are not dependent on any one bull, as every cow has more or less 'Duchess' blood, with all the excellences which cattle so bred possess. In fact, as *Duchess* 34*th* proved, by several trials repeatedly made in various years, she consumed less food (hay) per day than my 1*st Duchess*, grand-dam of No. 1 in Herd Book. From a quart of milk the yield of butter from *Duchess* 34*th* was more than from my 1*st Duchess*. These are important considerations, when weighed in conjunction with a greater increase of weight in beef, with so much less consumption of food. In fact, this consumption of food and production of meat were nearly equal to the small consumption of the West Highlanders, which are the smallest consumers of any cattle I ever tried on hay alone in winter; and have ever found the consumption of hay correspond with the consumption of Turnips or straw given singly."

—— We quote the following passage from Mr. Jacob Wilson's (senior steward) report of live stock in the current number of the Royal Agricultural Society's Journal, as bearing on a point now attracting some attention:—

"Except in 2-year-old and yearling heifers the show of Shorthorns at Wolverhampton could not be considered up to the standard of former exhibitions. Many reasons account for this. Since 1868 the Canadians, Americans, and Australians have bought up most of the best yearling and 2-year-old bulls and heifers at good prices for exportation, consequently exhibitors have not those specimens to send forward as fully matured and developed animals. Moreover, the higher bred Shorthorns have in the same period become immensely advanced in value, whilst pure and fashionable pedigrees command such extreme prices that selection is avoided, and the bad with the good are left to grow together, like Tares and Wheat, till an auction is held, which scatters them far and wide; but there can be no doubt that the pure stock of the country, though more may be bred, is hardly likely to be much improved in symmetry and quality, for there is an apparent coarseness in some of the more fashionable lines of blood."

AGRICULTURAL NOTES.

By Mr. Mechi.

Corn Growing or Couch-grass.—Which is it to be? For they can't grow together satisfactorily, seeing that the powerful Couch-grass, Twitch, Squitch, or whatever else it may be called, will be master of the situation. In old-fashioned farming a long fallow was made to get rid of Twitch, and if the ploughing was deep enough and frequent enough, and if the summer was hot and dry, the Twitch went to the wall, but, too often, especially on undrained land (for Twitch is a lover of moisture), the long fallow failed in its object, and proved to be an unprofitable investment. There is a rare supply of Twitch this season, and as I want to grow good corn crops pretty frequently, I take especial care (cost what it may), to fork it out of the land, shaking it from the soil, and carting it away from the field to be destroyed. Wherever there has been an old ditch, old fences and trees, which once abounded on my farm, the Twitch will crop up from some deep buried joint of an ancient stock, in spite of 28 years of constant war against it. Still we are, to a certain extent, masters of the situation, but it costs in such a season as this from 5*s*. to 15*s*. an acre to remove it. When I was once gently doubting the propriety of a pasture of Twitch on a stubble, the farmer exclaimed, "Why, what should I do with my heifers after harvest if I had not this feed for them." I gave up argument at once as a hopeless affair. I remember seeing enormous stacks of it years ago in Lincolnshire, as I passed by rail, intended for making paper, but I believe it was not a success. Most of mine is young Twitch, but where the old ditches were there are some tough old fellows that have got an anchorage at unknown depths, and they will show their noses, and seem determined to share the good things with the roots of the future corn plants. I wonder how much Twitch costs the country annually. Would a million sterling pay for it? I think not. It is painfully interesting to see how, just now, the Twitch plants are pushing forth their strong, white, devouring snouts. The Suffolk folks call it Spear-grass. I remember raising a considerable storm of indignation at an agricultural dinner not 100 miles from Watford, because I gently doubted the good taste of holding the agricultural show in a field matted with this noxious weed. As my bailiff says, if a farmer allows Twitch to be his master, it is sure to ruin him. It is a very insidious weed, for although on the surface you only see its narrow green leaves, its underground formation is a mass of strong, sharp-pointed piercers or spears, half as thick, and almost as stiff, white, and straight as a tobacco-pipe, forcing their way bodily and rapidly into the soil in every direction where the best plant food is to be found, and carefully avoiding the subsoil where it is poor and undisturbed. None of our cereal roots have a chance with it, for it preoccupies the ground, and holds possession by superior strength and tenacity. The only plant that appears to me to have a chance with it is the powerful Bean tap-root and side shoots, which resemble it in strength. As one of my men said to-day, when he was forking it out, "Old ditches should, before they are filled up, have their sides and contents brought to the surface and spread, so as to get out the Twitch, otherwise when merely filled up, the Twitch will retain its vitality and come gradually to the surface, although a yard or more deep." I have a field of 8 acres which grew 7 qr. of Wheat for its last crop some five years ago. I laid it down to grass, and for two years had first-rate crops, but soon the indigenous Twitch took possession of it, and despite of ample manuring and folding the crop has been "no go," so I shall break it up, and it will then, I know, produce me an abundance of other crops. Most of our poor worn-out pastures are mere beds of Twitch, and no doubt it is a great mistake to permit them to remain as permanent pasture. A couple of years in grass is quite enough in such soils. This I have proved by experience on my soil. Of course something depends upon sowing genuine grass seeds, and taking care that the ground is cleared of Twitch previous to sowing; but herein is the difficulty, for a piece of dirty-looking Twitch, which you think is dead and so pass over, has retained its vitality and only awaits favourable moisture to start it again.

Rats in Corn Stacks.—Nearly all my stacks are on Garrett's patent iron stack frames, 12 of which I have had for 25 years, and now they are as good as new. But I had occasion to place one Wheat stack on the ground, and although my buildings are free, or nearly so, of rats, within a fortnight my corn stack has been populated by them, and I must thresh it out immediately, or I shall, like one of my neighbours, find I have nothing but straw. He left two stacks unferreted for two years, and on threshing, found no corn in one, and only 5 qr. in the other! As he has passed away, I may now mention it as a warning.

Wet Corn Stacks.—Can any one tell me how much is the total amount of loss, this wet September, caused by unthatched stacks? I know of several instances where the corn has speared or grown from 1 to 2 inches in length; the stack, in fact, tied into one inseparable mass by the multitude of fibres, and the grain rendered partially or entirely worthless. The excuses for this are various. One had no straw, and no time to thresh; another meant soon to thresh, and so would save the cost of thatching; others had straw, but trusted to fine weather, or rather, the expectation of it, forgetting that harvest was later, and that September is a risky month for rain.

The Geological Map of Great Britain hangs in my study, reminding me, by its many coloured patches, how wrong and unreasonable it would be to recommend a uniform agricultural treatment, or one unsuitable to the formation, elevation, aspect, and latitude of the greatly varying soils and districts. Need we be surprised that our eastern and south-eastern counties are cereal, dry and warm in summer, cold and pinching in winter and spring, seeing that we there get the first of the sun and the last of the clouds, which, rising in the Atlantic, are well strained of their heat and moisture by Ireland, and then by the wide intervening space of land between the Irish Sea and the eastern coast. Cornwall and Devonshire, pushed into the Atlantic, meet the warm gulf-stream and luxuriate in its exhalations. An east wind in July and August parches us up in Suffolk and Essex, for it comes over an immense extent of land, while, under the influence of a westerly gale crossing to us over some thousands of miles of the Atlantic, the heat is moderated by moisture to men, plants, and animals alike. This subject might be greatly extended, but enough has been said to show how necessary it is to consider all the conditions before applying any particular agricultural treatment, either as regards soil or crop.

Preserving Root Crops.—We all know that roo crops are costly, and that, having grown them, the question arises how to preserve them from injury or waste, and how to get the best price for them from our stock. I can never believe that it is a profitable plan to leave them in the soil, unprotected by their leaves, and deteriorated by frost. One of the best and most extensive root-growers known to me invariably clamped his Swedes very early in November, in small heaps, well covered with earth, ready for feeding in the field in the winter or early spring. The cost of doing this is amply repaid, and, as I am successful in preserving my Mangel, I will state what I believe to be the reasons for my success. I have just finished some very fine ones, almost as fresh and juicy as when stored. A Mangel is never in greater danger of rotting that when it comes up clean and free from earth, for its fibres have then nothing to preserve their vitality. I consider it a bad plan to let them lie on the field in heaps after pulling. Mine are always thrown into the cart as they are lifted from their place, and at once placed in the clamp. As I do not pull them until late in October or early in November, a certain amount of damp or wet earth adheres to their roots. Those with two or three fangs always keep best. Those with only one fine tap-root hold little earth, and consequently rot early; so we use that sort for early consumption. We thatch the clamp with soft Barley straw, which lies close, and keeps out both frost and heat. Hard glassy new Wheat straw won't exclude the frost. A little later we earth them up—that is, plough round the clamp, and enclose them in a thick cover of earth. They keep good until September or October.

A Hint to Coursers.—A farming acquaintance of mine, who had greyhounds, was always lucky in having hares on his farm, although he did not preserve. Hares always make to a gate, where they get taken by the poachers. This farmer caught his own hares, at night, in a gate-net, and gave them a sound whipping with a lady's riding-whip. He then turned them down, and, however sharply driven, they would never attempt a gate again.

Early in the morning, and sometimes late at night, you may, by an occasional look out, see what is neither profitable nor agreeable. A young man who complained of farming was advised by a sagacious friend to go of a summer's morning about daybreak, and drink a glass of water from a spring at the further part of the farm.

The very first morning that he did so, he found a neighbouring person taking out his horse, &c., that had been feeding all night in his fields. I know of an instance where a cunning fellow always turned his horse out at night, and fetched it home before daybreak in the morning. It was often in people's fields, or lost. A farmer wisely offered a shilling to his men every time they could take it to the pound. This settled the matter, and the offender soon sold his horse. A great many things disappear from a farm late and early. Wood, and even coals, sometimes walk off.

Pasture.—Most of our old or permanent pastures, on certain soils, are weedy, exhausted, and unprofitable. If pasture is desired, let it be laid down for two or three years, but no longer. Hay crops are generally good the first and second year after laying down, but soon become weak and unprofitable. This I know from practical experience. Cultivation is so fertilising and valuable on certain, and indeed on most, soils, that the absence of it for any length of time is decidedly unprofitable. Of course there are exceptions to this rule.

LARGE v. SMALL FARMS.

I HAVE been amused at the discussions which have lately appeared in different periodicals on the relative advantages of large and small holdings, and the consequent advice so freely offered to landlords on the subject, as if they did not know their own business, but required to be taught how to manage their property by outsiders. I am not going to contend that the money return is the only consideration by which they should be guided. I will concede fully that property has its duties, and that a landlord is bound to take care that his lands are well managed, that his cottagers are cared for, and that his little plot is contributing its fair proportion to the national stock. But after all, both owner and occupier must be paid, and by this crucial test of *£ s. d.* must any new system be judged before it can be recommended or adopted. Let us apply this to a farm of 500 acres of fair arable land in an agricultural district some 6 or 7 miles from a market town, and cultivated according to the custom of the country. The rent will be from £600 to £700, the addition of tithes, taxes, and other fixed payments will bring the annual outgoings to £2 an acre, or £1000 per annum. His labour bill will probably be as much, which, with repairs and purchases, exclusive of corn or artificial manures, will bring his annual outlay to £3000 a year. His income, at £7 per acre nett, would be £3500. He must be a bad manager who could not realise thus much, and nobody would grudge him this amount of profit. By this method, too, a fair amount of food, both cereal and animal, is produced, and about 15 labourers and their families kept in the usual style of farm hands.

But suppose our landlord should be persuaded to cut up his farm into small holdings, say from 100 acres to 50 or 20 acres each,—let us see what improvement will result to landlord, tenants, or country at large. The man who takes 100 acres will require a decent house built, with stables and outbuildings, which will add £30 or £40 to the rent—say, £235 a-year, including taxes, &c., as before. He and his sons will probably manage the live stock, but he must keep one man and a pair of horses with hired assistance at busy times. This item cannot be less than £100 a-year. Add £50 for repairs and replacing losses, £50 for interest on capital (probably borrowed money), £50 for the wages of himself and his family, had they not been employed at home, and a total outlay of £485 will be necessary, without reckoning seed, artificial food, or any of the disasters to which farming is always liable from storms and seasons. To produce this sum he will have to sell the crop of about 25 acres of Wheat, and 20 of Barley—at the outside 180 qr. of bread corn, after deducting the seed—and fetching probably £375 or thereabouts. The remainder of his crops will be consumed by his horses and live stock in the manufacture of manure. Should the land be dry, he could probably winter about 60 lambs, making £1 each beyond the cake they eat. Should he have the advantage of a little grass land, he may keep two or three cows and their produce, selling butter and one cow off yearly. This latter would be likely to bring him home; but he or his wife would have to travel twice a-week to market with butter, which would outweigh the extra profit. In either case, and with the sale of a few pigs, they would hardly realise the £100 wanting to balance the yearly outlay of £485. The occupier of any of the 50-acre plots would be in a worse condition. His outgoings for rent, &c., with cottage and buildings, could not be set at less than £120; his own labour with his family at £50, and the necessary labour which he would have to hire at £50 more—bringing his outlay, including seed and tools, &c., to £250, which could only be produced on good stiff land by growing Wheat every other year, with Beans, roots, and Potatos, for pig-feeding. The 20-acre and 10-acre plots would labour under the same adverse circumstances of having to hire labour, which, especially horse labour, will be very expensive, and, at the distance I have supposed from a market town, nearly impossible to procure with any certainty at critical times of the year; both these occupiers, under the supposed circumstances, must on the first unfavourable conjuncture come to grief, after beggaring both the land and themselves.

But if we now reverse this supposition, and place our small tenants within a mile or two of a market town, we shall find the account to present a very different aspect. Our farmer will become a market-gardener—he will get the retail price for his Potatos, Cabbages, and roots, and will procure his dung or town refuse at nearly a nominal cost. He and his horse will be able to fill up their time by doing cart-work for hire, or by delivering milk and vegetables. His rent will be considerably increased, to perhaps £5 an acre; but the produce, which was worth only £7 or £8 to the farmer, will now realise from £30 to £40 per acre as sold retail. The same advantage will accrue, though in a less degree, to a wheelwright, blacksmith, publican, or other village tradesman, who have some spare time on hand. They can often make 50 acres pay, if industrious, and capable of making the most of their opportunities, where a living from the land only could not be obtained. So a carrier can keep his horses much cheaper by hiring a piece of land than by buying his provender. In all these cases money is made by filling up the odds and ends of spare time, rather than by any process that can be fairly called farming. Moreover the demand for these small holdings must be very limited. It is only here and there a tenant can be found who unites the necessary qualifications for making the most of a bit of land, and a bad tenant is ruinous to the landlord's property.

In making these comparisons of holdings, I have not drawn on my imagination, but could point out examples within my own knowledge of small farmers decaying, and the enterprising tradesman flourishing in his place,—of land, left utterly worthless as a farm, becoming highly productive as a market garden; while I know no instance of a labourer in agriculture raising himself to a higher station than a gentleman's bailiff or a respectable cattle dealer. I write from the South of England. In the North I am given to understand it is not so; but that from keeping a cow, which is the usual privilege and practice, a labourer can rise to a higher rank and aim at becoming a tenant-farmer. I can only wish it were so here. I have no doubt if there was a demand for such small farms they would be quickly supplied, like any other demand. In the meantime I would caution any landowner, who may be allured by any fanciful descriptions of a rural paradise, where each busy bee is to thrive in his little cell, to pause before he commits himself to such an absurdity; and to ask any would-be tenant of a little farm to show him what possibility exists of his being able to pay rent and taxes, and earn a livelihood for himself and family. Capital, the application of steam, and the concentration of labour, must in this as in other trades outstrip the little man in the race, and enable the man possessed of these advantages to live and pay a rent, where the other would starve. We have only to look across the Channel at France, Belgium, and Ireland, to see small holders, with the greatest thrift and economy living in penury, which to English eyes is little removed from starvation. *J. B. M.*

HOWARD'S STEAM TACKLE ON THE MOORS.

STEAM, that powerful agent for gladdening the face of Mother Earth, has been doing wonders for the rough wild moor land on the Wass estate, near Thirsk, belonging to Major Stapylton. This moor lies about 700 feet above sea level, and extends over about 30,000 acres, naturally a wild barren heath, producing a few grouse. The portion belonging to Major Stapylton rests upon limestone rock, the soil a peaty, gritty loam, from 4 to 6 inches deep, under which there is an impervious pan from 3 to 7 inches deep, composed of gritty material and rubbly limestone, conglomerated into a hard bed (impervious to both air and water); from this to the solid limestone rock an open porous bed of rubbly limestone of various thicknesses exists.

When this hard pan is broken through, both air and water pass freely down, washing out the sour sterilising acids. Although limestones are near the surface, they are perfectly inert, and after considerable loss of time and capital it has been found that no manure will do any good until from 4 to 6 tons of lime are applied per acre; limestone being in abundance underneath, kilns are erected in the most suitable situation for economy of cartage.

About 300 acres are in course of reclamation under the able management of Mr. R. E. Brown, who has gone both cautiously and economically to work; indeed it is seldom that such rare enterprise is guided by so happy a combination of wise economy brought into play for the realisation of the object in view. About three years ago Major Stapylton conceived the idea of reclaiming this brown heath and turning it into green fields and wooded dells, if anything like a fair prospect of a return for the outlay could be established. He commenced the experiment on about 20 acres; the heath was burnt down, and then cultivated by horses. But horse-power proved altogether unequal to the task of breaking up the iron-bound pan that sealed out the fertilising influence of air and water. However, after it had been well fallowed, it was sown with Rape, for which a variety of manures were tried—guano, phospho-guano, dissolved bones, superphosphates, and a portion was limed as an experiment, when it was discovered that lime was indispensable not only as a sweetener of the soil, but to set the manures in action, for until lime was applied they remained dormant; but after its application their fertilising effects were extraordinary; the Rape by its growth showing to an inch how far the lime reached. Where the pan had not been broken, manures were all but inert for want of air and water moving through the soil.

This experiment induced Major Stapylton to turn his attention to steam-power, to obtain the requisite strength of implements and force to break the pan thoroughly, and allow the rains to wash the corrosive acids out of the soil, and the air to permeate through it and decompose the inert organic earth into fertile soil,—a theory the wisdom of which has been thoroughly borne out by the magnificent results obtained when put in practice, and is now making the reclamation of this moor a most profitable undertaking to its spirited owner.

About 18 months ago Major Stapylton obtained a Howard's traction-engine with two winding drums, with all the necessary implements, cultivators, harrows, &c., for working either on the direct or roundabout system. The cost of all was £682.

Having obtained this grand pioneer of agricultural progress to the full development of Mother Earth's generous supplies of sustenance for man, operations were at once systematically commenced by thoroughly breaking up the 20 acres 14 inches deep with the cultivator twice crossing each other, making an excellent preparation for Turnip and Swedes.

Then operations on the wild heath began as follows:—The heath was burnt down at 6*d.* an acre, then twice cultivated with wide shares 6 inches deep, each time crossing the other, at a cost of 15*s.* per acre; then it was left a few weeks to the action of the weather.

Brought forward	£0	15	6
Then well steam harrowed thrice, at per acre	0	7	6
Burning tussacs and roots, &c., and spreading ashes	0	7	6
Two cultivatings crossing each other, 14 inches deep	1	0	0
4 tons of lime, carted and spread, at 8*s.* 3*d.*	1	13	0
2 cwt. of phospho-guano, at 12*s.* = 24*s.* 2 cwt. of dissolved bones, at 7*s.* = 14*s.*	1	18	0
3 lb. of Rape-seed, 1*s.* 6*d.*; drilling manure and seed, 1*s.* 6d.	0	3	0
Rolling, 6*d.*; horse-hoeing, 1*s.* 6*d.*	0	2	0
Weeding	0	1	0
	£6	7	6
Good half crop of Rape kept 120 sheep one week, at 6*d.* each	3	0	0
Outlay left, not repaid	£3	7	6
Two ridgings 27 inches wide, and subsoiling 14 inches deep in bottom	1	0	0
2 cwt. Peruvian guano and 2 cwt. dissolved bones as before	1	13	0
Turnip seed, 2*s.*; drilling manure and seed, 1*s* 6*d.*	0	3	6
Horse-hoeing, 1*s.* 6*d.*; hand-hoeing, 5*s.*	0	6	6
	£6	15	6
One year's interest on this, at 5 per cent.	0	6	9
	£7	2	3
Turnip crop, worth at least	3	0	0
Outlay left not repaid	£4	2	3
Once ploughed with double-furrow plough and two horses	0	6	0
3 bush. Oats, at 28*s.*	0	10	6
Drilling, 1*s.* 6*d.*; harrowing, 1*s.* 6*d.*; rolling, 1*s.*	0	4	0
Weeding, 9*d.*; harvesting and threshing, 20*s.*	1	0	9
	£6	3	6
Interest on this at 5 per cent.	0	6	2
Total expense taken down	£6	9	8
5 qr. Oats, at 28*s.*	£7	0	0
30 cwt. of straw, at 2*s.*	3	0	0
	£10	0	0
Expenses brought down	6	9	8
Profit for the four years	£3	10	4

Thus, after all expenses are paid, there is a profit of £3 10*s.* 4*d.* per acre, and the land in first-rate condition to go on in a four, five, or six-course system of farming, and will readily let at a good rent per acre; thus a comparatively barren, wild waste, is converted into green fields and happy homes of prosperous tenants raising increased supplies of meat for our rapidly increasing population, and contributing a fair share of the taxes of this our great and prosperous country, and a rich return to the energetic and enterprising owner, who is creating a grand estate out of that which had scarcely any value.

It is to be hoped that the other owners of this vast valueless waste may regard the signs of the times on the land question, and be induced to follow Major Stapylton's spirited example, and reclaim the whole into farms for the sons of our farmers, who will be glad not only to give fair rents, but protect and produce far more partridges for sport than there are grouse to be found now; thus, in every point of view, there will be a great gain of wealth, stability, power, and pleasure to the country.

Mr. Brown having kept a strict account of all the outlay and work done, the actual expenses are got, and honest data to go by, in calculating the amount of capital required to reclaim such waste lands, and the inevitable results shown. As we witnessed the simple and powerful engine moving about this rough, wild heath, we could not but feel there was a great future for this efficient system of Messrs. Howard, a wonderful advance upon the separate engine and windlass plan.

These waste lands of the kingdom ought surely to be heavily taxed until they are brought into cultivation, and fit for tax-paying profit to live upon.

Expenses and Results.

Total expense of wearing parts, repairs, oil, and grease, as per bills for the 18 months	£56 8 0
Wire-rope, nearly one-fourth worn	23 0 0
	£79 8 0
This, on the 968 acres cultivated, gives about 1*s*. 8*d*. per acre for wear, &c., of tackle. To cover interest and depreciation of capital invested, 10 per cent. must be charged on £682 for 18 months ..	102 6 0

This gives about 2*s*. 2*d*. per acre for this item.

Working Expenses per Day.

One engineman	£0 3 0	
Four men (two anchor, one cultivator, and one porterman), at 2*s*. 6*d*.	0 10 0	
One boy, at 1*s*. 6*d*., and a horse, at 3*s*. 6*d*.	0 5 0	
6 cwt. of coals, at 8*d*.	0 4 0	
968 acres in 176 days at	£1 2 0 =	193 12 0
968 acres, at 7*s*. 9*d*., or under 176 days, at	£2 2 8 =	£375 6 0

Thus it is evident that the data here actually given agrees fairly with what we have used in the details in the beginning of this paper, viz., 7*s*. 6*d*. for shallow, and 10*s*. per acre for deep cultivation. The land being very rough, boys are unequal to the management of the porters, therefore Mr. Brown finds it economy to have all men. The fact is, that a popular error exists in the undue stress laid upon the saving of a man or boy, when the fact is that every £160 sunk in plant represents the equivalent of a man, because the tear, wear, depreciation, and interest on steam tackle is 17½ per cent. per annum, which, on £160, is £28; and a man's wages for the 224 days available for steam cultivation is, at 2*s*. 6*d*. a day, also £28; while in ordinary farming there are not more than 160 days of steam cultivation to be obtained under the most favourable circumstances by any company letting for hire; therefore in ordinary cases £112 worth of tackle represents the equivalent of a man, while the man when sick goes to his club, the tackle when out of sorts has to be taken to the factory for renovation. After seeing what can be done with this apparatus, we came to the conclusion that single-engine tackle like this are the most economical for farmer's own use; while for companies letting out, double-engine sets undoubtedly pay the owners best, but the water carting is a great nuisance. Mr. Brown expressed his thorough approval of the engine and implements of Messrs. Howard, which, he says, have gone through this pioneer work and stood the rough usage in a way he could not have believed. *L. P. B.*

TOWN SEWAGE.

DURING the last fortnight there has been even more discussion than usual on the best means of dealing with the sewage of towns, and the general opinion seems to be at present in favour of the water-closet system. That the subject is one of very great importance every one acknowledges, and it is only natural that the authorities in populous towns should watch with attentive interest these discussions, as they may affect future legislation touching their interests.

There are three principal objects in view—the doing away with river pollution, the doing away with nuisances in towns, and the saving of manure.

River purification at present occupies the greatest amount of attention, probably because it is the most difficult problem, and requires the most expense in its solution. The nuisances within large towns have secured by no means the same amount of attention, and consequently dry systems of dealing with excrement have been pooh-poohed as not being applicable to them by eminent engineers, who apparently have not given much attention to that branch of the subject, being pre-occupied with the larger scheme.

This must be discouraging to all those who have for some time worked hard with the twofold object of abating the nuisances in towns, and of supplying the farmers with a serviceable and comparatively cheap manure, from Mr. Moule himself to his latest follower.

It seems also surprising that immediately after the searching investigation of, and masterly report on, the earth system, by Dr. Buchanan, in the 12th report of the medical officer of the Privy Council, carrying, as it must do, much weight throughout the country, we should be flippantly told that earth-closets are much more frequently out of order than water-closets, or that they are much more costly, or that if (!) a perfect water-closet could be made, it could be worked at the 20th part of the cost of an earth-closet; and all this, not only without a tittle of evidence, but also directly in opposition to a vast amount of evidence in this country, in America, and elsewhere.

As a reader of your journal I have noticed many conflicting opinions as to sewage irrigation, but chiefly as to the method of carrying it out. Mr. Mechi and others have recognised the difficulty of, in many cases, dealing with the vast quantity of the sewage of large towns on the land which is usually available. If my memory does not fail me, Mr. Mechi stated that a certain proposition was equivalent to feeding 4000 sheep from year's end to year's end on a statute acre of ground.

So far as the health of towns only is concerned, it is scarcely a matter for argument that, if practicable, the decdoration and disinfection of all closet refuse on the spot, and the keeping of it entirely out of the sewers, must be a great benefit. I maintain that this is quite practicable, and am prepared, if space would admit, to prove it.

It must be admitted that sewage irrigation plans have failed, and have been abandoned for others in many instances [Where?], as I believe because there has been too much manure for the available land. The A. B. C. process seems at present to be the favourite, and the most successful wet plan. As a manure manufacturing scheme, its advocates would, of course, wish to have all the excrement, but it leaves, just as sewage irrigation does, the nuisances within towns to be separately dealt with.

I think that any outsider, being neither a professional engineer, nor a farmer, nor wedded to any particular theory, but who lives in a town, and has an eye to its necessities, and reads from time to time the various opinions that are expressed, and studies the evidence that is adduced, must come to the conclusion that it is a mistake to hold up a particular scheme, and think that it will single-handed manage all that is desired.

We want a code of principles such as has been brought forward by the committee appointed to investigate the subject in Birmingham. These principles should bear upon all that is required, whether as to the health of towns, the pollution of rivers, or the nett cost. If such principles were established, it would not be a very perplexing task to carry them out, but it is very perplexing to sanitary reformers if they find one year their labour backed up by official documents, and the next year pooh-poohed by semi-official utterances.

As it has been recently stated or quoted, that earth passed twice through the closet has no more manurial value than common garden mould, I shall be happy to forward by your order to any address, without charge excepting carriage, and in such parcels as you may judge best, 3 tons of earth passed four times through the closet for trial. I need scarely add that I am a believer in, and an advocate of Mr. Moule's system, but at the same time I think if his system were generally adopted, enough of manure would be left for sewage irrigation in the slop-water from dwelling-houses, slaughter-houses, and other sources to be met with in large towns. *R. H. A.*

HEADS.

BY HENRY CORBETT.

(*Continued from p.* 1337).

LOVELY as are the heads of the females, many bulls of the Bates blood are anything but good in this respect. There is an effiminacy in some of the sort which looks as if perseverance in one particular line had been carried too far, and nothing tells more of any such too close consanguinity than a feeble, weak, "pretty," head. You see it alike in man and beast. And yet you cannot of course, always "breed heads." With all the attention paid to this point at Warlaby, by far the worst "place" about the celebrated prize bull, Commander-in-Chief, was his head, and this was so bad as to mainly account for his ever having been beaten. It was more that of a steer than a bull, plain and common, with an unpardonable horn. On the other hand, Mr. Bates, whatever may have come of it afterwards, evidently attached due importance to this point, as the oft-told story goes of his once buying a bull at a long price, although he had never seen more of the animal than his head.

The fatal mark against the head of the Shorthorn, "the damned spot," which, like that on Lady Macbeth's hand, nothing can wash out, is the black or smutty nose, as held to be too sure a sign of bad blood or impurity in a close or more remote degree. But there is no telling how or when you may throw back to a cross, and Collings crossed with the Kyloe, while there were "unsuspected jumps in the dark," that are, nevertheless, very much matters of history. Perhaps no animal of any repute was ever credited with so many black noses as a well-known Northern "Duke," and there are tribes in descent from him which throw black noses to this day. There is, however, a difference between a thorough smutty nose, and one which is only dark in patches, of which Mr. Pawlett's prize bull, Baron Warlaby, in a very recent example. Many maintain that this was not a smutty nose in the true acceptation of the term, and so one set of judges would pass him, and another bench set him aside. At the Manchester meeting of the Royal Agricultural Society they ordered him out, and at the Oxford meeting they awarded him a prize. According to Mr. Wright—in 1846—"There are many well-bred Shorthorns with dark muzzles. This has been considered by many to be a recent introduction through some inferior cross; but, without denying that, let it not be forgotten that some of the early Shorthorns were not entirely free from it, although not very common, but the sire of Foljambe could not boast of much delicacy there." When, somewhere about the beginning of the present century, Mr. Thomas Booth was showing his Shorthorn herd to a neighbour, the other objected to what he called their raw noses—"in his day the stock was nearly all black-nosed, and he never knew a raw-nosed cow that was not delicate." It must be remembered that this was the word of a Yorkshire farmer, as uttered in the district from which the best Shorthorns have sprung. Early maturity or quick feeding is the chief recommendation of a Shorthorn; and so when we look one in the face we must bear in mind that what we want is, as Mr. Carr puts it, "a placidity and composure of mind, a phlegmatic disposition, suggestive of fattening propensity." In fact, a frisky Shorthorn should be something of an anomaly.

Not so the Devon. I should myself have a fancy for a certain wildness or boldness in the head of a pure North Devon; and when Captain Davy says this should in many points resemble the head of the deer, he seems to me to have very happily illustrated his subject. There is, of course, no surer tell-tale to this beautiful breed of animal than the blood-like head and lively look, as one may often distinguish in this way the little "native" gentleman from his commoner, heavier-countenanced cousin, born and bred on the fat lands of Somerset. With such a description apt to my hand, it would be worse than idle to attempt any other than that I have from Captain Davy:—"The head should be small, with a broad indented forehead, tapering considerably towards the nostrils; the nose of a creamy white; the jaws clean, and free from flesh; the eye bright, lively, and prominent, encircled by a deep orange-coloured ring; the ears thin; the horns of the cow long, spreading, and gracefully turned up, tapering off towards the ends; in fact, the general aspect of the head should in many points resemble that of the deer. At the same time the expression must be gentle and intelligent. The horns of the bull are thicker set and more slightly curved, or in some instances standing out nearly square, with only a slight inclination upwards. Fault has been found with the length of the horn of the Devon as being disproportionate, and we have been recommended to get them more like those of the Shorthorn; but I hope, and indeed feel sure, that our breeders will never consent to give up one of the grandest characteristics of their breed."

Here, again, we have the raw nose, as the old Northern farmer contemptuously called it, and here, too, precisely the same sort of discussion crops up.—"A black, or even a spotted, nose is very much disliked, and a calf so marked is never kept by the best breeders. Now the wild cattle in Chillingham Park are of a creamy white colour, with black muzzles; may not the appearance at rare intervals of these black muzzles, and also of the white of which I have already spoken, be additional proofs, if any be wanting, that the Devons were originally descended from the wild cattle which were natives of these islands. I never heard these marks accounted for. Judging from the rude state of agriculture until, we will say, within the last 200 years, it is just possible that our ancestors were not so fastidious about the colour of the nose as we have since become, and did not object to breed from an animal with a black muzzle."

So says Captain Davy, and his theory is well put; but still it is not so clear why we should be so fastidious in preferring a white nose to a black. The Shorthorn breeders say the smut comes originally from a cross, although this would seem to be something of a hypothesis at best. Can the curse of a black nose be further shown by any accompanying want of style or quality—in a word, does its appearance necessarily imply an inferior animal in other respects? In support of my own theory, I am glad to say that some of the best and most successful Devons I have ever seen have had the handsomest heads, and I need but name Mr. James Davy's Temptress family to recall their fine deer-like character, telling as truly of their lineage as the longest pedigree in the Herd Book.

The mottle-faced Hereford is fast going out of fashion. Few people would object to buying a good mottle-faced cow, but no breeder of note would care to rear a bull thus marked, as he might be difficult to sell, for undoubtedly the white faces are now all the fashion. A well-known judge and breeder tells me that, beyond the colour of the face, and the length and straightness of the horn, the good points in a Hereford bull's head cannot differ much from those to be appreciated in other breeds. While, however, the horn of the bull runs straight and level from the poll, those of the cow and ox gradually curve upwards. The eye of the male should be rather lively than otherwise, and that of the cow conveying precisely the same calm, comfortable, good-tempered look which I have already identified with the Shorthorn. The face should be of a beautiful clean white in colour, backed by a rich red, more especially in the bull; the horn also white or light yellow, occasionally tipped with black, and the nose white; although here, again, we have the evil of black noses, which come, it is said, more frequently in Herefords than in any other breed of cattle. The head should certainly not be small in proportion to the other parts, as, in fact, a head either large or small out of proportion, is simply a deformity in any animal. A really good head must have a certain length and breadth, to which such a phrase as small can never reach. Mr. George Smythies has favoured me with a measurement of the head of Governess, a choice Hereford cow, the property of Mr. Green, of Marlow:—

	Inches.
Length of face	21½
Between eyes	12
Round nose	25
Length of horns	20
Width of horns from tip to tip	37½

It is said that Professor Owen, if you give him only the thigh-bone of some antediluvian creature, will work up the frame of a perfect monster, and with these dimensions he could, no doubt, fashion out a model Hereford. Governess, however, was altogether on a larger scale than the animals now exhibited, which are neater and finer, as no doubt but few heads would measure against her. One of the kindest heads I ever saw on a Hereford cow was that of Stately 2d, the property of Mr. Evans, of Swanstone, though she never did quite so well in public as might have been expected; but—

> "If to her share some trifling errors fall,
> Look in her face and you'll forget them all."

The champion Hereford bull of his day, on the contrary, begins with a somewhat mean, small head; whereas there should be something very noble in the head of a white-face, when seen at his best.

There is no animal which tells more of high breeding than an Alderney, or rather, a Jersey-born cow. There is a refined air and carriage, a certainly comely "presence," which would forbid all thoughts of the butcher, and never carry one's appetite beyond a syllabub on thin bread-and-butter. A Shorthorn bears "beefsteaks" on his very visage, whereas we shudder at the notion of cutting prime pieces out of old Daffodil, or of putting a round of Nora Creina in salt. It would be worse than killing and eating the pet lamb, let alone the question of Daffodil ever possessing any prime beef; while Nora, more palpably, being all angles can have no rounds. No—the head and beaming eye of the Alderney speak again of her purpose, of rich cream and yellow butter; but the charm here is all on the cow's side. Beyond a peculiar, wild, wicked eye there is not much to admire in the head of an Alderney bull, and even the cows lose much of their graceful character when bred away from their native isle. In the Jersey scale of 36 points for a perfect cow or heifer, one each is allowed for the following excellencies:—"Head, small, fine, and tapering; cheek small; throat clean; muzzle fine, and encircled by a light colour; nostrils high and open; horns smooth, crumpled, not too thick at base, and tapering; ears small and thin (one point), of a deep orange colour within (one point); eye full and placid." The eye of the bull must be lively and his horn tipped with black, but beyond these the points are much the same. Mr. Dumbrell, of Ditchling, who has the largest herd of Alderneys in the kingdom, has thus sketched the head for me:—"The horns should be fine, tapering, and crumpled, coming level from the head, and not turned up. The ears large, plentifully fringed with fine silky hair, with the inside skin of the ear of a deep rich orange colour, and the hair between the horns fine. The eyes, placed wide apart, should be large, prominent, bright, and intelligent; the forehead wide, and depressed in the centre; the cheek fine, and very tapering to the nostrils, which should be large, and the muzzle black, edged with tan. The head itself should be distinguished by a certain unmistakable evidence of good breeding, which is readily recognisable, but not so easily put upon paper." The Jersey society goes on to distribute the other points over the back, the barrel, legs, and so forth; but if we put down 15 points for the head, and 10 for the udder, leaving the other 11 for general appearance, we should arrive at a tolerably accurate, if not so elaborate, an estimate of an Alderney, which, after all, you must judge mainly fore and aft. I cannot believe in any man entering a ring with a pencil in his hand and carefully entering one point for this, and another for that, until he had proved a very pretty little sum in simple addition. He would surely "bother" himself during that somewhat tedious process.*

Mr. M'Combie, again, speaking of course of his much-beloved Blackpolls, says:—"A perfect breeding or feeding animal should have a fine expression of countenance; I could point it out, but it is difficult to describe upon paper. It should be mild, serene, and expressive. He should have a small, well put-on head, prominent eye, with a clean muzzle. Thick legs, thick tails, sunken eyes, and deep necks, with thick skin and bristly hair, always point to sluggish feeders." Some years since I was at a meeting of the Highland Society at Aberdeen, when rather a good story got about as to the heads of these famous Polls. Some philanthropists from Paris were present, and so struck were they with the Aberdeenshire cattle, that they offered, on the part of some French humane society, an extra medal for the best bull, the impression being that an animal without horns could do little injury either to the herd or the herdsman. Whereas the Poll has, in "fancy" parlance, rather "a fighting mug of his own," as often enough, like bulls of other breeds, a bit of temper, and with that hard bullet-head of his he will at times butt away like a nigger. However, the medal was duly awarded, and the French embassy returned, no doubt able to report that it had discovered a breed of cattle which must have flourished in Arcadia in the Golden Age—so gentle, so mild, and so harmless.

Let us look to another kind of Scotch cattle, and what would the West Highlander be without his head? The butcher will say in answer—"the very best beef"—but with his head all his character is gone. There is a wild grandeur, I had almost said majesty, about the head of the Highlander, that should count up very fast in any scale of his points, as perhaps no other animal shows in this respect such insignia of Nature's nobility. You may read of his Highland home in his clear bright eye, his magnificent horn, and his rough, but right royal coat. And the Southron would seem to have a deal still to learn in this way, for at the Smithfield Club Show of 1869, the judges selected as the best Highland ox an animal with an ugly "cowy" half-Ayrshire head, that was, no doubt, a mongrel; and a new class had straightway to be instituted, in order to avoid such awkward "findings" for the future. *Bath and West of England Society's Journal.*

(*To be Continued.*)

STRAW-CHAFF FOR CATTLE FEEDING.

By Dr. Voelcker.

In the current number of the Journal of the Royal Agricultural Society of England, Dr. Voelcker has an article upon the method of preparing straw-chaff adopted by the late Mr. Jonas, of Chrishall Grange, Saffron Walden. Dr. Voelcker says, the peculiarity of the plan of Mr. Jonas consists in the use of a small quantity of green Rye, or green Tares, as a fermenting agent.

Mr. Jonas, who for many years has been a great advocate for the consumption of a large portion of straw-chaff for feeding purposes, uses a 12-horse power engine for threshing, dressing, and bagging the corn ready for market, and cutting the straw into chaff, at the same time. With 1 ton of straw-chaff he uses about 1 cwt. of Rye or Tares, cut green into chaff, and 1 bush. of common salt. This is done in spring and summer; the chaff is not used until October or the winter months. The addition of the green stuff causes the straw-chaff mixture to heat; the volatile and odoriferous principles produced by the fermentation are retained by the straw-chaff, itself undergoing a kind of slow cooking process, and they impregnate the whole mass with an extremely pleasant flavour, scarcely inferior to that which characterises well-made meadow hay. It appeared to me interesting, if not useful, to compare the nutritive properties of straw-chaff prepared according to Mr. Jonas' plan, with ordinary wheat-straw, and I therefore made a careful analysis of a sample of chaff taken from the bulk at Chrishall Grange, supplied to me by Mr. Jonas.

Analysis of the Straw-chaff.—The following results were obtained in the analysis of this straw-chaff:—

Moisture	7.76
Oil and fatty matter	1.60
*Albuminous compounds (flesh forming matters) ..	4.19
Sugar, gum, and other organic compounds soluble in water	10.16
Digestible fibre..	35.74
Woody fibre (cellulose)	34.54
Insoluble mineral matter (chiefly silica)	3.20
Saline mineral matters (chiefly common salt ..	2.81
	100.00
* Containing nitrogen	.67

The term woody fibre (cellulose) in the preceding analysis applies to that portion of the straw-chaff which remains behind after successively boiling the material with water, dilute sulphuric acid, and dilute caustic potash solution, and exhausting the residual dried substance with alcohol and ether. There can be no doubt that the different alkaline and acid secretions in the animal organism exercise similar, probably even more, energetic effects upon straw than these successive exhaustions with various chemical agents in the the laboratory. The treatment with dilute acid and alkali, therefore, affords a better insight into the digestibility of the bulk of straw than the mere exhaustion with water. Let us now compare the preceding analytical results with the composition of ordinary wheat-chaff. The following is the composition of a sample of well-harvested wheat-straw, which was neither under nor over-ripe:—

Moisture	13.33
Oil and fatty matter	1.74
*Albuminous compounds (flesh-forming matters) ..	2.93
Sugar, gum, and other organic compounds (soluble in water)	4.26
Digestible fibre..	19.40
Woody fibre (cellulose)	54.13
Insoluble mineral matter (chiefly silica)	3.48
Saline soluble mineral substances	1.13
	100.00
* Containing nitrogen	.47

Wheat-straw and Straw-chaff Compared, to the Advantage of the Latter.—A comparison of the composition of ordinary good wheat-straw with that of straw-chaff prepared by the system pursued by Mr. Jonas brings out several points of interest, on which a few observations deserve to be made. 1. In the first place it may be remarked, that both kinds of straw-chaff contain about the same proportion of oil. The oil exhausted from straw by means of ether has a bright yellow colour, is sweet to the taste, and renders straw more palatable and more nutritious than it would be without this constituent. It is appreciable in quantity, for according to the preceding data, 1 ton of straw-chaft contains about 39 lb. of oil. 2. It will be seen that fermented straw-chaff contains rather more than 4 per cent. of albuminous, or flesh-forming compounds; whereas ordinary wheat-straw contains, in round numbers, only 3 per cent. The prepared wheat-chaff, therefore, is one-fourth richer in materials which produce the substance of the lean fibre of meat, or the muscle. 3. Common wheat-straw, of good quality, contains about 4½ per cent. of sugar, gum, and similar soluble organic compounds. In over-ripe straw the amount of these soluble matters is less. On the other hand, in the sample of fermented straw-chaff analysed by me, the percentage of sugar, gum, &c., amounted to 10.16, or to nearly two-and-a-half times the amount which occurs in good unprepared wheat-straw. The much larger proportion of sugar and other soluble matters in the fermented straw, no doubt, is due to the green-stuff employed in its preparation; but, at the same time, the process of heating the mixture, it is quite probable, may have had the effect of rendering the chaff more soluble in water. Bearing in mind that the chaff prepared by Mr. Jonas contains so large a proportion of succulent matter, it is no wonder that cattle and sheep are fond of it, and thrive upon it in a much higher degree than upon ordinary wheat-straw. 4. A comparison of the relative proportions of digestible and of woody fibre in fermented wheat-chaff, with their proportions in common wheat-straw, exhibits striking differences, which cannot fail to arrest the attention of stock-feeders. Taking together digestible and woody fibre, we have in the fermented straw-chaff 70.38 per cent., and in ordinary wheat-straw 73.53 per cent., showing a slight difference in favour of the fermented chaff, which, being richer in sugar and other matters soluble in water, contains about 3 per cent. less vegetable fibre than common wheat-straw. When the vegetable fibre of each kind of straw-chaff, or the material insoluble in cold and boiling water, is treated with dilute acid and alkalies of the same strength, for the same length of time, and in all other respects precisely alike, a certain proportion of the vegetable fibre is rendered soluble. This soluble portion figures in the preceding analysis as digestible fibre, whilst the matters insoluble after treatment with the various chemical agents is termed indigestible or woody fibre (cellulose). Although it is not meant to convey by those terms the idea that animals have the power of resolving crude vegetable fibre into digestible and into woody fibre, in precisely the same ratio in which we can separate them in the laboratory, a tolerably good opinion may be formed of the relative digestibility of various foods, consisting principally of vegetable fibre, by submitting them to the process usually employed in laboratories for the determination of woody fibre. In the cases before us, it will be seen that of the total amount of vegetable fibre present in the fermented wheat-chaff, 45¾ per cent. were rendered soluble by the treatment described, and 34½ per cent. (in round numbers) left behind as indigestible woody fibre, whilst the 73½ per cent. of vegetable fibre present in common wheat-straw chaff were resolved, by treatment with dilute acid and alkaline liquid, into 19½ per cent. only of digestible, and into 54 per cent. of indigestible woody fibre. In other words, the same treatment rendered soluble 50.85 per cent. of the vegetable fibre of the fermented prepared chaff, and only 26.38 per cent. of the fibre of common wheat-straw. These differences are very marked, and well calculated to explain, in a great measure, the great superiority of the fermented chaff as feeding material, over common straw-chaff.

Fermentation: the Cause.—The fermentation to which the straw is submitted in Mr. Jonas' plan thus has the effect of rendering the hard and dry substance, which constitutes the bulk of straw, more soluble and digestible than it is in its natural condition. But useful as the effect of the slow and moist heat, developed in the mixture of straw-chaff with green Rye or cut Tares, no doubt is in rendering the fibre of the chaff more digestible, this is not the only recommendation of Mr. Jonas' admirable plan of preparing a really very nutritive and important food for stock. Another recommendation is the extremely delicate flavour and the palatable condition which is conferred upon the straw, in the process of fermentation. The prepared straw-chaff, kindly sent to me by Mr. Jonas, had all the agreeable smell which characterises good green meadow hay, and a hot infusion with water produced a liquid which could hardly be distinguished from hay-tea. Although fermented chaff resembles hay so much in taste and smell, it need hardly be stated that the latter is more valuable for feeding purposes. However, the differences in the nutritive properties of meadow hay and straw-chaff made from rather under-ripe wheat-straw, prepared and fermented in accordance with Mr. Jonas' directions, is not so great as might be imagined by some. A little cake ground into meal and sprinkled over the chaff, would go far to obliterate the difference in the feeding quality of the two kinds of chaff. I would particularly recommend for that purpose, a cake rich in albuminous compounds. Green German rape cake, or decorticated cotton cake, added to the straw-chaff in but small quantities, will bring up the percentage of albuminous compound to what it is in good meadow hay. Best decorticated cotton cake contains about 40 per cent.; green rape cake about 33 per cent.; and the finest linseed cake, from 30 to 32 per cent. of albuminous compounds. About 2 cwt. of decorticated cotton cake, ground into meal, and added to 1 ton of fermented straw-chaff, presuming it to have always the same composition as the sample analysed by me, I find, constitutes a mixture which agrees closely in composition with good meadow hay. Chaff, especipally if it be made from over-ripe straw, is not readily taken to by cattle, on account of its insipid taste and harshness; and considerable difficulty is experienced to induce stock to consume straw-chaff in as large quantity as is desirable. To meet this difficulty, several stock-feeders with whom I am acquainted have found it useful, in practice, to use straw-chaff with some treacle previously diluted with sufficient water to impregnate uniformly the chaff with the sweet liquid. The only fault I have to find with this otherwise good plan of rendering chaff more palatable is, that the farmer has to pay from £13 to £14 per ton for the treacle, and obtains in that material only about 54 to 60 per cent. of sugar, the rest being water and impurities of no feeding value. By Mr. Jonas' plan, straw-chaff is not merely made more palatable, but, as it is mixed with a little green food, it undergoes a slow cooking process, and becomes more digestible, and permeated by a delicate hay flavour. Thus the most is made both of the green stuff and the straw, and an excellent food is produced at a trifling expense, greatly superior in feeding properties to treacled ordinary straw-chaff, which costs more money. The great simplicity of preparing and storing straw-chaff, and the inexpensiveness of Mr. Jonas' plan, are further advantages, which all who consume much straw may secure to themselves.

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* Since writing this, I have heard an amusing story in point. A scale had been settled for certain breeds of sporting dogs, and at one of the shows the judges, after having awarded the premiums in a class, went on to prove their decisions by the new system. They accordingly noted down so many points for the head of the first prize dog, so many for his tail, so many for style, and so forth; and they proceeded to appraise the second and third prizes after the same fashion. The several totals were then carefully counted up, when it was found that each of these three dogs had precisely the same number of points in his favour!

Home Correspondence.

Waste Brings Want, and this is as true of a nation as of an individual. At the present rate of waste of the constituents of our food after we have consumed it, the nation must become *pro tanto* poorer and more dependent on other nations for its supply of food. London alone sends into its Thames, in seven years, the whole of a year's produce of the United Kingdom, or its equivalent, which costs about £150,000,000 sterling; and as our town populations are estimated at 15,000,000, the waste in seven years is that from food which has cost £1,000,000,000, or much more than the total amount of our national debt. These are not imaginary figures, as I shall now prove. Our population is 32,000,000, our farmed area is only 46,000,000 of acres, having, at £4 an acre, an annual produce worth £184,000,000; so that 1½ acre of British soil is not near enough to feed each individual, and we therefore have to draw upon foreign countries for the remainder. As their production of food per acre is less than half that of our own (in some cases not a third), another 20,000,000 of acres are probably required to supply us. I speak of bread, meat, Potatos, butter, and cheese, and leave out of consideration the vast area of land required for tea, coffee, sugar, wine, spices, &c. Well, then, we require 2 acres each to feed ourselves and our horses—I mean the available produce of 2 acres, because the farmers have a million of farm horses which consume, probably, the produce of 4,000,000 to 5,000,000 of acres. Licensed, or taxed horses, non-agricultural, number 1,500,000, and they no doubt consume the produce of some 5,000,000 or 6,000,000 of acres. If I add to that of our own production all the tea, sugar, coffee, wine, &c., received from foreign countries, and consumed in London, and all the products of our fisheries, the amount I have named will be vastly increased. It probably takes the available produce of 20,000 acres to feed Londoners for one day, and 20,000 acres to feed their horses for a week. To what extent, in manurial money value, do we Londoners thus withhold from the land? Mr. Lawes, and our other chemical authorities estimate the manurial results of its consumption of food at percentages, according to its constituents, varying from 10 to 40 per cent. of cost. We may, therefore, safely value the voidances at one-tenth of the value of the food consumed. At this rate the loss to London might be put at £2,000,000 sterling annually, or for all the towns of Britain £10,000,000 annually. There is an unerring way of testing this question—a crop grown on 1 acre, if consumed on that acre, will fertilise it, but if the crops of 2 acres are consumed on 1 acre, the fertilisation is amply sufficient to produce a great crop. Therefore, if each individual on an average consumes the produce of 2 acres, the voidances resulting from it, if all economised, ought to fertilise 1 acre. On this principle or calculation the population of London and their horses should fertilise 3,000,000 of acres annually. Of course there can be no reasonable hope of this taking place, but it illustrates the folly and waste of applying the annual voidances of 50 people to a single acre of land, and continuing to do this year after year. Even at this rate, 60,000 acres would be required to utilise the sewage of the 3,000,000 population of London. This question is of such vital importance naturally, that our Legislature and Government should, in my opinion, take initiative action upon it, by the purchase of a sufficient area in various directions, and a resale when properly completed. The city of Glasgow, by a single pipe of 4 feet diameter and a fall of 5 feet per mile, has, at a cost of a million sterling, obtained from Loch Katrine, 40 miles distant, 22½ million gallons of pure water daily. Steam power would, at a cost of 8*s.* 6*d.* per 1000 tons of sewage, raise it 200 feet high, which, at a fall of 5 feet per mile, would convey it 40 miles away from London. But then the sewaged land must be drained, naturally or artificially; so it is a "big job," which will ultimately force its way to a solution. Still, as compared with our railways it is, for engineers, a very little job. It is estimated that we shall this year require 13,000,000 qr. of foreign Wheat independent of our enormous imports of other kinds of grain, meat, butter, cheese, and a million of foreign eggs daily. *J. J. Mechi, Tiptree.*

Landowners and Labourers.—Your correspondent, E. Minshall, writing from an estate office, makes some suggestions by way of improving the agricultural labourer. I fear his reasoning will not improve matters. His first suggestion is that "all landlords and agents should use every endeavour to retain upon the estate the labourers' sons." He says, "three of every five find their way to the towns and cities," and this would be avoided if "good cottage accommodation was to be obtained in the country." May be it has not occurred to him that families will outrun the requirements of an estate, excepting where certain portions of J. S. Mill's "Political Economy" has been studied and acted upon; further, the natural law of supply and demand seems to be unknown to him. Secondly, that "every cottager should hold direct from the landlord, and not under his master. In most cases, cottages are leased to the farmers, who sublet them to their workmen as weekly tenants; this arrangement is bad, for in many cases under it the labourer feels himself a sort of slave to his own master." The farmers in and around Aston, Preston Brook, indeed as far as the dictum of this estate office reaches, must be, to say the least, a queer lot; they will pardon me, but Mr. E. Minshall would make it appear there is not a "man of any honour" among them. His "man of any honour" (the labourer) feels it a sort of slight to take his cottage from his master, and not from the owner; at the same time, he (Mr. Minshall) says, "Now, if every cottage was let direct to the occupier, under a monthly agreement, the farmer to nominate the tenant, subject to the approval of the agent, an improvement would be made. The cottager would feel himself independent," &c. He would release the labourer from what he terms the slavery of his master, but the farmer is to be subjected to the slavery of the agent. Would not the fact of the farmer being compelled to ask the agent's permission to remove a tenant from a cottage on his farm, be sufficient to give rise to those "vast number of squabbles" which have sprung up, Mushroom-like, in his imagination? Now, let Mr. E. Minshall say, had these "three out of the five" lads, who have sought for work elsewhere, remained on the estate, would they, and the labourers now located on the estate, be dealt with more honestly by him than the farmers? Is the breast of Mr. E. Minshall the only soil congenial to the growth and nurture of that noble virtue, "common honesty?" *A Farmer.*

Cottages.—The remarks which I made upon the former set of three cottages, apply nearly equally to those which you publish at p. 1335. It will at once be seen that the middle one of the three is a very imperfect form of cottage, and it is very difficult, if not impossible, to make it otherwise. As I said before, it is a far better plan, in general, to build two-roomed cottages in pairs, and three-roomed ones in pairs also, and not to mix them up together. The two end cottages in Mr. Denton's plan would make a pretty good pair of two-roomed cottages. Of course it is a defect in them the pantry opening out of the living room, but there is no reason why it should not open out of the porch in these plans, which would be much better. Even with this alteration the plan is not so good or so cheap as plan No. 9 in my book on cottages. Cottages on that plan can be built for less than £200 the pair in most parts of England, with more accommodation in them than the end cottages at p. 1335 give, and I am not aware of any serious defect in the arrangement of that plan. *C. W. Strickland*, 30, *George Street*, *Hanover Square*, *October* 16.

Flowering Stems.—Like "Observer," I have been much struck this year with the disposition of biennial plants to run to seed in their first year's growth. The early Cabbages exhibited this tendency more than they usually do, and Mangels have largely run to seed. Many of my spring-sown Onions threw up flower-stems. I, too, like "Observer," have found some patches of Dodder in my Clover sown with the Barley this spring, in a field where Clover has not been grown for 16 years; the seed could hardly have been dormant so long in the soil. The Swedes are much injured in this neighbourhood by the insect "Observer" speaks of, destroying the crowns of the young plants; this is a common occurrence in Norfolk just about the time the Swedes are singled, and they generally recover from the attack without material damage. This year in many fields 90 per cent. of the Swedes suffered in this way, and, contrary to my experience in former years, the fresh crowns formed after the original injury have been destroyed in the same way, so much so that large numbers of the Swedes even now have no leading shoots. Cabbages, Couve Tronchuda, and Broccoli have been attacked more or less by this insect, though not to so large an extent. White Turnips are uninjured. I fear any protection against damage in future is not to be expected. Can any of your correspondents say what the insect is which deposits its eggs in the crowns of young Swedes? *J. G. Nelson, Aldborough Rectory.*

Tanks in Rural Districts.—My friend Mr. Mechi states in last week's *Agricultural Gazette* that underground tanks should be of brick, well cemented. If the ground is firm, bricks need not be used except for the dome. Two-thirds of the tanks in this district are cemented upon the solid, and stand better than if bricked, the latter being very liable to cause a leakage from settling and cracking. A tank of this kind sufficient for two cottages can be completed for £6, exclusive of a pump. Farm tanks cost from £12 to £15. *William Brown, Land Agent, Tring.*

Societies.

DOCKING.

The Harvest.—At the late meeting of this Society the Earl of LEICESTER said:—I must congratulate you upon meeting after your farming prospects have been so successful. You have grown good crops, and you have harvested them well. It has been a year that has been peculiarly favourable to the soils that we cultivate; in fact, the light land has at last had a turn. And I will ask you whether we have on this description of soil, and in a favourable season, grown all that it is possible to grow with profit? whether we have retained the greatest possible return at the least possible cost? and whether our grain crop and our root crop are all that could be desired? I fear that those questions can hardly be answered in the affirmative, and as long as we are so cautious in deviating from the beaten track, and so slow in adopting the knowledge that is extending itself throughout the country, we shall be more dependent upon the seasons than we ought to be, and we shall not obtain that success for our efforts which we otherwise should do. Since I last met you, I have travelled much through England and through parts of Scotland; and, taking into consideration the whole of the land that I have seen under cultivation, I think I may safely state that the produce of the land might be nearly doubled under a perfect system of agriculture. I have observed a want of capital and skill on the part of the occupier, and an apparent want of assistance and encouragement on the part of the owner. The buildings were bad and inconvenient, the fields too small and ill-arranged, and too often covered with useless timber. But the two greatest evils that, in my opinion, prevented the growth of larger crops were inferior drainage and shallow cultivation. Now, the soils that we cultivate have a natural drainage, but I am now convinced that on the lightest of our Norfolk lands deeper cultivation than we are in the habit of adopting would be remunerative. I have not had an opportunity yet of inspecting the root crops of my neighbours, but I fear that they are not altogether satisfactory. Now, I last year ploughed every acre for my root crop 12 inches deep by the aid of steam, and much of this land was, I am happy to say, lighter than that which is generally to be found on my estate; and I would ask those gentlemen who are sceptical as to deep cultivation for the root crop on such soils as ours to examine my root crop and to judge for themselves. I do not assert that deep cultivation will secure the root crop in such droughts as we sometimes experience in this county; but it will have this effect, that the drought will not injure the roots on the deep ploughed land until two or three weeks after those on the shallower soil are destroyed; and in those two or three weeks rain may come, and the root crop may be saved. This was my case last year; it has also been so this year.

A doubt had been expressed as to the result of deep cultivation upon the succeeding corn crops. I did not entertain this doubt, because I believed that a heavy root crop was, on our soils, the best preparation for the succeeding corn crops, if a due proportion of that root crop was fed off on the ground. This, as far as my experience goes, has been the case. I have lately threshed some Barley on land that was ploughed 12 inches deep for the root crop, to test an experiment that I had made of sowing Barley 12 inches from drill to drill; and as it is important, gentlemen, where figures are stated to be accurate, I will, with your permission, read the result of that experiment. "The experiment was on two pieces of land adjoining each other, each containing 1 a. 3 r. 28 p. Two-thirds of the previous Turnip crop fed off with fat sheep, eating 1 lb. of linseed-cake per day." I ought to state with this exception, all my Barley on the Park Farm is drilled 9 inches from drill to drill. "One piece drilled at 9 inches apart with 2 bush. of seed per acre, produced, best corn, 20 coombs; best tail, 2 coombs; inferior tail, 3 coombs; total, 25 coombs, or 13 coombs per acre. One piece drilled at 12 inches apart, with 1½ bush. of seed per acre, produced, best corn, 20 coombs; best tail, 2 coombs 1 bush.; inferior tail, 2 coombs; total, 24 coombs 1 bush., or 12 coombs 2 bush. 1 peck per acre." The conclusion I have come to from that experiment is this, that considering that the seed corn was the same in both cases, air and light are necessary to protect all crops, and also that wider distances and less seed might be used than is generally the custom; and I think that as 12½ coombs was the produce of 43 acres of land of 9 inches from drill to drill, the beneficial effect was the result of deep cultivation for the root crop. And I find also that after deep cultivation Clover seems to be kinder and more likely to stand on that land which has a certain admixture of the subsoil than where such an admixture has not taken place. I do not recommend the 12 inches from drill to drill. I believe that is too wide on our description of soil, as the 6 or 7 inches is too narrow. On my Marsh Farm of strong land, I find I never sow nearer than 12 inches either for Wheat or Barley; and I find that 3 pecks of Wheat and a little more than 3 pecks of Barley is ample seeding. Before I sit down I will say one word to my brother landlords. I do not believe that agriculture will ever attract that capital, that skill, and that energy that is required to bring it to perfection until ample security is given in the form of a lease to the occupier of the farm, and from that lease many unnecessary restrictions which exist in 99 leases out of a 100 are omitted. I found that in the lease in use on my estate there were many restrictions—such restrictions as I should not like to be bound by were I a tenant of a farm. I have, therefore, with the assistance of my agent and my tenants, deviated from the beaten track, and endeavoured to frame a lease more in accordance with the spirit of the age, avoiding all interference with the capital of the tenant, removing all clauses that dictate as to the cropping of the soil or as to the sale of the produce, and, as far as I can, giving security for the capital invested. I have endeavoured to place my tenants in that position which I should like to hold as an occupier of land; and in doing so I am satisfied I have studied my own interest as well. That lease will be printed, and with as few legal phrases as is practicable; and I shall be happy to submit a copy of that lease to any of my friends who may like to see it, because I believe, with certain modifications, it may be adapted to many estates of this country, both for the advantage of the landlord and the tenant.

Mr. H. E. Blyth remarked, that Mr. Simpkinson was not altogether acquainted with the details of agriculture, or he would have been aware that one of the great objects in view during the last few years in cultivating the soil by the aid of machinery was to endeavour to make the labour bill less in amount. Whether or not that was right in principle he would not argue; but there was no question that by the introduction of most expensive and powerful machinery to many operations on land not so many hands were required to cultivate it as 10 years ago. He could fully bear out what the noble lord had said with respect to the advantage of deep cultivation, especially in the growth of the root crops; for he had long noticed that where they double furrowed, or used something to grub the soil up to a greater pitch without turning over the subsoil, that the drought did not there affect the root crop so soon by two or three weeks as where the ground was only ploughed in the common manner. He had also frequently noticed the effect of deep cultivation for root crops upon the succeeding crops of corn, but whether the effect described would always be produced, he could not say. Speaking of the Association, Mr Blyth said that its funds continued in an equable position, for the subscriptions were liberally maintained, while there was between £100 and £110 at the bank. Premiums were awarded by the Association to young servants retaining their situations for a certain number of years. But servants now-a-days were not fond of remaining for years together in the same service. This was no doubt partly because of the facilities there were for young people getting about, and partly because of the temptations of which they could avail themselves, and which made them rather unsettled. Though the Association might not have been successful in securing their object in that class, it most assuredly had produced satisfactory results in the classes of skilled work, such as ploughing, stacking, sheep shearing and thatching. But he was afraid that in some of these they might be getting out of the right track. For instance, the premiums for ploughing were given to the man who drew the straightest and worked the best furrow on a given piece of land in the course of so many hours. The noble lord, not directly, but practically, said that ploughmen were to be superseded by steam-engines; while the intelligent farmers of the neighbourhood set their men to plough in a round O and not a straight furrow at all. There might be what were known as "hogs backs" and "slips" which were soon covered up with a harrow without being detected by a master. If clean ploughing was good, then circular ploughing had certain great disadvantages. Then the ploughmakers had excelled in producing implements of first-rate character. And what did the ploughman do? So perfect and so good were the ploughs that a man would get on the tail and ride from one end of the field to the other; and if that were not enough let them set two ploughs into a field, and then one man at one end and the other at the other would move the horses backwards and forwards and not go near the plough. If these things prevailed on farms it was no use the Association giving prizes for straight ploughing. These were some of the anomalies which had crept in, and which were telling them that as the times had changed it was necessary that they should make some alteration in their programme before long.

Sir W. Jones proposed "The Judges of Summer Work," in doing which he referred to the problem he put before the Norfolk Agricultural Association for solution, namely, "What will give a good crop of hay, and afterwards a good crop of Wheat?" Many gentlemen had informed him that Sainfoin was the solution of the problem. He differed from them, for Sainfoin would not grow on all soils; indeed, there was a large proportion of land in this country which would not grow Sainfoin. Many and many a good field which might have grown Trefoil or Clover had he seen thrown away because it was given up to Sainfoin in the hope that it could be grown. He had attempted it, and with very poor success, on good land. It would grow on light and thin-skinned land. Those gentlemen who had tried to set him right had uniformly been West Norfolk men, who judged by their own experience; but, take a farm on the light lands of East Norfolk, and it would be found that Sainfoin was not the solution to the problem. He only wished some one could find the answer. With respect to what had fallen from Mr. Simpkins on the subject of the census, he would suggest whether it was not possible that the exodus of labourers from Norfolk to the North of England might not be more owing to the attraction of the North than to the repulsion of Norfolk. In the North there was an immense scope for labour. The gigantic development made year by year in the factories and coalfields called for a large increase of labour. Naturally enough, the increase there was only about the same as it was in Norfolk, but the deficiency was made up by the North attracting by higher wages the surplus of the agricultural population. He was therefore inclined to believe that it would be found that it was not so much the repulsion exercised by the agriculturists as the attraction of, and the deficiency of, labour in the North. Wherever there was a depression, fluid would flow in and bring it up to a level. This was a law of physics, and there was a similar law in political economy, for where there was a deficiency of labour, labour would flow in and fill up the void. The increase of labour produced in the North was never sufficient to meet the demand for it created by the erection of new mills and the opening of new mines; consequently the surplus labour from this district flowed there as naturally as water flowed into a hollow. What had been noticed was not so much a fault on their part as the result of the immutable laws of labour.

Mr. T. Everitt thought that farmers would find on referring to their books, that it cost them as much for labour now as it did 10 or 20 years ago, *plus* the cost of many expensive machines. Farmers were now rather short of labour, and some would employ more hands if they could get them.

The Chairman said that Mr. Simpkinson, in his address to the labourers, put the question of labour as one of profit to the farmer—that it was not the farmer's business to pay more for it than would make a profitable return. He also believed that they ought not to employ more labour on their farms than would make a profitable return. It was a question of profit and loss in the employment of labour. They ought to employ as little labour as they could, in reference to the return they got for it. As far as the migration of the labourer from Norfolk was concerned, he agreed with Sir W. Jones that the attraction in the North was at present very great. But he believed that this would soon rectify itself, for though the wages of the labourer in the North greatly exceeded the wages of the labourer in agricultural districts, the amount left to him, after making all deductions, was in the agricultural districts equal to, if not greater than it was in the northern counties of England. If this were so, the matter would soon rectify itself, and labour, like capital, would be transported to where it was wanted. He believed that agricultural labourers were never so well off as they are now. They might be better off in having good habitations, for a good habitation was the first thing for a labourer to possess, and until they had good houses their position could not be improved. An improvement had, he believed, been made in this country greatly in favour of the agricultural labourer, in the improvement of the cottage accommodation. With this, and increased pay which he would receive from having more education, which would make him more valuable to his employer, they would find that the migration that had been going on to the North would soon come to an end.

The Rev. A. Napier, in giving "The Agricultural Labourer," said that what Mr. Simpkinson had uttered was an excellent, and a sound doctrine of political economy. There was only one point on which he differed from him. He seemed to infer that the exodus of labour from the agricultural counties, and especially from Norfolk, was an evil. Without entering very deeply into that question, he (Mr. Napier) was inclined to doubt whether it was a benefit or an evil. He ventured to assure them of the absolute certainty that the exodus had begun, and that it would continue. It appeared to him that the exodus was not an evil, for those who were left behind would be more thought of and better paid. He believed that the scarcity of agricultural labour would be followed by an enormous increase of employment of machinery, and he apprehended that the employment of machinery would not hurt but greatly benefit the farmer, and at the same time be a great benefit to the labouring man. He had watched the men who went up to receive the various prizes. A great number of them were excellent specimens of the agricultural labourer—sturdy, vigorous, hardy fellows. When he heard that those who attended to engines were about to go up for their prizes, he determined to watch the men. Four were called up, and four received prizes. More intellectual looking men than those he had not seen for a long time. So much was he taken with the aspect of one man that he edged his way through the crowd and drew up to him, when he was struck with the cast of his head. That man had a head upon his shoulders. A man like him for machinery was worth six common labourers. Furthermore, it would be found that the great Act of last session just came in to help the farmer and the whole social system. Mr. Foster's great Bill, ay, his large Liberal Bill, would prove, he thought, the greatest source of benefit to the agricultural labourer and to the whole community.

RODING LABOURERS' FRIEND SOCIETY.

At the late annual meeting of this Society, Mr. Glyn, who presided, gave the toast of the evening. He said:—

We are members of a society whose object it is to benefit the labourer, and if there be a body of men in England who deserve our sympathy and our care that body is composed of the agricultural labourers. I think that to-day the gathering showed that the labourers themselves in this district are alive to the benefits of this Society, and also that the Society itself is really doing a good work among them. The objects of this institution seem to be three-fold—to encourage skill in the field; to promote good gardening; and to reward industry at home. But I think, seeing that we are a body of men who come together in the interest of the labourer, there are other topics connected with his welfare that it is well for us occasionally to speak about, and, if possible, to act upon. It is our universal opinion, for instance, I think, that the labourer generally, for moral effects, is not well lodged. That matter we cannot do much in, beyond expressing our opinion, because it is a question for the landlord and the man who has got money, but the labourer with regard to his life externally is quite another matter. We know that what is everybody's business is nobody's business—that is a very great trouble in the world—and if there is a work which somebody ought to do it is to take care that the labourers' cottages are healthy—that their drainage and water supply are in proper order. The law of sanitary affairs is a little difficult, but I have looked into it, and I believe that now the vestry of every parish in England is the sanitary authority in regard to drainage, and it is the business of every vestry to appoint a committee who shall make an investigation of every cottage. We have done that in our parish, and I hope that in the course of a year or two we shall have drainage and cesspools as perfect as we can well get them. With regard to water, I regret immensely that there is no power given to us by Act of Parliament enabling us to forbid anybody from building a cottage that is not well supplied. I saw cottages building as I came here, and I wondered whether there was a well or anything better than a stinking ditch connected with them. These are two matters that ought to be relegated to the vestries with absolute power to say, "Here is a bad drain or a stinking well; Mr. Landlord, make it right." Then there is the question of labourers' clubs. The other day a most excellent and well-conducted man in our village came to me, bringing a long doctor's bill, which he had no money to pay. I said how about your club? "Club!" he replied, "I belonged to one 43 years, and it broke; I belonged to another, and it broke also." Can there be a greater blow to a labourer, after subscribing to a fund for years, than to find, when he has need of it, that he has been relying upon a rotten reed which breaks in his hand! The clubs about me are most of them public-house clubs, and one of them has a rule to the effect that on club nights as many quarts of beer shall come in as there are members, so that if there are 100 members and 20 present at the meeting, I suppose that 100 quarts of beer have to go somewhere. Suggesting that this subject also ought to be dealt with by Act of Parliament, the Chairman proceeded to say that he was told there were admirable clubs at Dunmow and Bishop Stortford, and to urge upon those present to get the labourers to join well-established and properly conducted clubs instead of those held at public-houses.

Mr. Shepherd responded. He believed the Society had done great service to the neighbourhood. When it first started the question of cottages, as a question of the employer of labour, attracted its attention, and for many years prizes were given in order to induce the labourers to take more care of their houses, which, alas, were sometimes little better than pig-styes. But, although they were so bad, generally the old cottages took the prizes from the new ones. An old cottage, well kept, was really a very warm abode for the labourer and his family. In fact, most of the cottages then about were old farmhouses, and he thought, taking all together, that there was no agricultural district with better cottages. There had been some built in his own parish during the last few years, very comfortable houses, with three bed-rooms, and for which not a high, but a remunerative rent was obained. Still, he thought those old cottages, with their thatched roofs, and the Ivy climbing round them, and the Honeysuckle too, were to be preferred for their warmth in winter and their coolness in summer to those built of brick, which were generally broiling in summer and cold in winter. Alluding, in passing, to the changes which the programme of the Society had of late undergone, in dropping the "moral" prizes and so forth, Mr. Shepherd dwelt on the new prize of £5 for the best ploughman, open to all England, took some credit to the immediate neighbourhood, because it had once more been able to hold its own against ploughmen from Canfield, Bardfield, and other places; and, in conclusion, he expressed the warm desire of himself and Mr. Reeves for the Society's continued prosperity, and, in order to that end, asked for the continued support of its members.

GREAT BRAXTED.

COLONEL BRISE, M.P., proposed the toast "Success to Agriculture, coupled with the name of Mr. Mechi." If he had had the wording of this toast, he should have put it "Mr. Mechi and Agricultural Reform." Mr. Mechi had nobly and gallantly earned the name and title of an agricultural reformer. It was his (Colonel Brise's) lot, or it might be his stupidity, that he had not always followed in Mr. Mechi's line, but he nevertheless said that the country generally was greatly indebted to that gentleman, that his earnestness and heartiness and good-tempered arguments, and his unintelligible statistics, at times greatly tended to puzzle them all, and to lead them to look upon him as one of the greatest lights of the day. With these few remarks he would propose "Success to Agriculture, coupled with the name of Mr. Mechi."

Mr. MECHI was warmly applauded, and returned thanks. He was much interested and delighted at the success of their meeting that day, and particularly at the remarks made by the Chairman in addressing the labourers from the waggon in the afternoon. They could not do better, socially and politically, than look after the welfare of those below them, and encourage them in every possible way. The subject of agriculture was a very large one, and must necessarily provoke in its discussion a great variety of feelings, and as this was a very harmonious meeting—he had turned it over in his mind for a long time—he thought it was undesirable to disturb that harmony; and therefore, however reluctant he might be, he had made up his mind not to enter into a discussion on agricultural points. He wished for the success of the Society, and was always glad to come to their annual meeting.

The Rev. C. B. LEIGH, in proposing the "health of the Chairman," of whom he spoke in highly complimentary terms, took occasion to congratulate the agriculturists of the Braxted district on having hitherto escaped the infliction upon them of the Highway Board system. Mr. Mechi had lately issued a luminous manifesto, and he (Mr. Leigh) was in hopes that he would have explained it that evening and made it intelligible to simple minds like his, for when labour was dear, aad hay had been selling at an almost ruinous price, and when stock was almost at famine price, how Mr. Mechi could recommend that the grass lands of this country should be ploughed up was past the conception of his simple mind.

The CHAIRMAN, in returning thanks, congratulated them upon the harmony of the meeting, and contrasting it with the rows on some former occasions, when Mr. Mechi had been attacked in an unfair manner, which he deprecated as being discreditable to the Society, reminded them that abuse was not the proper weapon with which to meet argument. He regretted that Mr. Mechi had withheld his speech that evening, for, as their chairman, he had hopod to have derived some information from it, and if Mr. Mechi had advanced opinions contrary to what he (the chairman) believed to be right, he should have liked to argue the point a little, and have it out with him. His notion was, that Mr. Mechi was sometimes very quick in finding a hare, but not always so successful in killing her, and on this occasion he thought that he had met his match, for the answers that had appeared in the newspaper in reply to his letter, headed "Agricultural Reform," must have told him that he was starting a wrong measure of reform, and that it would not go down. With regard to the question of pasture, he did not mean to say that there were not some pastures in the kingdom which were beyond restoration, but he maintained that, as a general rule, the tree must be dug about, and dunged, and cultivated, and it was just the same with pasture. (Mr. Mechi: Hear, hear.) Many farmers had asked him to let them plough up their pasture, and he had told them he would give his permission, if after they had treated it properly, it was not worth their keeping as pasture. In those cases, the land still remained pasture, and he advanced it as a strong opinion of his own, that a farm, with 20 acres pasture out of 100 acres, properly cultivated, would grow as much——

Mr. MECHI: Properly cultivated?

The CHAIRMAN: Properly cultivated, Mr. Mechi. Why, in some cases pasture was so much more cultivated than arable land, that many leases provided that all the manure should be put on to the pasture and none on to the arable land.

Mr. MECHI: I was not aware of that.

The CHAIRMAN: I am glad that I for once stand here and say that I have given Mr. Mechi some information.

The Rev. F. WATSON proposed "The Health of the Judges," coupled with the name of Mr. C. Hall.

The CHAIRMAN congratulated Mr. Hall on his having won the silver cup given for the best Mangel.

The Rev. F. WATSON said he should like to hear from Mr. Hall whether the Mangel which he had exhibited that day were grown on drained or undrained land.

Mr. HALL acknowledged the toast of "The Judges," and said he had acted as one of that number almost from the formation of the Society. As to the character of the work that day, he might state that the drilling was very much improved since the Society was first established, and the work on Mr. Wakelin's farm was done particularly well. The stacking on large farms was also much improved, but he was sorry to say this was not the case on the small farms under 200 acres, for which he had almost decided to withhold the prize. The ploughing had been bad for the class. It was done well considering the character of the land, and the ploughmen had very much improved since he first acted as judge; but he would suggest to the committee that another year they should select a clover-lea for the ploughing. The best ploughmen could not show off their work on soft land, and the boys could do it almost as well as the men, for there was then no skill in it. As to his Mangel, he might state that he had been an exhibitor for many years, and was never beaten until last year, when he took only second prize.

Colonel BRISE: Were they grown on undrained land?

Mr. HALL: The land on which I grow my Mangel is not drained. I never have grown them on drained land.

Mr. POTTER: Your land does not require it.

Mr. HALL: I am prepared to grow Mangel with Mr. Mechi on undrained land.

Farmers' Clubs.

IXWORTH.

Harvest Work.—At the first meeting of this Club for the present season, the subject for discussion was the best means of harvesting corn.

Mr. PETO said—When he lived near London, some 18 years ago, it was then the custom in Middlesex to fag the corn, to chop it in against the standing corn, and then gather it in. Good workmen would thus make very clean work, leaving hardly an ear on the land; consequently, no raking being wanted, this would be done at a cost varying from 10*s.* to 20*s.* per acre. They next came to the Suffolk and Norfolk style of harvesting. As far as his own experience went, he knew of no better or cheaper plan than the usual custom of mowing the crops and putting so many acres to each man to complete. The reaper was costly, and if they took into consideration the horse labour (no small item), and made a valuation of the horses before and after harvest, a considerable loss would be found in the condition of the animal. He had put down the cost of each, and he found it to be as follows for the Suffolk mode of harvesting—17 acres per man for £7, averages 8*s.* 3*d.*; horse drivers, leaders, and rakers, and what extra help might be given, 9*d.*; his stacks would average 10 acres per stack, Wheat and Barley, containing 10 squares of thatching at 1*s.* per square, 1*s.*; so that the whole could be performed in this manner for 10*s.* per acre. With a reaper the items were as follows. Horse labour, 2*s.*; tying, 3*s.* 6*d.*; carting and stacking, 3*s.*; tying and carting rakings, 1*s.*; thatching, 1*s.*; oil and wear and tear of machine, 1*s.*; thus making a total cost of 11*s.* 6*d.* per acre. It appeared to him that if they used the reaper, they ought to cut the whole of the corn by it, putting it out to tie, cart, and stack, at about 8*s.* per acre. By using the reaper they wanted to reduce their men, say a fourth; but by lessening the quantity of men they could only work with three forks in carting instead of four, and the operation would be very tedious. He had a machine, but did not put it in the harvest, because he was of opinion that it was of little assistance on account of the men taking advantage of the help given, and not working as hard as formerly. In neighbourhoods where there was sufficient labour, he should prefer the old system to the present mode of using the reaper. He had completed his harvest, 17 acres per man for £7 each, without the necessity of a disagreeable word, in three weeks and four days, all performed in a workmanlike manner, and he believed, if spared for another year, that his men would take the harvest on the same conditions. He had noticed that those farmers who used the reaper were generally behind, but as the harvest was only just completed, he hoped the subject would be thoroughly discussed, and he should be happy to answer any questions that might be put to him.

The VICE-CHAIRMAN (Mr. Fison) gave them his harvest expenses. His harvest consisted of 151 acres, 70 of which were Wheat, 70 Barley, 5 Beans, and 6 Sainfoin. He engaged 12 men, being 10 harvestmen, one horseman, and one thatcher, and he paid them each £7 8*s.*, including the shilling hiring money. One old man had £3, a man to attend the thatcher had £5 5*s.*, and seven boys £10 10*s.*, making his harvest expenses altogether, with £2 for horkey, £109 5*s.* This was a little over 14*s.* 6*d.* per acre. If they deducted the help, which in some cases they did not talk much about, deducting the horseman, thatcher, and the one man to help, it reduced the amount to £89 4*s.*, or 11*s.* 9*d.* per acre. In reference to reapers, he might say he had had one for the last four years. What use it would be in a wet harvest he must leave, as during the time he had had it the harvests had been dry ones; but during the last four years he had been quite as early as his neighbours, and he was disappointed that he had not finished earlier. His men said it was due to the fact that his crops were more bulky. The one he used was Samuelson's 2-horse Eclipse, and its expenses since he had bought it had been a mere bagatelle. He had it the first year just before harvest, and several of the bolts broke. This was a general evil, from the machines not being sent out sufficiently strong. He had duplicates made of the parts likely to break, and since then he should suppose it had not cost him 30*s.* Its present state was very satisfactory, but he had, nevertheless, sent it to his mechanic to have all the bearings and things of that kind thoroughly looked to. Therefore, the interest on the outlay was not a very great deal, not more than about 5 per cent. That was not allowing for wear and tear. But when a man laid down money in that way, whatever the amount might be, he ought to have something for it—he ought to be able to reduce his expenses by some amount, by way of interest on the outlay, and in the case of the reapers he could not see that they did that. His men finished harvest in three weeks and two days.

Mr. ELVIN (Mr. Fison's bailiff) said the machine cut about 60 acres of wheat, and 20 or 25 of Barley, allowing for cutting into and around the fields.

Mr. PETO said that observation just touched the point. On heavy land there was so much preparation to be made before the reaper could get to work, that he believed if some good men were put to work in the field they would cut the corn as quickly. If a reaper were employed at all, it should be on the mixed soil land, where there were large fields. Then, again, they all knew as practical men that they very often had a day, in the latter part of the Wheat harvest, when they could not cart their Wheat, and if they employed 20 men, or whatever the number might be—he that year had employed 19—they would cut 40 acres in a day with the greatest ease, and a practical man would not give a thank-you for more. Again, as to Barley, four days out of the six they could not commence carting till 9 or 10 o'clock in the morning, and if their men were industrious, commencing cutting at 5, they would keep themselves going without wanting a reaper at all. Therefore, in the Barley harvest, he contended, a reaper was very little use at all, if the men would only go to work in a proper style.

Mr. FISON said his experience was that, except after heavy rains, the machine would cut from the earliest dawn.

Mr. GOLDSMITH said the great advantage of the reaper was that it laid the corn lighter, and consequently it could be carted two days sooner. He tried the experiment himself the first year he used it.

Mr. PETO said he was quite of a contrary opinion.

Mr. GOLDSMITH said he cut half a field with the reaper and half with a scythe, on purpose to try it. A little rain came, and they got up that cut by the machine two days before that cut by the scythe. The scythe "roped" the corn up. He believed, also, their Barley in a wet season would grow sooner when cut by the scythe than by the other way.

The VICE-CHAIRMAN said his men objected to the reaper for that reason. The corn did not get bound together. It was, as they said, "fuzzy."

Mr. DAY said the reaper did not cut so closely as the scythe, because it went more on the level.

In answer to a question from the Chairman, Mr. GOLDSMITH said he believed layers ripened more quickly when cut by the reaper, as the sun could penetrate.

Mr. MANFIELD said, after all, the old system of reaping was not the most expensive plan, but it had gone out, and rightly, because it left so much work to do afterwards. The haulm was left on the land, and that had to be cleared away before they could get at the stubble, while under the present system they could get at it at once to break it up. Since that time, within the last few years, reaping-machines had become the fashion, and they ought to have been of a very great advantage to them as farmers. The corn was certainly cut in a most workmanlike manner, and not only that, but it was laid in sheaves, and so it was very easy to tie, but somehow it was not the advantage to them that it ought to have been in the saving of time. Somehow or other their men took just about as long now to the corn after the reaper as they used to cut and tie it. He believed many who had reaping-machines would bear him out in that respect. Mr. Peto had given them his figures in a straightforward way, and he certainly must congratulate him on getting his harvest done in so quick a manner. As he understood him he had little or nothing done with the reaping-machine, and the price he had quoted included the thatching. Now he (Mr.

Manfield) must tell a very different tale about his harvest. He had not so many acres per man; he gave his men the use of a reaper, and they were five weeks and one day in completing their harvest. Mr. Manfield went on to say that he did not quite agree with Mr. Peto's estimates as to the expense of cutting with a reaper. He thought 2*s.* per acre for horse labour was fair enough, but tying certainly ought not to cost 3*s.* 6*d.* per acre. He was speaking of what it ought to be, not what it was. He contended a man ought to be able to tie up and shock 2 acres a day. He should put tying at 2*s.* 6*d.* per acre, and carting at the same sum. For carting rakings he should think 1*s.* a fair price, and he quite agreed with Mr. Peto and disagreed with Mr. Fison as to the wear and tear of the machine. He thought the wear and tear would not be less than 1*s.* per acre.

The Vice-Chairman: I don't think that my machine has cost me that the whole time I have had it.

Mr. Elvin: Nor, nor one-half of it.

Mr. Manfield said his was Hornsby's. It had cut 175 acres of corn every year for five years, and it was now nearly worn out, besides costing a good deal for sections, knives, &c.

The Vice-Chairman said his machine at the present time was as good as new, and never cost a penny for knives. He had supplemental knives, and he hoped it would last his lifetime.

Mr. Manfield went on to observe that he did not think there was so much saving in a reaper as was imagined, for it wanted three men to accompany it, one to drive, another to cut the corners, &c., and almost another to sharpen the knives. With regard to Barley he thought there was some saving in labour, but he differed with the opinion expressed, that there was any advantage in carting. Some wet got on his Barley, and that which was cut by the scythe was ready for carting first; but then he must admit that his reaper was one which laid the corn as though it were to be tied. It would have been better for carting, but as it was the layer held the wet. His harvest cost him from 11*s.* to 12*s.* per acre.

The Vice-Chairman said his thatching cost him £12 13*s.*

The Chairman said then that was more than Mr. Peto's cost.

The Vice-Chairman said he hoped his crops were the heavier. He should average 7 acres to a stack, while Mr. Peto's averaged 11. At a later period of the discussion it appeared, however, that Mr. Peto's stacks were the larger, being 12 by 5½, while Mr. Fison's were only 10 by 5.

Mr. Goldsmith said he had been looking over his books for the last 20 years, and he found that he never got his harvest done under 10*s.* per acre, while this year it would be, including everything, about 12*s.* 6*d.* He had 10 men with 15 acres each, and he gave them £5 10*s.* in money and £1 in malt and hops, and finding that they were very much fagged, and that the beer they were drinking was not very good, he gave them some beer, using up six half-barrels.

Mr. Day said there was no cheaper way of doing harvest, especially on light land, than by using the scythe, and sticking to it. He was quite persuaded the more the reaper was used the less the men did. He had had one for seven years, and it was his experience, and he thought his men were inclined to agree with him, that it was much better to do without the reaper. They were very expensive, and on heavy land could not be moved if they got a quantity of wet. He gave 10*s.* per acre, and found drivers and horse-rakers, the men finding hand-rakers. A little farm he had down at Newton cost him 12*s.* per acre. He worked 14 acres per man, which was £7 each, and about the average price. He was nearly five weeks about his harvest, and that was what he objected to in the men, that they would not work.

The Chairman, in summing up the discussion, said he should be very sorry to see the Club take a retrograde step, and no man felt the value of machinery more than he did; but he was sure they would all agree that its relative value was far greater in some counties than in others. He pointed out, by reference to the prices paid per acre mentioned that evening, that the sum varied according to the character of the land, and so did the amount a man would do. What they wanted to do was to encourage the men to earn as much money as they could, because that was the good period of their lifetime, by means of which they paid their rent and any little back score they had got. Although unwilling to take a retrograde step, he did find when the men had the machine—whether they stopped to look at it or not he did not know, but they did not do so much work. Still, if he were going into an occupation again, he would not be without a machine, for a time might come when it would be useful; and he believed in that part of the country, where their labour was not drawn away by adjoining manufacturing districts, they could do their work better, on the whole, by putting it out than by the aid of the machine. Still, no two harvests were alike. In some years they would hardly be able to get the machine to work, while in another year they would be very glad of it. He must confess he thought by leaving the matter very much to the labourer they gave him more zest and will in finishing the harvest; but the whole labour question was one which required a great amount of consideration, and was included in the matter they were discussing. Mr. Greene pointed out that the position of the labourer in the agricultural districts was different from that of one in the manufacturing part of the country, because at times the farmer wanted him very much, and at others could find scarcely anything for him to do. They could not look at this question from the dry supply and demand point of view. If they discharged their labourers they could not expect them to wait doing nothing till harvest came round, and they were wanted. He knew it was the fashion for people to talk publicly about the bad way in which the agricultural labourer was treated, and what ought to be done, but they did not know the difficulties with which a farmer had to contend. He knew that many a farmer found his labourers work at a period when he had nothing really for them to do, rather than throw them off. He believed by giving their labourers the opportunity of earning money at harvest-time they could do very much without machinery, and his practical experience was, that by this means harvest could be well done, and at an economical price. As to his friend Mr. Fison, they all knew he drew from some other purse besides the farming one, yet he had not been very extravagant in his labour, because he grew very large crops, both of straw and corn; and he thought Mr. Peto would be very glad to pay his expenses and change crops.

The Vice-Chairman expressed his agreement with the Chairman's views. He thought a farmer ought always to keep his staff of workmen about him, and have as little extraneous help as possible. He proposed a vote of thanks to Mr. Peto for his paper, observing that he had set a very good example, one which he hoped would be followed, in cutting his paper short. What they wanted was a discussion, and not a lengthy paper.

Notices of Books.

Model Lodging Houses for the Industrial Classes.

By Banister Fletcher. Longmans.

This is a book rather for those interested in towns and townsmen, than for country people. Mr. Fletcher discourses of dwelling-houses for letting in flats, of courts and alleys, and how to improve them; and the examples by which he illustrates his propositions are those of streets and towns—places where "land can be obtained on building lease at a price of 10*s.* per foot frontage." We direct the attention of our readers to it, nevertheless, as containing much in the way of suggestion and ingenious contrivance which may be serviceable anywhere.

A Treatise on Horse-shoeing and Lameness.

By Joseph Gamgee, Veterinary Surgeon, formerly Lecturer on the Principles and Practice of Farriery in the New Veterinary College, Edinburgh. Longmans, Green & Co.

A well-written and well-illustrated book, by an experienced man. We take an extract from the very interesting historical chapter by which it is introduced:—

"The English public has been so unaccustomed to look for anything rational and intelligible about horse-shoeing, that the idea of associating the reasoning faculties with physical power in the process of shoeing horses is scarcely entertained. When one reads *farrier*, unless the term is qualified by reference to shoeing, nobody can understand what is meant. Even after reading through part of De Gray's "Expert Ferrier," and finding nothing about horse-shoeing in the first 30 pages of the book, I began to wonder what the author meant by *ferrier*, when, on arriving at the 35th page, I found the explanation as follows:—

"'Of what points consisteth the office of ferrier?—Handled dialogue-wise, What is the ferrier's art? It principally consists of four things—to wit: science, experience, knowledge, and handywork.

"'Handywork is to heat the iron well, to sodder well, to forge well, to turn a shoe well, to make and point a nail well, to pare the hoof well, to cauterise well, to let blood well, to be light and well-handed, bold and handy in dressing a horse well, of such accidents as may happen unto him.'

"This extract is from the work of one of the three or four chief English writers on farriery of the 17th century, and De Gray was in the service of Charles II. We here learn that farrier meant the horse-shoer, who was also practitioner in general for the treatment of diseases.

"The old English writers are commonly mentioned as not worthy of being consulted now; but at least references to them are instructing, since they are all we have, besides oral traditions, as a set-off against Solleysel and others in France, of the same period, and to compare with Ruini and his fellow-country writers in Italy a century and more earlier.

"No nation could produce abler men than our own as mechanics for working iron; but Englishmen did not to any great extent display their usual talents in the development of farriery. . . .

"Our country, with its all-the-year-round moderate temperature and well-adapted soil, produces the most powerful horses of any in the Old World; and the want of economy in their management has been equal to the bounteous natural endowments conferred upon us.

"Is horse-shoeing an art that can be learned and followed as a distinct calling, with credit and remuneration to those depending on it for their livelihood, and to the satisfaction of the horse-owning public? I believe not; and I have neither arrived at this conclusion inconsiderately, nor without ample data for it. Horse-shoeing never has stood alone in Europe, so far as its history shows; it may sometimes seem to be followed independently; but, on careful inquiry, it is always found otherwise.

"I deem it expedient to express myself plainly on this point, because on a clear understanding of it very much depends the possibility of carrying out any adequate reformation in farriery.

"At the end of the last century and beginning of the present one the farrier was in England a general practitioner; sometimes his field of occupation was among horses and cattle, and not in horse-shoeing; but we never find a shoer who was not more or less a dealer in drugs, or else a general smith."

Poultry for Prizes and Profit.

By James Long. Exchange and Mart Office, 32, Wellington Street, Strand, W.C.

This pamphlet is Part I., and relates to poultry for prizes. We presume, therefore, Part II. will appear hereafter and enlighten us on certainly the more important subject of poultry for profit. The present division is well illustrated, and contains much that is accurately descriptive of the different breeds, with instructions for breeding. Take the following as an example, in which the art of breeding pure Spanish poultry is referred to:—

"In selecting stock it is well to put a 2-year-old cock to not more than three 2-year-old hens, each weighing about 6 lb.—the cock weighing from 7 to 8 lb. It is highly important that the cock's comb should be perfectly strong, stiff, and erect, thick at the base, and tapering delicately to the points. The hen's comb, though falling well over the eye, should be also thick at the base, and perfectly stiff throughout—a flabby-combed hen usually throwing falling combs in the cockerels, a most fatal point. As regards breeding for face, we strongly advise the greatest caution in purchasing stock. Inquire strictly as to the pedigree of the birds, for an ill-advised cross will destroy the strain, and throw faces so red that it cannot be bred out. Although in the very best yards the chickens differ much in quality of face, birds are always obtained that do credit to their breeders; yet a bad cock will fail to throw a single good chicken. Let the stock be very white, and perfectly smooth and large in face, and of a strain that can be depended upon. The minor points, such as legs, shape, plumage, and size, must of course be correct.

"The chicken should not be hatched earlier than the end of April; early broods are always delicate, and die off mysteriously. When the faces begin to show, pick out and discard those showing a decided red tinge—they will only blush the more the longer they live; but the bluish faces should be well cared for, as they generally make the best birds. Good Spanish cocks will sometimes blush a little; when this happens they should be shut in the dark, away from the hens, and their faces gently washed twice a day with milk. Sometimes the sun will discolour the face, and at other times it gets spoiled by a discharge from the eye—"

and so on. We doubt if anything in poultry literature will beat this for detail. The circumstances of other breeds are described with equal care.

Farm Memoranda.

A Visit to Woolston.—We had read of this place, and often wished to see the spot; so, being in Bucks a fortnight since, we, in company with three friends, made bold to call upon the chronicler of steam ploughing at Woolston. It was a dull, quiet September morning, and our road lay through a flat, well-wooded district, bordering on the Ouse. Passing through the town of Newport Pagnel, we came upon broad, rich meadows, with here and there a homestead, and near it a few fields of useful-looking heavy loam; undulations in the land occurred as we proceeded, and at Woolston we found a small village on the flat, with high ground on the north-west side. We had heard so much of the stiff poor clays in this locality, and of the wonderful change wrought in them through the agency of steam, that we looked with more than ordinary care upon every feature of the district for a close resemblance to the clayey neighbourhood with which we are more especially concerned. In this respect we were disappointed; for neither in Woolston nor around it did the land appear of that low class we are acquainted with at home. The Woolston Farm is some 300 acres in extent, 160 or thereabout being arable. The land nearest to the house appears to be a heavy loam resting on clay, beneath which, we were informed, at a depth of 2 feet, is a stratum of sand, into which the drains are sunk, the water from them finding an outlet in a stream of considerable size, which bounds the farm on the south. The fields are large, level, and fairly square, and well adapted for operations by steam. For 16 years this part of the farm has been stirred and worked by the ridge plough and cultivator, invented and patented by Mr. William Smith, of world-wide celebrity. Adopting a 6-field system, and manuring the root and Bean land with 12 tons of farmyard-dung per acre, he has successfully raised a more than average bulk of produce annually, at a marvellously small cost for cultivation. Autumn tillages are thoroughly believed in. The land, steam cultivated at this season, is harrowed down in the spring; that coming in for Beans or roots is manured and ridge-ploughed by the same agency. One field in particular was pointed out to us as having grown Barley in sucession since the year 1868. We saw samples of grain for the several years, and the produce of 1871 far surpassed in quality any of the growth of previous years, and the quantity promised to reach that of former season's weight, 57 bush. per acre. We should mention that this field was originally pasture, which will account for its productiveness. A piece of luxuriant strong grown roots bore testimony to the Woolston management. This ground received 12 tons of manure in September, 1870, which the ridge-plough covered in. The roots are drilled on the ridges at intervals of 36 inches. The excellence of the cultivation and cleanliness of the surface of this field was most striking, as was indeed that of all the fields we visited.

Hitherto we had seen nothing resembling the poor stiff clay associated with the history of Woolston; remarking as much to the wealthy proprietor, we are promised a sight of it on the other side of the canal bank. We pass over a few poor pastures, which, in their present condition, do not look highly remunerative, nor do we imagine that they will ever become very profitable until a deeper system of drainage is carried out, for, with all deference, we object to a depth of but 2 feet for drains. The weak part of the farm is now reached, and yet the strong stubble cracks under the pressure of each step, and portions of oolite rock and pebbles on the surface fail to convey the notion of a poor stiff clay soil. No, Mr. Smith (fortunately for him) is not the cultivator of really poor unkind clays; on the contrary, he is dealing with a soil full of substance and stamina, which needs but drainage, his energy, and his steam-cultivating system to redeem it; and he is just the very person to do it, and many would do well to follow in his path. He has succeeded in picking the lock of the strong box, and now that we have seen his farm, we are convinced that his management is right. The grand starting point is drainage on the arable land at 8 or 10 yards' intervals, at a depth of 4 feet. Why a less depth is preferred on the grass land, we do not understand. Then follows deep autumnal steam cultivation, or the ridge-plough covers in 12 tons of manure per acre at that season as a preparation for Beans, or other crop. Men with forks go over the land thus operated upon once or twice during the winter, to remove any Couch on the ridges. When Barley or other white crop succeeds Wheat, a dressing of 5 cwt. of superphosphate is applied to the land in the spring. A large proportion of straw is sold to the London market at 50*s.* per ton, in exchange for London horse manure, delivered by barges on the farm at 6*s.* 6*d.* per ton.

Mr. Smith's mode of dealing with his land is admirably successful. He has continued to take grain crop after grain crop in succession for a series of 16 years, and the soil is apparently still full of life and vigour, and it is certainly more free from weeds and Twitch than any similar area with which we are acquainted.

Although the Woolston system of steam cultivation has not gained the blue riband of the Royal Agricultural Society, it is justly entitled to be considered the true method of working land, and the carefully recorded operations by it (priced as we thought very fairly) show that there is no more economical mode of cultivating. We could not but compare the energy and intelligence which reigns on Mr. Smith's farm, with the sluggishness and indifference of many occupiers of similar land in other directions; and we would strongly advise all who are interested in raising the productiveness of their poor clays to visit Woolston and copy the system pursued there. In taking leave of our friend Mr. Smith, we cannot but congratulate him upon the perfect success of his mode of culture, and to express our hope that he may long continue to publish his annual reports of the Woolston management. If his apparatus does not possess the newest and most perfect features of modern machinery, it exhibits the purest and the most economical mode of cultivation yet practised. *J. L. F., Clipstow.*

MERSE OF BERWICKSHIRE: *October* 16.—We have at last got through one of the most tedious harvests. Five weeks had secured most of our white crops, and our hill neighbours had scarce anything secured, when the weather fairly broke three weeks ago, and there was nothing for it but to wait. When everything was soaking for a fortnight, even the penny papers couldn't keep it from serious damage, and such weather was equally bad for much that had been unduly hurried to the stack.

We may class this harvest with the disastrous years 1856 and 1857, and the scarcity of good corn is already felt in the markets. Barley will be "the crop of the year," as the maltsters will find to their cost if they haven't plenty in the South. The quality is not to be compared with past years, nor will the quantity be satisfactory. Wheat always was a shabby crop. On rubbing out heads, one-half of the grains are found to be light and defective. Potatos are being lifted, not more diseased than might have been expected. Turnips are no such great crop after all the cry, having got a check in the end of August. The exorbitant prices of live stock are beginning to slacken. *J. L.*

Obituary.

MR. G. JACKSON, of Tattenhall Hall, expired suddenly, of heart disease, at his residence near Chester early on Tuesday of last week. He had been working hard at the harvest, and after his days' labours were over, had been busily engaged writing a report on farms for the next Journal of the Royal Agricultural Society, he having been appointed by the Society one of its farm inspectors for the year. Whether the exhaustion consequent upon this unusually close application induced the malady is not stated, but it proved fatal. Mr. Jackson had been an extensive and successful farmer, and had done much to advance agricultural knowledge. In his capacity of inspector of farms for the present year, he had twice visited some 28 farms, the report upon which he lived just long enough to complete. To him belongs the merit of establishing the first cheese factory in this country, the factory at Tattenhall taking priority in point of time of those at Derby and Longford; and this he did entirely from his own private resources, except so far as facilities were given him in connection with the building by his landlord, Mr. Barbour. The deceased only a few years ago, assisted by a few friends, established a British school in the village, which has been prosperous from the day it was opened; and this has been followed by a still heavier undertaking, the building of a large chapel.

Miscellaneous.

VOLUNTARY RETENTION OF MILK.—Almost every rustic who has either followed his mother or the maid to the dairy must be familiar with the ancient saying, the cow keeps or refuses to give her milk, and chiefly to be observed when a strange person performs the operation of drawing away the lactiferous fluid; but the rustic, it may be, makes choice of the veterinary profession, and in due course makes himself acquainted with the anatomy and physiology of the mammary glands of the cow, when perchance the thought turns uppermost in his mind, how can the cow retain her milk, seeing no muscular tissue enters into the udder whereby the flow of blood or milk from it can be checked? Bosh! it is, after all, old wife's talk—it can't be. Well, I must confess I was rather dubious about the fact that a cow does, or can, retain her milk, and all simply because the *modus operandi* did not reveal itself to me; for like many others in quest of knowledge, I travelled too far and gazed too high to find it out; it was not till I purchased my wild, passionate little Kerry I found it out. Well, the mind of the cow (for my readers may be assured she has one, the same in kind with their own, differing from it only in degree) when disturbed in the humble, generous animal, or when passion is roused, has the effect of arresting the secretion of milk. Such is the mysterious and close union the mind has with certain actions of physiological systems. We see it in a cow or animal suffering from parturient fever. When due to parturient excitement, with a system surcharged with blood, and a passive, non-secreting state of the udder in many cases in the early stage, all the morbid phenomena present are dispelled as by magic by allowing her calf to suck her—sending with the bridge of its nose, as it were, an electrifying, but genial, health-giving shock. I might give many analogies from the human female, but here shall not trespass, but stick to my own class of patients. We have a proof that the milk is a fluid quickly made and secreted, in activity resembling that of the secretion of saliva; that the cow is an animal grateful for kindness; that in order to obtain a good supply of milk, in addition to good feeding, it is necessary to keep them quiet, and free from all excitement. The same cause of reasoning will also elucidate many things peculiar in the milking qualities of different individuals and breeds of animals. Lastly, be kind to the poor cow; for the violation or abuse of man's lordly power will surely, in this case, be visited with moral punishment. *A Veterinary Correspondent of the "Dublin Farmers' Gazette."*

AGRICULTURAL STATISTICS.—We have received the following good-natured query from a correspondent, who, in forwarding to us the special schedule we desired him to fill up, writes:—"General report says the Wheat yields badly, all other crops above an average; root and forage crops much above an average." For this general report we thank him, but wish it had been substituted by individual opinion, and expressed in figures under the headings of our schedule, but to this form "T. A." objects, as follows:—

> "Sir,—I think your inquiries too inquisitive when you ask us to give our private estimates of our crops, which, no doubt, most of us make, and act accordingly for our own interest; but it is too much to ask us for them for publication, so that the trade may benefit, under the pretence of benefiting the country. Can you tell me producers who are so philanthropic?"

It is to answer this very old objection that we notice it. "Do any other producers inform the public of their stocks, &c.?" Yes, the Cotton Statistics Act requires regular periodical reports of the stocks and sales, and most manufacturing and commercial interests reveal their position from time to time; banks, mines, ships, public companies generally, undoubtedly expose their business to public criticism, which, like healthy air, should pervade and invigorate all sound speculation. With respect to agriculture, its position is so far singular, that as its shop or manufactory is the wide open country, where cultivation, production, and marketing, must be performed under universal inspection, concealment is impossible. Farmers work like bees under a glass hive, not like chemists, and a few other producers, in secret laboratories. Concealment is therefore impossible, if it were desirable. Such being the case, it is much better that judgment should be true, rather than inaccurate—it is the farmers' interest, quite as much as it is the interest of the public, that the national verdict as to the corn crops should be correct; and who better than the farmer can tell the truth of his own particular field? That truth being known, the nation, with real English love of fair play, pays cheerfully full value for the produce of agriculture—it did so last year, it will do so this, in any season. England, like an economical yet liberal housekeeper, reckons up her Wheat stores, home and foreign, and pays for them ungrudgingly, at the fair market price. Now, the real issue implied in "T. A.'s" objection is that the season's market price may be enhanced by concealment. Is this likely? Would not the buyer probably fancy the stores were larger than represented by the seller? In fact, the difference in opinion (even after every farmer and dealer should give his estimate) would still be very great, and thus fluctuations in demand would always agitate the surface of the grain trade. But then panic would never heighten or depress value to a ruinous extent, as prices must keep nearly to that natural level which the season had established. To sum up the whole argument, knowledge of agricultural produce fixes a real value to the farmer's crops, whilst uncertainty arising from imperfect information attaches a fictitious value, which may either be too high or too low, and therefore unjust; and, as a result, when the value of produce is left to chance, the scale would turn towards the public, simply because the public as the buyer always must have the buyer's privilege. Let, then, the farmer, to use a metaphor, throw open his barn door, count his ricks, number his flocks and herds, and he will find agricultural statistics will be the best salesman of agricultural produce that he can employ. *H. Kains-Jackson's Harvest Journal.*

The Week's Work.

OCTOBER 21.—*Turnip Fallows* extend over a very large area of the cultivated land of the kingdom. Over the whole of Scotland, and a great part of the north of England, with most of the sister country, for example, about a fifth part of the arable land is under Turnips. Such an extent of land shows the importance of the crop, and all who have any successful experience in its growth are familiar with the advantage of a thorough deep tillage at this season, subsoiling when the bottom is unsound, so as to increase the depth of the staple when the noxious matter is either neutralised or washed out by drainage.

Draining should commence immediately after harvest, and be prosecuted with vigour so long as there is a wet furrow of land on the farm. It is generally advisable to do so much yearly, and the break under fallow or lea is the portion usually set apart for drainage, the ploughing after being followed by subsoiling, which greatly promotes the work of drainage and aëration.

Top-dressing leas for cropping may be done as late as the beginning of November, the ploughing being deferred until the top-dressing has produced the desired effect on vegetation and any effete organic matter on the surface, which is known by the green sward produced,—in other words, the top-dressing should be well worked into the roots of the grass with a chain-harrow; and as soon as the more soluble and fertilising portion is washed into the land, and the grass up, so as to prevent the compost on the surface falling to the bottom of the furrow when the land is ploughed, the ploughing may be done. In examples where the land lies two years in grass—the first year hay and the second pasture—some prefer top-dressing after the hay crop, the compost being applied as soon as the cattle are housed, or sooner, if the stock can be removed to other pastures, or soiled indoors. Clay may also be applied to the hay stubble in frosty weather; but of this more afterwards, when the frosty weather comes; so may chalk to a different class of soils, but lime compost may be applied in autumn.

Lea Ploughing for Oats or spring Wheat usually followed the ploughing of Wheat and Oat stubble for Turnips, according to the old practice; but steam culture is turning topsy-turvy many old tillage rules, for those who smash only plough their leas with their teams while they are smashing up their stubbles by steam, so that where the latter has to be hired the former may take precedence as to time; but the more advanced plan is to do both the smashing and ploughing by steam, the advantage on the one being as great as on the other.

Threshing proceeds the moment cattle are housed for the winter, a regular supply of straw for provender and litter being daily required. Straw may be cut into chaff and salted in bins, but the more newly-threshed it is the more valuable for cattle food, for the small allowance of salt is insufficient to preserve it from waste, more especially when the straw has suffered deterioration either from lodging, bad harvest weather, or dampness in stacking. Any coarse straw of inferior quality may be threshed out and stacked for litter.

Highland Sheepwalks present a very different practice from those of the southern counties of England at this season. From the more elevated and exposed districts the flocks are removed to the lowlands; on the more sheltered, shepherds have to contend with the heavy snowfalls which now become common. Rams are got into condition for being turned to the ewes about the middle of November. Towards the close of October sheep-bathing commences. Various baths are used, as "the turpentine bath," or the more common one—a decoction of tobacco, to which is added spirit of tar and soap. To cure scab some add "sulphur-vivum," but bad cases of scab require sheep-ointments, as preparations of carbolic acid and mercury; others smear with a compound of tar and butter—a gallon of tar poured into from 6 to 8 lb. of melted butter, being a common salve calculated to smear a score of blackfaced or Cheviot wethers. Smearing kills tick and defends the skin from cold and rain, but it less or more injures the wool. Old wedders are sold for fattening in the lowlands on Turnips, and draft ewes not sold last month are disposed of as early in this as sales can be effected, and served with Leicester rams as soon as they arrive at their new quarters.

Milch Cows should now be "taken" with their winter dietary.

The Dairy now requires artificial heat to keep it dry, thoroughly ventilated, and at the proper temperature (60°); and if this is done, and the cows properly attended to as above, a rich supply of butter may be made for market; good cheese may also be made, but at more expense for fire.

Swine.—Dairy porkers and bacon hogs now thrive amazingly. Full-grown hogs can be forced forward very fast on steamed Potatos mashed with barley meal or Indian Corn meal, seasoned with a handful of acorn meal, and a little sour wash to swill it down with.

Notices to Correspondents.

BOOKS: *A Constant Reader.* Probably "Our Farm of Four Acres" (Chapman & Hall), would suit you. If you want elaborate works on agriculture, Stephen's "Book of the Farm" (Blackwood), "The Farm Calendar" (Warne & Co.), "Cyclopedia of Agriculture" (Blackie).

FARM ACCOUNTS: *Agricola.* Apply to Mr. Alexander Jemmett, Murrell Hill Farm, Binfield, Reading.

GREEN ROUND TURNIP: *The Earl of Essex* would be glad if any of our correspondents who have pitted Green Rounds, or other soft-fleshed Turnips, would tell him their experience as to whether they have kept well, and till when.

MERINO SHEEP: *Inquirer.* We know of no history of the Merino sheep in any separate publication.

STORING DRUMHEAD CABBAGES: *Anglo-Saxon* writes to ask if any one has practised storing Cabbages, and if so, with what success. Kohl Rabi will stand the winter out.

Markets.

HOPS.

BOROUGH MARKET, Oct. 19.

Messrs. Pattenden & Smith report a steady inquiry for all descriptions, more especially the better sorts of East and Mid Kents, the tendency being towards higher prices, owing to the great scarcity of choice samples.

MARK LANE.

MONDAY, Oct. 16.

There was a fair supply of English Wheat to this morning's market, a portion of which only was disposed of at the extreme prices of this day se'nnight. The attendance was good, and a moderate amount of business transacted in foreign on the same terms. Barley and Beans were fully as dear. White Peas sold at an advance of 1*s.* per qr. The Oat trade was firm, and fine Russians brought rather more money. Flour was fully as dear.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk..White	55—61	Red......	55—58
— fine selected runs ....do.	58—62	Red......	57—59
— Talavera	60—64		
— Norfolk	—	Red......	—
— Foreign	50—69		
BARLEY, grind.&dist.,26*s* to 31*s*..Chev.	38—40	Malting ..	33—38
— Foreign . grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign			
BEANS, Mazagan.... 35*s.* to 38*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	34—38
MAIZE	—	Foreign ..	32—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Oct. 18.

The Corn Exchange to-day was thinly attended by millers, and the business transacted was on a limited scale. There was a small supply of English Wheat on sale, but the receipts from abroad were good. For all qualities a slow demand prevailed, at the rates current on Monday last. Fine Barley was purchased steadily, but other descriptions were quiet. Malt sold cautiously on former terms. Oats, the show of which was large, met with a limited inquiry, at previous quotations. Maize was firm in value, with a moderate demand. Beans and Peas were in fair request, at about late rates. Sales in Flour were effected slowly, at Monday's currencies.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	180	—	—	—
Irish ..	—	—	—	—
Foreign ..	30,060	5110	25,450	150 — brls
	30,240	5110	25,450	

LIVERPOOL, Oct. 17.—There was a good attendance, but only a moderate business was done in Wheat, though the advance of Friday last was maintained. Flour 6*d.* per barrel and sack higher. Beans fully 1*s.* per qr. dearer. Peas showed a hardening tendency. Oats and Oatmeal slow sale. Indian Corn maintained Friday's advance, and was 3*s.* per qr. over the rates of this day week.

AVERAGES.

	Wheat.	Barley.	Oats.
Sept. 9	56*s* 6*d*	35*s* 1*d*	26*s* 0*d*
— 16	56 7	35 8	24 9
— 23	57 7	35 6	23 6
— 30	57 3	35 10	23 10
Oct. 7	56 3	35 8	23 8
— 14	56 5	36 2	22 6
Average ..	56 10	35 7	24 0

SEED MARKET.

The agricultural seed trade maintains the same firm but quiet position noted in our last. Clover seed excites as yet but little attention. Perennial Rye-grasses continue to advance in price. New French Italian is in improved request, and realises more money. Winter Tares, although not very cheap, meet with a slow sale. Rape and Mustard show no alteration in value. Blue Peas are in brisk demand, at increased rates. Bird seeds move off in retail at last week's currencies. There is a good business still doing in seed Wheats for France.

JOHN SHAW & SONS, Seed Merchants,
16, Water Lane, London, E.C.

HAY.—Per Load of 36 *Trusses.*

SMITHFIELD, Thursday, Oct. 19.

PrimeMeadowHay,	85*s.*to100*s.*		Clover, old	125*s.*	140*s.*
Inferior do.	45	65	Inferior do.	55	95
Rowen	40	65	Prime 2d cut do. ..	110	120
Inferior do.	—	—	Inferior do.	55	95
Straw	36	45			

CUMBERLAND MARKET, Thursday, Oct. 19.

Sup. Meadow Hay	105*s.*to112*s.*		Inferior Clover ..	90*s.*to126*s.*	
Inferior do.	70	95	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	140	150			

JOSHUA BAKER.

METROPOLITAN CATTLE MARKET.

MONDAY, Oct. 16.

The number of Beasts is much smaller, and choice qualities are in good demand at higher rates; a fair clearance is effected of all kinds. The supply of English Sheep is unusually small, of foreign plentiful. Trade is not very brisk, but higher prices are realised for choicest qualities. Choice Calves are likewise dearer. Our foreign supply consists of 3230 Beasts, 15,350 Sheep, 133 Calves, and 70 Pigs; from Ireland 200 Beasts, Scotland 23; and 1347 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 8to5 10	Best Long-wools	6 6to6 8
		Do. Shorn ..	.. — ..
Best Shorthorns..	5 4—5 8	Ewes & 2d quality	5 0—5 8
2d quality Beasts	3 8—4 6	Do. Shorn ..	.. — ..
Best Downs and Half-breds ..	6 10—7 0	Lambs	.. — ..
		Calves	4 0—6 4
Do. Shorn ..	.. — ..	Pigs	3 8—5 4

Beasts, 4800; Sheep and Lambs, 20,550; Calves, 148; Pigs, 165.

THURSDAY, Oct. 19.

Our supply of Beasts is small, but quite equal to the demand; we have a very slow trade, and at lower prices. The number of Sheep is also smaller, and the demand has also decreased; the few on offer are nearly all disposed of, but at lower rates. There are scarcely any choice Calves on offer, the quotation for them is consequently almost nominal. Trade on the whole is dull. Our foreign supply consists of 220 Beasts, 3420 Sheep, and 151 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8to5 10	Best Long-wools	6 0to6 4
		Do. Shorn ..	.. — ..
Best Shorthorns ..	5 4—5 8	Ewes & 2d quality	4 8—5 4
2d quality Beasts	3 8—4 6	Do Shorn ..	.. — ..
Best Downs and Half-breds ..	6 4—6 8	Lambs	.. — ..
		Calves	3 8—6 0
Do. Shorn ..	.. — ..	Pigs	3 4—5 0

Beasts, 700; Sheep and Lambs, 5880; Calves, 193; Pigs, 105.

METROPOLITAN MEAT MARKET, Oct. 19.

Best Fresh Butter	17*s.* per dozen lb.
Second do. do.	15*s.* ,,

Small Pork, 4*s.* 4*d.* to 5*s.* 0*d.*; Large Pork, 3*s.* 0*d.* to 3*s.* 8*d.* per 8 lb.

COALS.—Oct. 18.

Walls End Harton, 18*s.* 9*d.*; Eden Main, 19*s.*; Walls End Hetton, 21*s.*; Walls End Hetton Lyons, 18*s.* 9*d.*; Walls End Hawthorn, 18*s.* 6*d.*; Walls End Russell's Hetton, 19*s.* 6*d.*; Walls End South Hetton, 20*s.* 6*d.*; Walls End Original Hartlepool, 21*s.*—Ships at market, 11; sold, 10; unsold, 1; at sea, 20.

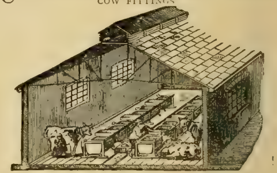
LABELS, LABELS.—PARCHMENT or CLOTH LABELS.—Tree or Plant Labels, punched parchment, 4 inches long, 4*s.* per 1000, or 10,000 for 35*s.*, cash on delivery. Sample Label sent on receipt of a postage stamp. Orders delivered free in London by
JOHN FISHER AND CO., Label Works, Boston, Lincolnshire.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size
Prices from 16*s* 6*d.* {Prices from 35*s.*
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*
Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the Corporate Mark, OBTAIN WARRANTED, without which none are genuine
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.
S. AND C.'s PRUNING and BUDDING KNIVES are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.
They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.
Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

The Cheapest and Best Insecticide.
POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

WILKIE'S CONDENSED COMPOSITION,
THE CHEAPEST AND ONLY EFFECTUAL
MEALY BUG, SCALE, and THRIP DESTROYER.
One trial will be sufficient to give it a pre-eminence over all othe Insecticides.
Sold in bottles at 2*s.*, 3*s.* 6*d.*, and 6*s* each.
May be had of all respectable Nurserymen and Seedsmen, and Wholesale of
ALEX. WILKIE,
Oak Lodge Gardens, Addison Road, Kensington, W.

Red Spider. Magnified.

GISHURST COMPOUND.
Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*
Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Wheat Sowing.
DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wire-worm. A 9*d.* packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.
Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.
Full directions for use are given with each packet.
Prepared at the Manufactory, Woburn, Beds.
CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.
Agents in every Town throughout England, Scotland, and Ireland.

The Patent Imperishable Hothouse.

AYRES'S PATENT.
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the
IMPERISHABLE HOTHOUSE COMPANY,
Newark-on-Trent, Notts.
MANAGER—W. P. AYRES, C.M.R.H.S.,
Imperishable Hothouse Company, Newark-on-Trent.
Plans, Specifications and Estimates supplied upon the shortest notice.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.
6, Bankside, Southwark, London, S.E.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

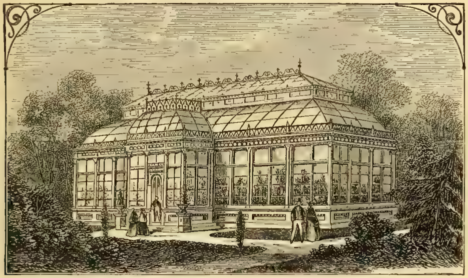
Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

ST. PANCRAS IRON-WORK COMPANY.



CONSERVATORIES, GREENHOUSES, &c.

ARCHITECTS' DESIGNS CAREFULLY CARRIED OUT.

APPLY FOR ESTIMATES TO
OLD SAINT PANCRAS ROAD, LONDON, N.W.

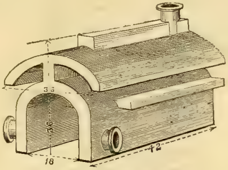
J. C. & J. S. ELLIS,

HORTICULTURAL ENGINEERS,

NORFOLK FOUNDRY, SHEFFIELD,

MANUFACTURERS and ERECTORS of HOT-WATER APPARATUS

OF EVERY DESCRIPTION, FOR
HEATING GREENHOUSES, CONSERVATORIES, HOTHOUSES, CHURCHES, PUBLIC BUILDINGS, PRIVATE RESIDENCES, WAREHOUSES, &c.



PATENT DOUBLE-ARCH BOILER.

The great advantages of these Boilers are :—

The fire acting directly under the flow pipe, the water begins to circulate immediately.

The Flues all being formed by a continuous water-way, the fire and all the hot gases are brought in direct contact with the heat-absorbing surface of the Boiler, thereby giving a greatly increased amount of power, and by which an immense saving of fuel is effected.

These Boilers offer great facilities for banking-up the fire, and will burn easily from 12 to 14 hours without attention.

The arrangement of Soot-doors in the brickwork is such that all the flues can be cleaned in a few minutes.

TESTIMONIALS.

"The Gardens, Chatsworth, January 19, 1871.

"DEAR SIR,—After using your Patent Double-Arch Boiler for the past 12 months, enables me to speak with a practical knowledge of its merits; and I have no hesitation in saying, out of many Boilers, of all sorts of construction, we have in use, it is the most efficient, and I believe it to be the best Boiler extant; neither do I think there is another that exposes so much surface to the direct action of the fire. Its efficiency, economy in fuel, and the minimum of attention, renders this Boiler a valuable improvement in Horticulture, and it reflects great credit on your good sense in designing it. I shall be glad to show the one I have in use to any person calling at Chatsworth.
I remain, dear Sir, yours truly,
"THOMAS SPEED.
"Mr. Ellis."

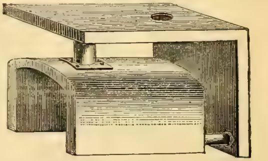
"Westbourne Gardens, Sheffield, October 27, 1870.

"DEAR SIR,—Your Patent Double-Arch Boiler, that you have put down for us lately, to heat the whole of our houses, answers admirably. Its heating surface exceeds all others which I am acquainted with. The small amount of fuel required, the way it is set, and the arrangement of soot-doors, renders it the most complete and economical Boiler I have had to do with.—Believe me, Sir, yours truly,
"W. H. BIRD.
"Mr. Ellis, Norfolk Foundry, Sheffield."

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.
BENJAMIN LOOKER,
Inventor, Patentee, and Sole Manufacturer, Kingston-on-Thames.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.

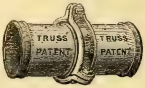


These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 ,,	18 ,,	24 ,,	450	6	0	0
20 ,,	18 ,,	30 ,,	600	7	0	0
24 ,,	24 ,,	24 ,,	700	8	0	0
24 ,,	24 ,,	30 ,,	850	10	0	0
24 ,,	24 ,,	36 ,,	1,000	12	0	0
24 ,,	24 ,,	48 ,,	1,400	15	0	0
28 ,,	28 ,,	60 ,,	1,800	20	0	0
30 ,,	30 ,,	72 ,,	2,600	30	0	0
36 ,,	36 ,,	96 ,,	4,500	50	0	0
48 ,,	48 ,,	108 ,,	7,000	75	0	0
48 ,,	48 ,,	144 ,,	10,000	100	0	0

And are kept in Stock and sold only by the Inventors and Patentees,
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

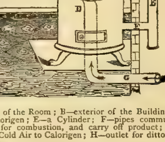
T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

GEORGE'S PATENT CALORIGEN,
For WARMING and VENTILATING.

PRICES : —
COAL CALORIGEN, £6 6*s*. | GAS CALORIGEN, £3 3*s*.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

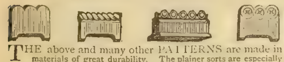
It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

J. F. FARWIG AND CO.,
36, Queen Street, Cheapside, London, E.C.

Garden Tools, Buildings, Rockworks, &c.

M. ANDRE, of Paris, LANDSCAPE GARDENER and GARDENER ARCHITECT, the designer of the Sefton Park, Liverpool, and who is engaged in Laying out several Parks for English Gentlemen, is desirous of PROCURING GARDEN IMPLEMENTS, VASES, and other objects for use in gardens, or as decorative objects. M. ANDRE is desirous of receiving Illustrated and Priced Catalogues, Designs for Rockwork, Summer-houses, Garden Buildings, Vases, Ornamental Flower Pots, &c. Catalogues and Price Lists should be addressed to M. ANDRE, 10, Rue Labruyère, Paris.

Rosher's Garden Edging Tiles.



THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

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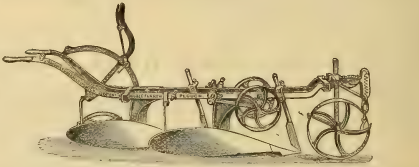

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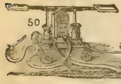

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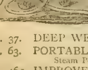

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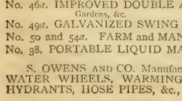

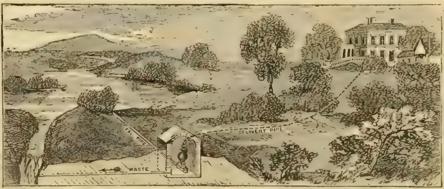

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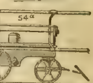

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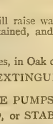

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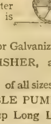

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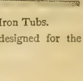

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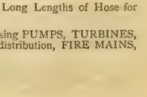

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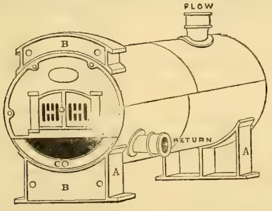

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MARKET GARDENER, CLEVEDON, SOMERSET,

Will be prepared to send out the above Currant in October and November, in not less than one dozen plants at the following rates (orders booked as received) :—

1-yr. old Plants, 18s. per dozen Plants.
2 or more yr. old Plants, 24s. to 30s. the dozen Plants.

It will be found a great acquisition on account of its fertility and other good qualities. It is very prolific (name given by the Committee of the Royal Horticultural Society), 600 plants (on 5½ rods of ground) in a Nursery the second year after planting producing over 5 cwt. of fine fruit. The bunches are medium length, of almost uniform size in berry, long-stemmed, so as to be gathered without crushing the upper berries. It is very sweet, much more so than the Black Naples, which he has grown largely for near 20 years. It is much enjoyed as a dessert. Is very thin-skinned, and makes a fine preserve. Fetches a much higher price in the market. It will be a good variety for the Market Gardener. Plants can also be supplied by the following Nurserymen :—

Messrs. P. LAWSON AND SON, Edinburgh.
Messrs. T. RIVERS AND SON, Sawbridgeworth.
Messrs. J. GARAWAY AND CO., Bristol.
Mr. C. TURNER, Slough.

EAST SOMERSETSHIRE CHAMPION POTATO.

Report of the Royal Horticultural Society's Trial Committee.

"*Late Kidney, allied to the Fluke.*—A most extraordinary cropper, very handsome, and of good quality."

This is a Potato that we confidently recommend, not only as a late but as a second early, quite fit for the table second week in July, but good late-keeping.

This will be sent out in September and October, in not less than 28 lb., 6*s.* ; 56 lb., 11*s.* ; 112 lb., 18*s.*—bags included. Remittances from unknown Correspondents. ☞ Stock limited. Trade not supplied this Season.

IMPORTANT PRIVATE SALE

OF

WINTER AND SPRING FLOWERING CONSERVATORY AND ORNAMENTAL DECORATIVE PLANTS AND FRUITING VINES.

J. & R. THYNE,

SEED MERCHANTS AND NURSERYMEN, GLASGOW,

Respectfully beg to offer the largest, best selected, and most superbly grown Collections of the above they have ever cultivated for Sale, and especially request a personal visit from intending purchasers.

Any parties leaving the selection to J. AND R. T. may fully depend on receiving their most careful attention.

DETAILED PRICE LIST under offer as follows :—

	Per dozen.—*s. d.*	*s. d.*		Per dozen.—*s. d.*	*s. d.*		Per dozen.—*s d.*	*s. d.*
AZALEAS, well budded	21 0 to	42 0	EPIPHYLLUMS, in variety ..	30 0 to	60 0	PRIMULAS—Cortusoides ..	6 0 to	9 0
BOUVARDIAS, in variety ..	18 0 „	30 0	ERICAS, in variety	18 0 „	30 0	„ „ amœna	18 0 „	36 0
BEGONIAS, in variety	12 0 „	24 0	EPACRIS, in variety	18 0 „	30 0	„ japonica .. each	7 6 „	10 6
CAMELLIAS, well budded ..	21 0 „	42 0	FERNS, in variety	12 0 „	60 0	ROSES, in pots	18 0 „	30 0
CROTONS, in variety	18 0 „	42 0	GARDENIAS, in variety ..	30 0 „	60 0	SPIRÆA JAPONICA	12 0 „	18 0
CINERARIAS, named sorts ..	0 0 „	18 0	IXORAS, in variety	18 0 „	60 0	„ PALMATA .. each	2 6 „	5 0
CHRYSANTHEMUMS, in variety	9 0 „	18 0	LILY of the VALLEY, in clumps	18 0 „	21 0	SOLANUMS..	18 0 „	21 0
CYCLAMENS, in variety ..	9 0 „	30 0	PALMS, in variety	42 0 „	105 0	TREE CARNATIONS	24 0 „	30 0
DEUTZIAS..	9 0 „	18 0	PANDANUS, in variety ..	42 0 „	60 0	VINES, strong fruiting, best sorts		
DRACÆNAS, in variety.. ..	24 0 „	60 0	PRIMULAS—Seedlings.. ..	9 0 „	18 0	in cultivation .. each	10 6 „	12 6
			„ nivalis	12 0 „	21 0	„ strong, for planting each	5 0 „	7 6

Five per cent. discount allowed for prompt cash.

Special quotations for large and specimen ORCHIDS, PALMS, FERNS, and STOVE, GREENHOUSE and ORNAMENTAL FOLIAGE PLANTS.

60, BUCHANAN STREET.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

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Standard Fruit Trees.

For the Orchard :—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden :—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

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Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

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(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

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(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

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(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

New Lilies.

MR. WILLIAM BULL begs to intimate that he can now supply fine healthy Bulbs, as imported from California, of the following extremely beautiful, rare, and hardy LILIUMS, viz :—californicum, columbianum, Humboldtii, Washingtonianum, and canadense superbum.

Mr. W. B can also supply nice little sound English-grown bulbs of LILIUM AURATUM, at 75*s* per 100 ; and small Bulbs for planting for stock, 20*s* per 100.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S W.

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B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following :—Williams' superb strain of PRIMULA, red, white, and mixed ; Neill's choice strain of CALCEOLARIA ; Weatherill's choice strain of CINERARIA ; and Wiggins' prize strain of CYCLAMEN. All the above at 1*s.* 6*d.* 2*s.* 6*d.*, 3*s.* 6*d.*, and 5*s.* per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Camellias, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine plants of CAMELLIAS, without flower bud, best varieties, 1½ to 2 feet high, bushy plants, at £6 per 100.

Fine plants of PANDANUS UTILIS, for table decoration, 15*s.* per dozen ; ditto, smaller, 12*s* per dozen.

CHAMÆROPS FORTUNEI, young plants, with three to four leaves, 42*s.* per 100 ; ditto, formed plants, 30*s.* per dozen.

CORYPHA AUSTRALIS, nice young plants, 63*s.* per 100.

INDIAN AZALEAS, choice varieties, £5 to £6 per 100.

CAMELLIAS, with flower bud, £7 to £8 per 100 ; ditto small, £6 per 100.

ARAUCARIA IMBRICATA, in small and store pots, 30*s.* per 100.

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J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send free his special cheap LIST of above, containing many good things.

CAMELLIAS and AZALEAS.—Good plants, with and without buds, at 15*s* , 18*s* , and 30*s.* a dozen, fine varieties. Package gratis for cash with order.

J. H. LEY, Exotic Nursery, Croydon, S.E.

Special Cheap List of Palms, Ferns, and Stove Plants

J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send above, with general CATALOGUE, free on application

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D. S. THOMSON offers the following well grown NURSERY STOCK, in quantity :—

CEDRUS DEODARA, 1½ to 2 feet, 2½ to 3½ feet high; WELLINGTONIA GIGANTEA, 1½ and 2½ feet ; THUJOPSIS BOREALIS, 1½ to 2 feet, 2½ to 3 feet ; THUJA GIGANTEA, 2½ to 3 feet ; Double FURZE in 60 pots by the 100 GRAPE VINES for planting and fruiting, best varieties ; with a general collection of Stock Price on application.

The Nursery, Wimbledon, Surrey, S.W.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION ;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

RHODODENDRON HYBRIDUM, from seed, 2-yr. and 1-yr transplanted, 20*s.* per 1000 ; 4 to 6 inches, 30*s.* ; 5 to 7, 40*s.* ; 8 to 12, 12*s.* per 100 ; 9 to 15, 15*s.* ; 12 to 18, 20*s.* ; 18 to 24, 30*s* ; 24 to 30, 40*s.* ; Stocks, 12*s.* ; Splendidum (white), Maid's Blush, 12 to 15, 50*s.* ; Jacksonii, Victoria, 12 to 15, 15*s.* to 18*s.* per doz. ; Woolneri, 12 to 15, 12*s.* ; Caucasicum pictum, 12 to 15, 10*s.* to 12*s.* ; all bushy, healthy plants. EVERGREEN PRIVET, 18 to 24, 16*s.* per 1000 ; 24 to 36, 20*s.* BERBERIS AQUIFOLIA, 15 to 20, 50*s.* AUSTRIAN PINES, 18 to 24, 50*s.* ENGLISH OAK, 18 to 24, 20*s.* WYCH ELM, 24 to 36, 20*s.* ; 36 to 48, 25*s.*

ISAAC MATTHEWS, Nurseryman, Milton, Stoke-on-Trent.

To Planters.

LIMES, 10 feet ; POPLARS, 10 to 16 feet : ACACIA, 10 to 12 feet ; BIRCH, 10 feet ; MOUNTAIN ASH, 9 feet SYCAMORE, 10 to 12 feet ; and other trees.

AMERICAN and CHINESE ARBOR-VITÆ, PORTUGAL and COMMON LAUREL, HOLLY, RHODODENDRON, BERBERIS, BOX, YEW, THUJA AUREA and LOBBII, THUJOPSIS BOREALIS, and other Evergreens, good and cheap. A large quantity of EVERGREENS, suitable for potting Priced CATALOGUE on application.

ROYALTY STRAWBERRY, 21*s.* per 100 ; 4*s.* per dozen.

J TROTMAN, Spring Grove Nursery, Isleworth, W.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.
WILLOW CUTTINGS for Basket Makers' purposes.
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WILLOW STOCKS for Budding and Grafting.

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NURSERY : MINTS FEET, KENDAL.

THE UNDERSIGNED, having now entered upon Possession of the Old Established SEED and NURSERY BUSINESS so long carried on by his late Father and his Executors, respectfully requests a continuance of the support so liberally accorded to them. He will continue to conduct the business as already announced, and will endeavour to merit confidence of the Public by a close personal superintendence in every department of his business.

October 12. JAMES MELDRUM.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), beg to draw attention to their DUTCH BULBS, collections of which, amounting to 21*s.* and upwards, they forward carriage paid to any Railway Station in England and Wales. Their Descriptive CATALOGUE, containing Cultural Notes for the Guidance of the Amateur, sent post free on application.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), supply GARDEN REQUISITES of every description.

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Seed Wheat.

W. SAVILL, Curl's Farm, Clavering, has a good stock of RIVETT SEED WHEAT for SALE, requiring only from 1 bushel to 5 pecks per acre. During the last four years many of the heads have had six or seven set on each side, containing from 100 to 130 grains each, and producing from 6 to 8 quarters per acre without fallowing. Price 6*s.* 6*d.* per bushel ; delivered within 8 miles at 2*d.* per bushel extra, in quantities of not less than one sack.

N.B.—There is a slight sprinkling of Kentish in the above Wheat, but a less quantity than is generally sown in Rivetts.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.

Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & CO., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, October 21, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 43.—1871.] SATURDAY, OCTOBER 28. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by W. RICHARDS, 41, Wellington Street, Covent Garden.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.
NOTICE.—FLOWER SHOW, FRUIT and FLORAL COMMITTEE MEETING, on WEDNESDAY NEXT, November 1, at 11 o'Clock. GENERAL MEETING at 3. Band of the Royal Horse Guards from 2. Admission 2s. 6d.

SCOTTISH ARBORICULTURAL SOCIETY.
ANNUAL GENERAL MEETING.
The EIGHTEENTH ANNUAL GENERAL MEETING of the SCOTTISH ARBORICULTURAL SOCIETY will be held in the Craigie Hall, St. Andrew Square, Edinburgh, on WEDNESDAY, November 1, at 12 o'Clock noon. ROBERT HUTCHINSON, Esq., of Carlowrie, F.R.S.E., President, in the Chair.
JOHN SADLER, Secretary.

BRISTOL CHRYSANTHEMUM and FRUIT SHOW SOCIETY.—The EIGHTH GRAND SHOW of CHRYSANTHEMUMS, FRUIT, &c., will be held in the Drill Hall, on WEDNESDAY and THURSDAY, November 8 and 9.
Schedules, &c., may be had on application to G. WEBLEY, Hon. Sec., Henleaze Park, Westbury-on-Trym.

THE PETERBOROUGH CHRYSANTHEMUM and FRUIT SHOW will be held on NOVEMBER 15.
Schedules and Forms of F. G. BUCKLE, Secretary.

CHEAP CHRYSANTHEMUMS, VINES (1-yr. old Canes from eyes), ROSES, FERNS, and other plants. Priced LIST forwarded on application.
KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Carnations, Picotees and Pinks.

J. BOOTH, FLORIST, Pole Lane, Failsworth, near Manchester, is now offering the above, in all the best named exhibition varieties. Trade supplied on reasonable terms.
CATALOGUES now ready.

THE PINE-APPLE NURSERY COMPANY, 32, Maida Vale, Edgware Road, W.
JOHN BESTER, Manager of the Nursery and Seed Department.
The Company guarantee to their Customers Punctuality, Liberality, and Genuine Articles. The favour of a visit is earnestly solicited.

New Soft-wooded Plants, 1871.

H. CANNELL begs to inform his Friends and Customers that his AUTUMN CATALOGUE, containing all the above, is now ready, and will be sent free on application.
New Florist Flower and Florist Flower Seed Merchant, Woolwich.

EVERY GARDEN REQUISITE KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.
Forwarders to all parts of the World.

Autumn Catalogue.

GEORGE POULTON'S AUTUMN CATALOGUE of PLANTS and CUTTINGS of NEW PELARGONIUMS, FUCHSIAS, CHRYSANTHEMUMS, &c., is now ready, and may be had post free upon application.
GEORGE POULTON, Fountain Nursery, Angel Road, Edmonton, Middlesex, N.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

To the Trade.

BETA CHILENSIS (True), the variety grown so extensively in all the London Parks and Public Gardens.—The Undersigned have a small quantity to offer. Price per ounce on application.
BUTLER, McCULLOCH AND CO., Covent Garden Market, W.C.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
In Collections to suit Large and Small Gardens.
10s. 6d. | 21s. | 42s. | 63s. | 84s.
No charge for packing. Carriage free.
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CARTER'S PRIZE DUTCH FLOWER ROOTS.
EVIDENCE OF QUALITY :—
From Miss J. Smith, *Enniskillen, April* 19, 1871.
"The Hyacinths supplied by you are the admiration of the country."
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
In Collections for the Conservatory or Drawing Room.
10s. 6d. | 21s. | 42s. | 63s. | 84s.
Packing and carriage free.
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

Dutch Flower Roots.

G. M. KEMP-WELCH'S CATALOGUE of the above is just published, and will be sent free by post on application. The Bulbs are of the finest quality, and moderate in price. Early orders will oblige. The Catalogue is of a convenient size for the pocket.
Seedsman and Florist, Cotham, Bristol.

Dutch Flower Roots.

B. S. WILLIAMS' ANNUAL CATALOGUE of DUTCH FLOWER ROOTS, containing all the best varieties of Hyacinths, Tulips, Crocuses, Narcissus, &c.; also a Select LIST of FRUIT TREES, ROSES, &c., for autumn planting, is now ready, post free on application.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

SUTTONS' SUPERB HYACINTHS.
For particulars, see p. 1385 of this day's *Gardeners' Chronicle.*

SUTTONS' Choice POLYANTHUS NARCISSUS.
For particulars, see p. 1385 of this day's *Gardeners' Chronicle.*

SUTTONS' CHOICE EARLY TULIPS.
For particulars, see p. 1385 of this day's *Gardeners' Chronicle.*

Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived, and have every appearance of being above the average quality, for which they have been noted so many years.
CATALOGUES of the above, also FRUIT TREES and general NURSERY STOCK, post free on application.
Highgate Nurseries, London, N.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

GEORGE LIGHTBODY, Falkirk, in consequence of infirmity, will DISPOSE OF the remainder of his STOCK of fine SHOW TULIPS, at the following low prices :—
100 varieties, Show Flowers, 50s. | 100 varieties, Offsets, 25s.
CATALOGUES on application.

FOR SALE CHEAP (their usual bed being otherwise required), 700 ENGLISH SHOW TULIPS, excellent varieties, from the late Mr. Tibbutt's collection, 25s. per 100, the bed for £8.
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CZAR VIOLETS.—Strong blooming plants, from open ground, 6s. per dozen; 40s. per 100.
EDWIN COOLING, Mile Ash Nurseries, Derby.

COMMON CHESTNUTS, 4 ft., 5s.; 5 ft., 10s. p. 100.
OAK, BEECH, ELM, 3 to 4 feet, 30s. per 1000.
SYCAMORES, 7 to 9 feet. 6s. per dozen. And other Nursery Stock.
A. C. WILKIN, Tiptree, Kelvedon, Essex.

Mulberries—Mulberries.

PONSFORD AND SON offer the above, by the dozen or hundred, fine, clean and healthy.
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Mulberries—Mulberries.

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The Nurseries, Bridgwater.

EXTRA fine Transplanted COMMON LAURELS, 6 feet high, and very bushy; magnificent plants.
WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

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WM. ABRAHAM offers, for cash, LAURUSTINUS, 6 to 12 inches, 25s.; 18 inches, 30s. per 1000; transplanted, bushy, 1½ to 2 feet, 15s. per 100.
Fort Prospect Nursery, Limerick.

FIVE HUNDRED THOUSAND strong 2 to 6-yr. old Seedling and Transplanted WHITE HAWTHORN QUICK. Must be Sold this season, as the ground has to be cleared.
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Seedling and Transplanted Forest Trees, &c.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., hold a large stock of the above, quotations for which may be had on application.
One and two-yr. Seedling LARCH particularly fine this season.

ALDER, very fine, 3 to 5 feet, £1; ELMS, 3 to 4 feet, 18s.; ASH, 2 to 3 feet, 12s.; OAKS, 9 to 18 inches, 10s.; strong 4-yr. QUICKS, 15s.; large extra strong, 25s. per 1000 Fine MAIDEN APPLES and PEARS, £2 per 100; extra fine 4 to 5-yr. PEARS, PLUMS, and CHERRIES, 15s.; APPLES, 12s. per dozen.
R. THORNHILL, Bowdon Nurseries, Bowdon, Cheshire

LARGE SPECIMEN CAMELLIAS for SALE.—List of Names and Prices on application to
E. COOLING, Mile Ash Nurseries, Derby.

CAMELLIAS and other CHOICE BLOOMS WANTED.—Parties having the above can meet with a ready SALE by applying to the
FLOWER MART, Villiers Street, Charing Cross, London, W.C.

WANTED, extra strong old plants of CLEMATIS FLAMMULA, out of pots. State size and price to
WM. WOOD AND SON, Nurseries, Maresfield, near Uckfield, Sussex.

WANTED IMMEDIATELY, FIVE HUNDRED PLANTS of ALYSSUM SAXATILE VARIEGATUM.—Apply, stating price, to
WILLIAM PAUL, Waltham Cross, London, N.

WANTED, strong SEAKALE, for Forcing. Send sample and price to
JAMES GARAWAY AND CO., Nurserymen, Bristol.

New Rose and Tree Catalogue.

CHARLES TURNER'S Descriptive LIST for the present season is now ready, and may be had on application.
The Royal Nurseries, Slough.

To the Trade.—Dwarf Roses.

HUSSEY AND SON have a large stock of the above to offer, in all the best kinds, selection left to themselves, good strong plants, at 30s. per 100.
Mile End Nursery, Norwich.

ROSES,—Standards, 20s.; Half, 15s.; Dwarfs, 12s. per dozen. Aad other Nursery Stock. LISTS on application.
A. C. WILKIN, Tiptree, Kelvedon, Essex.

TEA-SCENTED ROSES, in pots.—The largest stock of Tea-scented Roses in the Kingdom. They may be had in small pots, also established in 6-inch pots, for forcing and greenhouse culture.
WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

Planting Season.—Roses, Fruit Trees, &c.

W. KNIGHT intimates to intending Planters that his NEW CATALOGUE of HARDY TREES and PLANTS is now ready for distribution, containing faithful descriptions of his stock, which is unsurpassed in the Trade. Catalogues free.
Floral Nurseries, Hailsham, Sussex.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford.

Roses, Pæonies, &c.

CHARLES VERDIER, FILS, NURSERYMAN, 12, Rue Duméril, Paris, begs to call attention to his CATALOGUE of NEW ROSES, PÆONIES, &c., which is now ready, and may be had post free from his Agents,
Messrs. R. SILBERRAD AND SON, 5, Harp Lane, London, E.C.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
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A DESCRIPTIVE CATALOGUE of FRUITS for 1871. By THOS. RIVERS, of Sawbridgeworth. Free.

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NOW READY, 5000 VINES, in pots, including 1000 large Hamburghs. CATALOGUE free. Carriage paid to London.
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NOW READY, 4000 PEACH and NECTARINE TREES (bearing Trees), for Orchard House Culture or Forcing. A CATALOGUE free. Carriage paid to London.
THOMAS RIVERS AND SON, Sawbridgeworth.

GRAPES the FIRST YEAR.
Six bunches for 5s. | Twelve bunches for 10s. 6d.
The finest Canes in the Trade.
R. TANTON, F.R.H.S., The Nurseries, Epsom; and Boro' End, London Bridge, S.E.

STRONG STANDARD APPLES, PEARS, and WALNUTS.—Fine Standard and dwarf-trained APRICOTS, PEACHES, and NECTARINES, Standard and Dwarf Perpetual ROSES, Evergreen and Deciduous Flowering SHRUBS, FOREST TREES of sorts, from 2 to 10 feet. Prices on application to
CHARLES BURGESS, The Nurseries, London Road, Cheltenham.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

OSIERS for SALE.—About 40 Bolts of White, and 200 Bolts of Brown ones. A sample of them may be seen at the Warehouse of
Mr. JOHN DAY DAVIS, Spitalfields Market, London, E.

TELEGRAPH CUCUMBER SEED, true.—New Seed can be supplied, from own saving, in 1s. packets, post free.
A. WATKINS, Nurseryman, Bishop Stortford.

SEEDLING SEAKALE, 1-yr. old.—30,000 of these to offer. Prices extremely moderate.
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To Nurserymen and Others.

SEAKALE ROOTS for SALE, extraordinarily fine growth, 8s. per 100, cash on delivery; and also some 3-yr. old ASPARAGUS ROOTS, for Forcing.
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JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
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W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts :—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3s. per 1000; do. RED PICKLING, 5s. per 1000.
The Nurseries, Wonersh, Guildford, Surrey.

JOHNSTON'S ST. MARTIN'S RHUBARB.—Strong roots, 1s. 6d. each; 16s. per dozen. Price to the Trade on application.—The Subscribers have received, quite unsolicited, the highest testimonials as to the superiority of the above new variety of Rhubarb. It is undoubtedly the best sort in cultivation.
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ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6s. and 8s. per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

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CHARLES TURNER has fine plants of the following:—

WHITE NUN, 2s. 6d. each | MAIDEN'S BLUSH, 2s 6d. each

Also good plants of the leading kinds, and of various colours, at 12s. per dozen.

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LADY BLANCH, fine, pure white, 1s 6d per plant; and a variety of other kinds for forcing Also a fine collection of named varieties for exhibition, from 9s. to 18s. per dozen pairs.

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PRIZE MEDALS, 1851 and 1862.

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No. 1.	No 2.	No. 3	No. 4.	No. 5.	No. 6.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.

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CATALOGUES, containing full details of these Collections, free and post paid.

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WINTER FLOWERING ORCHIDS.—We beg to call attention to a splendid stock of ORCHIDS, which has been grown specially for our Winter Trade in Bouquets and Cut Flowers, and for which purpose we find them highly useful and indispensable for first-class Bouquets. The plants are well grown and the bulbs finely ripened, and consist of best sorts of Dendrobium, Cattleya, Odontoglossum, Cœlogyne, Calanthe, Lycaste, Phalænopsis, Trichopilia, Barkeria, Cypripedium, Phaius, Pleione, Zygopetalum, &c. CATALOGUES on application to

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester.

Nurseries: Fairfield, near Manchester.

Orchids.

HAVING A VERY LARGE STOCK,

MR. WILLIAM BULL begs to offer the following ORCHIDS, at the extremely Low Prices annexed:—

	Each. s. d.	6 Plants. s. d.
VANDA ROXBURGHII	12 6	63 0
AERIDES LINDLEYANUM	12 6	63 0
DENDROBIUM DEVONIANUM	10 6	52 6
,, CAMBRIDGEANUM	10 6	52 6
ONCIDIUM ORNITHORRHYNCHUM ..	5 0	27 0
ANGRÆCUM PERTUSUM	5 0	27 0
ONCIDIUM WENTWORTHIANUM	4 0	21 0
TRICHOPILIA SUAVIS	5 0	27 0
EPIDENDRUM CONSPICUUM..	5 0	27 0
ONCIDIUM CRISPUM	6 0	30 0
CYPRIPEDIUM BARBATUM	4 0	21 0
,, PEARCEI	4 0	21 0
EPIDENDRUM DICHROMUM	5 0	27 0
CATTLEYA MOSSIÆ	10 6	52 6
BROUGHTONIA SANGUINEA	5 0	27 0
ONCIDIUM TRIQUETRUM	7 6	36 0
DENDROBIUM HETEROCARPUM	10 6	52 6
,, TRANSPARENS	10 6	52 6
CATTLEYA LEOPOLDII	10 6	52 6
ONCIDIUM PUBES	4 0	21 0
ODONTOGLOSSUM INSLEAYI..	12 6	63 0
BRASSAVOLA CORDATA..	7 6	36 0
ONCIDIUM FUSCATUM	31 6	157 6
,, BARBATUM	4 0	21 0
ODONTOGLOSSUM LINDLEYANUM ..	7 6	36 0
,, GRANDE	7 6	36 0
ONCIDIUM KRAMERIANUM	15 0	72 0
TRICHOPILIA DOWIANA	7 6	36 0
CALANTHE VESTITA	7 6	36 0
ANGRÆCUM FUNALE	5 0	27 0
ODONTOGLOSSUM PESCATOREI	21 0	105 0
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LÆLIA AUTUMNALIS	12 6	63 0
DENDROBIUM SPECIOSUM HILLII ..	7 6	36 0
ODONTOGLOSSUM AUREO-PURPUREUM	21 0	105 0
,, PLATYODON	12 6	63 0
BARKERIA SPECTABILIS	10 6	52 6
ONCIDIUM PANCHRYSUM	21 0	105 0
,, ROEZLIANUM	21 0	105 0
DENDROBIUM JAPONICUM	7 6	36 0
AERIDES ODORATUM	7 6	36 0
EPIDENDRUM SCEPTRUM	6 0	30 0
,, AURANTIACUM	7 6	36 0
LÆLIA PURPURATA	12 6	63 0
CATTLEYA ACKLANDIÆ	12 6	63 0
VANDA GIGANTEA..	5 0	27 0
SACCOLABIUM BLUMEI MAJUS	21 0	105 0
EULOPHIA LURIDA	5 0	27 0
ONCIDIUM PAPILIO MAJUS	7 6	36 0
,, LANCEANUM	7 6	36 0
EPIDENDRUM AFRICANUM	5 0	27 0
AERIDES WARNERI	10 6	52 6
DENDROBIUM MACROPHYLLUM	5 0	27 0
ANGRÆCUM DENSUM	7 6	36 0

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

CHEAP STRAWBERRY PLANTS.—Strong and well-rooted plants of the following selected sorts:—Keens' Seedling, Prince Imperial, Sir Joseph Paxton, President, Crimson Cluster, John Powell, Sir Charles Napier, British Queen, and Carolina Superba, 2s. per 100 of sorts, or 11s. per 1000 of one kind. Hamper, 6d. Orders, except from Trade, to be accompanied with Post-office Order on New Ferry, Cheshire.

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JAMES CARTER AND CO. have extra fine plants to offer this season of the undermentioned STRAWBERRIES.

Runners, in pots, our selection, 25 of a sort ..	10s. 6d. per 100.
,, ,, ,, 100 ,, ..	7s. 6d ,,
Runners, out of pots, our selection, 25 of a sort.	5s. 0d. ,,
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Black Prince
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Goliath
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Wonderful

Runners, out of pots, per 100, 3s. 6d.; Runners, in pots, per 100, 10s. 6d.

Dr. Hogg
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New kinds at a slight advance in price according to our stock. Newest sorts, such as The Amateur, Royalty, Brown's Wonder, and several French varieties of the late Dr Nicaise's raising, at same prices as advertised by the firms distributing them.

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IMPORTANT PRIVATE SALE

OF

WINTER AND SPRING FLOWERING CONSERVATORY AND ORNAMENTAL DECORATIVE PLANTS AND FRUITING VINES.

J. & R. THYNE,

SEED MERCHANTS AND NURSERYMEN, GLASGOW,

Respectfully beg to offer the largest, best selected, and most superbly grown Collections of the above they have ever cultivated for Sale, and especially request a personal visit from intending purchasers.

Any parties leaving the selection to J. AND R. T. may fully depend on receiving their most careful attention.

DETAILED PRICE LIST under offer as follows:—

Per dozen.—	s. d.		s. d.
AZALEAS, well budded	21 0	to	42 0
BOUVARDIAS, in variety ..	18 0	,,	30 0
BEGONIAS, in variety	12 0	,,	24 0
CAMELLIAS, well budded ..	21 0	,,	42 0
CROTONS, in variety	18 0	,,	42 0
CINERARIAS, named sorts ..	9 0	,,	18 0
CHRYSANTHEMUMS, in variety	9 0	,,	18 0
CYCLAMENS, in variety ..	9 0	,,	30 0
DEUTZIAS..	9 0	,,	18 0
DRACÆNAS, in variety.. ..	24 0	,,	60 0

Per dozen —	s. d.		s. d.
EPIPHYLLUMS, in variety ..	30 0	to	60 0
ERICAS, in variety	18 0	,,	30 0
EPACRIS, in variety	18 0	,,	30 0
FERNS, in variety	12 0	,,	60 0
GARDENIAS, in variety ..	30 0	,,	60 0
IXORAS, in variety	18 0	,,	60 0
LILY of the VALLEY, in clumps	18 0	,,	21 0
PALMS, in variety	42 0	,,	105 0
PANDANUS, in variety ..	42 0	,,	60 0
PRIMULAS—Seedlings.. ..	9 0	,,	18 0
,, nivalis	12 0	,,	21 0

Per dozen.—	s. d.		s. d.
PRIMULAS—Cortusoides ..	6 0	to	9 0
,, ,, amœna	18 0	,,	36 0
,, japonica .. each	7 6	,,	10 6
ROSES, in pots	18 0	,,	30 0
SPIRÆA JAPONICA	12 0	,,	18 0
,, PALMATA .. each	2 6	,,	5 0
SOLANUMS..	18 0	,,	24 0
TREE CARNATIONS	24 0	,,	30 0
VINES, strong fruiting, best sorts in cultivation .. each	10 6	,,	12 6
,, strong, for planting each	5 0	,,	7 6

Special quotations for large and specimen ORCHIDS, PALMS, FERNS, and STOVE, GREENHOUSE and ORNAMENTAL FOLIAGE PLANTS.

EXPERIENCED GARDENERS RECOMMENDED.

60, BUCHANAN STREET.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of **60** YEARS, and NOW OCCUPYING an AREA of **180** ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple-variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

LEE'S PROLIFIC BLACK CURRANT.

FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY, 1869.

GEORGE LEE,

MARKET GARDENER, CLEVEDON, SOMERSET,

Will be prepared to send out the above Currant in October and November, in not less than one dozen plants, at the following rates (orders booked as received):—

1-yr. old Plants, 18s. per dozen Plants.

2 or more yr. old Plants, 24s. to 30s. the dozen Plants.

It will be found a great acquisition on account of its fertility and other good qualities. It is very prolific (name given by the Committee of the Royal Horticultural Society), 600 plants (on 5½ rods of ground) in a Nursery the second year after planting producing over 5 cwt. of fine fruit. The bunches are medium length, of almost uniform size in berry, long-stemmed, so as to be gathered without crushing the upper berries. It is very sweet, much more so than the Black Naples, which he has grown largely for near 20 years. It is much enjoyed as a dessert. Is very thin-skinned, and makes a fine preserve. Fetches a much higher price in the market. It will be a good variety for the Market Gardener. Plants can also be supplied by the following Nurserymen:—

Messrs. P. LAWSON AND SON, Edinburgh.
Messrs. T. RIVERS AND SON, Sawbridgeworth.
Messrs. J. GARAWAY AND CO., Bristol.
Mr. C. TURNER, Slough.

EAST SOMERSETSHIRE CHAMPION POTATO.

Report of the Royal Horticultural Society's Trial Committee.

"*Late Kidney, allied to the Fluke.*—A most extraordinary cropper, very handsome, and of good quality."

This is a Potato that we confidently recommend, not only as a late but as a second early, quite fit for the table second week in July, but good late-keeping.

This will be sent out in September and October, in not less than 28 lb., 6s.; 56 lb., 11s.; 112 lb., 18s.—bags included. Remittances from unknown Correspondents. ☞ Stock limited. Trade not supplied this Season.

Five per cent. discount allowed for prompt cash.

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PAUL AND SON, The Old Nurseries, Cheshunt, can furnish prices to the Trade of the following, which they hold largely and of usual quality:—

FRUITS.

Standard APPLES, and PEARS and WALNUTS, with 6 feet stems and good heads.
Dwarf horizontal-trained PEARS and APPLES.
Fan-trained PLUMS and CHERRIES.

STANDARD ORNAMENTAL TREES.

LIMES, 9 to 14 feet | Scarlet CHESTNUTS, 8 to 10 ft.
PAUL & SON'S Scarlet THORN, fine stems.
Purple BEECH, 8 to 10 feet. | Double CHERRIES, 8 feet.
Variegated MAHALEB and ACER NEGUNDO Var.
MAPLES, ASH, CHESTNUTS, ELMS, five or six varieties of each; and in general one of the finest collections of Ornamental Trees in the country.

EVERGREENS.

GOLD and SILVER HOLLIES, 2½ to 4 feet.
PORTUGAL LAURELS, 2 to 5 feet.

PYRAMIDS or BUSHES.

BOX, in variety, 3 to 4 feet. | AUCUBAS, 1½ to 2½ feet.

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PAUL & SON'S New Conifers.

CUPRESSUS LAWSONIANA PENDULA ALBA.
ARAUCARIAS, 2½ to 5 feet, uninjured by frost.
PICEA NORDMANNIANA and P. PINSAPO, 1½ to 2½ feet.
MEXICAN PINES, 3 to 5 feet, as P. Devoniana, Hartwegii, Don Pedri, &c.

The above are all in proper order for moving.

BIOTA ZUCCARINIANA.—The most handsome of all Arbor-vitæ. Is of neat, compact, and columnar habit, and as much superior to "aurea" in form, as that fine variety is to "compacta," and perfectly hardy. Was raised from seed received from Nagasaki, in Japan. Original seedling plants, all exactly alike, particularly handsome, about 30 inches high and 20 inches through, 15*s*. each.; smaller plants, from cuttings, from 12 to 18 inches high, 2*s*. 6*d*. to 3*s*. 6*d* each, or 27*s*. to 40*s*. per dozen.

FRANCIS R. KINGHORN, Sheen Nursery, Richmond, Surrey.

Wheelers' Brockworth Park Pear.

"The handsomest and most valuable dessert Pear of recent years."

J. C. WHEELER AND SON offer fine young PYRAMIDS of this magnificent PEAR, at 10*s*. 6*d*. each, and a few DWARF-TRAINED TREES, at 15*s*. each. It obtained a First-class Certificate from the Fruit Committee of the Royal Horticultural Society, on September 20, 1870, and was exhibited at the Royal Horticultural Gardens on October 4, 1871, when it was again greatly admired. It is large, handsome, and fine flavoured, and is, without doubt, a great acquisition to our choicest and best dessert Pears. It may fairly be described (when grown against a wall, with a good aspect) as one of the handsomest, largest, and best dessert Pears ever introduced. It ripens the end of September and beginning of October.

J. C. WHEELER & SON have already received orders for it from nearly all parts of the United Kingdom; from Germany (for the Emperor's gardens at Sans Souci, Berlin); from France; and from the United States. Orders are now being booked, and will be executed in rotation as received.

J. C. WHEELER AND SON, Nurserymen,
Gloucester and London.

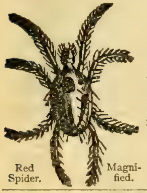
The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both Destroys Dandelions, Daisies, Plantains, Ribbed Grass, &c., and invigorates the Grass, keeping it green during hot dry weather. Cleanly and inodorous. 30*s*. per cwt.; 36-lb. tins, 10*s*. Directions and testimonials on application.

Principal Agent:—W. D. BARBOUR, 3, Park Row, Leeds.



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Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s*., 3*s*., and 10*s*. 6*d*.

Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Wheat Sowing.

DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. A 9*d*. packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.

Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.

Full directions for use are given with each packet.
Prepared at the Manufactory, Woburn, Beds.

CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.

Agents in every Town throughout England, Scotland, and Ireland.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.

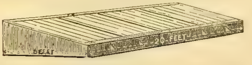
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

W. S. BOULTON AND CO., Norwich, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES.—Carriage paid to any station within 200 miles of Norwich when orders amount to £3 and upwards.

8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
17½ feet long by 6 feet wide..	£5 0	31½ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.
PLANT PRESERVERS.
Illustrated Catalogues free on application.
Rose Lane Works, Norwich.

J. TYLOR AND SONS' FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—*s*.	*d*.		Each.—*s*.	*d*.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 " " ..	0	4½	13 " " ..	2	0
4 " " ..	0	5½	14 " " ..	2	6
5 " " ..	0	6½	15 " " ..	3	0
6 " " ..	0	8	16 " " ..	3	6
7 " " ..	0	10	17 " " ..	4	0
8 " " ..	1	0	18 " " ..	5	0
9 " " ..	1	2	19 " " ..	6	0
10 " " ..	1	4	20 " " ..	7	0
11 " " ..	1	6			

BEE GLASSES, with ventilating hole through knob

4 inches in diameter ..	0*s*.	6*d*.	9 inches in diameter ..	1*s*	8*d*
5 " " ..	0	8	10 " " ..	2	0
6 " " ..	0	10	11 " " ..	2	6
7 " " ..	1	1	12 " " ..	3	0
8 " " ..	1	4			

Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2*s*.	0*d*.	16 inches long	1*s*.	4*d*.
22 "	1	10	14 "	1	2
20 "	1	8	12 "	2	6
18 "	1	6			

WASP TRAPS, 3*s*. 6*d*. per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—*s*.	*d*.		Each.—*s*.	*d*.
12 inches	6	6	20 inches	10	6
14 "	7	6	22 "	11	6
16 "	8	6	24 "	12	6
18 "	9	6			

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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Rosher's Garden Edging Tiles.

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3*s*. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14*s*., Coarse 17*s*. per Ton. In Truck Loads 1*s*. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s*. per Ton extra. Samples of Sand free by post.

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F. AND G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

Hot-Water Pipes and Boilers.

J. JONES AND SONS deliver HOT-WATER PIPES and CONNECTIONS, with BOILERS of every make, free to any Station in England, for Cash with order; or they allow a liberal Discount for Cash at their Wharf in London.

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PEACH-HOUSE, or Covered Way, with Circular Iron Roof, 58 feet long, 9 feet wide, to be SOLD, Cheap; glass at sides, within 1 foot of the ground. Also several good SECOND-HAND HOT-WATER BOILERS

Apply at the Horticultural Works, Stamford Hill, Middlesex, N.

The Royal Pottery, Weston-super-Mare.

UNDER ROYAL PATRONAGE.

JOHN MATTHEWS (late C. PHILLIPS), Manufacturer of TERRA COTTA VASES, FOUNTAINS, ITALIAN BASKETS, RUSTIC FLORAL ARBORETTES, STATUARY, GARDEN POTS (from 2 to 30 inches in diameter), of superior quality, withstand frost, and do not become green; EDGING TILES, &c. See specimens in the Royal Horticultural Gardens. Price List free, Book of Drawings, 6*d*. each.

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SLATE, for Gardening and Agricultural Purposes, &c.
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MANGERS, easily kept clean, non-absorbent, and not liable to rust,
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.

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For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

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For Double Ploughs,
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J. AND F. HOWARD, Bedford,
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Catalogues free.

THE ACME GARDEN FRAME and GROUND VINERY.

The most perfect and effective, as well as the cheapest Frame and Vinery yet brought out. See the *Gardeners' Chronicle*, Dec. 17, 1870.

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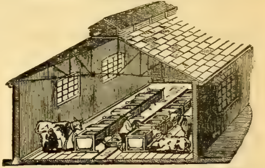
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s*.

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.

They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.

Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from

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RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

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RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100*s*.; Petersburg, 60*s*. and 80*s*.; superior close Mat, 45*s*., 50*s*., and 55*s*.: packing Mats, 20*s*., 30*s*, and 35*s*. per 100; and every other description of Mats at equally low prices, at

J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from 2*d*. to 5*d*. per yard, advancing ¼*d*.
54-inch Hessian and Scrim, 3*d*., 3½*d*., 4*d*., 4½*d*. and 5½*d*.
72 " " " 4½*d*., 5½*d*., 6*d*., 6½*d*., and upwards.

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PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.

WOOL NETTING, 2 yards wide and 1*s*. 6*d*. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1*s*. 10*d*. per yard.
Three yards wide	2*s*. 10*d*. per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d*. to 8½*d*. p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d*. and 8¾*d*. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.: and of all Seedsmen in London or the Country.

NOTICE.—Removed from 7, Great Trinity Lane.

MAGNIFICENT PLANTS of PINUS AUSTRIACA, 4 times transplanted, 4 to 5 feet (perfect specimens); smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
SCOTCH FIRS, extra fine, 3 times transplanted, 4 feet; smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, by the 1000.
SILVER FIRS, very fine plants, 3 times transplanted, 4 feet.
COMMON LAURELS, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet, by the 100, 1000, or 10,000.

CATALOGUES and Prices on application.

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JOSEPH SMITH, JUN., begs to announce that he holds large stocks of FOREST TREES, COVERT and HEDGE PLANTS of a moderate size, suitable for general planting; also EVERGREEN and FLOWERING SHRUBS, &c., of which CATALOGUES will be forwarded free on application, and special offers given for large quantities.

D. S. THOMSON offers the following well grown NURSERY STOCK, in quantity:—

CEDRUS DEODARA, 1½ to 2 feet, 2½ to 3½ feet high; WELLINGTONIA GIGANTEA, 1½ and 2½ feet; THUJOPSIS BOREALIS, 1½ to 2 feet, 2½ to 3 feet; THUIA GIGANTEA, 2½ to 3 feet; Double FURZE in 60 pots by the 100. GRAPE VINES for planting and fruiting, best varieties; with a general collection of Stock. Price on application.

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TWO MILES from BLACKHEATH STATION;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

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PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

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Nurseries: Fairfield, near Manchester.

RHODODENDRON HYBRIDUM, from seed, 2-yr. and 1-yr transplanted, 20s per 1000; 4 to 6 inches, 30s; 5 to 7, 40s.; 8 to 12, 12s per 100; 9 to 15, 15s; 12 to 18, 20s; 18 to 24, 30s.; 24 to 30, 40s.; Stocks, 12s; Splendidum (white), Maid's Blush, 12 to 15, 50s.; Jacksonii, Victoria, 12 to 15, 15s to 18s. per doz; Woolneri, 12 to 15, 12s.; Caucasicum pictum, 12 to 15, 10s. to 12s.; all bushy, healthy plants. EVERGREEN PRIVET, 18 to 24, 16s. per 1000; 24 to 36, 20s BERBERIS AQUIFOLIA, 15 to 20, 50s. AUSTRIAN PINES, 18 to 24, 50s. ENGLISH OAK, 18 to 24, 20s. WYCH ELM, 24 to 36, 20s; 30 to 48, 25s.

ISAAC MATTHEWS, Nurseryman, Milton, Stoke-on-Trent

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.
WILLOW CUTTINGS for Basket Makers' purposes.
BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.
WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above

"The Salix, or Willow," second edition, post free, 1s.; or of SIMPKIN, MARSHALL AND CO., London.

LIMES, PLANES, 10, 12, and 15 feet high, stout, straight, and splendidly rooted, by the dozen or hundred.

HOLLIES, common green, 3, 4, 5, 6, 7, 8, and 10 feet.
" Variegated " "

☞ Purchasers may select from many thousands of these Hollies, which are finely grown plants, and will be guaranteed

GOLDEN QUEEN, SILVER QUEEN, and WATERER'S HOLLIES.—Hundreds of handsome specimens, 4, 5, 6, 7, and 8 feet high, guaranteed
HODGINS, YELLOW-BERRIED, LAURIFOLIA, MYRTIFOLIA, and other varieties of Green Hollies, 5, 6, 7, 8, and 10 feet high, large number of splendid plants, guaranteed
YEWS, Common, many thousands, 3, 4, 5, 6, 7, 8, 10, and 15 feet high, guaranteed.
YEWS, GOLDEN and ELEGANTISSIMA, as globes, standards, and pyramids, up to 8 and 10 feet high.

ANTHONY WATERER'S CATALOGUE of AMERICAN PLANTS, ORNAMENTAL TREES, &c., Priced and Descriptive, and containing Illustrations from photographs of Waterer's and Golden Queen Hollies, as standards and pyramids; the Weeping Sophora, the Weeping Deciduous Cypress, the Weeping Beech, Standard Rhododendron, and Cupressus Lawsoniana erecta viridis; will be forwarded on application in return for 12 stamps, or the same Catalogue without the illustrations for 6 stamps. With reference to this Catalogue A. W. has the satisfaction to state, that he has received at least a hundred unsolicited testimonials of a highly complimentary character. Amongst others Mr. H. G. Bohn, whose knowledge of such matters gives authority to his opinions, writes as follows:—"I am delighted with your new Catalogue; it is a great advance upon all that has been done before" The *Gardeners' Chronicle* and other gardening publications have also made frequent allusion to it, as one of the best Catalogues ever issued. The illustrations have been freely copied, both in this country and America.

ANTHONY WATERER, Knap Hill Nursery, near Woking, Surrey.

Choice Seeds, for Present Sowing.

B. S. WILLIAMS begs to announce that he has just harvested NEW SEED of the following:—Williams' superb strain of PRIMULA, red, white, and mixed; Neill's choice strain of CALCEOLARIA; Weatherill's choice strain of CINERARIA; and Wiggins' prize strain of CYCLAMEN. All the above at 1s. 6d. 2s. 6d., 3s. 6d., and 5s. per packet, post free.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Phalænopsis grandiflora.

MESSRS. JAMES VEITCH AND SONS, having received an importation of the above, in the FINEST POSSIBLE CONDITION, beg to offer them at the following low prices; all the plants are established on wood —

Smallest size, healthy young plants, 25s. each, £12 12s. per dozen.
Second size, " 42s each, £22 per dozen.
Strongest size " 63s. each, £36 per dozen.

Royal Exotic Nursery, Chelsea, S.W.—October 28.

Notice.

H. LANE AND SON'S Descriptive CATALOGUE of ROSES, FRUIT TREES, VINES, CONIFERS, DECIDUOUS and EVERGREEN TREES and SHRUBS, RHODODENDRONS, AZALEAS (Indian), CAMELLIAS, &c., may now be had free on application The prices will be found moderate, combined with quality. An inspection of the growing stock is earnestly solicited.

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HOCK AND CO. beg to intimate that they can now supply fine and healthy BULBS of their unrivalled Collection of CANNAS, containing the newest and the best older varieties

New CANNAS.—12 for £1 10s., 3s. each: viz., Adolph Weick (Chaté), Alfred Dumesnil (Sisley), Auguste Férier (Sisley), Auguste Joigneau (Chaté), Dr. Gromier (Nardy), Gloire de Toulouse, Jacques Plantier (Nardy), Jean Vandael, Mdme. Devalloy (Robichon), Mdlle. Schmitt (Nardy), Prince Impérial, Sénateur Chevreau.

Best varieties, of former years—21 varieties for 10s., 6d. each 12 of one variety, 4s.; 25 of one variety, 7s. 6d.

The whole Collection of newest and best varieties f former years, altogether 43 varieties, for £2.

HOCK & Co. beg also to offer strong plants of DAHLIA ARBOREA at 2s. each; as well as 25 varieties of new PHLOX DECUSSATA for £1.—HOCK AND CO., The Rhine Nursery, Castel, opposite Mainz, Germany.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS) keep a choice assortment of EVERLASTING and DRIED NATURAL FLOWERS and GRASSES, arranged in Baskets, Wreaths, Bouquets, &c.; FRENCH IMMORTELLE WREATHS and CROSSES, for Funeral Decoration.

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W. HEATH has to offer, at a cheap rate, fine specimen plants of the following kinds —ALLAMANDAS, ALOCASIAS, CROTONS, FERNS, IXORAS, PALMS, PANDANUS; also a few GREENHOUSE PLANTS, EXOTIC FERNS, by the dozen or hundred The whole of the above are in the finest condition. W. H. will be happy to forward a printed priced LIST with dimensions on application

Exotic Nursery, Cheltenham

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station

Priced LISTS post free.

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

CONIFERS for SALE.—A large quantity to be Sold, in Lots to suit Purchasers.

THUJA LOBBII, 3 to 4 feet
CEDRUS ATLANTICA, 2 feet.
CUPRESSUS LAWSONIANA, 2 feet.

The above have been three times Transplanted.

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THE REMAINING STOCK of Mr. SALTER'S noted collection of CHRYSANTHEMUMS, Double PYRETHRUMS, CHINESE PÆONIES, GERMAN IRIS, PHLOX, &c, is now being SOLD at reduced prices. Several GREENHOUSES are also for sale

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Northampton Nurseries.

JOHN PERKINS, SEN., begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his extensive STOCK of the following, the whole of which will be offered at very low prices:—

Whitethorn or Quick, extra fine, 3-yr. transplanted
Spruce Fir, 2½ to 4 feet
Scotch Fir, 1½ to 2 feet
Larch Fir, 1½ to 2, 2½ to 3, and 3 to 4 feet
Pinus austriaca, 1½ to 2, 2 to 3, and 3 to 4 feet
Birch, 3 to 4 feet
Hazel, 2 to 3 feet
Hornbeam, 2 to 3 feet
Evergreen Privet, 1½ to 2, 2 to 3, and 3 to 4 feet
Berberis aquifolia, 1 to 1½ foot
Green Box, 1½ to 2, and 2 to 3 feet
Portugal Laurel, 1½ to 2, and 2 to 3 feet
Common Laurel, 1½ to 2, and 2 to 3 feet
Black Italian Poplar, 4 to 6 feet
Blackthorn, 1½ to 2, and 2 to 3 feet
Roses, &c., &c.

J. P.'s stock of all kinds of FRUIT, FOREST, ORNAMENTAL TREES, &c, is very extensive, and in the best possible condition for removal, having been frequently transplanted. Descriptive priced CATALOGUES free by post, or on application.

52, Market Square, opposite the Corn Exchange, Northampton.

RHODODENDRONS, FINEST NAMED VARIETIES,

BEAUTIFULLY SET WITH FLOWER BUDS.

MESSRS. VEITCH & SONS

BEG TO ANNOUNCE THAT THEY HAVE

A SPLENDID STOCK OF THE ABOVE,

WELL SET WITH FLOWER BUDS, AND ARE ENABLED TO OFFER BEAUTIFUL PLANTS, SUITABLE FOR FORCING OR PLANTING IN BEDS, AT

30s. to 42s. per dozen.

MESSRS. VEITCH AND SONS have a large stock of named sorts in other sizes, and also of HYBRIDS and PONTICUM RHODODENDRONS, and will be happy to send samples and quote Sizes and Prices by the Hundred or Thousand.

ROYAL EXOTIC NURSERIES, CHELSEA; and COOMBE WOOD, KINGSTON, S.W.

OFFICINAL AND MEDICINAL PLANTS, TROPICAL FRUITS, &c.

MR. WILLIAM BULL

BEGS to offer the following from his collection of living economic Plants, which contains specimens of nearly all the species and condiments in domestic use, many of the most highly esteemed tropical esculent fruits, also of those from which furniture and other woods are obtained, the principal gums and medicinal products, the poison trees from Brazil and Madagascar, at one time only heard of in tales of fiction, plants which supply our daily beverages and food, as well as many of historical interest.

African Mangosteen ..	Garcinia Livingstoni	*Africa.*
Alligator Pear	Persea gratissima..........	*West Indies.*
Allspice	Eugenia Pimenta	*West Indies.*
Arnotto Dye Plant	Bixa Orellana	*Trop America.*
Arrowroot....	Maranta arundinacea	*South America.*
Australian Banyan....	Ficus macrophylla	*Australia.*
Balsam of Peru	Myroxylon Pereira	*Peru.*
Betel Nut Palm	Areca Catechu	*East Indies*
Betle Pepper	Piper Betle	*East Indies.*
Bitter Aloe	Aloe socotrina	*Island of Socotra*
Black Pepper	Piper nigrum	*East Indies.*
Black Tea............	Thea Bohea	*China.*
Bread-fruit Tree......	Artocarpus incisa	*Otaheite.*
Cabbage Palm	Euterpe edulis	*Brazil.*
Camphor	Camphora officinalis	*Japan.*
Candle Tree...	Parmentiera cerelfera......	*Panama.*
Cardamon	Amomum Cardamomum ..	*East Indies.*
Cherimoyer	Anona Cherimolia..	*South America.*
Chinese Plantain Tree	Musa Cavendishii	*China.*
Cinnamon Tree	Cinnamomum verum	*Ceylon.*
Clove Tree	Caryophyllus aromaticus ..	*Moluccas.*
Cocoa	Theobroma Cacao	*Trop. America.*
Coffee	Coffea arabica	*Yemen.*
Contrayerva Root	Dorstenia Contrayerva	*South America.*
Cotton Tree........ .	Gossypium herbaceum	*East Indies.*
Croton Oil Plant	Croton Cascarilla	*South America.*
Cuba Bast............	Paritium elatum	*West Indies.*
Cubeb Pepper........	Piper Cubeba..............	*Java*
Date..	Phœnix dactylifera	*Levant.*
Divi Divi	Cæsalpinia coriaria	*West Indies.*
Edible Fruited Passion Flower	Passiflora edulis	*Brazil.*
Edible Vangueria	Vangueria edulis	*Madagascar.*
Fiddle Wood	Citharexylon quadrangulare	*Jamaica.*
Fragrant Cedar	Cedrela odorata	*West Indies.*
Gamboge	Xanthochymus pictorius ..	*East Indies.*
Gigantic Granadilla ..	Passiflora macrocarpa......	*Rio Negro.*
Ginger	Zingiber officinale..........	*East Indies.*
Granadilla............	Passiflora quadrangularis ..	*West Indies.*
Green Tea	Thea viridis	*China.*
Ipecacuanha	Cephealis Ipecacuanha	*Brazil.*
Japanese Pepper......	Piper Futokadsura	*Japan.*
Latanier Palm........	Latania borbonica	*Bourbon.*
Lemon Grass	Cymbopogon Schœnanthus	*East Indies.*
Loquat	Eriobotrya japonica...... .	*Japan.*
Mahogany Tree	Swietenia Mahagoni	*West Indies.*
Malay Apple	Jambosa malaccensis	*East Indies.*
Mammee Tree	Mammea americana	*South America.*
Mango	Mangifera indica	*East Indies.*
Mangosteen..........	Garcinia Mangostana	*Java.*
Matico	Artanthe elongata..........	*Peru.*
Mustard Tree of Scripture	Salvadora persica	*Persia.*
Naseberry Tree	Achras Sapota	*South America.*
Nicker Tree..........	Guilandina Bonduc	*Sumatra.*
Oil Palm	Elais guineensis	*Guinea.*
Orange Fig	Ficus macrocarpa..........	*Columbia.*
Otaheite Apple	Poupartia dulcis	*Society Island.*
Patchouli Scent Plant	Pogostemon Patchouli	*East Indies.*
Physic Nut	Jatropha Curcas	*Africa.*
Queensland Nut......	Macadamia ternifolia	*Queensland.*
Red Bark	Cinchona succirubra	*Trop. America.*
Rice Paper Plant	Aralia papyrifera	*China.*
Rose Apple	Jambosa vulgaris	*East Indies.*
Sandal-wood..........	Santalum album	*East Indies.*
Shining-leaved Custard Apple	Anona palustris............	*West Indies.*
Sarsaparilla	Smilax Sarsaparilla	*North America.*
Silk Cotton Tree	Bombax malabaricum......	*Malabar.*
Sour Sop	Anona muricata............	*West Indies.*
Strychnine	Strychnos Nux vomica	*East Indies.*
Sugar Cane	Saccharum officinarum	*India.*
Sugar Palm	Arenga saccharifera	*East Indies.*
Sweet Sop............	Anona squamosa	*Trop. America.*
Sycamore Tree of Scripture	Ficus Sycomorus	*Persia.*
Tamarind Tree	Tarmarindus indica........	*East Indies.*
Tonquin Bean	Dipterix odorata	*Guiana.*
Travellers' Tree	Ravenalia madagascariensis	*Madagascar.*
Turmeric	Curcuma longa	*East Indies.*
Turpentine Tree	Pistachia Terebinthus	*South Europe.*

AND MANY OTHERS.

Collections, Large or Small, of Living Plants, of Officinal and Medicinal Plants, Tropical Fruits, &c., can be made from the preceding List, at any prices from

3 to 15 Guineas.

The difference in Price of the Collections principally depends upon the number of plants included, their size, and the rarity of the species.

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NEW AND RARE PLANTS,
KING'S ROAD, CHELSEA, S.W.

Seedsmen
to Her Majesty
The Queen.

BULBS
For Autumn
Planting.

Seedsmen
to H.R.H. the
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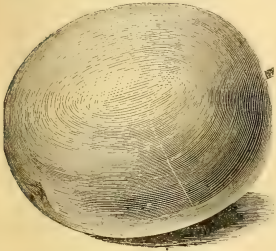
CARTER'S
BULBS for INDOOR and OUTDOOR PLANTING.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.
Packing and Carriage Free.
DESCRIPTIVE LISTS Gratis on application.

NEW PLUM.



DUKE of EDINBURGH.

Awarded a First-class Certificate by the Royal Horticultural Society

Fruit large, roundish-obovate, with a shallow suture; outline very regular and smooth; skin thin; colour light purplish, with an exceedingly dense coating of light bluish bloom; flesh reddish yellow, thick, juicy, and moderately rich, parting freely from the stone; a very prolific bearer, and good for culinary purposes. First-class Certificate, Royal Horticultural Society.

Maidens, **5s.** each.

CARTER'S
"SUBURBAN" COLLECTIONS
Of CHOICE FLOWER ROOTS for the DECORATION of the DRAWING-ROOM and GARDEN.
Price **25s.** packing and Carriage free, or half quantity for **12s. 6d.**

NEW PLUM.

DRY'S SEEDLING.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, or above medium size, roundish oval, marked with a very slight suture; skin reddish purple, covered with a thin bloom, slightly marbled when fully ripe; stalk long and stout; flesh dull greenish yellow or orange, firm yet melting and juicy, parting freely from the stone; it is of delicious flavour, and will make an excellent early dessert variety.

"The fruit is oval, of light purple colour, fine in size, remarkably good in flavour, and early: it was shown at one of the meetings held last year, and was then considered by the Committee to possess considerable merit, and its qualities having been again tested on this occasion, it was duly honoured with a First-class Certificate"

Standards, **5s.**; Pyramids, **3s. 6d.**; Dwarf-trained 1 year, **5s.**; Maidens, **2s. 6d.** each.

CARTER'S AUTUMN CATALOGUE
Of DUTCH BULBS, FRUIT TREES, ROSES, &c., is now ready, and may be had Gratis and Post Free on application.

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SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

SUTTONS'
FRESH IMPORTED
DUTCH FLOWER ROOTS,
CARRIAGE FREE.

100	HYACINTHS, in 100 sorts, Carriage Free	£4	4 0
100	" in 50 sorts, Carriage Free	3	10 0
50	" in 50 sorts, Carriage Free	2	2 0
50	" in 25 sorts, Carriage Free	1	15 0
25	" in 25 sorts, Carriage Free	1	1 0

New Varieties, specially selected for Exhibition purposes, 25 choice Bulbs for 40*s.*, 12 choice Bulbs for 20*s.*, Carriage Free.

From R. PEARSON, Esq., Jun, *Altofts.*

March 28, 1871.—"My brother, Mr. H. Pearson, took First Prize for Hyacinths at the Pontefract Show, with Bulbs supplied by you."

Suttons' Superb Hyacinths.

From Mr. A. WIPF, *Gr. to* A. SHUTTLEWORTH, Esq., *Hughington Hall.*

July 3, 1871.—"The Bulbs procured from you last autumn gave the most complete satisfaction to my employer, and were admired by all visitors, in particular by some proprietors of extensive gardens, who could not suppress their disappointment and chagrin at having been at the expense and trouble to get Bulbs direct from Holland, which were nevertheless much inferior to your flowers."

100	POLYANTHUS NARCISSUS, in 20 choice sorts ..	£1	5 0
50	" in 10 choice sorts ..	0	14 0
25	" in 12 choice sorts ..	0	7 6
12	" in 12 choice sorts ..	0	4 0
100	" fine mixed	0	15 0
12	" fine mixed	0	2 0

Suttons' Choice Polyanthus Narcissus.

100	EARLY TULIPS, in 20 choice varieties	18*s.*
100	" in 10 choice varieties	15*s.*
50	EARLY TULIPS, in 10 choice varieties	8*s.*
25	" in 5 choice varieties	4*s.*

Suttons' Choice Early Tulips.

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SUTTON AND SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN, and H.R.H. THE PRINCE OF WALES,
READING.

New Plant.

ALLAMANDA CHELSONI.—This attractive novelty has been imported from the West Coast of Africa. The peculiar character of its flowering growth (which is often elongated a foot or two), and its continuous blooming property, somewhat similar in this respect to A. Hendersoni, make it one of the most desirable of its family. The flowers are about the size of those of A. Aubletii, intermediate in colour between that species and A. cathartica, of great substance, and free from the objectionable habit of reflexing which exists in the flowers of A. Aubletii. Price 7*s.* 6*d.* each.

Mr. WILLIAM BULL, Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

"The best Catalogue."—*Vide* "*Horticulturist,*" *October*, 1870.

Gratis and post free,

A CATALOGUE of DUTCH BULBS, FRUIT TREES, DRIED FLOWERS, and general Autumn Requirements.

DICK RADCLYFFE AND CO., Seedsmen, Horticultural Decorators and Garden Furnishers, 129, High Holborn, W.C.

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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz. :—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Professor REICHENBACH, of Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, OCTOBER 28, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Nov. 1	Royal Horticultural (Fruit and Floral Committees), at S. Kensington ..	11 A.M.
	Ditto (Scientific Committee).. ..	1 P.M.
	Ditto (General Meeting)	3 P.M.
THURSDAY, — 2	Linnean	8 P.M.

WE recently transcribed some seasonable notes respecting a few rare deciduous ornamental hardy trees, which we are glad to find have been appreciated. Now we have to introduce, in a similar way, one of the best and most useful of evergreens, namely, the CHERRY LAUREL, and to note some of the peculiarities of the most remarkable varieties to be met with in cultivation.

We will refer first to the forms most nearly related to the common Cherry Laurel (Cerasus Laurocerasus)—itself too well known to need more than a passing reference. Of these the most prominent is the Versailles Laurel (latifolia), a very large-leaved kind, differing only in size from the common sort. When first introduced at the meetings of the Floral Committee a year or two since, a very proper doubt was entertained as to whether or not this extra size might be merely the result of special culture, but we have since seen it at the Tunbridge Wells Nurseries growing freely by the side of the common Laurel, and maintaining a decided difference, both as to robustness of habit and boldness of foliage. Whether it is more or less tender than the type, which, we all know to our regret, sometimes gets severely touched by frost, we are not aware.

Another variety, also closely related to the common Laurel, is the round-leaved Laurel (rotundifolia), which has been exhibited by Mr. W. PAUL, and which we have noticed growing in his nursery at Loughton, in a situation where its hardiness was thoroughly tested. The habit of this sort is very dense; the leaves, though not exactly round, are particularly broad and short, and are serrated at the edge, and the whole plant appears to us to have an aspect recalling that of a Bay Laurel rather than a Cherry Laurel. We look upon this as one of the best of the forms belonging to the same race as the common Laurel, while a narrow-leaved form, occasionally seen, is one of the worst from an ornamental point of view.

Of a distinct and hardier type is what is known as the Colchican Laurel (colchica). One of its peculiarities is its remarkably spreading habit of growth, without much tendency to get upwards, a quality which seems to adapt it specially for planting as undergrowth or cover. Another of its peculiarities is the pale hue of the back of the leaf, which somewhat detracts from its beauty as an evergreen. The leaves are rather lengthened out, conspicuously pointed, and glossy, and have a sort of refined character, which no doubt would command the approval of most persons of taste in these matters. It is, undoubtedly, a better evergreen than the common Laurel.

The Caucasian Laurel (caucasica) is again of another distinct type, and, so far as we have been able to observe, is the most valuable of all the Cherry Laurels we have in cultivation. It has a bolder and more vigorous style of growth than the common Laurel, is naturally much more inclined to assume an erect habit of growth than colchica, and is, at the same time, dense and well furnished, thickly clothed with fine, broad, dark-green glossy foliage. What is, however, of still more importance, in regard to an estimate of its merits, is the fact that it is hardier than any of the other varieties.

The Cherry Laurel is so often and so much in request as a shrubbery plant, that we trust our readers will find these brief memoranda of the peculiarities of the different kinds to be useful to them in making their selections, now that the planting season has again come round.

—— AT the meeting of the Fruit Committee of the Royal Horticultural Society on September 20 last, Mr. J. MAY, Westfield Gardens, Hayling Island, exhibited a dozen remarkably fine SHALLOTS GROWN FROM SEED, since which time it appears Mr. MAY has been inundated with letters requesting him to inform the writers how he obtained such satisfactory results. As to give full details of his treatment to each of his applicants would entail upon him an unnecessary amount of labour, Mr. MAY requests us to afford him space to answer them, once for all, through the medium of our columns, which we have much pleasure in allowing him to do in his own words:—

"Nothing can be more simple than the treatment which these Shallots receive at my hands. The first and primary point is to obtain good, well-ripened seed, which I have done for some time by selecting the best roots from year to year and planting them in good soil, in some warm sheltered place, where they get the full benefit of the sun. By planting early I get, perhaps, two in ten to run to seed, and from these (if the autumn is fine) I get my seed for the next year's supply. The seed must be thoroughly matured, otherwise the produce is uncertain. On March 20, this year, I sowed my Shallot seed alongside that of my Onions, on ground which had, during the winter, been trenched 2 feet deep, with manure under both spits, and left rough to get thoroughly pulverised by frost, &c. It was raked down and trodden hard at the time of sowing, just in the same way as the ground is usually treated for Onions. As soon as the seedlings are large enough to thin they are drawn out, and left about 12 inches from plant to plant. All that is required after that is to keep the Dutch hoe occasionally run between the rows, to keep down weeds, and to prevent rapid evaporation after rain. The 12 exhibited on the 20th weighed 4 lb., and were a fair sample of the whole, but I hope to be able by careful selection to produce much better roots than these. Where, as in many large families, a quantity of this root is required, those grown from selected seed will soon supersede those obtained by the old method of planting roots for the current year's supply."

Another correspondent at Hayling also grows his Shallots in the manner above described, as will be seen on reference to p. 1254 of our volume for 1869.

—— The basement of the Town Hall, Birmingham, was recently fitted up by Mr. VERTEGANS, of the Chad Valley Nurseries, as a refreshment *salon* during the Mayor's *conversazione*. It appears that the walls and pillars were carefully whitewashed; and the latter, with a tasteful edging of red, and the motto of the borough, "Forward!" in the same colour on each, were further ornamented with evergreens and Holly berries. The walls were also latticed with these latter decorations, and the contrast afforded by the glowing green and scarlet, with the white background, was effective. The greatest attraction of all was a fountain and cascade at the end, adjacent to the front of the hall, and which formed a charming spectacle. A semicircular space, lined with Ferns, ornamental foliage plants, and Mosses, arranged with artistic skill, formed a natural grotto, from the far extremity of which a cascade of sparkling water flowed down among the plants, while a small fountain, with a convolvulus jet, found place in the centre of the retreat.

—— We are glad to see that the breeding of HYBRID CAPE PELARGONIUMS is engaging the attention of cultivators, not so much perhaps for the sake of the gains already acquired, as for those which we may reasonably expect to reward the persevering experimentalist whose efforts may be turned in this direction. There is no apparent reason why we should not as greatly improve other distinct races of Pelargoniums as those which constitute our modern show and zonal varieties. Mr. WILSON SAUNDERS and Major TREVOR CLARKE may be cited as workers in this field, and now we may quote from the practical ranks, Mr. SAMPSON, of Yeovil, who is just sending out some new Oak-leaved sorts, reminding one of that old favourite, the Fair Helen of our youthful days, but differing in colour. They are said to be the result of a cross between the Cape and the Nosegay sections, and to have flowers of a finer and stouter build than any that have preceded them; while being free of bloom, it is believed that they will prove valuable both for winter or summer decoration, as well as useful for cutting from, as they yield a continuous supply of flowers. The plate Mr. SAMPSON has issued represents them as being of different shades of rosy-purple, spotted after the style of the variety already named. The trusses are shown as being full and compact, one is of a violet-purple, dashed with rose, another deep rosy-magenta, and a third rosy-violet, shaded with carmine, all of them with dark crimson spots and stripes most prominently marked on the upper petals. We trust Mr. SAMPSON, or some one else, will go on seeding and selecting till we get these Oak-leaved Pelargoniums as fine and as varied as their hitherto more favoured relatives.

—— Mr. CHAPMAN, whose useful aids to GRAPE THINNING we described at p. 1193, reminds us that we have omitted to mention his pruning scissors, without which the other contrivances are incomplete. "The same pair of scissors which I use for thinning the Grapes, I also use for cutting the wire into the lengths required for suspending the shoulders of the bunches, which prevents the necessity of using a pair of cutting pliers." What Mr. CHAPMAN does in this case, is to make a small semi-circular notch—which any grinder can do—in one of the blades of the scissors, this simple notch being sufficient to hold the wire firmly, so that it may be severed by the other blade. It is a manifest convenience to be able to cut the wires as required, without the necessity of carrying and handling a second instrument for the purpose.

—— The publication at an early date of a new gardening journal, to be called "THE GARDEN," is announced. The new-comer is, we learn, projected by Mr. W. ROBINSON, F.L.S., and will be edited by that gentleman.

—— The success which has attended the introduction into this country of the form of blind for windows generally seen in use on the Continent, has led Messrs. DICK RADCLYFFE & CO. to introduce a more substantial and rougher article for outside use, and especially for GREENHOUSE SHADING, samples of which are before us. The annexed illustration (fig. 304) will give an excellent idea as to the use for which they are intended, and for which few materials are so well adapted. The price, we are informed, is very moderate, so that there is no reason why this elegant article should not be universally employed. Some of the forms laid before us would, if cut to the proper size, make excellent "ventilators" for drying plants for the herbarium, being much lighter, and more portable, than those generally used.

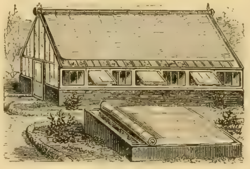

FIG. 304.—SHADING FOR GREENHOUSES.

—— Instances of so-called PARASITIC TREES are not very uncommon, but the following is somewhat remarkable. On the bank of a side stream of the Cherwell, at Oxford, there stood a few years ago (and probably does still), a pollard Willow, on the top of which a Sycamore had grown. The root of the Sycamore had run down the hollow trunk of the Willow, and seemed to be gradually becoming converted into a trunk itself, for the old Willow's natural tendency to split was being increased by the strong growth of the Sycamore. It would be curious if, as seemed likely to occur, the Sycamore were eventually to stand rooted in the ground, after the decay of the Willow, with some 5 feet of original root transformed into trunk.

—— On the last plate of CURTIS' "British Entomology" is the following curious notice:—"I consider myself fortunate in being able to introduce into my plate (of the honey bee) the HIVE of some HIVE BEES which was discovered by Lord MALMESBURY in his plantations near the river Avon, not far from Sopley. I had the gratification of seeing it before it was removed in October, 1838; it was attached to the arm of a tree, and hung down as represented in the plate about 2 feet from the ground; a considerable number of the bees had died with their heads in the cells. Combs have been rarely formed in hollow trees in this country, but one formed on the outside is, I believe, without a parallel in the history of bees." Curious as this account is, a very similar case was pointed out to us a few weeks since by Lord KESTEVEN in his park at Casewick, in Lincolnshire. An Ash tree partially hollow was occupied at the base by some specimens of Polyporus fomentarius, while half way up on the trunk was a specimen of Polyporus hispidus, below which was a strong hornets nest. About 5 feet above this some bees had formed on the outside of the trunk five perfect combs, four of a considerable size, parallel to each other, exactly as in CURTIS' plate. When we saw them only a few bees were about the combs, which were so loosely fixed that every puff of wind moved them. The hornets, however, did not molest the bees, though very probably in an earlier stage they may have robbed the honey. The hornets were so abundant that it was not possible without some risk to examine the comb very closely, so that we were contented to get the best sight we could with a telescope. Ultimately the combs fell, but we have no further information. It is not certain whether the bees in the first instance had chosen too narrow a hole, or whether they had been driven upwards by the hornets. While speaking of entomological subjects it may be interesting to some of our readers to know that a fine specimen of Deiopea pulchra was found in a stubble field at Marston Trupil, Northamptonshire, by the Rev. W. LAW, but not near the sea, as has been the case more frequently where this rare and beautiful moth has been found. *M. J. B.*

—— The highest MAXIMUM TEMPERATURES of the AIR during the week ending October 21, ranged from 68°.4 at Blackheath to 57° at Dundee, with a mean for the English stations of 65°.3, and for the Scottish of 59°.9. The MINIMUM TEMPERATURES of the air ranged from 42°.5 at Bradford to 33° at Perth; the mean for England amounted to 37°.7, and for Scotland to 37°.3. The highest MEAN TEMPERATURE (54°.6) occurred at the most southern station, viz., Portsmouth, and the lowest (48°.2) at Dundee. A value of 48°.4 was also recorded at Aberdeen. The mean for all England was 52°.9, and for Scotland 50°.1. The RAINFALL for the week was large at some stations; in one case, viz., Greenock, as much as 2.08 inches fell, and at Newcastle-on-Tyne and Perth the amount exceeded 1 inch. The mean fall for England was 0.67 inch, and for Scotland 0.79 inch. (See Mr. GLAISHER'S Tables, p. 1394.)

—— We have found FRETTINGHAM'S LIQUID COMPOUND a very efficient agent in the destruction of insects upon plants. Applied by means of the Horticultural Vaporiser, to which we referred at p. 870, it effectually kills both thrips and red spider, and, with care in the application, white and brown scale also. The mealy-bug is killed when the liquid fairly reaches them, but it requires a double application through the vaporiser to make sure of this. Probably this pest would be more effectually got at by means of a sponge or brush. The compound does not in any way injure the plants.

—— Mr. J. R. GORDON records in the *Scientific American* a somewhat novel use for the stem of AGAVE AMERICANA. He says:—

"One Sabbath evening—the sailor's vacation—I watched a number of men who had provided themselves with axes, making an attempt to secure one of these plants, which they could not accomplish without cutting its surrounding leaves; and, as I was desirous of knowing what use they would make of it, I approached and questioned them. One of the men informed me that they made razor-strops of the stalk, and that it furnished tolerably good ones too. It was cut into lengths of 3 feet, in order to be portable, and at leisure it would be cut into the desired form of razor-strops."

—— There is, says *Nature*, in the Museum at Cassel, a curious collection illustrating EUROPEAN and OTHER TREES. It is in the form of a library, in which the back of each volume is furnished by the bark of some particular tree, the sides are made of perfect wood, the top of young wood and the bottom of old. When opened, the book is found to be a box containing either wax models or actual specimens of the flower, fruit, and leaves of the tree.

—— One of the most conspicuous plants of Yucatan is a showy species of BROMELIA, allied to B. bracteata, if not actually that species. It grows parasitically in the forks of large trees, where it embellishes the scenery with its long bright scarlet bracts. The Indians even now have great admiration for this plant and its congeners, which played an important part in the sacred rites of their ancestors. It was from the axils of the leaves that the pure water of heaven was collected to be used for the baptism of children. On such and other equally solemn occasions it was essential that water should be used which had come direct from heaven, and never touched ground; hence the value of this and similar plants which collected the rain in a manner akin to that of our common Teasel.

—— At one time only recognised among us in connection with sauce, the TOMATO is yearly becoming more popular as a vegetable. Mr. ROBINSON gives a graphic account of its use in America. He says:—"From the hot States round the Gulf, and from sunny and genial California, where it grows as freely as Groundsel does in England, to the Canadas and the Northern States, where they must first be raised in heat, as with us, the Tomato is a blessing to this country. No other product is so popular with all classes, high and low, and probably none so wholesome among the many things here used. For months in summer and autumn it may be gathered fresh. It shares the fate of Peaches, Pears, and Oysters, and is preserved in tins for winter use, so that practically it is obtainable all the year round. Stewed, baked, as sauce, or in soup, eaten raw as a salad, or with sugar, in all these ways it is good; but during the heat of summer in no way is the Tomato more agreeable to those who know its merits than when eaten 'from the bush.' The process is simple. Select a good ripe fruit, place the lips against its glossy sides, bite a piece clean off without fear, and then suck with all your might. At first certain succulent leathery coats may offer some resistance, but soon the red heart's juice, kept cool in the hottest days by the outer coats, will begin to flow, and victory will be yours. In every country enjoying a higher temperature than that of England, the Tomato should be grown abundantly as a common garden or field crop; and even where, as in Northern England, you cannot even ripen them against walls, they may be easily grown in empty frames, &c., unused in summer; and, once plentiful, every child would learn to relish a food so wholesome and so excellent."

VINE GRAFTING.

SOME 28 years ago Mr. Douglas, of Babworth, East Retford, successfully inarched a Black Hamburgh upon an old Syrian Vine, and which up to the present time has answered every purpose, still producing wonderful bunches of good-sized Grapes. A few years later on, when the Barbarossa [Gros Guillaume] was first introduced, Mr. Douglas was fortunate enough to obtain a single eye of it, and being, naturally enough, anxious to see its fruit as soon as possible, he hit upon the following plan for getting a strong shoot, and in carrying it out was not disappointed. He simply bored a hole in the cane of the same Syrian Vine, shaped his bit of wood of the Barbarossa peg fashion, and drove it firmly into the stock; the result being the production of a cane quite to his satisfaction, and which in due time bore fruit. I lately visited Mr. Douglas, and saw such bunches of Grapes of both sorts on the old Syrian Vine as most gardeners would not be ashamed of.

He also drew my attention to his new method of grafting the green wood upon green wood, and there they were, eight grafts in all, worked at various times since he first successfully carried it out. The system of grafting which he follows is understood as whip or tongue grafting, the grafts being tied on with nothing more than some nice matting. The reason which induced him to try this plan was the want of Vines in pots to inarch with. I must confess that to all appearance Mr. Douglas' new method has answered admirably, and will prove an immense boon to gardeners, more especially as under the new postal arrangements green grafts may be conveyed almost at the shortest notice from the Land's End to John o'Groat's in a few hours, and be grafted with every chance of success. I enclose two pieces cut from two of the Vines for your inspection. No. 1 was grafted upon March 11, and the piece sent was taken 20 feet from the graft; No. 2 was grafted on March 17, and taken 12 feet from the graft after being twice stopped; and I confess to having seen Vines take two years on their own roots to make such rods. Four other rods which I saw (grafted on June 18) were smaller than those from which I have sent you samples, but were growing fast. The grafts of these four were taken from a pot Vine that had been forced, and turned out-of-doors over a month, and notwithstanding the difference in the ages of the scion and the stock they were doing well.

I have only to say in conclusion that the whole of the grafts put on as above stated, are going on very satisfactorily, and that this system is, in my opinion, the most simple for grafting the Vine yet adopted. Without at all flattering Mr. Douglas I must mention that he appears to be quite at home with the Vine, and exhibits as well very superior skill in the management of the fruit, flower, and kitchen garden departments at Babworth Hall, over which he has presided for upwards of 30 years. *J. Miller, Worksop Manor.* [As was to be expected, the wood received was not particularly stout, but was well ripened, and showed good eyes. This system would seem to be a good one to fall back upon where Vine budding has failed. EDS.]

BOMAREA CHONTALENSIS.

IN a previous number (1871, p. 479), Dr. Seemann described this handsome stove climber, of which we now give an illustration (fig. 305), from a plant that flowered in Mr. Bull's nursery at Chelsea in August last. We need only refer to the description above cited, and add what Dr. Hooker in the "Botanical Magazine," tab. 5927, says as to the flowers:—Flowers 1½ inch long, sub-campanulate, obtusely trigonous; outer segments thick, fleshy, waxy, rose-red, with a few brown spots round the margin at the tip, obovate obtuse, very convex, obscurely keeled at the back, with a thick rib towards the tip; inner segments a little shorter and much narrower, spathulate obtuse, apiculate, quite entire, pale yellow blotched with brown, claw concave at the base in front. Anthers dark purple, style columnar; stigmas three, short, spreading. Ovary turbinate, trigonous, with three thick ribs. Dr. Hooker further adds, that it is closely allied to B. edulis, a native of San Domingo, the tubers at the end of the root fibres of which are boiled and eaten as Potatos under the name of Topinambours blancs. The present plant is also tuberous, and easily cultivated. It is one of the most elegant of Mr. Bull's introductions.

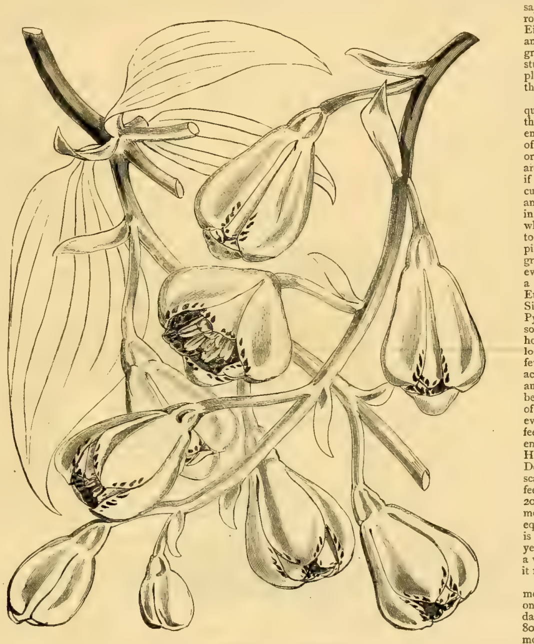

FIG. 305.—BOMAREA CHONTALENSIS.

A TROPICAL FOREST.

(*Concluded from p. 1357.*)

AND where are the famous Orchids? They perch on every bough and stem; but they are not, with three or four exceptions, in flower in the winter; and if they were, I know nothing about them—at least, I know enough to know how little I know. Whoever has read Darwin's "Fertilisation of Orchids," and finds in his own reason that the book is true, had best say nothing about the beautiful monsters till he has seen with his own eyes more than his master.

And yet even the three or four that are in flower are worth going many a mile to see. In the hothouse, they seem almost artificial from their strangeness; but to see them "natural," on natural boughs, gives a sense of their reality which no unnatural situation can give. Even to look up at them perched on bough and stem, as one rides by, and to guess what exquisite and fantastic form may issue, in a few months or weeks, out of those fleshy, often unsightly leaves, is a strange pleasure; a spur to the fancy which is surely wholesome, if we will but believe that all these things were invented by A Fancy, which desires to call out in us, by contemplating them, such small fancy as we possess; and to make us poets, each according to his power, by showing a world in which, if rightly looked at, all is poetry.

Another fact will soon force itself on your attention, unless you wish to tumble down and get wet up to your knees. The soil is furrowed everywhere by holes; by graves, some 2 or 3 feet wide and deep, and of uncertain length and shape, often wandering about for 30 or 40 feet, and running confusedly into each other. They are not the work of man, nor of an animal; for no earth seems to have been thrown out of them. In the bottom of the dry graves you sometimes see a decaying root: but most of them just now are full of water, and of tiny fish also, who burrow in the mud and sleep during the dry season, to come out and swim during the wet. These graves are, some of them, plainly quite new. Some, again, are very old; for trees of all sizes are growing in them and over them.

What makes them? A question not easily answered. But the shrewdest foresters say that they have held the roots of trees now dead. Either the tree has fallen and torn its roots out of the ground, or the roots and stumps have rotted in their place, and the soil above them has fallen in.

But they must decay very quickly, these roots, to leave their quite fresh graves thus empty: and—now one thinks of it—how few fallen trees, or even dead sticks, there are about. An English wood, if left to itself, would be cumbered with fallen timber; and one has heard of forests in North America, through which it is all but impossible to make way, so high are piled up, among the still-growing trees, dead logs in every stage of decay. Such a sight may be seen in Europe, among the high Silver Fir forests of the Pyrenees. How is it not so here? How indeed? And how comes it—if you will look again—that there are few or no fallen leaves, and actually no leaf-mould? In an English wood there would be 1 foot—perhaps 2 feet—of black soil, renewed by every autumn leaf-fall. Two feet? One has heard often enough of bison-hunting in Himalyan forests among Deodaras 150 feet high, and scarlet Rhododendrons 30 feet high, growing in 15 or 20 feet of leaf-and-timber-mould. And here in a forest equally ancient, every plant is growing out of the bare yellow loam, as it might in a well-hoed garden bed. Is it not strange

Most strange; till you remember where you are—in one of Nature's hottest and dampest laboratories. Nearly 80 inches of yearly rain, and more than 80° of perpetual heat, make swift work with vegetable fibre, which in our cold and sluggard clime would curdle into leaf-mould, perhaps into peat. Far to the north, in poor old Ireland, and far to the south, in Patagonia, begin the zones of peat, where dead vegetable fibre, its treasures of light and heat locked up, lies all but useless age after age. But this is the zone of illimitable sun force, which destroys as swiftly as it generates, and generates again as swiftly as it destroys. Here, when the forest giant falls, as some tell me that they have heard him fall, on silent nights, when the cracking of the roots below and the lianes aloft, rattles like musketry through the woods, till the great trunk comes down, with a boom as of a heavy gun, re-echoing on from mountain-side to mountain-side; then—

> "Nothing in him that doth fade,
> But doth suffer an *air*-change
> Into something rich and strange."

Under the genial rain and genial heat, the timber tree itself, all its tangled ruin of lianes and parasites, and the boughs and leaves snapped off not only by the blow, but by the very wind, of the falling tree—all melt away swiftly and peaceably in a few months—say almost a few days—into the water, and carbonic acid, and sunlight, out of which they were created at first, to be absorbed instantly by the green leaves around, and, transmuted into fresh forms of beauty, leave not a wrack behind. Explained thus—and this

I believe to be the true explanation—the absence of leaf-mould is one of the grandest, as it is one of the most startling, phenomena of the forest.

Look here at a fresh wonder. Away in front of us a smooth grey pillar glistens on high. You can see neither the top nor bottom of it. But its colour, and its perfectly cylindrical shape, tell you what it is—a glorious Palmiste: one of those queens of the forest which you saw standing in the fields; with its capital buried in the green cloud, and its base buried in that bank of green velvet plumes, which you must skirt carefully round, for they are a prickly Dwarf Palm, called here Black Roseau [Bactris]. Close to it rises another pillar, as straight and smooth, but one-fourth of the diameter—a giant walking cane. Its head, too, is in the green cloud. But near are two or three younger ones only 40 or 50 feet high, and you see their delicate feather heads, and are told that they are Manacques [Euterpe oleracea]; the slender nymphs which attend upon the forest queen, as beautiful, though not as grand as she.

The land slopes down fast now. You are tramping through stiff mud, and those Roseaux are a sign of water. There is a stream or gully near: and now for the first time you can see clear sunshine through the stems; and see, too, something of the bank of foliage on the other side of the brook. You catch sight, it may be, of the head of a tree aloft, blazing with golden trumpet-flowers, which is a Poui; and of another lower one covered with hoar frost, perhaps a Croton [Croton gossypifolium]; and of another, a giant covered with purple tassels. That is an Angelim. Another giant overtops even him. His dark glossy leaves toss off sheets of silver light as they flicker in the breeze; for it blows hard aloft outside while you are in stifling calm. That is Balata. And what is that on high?—twenty or thirty square yards of rich crimson a hundred feet above the ground. The flowers may belong to the tree itself. It may be a Mountain Mangrove [Moronobea coccinea], which I have never seen in [flower: but take the glasses and decide. No. The flowers belong to a liane. The "wonderful" Prince of Wales' feather [Norantea] has taken possession of the head of a huge Mombin [Spondias lutea (Hog plum)], and tiled it all over with crimson combs, which crawl out to the ends of the branches, and dangle 20 or 30 feet down, waving and leaping in the breeze. And over all blazes the cloudless blue.

You gaze astounded. Ten steps downward, and the vision is gone. The green cloud has closed again over your head, and you are stumbling in the darkness of the bush, half-blinded by the sudden change from the blaze to the shade. Beware. "Take care of the Croc-chien!" shouts your companion: and you are aware of, not a foot from your face, a long, green, curved whip, armed with pairs of barbs some 4 inches apart; and are aware, also, at the same moment, that another has seized you by the arm, another by the knees, and that you must back out, unless you are willing to part with your clothes first, and your flesh afterwards. You back out and find that you have walked into the tips—luckily only into the tips—of the Fern-like fronds of a trailing and climbing Palm such as you see in the Botanic Gardens. That came from the East, and furnishes the rattan canes. This [Desmoncus] furnishes the Gri-gri canes, and is rather worse to meet, if possible, than the rattan. Your companion, while he helps you to pick the barbs out, calls the Palm laughingly by another name, "Suelta-mi-Ingles;" and tells you the old story of the Spanish soldier at San Josef. You are near the water now; for here is a thicket of Balisiers [Heliconia]. Push through, under their great Plantain-like leaves. Slip down the muddy bank to that patch of gravel. See first, though, that it is not tenanted already by a deadly Mapepire, or rattlesnake, which has not the grace, as his cousin in North America has, to use his rattle.

The brooklet, muddy with last night's rain, is dammed and bridged by winding roots, in shape like the jointed wooden snakes which we used to play with as children. They belong, probably, to a Fig, whose trunk is somewhere up in the green cloud. Sit down on one, and look, around and aloft. From the soil to the sky, which peeps through here and there, the air is packed with green leaves of every imaginable hue and shape. Around our feet are Arums [Spathiphyllum cannæfolium], with snow-white spadixes and hoods, one instance among many here of brilliant colour developing itself in deep shade. But is the darkness of the forest actually as great as it seems? Or are our eyes, accustomed to the blaze outside, unable to expand rapidly enough, and so liable to mistake for darkness air really full of light reflected downward, again and again, at every angle, from the glossy surfaces of a million of leaves? At least we may be excused; for a bat has made the same mistake, and flits past us at noonday. And there is another—No; as it turns, a blaze of metallic azure off the upper side of the wings proves this one to be no bat, but a Morpho—a moth as big as a bat. And what was that second larger flash of golden green, which dashed at the moth, and back to yonder branch not 10 feet off? A Jacamar [Galbula]—kingfisher, as they miscall her here, sitting, fearless of man, with the moth in her long beak. Her throat is snowy white, her under-parts rich red brown. Her breast, and all her upper plumage and long tail, glitter with golden green. There is light enough in this darkness, it seems. But now a look again at the plants. Among the white-flowered Arums are other Arums, stalked and spotted, of which beware; for they are the poisonous Seguine diable,* the dumb-cane, of which evil tales were told in the days of slavery. A few drops of its juice, put into the mouth of a refractory slave, or again into the food of a cruel master, could cause swelling, choking, and burning agony for many hours.

Over our heads bend the great arrow leaves and purple leaf-stalks of the Tanias [Xanthosoma]; and mingled with them, leaves often larger still: oval, glossy, bright, ribbed, reflecting from their underside a silver light. They belong to Arumas [Calathea]; and from their ribs are woven the Indian baskets and packs. Above these, again, the Balisiers bend their long leaves, 8 or 10 feet long a-piece; and nuder the shade of the leaves their gay flower-spikes, like double rows of orange and black birds' beaks upside down. Above them, and among them, rise stiff upright shrubs, with pairs of pointed leaves, a foot long some of them, pale green above and yellow or fawn-coloured beneath. You may see, by the three longitudinal nerves in each leaf, that they are Melastomas of different kinds—a sure token they that you are in the tropics—a probable token that you are in tropical America.

And over them, and among them, what a strange variety of foliage. Look at the contrast between the Balisiers and that branch which has thrust itself among them, which you take for a dark copper-coloured Fern, so finely divided are its glossy leaves. It is really a Mimosa—Bois Mulâtre [Pentaclethra filamentosa] as they call it here. What a contrast again, the huge feathery fronds of the Cocorite Palms which stretch right away hither over our heads, 20 and 30 feet in length. And what is that spot of crimson flame hanging in the darkest spot of all from an under-bough of that low weeping tree? A flower-head of the Rosa del Monte [Brownea]. And what that bright straw-coloured fox's brush above it, with a brown hood like that of an Arum, brush and hood nigh 3 feet long each? Look—for you require to look more than once, sometimes more than twice—here, up the stem of that Cocorite, or as much of it as you can see in the thicket. It is all jagged with the brown butts of its old fallen leaves; and among the butts perch broad-leaved Ferns, and fleshy Orchids, and above them, just below the plume of mighty fronds, the yellow fox's brush, which is its spathe of flower.

What next? Above the Cocorites dangle, amid a dozen different kinds of leaves, festoons of a liane, or of two, for one has purple flowers, the other yellow—Bignonias, Bauhinias—what not? And through them a Carat [Sabal] Palm has thrust its thin bending stem, and spread out its flat head of fan-shaped leaves 20 feet long each: while over it, I verily believe, hangs, 80 feet aloft, the head of the very tree upon whose roots we are sitting. For amid the green cloud you may see sprigs of leaf somewhat like that of a Weeping Willow [Ficus salicifolia?]; and there, probably, is the trunk to which they belong, or rather what will be a trunk at last. At present it is like a number of round-edged boards of every size, set on end, and slowly coalescing at their edges. There is a slit down the middle of the trunk, 20 or 30 feet long. You may see the green light of the forest shining through it. Yes. That is probably the Fig; or, if not, then something else. For who am I, that I should know the hundredth part of the forms on which we look?

And above all you catch a glimpse of that crimson mass of Norantea which we admired just now; and, black as Yew against the blue sky and white cloud, the plumes of one Palmiste, who has climbed toward the light, it may be for centuries, through the green cloud; and now, weary yet triumphant, rests her dark head among the bright foliage of a Ceiba, and feeds unhindered on the sun.

There, take your tired eyes down again; and turn them right, or left, or where you will, to see the same scene, and yet never the same. New forms, new combinations; a wealth of creative Genius—let us use the wise old word in its true sense—incomprehensible by the human intellect or the human eye, even as He is who makes it all, whose garment, or rather whose speech, it is. The eye is not filled with seeing, or the ear with hearing; and never would be, did you roam these forests for a hundred years. How many years would you need merely to examine and discriminate the different species? And when you had done that, how many more to learn their action and reaction on each other? How many more to learn their virtues, properties, uses? How many more to answer the perhaps ever unanswerable question—How they exist and grow at all? By what miracle they are compacted out of light, air, and water, each after its kind? How, again, those kinds began to be, and what they were like at first? Whether those crowded, struggling, competing shapes are stable or variable? Whether or not they are varying still? Whether even now, as we sit here, the great God may not be creating, slowly but surely, new forms of beauty round us? Why not? If He chose to do it, could He not do it? And even had you answered that question, which would require whole centuries of observation as patient and accurate as that which Mr. Darwin employed on Orchids and climbing plants, how much nearer would you be to the deepest question of all—Do these things exist, or only appear? Are they solid realities, or a mere phantasmagoria, orderly indeed, and law-ruled, but a phantasmagoria still; a picture-book, by which God speaks to rational essences, created in His own likeness? And even had you solved that old problem, and decided for Berkeley or against him, you would still have to learn from these forests a knowledge which enters into man not through the head, but through the heart; which (let some modern philosophers say what they will) defies all analysis, and can be no more defined or explained by words, than a mother's love. I mean the causes and the effects of their beauty; that "Æsthetic of plants," of which Schleiden has spoken so well in that charming books of his, "The Plant," which all should read who wish to know somewhat of "The Open Secret."

But when they read it, let them read with open hearts. For that same "Open Secret" is, I suspect, one of those which God may hide from the wise and prudent, and yet reveal to babes.

At least, so it seemed to me, the first day that I went, awe-struck, into the high woods; and so it seemed to me, the last day that I came, even more awe-struck, out of them. *Kingsley's "At Last."*

THE AMATEUR GARDENER.

Carnations and Picotees.—Floral tastes, like all others, change as time rolls on, and the amateur gardener who has reached the grand climacteric is rarely found to patronise the favourites of his youth. Not only do our fashions in flowers alter, but art science, and research combine to introduce so many new species and varieties, that the exclusive culture of a few favourites is now more rare than it was a generation back. We do not now so often see a stand of perfect Auriculas, nor a collection of Carnations and Picotees, grown in pots, and tended day by day with almost parental care. Even the smaller gardens of our day are so occupied with "bedding plants," that comparatively little time and space remain for the exclusive culture of those plants which used to be under the daily supervision of those technically called "florists." Our memory goes back for 40 years, when Henry Groom held a fine piece of nursery ground at Walworth, the freehold of which belonged to the Dean and Chapter of Canterbury, and which is now covered with houses, the special site of the garden being now designated Lorimer Square. We quote Gray feelingly, in reference to the Montpelier Fields, and the numerous rich meadows and market gardens which extended as far as the eye could reach, towards Kennington and Clapham, but have now no available space for flying a kite, or dabbling in a pond:—

> "Ah, happy hills! ah, pleasing shades!
> Ah, fields beloved in vain!
> Where once my careless childhood stray'd,
> A stranger yet to pain."

And we do not doubt that many readers of the *Gardeners' Chronicle*, should they read this paper, sympathise with us in regretting the entire vanishing away in the neighbourhood of London of the numerous places once dedicated to Flora.

Both at Walworth, and, when forced by bricks and mortar to migrate to Clapham, Mr. Groom drew admiring crowds every year to his celebrated collection of Tulips; but it was as a grower of Carnations and Picotees that we first knew him at the former residence. We speculated, we well remember, in twelve pairs, and having a special predilection for "flakes" and "bizarres," our purchase only included two pairs of Picotees. We bought in the autumn, as every grower should who wishes for as fine a growth as possible the next year, though, to counterbalance this advantage, he must encounter the perils of winter. These were duly planted in twelve enormous pots, one pair in each, in a compost which then was in vogue, but which we believe a more scientific treatment has since exploded, in which pigeon's dung and the scum of sugar-bakers' pans performed a part, and which had been baked, to guard against the possible existence of a lurking wireworm or other insect fatal to the florist's prospects. Woe be to him who, neglecting all due precautions, finds the stem of his best Carnation gnawed through by one of these pests! But there are other enemies besides insects, and by the time the spring arrived we were *minus* a few of our plants from inherent disease, or from being insufficiently rooted, or some occult cause, baffling all floricultural care and skill. At length our little stock began to "spindle," and then began the mysterious operations of manure-watering, applying suitable sticks, and, somewhat later, the tying up the blooms to prevent their splitting, and spreading out the petals on a card carefully fitted to the advancing bud All this was very interesting to us then, and so was the providing a canvas shade to protect the flowers from sun and rain and to prolong their bloom, and at last we were repaid by the visits of all our friends to admire the collection and praise our taste and perseverance.

But in looking back on this long and painstaking process, we confess to feeling that we should not like all this laborious culture to come over again. The flowers were certainly many of them beautiful, but even at the time we felt that the "trussing" process was too artificial, and that the flower spread out on a card wanted the charm of naturalness to a great degree. Afterwards we took to growing commoner kinds of Carnation and Picotee, such as would develope themselves into large groups of flowers, and allow us to present a friend with a handful, or make a bouquet of them for the drawing-room. But it is only rarely that such a bed can be secured, and when possessed the plants will not produce fine flowers unless often renewed. This reminds us of the process of propagating, and of the fact, so worrying at the time, that some of our plants produced no "grass," that is, no shoots suitable for "layering," when a small sprout would be taken off, to be "piped" with very doubtful success under a hand-glass.

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* Dieffenbachia, of which varieties are not now uncommon in hothouses.

Well, this method of cultivating Carnations and Picotees still goes on, as our readers may see by the advertisements of the plants at so much "the dozen pairs" in the columns of this paper. But the old culture has a formidable rival of modern growth in the practice of raising these flowers from seeds, now so common, and so amply rewarding the cultivator. It appears that the science which has enabled double Carnations to be grown easily from seeds was developed first in Italy, and the finest collections come from that country. We have grown some splendid double flowers from seeds purchased in England, and we advise our readers to try the experiment. It is too late to sow the seed now, August being the best month, or March will do as well, though in that case the plants will not bloom till the year following. Sow in pans, in light rich soil, and transplant as soon as the seedlings are strong enough to be handled. *H. B.*

NEW INVENTIONS FOR PLANT AND FRUIT PROTECTION.

It is only a few years since that Mr. Rendle introduced his protectors to the public. Very simple and unpretending things they were. One of their early titles, if I remember rightly, was "A New Trap for Sunbeams," and their chief merit consisted in this, that the sunbeams they caught they kept. Their brick sides absorb much heat by day, and let it go forth to fight the cold with at night. Thus it came to pass that these protectors, though so simple, were found efficient. Experience, that surest of all tests, has proved that they keep out more cold and let in more warmth than either *cloches* or handlights — hence their deserved success.

Founded on true principles, adapted to general wants, the protectors have grown marvellously, alike in height and breadth and number. The central ideas, warmth, virtual imperishability, and portability to the utmost, were sown; and like all true thoughts they have fructified and grown. And the growth in this instance has been most rapid. And if they grow as fast in the future as they have done in the past, they must speedily cover the greater part of the field of horticultural enterprise, wide as it is. Starting humbly, a few inches from the ground, they have risen to the stature of ordinary span and lean-to houses, with glass ends and doors. Recommended at first chiefly for dwarf crops, such as Lettuces, young Cauliflowers, early Carrots, Radishes, Strawberries, bulbs, and other flowers; now they have risen to the stature of lawn conservatories, orchard-houses, vineries, glass screens for walls of any height, &c. Neither has the development of an idea been, as is too often the case, a series of supercessions, but a course of regular and upward progress. No old ground has been relinquished in the occupation of so much new. With the exception of some structural improvements, to be presently described, the old protectors are as well fitted for their work as at the first. The new types by no means supersede the old, they only enter into fresh fields of usefulness.

We often hear of enthusiasts riding their hobbies to death: Mr. Rendle has succeeded in riding his into newer, higher, wider spheres of life. I believe I was among the first to recognise and testify to the merits of this invention; and many were the sly hits and cynical sneers hurled at me in consequence. It is, consequently, all the more gratifying to find that merit now acknowledged, and those early favourable impressions confirmed by a great cloud of witnesses, many of them carrying such weight in the horticultural world that it is an honour to think with them.

Therefore, leaving these and others to testify to the usefulness of Rendle's protectors, I will proceed further to illustrate the expansion of an idea by briefly describing one of the newer forms that have recently appeared. Before doing so, however, it may be well to refer to the chief structural improvements that have been effected. This consists in making one half of the grooved bricks in two pieces, to facilitate the removal of the glass. With ordinary care, I never found any difficulty in working the old forms; but complaint was made by some of a difficulty in quickly and safely removing the glass. The new pattern renders such difficulties impossible. The glass lies on, or in, the lower portion of the grooved brick, the upper half is then laid on, and keeps the glass firmly in position, and forms a coping over it. Fig. 306 shows a section of both parts of the Belvoir Castle pattern. It must be obvious at a glance that when the upper portion is removed the square of glass can be instantly taken out. The front coping brick continues of the old pattern, and is pierced with holes at intervals for the discharge of the rain-water.

For span-roofed protectors, the covering tile assumes the form of a fat, dumpy T, as shown in fig. 308.

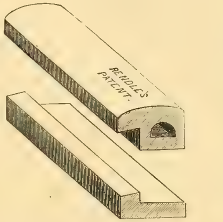

FIG. 306.—SECTIONS OF THE BELVOIR CASTLE PATTERN TILE.

These span-roofed protectors double the area covered, admit more light and heat, and have altogether a more imposing appearance. The smaller sorts of span-roofed protectors are from 3 to 4 feet wide; the larger ones with central platform of wood, and intermediate grooves of galvanised iron to receive and fix the glass, from 3 to 8 feet.

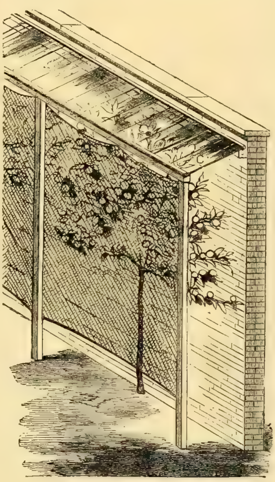

FIG. 307.—RENDLE'S PORTABLE GLASS COPING FOR WALLS.

Our next illustration (fig. 307) solves one of the great difficulties of protecting walls from spring frosts by means of coping. It lets in the light while shutting out the cold. Opaque copings blanch the tree into tenderness. True, glass will not keep out so much cold as wooden or other opaque copings, but then it does not make the tree tender, so that possibly the glass will be found the more effective in practice. The cardinal fault of all opaque copings is that they so coddle the trees that a lesser amount of cold injures them as much or more as a greater without covering. This is like keeping out the cold with one hand and letting it in with the other. Practically it matters little in the end whether a crop is ruined by more cold without protection or less cold with it. To shelter without weakening should ever be our object; glass copings furnish us with the means of doing so, and therefore they are likely to prove most useful. Besides, the efficiency of most protecting expedients is largely dependent on their ability to keep the trees dry. Scarcely any material can compete with glass in this respect. It is not only impervious to water, but, offering no obstruction to light and heat, the trees are almost sure to be dry under it, and hence the night frosts would find them prepared to resist its power to the uttermost. These copings are warranted by the inventor to stand the strongest winds, and are likely to be extensively used as shelters from heavy rains, protectors from spring frosts, and aids to the maturation of late autumn fruits. *F.*

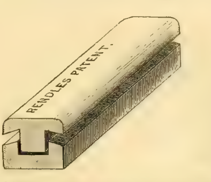

FIG. 308.—COVERING TILE OF THE SPAN-ROOF ENVILLE PATTERN.

THE RATIONALE OF HOT-WATER CIRCULATION.

"CALORIC," Mr. Fish says, "is the driving force of the universe." The import of these words is that caloric is pre-eminently above all other forces, or even exclusively of all others, the driving force. Such is the grammatical value of the definite article—such the ordinary meaning attaching to the expression. The reader who, from respect to this gentleman's opinions, might be ready to accept this statement in all its force must not lose sight of the fact that the writer himself at once abandons one-half of its value. "For every molecule," he says, "lifted by caloric, others are pushed forward and onward by gravitation." On the first part of this sentence I beg to refer the reader to the concluding passage in this letter. The second part of the quotation is that which immediately concerns us. It ascribes to gravitation a driving force fully equal in extent and power to that of caloric. I object, therefore, to this undue prominence given to the driving power of caloric, as tending to mislead, and prepossess the mind of the reader with the idea that it is chiefly, if not exclusively, to this power that the circulation of hot-water is due.

The action of caloric on fluids and gaseous and other bodies as a motive power is confined, I believe, to its property of causing expansion or contraction on those bodies. But though, under certain conditions, immense motive power is directly produced by its agency; yet, in a multitude of cases, effects follow expansion, which are not referable to caloric, but to forces quite independent of it. Thus while, on the one hand, the expansion being resisted, elastic force is generated, as in the gun and steam-engine, caloric, by this production of expansive power, is the cause of all the tremendous results so familiar to us. But when, on the other hand, the expansion is unresisted, the effect of caloric is limited to the alteration of the relative proportions of bulk and weight in the body acted upon, bulk being increased or diminished while weight remains the same.

Motion constantly ensues upon such changes, which are certainly not traceable to any lifting power of caloric; for such motions ensue where caloric is not present, or being present is passive. Any body which barely floats in water, will at once rise in it from the bottom to the surface on the least increase of bulk, whether caloric or any mechanical cause give rise to that expansion. The same thing is seen in the atmosphere, and in all other liquids. A slight decrease in bulk, on the other hand, will leave a predominant force to gravity, and the shrunken body will fall to the bottom. The balloon falls or rises by very slight alterations between the relations of bulk and gravity. Caloric being most active in the expansion and contraction of bodies, is thus an accompanying and active agent of other forces, presenting bodies to the action of these lifting and depressing powers, but not itself producing these motions.

Deposing caloric from the high position assigned to it by the writer, I must further strongly object to another statement, as misleading. "It is difficult," he says, "to know which," viz., heat or cold, "takes the initiative. Of more moment is it to be assured that both run on without ceasing." Doubtless it is of more moment to an ordinary gardener to know that he has a heating current which runs on without ceasing, than to know why it does so; but how with the constructor of such apparatus? Is the difficulty of discerning between cause and effect to turn him away from these important points, and is he to trust to the chapter of accidents to further him in any attempt at improvement? Moreover, if he does not acquaint himself with the real cause of motion, he will probably hold wrong notions, and act upon them, and be misdirected by them; and, if I am not very much mistaken, such a case of misdirection will be found in Mr. Fish's own letter. The attendant is there directed (and by implication the engineer or constructor) to give his chief attention to the extra heating of the crown of the boiler, the bottom being left to the cooling effect of the return current. Now, if gravitation be the motive power, no instruction, with respect to the lower part of the boiler, could be more mischievous. "The greater the disparity," as Mr. Fish well states it, between the hot and the cold, "the more energetic the motion." Now, to allow any portion of the lower part of the ascending column of hot water to be occupied with cool water, is to do away with some of this disparity. If 6 inches or 12 inches of the column of water in the boiler at the base be cool, that cool water will be an equipoise to the cool water in the base of the descending column. It will be just equivalent to cutting off so many inches from the altitude of the fall and weight of the descending force. Nay, if this direction of the writer were correct, the boilers might be at once lifted out of their stokeholes, and the fires placed nearly on a level with the flow-pipes. What would practical men say to this question? Yet it must be correct if the principle of this instruction be true, that the base of the boilers may be left cool, so that the crown be hot. These men virtually acknowledge the opposite principle, so far as relates to the base of the boiler. They set the boiler as low as they conveniently can; the import of which is that a column of water in the boiler on the same level with that of the return column, but consisting of cool water at the bottom, warmer water in the middle, and hot water at the top, will not effect their object. They get their cooled water down below the whole level of the system, where it can do no harm. Thus they get it hot at a comparatively low elevation, and find the advantage of doing so.

The constructor who shall thoroughly carry out the gravitation principle, extending the heating surface of his boiler horizontally at the lowest part, and so make the whole contents of his boiler thoroughly hot from the base to the crown, will not only do much towards clearing up the doubt which overclouds this important subject, but will be able to dispense with that depth of stokehole which is complained of as so inconvenient. To carry out the principle of gravitation thoroughly, the returning current should not be allowed to descend from the summit level till it has attained its maximum of coolness, and the ascending current should not be allowed to leave the base level till it has attained its maximum of heat; for "the greater the disparity between the hot and the cold the more energetic the motion." Observe, I do not here assign any special degree of heat in the terms maximum of coolness and maximum of heat. The great principle is diversity between these two things.

When looking on, even as spectators, at the Creator's works, the interest we feel in them, and the instruction we derive, depends much upon our recognition of the fact, that in the midst of seeming disorder there is a most accurate adjustment of cause and effect; and this implies some slight acquaintance with the powers at work and the laws of motion. How much more, then, when no longer as spectators but as constructors we endeavour to set *our* currents in motion and make them run round without ceasing. If our commencements are feeble, that feebleness is in great measure due to our ignorance or imperfect knowledge of the nature and modes of operation of the forces we are about to deal with. Hence, though we cannot stop for perfect knowledge, there can be no question as to the intense importance of it. Total failures, clumsy and badly working productions, and perplexing phenomena, are regular attendants on those stages of constructive effort wherein the guide chiefly relied on is the chapter of accidents. Even loss of life, as in chemistry, electricity, and steam machinery, has resulted from ignorance of the nature of powers called into operation. The least, therefore, that can be said in reply to this rule of Mr. Fish is, that the course of improvement demands the closest possible acquaintance with the nature of the powers employed and the laws of motion.

It may appear over critical thus to challenge a sentence. I do so because it appears to me not to be isolated, but indicative of and in accordance with the reasonings which follow, and to characterise them. Thus in one place strong motive-power is all but ascribed to the returning cold water, while yet the limb of the boiler which conducts it is called the negative limb. They are called strong cold waters, described as pushing sharply upon the warm water in the boiler, as encountering there levity in contrast with their own weight, an opposition, in other words, of weak resistance to the strength and weight and rushing impetus of the invading current; and after all this what follows as the result? Nothing more than "help" in lifting the hot water, and that help only "possible." A most lame and impotent conclusion certainly. The writer fairly describes and accompanies the force described in strong terms, and yet turns back at the very point of its contact with, or impact upon, the hot water. He interposes between the inrushing power and the reality of its impact and consequent propulsion of the hot water. These strong cold waters, he says, by their weight and impulse are "the chief cause" of the sensitiveness to motion found in the hot water; yet, in other words, he speaks of their "bounding forward" as only "to fill up a vacuum." In this last expression impact of the descending cold water on the hot water is virtually denied. It does not attack a retreating foe in the rear, but simply occupies a vacated position. Uncertainty of sound is then a most conspicuous feature in this description of the gravitation of the cooled water. The same uncertainty characterises the description of the effect of caloric. It is, he says, the driving power of the universe. Again, he says, it can "hardly be" caloric which lifts the hot water. Now from this language about gravitation and caloric, we might conclude that he had given them both up as constituting motive powers in hot-water circulation. Yet he does not, for he adds:—"There is thus a compound action, dual forces acting simultaneously to induce motion." And though one "can hardly be" the lifting force, and the other only "possibly helps," yet finally they are claimed as motive powers.

The writer then calls in to his aid a third force. No wonder, being so little satisfied with those already dealt with. This third force he defines to be the upward bound or rush of hot water, and appears to account for this action on the principle that caloric "ever aims at its source—the sun." This force, imaginative as the conception of it evidently is, could not avail even were it existent. The rotation of the earth effectually shuts out the idea that upward motion in the direction of a boiler can be towards the sun. That motion is upward at sunset and at sunrise; and even at midnight, when it is more nearly opposite to the sun's position than towards it. If caloric "ever hits straight at that mark," viz., at the sun, its direction in a boiler, with respect to the sun's position, would vary as the spokes of a wheel or the hands of a clock.

I can hardly conceive a break down to a theory so thorough as is exhibited in this instance. It falls to pieces in the hands of its best supporters. Any attempt to explain and illustrate the caloric theory as that to which the circulation of hot-water is due, brings nothing but confusion of ideas and self-contradiction. When attempted in the guise of "expansive force," it immediately comes into collision with the laws of motion. He who undertakes it undertakes a hard task. How simple, on the other hand, the statement, the explanation, and illustration of the gravitation theory. In reply to Mr. Fish's remark on my use of the term "boiling water," I can only say that such a temperature is no necessary condition of the principle for which I contend. When he says that I attribute too much to verticality in the return pipe, he must remember that I use the word in a sense which admits of modification without in any way affecting the soundness of the reasoning. The descent of the return-pipe should be measured by feet rather than by hundreds of feet. It should be direct rather than by gradations at long intervals.

"The gravitation is from the highest point," as Mr. Fish justly observes, "how or wherever placed;" but the advantage gained to gravitation by the directness and short distance of the descent I contend for is, that it does not take place until weight is restored to the water by condensation. Its descent commences, as in the common arrangement, long before the final approach to the boiler; it does so, therefore, while yet very hot; and the term which Mr. Fish himself applies to it in that condition is "levity." If it descends in this condition it will not answer to his description as that which characterises his descending columns, viz., "strong cold waters:" such are his words. We want that strength from the highest point of the fall, because the higher the fall the greater the power. My principle in developing the action of gravitation is very simple, and may be readily proved to be in full accordance with many of Mr. Fish's own remarks when tracing the operations of gravitation. I think, therefore, that I have left him little room for saying that my proposed arrangement of pipes would seem to him to neutralise circulation.

Mr. Fish has rendered good service to the cause of truth in this matter by his fearless admission of points without regard to their effect on his own theory. I shall hope to see his able pen enlisted on the simpler and more useful side of this question. I hope I have not said a word in this paper which may make the discussion between us anything else than a perfectly friendly one. I shall be happy to contribute a few short papers on the principles which govern the movements of fluids and bodies immersed in them, and their bearing on the construction of chimneys and flues, as well as on hot-water apparatus, if the Editors approve. *J. M. Taylor, Seer Green Vicarage, Beaconsfield.* [We quite approve. Eds.]

Home Correspondence.

Covent Garden in Darkness.—Can any of your readers tell the reason of Covent Garden being left in utter darkness at this season of the year? Is it intended to give the swell mob an opportunity to walk off with our goods while they are being unloaded in the dark? for it is almost an impossibility to prevent them. We commence unloading our goods about 3 o'clock, and have to grope about in the dark until daylight (about half-past 6), by which time many of the greengrocers like to have finished their buying. Shall we have to fall back upon the old, discarded naphtha lamps?—if so, we shall indeed be going back to the dark ages. *M. C.*

Miltonia Warscewiczii.—"C. J. W." wishes to know if more than 15 flowers have been produced on one spike of the above plant. Allow me to inform him that we have now in bloom a spike on which are 16 flowers, each measuring 1¼ inch across the lip. This is also the best coloured variety that I have yet seen. The pseudobulb which produces it is 7½ inches in height, and 4 inches in circumference, which is larger than any of the old imported bulbs I have seen. I may also state that this plant, and several others of the same kind, have flowered with us twice this season, and I believe they will do so regularly when fairly established. *E. Mitchell, Cliff Point, Broughton, Manchester.*

Hybernation of Plants.—At p. 1070 "G. H." gives a quotation from a lecture by Prof. Dyer, and at p. 1229 brings it to my notice again in a very prominent way, giving as a reason for so doing the assertion that it is so contrary to my theory of resting Orchids. I have read the quotation very attentively, and I cannot understand how your correspondent could arrive at this conclusion, except upon the supposition that he intends to make comparisons between plants that have no resemblance to each other. Let us first examine those sentences which refer to hardy plants: "There is no inherent disposition common to all plants to hybernate during the winter." Whoever said there was?—not "Ex-Cantab" most certainly. "Hybernation is forced upon them by deficiency in one of the conditions necessary to their growth, viz., warmth," so that in a mild winter trees retain their leaves and continue to grow. Quite true in many cases, but I am quite sure the Professor never intended this to apply to all hardy plants, but to certain kinds of trees, shrubs, and herbaceous plants. But, with all deference to "G. H.," I do not intend to compare a Cattleya with a Spruce Fir, an Oncidium with a Laurel, or an Odontoglossum with a Periwinkle. There is no resemblance to each other in these plants, but there is a large class of hardy plants, the Monocotyledons, many of which do somewhat resemble Orchids, both in their mode of growth and resting. The pseudobulb of an Orchid is a reservoir of nutriment for the future use of the plant, *i.e.*, to retain its vitality and assist the young growth. Many herbaceous plants have reservoirs for the same purpose, but in different forms. Nearly all these plants have a most decided disposition to hybernate, and many of them do not do so for want of either heat or moisture. Many examples of this may be found in the following genera:—Crocus, Leucojum, Corbularia, Ajax, Queltia (in fact, nearly all the Narcissus group), Scilla, Hyacinthus, Muscari, Fritillaria, and several others. Now, it is perfectly well known that the foliage of these plants ripens off very early, and the plants, like some of the Orchids, are resting in our hottest season. Thus the only section of hardy plants that can reasonably be compared with Orchids confirms my resting theory in a very forcible manner. When speaking of hot climates, the Professor says that the absence of moisture produces an enforced season of rest in vegetation, but at the hottest time of the year; and adds that the great effort of flower-producing needs a special season of rest; thus, as I understand it, the plant needs the rest, and Nature provides a season for it—again confirming my theory; and I am very much indebted to "G. H." for bringing this quotation forward in such a prominent way. I had promised to make a few remarks upon this subject, but this quotation has confirmed my theory to such an extent, that any further notice from me is quite unnecessary. "G. H." thinks Professor Dyer is right, and, for once, I quite agree with him. *Ex-Cantab.*

Lifting Fruit Trees in Nurseries.—In visiting a nursery a short time since I was astonished to see a newly packed bundle of Apple trees with all the leaves still adhering to the branches. On examining the wood with the principal, it was found to be shriveling. The reason is obvious. I don't think this is a common occurrence in nurseries, yet withal I would advise those who don't know better, when orders have to be executed early, to strip all the leaves off ere a root is disturbed with the spade. It is easily done when the tree is in the ground, and while the sap is not checked; but let the tree be lifted, and the leaves allowed to remain on for a day, they are difficult to remove, and the wood, moreover, suffers materially. At this season, when Apple trees in general are green longer than usual, a timely word like this may be the means of saving a good many trees, not only Apple, but others, from injury. *H. K.*

Trees for the Yorkshire Coast.—Having a piece of ground in Yorkshire, containing about 4 acres, abutting, with a north-east aspect, on the sea, which I am wishful to convert into pleasure ground, I would feel greatly obliged if any of your numerous readers would kindly inform me, through your columns, the kinds of ornamental trees and shrubs best adapted for growing and flourishing in this exposed situation. Also the age or size they would recommend them to be planted, and the time most suitable for performing the operation. *Arbor.* [See pp. 1295, 1328. Eds.]

The Certificating New Grapes.—Your correspondent "Lynx Eye" (p. 1359) deserves the thanks of the gardening community for his remarks on the certificating new Grapes by the Fruit Committee of the Royal Horticultural Society. There is no fruit so easily raised as the Grape, and as they can be fruited in two or three years from the seed, we can afford to wait until a really good variety is proved before it is sent out. How much more would it have put into the pockets of Messrs. Lee had they kept in their really good variety, the Madresfield Court, for a year or two's longer trial before they sent it out? I have now three varieties of seedling Grapes raised from the Frontignan section, and all, as regards flavour and size, equal to the White or Grizzly Frontignan, but I should not think of distributing them till thoroughly proved. The so-called Strawberry Grape named Ferdinand de Lesseps, and certificated by the Fruit Committee, is only a curiosity as regards flavour, and as such will remain in the limbo of obscurity. Another newly certificated Grape named Dr. Hogg may turn out to be a first-rate sort, but the Fruit Committee can know nothing as yet of its habits or permanent excellency. The Doctor can afford to wait, for you have lately, in your columns, given him a first-class certificate (his portrait), and a new Grape should be worthy of him before it is sent out. If the Royal Horticultural Society is to fulfil its mission worthily, it should be the testing institution, to grow and try all kinds of new seedling fruits before they are sent out. There is no one better qualified to report on new fruits than Mr. Barron, the Society's superintendent at Chiswick, for he can both grow them well and give an unbiassed opinion as regards their merits. The raisers would then find the advantages of these trials, for really first-rate varieties would find a larger sale, as the public would buy them with confidence. *Vitis.*

Apple Stocks.—At p. 1264 you kindly inserted some observations of mine about the Pommier de Paradis Apple. You there make me say, "examples of this stock I have sent." I think I said, or, at least, I meant to have said, "this tree," to show how hardy it has proved amidst the almost general wreck of other kinds, meaning that it, as an Apple tree, not as a stock, did not suffer like most other Apple trees in this neighbourhood, many of which have been killed, and many more seriously damaged. I think that the above will explain what I meant. I went on to say that "the extreme hardiness of this as a stock, I should think, would tend to the healthy development of more tender kinds." I merely put this hypothetically, and I further added that "our young trees worked upon this stock this season have made extraordinary growths (I send you half a dozen sorts, to show you that what I have stated is the truth), and that I now feel satisfied that no other stock can equal it in hardihood, let the summers be what they may." This was, perhaps, too much to assert as regards other localities, but as regards this it is perfectly true. I have got Paradise stocks and Doucin stocks from every quarter I could obtain them, and I honestly affirm that none of them grow here with anything like a healthy growth. I have five sorts from France, and I have what they called Paradise stocks from Scotland; I have what are called English Paradise stocks, otherwise the broad and narrow leaved Nonsuch, and I must say that I cannot grow them here; they are immeasurably behind what I, for want of a more distinctive name, call Scott's Paradise stock. Such is the fact, and any one who doubts it can come here and see all the sorts growing upon the same soil together. To the Editors' remarks, "We are not sensible of any general wreck amongst the Apple stocks," &c., I reply, neither am I; mine never were finer, nor the young trees worked upon them more healthy. I have now to turn my attention to the remarks of "Malus," p. 1295: he asks what "I mean by the general wreck of Apple stocks?" He will see, by what I have said above, that it was not Apple stocks that I meant, but trees in gardens and orchards. "Malus" seems to think that the general wreck of Apple trees was confined to Somerset and Devon; if he has carefully read the columns of the *Gardeners' Chronicle*, he has no doubt found that these two counties were not the only two unfortunates. Let "Malus" turn to p. 1038, and read down the second column, headed Apples, and let him dwell upon what is there said about Hereford and Gloucester, then read all that has been said by your intelligent correspondents, p. 1039, and onwards, I then think that he will doubt his own assertions about the shining bark and grand foliage. The shining bark he can see in hundreds of orchards here, but "Where, and oh, where! does the fine, grand foliage dwell?"—in very few places that I have seen this season. The only grand foliage I have seen—is upon newly-grafted trees, and young trees in sheltered places; I do not know if I am right in saying that I think I see a little *malice prepense* in the remarks about the "poor damped mossy trees of Somerset looking as if they were tasting of death." This is such a palpably wrong assertion, that I will leave others to refute it; I only say that "Malus" might shave himself by using the bark of the trees hereabouts as a mirror. Sweeping, one-sided assertions made by anonymous writers are not worth refuting, they refute themselves. "Malus" further says, that "An Apple tree on the French Paradise, at three years old, is 2 feet, and on the English Paradise 3 to 3½ feet—three years to grow 3 to 3½ feet! Why, worked on my Paradise stock, it grows over 4 feet in six months, as you will see by the specimens sent, which were budded August, 1870, or grafted this year in April. I need not dwell longer upon the observations of "Malus," excepting to say that I am no advocate for half-starved dwarflings, upon whatever kind of stock they may be worked. Give me a healthy, well-developed tree, on a stock that will grow it, and at the same time throw it into bearing; let me have a tree that gives at the same time a good growth, healthy leaves, and handsome, well flavoured fruit. These you can never get from over-dwarfed and over-pinched trees—they may serve for amateurs and children to amuse themselves with. So I may say about the cordons; neither of them will ever do much to fill Covent Garden or the Borough Markets. *J. Scott.*

Veitch's Autumn Giant Cauliflower.—I have every reason to believe that the majority of your readers are fully alive to the excellence of this Cauliflower, nevertheless I cannot see our old and trusty friend, the Walcheren, who has served us well for so many years, condemned without entering a protest. You correspondent, Mr. Morgan, must have got the very worst stock in the trade. For my part, I have been cutting the latter variety for two months, and such heads, too: I have never seen better. Allow me to tell Mr. Morgan that, for the family table, large Cauliflowers are, in my opinion, not desirable. Nice little compact heads, three to a dish, are much better for these reasons. Large Cauliflowers have often a strong and very unpleasant taste to pure palates, and small, perfectly white heads, fringed with their green foliage, look far more artistic—a point almost as much thought of as quality at the present day. *R. Gilbert, Burghley.* [Our correspondent sent samples to confirm his statements, in which we quite agree. Eds.]

Ground Vineries.—I wish to bear testimony to the continued success that results from the cultivation of Grapes under Rivett's ground vineries. Bunches of Black Hamburgh have been grown by me under them this season—by no means a favourable one—up to 2 lb. 6 oz., and Black Prince up to 1½ lb. They were perfectly finished in every respect, the Black Hamburghs by the middle of the second week, and the Black Prince by the middle of the first week of October, being later than usual. *A. Boyle, South Wales.*

The Potato Disease.—As a means of preventing the spread of the disease amongst Potatos after they are raised, I was advised to have recourse to a remedy which is, I am informed, extensively applied in America, the plan being to strew some slaked white lime amongst them as they are deposited in the cellar or storeroom; and having acted upon the advice, I am pleased to say that up to the present time the experiment appears to have succeeded. I was told by some one to whom I named this, that lime would be likely to impart to the root a nauseous flavour, but it seems to me that, on the contrary, the flavour is improved if anything by it. The Potatos are apparently rendered by it more "mealy," or "floury," than was the case previously to the mingling of the lime with them. I am informed that if a Potato which is but partially diseased be placed in slaked lime the disease will not extend itself further in it. *R. Bond, Tredegar.*

—— Some years ago I was residing a short distance from Kidderminster, and there being a large garden attached to the house, I set myself the task of cultivating it without assistance, and it so happened that during this time the Potato disease was prevalent more or less; and entering fully into my occupation, I endeavoured to find a remedy for this mysterious visitation. It was thought that the cause arose from a deficiency of its proper aliment in the soil, and with this idea I considered that I might remedy it by planting the Potato in soil in which nothing had ever grown before; at all events, I resolved to try the experiment. The garden being a gravelly soil, I had perceived by previous workings that below the surface, about two spades' depth, there was a thick layer of an intermediate soil on the top of the gravel, and which was too far below the surface ever to have been used or turned up in cultivation, I got out a quantity of this, and it being very stony I riddled it, and when planting the Potatos by trench, I applied sufficient of this soil to cover the sets, and the result far exceeded my expectations; the tubers were not only entirely free from disease, but very clear and delicate, and also of improved flavour in eating, whilst others planted in the ordinary way were diseased. I pursued this plan for several years, with always the same results. The soil at my present residence being a clay, does not afford the means of continuing the experiment, and the disease not having appeared for some years rendered it unnecessary. *W. F., Kidderminster.*

Ablaqueation.—It is to me most interesting to see this favourite operation of John Evelyn, one which he practised 200 years ago, alluded to by Mr. Ellison (see p. 1355). I remember, when I was young, stumbling at the term—thinking it was a technical and not a dictionary word. The term is often employed by Evelyn in his "Kalendarium Hortense." Webster renders it "a laying bare the roots of trees, to expose them to the air and water." Evelyn, in his "Kalendarium" for October (mine is the 6th edition, 1676), says "Now is the time for ablaqueation, and laying bare the roots of old and unthriving, or even hasty blooming trees." This seems the opposite of the practice Mr. Ellison advises, for Evelyn seems to wish to give vigour to unthriving trees, or those even hasty in blooming, which, I presume, means trees that are inclined to blossom prematurely. I have read most of Evelyn's works, but have never come across any passage in which he describes the effect of ablaqueation. It seems not to have been practised by our gardeners—perhaps for a very good reason; still it would be interesting to know whether the operation, like root-pruning, will bring on fruitfulness in trees. The "Kalendarium" for January says, "Uncover as yet roots of trees where ablaqueation is requisite," so that it seems to have been practised all through the winter. The time to cover them up he gives under March, in which he says, "Cover such tree roots as you laid bare in autumn;" but he does not mention the effect of uncovering the roots during the winter. This will be a question to put to rest by some of your contributors. Mr. Ellison says the base of the roots only should be laid bare, and it seems for a length of time. In my experience I have found that uncovered roots for a season or two form buds and shoots, and this with a grafted tree would prove injurious to the graft. But I confess to never having tried a winter's ablaqueation, which could not do much harm, and the experiment may at once be tried by fruit tree cultivators. It is curious to observe the dearth of good Pears 200 years ago. The Pears for November are few as compared with the hundreds of Pears now "in prime and yet lasting." Evelyn's list is as follows:—"Massive Pears: Long Bergamot, Warden (to bake), Renne Cot, Sugar Pear (I suppose Susan Vert), Tardy Pear, Ice Pear, Dina Pear, Deadman's Pear (said in December to be 'excellent'), Winter Bergamot (I suppose Bergamotte de Paques), and Bell Pear." Most of these Pears would, I think, require iron teeth and a leather stomach. *Thos. Rivers.*

Tomato Preserve.—Having a quantity of Tomatos, which have no chance of ripening, I have tried your correspondent's recipe (p. 1328), and so far as my taste goes, I can speak well of it, and decidedly agree with making the preserve in preference to leaving the Tomatos to the mercy of "Jack Frost." I find that the Trophy Tomato is rather a late variety, large, and very smooth, consequently it makes an excellent variety for the purpose, as no difficulty is experienced in peeling them, as there is with other varieties. *E. Morgan, Harrow-on-the-Hill.*

Orchids.—A letter at p. 1329, from your excellent correspondent, Mr. MacPherson, suggests that some "hard-working botanical penman" should address himself to the task of collecting and tabulating particulars as to the elevation at which Orchids grow in their native countries; also as to the temperature and the rainfall of the respective districts—this with a view to supplying cultivators with the means of gaining clearer ideas, or at all events more uniform and definite opinions, as to the best modes of growing their plants, than they appear to possess at present. I shall be glad to do my best towards carrying out this capital suggestion, and to put myself in correspondence with any persons who may feel disposed to co-operate; and, as I am probably unknown to many of the Orchidologists among your readers, allow me to say that I have for many years given attention to Orchids, and that I am now engaged upon a little volume treating of these plants. It seems to me that, work as we may in England, comparatively little can be done without aid from collectors abroad, and from gentlemen residing in Orchid countries. Could not some kind of official circular be addressed to those who are known to be interested in Orchids, and especially to the curators of botanic gardens in the East and West Indies, &c.? Perhaps it might not be thought wide of the functions of the heads of our botanic gardens so to communicate with foreign curators and others. Surely all would be willing to assist in an inquiry so valuable, not only to floriculture, but to physical science. The *Gardeners' Chronicle* might be disposed to invite the attention of its foreign readers to the value of the services which they may thus be able to render, and serve as a medium for their communications. *Leo Grindon*, 71, *Rumford Street, Manchester.*

Blackbirds and Thrushes.—I am afraid that it is not generally known by those who destroy these sweet warblers and their nests that these birds do a great deal of good—I have found them particularly useful the past summer. They carefully kept clear our pleasure-grounds from worms by their constant feeding on them; so, with the aid of our little friends and Green's mowing machines, our lawns, which are several acres in extent, have been the admiration of all who have seen them. *J. J.*

The Seaham Hall Trial of Peas.—The criticising remarks of "A. D." at p. 1294 on the trial of Peas at Seaham Hall are not devoid of interest, though some of his comments are not flattering to the conductor of the experiments, as he seems to doubt the accuracy of dates and figures. In answer to such an assertion, I beg to say that the experiments were conducted with great care and attention, all particulars of each variety being daily noted. The following statement may be of interest to show the way in which the trial was conducted. Each sort was sown in rings 3 feet in diameter and 3 feet apart. As soon as the first 24 flowers appeared on any variety it was marked as in flower, it being my object to have a fixed period of their flowering, I considered an early stage of flowering a good period to note. As soon as the Peas attained the size of Barley, or so, they were marked as ready; after that time of growth every particular of their character was noted daily. I cannot see how the trial has been robbed of its value in consequence of the wet season. I think it is of more interest, as it reveals to "A. D." the character of each variety in a wet season. The advice which "A. D." gives, as to how to test the value of Peas, no doubt would be of much interest if he would publish his trials in the southern climate. It is remarkable that "A. D.," from his close scrutiny, should not have found out that periods of blooming in Peas afford no real guide as to periods of cropping. It is well known that different varieties are not of the same growth and constitution, therefore different periods from flowering to being ready might naturally be supposed to exist. The remarkable diversity, as "A. D." finds with Peabody, is not the case; as I find from my note-book that the time of flowering is July 1, instead of June 1, a mistake either of my copy or of the printers. The reason why my remarks of commendation are general and superlative are because I find only two kinds that I consider inferior. The tall kinds are good to those that have plenty of time, stakes and ground to spare. Those that I consider too tall are kinds that have grown with me from 4 to 5 feet before they begin to pod. Therefore I cannot recommend them. I find that "A. D." agrees with me in stating that dwarf Peas are the best, but I doubt if ever we shall find Multum-in-Parvo to beat Little Gem, as the former requires stakes. Experiments of this kind, whether conducted at Chiswick or in the North, will always be of interest, and private trials will always carry their weight, and no doubt are safe and reliable.—Mr. Eastes writes to know from what firm I obtained the Carter's Invicta Pea. I beg to say that the so-called Carter's Invicta Pea was given to me by a private grower, and he writes to me to say that the Pea was supplied by Messrs. Carter & Co., but that the addition of "Carter's" to the name was by some means an error on his part. *Robert Draper, Seaham Hall, Sunderland.*

Rock Plants for the Sea-coast.—Nobody having given the information sought by Mr. Miller, I therewith append the names of a few plants suitable for the situation indicated by your correspondent:—Cotoneaster thymifolia and *C. microphylla, Euonymus radicans foliis variegatis, *Coronilla varia, Berberis empetrifolia, Eryngium sp., Cistus, dwarf species, Helianthemums, Armeria vulgaris, Iberis, various species, Sedums, Sempervivums, Silene maritima, Stocks, Wallflowers, Koniga maritima variegata, *Lavatera arborea, *Saponaria officinalis, Lathyrus latifolius and L. sylvestris. This list might be extended almost indefinitely by persons of longer experience in plant-growing by the sea. Those preceded by an asterisk require considerable space. *H.*

Mixed Bedding Plants.—I can fully endorse your correspondent's statement (p. 1295) respecting Viola Perfection as a "mixed bedding" plant. As such it is indeed a gem, but we must not confine its usefulness to mixing only. It is suitable either for mixing, massing, bordering, or ribboning, in almost any position, or in almost any soil. If Mr. Gardiner or "A. D." when at Heckfield Place had gone a few miles further south to Rotherfield Park, the very place where the plant in question was raised, and where its raiser exhibits so much taste and skill in its display, they would have had ocular demonstration, not only of its usefulness as a mixed bedding plant, but of its exquisite appearance in every form above described. It contrasts well with anything, and will no doubt be extensively used when better known. I believe at the present time the true stock is not generally known, there being so many counterfeit varieties in circulation, which cause great disappointment. At p. 1293 there is an account of a new Viola called Lavender Queen, raised by Mr. Speed of Chatsworth, and of which your correspondent, Mr. Read, speaks in flattering terms. Should it prove to be what he describes it, it will, I am sure, be eagerly sought. This induces me to direct attention to another seedling Viola, which I saw when on a visit to Rotherfield Park. It was raised by the successful introducer of Viola Perfection, and if my memory serves me right, he has rightly named it Viola Enchantress. It is of a rich dark velvety purple colour (as near as I can describe it), of extraordinary substance, with stout flower-stalks, and it is, moreover, beautifully scented. It eclipses anything I have hitherto seen; and, from the description given of Mr. Speed's Lavender Queen, I am of opinion that the two would make an excellent combination,—a fact which, however, can only be proved when they are before the public. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Agaves as Decorative Plants.—How is it that the nobler forms of these plants are not more used for subtropical work in the parks? I have often been surprised to see such tender subjects as Musas put out for the winds to sport with, making them look about as happy as the tropical birds in the Zoological Gardens on a winter's day, while the many hardy and fine plants to be found amongst the Agaves are almost neglected, though they can be wintered better, and will stand all the cold and rain we get from May to October. A. americana, and its varieties, variegata and striata, A. Jacquiniana, Salmiana, potatorum, and Fourcroyoides, are the best for positions where large plants are required. There are many dwarfer growers that can be used with advantage, either in vases or in the open ground; many beautiful varieties of A. Verschaffeltii, also A. Seemanni, A. univittata and A. cœrulescens may also be used to give variety, as they look well in all weathers. The best for vases are A. filifera, A. geminiflora (known under the name of Bonapartea juncea) and A. striata. Until lately the number of Agaves was thought by many gardeners to consist of about a dozen species, for although a few collections have existed in this country for some time, until lately the number of species and varieties has been small in comparison to what they are now, amounting to about 170. Many of these are quite new, and amongst them are some imported seedling varieties. There is a great diversity of form in the seedlings, in those of A. Verschaffeltii especially, and which seem to vary more as they get older, both in shape of leaf and spine, and in the tint of foliage, some being almost white and others green, the spines in some being black, in others almost yellow, while the margin of leaf in some is set with small spines, others have deep indentations, and are furnished with desperate teeth. From New Grenada has come a set that have been named horrida and Roezlii, but out of 20 plants one cannot find two alike. Another beautiful species is A. Bessereriana, the plant being almost white, with black spines, growing about 2 feet through, and 1 foot 6 inches high, with the same tendency to vary. The leaves of full-grown plants differ so much in length and shape that one might be excused if he called them distinct species. They also show good examples of the mutation of species—deserving even of Mr. Darwin's attention. If we get seedlings of the older species they invariably come true. The same tendency to sport may be seen in seedlings of Mammillaria spinosissima, though other species come true; and in Haworthia margaritifera, from one lot of seed, you get five or six varieties. This tendency to sport in some species has caused botanists to give two or or three names to the same plant, and if nurserymen fall into the same error, we must not complain; but it would much aid us all if more caution were observed, though caution should not lead into the other extreme, by saying, because one species varies, all do, for though Mesembryanthemums seem very near in habit, yet I have never seen a sport, though I have raised thousands from seed. *J. Croucher, Gr. to J. T. Peacock, Esq., Sudbury House, Hammersmith.*

Coning of Cedrus Deodara.—I have seen several young trees this season, from 6 to 8 feet high, bearing cones, and I have also observed the same thing in young specimens of Wellingtonia gigantea. *H.*

The Premature Bolting of Green Crops.—Mr. Earley has done good service by calling attention to this matter. There can be no question about the fact. From the early days of spring, when the winter Cabbages bolted, in many cases in whole battalions, down to the pouring rains of one of the wettest autumns we have had for years, this tendency to bolt has been constant and well-nigh universal. Perhaps no crops have suffered so much as Cauliflowers, they seemed to bolt, to use an Hibernianism, before they were formed; in very many instances the flower never did form aright, it spread out and ran up into wiry patches, instead of turning in or setting together closely, as a good Cauliflower ought to do. With the exception of the spring Cauliflowers wintered under glass or raised in the spring, I have seen but few perfect heads this summer. I have lately seen some fine looking late plants of Veitch's and other varieties, but whether they will keep close or sprawl it is yet too early to say. Most of us are familiar enough with the bolting of Cabbages, Cauliflowers, &c., but generally the heads close in first, and open and bolt afterwards. This season they have sprawled and run from the beginning,—a very important difference, and one also that makes the malady of this season more difficult to cure, and its cause more mysterious to unravel. This also strengthens my belief, to use the words of Mr. Earley, "that there is in Nature something which influences the aftergrowth of plants long before the time arrives for the secret to be unfolded" (see p. 1231, col. *a*). What that something is seems difficult to discover. Mr. Earley almost says it is the most felicitous condition of growth. But he concludes with querying why plants should show this remarkable tendency to bolt, when surrounded with those suitable conditions? Greater force may be added to this query if we put it thus—Why should plants surrounded with the most felicitous conditions of growth run to seed prematurely? For it is a fact that the majority of the plants that bolt are undersized. Had they reached maturity and a maximum size, fostered with felicitous conditions, one could easily have understood their rushing into seed; but they throw their vitality into seed-bearing before they are half grown. This fact seems to point to a check, not a stimulus, as the cause of premature bolting, such as we have had this summer. Have we had any such checks? We have, all through the season. The changes this season have been less from drought to an excess of water, than from moderate heat to excessive cold. We have scarcely been a month throughout the season without frost, and the loss of heat from evaporation has been tremendous. I believe these changes of temperature have checked growth, and forced the plants to bolt. Possibly this theory will be confirmed by noting the crops that have bolted most freely—Carrots, Cauliflowers, Sugar-Beet, Mangels. As far as my observation has gone, Parsnips, Swedes, Turnips, Onions, Borecole, and Broccolis have not run so freely. What then? Only this, that possibly they were not so susceptible to atmospheric changes. I admit, however, that it is rather premature to write positively of the new crops of Broccoli. Only looking over them, the stems of many near the base of the leaves look rather too fat and lumpy, as if they were gathering up their energy for a bolt. I hope this may not prove to be the case; but if it should, I think a frost-bite in their seed-bed, which all of them had, is much nore likely to induce premature bolting than the most felicitous conditions of growth. *D. T. Fish.*

Skinned Fruit Trees.—Your advice to a correspondent respecting the skinning of fruit trees by rabbits, at p. 1267, has recalled to my mind an experiment which I tried last spring on two Apple trees. These were selected as the two worst, out of an orchard which had been attacked by rabbits. They had all the skin peeled off, and had the appearance of being scraped to the extent of from a foot to 15 inches all round. I cut some thin turf and tied around these parts, placing the earth side next the tree, and kept the turf moist in dry weather. To-day I examined them, and I find a layer of bark has formed all round, although very uneven, as if inclined to form roots, which shows perhaps that I ought to have taken off the bandage before. The trees meanwhile have made wood, and have buds formed for a good show of bloom. *H. M.*

The Hybridity of Willows.—Expecting to find that many planters would be able and ready to reply to the Rev. J. E. Leefe on this subject, I allowed it to pass by without comment, the more especially as the matter would have received notice in my book on the "Salix or Willow," now in course of publication. I was aware that the question was a disputed one, and also that few botanists seemed very clear about it; but the same may be said of everything connected with the genus Salix. There are seedlings innumerable now growing in my nursery at Basford, and I should have great pleasure in sending the Rev. J. E. Leefe a few in different stages of growth for his satisfaction, should he desire it. I have them from many species of Willows, and some have been crossed and recrossed, and are now grown for regular trade purposes. I would suggest that the reason the rev. gentleman and his friend have not succeeded in producing them has been chiefly from the want of shade and moisture. I have not succeeded in obtaining them from Willows of greatly dissimilar character, although by recrossing I have now intermediate varieties between several species, as between S. purpurea and S. viminalis, S. fragilis and S. viminalis, S. lacustris and S. rivularis, S. triandra and S. amygdalina—in fact, I am driven to the conclusion that the species of Willows are comparatively few, but the number of varieties innumerable, and that many of the now called species are only varieties. *William Scaling, Basford, Notts.*

Hornets.—Your correspondent, at p. 1358, asks for any information respecting the hornet. It is well-known that the hornet builds its nest in any hole in tree, house, or other structure, provided it is dry and there is a cavity below or outlet from the bottom of the position where the nest is placed or suspended. This seems to be necessary for keeping the nest dry, or, as Mr. Lee remarks, the sap flows out in large quantities from the tree. This moisture is not the sap of the tree, it is the excrements which are passed from the body of the insects. If you could see a hornets' nest, suspended by the insect itself, there would be a large opening at the bottom of the nest; and, as the insects need, they come down to this open part of the nest for the purpose of passing the moisture above referred to. I, only a few days since, found a hornets' nest in an attic, suspended like a small balloon, with the opening in the bottom, from which I carefully watched the hornets. The moisture from the nest was so great that it penetrated the first floor and continually dropped down on the second floor. What this moisture contains, chemically, or whether it would be injurious to any living tree and likely to cause its death, I do not know. If your correspondent would dip some tow in spirits of turpentine and place it in the hole as close to the nest as possible, and stop up the holes with moist earth or cow-dung, I have no doubt the hornets would be destroyed, and the tree would certainly not be hurt by the turpentine. *P. Fry, Addington.*

The Champion of Scotland Pea.—No one can doubt the usefulness of both trials of plants and vegetables, and particularly Peas, as unfortunately very few gardeners have the opportunity of trying so many sorts as Mr. Draper has done. His remarks on the qualities of some of them show a great difference from what they are in the neighbourhood of Manchester, and particularly so the Champion of Scotland, which Mr. Draper characterises as bad in flavour, and cannot be recommended. This Pea was sent out, if I remember right, by Messrs. Lawson & Sons, of Edinburgh, about 10 or 12 years ago, at which time I ordered 1 quart, and sowed them and the Champion of England both the same day, and side by side. The difference between them in being ready for gathering was very slight, the English Champion being a little earlier and rather lower in growth, but the Scotch Champion commenced podding much nearer the ground, with larger pods, well filled, and more in number. When we sent it to the kitchen my master, whose favourite vegetable was the Pea, considered it the finest and best flavoured he ever tasted, and wished me to grow a good quantity of it another year; ever since then the best half of my order for Peas has been the Champion of Scotland. When the Royal Horticultural Society held its show at Manchester I exhibited in three classes of vegetables, viz., in the classes for 12, 8, and 6 dishes, and was awarded the 2d prize in each of them. I had a good dish of the Champion of Scotland Pea in each class, and on the night of the second day of the show I met Mr. Baines, then a neighbour of mine, but now at Southgate, who said, "I don't think they have left you a single Pea on any of the three dishes; there are the empty pods, but those splendid Peas in the 1st prize collections, called Snowden's Nonsuch, are scarcely touched." Some pods were opened, but the Peas not taken out, as was the case with many other good dishes of Peas shown. If the Scotch Champion had been bad in flavour I think he would not have received so much favour from the public. Therefore I conclude Mr. Draper could not have had the true article, as there are few Peas, under good cultivation, that will give the grower greater satisfaction in every point than the Champion of Scotland. *James Smith, Gr. to Wm. Blinkhorn, Esq., Waterdale, Sutton, Lancashire.*

Madresfield Court and Golden Champion Grapes.—How widely the report of your correspondent "R. D.," on the merits of these two Grapes, differs from my experience. First, I would refer to the Madresfield Court, which we have growing in a late vinery, budded on a Vine of West's St. Peter's, a young plant headed down specially for its accommodation. So far as vigour is concerned, no stock can be more desirable. We have had it in a bearing state for two years past, and each season, contrary to anticipation, it has completely deceived me. The bunches and berries are large; nothing whatever appears to be amiss till just before the ripening process is completed, when atrophy overtakes every berry, the skin begins to shrivel, and so continues to collapse till the flesh is consumed, leaving behind nothing but withered husks. Let it not be imagined that such a defect is brought about by either an excess or a deficiency of water, as nothing of the kind has occurred. The roots are confined exclusively to an inside border, and hence completely under control. In the same house, and treated exactly alike, we have West's St. Peter's, Black Lady Downe's Seedling, White Tokay, and the Mrs. Pince, budded on the Black Hamburgh, producing fruit in every way satisfactory. Now, the question may be asked, If there is no constitutional defect in the Madresfield Court, why should these other varieties do so well? In a midsummer vinery, where the crop ripens about the middle of July, we have this kind budded on a Black Hamburgh stock, and find the result to be exactly the same as in the preceding case. Here we had no difficulty whatever in growing excellent White Muscats, and several other varieties requiring a considerable advance of temperature above our late vinery; so we are, I think, not justified in attributing any defect in the Madresfield Court to an insufficiency of heat. Most gardeners of experience will admit that, quite independent of cultural ability, some of our Grapes succeed well on a particular kind of soil, but remove them to that of a different character, whether physical or chemical, and the quality of the fruit will just be in proportion to the change of circumstances. Such being the case, I do not for one moment question the accuracy of "R. D.'s" report; but this I may say, that a Vine of a fastidious habit, however excellent the quality of its fruit may be, can never benefit the country at large. We have as yet no certain knowledge of the influence exercised by the stock over some varieties of the Grape Vine; that there does exist an active power of some kind is beyond doubt. Some years ago I had the Alicante worked on the Black Hamburgh, but instead of deriving any advantage from the union, as I had expected, the very reverse happened. Vitality was much reduced, and the berries exceedingly small for that kind when nourished by its own roots. I made another experiment by having the White Tokay grafted on the Black Morocco, the Vine abated none of its vigour; but instead of the berries being oval, which is their true character, they were round, more crisp in the flesh, and smaller in size. Did time and space permit, I could bring forward numerous cases, selected from our hardy fruit trees, where the grafting of one kind of Pear or Apple upon another variety either hastens or retards maturation, and sometimes produces barrenness. [Pray do.] My first introduction to the Golden Champion was at the Manchester meeting of the Royal Horticultural Society, and certainly the sample exhibited was not by any means calculated to engage the attention of purchasers. But in opposition to appearance I ordered a plant, and had it budded on the Black Hamburgh. The first year's produce was by no means encouraging, several of the berries were spotted, and consequently decayed, so I began to believe that the adverse opinions in circulation against it were quite true. This season circumstances have changed very much. We have hardly had a faulty berry; certainly not more than is usually to be met with. Some of the bunches exceed 3 lb. in weight, the berries exceeding 4 inches in circumference. True to its name, the colour was excellent and the flavour good. So much has this Grape improved in my estimation, that I propose to increase our stock, destroy the Madresfield Court, and substitute the Mrs. Pince, which, whatever may be said to the contrary, is an excellent Grape. The Golden Champion, like the Golden Hamburgh, for the production of large bunches, requires to be treated on the long spur or long rod system of pruning, and to finish off the fruit well should have a strong heat equal to that given to the Muscat. *Alexander Cramb, Tortworth.*

Foreign Correspondence.

GHENT: *September.*—This with its 200 horticultural establishments, must be the very paradise of nurserymen, and yet it does not seem by any means to have any exceptional advantages. What can have induced so many to form their establishments there more than at Antwerp or Brussels? Yet so it is, and with a light and sandy soil, with a climate which must be cold and damp in winter, the Ghent nurserymen have managed to gain for themselves a reputation which is world wide, and a success in some special forms of culture in which they are wellnigh unapproachable. Where, for instance, are Camellias done as they are here? I have seen, doubtless, as fine plants elsewhere, but for quantity, for neatness, for vigour of growth, especially in small plants, we in vain look elsewhere for a parallel. It is from hence that those multitudes of small plants, which fill our London nurseries and Covent Garden in the season, come—"innocents," too often, not indeed "born to bloom unseen, and waste their sweetness on the desert air," but doomed to the gaze of the company in crowded gas-lighted drawing-rooms, and then to perish,—for hardy as the Camellia is, it will not bear all this; and then in Palms, in Cycads, in Agaves, where can we find anything like the amount or success of cultivation that we can in the Ghent establishments.

Amongst the many "Vans" and "Vers," the Van Houttes, Van Geerts, Verveane, Vandercruyssens, &c., who throng the list of Ghent nurserymen, that of Verschaffelt has long been honourably distinguished; the establishment of M. Ambroise Verschaffelt, which has now passed into the hands of M. Linden, and that of M. Jean Verschaffelt, of which I now write, are amongst the foremost of their class, and both at the great International Exhibition of 1866, and during the present season, the latter has shown the capabilities and resources of his establishment to the frequenters of the London shows, while the genial character of its proprietor has won for him many friends when he has come amongst us. His establishment, while not on so extensive a scale as Van Houtte's or his cousin's, is yet one of considerable magnitude, and the cultures to which he especially devotes himself are carried on with great care and energy, and he is continually importing from Mexico, Africa, Brazil, and other countries large specimens of many of them. Orchids are not much cultivated in Belgium, excepting at M. Linden's—whose collection of 1200 species is perhaps unrivalled—to the same extent as in England. There are not so many amateurs, and the plants are, generally speaking, small, so that we should in vain look for such Orchid-houses as Veitch's, Williams', Bull's, or Rollisson's; but M. Verschaffelt grows his at a moderate temperature, so that plants from here are the more likely to thrive than when grown in a higher temperature; but in his Orchid-house I noticed a few remarkable things. There was, for instance, a new plant from Guiana, somewhat in appearance like an Alocasia, but with leaves of such a substance that they might be very easily taken for leather, while the leaf-stalks were like those leathery stalks of seaweed so common on our shores; the genus of the plant does not seem as yet to be known. Here also were quantities of the curious Tillandsia argentea; some placed on the dead trunks of Tree Ferns looked remarkably well—in fact it seems most accommodating, for M. Verschaffelt assured me he had grown it in all sorts of ways, in Sphagnum, peat, on blocks of wood, on Tree Ferns, and never lost a plant, while he has got a large number of young plants; so that, rootless though they be, they multiply freely. Here also were good plants of Plumieria bicolor, an Apocynaceous plant, white with yellow centre, very free flowering, and likely to be very useful as an ornamental plant. In another house I noticed some magnificent plants of the fine Crinum amabile, one of those fine old plants which novelties have elbowed out of the way; also a very remarkable Hemerocallis, with variegated foliage, one half of the leaf white, the other green, and with so curiously formed a growth, that looking at the back of the plant it seemed to be all white, and in the front all green. There were also some grand plants of Musa Ensete, a plant so valuable for subtropical gardening from its showy appearance and rapidity of growth.

But the greater portion of the houses here are devoted to the growth of Palms, Cycads, Tree Ferns, and similar ornamental foliage plants, which are so much more valued on the Continent than with us—and magnificent indeed are some of the plants; while Palms for the million is no idle word, for here we see pots of Chamærops excelsa with 50 seedling plants for sale at 40 fr.; Phœnix dactylifera, the same; while Latania borbonica, Corypha australis, Chamærops Fortunei, were to be had by the thousand. Of Zamias there were some magnificent specimens, both home-grown and imported specimens; amongst the most remarkable were Altensteini, cycadæfolia, horrida, and the very striking Lehmanni. I do not wonder at the admiration which these plants excite amongst the Continental horticulturists, and do very much wonder that those who have large conservatories with us do not grow them more than they do. Of Tree Ferns there were some fine specimens of Cibotium princeps, Dicksonia antarctica, Cyathea dealbata, and dealbata excelsa, although some of the large plants had just been sent away. The collection of Agaves is wonderful. M. Verschaffelt cultivates upwards of 100 species, and they are to be seen in all sizes, from the tiny seedling plant to large specimens. Of the latter he has some, such as dentata, for which he asks £40; of horrida (well named) an unique example; Kerchovei and Kerchovei macrodonta, very large; dealbata nana, very remarkable; laticincta, a dwarf species, a bright lustrous green, largely pencilled with white; Nissoni, with a large, deep, golden-yellow line in the centre of the leaves; Verschaffeltii, of which there is a large quantity of imported plants, and one with golden-yellow bands on the leaves; while pulverulenta, filifera, univittata, marginata, and other fine varieties, were to be seen in all sizes. Amongst them was a plant which had all the appearance at first of an Agave, but which was in truth Echeveria agavoides—one that is destined, if subtropical gardening holds its own with us, to be brought into extensive use. There are a couple of plants of it at Kew, and at another place on the Continent, but otherwise it is confined to this establishment. It was found impossible to propagate it in any way, but M. Verschaffelt re-received a quantity of seed from Mexico, and he has been enabled to raise a considerable quantity of young plants; out-of-doors it comes with a beautiful rosy margin, and I cannot but think that it will be a very interesting addition to our succulents for summer gardening.

Passing to the out-of-door department, I saw a large quantity of those beautiful standard and pyramidal Bays, Portugal Laurels, and others for which the Ghent nurserymen are so famous, and which they do so well. Some plants here are worth 600f. the pair, and for terraces, for public places, where a regular form is desirable, they are admirably adapted. The standard Orange trees many saw at Kensington not long ago, and although much admired, they did not find, as the Agaves did, purchasers. There were immense quantities of Dracæna indivisa, Camellias of all sizes, and the other cultures of a Belgian nursery. There were also some very beautiful varieties of the variegated form of Phormium tenax; two were especially noticeable—Cookii, dwarf, very pretty, and distinctly margined with brown; and one unnamed variety, with a splendid band of a rosy-yellow hue. There was also a variegated variety of Gnaphalium lanatum, which will be useful as a bedding plant; it is very free and very pretty. While speaking of the outdoor department, I should say that M. Verschaffelt speaks in very warm terms of Delphinium nudicaule, introduced by Mr. Thompson, of Ipswich, considering it to be one of the best introductions of late years for the herbaceous border.

I have thus endeavoured to indicate some of the more remarkable features of this establishment, feeling, of course, that it is impossible in such a sketch to do anything like justice to its resources and the value of its cultures, but at the same time desirous of informing those who have not visited Ghent of some of those special cultures for which it has become famous. *D., Deal.*

Notices of Books.

The Lichen Flora of Great Britain, Ireland, and the Channel Islands. By the Rev. W. A. Leighton. Shrewsbury: printed for the author, 1871. 8vo, pp. 470.

This is a book which will find its way directly, as a matter of course, into the hands of every one who is interested in the very difficult class of plants of which it treats. The author is a veteran worker in the field, and well-known as a thorough master of his subject. His monograph of the British Angiocarpous Lichens, published by the Ray Society in 1851, with full dissections and drawings of the spores of all the species, marks an era in its literature. He was one of the very first to bring to bear upon Lichens the full resources of the modern compound microscope, and to introduce that careful and systematic study of the spores which, during the last generation, has completely revolutionised their species limitation. Since his first work he has published an extensive fasciculus of specimens of the British species, and many detached papers in the "Annals of Natural History" and Transactions of the Linnean Society. It was quite expected that he would undertake many years ago a general handbook of the British species, but he has delayed to do this till the present year, and in 1861 a Manual was published by Mr. Mudd, now curator of the Cambridge Botanic Garden, in which all the species then known in the island were excellently marshalled and described. From the recondite nature of the subject and the delicate manipulation required to see the spores, there are probably fewer students of Lichens than any other class of Cryptogamic plants. Perhaps in the whole country there are not more than from half-a-dozen to a dozen collectors now living actively engaged in studying them, but the zeal and energy with which they have worked may be gathered from the fact, that since Mr. Mudd's book appeared the number of species known in the country has been increased more than 50 per cent., what was 500 in round numbers in 1861 having been augmented to nearly 800 in the present work.

The state of the classification of Lichens much resembles that of Ferns. There are two schools of classifiers, both agreed substantially as to the circumscription and definition of groups higher than genera, but differing materially in the number of genera they make and the kind of characters on which they found them. Mudd, like Hoerber and Massolongo on the Continent, was a "splitter" of genera, not keeping together in the same genus species with asci and spores decidedly dissimilar in character, and in consequence using new names copiously. Leighton follows Nylander almost implicitly, making much fewer genera, retaining, for instance, Lecidea, with 233 British species intact, and not deviating conspicuously in this respect from the path chalked out by Acharius and Fries, except that, of course, the genera of the older writers, shown clearly not to be autonomous, like Lepraria, are rejected. In Lichens, fortunately, the two schools do not differ materially in the number of species they admit, both being willing freely to characterise and name a host of forms which exist with a comparatively less clearly marked individuality under the heading of varieties. If these are counted the number of forms now known in Britain does not fall far short of a thousand. But besides the difference caused by the added species and a different plan of genus-limitation, there is another important innovation in the work of 1871 as compared with that of 1861, as Leighton, here again following Nylander, brings chemistry into requisition, using largely as characteristic the results obtained by treating the thallus with hydrate of potash and hypochlorite of lime. It is very rarely that he makes species founded solely on chemical grounds, but he considers that chemical characters furnish a great help in their discrimination, and in some cases, as in Parmelia, founds his sub-genera entirely upon them.

The geographical distribution of the species is worked out very carefully. The author traces each of them through Britain by means of the 18 botanical provinces used for flowering plants and Ferns in Watson's "Cybele Britannica," and through Ireland by means of the similar divisions used in Moore and More's "Cybele Hibernica." He gives special stations copiously, with the names of the authorities on which they rest, and devotes a line to an account of the general world distribution of each species. So that although we know really far less about the dispersion within our island of Lichens than of Mosses, we have now that of the former much more thoroughly worked out, and the blanks, which want filling up for each species, clearly shown. The parts of the island which the author mentions as still almost unexplored, are the whole of the north and north-western counties of Scotland, including the Hebrides, Orkneys, and Shetland isles; nearly the whole of the north, north-west, and midland counties of Ireland; in England, the counties of Cheshire, Lancashire, Derby, Nottingham, Lincoln, Stafford, Hereford, Monmouth, Gloucester, Warwick, and Northampton; the whole of South Wales, and large districts in North Wales. He intimates that he will gladly receive Lichens from any of these tracts, and that he intends to prepare a conspectus of all the Lichens hitherto discovered throughout the world, and that he proposes to issue shortly new sets of specimens, cotaining from 150 to 200 species, to illustrate the principal genera, and that for both of these two last named publications he is ready to receive the names of subscribers.

The point which strikes us in glancing over the book as most open to criticism, is the little pains that have been taken to adapt it to the requirements of beginners. When we get down to species the descriptions are by no means unduly curtailed, but many terms are used which are entirely peculiar to modern lichenology, and there is no glossary or general explanation of organography, and the range of structure in the different parts of the plant, such as is carefully given both by Nylander and Mudd. The introductory key to the tribes and genera, which is a most important part of a book like this, is so drawn up that it is often quite impossible to understand their essential characters by using it alone. Take for instance the six series of Lichenacei, the family including more than seven-eighths of the species, which stand as follows:—

Series 1. *Epiconiodei.*—Spores pulverulent on surface of fructification.

Series 2. *Cladodei* (no doubt a misprint for Cladenioodei).—Thallus foliolose; apothecia terminal on podetia, bratorine.

Series 3. *Ramalodei.*—Thallus efoliolose, puticulose, or filamentose; apothecia lecanorine.

Series 4. *Phyllodei.*—Thallus foliaceus, depressed, lobed.

Series 5. *Placodei.*—Thallus crustaceous, squamose, radiate, granulose, powdery, or evanescent.

Series 6. *Pyrenodei.*—Fructification in closed receptacles.

Who would gather from this that is intended in the first instance to establish a contrast between the open disciform receptacle of series 1 to 5, and to contrast it with that of series 6; that next, attention has to be directed to the difference between Lichens with exposed spores, and Lichens in which the spores are permanently contained in asci, and embedded inside the disc of apothecia, as in series 2 to 4, and that series 2 to 4 agree with one another essentially in the nature of the fructification, but differ mainly in the habit of the thallus? These are points that should be clearly brought out in the key, for they are the very first things which a student of Lichens needs to be taught, and which, when he gets a book of this kind, he expects to have clearly explained to him. No one is better able to unfold these elementary points than the writer of this handbook; and we trust that, when a new edition is called for, he will both give a structural introduction, and recast and amplify his general clavis, so that a student possessing no other book on the subject may be able to use this as a guide in his practical daily work, and that he will entirely strike out all such definitions as "Tribe 14. Lecanora.—Apothecia lecanorine," and "Tribe 18. Pyrenocarpa.—Apothecia pyrenodine," which give no more information to a student than the mere occurrence of the name of the tribe would, standing by itself in a catalogue. The entire want of an index of species will involve a great loss of time upon those who use the book. Verrucaria has 113 species, and Lecidea 233; and, as the matter stands, the only way to find one of the latter is to search for it over the 110 pages the genus covers. This, coupled with the sparing citation of synonyms, will puzzle all but the few thoroughly-experienced special Lichenologists exceedingly. To take an instance, some half-dozen Lichens are thoroughly familiar to British collectors under the generic name Borrera, under which everyone at home and abroad knew them for a whole generation. Let us suppose a student trying to find these here. He will look first for the generic name in the index, and not find it; then perhaps turn over the pages in search of it, still without success, for it does not appear to occur at all. If he be easily daunted, or his time be short, he will lay down the book in despair. If he be very energetic and persevering, he will search on and find plants with the same specific names placed, one under Evernia, and the others under Physcia. These are really the plants he requires, but a beginner will not get much help towards knowing it by the only references that are given, and before he can be sure, will need to compare his specimens with the generic and specific diagnoses in detail.

Garden Memoranda.

New Winter Garden in Edinburgh.—That the love of floriculture and the pursuit of botany as a pleasant and useful study are making rapid progress among all classes of the people is abundantly evident from the numberless gardens which are springing up around the city, the care which is bestowed on the cultivation of villa plots, and the large attendance of students of both sexes at lectures given by Professor Balfour at the Botanical Gardens. It must, therefore, be matter of general interest to hear of a new place of public resort, where the rarer forms of plants may be studied, and the love of beautiful flowers gratified. Although the houses at the Botanical Gardens are open to the public, yet they are not always available to the amateur florist or botanist. It is only on certain days of the week that admission can be obtained; and, moreover, for a large class of persons, the distance of the gardens from the city practically bars the way to enjoyment and improvement. The opening of the new winter garden which has been erected at Haymarket by Messrs Downie, Laird & Laing, nurserymen, may therefore be looked forward to with considerable interest, more especially by residents in the West End, to whom its benefits will be most accessible. About eighteen months ago, Messrs. Downie, Laird & Laing obtained from the governors of George Heriot's Hospital a feu of an acre and three-quarters of the ground lying east of Donaldson's Hospital, which had formerly been occupied by them as a nursery. The remainder of the ground was feued off for the streets now known as Magdala Crescent and Coates Gardens, and the portion now in question lies between these two handsome ranges of dwelling-houses. On this feu, Messrs. Downie, Laird & Laing agreed with the superiors to erect a winter garden, and Mr. Downie, accordingly, after visiting many of the largest conservatories in the country, designed the elegant structure which has now been completed. The conservatory, from its extent and beauty, enhances considerably the amenity of the district, and, when it is thrown open to the public, it cannot fail to prove attractive to all sections of the community. It has two fronts—the façade facing the Glasgow Road and a side elevation abutting upon Coates Gardens. The main front is, of course, the most ornate, and viewed from the Glasgow Road, its handsome proportion at once strikes the visitor. The principal house is 130 feet long—the end gables and the first course being of polished freestone, while a glass superstructure rises in three stages—the first of plain, the second of ground, and the third of figured glass. Each stage is marked off with ornamental iron fretwork extending the whole length of the building. The main entrance is in the centre block, which is 50 feet wide and 30 long, and is surmounted by a handsome dome 65 feet high. East and west of this central hall extend wings 30 feet wide and 26 feet high, surmounted at the ends by lanterned pinnacles with ornamental finials. The roof of the building is constructed in graceful curves, and is supported by light iron pillars. At right angles to the main building and running in a northerly direction, is an *annexe* 50 feet in length by 28 in breadth. In each wing are retiring and waiting-rooms, and these are surmounted externally by the royal arms in carved work, and by ornamental vases containing variegated Aloes. The interior of the large house has not yet been completely finished; but enough has been done to give a general idea of its effect when furnished with plants and flowers. The floor is laid with mosaic tiles, and the walls are painted a delicate stone colour, the panels being relieved with stripes of red and blue and gilt beadings. At each end large mirrors are let into the walls, by which the long rows of plants and flowers will be reproduced *ad infinitum.* In the centre of the house are to be planted Camellias, Azaleas, Aloes, and an immense variety of hothouse plants; while ranged along the sides are placed iron perforated tables for pot and ornamental foliaged plants. In heating the main building no fewer than 1650 feet of hot-water piping are employed; and ordinary water pipes have been laid all round the house, to afford facilities in watering the plants. Beneath the dome a large terra-cotta fountain has been erected, and the pleasing music of the rippling water will enhance the other attractions of the place. Leaving the main building, a covered way conducts the visitor to the Fern-house, which is 37 feet long by 20 feet broad, and from which an ornamental spiral staircase leads to the long range of houses forming the east of Coates Gardens front. These houses, which are 188 feet long by 17 broad, and are heated with 930 feet of piping, stand on a terrace which slopes up from the street—the slope being tastefully laid out in flower beds. Seen from Coates Gardens, this range, although not so ornate as the main front, has a very chaste effect—the centre block having a lantern roof capped with ornamental iron fretwork. Within the grounds, and running parallel with the main building, but not visible from the street, are a series of new stove, green, and propagating houses, extending to 408 feet by 16 feet broad, and heated by means of 2300 feet of piping. The heating power is supplied from a large boiler placed in the potting-sheds beneath the terrace houses, and the smoke is carried away through two flues carried up the gable of the dwelling-house erected to the north of the winter gardens. The whole of the houses are thoroughly aired by means of new patent lever ventilators. A considerable amount of work has yet to be done in the way of painting, tile-laying, &c., before the whole of the houses can be furnished with plants and flowers; but it is expected that the winter garden will be opened about the New Year, when a good display of blossoming plants will be most acceptable. It may be mentioned that the large building was erected by Messrs. Alex. Cruikshanks & Sons, horticultural builders, Arbroath, and the houses on the terrace by Mr. David Lowe, Gilmore Park. *The Scotsman.*

THE WEATHER.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, Oct. 25, 1871.

1871. Month and Day.	At 9 A.M. Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
October.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
19. Thurs.	29.56	59.1	57.8	56.0	92	5.1
20. Friday	29.62	57.3	57.2	57.1	100	5.2
21. Satur.	29.87	49.3	46.5	43.4	81	3.2
22. Sunday	30.17	50.8	48.0	45.2	81	3.4
23. Monday	30.18	48.1	47.0	45.8	92	3.5
24. Tues.	30.11	39.3	38.2	36.8	91	2.6
25. Wednes	30.18	47.2	46.8	46.4	97	3.6

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
October.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
19 Thurs.	63.4	55.7	7.7	58.5	+9.2	S.: S.E.	215	0.09
20. Friday	60.0	49.5	10.5	53.0	+4.5	variable	145	0.20
21. Satur.	50.0	40.7	15.3	48.7	−0.2	S.S.W.	300	0.22
22. Sunday	56.8	40.0	16.8	47.5	−1.2	S.W.	205	0.00
23. Monday	58.4	35.8	22.6	46.2	−2.3	S.S.E.	125	0.00
24. Tues.	52.5	34.6	17.9	42.7	−5.5	variable	60	0.00
25. Wednes	54.1	38.5	15.6	45.4	−1.5	N.N.W.	160	0.01

Oct. 19.—Generally overcast. Rain fell occasionally during the morning, and between 7 and 10 P.M. Lightning seen at night.

— 20.—Generally overcast. Rain fell between 6.50 A.M. and 3 P.M., and occasionally afterwards.

— 21.—Cloudless and very fine during early morning. Generally overcast after 9 A.M. Rain fell between 2 and 7 P.M., and again heavily between 9 and 9.30 P.M.

— 22.—Light clouds prevalent till night; then cloudless. Fine.

— 23.—Small amounts of cloud present. Very fine.

— 24.—Very foggy in morning and at night. Variable amounts of cloud prevalent during the day.

— 25.—Generally cloudy till night; then cloudless. Rain fell in early morning. Lunar corona and halo at night.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, OCT. 21, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth	66.8	39.6	27.2	62.6	48.6	14.0	54.6	0.39
Blackheath	68.4	34.5	33.9	61.8	46.9	14.9	53.5	0.55
Bristol	..	..	..	..	..	..	..	..
Birmingham	65.7	33.8	31.9	59.8	40.8	19.0	49.3	0.48
Wolverhampton	65.2	39.8	25.4	58.8	48.4	10.5	52.6	0.80
Leicester	65.2	35.2	30.0	60.4	48.2	12.2	53.3	0.43
Norwich	63.0	33.5	29.5	59.9	45.5	14.4	51.7	0.36
Nottingham	67.4	37.2	30.2	60.8	47.9	12.9	53.3	0.38
Sheffield	65.0	38.5	26.5	59.9	48.7	11.2	53.3	0.64
Liverpool	62.1	40.2	21.9	58.5	49.0	9.5	52.7	0.74
Manchester	67.0	37.0	30.0	60.8	47.9	12.9	53.3	0.81
Salford	66.5	37.9	28.6	60.3	46.7	13.6	52.5	0.98
Bradford	65.7	42.5	23.2	62.1	51.7	10.4	55.9	0.63
Leeds	66.0	39.0	27.0	61.0	48.7	12.3	53.8	0.93
Hull	63.0	37.0	26.0	58.0	48.0	10.0	52.0	0.72
Newcastle	62.0	40.0	22.0	57.8	47.6	10.1	51.7	1.20
Edinburgh	64.7	36.0	28.7	..	..	..	50.9	0.30
Glasgow	60.2	36.5	23.7	..	..	..	50.1	0.67
Dundee.. ..	57.0	37.0	20.0	..	..	..	48.2	0.60
Aberdeen	57.2	38.3	18.9	..	..	..	48.4	0.32
Paisley	..	..	..	..	..	..	..	..
Greenock	58.5	42.0	16.5	..	..	..	51.0	2.08
Leith	59.8	38.0	21.8	..	..	..	50.9	0.44
Perth	62.0	33.0	29.0	..	..	..	51.4	1.10
Dublin	64.9	35.0	29.9	..	..	..	51.5	0.69

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

Chrysanthemums will shortly assert their claim to be considered the most popular of our early winter decorative plants, and though I do not think the firm growth latterly made will be capable of standing much frost out-of-doors, I anticipate a capital display in all instances where protection from frost is afforded. It will no doubt have been observed that I have almost invariably refrained from making any suggestions as to affording liquid manure to growing plants, because I hold the opinion that better flower-producing growths are made without supplying so stimulating an aid. Now, however, that the flowers are actually expanding, good manure water should be afforded abundantly, and the result will show itself in the production of blooms of extreme beauty. Those plants which are placed under cover, and the pots of which are not plunged, will be found to get dry very quickly, and will therefore require to be frequently watered, notwithstanding the dulness of the season. To neglect them in this matter will assuredly be injurious to the blooms, as well as cause the plants unnecessarily to shed many of their leaves, a contingency by all means to be guarded against. Where temporary protection only is afforded, and consequently the necessities of other plants have not to be considered, it would be of great benefit to the plants to occasionally syringe them overhead. See to the potting up of any plants that are intended for late flowering, and bring the necessary operation of tying-up of such plants as need it to a close. Finish thinning out *Pot Mignonette* for late display, subsequently making the soil firm around the base of each plant; after which the pots should be placed upon light, airy shelves, or in some similar position. Give to *Tree Violets*, now about to flower in pots, occasional moderate applications of liquid manure. *Camellias* will now require constant attention in the matter of affording an uniform supply of root moisture, otherwise there will be some risk of their shedding their blooms. On the other hand, an excessive supply is quite as likely to end in a like injurious tendency; hence the need of such an amount of care as I have suggested. The surfaces of the pots of these, and other similar plants, will often, and especially if the soil is at all retentive of moisture, become uncleanly, or green around their outer sides, which also in itself tends to increase the above evil. These should, therefore, whenever such is the case, be thoroughly well scrubbed over, at the same time the drainage should be seen to, and, if necessary, the pots raised in such a manner that the air can act more freely upon each, and so exert to the full its drying influence. The night temperature in stoves proper should not by any means exceed 60° at this date, and onward for some time to come. Continue to pot off successionally *Herbaceous Calceolaria* seedlings as they attain to a size befitting the operation, and give a slight shift to any old plants which have made good progress since they were last potted. The coolest and dampest end of any structure should be reserved for them, direct heat from any kind of actual heating mediums being antagonistic to their well-being, whenever they are maintained in too close proximity thereto. Let any old plants of *Cape Pelargoniums* which have advanced materially in the matter of autumn growth, and the roots of which moderately fill their pots—the latter being of such a size as to obviate the necessity of shifting again at this dull season—be now forced gently into a state of semi-rest by partially withholding water from them and by affording air freely. Do not under any circumstances maintain climbing plants too densely above those which may be of value underneath them. Where there is a demand for early forced flowers, it will be necessary now to introduce a plant or two of *Camellias*, the buds upon which are prominent, into moderate heat. The earliest *Hyacinths* and *Tulips*, with *Narcissi*, should also be introduced into the forcing pit, as well as such subjects as *Salvias*, the Lily of the Nile (*Richardia æthiopica*), various *Amaryllis*, such as *A. formosissima*, *A. crocata* and *A. sarniensis*, *Pentas carnea*, *Pleione lagenaria*, *Thunbergia laurifolia*, Solomon's Seal (*Polygonatum*), *Genistas*, *Hoteia japonica*, *Cannas* of the indica type, whose natural season of blooming is December; Tree or perpetual *Pinks*, *Picotees* or *Carnations*, *Roses*, and *Cyclamens*. Seedling *Nemophilas* sown a month ago to flower on shelves in the early spring should be now potted singly into 60-sized pots.

FORCING HOUSES.

Much difficulty will the Pine grower experience now who has to deal with the main stock and actual fruiters, some of which, it may be, are ripening, and all in the same house. Those swelling their fruit require a close, snug, warm position, whilst fruits that have finished swelling should be maintained as near to the pipes or flue as possible, all felicitous surroundings being made the most of. Berries often decay in large bunches of Grapes in an incredibly short time at this period of the year; hence an almost incessant daily watch must be kept on all, in conjunction with the maintenance of a dry atmosphere with gentle artificial warmth. Delay not in procuring the necessary protecting materials, whether fermenting or otherwise, for the protection of out-door *Vine borders* attached to those *Vineries* which are to be forced early. I have suggested previously how desirable it is in the early autumn to place a good thick covering of dry material over them to avert the loss of natural and latent heat which otherwise has taken place. It is better far to economise such warmth as the ground naturally possesses, than to allow the heat to fly away and be obliged to resort to such a poor substitute when a little warmth is required. I need add little at this time to my former suggestions regarding the early pruning, cleansing, and preparing of successional houses, which come under this heading.

HARDY FRUIT GARDEN.

Red, white, and black *Currants* may now be planted; in doing so it is of the utmost importance that the best varieties only be planted, as the difference in the produce of good and bad cannot be well estimated in an imaginary manner. Raby Castle, La Fertile, and a variety I have heard called the Marseilles, are the best reds, the former being a good hanging variety. Of *White Currants* there is but the White Dutch, with its half-dozen synonyms, to choose from. *Black Currants* have long been represented in Black Naples and Ogden's Black, though these are exceeded, in the matter of increased fertility and a better hanging capacity, by Lee's Prolific Black. This is also a good time to plant *Raspberry canes*. Of the several varieties, Carter's Prolific and Fastolf are the best, generally speaking. Prince of Wales (Cutbush's) is a remarkable grower; Autumn Black, October Red, and October White being equal to any of their respective colours. To economise space and much ultimate outlay for stakes and labour, it is advisable to plant these in rows of not less than 4 feet apart, and to place thereto a permanent wire fence. This need not be higher than 3 feet, and with two wires only, as much vigour is lost by pruning Raspberry canes too little, leaving the top buds to carry the crop at a height of many feet, whilst the lower and riper eyes remain dormant.

KITCHEN GARDEN.

Any *Capsicums*, *Chilies*, or *Tomatos*, which are still unripe, should be gathered and removed into a warm, dry atmosphere, to ripen off better. Remove from the open ground all *Endive*, tied or not, intended for winter use a few months or weeks hence, as a frost would destroy much of them. The same remarks also apply to all good usable *Lettuces*. Those who possess *cloches*, or any of Rendle's protecting tiles, &c., should use them for such purposes with all despatch, as a sharp frost may visit us at any time now. Those who have spare time should prepare straw hurdles, or any other kind of temporary protection, to be ready for the advent of King Frost. At this period, *Walks* may be turned, or gravelled, *Box edgings* planted, and suchlike operations entered upon when time sufficient is to be found. Remove *Scarlet Runner Beans* and well trench the ground subsequently. Make a sowing of *Broad Beans* to stand through the winter for the earliest spring crop. Turn up a dry piece of ground, and let the surface become mellowed over with the action of the air, preparatory to sowing the first crop of *Peas* at an early date. As for the rest, though little can be suggested in a Calendar at this dull season, abundance of work will exist in the necessary cleaning up of dead leaves and other litter which accumulates so quickly now. *W. E.*

TOWN GARDENING.

Grass Plots and Verges should now be well rolled, and mowed for the last time this season. The edgings should also be trimmed with the edging iron, and the gravel-walks be cleared of weeds, swept, or turned, and rolled once or twice a-week, which will give a neat and agreeable appearance to the garden for the autumn. The altering and making of gravel walks should now be proceeded with, as well as the laying of turf, as quickly as possible, before severe weather sets in. *Dahlias* and *Marvel of Peru* should now be cut down to within 3 inches of the ground, be taken up, and placed to dry for a day or two, when they should be put away out of the reach of frost for the winter. The *Iris germanica*, a most useful plant for town, including its many beautiful varieties, should now be propagated by dividing the roots, and planting them where they are intended to flower. The following *Bulbs* should be at once planted to insure success:—*Tulips:* plant 3 inches deep from the upper side of the root; each hole should be made with a trowel, and a little silver sand put in and around the root. *Hyacinths* treat in the same manner, but *Crocuses* must only be put in 2 inches deep. To flower the Hyacinths in perfection, they should be planted in beds, which can be hooped over, so as to protect them from excessive rains and frost. Plant *Deciduous Trees* and *Shrubs*, stake them to protect them from rocking about, and cover the roots with rotten dung. Defer planting *Evergreens* till spring; for, if planted now, they get choked with soot and dirt, and do not start so freely as in spring. *J. D.*

Notices to Correspondents.

*** CARRIAGE OF PARCELS.—We are at all times willing to render assistance in the matter of naming plants, fruits, Fungi, &c., but our correspondents should remember that this entails, on our part, a very considerable expenditure of time, labour, and expense, and the least they can do is to pay the carriage of their parcels. In cases where this is not done, we shall rigidly adhere to our rule of not receiving such communications.

ARTICLE FOR INSERTION: *Messrs. S.* The writer had no authority for making any such assertion.

DOUBLE WHITE BRAMBLE: *E. J. W.* The double White Bramble is seldom met with. The Messrs. Osborn & Sons have informed us that they possessed the plant for many years, but have found it difficult to increase, and it rarely flowers with them.

DOUBLE APPLE: *R. M., Navan*, sends us a good example of the union of two Apples, forming a V-shaped fruit. Such instances are not uncommon.

FUNGI: *T. S. P., Moorhill, Sheffield.* 1, 2, Agaricus squarrosus; 3, Coprinus plicatilis.—*G. P. A., Heathfield Gardens.* The Fungus is Agaricus arvensis, the Horse-Mushroom, not quite so good as the true Mushroom, but edible. *W. G. S.*—*J. C., Luton Hoo.* Your Puff-balls are not the edible species (Lycoperdon giganteum), but L. cælatum, which is probably not good for food. For books on the subject of Fungi,—"Mushrooms and Toadstools" (Hardwicke, 192, Piccadilly, 6*s.*); Berkeley's "Outlines" (Lovell, Reeve, £1 10*s.*); Cooke's "Handbook" (Macmillan, £1 4*s.*). *W. G. S.*

GRAPES AND PINE-APPLES: *A. B.* These cannot be grown satisfactorily together. The Pines do not like to be under the shade of Vines, and the latter, especially when the fruit and wood is ripening, are seriously injured by the close humid atmosphere necessary for the well-doing of the Pines.

GROWTH ON OAK: *W. W.* Your letter was unfortunately mislaid, so that we cannot be quite sure to what you refer. We believe, however, that what you sent was a specimen of the Artichoke Gall described at p. 1162. We will endeavour to supply the requisite information as to the Hawthorn in an early number.

JAPANESE COPYING PAPER: *W. T.* A beautiful, thin, soft, yet strong paper, well adapted for copying, for packing, or even for correspondence. We do not know the substance of which it is made; it may be from the fibrous bark of a species of Daphne, or perhaps Broussonetia Bœhmeria. Messrs. Straker, the importers, might be able to supply the desired information. See an article on the subject in the Journal of the Society of Arts of October 13.

LACE: *E. M. O.* The sample enclosed is made from the fibre of the Banana or Plaintain, much used in the West Indies for such purposes.

MALFORMED PEAR: *J. B.* and *R. P.* An instance of prolification. Many such have been figured in our columns at various times.

MOWING: *C. F. P.* A suitable horse and full-sized, first-class horse machine and two men should be able to mow 4 acres of lawn a day, cutting it twice over, supposing there are the average obstructions to contend with in the way of trees, &c. If the machine is in good order it is not hard work for a suitable horse to work it.

NAMES OF FRUITS: *A. B.* *Apples:* 1, Adams' Pearmain; 2, probably Reinette du Canada; 3, Northern Greening; 4, large Hautbois; 5, Lemon Pippin; 6, resembles Rymer; 7, Red Winter Reinette.—*J. H.* *Pears:* 1, Doyenné de Fais; 2 and 3, Marie Louise; 4, St. Germain. *Apples:* 1, Ribston Pippin; 2, not certain.—*John Barnett.* We cannot name any of your northern Apples with certainty.

NAMES OF PLANTS: *Old Sub., Oxfordshire.* No. 1. Juniperus recurva; 2, Cupressus, sp. Materials insufsufficient.—*J. T.* Passiflora quadrangularis var. Buonapartea.—*J. S.* Lithospermum prostratum, Loisel; native of the south of France. Usually wrongly named in gardens.—*W. J. G.* Veronica decussata. Native of the Falkland Islands and Patagonia. A very old denizen of our greenhouses, having, so we learn from the "Botanical Magazine," been introduced as long ago as 1776.—*H. J. V.* Cissus orientalis; the C. glabra. Native of South Africa.—*F. W. C.* 1, Cystopteris sempervirens; 2 and 3, C. fragilis; 4, Polystichum angulare, irregular variety; 5, Scolopendrium vulgare submarginatum; 6, S. v. lobatum.—*J. L. N.* Omphalodes verna.—*Mrs. Parr.* 1, Euonymus europæus, Spindle Tree; 2, Cornus sanguinea, Cornel

Tree.—*F. S.* 1, Zygopetalum Mackai; 2, leaf only, Chamæpeuce diacantha (?); 3, Coccoloba platycladon; 4, Ceratopetalum gummiferum; 5, probably some Hakea or Grevillea—can't tell from such a scrap; 6, Sisyrhynchium sp.

PEACHES FOR A COOL HOUSE: *T. G.* We would recommend Early York, Grosse Mignonne, Royal George, Bellegarde, Barrington, and Walburton Admirable.

PLAN OF FLOWER-BED: *A Subscriber* writes that he applied, enclosing a fee, to a well-known nurseryman, in August last, for advice on the subject of his flower-beds. The information was promised, but has never been forthcoming, and now it is declined to be given on the score of want of time; meantime the fee has not been returned. Our correspondent has been badly treated, but we can only recommend him to apply for his money, which will, no doubt, be willingly refunded.

PORTRAITS: *G.* We feel flattered at your suggestion, which, however, our modesty forbids our acting on. The portraits already issued are all of them those of "contributors," and more will be issued subsequently.

PREVENTION OF THE POTATO DISEASE: *J. J.*, who has, he says, an infallible method of prevention, should tell the public what it is.

RABBIT-PROOF PLANTS: *An Old Subscriber* asks us to publish a list of plants and shrubs which rabbits will not destroy, he being over-run with these nibbling little animals. As a commencement, we may mention Pinus Laricio, Rhododendron ponticum, and Escallonia macrantha. Perhaps some of our readers who can reply from experience will kindly extend the list.

SPOILED GRAPES: *J. J. M.* The examples you have sent are decidedly the reddest Black Hamburghs we have ever seen. They have been shockingly mismanaged somehow. They bear traces, however, of having started well in spring, though the bunches were properly developed. It appears to us that yours is the result of keeping the house too close and moist during the colouring period. Next season we would recommend you, as soon as the berries have finished stoning, to nail the lights of your house open, so that they cannot be closed day nor night. It is air that is wanted.

VINE ROOTS: *J. A. L.* We see nothing whatever the matter with them. They seem to be perfectly healthy.

CATALOGUES RECEIVED.—Kelway & Son, Twenty-first Annual Catalogue of Gladioli.—Hogg & Wood, List of Flowering Bulbs, &c.—Von Hock & Co. (Castel, opposite Mainz), Herbst-Offerte der Samen und Pflanzen-Handlung.—Emil Liebig (Blasewitzer Strasse, No. 15, Dresden), Price List of General Nursery Stock. —Baltet Frères (Troyes), Catalogue of Fruit Trees, Roses, Shrubs, &c.

ERRATUM.—The word "not" should have been omitted in the third line from the bottom of the article from Goeppert, on the Action of Frost, p. 1355, col. *b*; p. 1353, col. *c*, for "seeing" read "swing."

COMMUNICATIONS RECEIVED: C. L.—J. J.—D. T.—A. B.—R. H.—A. M.—J. B.—S.—H. M. (with thanks.)—H. D.—J. H. M. A. C. A. W. F.—M. S.—C. J. R.—H. H.—J. G. B.—J. M.—T. G.—H. J. M.—M. J. B.—J. J.—Dhune Thuach. A. B.—R. H.—J. B.—J. C.—R. P.—Florist.—J. H. V.

Markets.

COVENT GARDEN.—Oct. 27.

A very steady business is maintained, and prices are rather in favour of sellers. Rough vegetables are abundant and good. Foreign produce ample, and large quantities are offered from ports of shipment, comprising Pears, Apples, Lemons, Nuts, Grapes, and Pomegranates, which realise fair prices under the hammer. The principal flowers on sale are Heaths, Chrysanthemums, Asters, and Fuchsias.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½ sieve	2 0 to 5 0	Melons, each ..	2 0 to 5 0
Cobs, per lb. ..	0 8 — 10	Nectarines, per doz.	4 0 — 8 0
Figs	1 0 — 2 0	Peaches, per doz. ..	8 0 —15 0
Filberts, per lb. ..	0 8 — 10	Pears, per dozen ..	2 0 — 4 0
Grapes, per lb. ..	1 6 — 5 0	Pine-apples, per lb.	2 6 — 6 0
Lemons, per 100 ..	8 0 —12 0	Pomegranates, each	0 4 — 0 8

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, per doz.	6 0 to 8 0	Herbs, per bunch ..	0 2 to 0 4
Beet, per doz. ..	1 0 — 2 0	Horse Radish, per bundle	3 0 — 5 0
Broccoli, purple, per bundle	1 0 — 1 6	Leeks, per bunch ..	0 2 — 0 4
Brussels Sprouts, p. half sieve.. ..	2 6 — 3 0	Lettuces, per score..	2 6 — 3 0
Cabbages, p. doz. ..	1 0 — 1 6	Mushrooms, p. pott.	1 0 — 2 6
Capsicums, p. 100..	1 6 — 2 0	Onions, per bunch..	0 4 — 0 9
Carrots, p. bunch ..	0 6 — 0 8	Parsley, p. bunch ..	0 2 — 0 4
Cauliflowers, p. doz.	2 0 — 6 0	Radishes, per bunch	0 2 — ..
Celery, red, p. bun.	1 6 — 2 0	Seakale, per punnet	3 0 — 5 0
— white, do. ..	1 0 — 1 6	Shallots, per lb. ..	0 8 — ..
Chilies, per 100 ..	1 6 — 2 0	Spinach, per bushel	2 6 — 3 0
Cucumbers, each ..	0 6 — 1 0	Tomatos, p. sieve ..	4 0 — 6 0
Ridge, p. doz.	1 0 — 2 0	Turnips, p. bunch..	0 4 — 0 6

Potatos (best samples), New Round, 5*s.* to 6*s.*; Kidneys, 5*s.* to 7*s.* per cwt.

No. 1, Peel Street, Manchester, 1871.

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No. 2.—54 inches wide .. .. at 7*d.* per yard run.
No. 3.—54 inches wide .. .. at 5½*d.* per yard run
No. 4.—54 inches wide .. .. at 4*d.* per yard run.
No. 5.—54 inches wide .. .. at 5½*d.* per yard run

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LABELS, LABELS.—PARCHMENT or CLOTH LABELS.—Tree or Plant Labels, punched parchment, 4 inches long, 4*s.* per 1000, or 10,000 for 35*s.*, cash on delivery. Sample Label sent on receipt of a postage stamp. Orders delivered free in London by JOHN FISHER AND CO., Label Works, Boston, Lincolnshire.

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.
The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

WANTED, as FOREMEN of the Kitchen and Flower Gardens in a large establishment in Scotland, two energetic and practical young Men of general experience. Preference will be given to those who have practised in England.—Apply, by letter, giving particulars as to experience, and references, to EDWARD SANG AND SONS, Nurserymen, Kirkcaldy, N.B.

WANTED, a HOUSE FOREMAN and PROPAGATOR.—Must be efficient, and of good moral character.—Apply, stating particulars, to R. P. KER, Aigburth Nursery, Liverpool.

WANTED, a WORKING FOREMAN, in a small Nursery, with a knowledge of Trees and Greenhouse Plants. State wages.—Messrs. BROWN, Nurserymen, Stamford.

Nursery Foreman.

WANTED, a WORKING FOREMAN, for a Nursery in the North of Ireland. Must be able to take general charge, and be a good Propagator. There is a dwelling-house on the Nursery.—Apply, with full particulars, by letter only, to C. D., Hurst & Son, 6, Leadenhall Street, London, E.C.

WANTED, as WORKING GROUND FOREMAN, for a Nursery in the United States, a steady, active young Man—good Budder and Grafter, with a general knowledge of Nursery Work. Single, or, if married, with a small family. Also, a JUNIOR CLERK—one acquainted with Packing small Packages of Seeds and Plants by Post preferred.—Both to apply in own handwriting, and, in order to avoid delay, enclose references or testimonials to J. S., Waite, Burnell, Huggins & Co., Southwark Street, London, S.E.

To Nursery Foremen.

WANTED, a good SECOND MAN, who understands Grafting and Budding, and general Outdoor work.—Apply to J. C. WHEELER AND SON, Nurserymen, Gloucester.

WANTED, a GARDENER (and Wife as Laundress), without children. The Man must be thoroughly competent to Manage Flowers, Fruits, Vegetables, and efficient in Vinery and Conservatory (Forcing unnecessary). Wages, with good cottage, coals, vegetables, and milk, £60. Characters must bear strictest investigation.—Address, by letter only, H. RAYMOND, Esq., 56, Lincoln's Inn Fields, W.C.

WANTED, a GARDENER (his Wife to take the Management of a small Laundry), without incumbrance. The Man must thoroughly understand the Growing of Flowers, Fruit, and Vegetables. Another Gardener is kept. None but those with good personal character need answer this Advertisement.—Apply by letter, stating length of service in last situation, wages, &c., to Mr. HENRY OXENHAM, Rawdon House, Hoddesdon, Herts.

WANTED, by a Florist, at a distance from London, a steady, active, young MAN, who thoroughly understands the Forcing of Gardenias, Stephanotis, Roses, and Geraniums, as well as the general treatment of Greenhouse and Stove Plants.—Address, stating full particulars, FLORIST, *Gardeners' Chronicle* Office, W.C.

WANTED, a PROPAGATOR and PLANT GROWER for Market.—Apply at Camden Nursery, Grafton Road, Kentish Town, N.W.

WANTED, a HANDY MAN, to work in a Garden; one that can Paint, Glaze, and do rough Carpentering.—C. W. ALDERSON, Langley Lane, South Lambeth, Surrey, S.W.

WANTED, a steady, respectable, young MAN, quick at Potting and Tying Plants for Market. One who can assist in Glazing and Hot-water Work preferred.—J. TURTLE, East Wickham Nursery, Welling, Kent.

Seed Trade.

WANTED, as IMPROVER, a young Man or Youth, good Penman, quick, and who has some knowledge of the Trade. State age, wages, in what capacity lately employed, &c.—S. FINNEY AND CO., Seed Merchants, Newcastle-upon-Tyne.

Traveller.

F. AND A. SMITH are in WANT of a TRAVELLER. Must be well up in Plants under Glass and Seeds.—The Nurseries, West Dulwich, S.

WANTED, an experienced INVOICE CLERK, for a London Wholesale Seed House.—Address by letter, stating salary, and where last employed, to C. A. S., 26, Maude Road, Camberwell, S.E.

Seed Trade.

WANTED, an experienced CLERK, also a SECOND SHOPMAN, who has a good knowledge of the Seed Trade.—State particulars to Mr. E. P. DIXON, Yorkshire Seed Establishment, Hull.

WANTED, a young Man as CLERK, in a Retail Seed Establishment.—One who has filled a similar situation preferred. Good reference expected.—Address, stating particulars and terms, Mr. BELL, 10 and 11, Exchange Street, Norwich.

WANTED, in a London Wholesale Seed Warehouse, a Man as WAREHOUSEMAN. He must be well up in the Trade, and thoroughly able to Superintend the execution of Orders. State age, experience, &c., by letter only.

WANTED also in above, a respectable young Man (age about 30), as SECOND SHOPMAN. Must have a good knowledge of the Seed Trade, put up Parcels nicely, and Write a good hand. State age, experience, and salary required, by letter only. Preference given to those who have been in the London Trade, for both Vacancies.—ALFRED LEGERTON, Seed Merchant, 5, Aldgate, London, E.

WANT PLACES.—Letters to be Post Paid.

GARDENERS.—THOMAS KENNEDY & Co., Seedsmen, Dumfries, can recommend a few good MEN in WANT of SITUATIONS, and will be glad to answer any inquiries respecting them. No charge.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

WM. CUTBUSH AND SON beg to state that they have always on their Books both HEAD and UNDER GARDENERS, whom they can confidently recommend; and any Nobleman or Gentleman requiring a Gardener, they would wish that all particulars should be stated at once, to save time, and also that a suitable man may be selected.—Highgate Nurseries, London, N.

GARDENER (HEAD).—Age 37, no children; thorough practical knowledge of the profession generally. Good character.—W. J., Pine apple Nursery, Maida Vale, W.

GARDENER (HEAD).—Married, three children; an industrious, sober, and hard-working Man; understands Flower and Kitchen Gardening well. Wages, with cottage, 21*s.* per week.—J. E., Mr. Whome's Nursery, Windsor.

GARDENER (HEAD).—Middle-aged, married, no family; thoroughly understands every branch of the profession. Can undertake the Management of Land and Stock.—M. G., 2, Cobden Terrace, Canterbury Road, Forest Hill, S.E.

GARDENER (HEAD).—Age 29, married; thoroughly understands the Management of Stove and Greenhouse Plants, Ferns, Vines, Peaches, Cucumbers and Melons, and Flower and Kitchen Gardening. Good character from present and previous employers.—J. L., S. Rucker, Esq., West Hill, Wandsworth, Surrey.

GARDENER (HEAD).—Age 33, Scotch; a thorough practical Man, with 13 years' constant experience in Fruit, Flower, and Kitchen Gardening; is desirous of meeting with any Nobleman or Gentleman, for a permanency.—REX, News Agent, 3, North End, Hammersmith Road, W.

GARDENER (HEAD).—Age 30, married; thoroughly understands the Management of Vines, Greenhouses, and Fruit, Flower, and Kitchen Gardening. Has had good practical experience, and four years' good character.—E. R., 20, Smeaton Road, Southfields, Wandsworth, S.W.

GARDENER (HEAD).—Age 38, married; is a first-class man, good scholar, experienced in all departments; is an excellent Landscape Gardener, could act as Estate Bailiff, alone or combined with the above, for which he is well qualified. Liberal salary expected. Ten years' recommendations from good families.—M. D., Mr. Smith, Nurseryman, Worcester.

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GARDENER (HEAD).—Age 31; thorough knowledge of Early and Late Forcing, Fruit, Flowers, and Vegetables, and general routine of a large establishment. Wife could undertake the Management of Laundry or Dairy if required. Can be highly recommended for ability, sobriety, &c.—Address, with terms, W. G., Post Office, Tue Brook, Liverpool.

GARDENER (HEAD).—Age 40, married, no incumbrance; a first-class practical Man, fully competent in every branch of modern Horticulture, especially in Pines, Grapes, and choice Fruits under Glass, Early and Late Forcing, Kitchen Gardening, &c. Has had much experience in Laying-out, and the Decoration of Ornamental Flower Gardens. Five years' good character.—W. H., Post Office, Boundary Road, St. John's Wood, N.W.

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GARDENER (HEAD, WORKING).—A middle-aged Man, who understands the profession. Wife a good Laundress, and can manage a Dairy and Poultry. Good references. No objection to the neighbourhood of London.—J. B. N., Sand Quay, Dartmouth, Devon.

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COMMISSION WANTED, by a Man who Travels all Ireland. Has a first-class Connection amongst Seedsmen, and knows the Seed Trade well. Agricultural Seeds on Commission from a first-class house only. The highest references can be given, and full particulars, by applying to B. C. D., *Gardeners' Chronicle* Office, W.C.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

JAMES BRYSON, INDOOR MANAGER, SALESMAN, and GENERAL PROPAGATOR for Messrs. S. Glendinning & Sons, is open to an engagement. Highest testimonials and references.—Chiswick Nurseries, Turnham Green, W.

Seed Trade.

MANAGER, or HEAD SHOPMAN.—Age 35; thoroughly acquainted with the Trade, also the Nursery Business. No objection to Travel. Highest references.—C. B. W., Messrs. J. Carter & Co., Seed Merchants, High Holborn, W.C.

SHOPMAN, or WAREHOUSEMAN.—Age 35; good experience. Highest testimonials.—T. W. B., Messrs. Thomas Gibbs & Co., corner of Half Moon Street, Piccadilly, W.

Seed Trade.

SHOPMAN, or otherwise.—Age 32; understands Plants. Five years in one of the largest London wholesale houses.—C. C., 2, Albert Cottages, Avenue Road, Hackney Downs, N.

To the Seed Trade.

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ODAMS'S DISSOLVED BONES.
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ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

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Chief Offices—109, Fenchurch Street, London, E.C.

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(ESTABLISHED 1840),
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PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

REPORT and ANALYSIS by DR. A. VOELCKER, Consulting Chemist to the Royal Agricultural Society of England.

"Analytical Laboratory, 11, Salisbury Square, Fleet Street, E.C.,
"London, January 15, 1870.

"SIR,—Enclosed you will find the results of a careful analysis of a sample of your Biphosphated Peruvian Guano. These results speak for themselves. I need, therefore, hardly add anything in commendation of the high fertilising character of this valuable Artificial Manure. The samples examined by me contained only 10 per cent. of moisture, and fully the percentages of soluble and insoluble phosphates which I understand you guarantee to furnish, and was in a fine state of preparation. The more generally this Manure will become known to Agriculturists, the more, I am convinced, will it be appreciated by them.—Believe me, Sir, yours respectfully,

(Signed) "AUGUSTUS VOELCKER.

"The Secretary, REES AND CO. (Limited), 32, King William Street, London, E.C."

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

MR. R. GAINSFORD, AUCTIONEER, AGRICULTURAL and GENERAL VALUER, after many years' practical experience in Nursery, Market Gardening, and Agriculture, begs to offer his services to his Friends and the Public in general, and hopes, by strict attention, to merit their support.—Park Farm, Hanwell.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

MILK WANTED.—In quantities of not less than Thirty Barn Gallons per day, delivered in London by Rail. Terms, payment Weekly.

J. ASHTON, Secretary, Aylesbury Dairy Company (Limited), Bayswater, London, W.

Whittington Nursery, Highgate Hill, N.

TO BE SOLD, by Private Contract, the whole of the NURSERY STOCK on 2¾ acres walled-in ground, including the Span-roof Greenhouses, 50 feet by 13 feet, and other Erections; also Seed Shop and Dwelling-house, with unexpired Lease of 20 years, situated in a very improving neighbourhood, about four miles from the City.

Further particulars may be obtained at the Nursery; and of Mr. JAMES FRASER, Horticultural Valuer and Auctioneer, Maylands Farm, Romford, Essex.

To Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the old-established and well-known NURSERIES, situate about six miles south-west side of Manchester, so long and successfully carried on, comprising Six Greenhouses, Five Ranges of Pits, with Hot and Cold Water, with the whole of the GREENHOUSE PLANTS, &c. These Nurseries are over 20 Acres, and are well stocked with choice EVERGREENS, FOREST and FRUIT TREES, such as are rarely met with. None but Principals need apply.

For further particulars, apply to J. HOCKENHULL, Nurseries, Sale, near Manchester.

NURSERY BUSINESS for SALE, at Taunton, Somerset.—The Grounds comprise about 14 Acres of Land, well filled with general Nursery Stock, and containing Houses heated with hot water, adapted for the growth of various sorts of plants in demand, also Cold Pits, &c., and situated in the County Town of Taunton aforesaid. The Retail Shop and Premises are in a good position in the centre of the town. The greater portion of the land is held on lease. This affords a rare opportunity to persons who are desirous of taking a thoroughly good nursery. The Stock to be taken at a valuation in the usual way. Immediate possession can be had. A large proportion of the purchase money can remain on satisfactory security at a moderate rate of interest.

To view, apply to Mr. AMBROSE DYER, Wembdon Road, Bridgwater; or, to Messrs. REED AND COOK, Solicitors, Bridgwater and Taunton.

SALES BY AUCTION.

SALE THIS DAY and MONDAY NEXT, at HALF-PAST 12.

Consignment of Plants and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 28, and MONDAY, October 30, at half-past 12 o'Clock precisely each day, Specimen CONIFERS, RHODODENDRONS, Variegated and Green HOLLIES, MAPLES, Standard and Pyramid FRUIT TREES; Standard, Dwarf, and Weeping ROSES, and a variety of HARDY TREES and SHRUBS, from Holland; also an importation of first-class Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, GLADIOLI, LILIUMS, and other Bulbs, just arrived from several well-known Dutch Farms.

On view the mornings of Sale, and Catalogues had

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 31, at half-past 12 o'Clock precisely, valuable ORCHIDS, including fine plants of Aerides, Vandas, Cattleyas, Saccolabiums, Oncidiums, Odontoglossums, Dendrobiums, Cymbidiums, Cypripediums, &c.

On view the morning of Sale, and Catalogues had.

Tottenham, N.

IMPORTANT SALE of about 3000 well-established POT ROSES, consisting of the best Tea-Scented and Hybrid Perpetual kinds for Forcing; also a quantity of valuable NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, on the Premises, The Hale Farm Nurseries, Tottenham, N. (adjoining the station, Great Eastern Railway, Cambridge Branch), on MONDAY, October 30, at 11 for 12 o'Clock precisely, by order of Mr. Thos. Ware (who is relinquishing the cultivation of Pot Roses in order to make room for his increasing stock of Perennials and Succulents), about 3500 choice TEA and other ROSES, in 48 to No. 16 pots, consisting principally of Devoniensis, Safrano, Madame Falcot, Mrs. Bosanquet, and the best varieties, strong established plants for Forcing; also a quantity of valuable NURSERY STOCK, comprising 1500 common Laurels, 3 to 5 feet; Euonymus, Green Hollies, Portugal Laurels, Privet, Box, &c.; a large quantity of fine standard and dwarf Roses, embracing the most approved varieties; selected Fruit Trees, a quantity of fine Limes, 6 to 10 feet; Acer Negundo variegata, Thorns, Sycamores, Laburnums, Maples, &c., Ivies, Loniceras, and other hardy Climbers, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

N.B. Frequent trains to South Tottenham from all stations on the Metropolitan Railway.

Sutton, S.

IMPORTANT to NOBLEMEN, GENTLEMEN, NURSERYMEN and OTHERS.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from the Proprietor to SELL by AUCTION, without reserve, on the Premises, The Grange, Sutton, Surrey, three minutes' walk from the Railway Station, on TUESDAY, October 31, at 12 for 1 o'Clock precisely, a large quantity of VALUABLE NURSERY STOCK, consisting of well-grown specimen Coniferæ and Evergreen Shrubs adapted for immediate effect, comprising a large stock of beautiful compact Chinese Arbor-vitæ, 5 to 8 feet; handsome Cupressus macrocarpa, 5 to 8 feet; fine English and Irish Yews, 5 to 9 feet; Pinus, Cedrus Deodara, Wellingtonias, Red Cedars; bushy green Hollies, 7 to 10 feet; Euonymus, Laurustinus, Box, Standard Lilacs, fine Weeping Elms, choice named and hybrid Rhododendrons, handsome specimen Andromeda floribunda, and other miscellaneous Shrubs suitable for borders; also a quantity of fine Standard and Dwarf ROSES, clean-grown FRUIT TREES, comprising Standard Apples, Pears, Plums, Dwarf-trained Peaches and Nectarines, Apples, Plums, and Cherries, Gooseberries and Currants; some Iron Guards, &c.

On view the day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

City Auction Rooms.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY and THURSDAY, October 31 and November 2, at half-past 12 o'Clock precisely each day, a first-class COLLECTION of DUTCH BULBS, 300 fine Standard and Dwarf ROSES of the choicest varieties, HARDY AMERICAN PLANTS, beautifully set with bloom-buds, &c.

On view the morning of Sale. Catalogues may be had at the Rooms, as above; and of the Auctioneers, Leytonstone, E.

Tooting, S.W.

IMPORTANT SALE of EXTRA THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from Mr. R. Parker to SELL by AUCTION, without reserve, on the Premises, Exotic Nursery, Tooting, Surrey, S.W., on WEDNESDAY and THURSDAY, November 1 and 2, at 11 for 12 o'Clock precisely each day, many thousands of first-class extra NURSERY STOCK, remarkably well grown, and in excellent condition for removal, comprising 7000 choice Evergreen and Coniferæ Shrubs in specimen borders, including Picea Nordmanniana, Pinsapo, and nobilis, Thujopsis borealis, Thujas in variety, Pinus of sorts, Cupressus, Wellingtonias, Arbutus, Aucubas, Hollies, Portugal Laurels, &c.; also a large quantity of handsome specimen Coniferæ, beautifully grown; likewise 1700 Spruce Firs, 2 to 4 feet; 1000 Green Hollies, 1500 Lygustrum ovalifolium, 1000 Berberis, 500 Rhododendron pontica, 600 Euonymus, Cotoneaster, bushy green Box, English Yews, Arbor-vitæ, common and Portugal Laurels, fine Standard Acer Negundo variegata, and other Ornamental Trees; 3000 fine Standard and Dwarf Roses; clean grown Pyramidal Fruit Trees, in bearing condition; 400 Currants, 1500 Poplars, Sweet Briars, 1000 Iris fœtida variegata, 2000 Sempervivum of sorts, Tulips, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, Leytonstone, Essex, E.

Gravesend, Kent.

IMPORTANT SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Gravesend Nurseries, Gravesend, Kent, on MONDAY, November 6, at 11 for 12 o'Clock precisely, by order of Mr. Thos. Eves, successor to the late Mr. England Clarke, without reserve, in consequence of a portion of one of the Nurseries being required immediately for Building purposes, a large quantity of VALUABLE NURSERY STOCK, comprising 2500 Green and Variegated Box, 2 to 4 feet; 2000 Laurustinus, 18 inches to 3 feet; 500 Berberis aquifolia, 2½ to 4 feet; 700 Chinese and Siberian Arbor-vitæ, 5 to 6 feet; 2000 bushy Aucubas, 18 inches to 3½ feet; 3000 bushy Laurels; 1500 fine Spruce Firs, 4 to 9 feet; a quantity of handsome specimen Thuja aurea, 3½ to 4½ feet; Hollies, Portugal Laurels, Lilacs, &c.; clean-grown FRUIT TREES, comprising 1500 Standard, Feathered, and Maiden Plums, 250 2-yr. Pears, 250 2-yr. Lord Suffield Apples; 3000 fine STANDARD ORNAMENTAL TREES, consisting of Poplars, Scarlet and common Chestnuts, Laburnums, Elms, Sycamores, Limes, Planes; 600 fine Irish Ivies, in pots, 7 feet; 150 strong Pampas Grass, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

Auction Mart, Tokenhouse Yard, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the Mart, Tokenhouse Yard, E.C., on TUESDAY, November 7, at half-past 12 o'Clock precisely, a first-class COLLECTION of DUTCH BULBS, a choice assortment of 300 fine Standard and Dwarf ROSES, selected HARDY AMERICAN PLANTS, &c.

On view the morning of Sale. Catalogues may be had at the Mart, as above; and of the Auctioneers, Leytonstone, E.

Notice of an Important and Extensive Sale of NURSERY STOCK.

Brox Nurseries, Chertsey, Surrey; within 1½ mile of the Chertsey, Addlestone, and Woking Stations, on the South-Western Railway.

J. WATERER AND SONS have been instructed by Messrs. Gray & Son, in consequence of the Dissolution of Partnership, to SELL by AUCTION, upon the Premises, on MONDAY, October 30, and following days, at 12 o'Clock precisely each day, the whole of the very valuable NURSERY STOCK on 16 acres of Land, consisting of 400 dozen fine Standard and Dwarf Roses, comprising all the most approved varieties, lotted to suit private Buyers and the Trade; upwards of 70,000 choice Conifers, from 6 inches to 5 feet, including Cedrus Deodara, Pinus excelsa, Pinus Laricio, Cedrus atlantica, Cupressus Lawsoniana, Pinus Nordmanniana, Picea nobilis, Wellingtonia gigantea, Pinus austriaca, Araucarias and Thujas; 1000 Acer Negundo, 2 feet to 6 feet; 3000 American, Chinese, and Siberian Arbor-vitæ, from 1 to 6 feet; 1000 Aucuba japonica of sorts, from 1 foot to 2½ feet; 3000 Laburnums, 5 feet to 7 feet; 5000 Acacias, from 5 feet to 7 feet; 2000 Poplars of sorts, 5 feet to 6 feet; 2000 Limes, from 2 feet to 7 feet; 20,000 Green Hollies, 50,000 Seedling ditto, 1000 Variegated ditto; Horse Chestnuts, from 5 feet to 9 feet; 1000 Kalmia latifolia; 3000 Common Yews, from 1 foot to 4 feet; 50,000 Quick of sizes; 10,000 Common Laurels, 10,000 Portugal ditto; 25,000 Rhododendrons, from 1 foot to 2 feet; 18,000 clean grown Standard, Pyramidal, Dwarf, Trained and Maiden Fruit Trees, consisting of Apples, Pears, Peaches, Nectarines, Cherries, and Plums, of the most approved kinds, all of which are true to name; about 150 lots of very choice mixed Shrubs fit for immediate Ornamental Planting, and a great variety of other Stock. The Auctioneers beg to call the special attention of Gentlemen, Nurserymen, and others, to this Stock, the whole being in a most perfect and safe condition for removal.

May be viewed ten days previous to the Sale, and Catalogues had on the Premises, at the principal Inns in the neighbourhood, and of Messrs. WATERER AND SONS, Auctioneers and Valuers, Chertsey, who will forward them on application.

N.B. There is direct railway communication for goods from Chertsey Station to all parts of the United Kingdom.

Re Mr. R. Glendinning, Deceased.

IMPORTANT NOTICE of NINE DAYS' ABSOLUTE CLEARANCE SALE of the entire and very extensive Nursery Stock, Conservatories, Greenhouses, Tools, Trade Erections, valuable Horse, Market Cart, and Complete Plant, on the Premises, Chiswick Nurseries, High Road, Turnham Green, and Chiswick Lane.

MR. J. A. SMITH is instructed by the Executri to SELL by AUCTION, on the Premises, near the South-Western Station, and Toll Gate, Turnham Green, on MONDAY and TUESDAY, October 30 and 31; WEDNESDAY, THURSDAY and FRIDAY, November 1, 2 and 3, and continuing on November 6, 7, 8 and 9, commencing each day at 11 for 12 o'Clock punctually, the extensive and beautifully varied NURSERY STOCK, in fine condition for effective planting after removal, including many prize specimens. The Catalogue will comprise all the Trade Fittings and Erections, 33,298 Evergreen Trees, 21,450 Deciduous or Forest Trees, 2000 Standard and Dwarf Perpetual and other Roses, 7000 Stove and Greenhouse Prize Specimen and other Plants, 30,000 Fruit Trees, 600 Vines, &c., &c., as described in Catalogue.

May be viewed the Thursday, Friday and Saturday prior. Catalogues, showing the arrangement of each day's Sale, to be had at the places of Sale, and of the Auctioneer, 58, King Street East, Hammersmith, W.

The LEASE of CHISWICK LANE NURSERY to be SOLD by PRIVATE TREATY, 4¼ acres, rent £60 nett.

Continuation of Great Nursery Sale.

MR. HENRY WALTERS will CONTINUE the SALE of choice NURSERY STOCK, at the Wetley Rocks Nurseries, on OCTOBER 30 and 31, and NOVEMBER 1 NEXT, when upwards of 50,000 Rhododendrons in variety, a large quantity of Hollies in variety, Acuba elegantissima, English and Irish Yews, and almost every kind of Evergreen; with a choice selection of FRUIT TREES, will be Sold, without reserve, as the owner is declining business.

Catalogues may be had from the Proprietor, Mr. A. B. FOX, The Nurseries, Wetley Rocks, near Leek, on and after the 22d inst.

To Gentlemen, Nurserymen, and Others engaged in PLANTING.

IMPORTANT and EXTENSIVE SALE of NURSERY STOCK.

MR. POYSER will SELL by AUCTION, without reserve, at the Tansley Nurseries, Matlock, Derbyshire, on TUESDAY, November 7, and three following days, at half past 11 o'Clock each day (Mr. J. Smith, Sen., having decided on clearing off a portion of his extensive stock), EVERGREEN and FLOWERING SHRUBS and TREES, suitable for planting; FOREST TREES, RHODODENDRONS, IRISH YEWS, of large and small sizes, in large quantities; also large quantities of the following,—THORN QUICKS, SCOTCH FIR, LARCH, SPRUCE, OAK, ASH, and Mountain ASH. Upwards of 1000 Lots.

Catalogues may be had 10 days prior to Sale, and further information obtained, from Mr. SMITH, Sen.; or from Mr. POYSER, Auctioneer, Wirksworth, Derbyshire.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871.

THE TWENTY-SECOND ROYAL BERKSHIRE ROOT SHOW will be held in Messrs. SUTTONS' NEW LARGE WAREHOUSES, READING, on SATURDAY, November 18, when PRIZES amounting to upwards of SIXTY POUNDS will be awarded for the best Specimen Mangels, Swedes, Turnips, Kohl Rabi, Potatos, &c., including a £10 10s. SILVER CUP for the best 24 Specimens of SUTTONS' CHAMPION SWEDES, with £5, £3, and £2, for the next best Specimens, and a £5 5s. SILVER CUP (offered by Messrs Griffin, Wolverhampton), for the Best Collection of ROOTS.

For complete Particulars, and Form of Entry, apply to
SUTTON AND SONS, Reading, Berks.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

PRIZE LISTS, CERTIFICATES of ENTRY, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on SATURDAY, October 28.

JOHN B. LYTHALL, Secretary.

Offices, 39, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS. will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 4, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A. For an OX or STEER (in any Class).
„ B. For a COW or HEIFER (in any Class).
„ C. For a BEAST in extra Stock.
SHEEP. „ D. For a Pen of three WETHERS.
„ E. For a Pen of three EWES. [Stock.
„ F. For a SINGLE WETHER SHEEP in Extra
PIGS. „ G. For a Pen of three PIGS (in any Class).
„ H. For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information, may be obtained on application to Mr. DAVID PULLEN, Assistant-Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant-Secretary, as above, and should bear outside the words "Smithfield Club Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 28, 1871.

FORTHCOMING MEETINGS.

WEDNESDAY, Nov. 1—Royal Agricultural Society of England—Noon.
MONDAY, — 6 { London Farmers' Club (Mr. C. S. Read, M.P., on The Agricultural Labourer), at the Salisbury Hotel—6 P.M.

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THE guides and mentors of Agricultural Society—whether self-appointed or otherwise—have a puzzling task before them. Not one of them can speak but he is straightway contradicted by another. And it is probably a happy thing that our progress is the result, not of attention to the remonstrances or exhortations of these outside spectators of the general body, but of the conduct individually of each member of the rank and file, who is obedient not to any general officer over all, but to his own perception of what, in his individual interest, it may be best for him to do. We would rather have the car of progress harnessed to what is probably the imperfect knowledge of the man whose insight is thus quickened, than to the wider and perhaps more perfect view of the mere philosopher, who may be only a spectator with no personal interest in the result.

Mr. MECHI'S recommendation to break up our grass lands, and the immediate protest of Mr. JAMES HOWARD and others, are thus happily both of them of little influence or use. The relative profitableness of the two recommendations has to be determined on separate estates and fields by each man for himself, and the resolution of the owner and the tenant rests on something altogether independent of the general view of the national interest which Mr. MECHI takes. Some of the best grass lands in the country are now being broken up, or have been already converted, and have yielded for many years double the rent which the landlord formerly received; much inferior grass land has also been broken up, and much very difficult and laborious clay land has been laid down—simply because the course determined on was the most likely to be profitable in the several instances concerned. Probably those of the many controversial pens, which were set to work by Mr. MECHI'S recent letter on agricultural reform, most nearly told the truth, which took occasion, not so much to protest against any particular recommendation as to declare that any recommendation at all is futile, impotent, impertinent.

That on which the efforts of the mere outsider, as it seems to us, can alone be usefully exerted, is to urge upon all alike the safety and advantage of liberty for the full exercise of this power of individual choice, on which agricultural progress after all depends. The folly of the owner who restricts the efforts of the tenant to extract a profit, is just as great as that of the tenant who would hide the increased fertility which he has created or extracted. Certainly, if it be true that "all men speak well of thee when thou doest well unto thyself," it should be especially true of the landlords as a body, in reference to the well-to-do land-tenant. The prosperity of the latter, based as that is on the increasing fertility, and therefore the increasing value, of the property of the former, is a thing of interest to both alike. And that system of land letting which gives the greatest confidence to the tenant — the greatest liberty to his intelligence, inventiveness, and enterprise, and the largest scope for the investment of his capital, is on both sides to be preferred. The object of the landowner ought to be to enlist the self-interest of his tenant in the maintenance and increase of fertility; and it will be best attained by making him sure of reaping the fruits of his industry and outlay. It will be attained, in the case of a carefully chosen tenant, by giving him the land for a term of years, to do with it, in fact, whatever a farmer or a gardener may think desirable.

We have not yet seen the form of lease to which Lord LEICESTER referred in the capital speech reported in our columns last week, but if drawn in the spirit of the remarks by which his lordship introduced it to his audience at Docking the other day, we will back it for promoting energetic agriculture against all the systems of elaborately calculated tenant-right that ever were devised.

We go entirely with Lord LEICESTER, when he says:—

> "I do not believe that agriculture will ever attract that capital, that skill, and that energy which are required to bring it to perfection until ample security is given in the form of a lease to the occupiers of the farms, and from that lease many unnecessary restrictions which exist in 99 leases out of 100 are omitted. I found that in the lease in use on my estate there were many restrictions—such restrictions as I should not like to be bound by were I a tenant of a farm. I have, therefore, with the assistance of my agent and my tenants, deviated from the beaten track, and endeavoured to frame a lease more in accordance with the spirit of the age, avoiding all interference with the capital of the tenant, removing all clauses that dictate as to the cropping of the soil or as to the sale of the produce, and, as far as I can, giving him security for the capital invested. I have endeavoured to place my tenants in that position which I should like to hold as an occupier of land; and in doing so I am satisfied I have studied my own interest as well."

We shall be delighted to publish Lord LEICESTER'S lease as soon as it is offered to the public, certain that if drawn in the spirit in which it has obviously been conceived it must define the relationship of landlord and tenant, so as to make it a source of profit to both. And then we may be sure that even Mr. MECHI need not be anxious about the national interests. They are best attended to by being left in the separate unfettered hands of the millions of individuals of whom the nation consists.

THE Journal of the Agricultural Society of New South Wales loses no opportunity of advocating the system of JUDGING BY POINTS. Its leading argument, that thereby the judges are forced to make a detailed examination and estimate of quality—which, however, they can hardly fail to make if they do their duty—is no doubt of some weight; and, if the relative shares of the several points to be considered could always be accurately defined, and are always the same in the different examples under examination, no doubt "judging by points" would be unquestionably the best method. In the case of manufactured articles, and even in that of dead produce—in the case, for example, of wines, dairy produce, vegetables, and wool—it would be a great help towards accurate judgment if the judges were beforehand told that a certain number should be allowed for perfection under each of half a dozen different heads, and that the place of any one competing "entry" on the final list should be determined by simply adding up its several merits thus individually ascertained. But we doubt the applicability of any artificial scale to a breeding animal, whose value depends upon its life, and health, and vigour, and its power of begetting offspring of similar merit with its own. And we can easily understand a set of conscientious judges adding up the particular valuations at which they had arrived, and then—knowing by general inspection the order of merit in which the animals ought to be placed—standing aghast at the results of their arithmetic. Nevertheless, we quote the remarks of our contemporary, first upon the fitness of the system to the estimation of quality in the case of wines, and next upon its equal fitness to the judging of live stock:—

> "The awards of the wine judges contained in the present issue of this journal fully confirm the value of the point system, and the wisdom of adhering to it. The judges have carried out the desires of the Council to the letter. No alteration has been made in the form of the award paper, and the points have been filled up for each sample under each head. The judging was conducted with such deliberation as to admit of the greatest particularity in this matter, and the consequence is that the document countersigned by the wine stewards is about the most perfect example of point judging we have to refer to. If the stewards in all the several sections of the great meeting next month are so fortunate as to receive from their several juries award papers so fully filled up as the one now under review—which is scarcely to be expected in all cases—the Society may regard the result as highly satisfactory. The system of judging by points may then be looked upon as pretty firmly established.
>
> "It seems to be supposed by some persons that the point system is introduced only because it is something new. But this is not the case. Its establishment is sought under the conviction that it will introduce more care in the examination and comparison made by the judges. It is introduced in the favour of the exhibitors, who, being at great expense in preparing for these shows, should not have reason to complain of the incompetency of the tribunals to which their exhibits are submitted. If a society of this sort is to succeed, and its success is to be based upon the prize system, too much care cannot be taken to establish the competency of the tribunal before which the competitors are to display their several claims to priority. The impression that prevails amongst the Council is, that the point system of judging tends to insure competence and care and impartiality in the jury, and for that reason it is now being tried.
>
> "It cannot be denied that this mode of judging is more applicable in some of the sections than in others; but any inapplicability observed in it is more evident in the minor than in the major sections. At all events, in horses, cattle, and pigs the judges of last year spoke out boldly in favour of it, as directing them to a nicer comparison of the various animals than they would have otherwise entered into. The award papers were then hastily drawn up, and, in some respects, defective. Since that period the subject has occupied the attention of the stewards and the Council, and a set of qualities has been determined upon, with their relative values attached."

—— THE rates of the previous Monday held good at Mark Lane on Monday last, for dry and good samples of English Wheat—inferior being difficult of sale. Wednesday's trade was inactive, and in some instances prices were somewhat easier.——At the Metropolitan Cattle Market on Monday, prices for beasts were rather better than in the previous week, and a good clearance was effected. Trade in sheep was brisk, at fully the prices of the Monday previous. Beasts at Thursday's market brought rather more money, and sheep maintained their prices; choice calves also realised high rates.——The Seed Market is quiet, but prices are firm.

—— This is the last day on which ENTRIES of LIVE STOCK, to be exhibited at the MIDLAND COUNTIES SHOW in Birmingham, can be received by the secretary. For the Smithfield Club Show, at Islington, November 1 is the last day on which entries can be made.

—— The following note has been addressed to Mr. BAILEY DENTON by Mr. CLUTTERBUCK, of Hinxworth. It will be seen that it bears most satisfactory testimony to the thorough efficiency of those measures of AGRICULTURAL REFORM which were some years ago carried out on that estate under Mr. BAILEY DENTON'S direction. Hinxworth is a capital example of the advantages which have been derived from the drainage and deep cultivation of clay land:—

> "I have just returned from Hinxworth, and after a pretty close investigation, I think you will like to hear the results.
>
> "The crops on my old farm have perfectly astonished me, and our hopes of ultimate success have been realised. The cold (so called), undrainable land, has produced crops both in quality no less than quantity equal, possibly in some instances superior, to those grown upon the free open soils on the estate. I assure you I was delighted with what I saw. Mr. NEWTON, who occupies the farm, is an intelligent person, and now that he has adopted steam ploughing, is perfectly satisfied with his future prospects. I found a double-engine Fowler's plough at work on No. 21 (the Ridgway field), a very clean Bean stubble. Mr. NEWTON very much prefers the direct traction to the roundabout system. On the other farms the tenants also adopt steam ploughing; in fact, an agricultural revolution has been effected in the parish. On every side I heard those principles which we—you not the least — tried to inculcate, admitted to be correct and practicable. Hedges are cut close after harvest, and channels and outfalls are now cleared out as a matter of course,—in fact, you would hardly recognise the place.
>
> "When you have an opportunity, will you mention these facts to JOHN SCOTT, if he be in the employment of your Company. You may add that I look to his energy and zeal in my service as having done much towards making some of the natives think who never thought before. I hope he is well.
>
> "These facts will, I feel sure, give satisfaction to you, and may add one item to the now, no doubt, very numerous instances in which your Company has effected much real good.
>
> "In such a district as that of the low lands of Hinxworth your burnt-clay roads have proved most useful; indeed you may remember that I have often called them the key of the position. How could steam-engines march to their work without the roads? I was surprised to see that the heavy engines had travelled so well."

—— Mr. W. H. SPURGIN thus writes in the *Times* on the so-called "CHARLIER" SYSTEM of HORSE-SHOEING:—

> "I have often noticed in Cheapside, when the asphalte is at all greasy, that scarcely any of the horses trotting over it are able to retain their foothold, and therefore get lamed or strained. I would suggest that all horses should be shod upon the "Charlier" system, as I believe the omnibus horses are in Paris—and they do not slip upon the asphalte.
>
> "The Charlier shoe is much lighter than the ordinary one, being about three-quarters the length and half the width of the latter; it has no calkins, and lets into a groove in the hoof made by means of the Charlier knife. The horse's frog and bars are allowed to grow, so, consequently, the horse has almost the entire foot to support it, instead of only the iron of the ordinary shoe, and sometimes only the toe and heel. The frog acts as a sort of skid, and prevents slipping. I have often heard the remark, 'Well, but the frog being sensitive, the horse will soon be lamed;' but it is not so, as the frog soon becomes as hard as gutta percha, and gives slightly, but causes no pain, and concussion is almost prevented. These shoes last over two months, as my father's horses have been shod on the Charlier system for over two years, and go on an average 20, 30, or 40 miles a day on very hard roads, and they are only shod about every eight or 10 weeks. During the frosty weather, when the snow is on the ground, they do not slip; so I should think that these shoes are admirably adapted for the asphalte. I do not believe that the Charlier system has had a fair trial in England, and I should be very glad to hear of its being tried."

—— We are glad to find, from the annual report of the GOVERNMENT EXPERIMENTAL FARM NEAR MADRAS, to which we shall hereafter direct attention, that our former correspondent, Mr. W. R. ROBERTSON, the manager, is proving himself to be the right man in the right place. The farm has risen into active usefulness since the day when he took charge, when only about one-sixth of the area was under cultivation, and that mostly overgrown with weeds and brushwood. The ample means placed at his disposal, and the encouragement given him to push on the work of improvement, have borne useful fruit. There is now both a model and an experimental farm, the former worked on purely commercial principles, and the latter a scientific or educational institution; and they are about to start five other farms in different parts of the Presidency. The whole of the estate is now under the plough, and each farm is supplied with a complete set of buildings. There are half-a-dozen young men under training as overseers, and it is hoped shortly to start an agricultural college, with a staff of lecturers on agriculture, chemistry, geology, &c. An implement manufactory has been established, in which ploughs, scythes, and other tools are made by native labour for native use. The poor Ryot cannot afford as yet to buy English-made implements, neither are English implements suited to their primitive ways. Seeds are imported from other countries, and after use are distributed gratuitously to the Ryots. Mr. ROBERTSON is evidently growing in influence and usefulness, having the general direction of agricultural matters in the Presidency, and winning high official approval, the Governor in Council having recently spoken in eulogistic terms of the success that had attended his endeavours.

—— Here is a piece of news!—The tenants upon the Sarsden Estate (Oxfordshire) have presented a magnificent timepiece to GEORGE BUSHROD, gamekeeper, on his leaving his post there to fill the same situation on the Gloucester and Tortworth property. Such a present is of rare occurrence, but they felt some token of respect should be shown to a man who, after 20 years' residence at Sarsden, had done all in his power not only to preserve the winged game, but to enable the tenants to enjoy their privilege of coursing the hares, and of destroying the rabbits. He was courteous and ever ready to oblige, and he carries with him the good wishes of the subscribers for success in his new home. The timepiece was supplied by Mr. SIMMS of Chipping Norton, and bears the following inscription on a neat silver plate:—"Presented to GEORGE BUSHROD by the tenantry upon the Sarsden estate, for his straightforward conduct as gamekeeper to the Right Hon. Earl DUCIE. Sarsden, September 1, 1871."

OUR LIVE STOCK.

CATTLE.

THE sale of Colonel Duncombe's Shorthorns took place on Friday, the 20th inst., at Waresley Park. We have already, in our impression of the 14th inst., explained the breeding of the animals composing this herd. The stock was brought out in nice condition, full of hair and quality, not large, but uniform and good. The company was numerous, and the bidding spirited. Forty-eight cows made £40 3*s*. 3*d*. each, 23 bulls £32 each, and the 72 animals disposed of realised an average of £37 10*s*. 4*d*., and a total of £2663 17*s*. The highest price was given for *Sugar Loaf* by CANTAB (23,507), and of the "Countess" tribe—a splendid 2-year-old heifer, with a sweet head, fine quality, and good looks. She was purchased by Mr. W. Dangar, for Australia, at 80 gs. Among the principal purchasers were the following:—*Mulberry*, by VOLUNTEER (19,087), 41 gs., Capt. Reed; *Windsor Lass*, by ROYAL BUTTERFLY 5TH (18,756), 43 gs., H. B. Wright; *Satin*, by VOLUNTEER (19,087), 40 gs., H. B. Wright; *Lavender*, by CONFEDERATE (19,493), 40 gs., W. Trethewy; *Queen of the Mist*, by VOLUNTEER (19,087), 42 gs., W. Ladds; *Girl of the Mist*, by HYPOCRITE (19,996), 63 gs., H. Grant, Australia; *Patty 3d*, by HYPOCRITE (19,996), a very sweet-looking animal, 55 gs., Major Fanning; *Windsor Queen*, by SAILOR BOY (22,825), 40 gs., Captain Reed; *Mirabel*, by SAILOR BOY (22,825), 45 gs., Messrs. Dudding; *Spray*, by SAILOR BOY (22,825), 42 gs., H. B. Wright; *Sarsnet*, by SAILOR BOY (22,825), 49 gs., Earl of Cawdor; *Soft Soap*, by SAILOR BOY (22,825), 47 gs., T. Topham; *Countess of Windsor*, by CANTAB (23,507), 42 gs., Mr. Banks, butcher; *Queen Mab*, by CANTAB (23,507), 51 gs., T. Rose; *Sylph*, by CANTAB (23,507), 40 gs., W. Ladds; *Lily of the Valley*, by CANTAB (23,507), 40 gs., G. Brown; *Mountain Dew*, by CANTAB (23,507), 50 gs., T. Rose: *Sugar Loaf*, by CANTAB (23,507), 80 gs., W. Dangar, Australia; *Sunflower*, by GENERAL WETHERBY (24,026), 41 gs., J. Parker; *Duchess Wetherby*, by GEN. WETHERBY (24,026), 40 gs., S. Beattie, Canada; *Duchess Wetherby 3d*, by GEN. WETHERBY (24,026), 40 gs., Earl of Cawdor; *Maid of the Mist*, 61 gs., T. Rose; GENERAL WETHERBY (24,026), by 2D DUKE OF WETHERBY (21,618), 46 gs., Earl of Cawdor; WINDSOR LAD (27,823), by SAILOR BOY (22,825), 46 gs., G. Armstrong; DUKE OF WETHERBY 3D, by GENERAL WETHERBY (24,026), 47 gs., W. Trethewy; WINDSOR BOY, by GENERAL WETHERBY (24,026), 47 gs., Mr. Hartley; SPLENDOUR, by GENERAL WETHERBY (24,026), 50 gs., G. Hodgkinson, M.P.; FRANCIS 1ST, by GENERAL WETHERBY (24,026), 45 gs., D. M. Brown.

SHEEP.

MR. CORBETT'S descriptions of the heads of Leicester and Lincoln sheep in the Journal of the Bath and West of England Society are puzzling. He tells us that "the Leicester head should be especially bare and free from wool of any strength;" and, "of the other breeds, the improved Lincoln now looks to take after the Leicester head." Previously (p. 115) we are informed that "the Leicester head should be covered with beautiful silky wool;" but, as the ears are included in this statement, and we are also told "there must be a peculiarly delicate tint of *blue* visible just beneath the wool on the head," we assume that in this passage the "wool" really means hair. This information is not only indefinite, but, so far as it conveys any meaning at all, incorrect.

Lincoln and Leicester sheep both possess a natural top-knot, of which, however, it is unfortunately the custom to deprive them when they are trimmed for show. The Lincoln sheep exhibited among the wool-bearing animals at the recent International Exhibition had well developed top-knots, and we have noticed the same feature repeatedly when examining flocks in their native county. The Leicester does not show so definte a top-knot, and occasionally little or none. That he "should be especially bare and free from wool" is, however, a statement from which we entirely dissent. Not only is this untrue with regard to many of our best Leicester flocks, whose "character" should not be ignored, but there are disadvantages connected with such bareness of head, namely, liability to annoyance from flies, and a corresponding tendency to bareness on the "purse" and belly. Has Mr. Corbett taken his types of Lincoln and Leicester heads from the well trimmed and shaven countenances of our Royal and other agricultural meetings then?

INDIAN CORN.

I HAVE received the following interesting communication from Miss S. Cobbett, a daughter of the late Mr. William Cobbett. It is the translation of a paper from a German periodical, and, as I have seen the perfect ripening of the corn in this country (specimens of which, sent to me by Mr. William Cobbett, ex-M.P., were exhibited on Messrs. Sutton's stand at the last Christmas Cattle Show), I think that the time has arrived when we should entertain and discuss the propriety, or rather profit, of growing it. In September, 1870, when I visited Mr. Hope's sewage farm, at Hornchurch, near Romford, I was particularly struck with the growth of a splendid crop of Indian Corn, 8 feet high, the stems nearly as stout as a mopstick, and immense well-developed heads of corn. It struck me as being especially advantageous as a gigantic appropriator and utiliser of an immense supply of sewage. Of course the means for drying and properly securing the crop would be readily found, should it promise to be a remunerative one.

Seeing how greedily a cow devoured a considerable portion of the stalk, I thought it likely that, like the hard and once neglected Bean-stalk, it might, by hot-water softening, be a valuable addition to cattle food. As a green crop, Mr. Hope put its value at a large sum—I think £20 per acre. It appeared to me by the heads I brought home that it was then almost matured and fit for drying; but Mr. Hope will, no doubt, enlighten us on this point. I do not see why it should not suit our climate as well as northern Germany. We should remember that we once thought our climate unsuited for Sugar-Beet; but now chemical analysis has shown to us that our Sugar-Beet contains quite as much saccharine matter as most of the Continental growth.

It will be rather singular, and not very creditable to our sagacity as agriculturists, if the late Mr. Cobbett's persevering conviction about the growth of Indian Corn in this country should prove a correct one.

If we are to utilise very large quantities of sewage on very limited areas, the Maize appears to me to be the very plant to accomplish this object.

The price of Maize here is nearly that of ordinary Barley, and there is an ample market for it always available; and we shall have, as we have in Wheat, a natural protection of nearly 20*s*. per qr. in our favour, arising from the distant places of its growth and the heavy costs of transit. There is also this advantage over an ordinary corn crop, that the spaces (4 feet) between the rows permit of its being made a fallow or clearing crop.

In my early days, when I knew the late Mr. Cobbett, Indian Corn was only known as a sort of curiosity in a corn merchant's shop window, but since the Irish Potato famine, corn-flour and Indian Corn have become "the order of the day," both for feeding men and animals. *J. J. Mechi, Tiptree, October.*

TRANSLATION.

The Maize, like many other of the most valuable productions of Nature, was long in establishing itself as a crop for general field cultivation in Europe; for, being too highly valued by a few, and undervalued by the many, who were not acquainted with its useful properties, it was full a hundred years before people in general became convinced of its worth. Whether the Indian Corn is really a native production of America or not, is matter of doubt; but it is certain that the Europeans found it there upon the discovery of that part of the world, and that it had there already been long cultivated, although it had never been seen in Europe, nor even mentioned by any European author.

The Spaniards being the first who brought it to this hemisphere, it was naturally first cultivated in Spain, where Oviedo, who published a description of it in 1525, states that he has seen fields of it in Andalusia; but although the Spanish discoverers must have seen it growing as a luxuriant crop in America, it does not seem to have made great way even in Spain for many years, since up to the end of the reign of Philip II., in 1598, the cultivation of it appears to have been confined to a few places, and to have been very sparingly carried on. It is said to have been brought from Sicily in the year 1560, to the south of Spain, by some Spaniards, and in that way to have obtained the various names of Spanish, Sicilian, and Turkish corn. In Italy it was but little cultivated until the end of the 16th or the beginning of the 17th century; but it is probable that it was introduced into France at the time of its discovery, since it was already known there during the reign of Henry II., from 1547 to 1559, although it did not obtain any great degree of estimation till the end of the 16th century, after whch time it came into cultivation all over the south of France, and reached as far north as Luneville and Ruffec. It was introduced into Germany during the first half of the 16th century, and, according to Leonard Fuchs, who published an account of it in 1545, it came there from Greece and Asia under the name of Triticum frumentum, but was only cultivated in gardens. The general cultivation of it in the Tyrol followed in the first half of the 18th century, and at present it is the principal crop in the level lands of the Upper and the Lower Inn, as well as in South Tyrol.

There are accounts of this corn in Hungary as early as the first half of the 16th century, and it is possible that from there it went into Turkey, as it is quite certain that it went from Hungary into the south of Russia and into Styria in the 17th century. Carinthia received it early from Italy, but it was later before it became known in Georgia, in Istria, and in Austria, below the Ens. In the milder parts of Franconia, in the middle and lower districts of the Neckar, and in the valleys of the tributaries of that river, it has long been cultivated and greatly esteemed; but that which grows in Baden, in the valleys of the Rhine, in the Grand Duchy of Hesse (with the exception of the province of Starkenburg), in the Electorate of Hesse, in Westphalia, and in Rhenish Prussia, is not so much thought of. In the kingdom, and in the province of Saxony, in many parts of Silesia and of Prussia, and even in Pomerania, the cultivation of Maize has succeeded perfectly, and has been permanently established. In Belgium, also, it is cultivated with great assiduity. It was brought into England as early as 1562 or 1595, but not until of late years has its cultivation been attempted as a field crop.

The Maize belongs to the family of the grasses, and has two kinds of blossom, namely, such as has only anthers, and such as has only pistils, and which have, therefore, no androgynous blossoms, but only either male or female blossoms. The plant has an upright, stout stalk, scored and smooth, and from 3 to even 18 feet high, with long, broad, lancet-formed leaves, at the bottom of which the female spadix come forth, which are covered by a close covering of leaves, out of which the long styles of the pistils project and hang down like a large tassel of silk. The male blossoms form at the end of the stalk, a bunch of many blossomed and separated panicles, and have two chalice valvules, which enclose two blossoms, each of which has two corolla valvules, whilst the female chalice encloses only one blossom, which also has two corolla valvules. The fruit or grain is arched on the outside, yellow, and smooth, and is wedge-shaped towards the inside, where it is attached to the cob.

There is only one species of Maize, but this has undergone many alterations in the course of time with regard to form and size and length of time in ripening, so that at present several varieties are known, which are generally ranked under two principal heads, namely, the American (Zea altissima s. hirsuta), and the European Maize (Zea Mais et præcox, Lin.). The former grows to the height of from 12 to 15 feet high, the latter to only about from 4 to 8 feet.

The warmer the climate the better it suits the Maize, which ripens, nevertheless, and comes to perfection, in countries lying very far north, provided the situation is not cold from being too high, too mountainous, or damp, or one which offers hindrance to the influence of the sun. It is said by Professor Lengerke that on the Mecklenburg coasts of the Baltic it will come to full perfection for many years in succession; that in favourable seasons it will ripen on the highest points of the Eifel; and that in Carinthia the common tall Maize ripens at a height of 2300 feet above the level of the sea; and in the valley of the Rhine, at Trons, even at the height of 5650 feet above it. It is a plant which requires protection, but which does not do well in the shade. The situation which suits it best is one which lies to the south and is protected from the north. As to soil, it succeeds in any that has strength enough, or that will bear manuring. But a sticky, clayey, or damp soil it does not like, and a light soil is more suited to it than a heavy one. It thrives well, nevertheless, in rich, deep and mellow land, and grows with the greatest luxuriance in places where the soil is so much overcharged with vegetable matter as to be too rich for the culture of other plants. At certain times the banks of a river which has overflowed, or the beds of dried up lakes or ponds, are complete hotbeds for the Indian Corn.

Fields in which the preceding crop was Clover, Tobacco, Beans, Hemp, or spring Wheat, are those which are most favourable to the Maize. In some districts it is usual to sow it after spring Wheat in the more northern and colder climates, but in the more southern and warmer districts it is sown in land which has lain fallow; and land which is intended to bear this crop should be ploughed in autumn or winter as deep as possible, and then left to lie through the winter in rough, uneven furrows, in order that the earth may become more mellow and loose, and that the vermin may be destroyed.

In choosing the seed for sowing the roundest and most glossy grains should be taken. They should be separated from the cob by the hand in the spring, taking those which are in the middle of the ear and rejecting those of the ends as being less perfect. Care should also be taken to reject all those which may have a black spot at the germ. In the cultivation of the Maize it is of great importance to select good seed, because, as the plant is a large one, the seeds cannot be sowed very thick, and the failure would therefore be great if many of the seeds failed.

The time for sowing is earlier or later in May, according as the situation is northern or southern, for the earth ought already to have been pretty well warmed, and there should be no longer any danger of night frosts. In the south of Germany it may even be sown by the middle of April. If cultivated merely for the plant itself, to be used as fodder, it may be sown as late as the middle of June; and as a green crop till the end of July.

In Italy, Franch-comté, Burgundy, Hungary, and Styria, it is the custom to sow the Indian Corn broadcast, but in the north of Germany it is sown in rows, which is the preferable way, whether cultivated for green fodder or for the grain. When the corn is up the earth must be repeatedly loosened round it, and each plant must be hilled-up, taking care at the same time to destroy all weeds. The first loosening of the earth takes place when the plants are about a foot high. It is usually performed with a hoe, but it is also sometimes done with a harrow, in which case the earth is left in rough furrows at the time of sowing. Later, when the plants are about a foot high, a second hilling-up is performed with a shovel-plough. This second hilling-up is very necessary, for the Maize has very large roots, and at the top of these bears other roots which are called the crown roots, and which, if well covered with earth, are capable of conveying a great deal of nourishment to the stalk, as well as of affording it great support, and thereby enabling it to resist strong winds.

During growth Maize suffers less than other crops from frequent changes of weather. Continued wet, provided that the water does not actually remain lying in the field, does not damage it, even during flowering time; and as little does it take harm from continual drought. The thing which is most prejudicial is continued cold, and great harm is often done in a field of Maize by a heavy storm of wind. If the plants stand too close together they grow tall and slender, and are easily thrown down and broken by a moderate storm of wind and rain, in which case no attempt must be made to raise them till the leaves are dry, but then there should be no delay. It must be done with the hand, carefully separating the plants from each other, and then, when stood upright, and still holding with the hand, the earth should be pressed tightly to the loosened roots with the foot. Those which may have been broken off by the wind, or which get broken in the raising, are used as fodder, as well as the shoots which come out from the stalk, and which must be pulled off. After fructification the plant should be topped—that is, the male blossom should be cut off; and then, also, should be removed the superfluous ears of corn, it not being advisable to leave more than three upon each plant. These toppings, and the ears which have been pulled off, are used as fodder.

Maize is subject to a disease which produces what are called blight boils. These show themselves mostly on some part of the cob, in the form of a swelling, covered with a shining and silvery white skin, being at first filled with a watery substance, which changes by degrees to a black powder. This disease is said, however, not to be at all detrimental to the corn. Sometimes, also, a kind of blighty, brown, leafy tuft appears, by which the ear, or part of it, is destroyed. At other times a maggot is found inside the ear, which attacks both spindle and corn. The birds are as troublesome when the corn is ripening as they are at sowing time, and every means should be used to frighten them away. One effectual means of doing this is to drive stakes into the ground, and from one to another of these to draw threads, with here and there feathers attached to them. Rats and mice, as well as various insects, such as the mole cricket, or churn-worm, are very destructive to the seed, and these are best destroyed by frequent ploughing or harrowing, by which means the earth is rendered more productive, and the harvest more abundant.

The uses to which Indian Corn is put are numerous, being thought so much of in America that it is much preferred to Wheat, particularly in the United States, where its yearly produce is double that of all the other kinds of corn. It forms in that quarter of the globe a very important part of the sustenance of man and beast, being used for bread, cakes, polenta, puddings, and an infinite number of other dishes, besides being a principal part of the food of oxen, pigs, sheep, poultry, and even horses. When used for bread it requires to be mixed with a portion of Wheat or Rye flour, as alone it would be too brittle, and would not possess sufficient consistency. In Italy it is universally used for polenta, whilst in England very excellent bread, mixed with Wheat flour, has been made of it, as well as puddings and light dishes of many kinds. In some countries grits are made of the grain, which is also used for brewing beer and distilling brandy; indeed, the art of making from it a most intoxicating liquor was already known to the native Americans at the time of the discovery of America by the Spaniards. Besides all that has already been enumerated of the valuable properties of the corn, it may be added that the ears, whilst the grain is stil green and milky, are extremely good to eat, either roasted or boiled, with a little butter and salt rubbed over them. The plant itself has so much sweetness in it that syrup and sugar can be made from the knobs.

Maize is a plant which serves for many things besides food. The stalks, and the cobs when stripped of the grain, are used as firing in places where fuel is scarce. If it is used as green fodder, then it should not be cut too young nor too old. The most appropriate time for cutting it is from the beginning of blossoming time to that at which the grain is set.

In southern Germany the harvest time of the ripe Maize often falls in August, but oftener in September; in the northern districts it falls at the end of September or the beginning of October. The plucking of the ears from the stalk, which is the harvesting, and which is done whilst the plant is standing, can be done by women and children, as can also what is called the stripping. This latter must by no means be delayed after the ears are gathered in, because if they lie longer than 24 hours together they heat, a consequence of which is that the leaves become rotten, and the corn has a bad taste. What is termed stripping is taking the husk off the ear, the husk being a set of thin leaves which are tightly wrapped round it. These leaves make excellent beds, if put loosely into a case.

If the Indian Corn is dried in drying-houses, in an airy corn-loft, or in an oven, then all the leaves are pulled off, and the stump of the cob is also broken away; the ears must not, however, lie more than half a foot thick, and must be constantly turned with a rake. If the ears are to be dried by hanging them up, then the three or four innermost leaves of the husk must be left on the ear, that they may be pulled back, and gathered up together, and by that means several ears tied into a bunch, and then hung up on ropes or on poles to dry.

The grain being perfectly dry it may be shelled, or separated from the cob, the usual time for this being when the hard frosts set in, or in the spring. In districts where the Maize grows in no great abundance, the common way of doing this is to rub the ear of corn upon the back part of an old scythe, or sickle. In the Tyrol they use a kind of large wooden four-sided funnel, which is made fast upon a bench, which projects beyond the funnel on both sides. The corn falls through the funnel into a measure placed beneath. The flail is sometimes used for removing the corn from the cob by threshing, but if done in this way the ears must be heaped up into high heaps that the stroke of the flail may be more rebounding, and may not injure the grains.

The most approved way, however, of separating the corn from the cob is by means of Mariot's machine, which consists of a notched iron plate, which is moved forwards in a vertical direction by means of two dented wheels and a winch, the ears of corn being pressed against this iron plate by a board running parallel to it. For this board Gardeer has substituted a kind of herculean wedge with teeth, which revolves on its axis whilst the ears of corn are cast into the space between it and the iron plate, through a tin tube, into which they are thrown.

TOWN SEWAGE AND THE ENGINEER.

NOTWITHSTANDING the accomplishment of wonders by Chambers of Agriculture and Farmers' Clubs all over the country, in the way of practical papers and discussions thereupon, that energetic secretaries and members are ever discovering or suggesting, there remains one subject not yet thoroughly laid hold of by either, and that is, the really universal application of sewage to the land in an economical way. True, a great deal has been written and said on the subject of sewage irrigation, and much has been done, and is being done, in the way of experiment—thoroughly successful experiment; but united action is required, so as to keep abreast of the investigations of Her Majesty's Rivers Commission, and the almost universal conviction that the sewage of towns must be returned to the land—that, at any rate, it must not be floated into the rivers; and as its natural place of lodgment is the land—its original source, so to put it—that the sooner it is returned to it, in the most economical way, the better for the land, and most especially so for all who live upon it, or on its fruits—and that means every living soul. With few exceptions, thinking men are agreed on this; crotchetty people we leave out of consideration, they have had their innings, and have not shouldered their bats out of the field triumphantly. Some vacillators may have hesitated over the "Système Liernur," but we who believe in cheap water carriage, and have at hand that means of transport, can afford to pass with a "blink" the blandishments thereof, and, though not abstainers, declare our determination to stick to water.

Towns generally, we believe, will gladly hand over their sewage to the land at a very low figure, looking for profits to the cheapened vegetable products brought in return to the inhabitants thereof. Then how is this sewage to be got to the land? What description of land is to be made the recipient thereof? And who is to pay the piper?—really the *piper* in this case, without suspicion of perpetrating a pun! These are the questions for the various agricultural associations to settle, and to enable them to arrive at a settlement we have a suggestion or two to make.

There is extant a splendid Geological Map of the country, and a most valuable Survey Map. The physical conformation of every county is in them beautifully portrayed, and so in part is that of every social beehive. Now, always remembering that the sewage must and ought to be returned to the land, how is it possible, with the aid of these maps, to settle where to take it, and how to do the work most efficiently? Chambers and Clubs have advising chemists—at least, some of them have, and all ought—what is to hinder them from calling in the consulting engineer? Really, nothing. But then owners as well as tenants are interested in this "disposal of sewage" question, and to their councils agricultural associations must invite every landlord. No right-thinking owner of land can possibly refuse to lend an ear, and help; hence we consider that no difficulty whatever will be experienced in getting the aid of the ear and tongue, ay, and pocket also, of every intelligent landowner in the country.

Now for the discussion. We will suppose the Chamber or Club to have settled the preliminaries; then let the county—the owners and tenant-farmers representing it—appoint a deputation to meet the Council of the county town; in joint conclave let them appoint an engineer to report on a plan for the disposal of the sewage, with the assistance of the geological and survey maps,—this official will not require to leave his office to do the preliminary rough work,—and let him report in "so many" months to the united body. But all counties should simultaneously enter on the work, it being understood at starting that all towns in each county would be ready, even if compelled by Act of Parliament, by a certain time, to open their sewage sluices for the benefit of the country; and we sincerely believe that in less than 12 months there would be presented to the general public—to a universally interested world (including speculators)—a plan for disposing of British sewage, the sale of which (that is, the plan in book form) would repay first cost, and leave something over. Whether the charge (first cost) could be made a county one or not—put on the rates—we know not, we think it might; certainly the outlay would prove a profitable one for both owners and occupiers, whether of farms or town dwellings.

Here, maybe, the "careful" reader will inquire, What would the consulting engineer be actually asked to report on? Well, supposing the towns ready to discharge their sewage into the country, carefully conning his maps the engineer would study the levels of supply and demand, the distance between the different points of output and intake, and the cost of uniting them per pipe and distributing engine, &c.; he would divide this cost by the acreage to be supplied, and render his first rough estimate accordingly. Compared with railway engineering, that of sewage transport is as 0 : 1—out of consideration. The main lines of supply being completed, there is little doubt but that many subsidiary streams would soon thereafter have to be sent flowing away into the nooks and corners; and thus every scrap of sewage might be utilised, giving a handsome return to both town and country, and uniting both more firmly in the bonds of profit and expediency,—to take a low standard of unity.

At this point a "halt" might be sounded by the economical dubious, and with every possible show of reason. If, they might say, the benefits contemplated are to be national, should not the nation pay the preliminary expenses, and save all "local" purses? Well, this is only another phase of the question, the result would, in the end, be the same. But perhaps a Government Commission, consisting of two engineers, a landowner, and a thorough agriculturist, with a reporter, could accomplish the work in the same time as, and at less expense than, a multitude of county counsellors. It is for agricultural associations to take this view also into consideration, and to go to Chambers of Commerce as well as to Town Councils, in order to get up an agitation which a not unwilling Government would listen to. But action must be taken; the land and the people cry out for cheap food; and the result of well-directed and continued action in most cases in ordinary life is—success.

Science and common sense have done wonders for commerce and ordinary social life, and they are ready to set to work to accomplish even greater wonders—in making the earth to yield its utmost service in the production of food, fruit, and flowers. And here it may be noted that these suggestions and remarks are thrown together by one who for 20 years has taken a great interest in all relating to the question of sewage utilisation, and who hopes that he may be spared to see every railway in the land made to do extra duty as a road along which will be carried the "waste" of every town, to the enrichment of every field in the occupation of British farmers. *E. C.*

POULTRY KEEPING.

By W. B. TEGETMEIER.

A GREAT amount of paper and print has been expended on the question as to the profitable or unprofitable character of poultry as farming stock. On the one hand it is maintained that fowls do not pay the farmer under any circumstances, and on the other that they yield a very handsome profit. Mr. Mechi, one of their latest advocates, states that they cost no more to produce than a corresponding weight of beef or mutton, and that they sell for double the price per stone. As usual in similar cases, I believe the truth lies between the two extremes. Poultry certainly can be made to pay, and yield the farmer a very satisfactory return. On the other hand, they cannot be reared in very large numbers, and certainly cost more per stone to produce than butcher's meat. The profitable production of poultry may be best considered under four distinct heads, namely, fowls, ducks, geese, and turkeys, as the conditions under which these may be most advantageously kept vary considerably, and those birds which are most profitable in one locality may be the least so in another.

Fowls.—In the following remarks I shall not enter into the consideration of fancy stock, but regard the birds solely as meat-producers. For market purposes a large-sized, hardy breed is required—one that will yield, without trouble or coddling, a good supply of large early chickens. If, on the other hand, eggs are more remunerative than chickens, the size of the fowl is not so great an object. For market-fowls the breed most available in this country is the grey or coloured Dorking; the chickens, however, have the disadvantage of being delicate, and consequently difficult to rear. The large Asiatic breeds, on the contrary, are very hardy, but they are not good as market-fowls, as the skin and fat are apt to be yellow, and the breast not well covered with flesh. By crossing these races a large, useful, hardy fowl may be produced. I do not maintain that half-bred Brahma and Dorking chickens will be equal as first-class market-fowls to pure-bred Sussex or Dorking; but from the larger number that can be reared on an ordinary farmyard, where no very especial care is given to them, they will be found much more profitable. Nothing is easier than to establish such a breed: half-a-dozen Brahma hens, either of the dark or light variety, large and short-legged, may be run with a good short-legged Dorking cock: the chickens will be found exceedingly hardy, and if well fed will grow rapidly. In supplying the market, all the cocks should be killed off, and of the pullets, those kept for stock should be such as have short white legs and plump bodies. These the next season should run with a fresh Dorking cock, not even related to the first, or, if a further cross is thought desirable, with a good Houdan cock. If eggs and chickens are desired for market purposes, the Houdan breed will be found very valuable. The chickens are not so large as those of the cross just recommended, but they are good in quality, mature early, and fatten rapidly, and the hens are very free layers; but, as they rarely sit, a few Brahma hens may be kept to hatch their eggs. It will be found more advantageous to use Brahma or Cochin hens for this purpose, inasmuch as their buff-coloured eggs are easily distinguished from those of the Houdans. The Crèvecœur or black-crested French fowl offers a good cross with either Dorking or Brahma; but their black legs tell somewhat against them in English markets, as there is a prejudice against that colour in the minds of many purchasers. The great drawback against most of the farmyard poultry is the want of size. This may be remedied by keeping better breeds, provided the chickens are well fed from the very first. It cannot be too strongly impressed upon the rearers of market poultry that large-framed birds cannot be hoped for if the chickens are not well fed from the very first day they leave the nest. It is not enough to put the hen and newly-hatched brood under a coop, and throw them some tail Wheat two or three times a-day; such treatment will never make large birds. During the hatching the hen should be left undisturbed; the young chickens should not be removed from under her as they are hatched—but when all are out and quite dry and strong, the hen may be cooped in a dry, sunny spot, and a good feed of corn and soft food given to her. The chickens want no food for many hours after they are hatched, as they are then digesting the yolk of the egg, which constitutes their first food, and acquiring strength to run about. When they begin to peck, they should be fed with soft food and very small grain. Unquestionably, the best soft food is an egg beaten up with a tablespoonful of milk, and heated in the oven, or by the side of the fire, until it sets into a soft custard. Chickens fed or partially fed on this make wonderful progress. Another point often overlooked is the time at which the young chicks are fed. If they are to make large fowls, they must be fed soon after daylight; if, as is too often the case, they are left hungry for three hours early in the morning, they are always stunted in their growth. They must be fed the first thing, and whilst they are young, every two or three hours during the day. A large lump of soft food, such as oat or barley meal, mixed with milk or water, is often put into the hen's coop, and it is thought that it will suffice for the day; in a short time it becomes trodden on and defiled, and it is then no longer wholesome food. The right plan is to give no more soft food than the chickens can eat at once. Over-night, a supply of grits, ground Oats, or small Wheat, may be put down to serve for the first meal in the morning. Many poultry-keepers are partial to keeping the hens with chickens under coops for some weeks. I am decidedly opposed to the plan. By so doing, the natural insect-food that the hen acquires by scratching—the worms, grubs, small seeds, and flies, &c.—are denied to the chicken, and no artificial diet will compensate for the loss. Nor can the hen dust to free herself from vermin, that feed sumptuously on the young chicks at night. It is said that the hen if not cooped will draggle the chickens through the wet grass, and tire them out. A half-starved hen may possibly do so; but, if she is well fed with corn, there is no danger of her so doing. If preferred, she can be shut up until the dew is off the grass; but the finest and heaviest chickens I have ever bred have been those that have been with hens that were never shut up in houses or coops, but being under open sheds, could go out at all hours. If the hens are allowed to scratch for the chicken, the chopped meat and meat-broth which are requisite for them when closely confined, is altogether unnecessary. It is the custom of some game-rearers to hang up in the woods any dead waste animal, to supply maggots for the young pheasants. This is not desirable near a homestead; but any refuse animal remains may be utilised without offence, by allowing them to become thoroughly fly-blown, and then burying them in the fowl-run; the maggots attain their full size underground, and previous to turning into flies work their way instinctively to the surface, furnishing an abundant supply to the young chickens.

There are a few other points in the management of fowls, about which it may be desirable to say a few words. In the first place, let me caution all agriculturists against attempting to employ any artificial incubators: despite of all the care and attention that has been devoted to their construction, not one has been found a success in actual practice, nor do I know of any person who continues to employ them except experimentally. There is no great difficulty in hatching a certain number of the eggs in incubators, but rearing the chickens in any number without hens is hopeless. Whatever may be the case in the warmer climate of Egypt, in the colder latitude of England artificial incubation is a delusion. The keeping of fowls in very large numbers by the establishment of what have been called poultry-farms, has attracted considerable attention of late. It has been argued that if a moderate number of fowls around a homestead can be made, as they unquestionably can, to yield a fair profit, it is only necessary to multiply the number by 10, 20, or 100 to secure a proportionate return. No argument can be more fallacious. Whenever a very large number of fowls is collected together in one place, the ground becomes tainted, and disease invariably breaks out amongst them. Poultry-farms have been tried under almost every possible condition, and have invariably proved failures. If a very large space of rough useless ground can be devoted to them, a considerable number may be kept; but such ground is rare near the farmhouses in England. The reason of the greater number of fowls being reared in France (from whence before the war we were in the habit of importing considerably more than one million of eggs per day) is that, in the place of large farms, the country is divided into very numerous small holdings, and that at each of these a good stock of fowls is maintained. The profit to be made by poultry depends so much on the management and on the demand for fowls in the locality that it cannot be accurately stated. Mr. Mechi, who allows his fowls free range of his cornfields, and regards them as his best friends in the destruction of noxious insects, maintains that they cost no more to rear than a corresponding weight of beef or pork, although they produce double the price per stone in the market. But when it is remembered that, during the whole of their lives, corn, in some form or other, forms the main food of poultry, and that, whilst they are young chickens and during the time they are fattening, their food is of an expensive character, whereas beef and mutton are grown upon grass and roots, we can readily perceive that one costs much more to produce than the other. Moreover, if the growth of poultry be quite as profitable as Mr. Mechi would maintain, how is it that almost every cottager in the kingdom does not follow it more extensively? That poultry, properly tended, will yield a good profit I am fully aware; but that fowls can be reared at the same cost as beef and mutton I must have some very definite accounts to prove.

Turkeys.—In many parts of the kingdom the rearing of turkeys is followed with great advantage, whereas in other localities a turkey in a farmyard is a rarity. There is no doubt that turkeys, properly managed, are amongst the most profitable of live stock, and it is difficult to account for their absence from many places where they could be advantageously reared. Turkeys consume a much larger proportion of green food than fowls, and grow into size almost without cost; when fattened, they realise a high price in the market, and, as they are chiefly in demand in cold weather, can be sent to distant places without risk of loss. Many farmers and farmers' wives, however, dread engaging in the rearing of turkeys, believing them to be exceedingly delicate when young. I believe properly-managed turkeys are not more difficult to rear than common fowls, and I am quite certain they can be raised to much greater profit. My own method of procedure is to follow Nature as far as possible. I make my turkey nests on the ground; or if in a paved house, in large shallow boxes, half-filled with mould that can be damped at intervals. The hens, unless they come off regularly, are lifted off to feed, and then supplied with grain with a liberal hand. When the young ones are hatched, they are left undisturbed under the hen until the next day. No attempt is made to cram them—an absurd practice, which interferes most injuriously with the due digestion of the yolk that is absorbed into the intestines at birth, and constitutes all the food required for 24 or 30 hours after hatching. The first food given them is egg beaten up with an equal bulk of milk, and baked into a soft custard; this is alternated with crumbled bread mixed with milk, to which oatmeal is added in a gradually increasing proportion. Ants' eggs are given, if I can get them; but if not, the custard is continued for a fortnight or three weeks. Quite as important as any other part of the dietary of young turkeys is the supply of green food, and many persons chop up Nettles, Onions, &c., with the meal; but if young turkeys are watched when grazing, it will be observed that they prefer eating bitter herbs belonging to the natural family Compositæ, or compound flowered plants, such as the Dandelion, &c. The common Lettuce belongs to the same tribe, and I have this year fed largely upon it. The greediness with which young turkeys devour this plant is remarkable. At three weeks old a dozen turkey chicks will eat four or five large Lettuces in a day, and they even seem to prefer them when running to seed, at which time there is abundance of milky juice in the plants. At the age of a month, they will begin to peck a few grains of Wheat or Barley: but bread-and-milk and meal should form the staple of their food for the first two or three months of their lives. Most persons say that young turkeys are particularly delicate when they are "shooting the red." This is not to be wondered at, when it is remembered that they are generally put on whole grain, without milk, long before they arrive at that age, and suffer accordingly. Another point of the highest importance in feeding turkeys, or young birds of any kind, is the hour at which they get their first repast. In summer it is daylight at 4 o'clock in the morning. If the birds have their first meal deferred until 6 or 7 o'clock, they have been hungry for two or three hours, and suffer very much. To be successful in rearing these, and any other young birds, they must either be supplied over-night with their first meal, or the poultry maid must be up with the lark. There is no better plan than putting the hen and chicks, for the first month or two, in a closely-wired aviary at night, which is open to the early sun; and Lettuce and a good supply of soft food can be put under a coop, so that the hen cannot eat it, and there will be found but little left an hour after daybreak. If the young turkeys are well fed from the first, they can be fattened by shutting them up for a fortnight or three weeks in any small sheltered court, and feeding them on meal and milk: and they ought to produce from 10*d.* to 1*s.* per lb., live weight, at Christmas. Selling them direct to the consumer, if possible, will be found a far more profitable proceeding than consigning them to a salesman, against whom the producer has not the slightest check.

Ducks are, under certain conditions, amongst the most profitable of farm stock. Aylesbury and its immediate neighbourhood is said to receive upwards of £20,000 yearly in ducklings sent to the London market. The usual mode of managing ducks in country districts is as erroneous as it is possible to conceive. The breed of ducks is usually small, and the broods are not killed until they are six or seven months old. For market purposes there is no breed so profitable as the large white Aylesbury variety. These, if well-fed, begin to lay about Christmas, and the eggs should at once be placed under hens; for this purpose Cochins or Brahmas answer admirably. It need not be insisted on that abundance of food must be supplied to produce eggs in winter. The only mode of feeding ducks satisfactorily is to put the corn in water; a shallow feeding-trough or other vessel should be provided, and the Oats be placed in sufficient water to cover them. This mode of feeding avoids all waste, as every grain is taken out of the water by the birds, and none is trampled under foot. As ducks usually lay at night, the brood stock should be shut up till morning, and the eggs at once removed, and, as soon as practicable, placed under hens. The young hatch on the 28th day, when they should, if the weather is at all cold, be placed in a warm shed with the hen, or, if several broods are hatched at the same time, and the shed is a warm one, they may all be given to one hen. At first they should be fed on oatmeal and milk; afterwards Oats may be given them in water; but if required to fatten and mature rapidly, the Aylesbury rearers feed them almost entirely on meal, boiled with a small proportion of greaves; but the flavour is not as delicate as that of corn-fed birds. If duly cared for, young ducklings should be perfectly feathered, fat, and quite fit for the market in less than two months, and the spring birds often produce 6*s.* or 7*s.* each in the London markets. The ducklings so forced are never allowed access to water, but are kept eating and growing during the whole of their short lives. After 10 or 12 weeks a duckling is only kept to waste, as it then begins to moult its first feathers, becomes poor, and does not gain in weight. Of course the profit on ducks is to be made only by sending them to market at the proper time—namely, when 8 to 10 weeks old. If they are kept till they are seven or eight months old, they are inferior for table purposes, cost more to produce, and yield less to the producer. It is no wonder that, under these circumstances, people say "ducks don't pay."

Geese can only be profitably kept where there is abundance of grazing ground, as they derive the greater part of their nourishment from grass. Under suitable conditions no birds can be more profitable, but under other circumstances they cannot be recommended. Of the three varieties, namely, the pure white or Embden, the grey or Toulouse, and the common saddle-back, the former are to be preferred, as the birds pluck much better and clearer than the common parti-coloured breed. The management of these birds in suitable localities is attended with very little trouble. In the early part of the year the old geese should be well fed with Oats thrown into water, so as to stimulate them to early laying in February, if possible. When she has laid from eight to 15 eggs, the goose remains on the nest and her eggs may then be given to her. When hatched, the goslings require grass, meal slaked with water, or porridge made with oatmeal. After a few days, Oats, in water, may be given, and with the food they find by grazing the young will do well until fattening time, when they should be fed on Oats, in water. In many parts the geese are partially plucked two or three times a year for the sake of the feathers. Nothing can be more injurious than the practice; the small sum obtained for the plumage is much less than the deterioration in the value of the bird. In concluding these remarks upon poultry as farm stock, I would impress on the agriculturist the necessity of commencing with really good stock. On many a farm where nothing is to be seen but the most improved varieties of cattle, sheep, and pigs, there may be observed a number of the most wretched fowls and small worthless ducks and geese, that are hardly worth the food they have consumed. Nothing can be done in the way of profit with such stock. Really good large breeds must be procured, but it must also be remembered that this alone will not do; they must be well fed and well housed, and even these two conditions will be of no avail unless the birds are well tended, and the young stock more especially never allowed to be checked in their growth by hunger. Good breed, good feeding, and good attendance, are the three golden requisites to profitable poultry keeping. *The Bath and West of England Society's Journal.*

HEADS.

By Henry Corbett.

(*Continued from p.* 1370).

The beauty of the horse, and of the head of the horse, have been sung in all ages. Job says, "the glory of his nostril is terrible," and that "he smelleth the battle afar off;" while Virgil repeats the image:—

> "Micat auribus, et tremit artus ;
> Collectumque premens volvit sub naribus ignem."

And this notion of "nostril fire" has been pronounced "the noblest line that ever was written without inspiration." Again, Homer and Shakespeare are never weary of taking the horse as an illustration of courage, vigour, and intelligence. I am inclined to doubt, though, whether the ancients could really have had any correct idea of what a horse's head should be, from the very name which Alexander the Great gave his almost equally renowned charger—Bucephalus, a composition of two Greek words, *bous* and *kephalos*, that is, the head of a bull; just about the worst kind of head a horse could have. We see this repeated, however, at a later period in the animal on which the Knights of the Tourney were mounted, where the same thick, broad bull's head is very commonly the type. But a man in armour was, of course, a great weight, and his war steed probably more of a heavy draught-horse than the stamp upon which we now see a dragoon officer. In fact, the modern charger, the hack, and the hunter, must all show breed; and let me thus endeavour to sketch the head of the well-bred horses, as it should be. The size of this must be in just proportion to the body, as certainly not noticeably small, but of a happy medium in length and breadth. Indeed, a horse's frame should "prove" by his head. The ears should be long, somewhat thin and moderately open, and not set too wide apart, nor pricked up, but the rather with a gentle inclination at the points towards each other. Our cropping forefathers, when they went so much for short pricked ears, could have had but a poor notion of the actual beauty in this feature of the horse, nevertheless, there are writers who go with them; Youatt, amongst others, who says, "the ear should be small and erect." But I cannot agree with him, no do I think that he was any great authority on the horse. In the short, stiff ear you lose that beautiful significant "play," almost as true a reflex of a horse's "thoughts" as the eye itself. There is scarcely a movement of the ears but which has its meaning, and on this our barbarian ancestors improved by cutting them off! A lop-ear is assumed to indicate coarseness of breeding and sourness of temper, but this is not invariably the case. I have seen some thorough-bred horses with lop-ears; and Oulston, who carries his very drooping, is, in other respects, a horse of particularly bloodlike appearance. Nor does the lop always answer for sluggish or bad disposition, as it is more "the look of the thing" after all, and I knew a really good judge who rather fancied a hack with one lop-ear. Beginning, then, with the lengthy, flexible ear, the horse's forehead should be broad, bold, and gradually expanding in width from the pole to between the eyes, which should be set in the head a third of its entire length from the pole. Nothing has a worse effect than the eye of the horse being set up too high in his head. And the eye of the horse is, of course, one of his great beauties, or one of the chief tests of his worth. Dark, bright, and lively, it should be a combination of spirit, sagacity, and gentleness, as, in fact, the eye of a gentleman. Especially to be avoided is the small, sunken pig's eye, which tells of everything that is bad.

To proceed, the face from the forehead should be rather round—not exactly bulging like the Johannas—gradually reaching to a slight dip between the eyes and the nostrils, and then rising and falling again before coming to the nose. This dishing in the face of the high-bred horse is deservedly prized, as the great prominent Roman nose or "Blacklock head" is to be equally avoided. How capitally Leech has transferred all its native ugliness to Jorrocks' Arter-Xerxes! The nostrils should be square and open, with a sharp angular look about them that gives a certain peculiar grandness and force to the face. The saying that "a horse should be able to put his nose into a pint pot" is something very like nonsense; as, indeed, I scarcely ever knew a horse with what a woman would call a sweet, pretty head, to be good for much. It is the expression of the horse's countenance which constitutes his chief charm, and there are many sober-headed horses who, without being handsome, show this all but speaking intelligence in a very remarkable degree. The jowl should have a sweep from the root of the ear, with a good depth and a width of channel, tapering gradually to the muzzle. Plenty of room for the windpipe to play in is a great point, and the best judge of a yearling we have, or certainly a gentleman who generally does the best by his purchases in this way, makes this width of jowl a cardinal point. The lip, another sure sign of blood, should be thin, firm, and of moderate length, as the pendulous thick lip is unsightly in itself, and a tell-tale of bad breeding. A fat or fleshy head cannot, of course, be ornamental either to man or beast, and, as every one has his own fancy, mine is for a longish, lean head on a horse; how many good nags have I known with that serious, almost judicial cast of countenance!

The horse's head must, above that of all other animals, be well set on. The effect of the best head is ruined if this run "throaty" into the neck, while a certain inclination is everything, either in the way of elegance of appearance or comfort in going. I have seen some good race horses with ewe-necks, but that of the hunter or the hack must give nicely in the right direction, if the horse is to be ridden with anything like satisfaction. I have said that the shoulder should answer for action, but I do not know but that you may often get at a key to this from the head. When you see a dull, drowsy-eyed, melancholy-visaged beast, drooping his head in his stall, cannot you tell before you have him out what a slouching, slovenly goer he will prove, ever waiting for a dig of the spur or a crack of the whip? whereas the bright, cheerful-looking horse points his ears, and steps away at once. The head of the heavy draught horse is not so important a point as that of the better bred one. It lacks much of the sensibility of the other, does not taper nor dish so gracefully, and is, in fact, more in conformity with the character of a mere beast of burden. Still great improvement is observable in the heads of our cart-horses, from the time when our old black breed was in the ascendant, and in none more so than amongst the Suffolks. At the time I first met with these in their own county, I was assured that the small, mean pig-eye was "the proper thing;" but since then this has gone very much out of fashion, and the heads of some of the more modern Punches are now handsome enough,—in fact, as some good old Conservatives will have it, a vast deal too pretty for their purpose.

I cannot say that I rank myself amongst the stanch admirers of the Arabian; but in General Dumas' book on the horses of the Sahara, edited by Abd-el-Kader, there is a high-flown description of the head of the Arab, too amusing not to be given:—"The eye of a horse should be turned as if trying to look at its nose, like the eye of a man who squints. Like a beautiful coquette who leers through her veil, his glance towards the corner of the eye pierces through the hair of the forelock, which covers his forehead as with a veil. The ears resemble those of an antelope, startled in the midst of her herd. The forelock is abundant. In the hour of pain mount a slender mare, whose forehead is covered by silky and flowing hair. The nostrils are wide: each of his nostrils resembles the den of a lion; the wind rushes out of it when he is panting." *Bath and West of England Society's Journal.*

(*To be Continued.*)

WATER.

The farmer has no element to deal with so essential to his success in business as water, for its character and action borders on the miraculous. The tissues of plants under the microscope seem sacks of water, and we are told that man and beast are made up of a very small portion indeed of dry goods, and the rest water. Irrigation, draining, and warping are all but verses taken from the general chapter of the deeds done by the agency of water. Water is rolling stock, movable by itself, like something having life; no other heavy body moves so lightly over the ground and from place to place as water; and from the numerous wells that have been dug, as well as from the springs that rise to the surface of their own accord, it is evident that the supply of water underground is nearly as general as that of the air we breathe.

In this country the usual rainfall is about 30 inches in the best cultivated districts, and this amount of rain-water would supply all our wants liberally if we could only prevent it from running to waste. This great weight of water falling from the clouds carries off a great deal of the filth of towns, and indeed of country dwellings as well, and thereby proves itself by far the most powerful scavenger that we possess; but the farmer sees with dismay the pitiless pelting of a stormy day washing the manure out of his farmyard, and carrying it out to the open sea. This text has furnished a never-failing theme in the hands of our great agricultural instructor, Mr. Mechi, at the gatherings of the experts in farming, where the note of warning, slightly varied, runs thus:—"Put your trust in Providence, and keep your *dunghills* dry."

The old school of gardeners, who grew early Melons and Cucumbers on heaps of stable-dung, before the system of heating by hot water was invented, thoroughly understood the various processes through which the dung had to pass, for long litter with a short supply of moisture would first turn of a blue colour and then burn black, and in this way get to be utterly useless either as a fermenting material or for manure; and the great bulk of London dung when it leaves the stables is seldom fit for manure, and the bulky load that a single horse can draw tells clearly that it is only dry litter. A covered manure-heap is certainly not the place for such an article, and many fields near London are marked with manure of this kind.

One of the best designed farm steadings that I have seen was built for Charles Fraser, Esq., of Williamston, in Aberdeenshire, and the manure pit occupied an important place in the design. The architect reckoned the annual rainfall to be about 3 feet, and planned the clearing for the reception of the dung from the stables, byres, and sties accordingly, so that all the manure had simply to be kept level, and thus the whole mass being always too wet to ferment suffered no waste, but, on the contrary, got improved, so that I have seen the silver case of the carter's watch quite black with the atmosphere of the manure-pit, and the excellent crops of Turnips told plainly that the manure-pit had been well managed; and if any zealous improver had offered to erect a shed over the manure-pit at his own cost, the proprietor would have laughed at the idea, for his was not a dungheap by chance, but a manure-pit by design. Brewers' grains or draff is kept sweet in tanks or cisterns under ground for the milk cows of the London cowkeepers, and the dry barley-meal that is usually mixed with it absorbs the water that was added to keep it from souring or fermenting. A tanner's bark pit is quite a case in point, for as long as the bark remains in the tank it is cold enough, because it is saturated, but get it half dry into a pit in the Pine stove, and it will heat violently and decompose, and finally get to fine black dust of no value as a manure, notwithstanding its vegetable origin. The mystery entirely disappears when you come to actual facts and consult the rain gauge; why, then, should any one attempt to complicate a thing that has already attained all the perfection it is capable of receiving, and that by the cheapest and simplest means? for there is seldom any lack of room downwards to hinder a man from getting a pit 3 feet deep, with an inclined plane for the carts to get in and out. I speak here only of the general practice of storing manure, and do not enter upon the specialities of manure tanks or manure sheds, where sheep are fattened on boards and their droppings occupy the ground floor of the apartment, and where chemicals are added to sweeten the air and improve the manure. These are laboratories, and have their accessories in high-priced steam-engines, cast-iron pipes, sulphuric acid, and the like; but I maintain that a wet dung-pit, well managed, will be found the mainstay of the ordinary tenant-farmer. From the earliest records of our race we learn that the planter always watered, until, in the days of the Apostles, it had become an idiom in the language, "Paul may plant, and Apollos may water," &c.; yet after all that has been done and said, and having all the experience of horticulture before his eyes, where should we look for a farmer that would think of watering?—and if I had been silly enough to hint that if it pays a man to water his garden it would do so to water his field, I should have been looked upon as a visionary; but the sewage farms have done this problem effectually, for in what does the supply of dirty water differ from the supply of plenty of dung and plenty of clean water to plants, whether in garden or field, by the perch or by the acre? In in short, we are only on the verge of a magnificent landscape, where the root crops will get justice done them in dry weather by means of watering, so that if the farmer gets enough of sunshine, the crop will be pretty nearly under his control—for tilling, manuring, timely sowing, and the like, are all of the usual kind that he is accustomed to grapple with, and the root crop secured leads to prosperity with the crops that are to come after.

The splendid sheet of water at Blenheim was made by a single dam dyke across the valley by the skill of the eminent landscape gardener, Mr. Brown, better known as "Capability Brown."

I have seen a large tract of land, high and dry, fit for nothing but a sheepwalk, but when a few acres had been converted into a lodge for rainwater, it was no longer the dry farm as formerly, for the threshing-machine was driven by water supplied by the sloping sides of the hill ground; and if Divine Providence sends an annual supply of this essential element equal to a tank 3 feet deep all over the farm, there need be no want of water when it is needed, and there need be no more difficulty in watering Turnip drills than there was in making them. It is enough for my purpose that the sound practice of watering for root crops has got from the garden into the field, and it would be no easy matter to settle what portion of the success attending the crops on sewage farms was due to simple watering, and what to the manure conveyed by water during the trying time of the summer of 1870. The constant watering of all the indoor garden plants with clean water, and the high state of perfection they attain to, leaves no doubt on the minds of the best cultivators that they have to supply water as freely as they supply air and light during the growing season to their plants. The ornamental water in most gardens is useful as a reservoir to supply the wants of the flower garden, and if I could only induce one farmer to build a dam dyke and store a good supply of water, to be used at discretion, as the need arises, I shall not have written in vain. There is no difficulty in convincing a man of the great service that draining is to wet land, but when it is proposed to husband the great blessing of a column of rain-water, 2 or 3 feet deep, which a kind Providence conveys to every field annually, however high or dry the field may be, nobody thinks of tampering with such a task, but if a person has had a little experience of the value of a water-store on high ground, he would not willingly part with such a privilege. We had acres of water above the level of the garden at Alton Towers, and used a hose for watering, and one man and a boy were sufficient to conduct the operation, pouring a continuous stream of water all the day where watering was wanted; and in the worst of cases, where recourse is had to the water-cart, much may be done at lessening the labour. Sir Simon Clarke's water-cart had a valve in the bottom, and was all below the level of the axle-tree, so that when the horse walked into the pond the cart filled in a few minutes without any labour, and I am advocating a system that does not require any fatigue to raise water. The "wheel at the cistern" and "the iron-bound bucket that hung in the well," are not to be named against a mill-dam filled with melted snow, or the rains of a "fill-ditch February," for the water God sends us will be found not only the cheapest but the best. *Alex. Forsyth*, 9, *Islington Square*, *Salford*, *Manchester.*

Home Correspondence.

I am an Agricultural Sinner.—Such, at least, is the opinion of a great many farmers, and some landlords, especially of a certain class, who say or think, "Confound that Mr. Mechi—I wish he was comfortably under the turf, for he is always creating an agricultural disturbance, and won't let agriculture alone. Besides, he is letting people into the secrets of our calling, and we shall have the landowners' eyes opened, and our rents raised." Now, I don't complain of this, because it is a natural feeling; we most of us dislike change (even if it be improvement), and the trouble attending it. How loth we towns-people were to part with our old stage coaches, and did we not protest against the horrible smoke, noise, and nuisance of the locomotive engine? and did we not so oppose the introduction of railways to our towns that they had to be constructed far away? and then, when too late, we repented of our folly, and had, in many cases, to make branch railways to reach the main line. So it will be in agriculture: when the farmer is more free in action, by means of a lease, or better still, a valuation for unexhausted improvements, he will not be afraid to say that he is making a living by his business, and will not be, as is too often the case now, hypocritically croaking about farming being a bad trade, and one to lose money by. I remember in my early days, when my employer (a merchant) had bought an estate in Kent, his principal tenant (a most respectable gentleman), always when he came to pay his rent brought a balance-sheet, showing what loss he was sustaining. Of course the landlord, a sharp-witted merchant, smiled at the innocent deceit and forgave it, but did not believe that any man would be so foolish as to continue a business by which he was always losing money. My agricultural friends ought really not to be angry with me, but the very contrary, for I have laboured long and hard to try to convince landowners that it is to their interest as well as to the tenants' that there should be more freedom of action and more security of tenure for the tenants, and that their land should be drained, their fields open and free from timber, and that there should be good roads and suitable homesteads for men, animals, and the costly but necessary implements of machinery of modern and improved agriculture. No doubt we are just emerging from a primitive and pastoral and almost feudal age, but mighty steam, which has severed so many old attachments, will break us into new and improved agricultural methods (both as landowners and tenants), and we shall soon look back with shame to the present time, when our annual agricultural available produce is less than £4 per acre, and we shall then, no doubt, consider it as unprofitable and degrading to depend upon foreigners for our daily bread, meat, butter, cheese, and eggs, as it would be to rely upon foreign supplies of cotton and woollen manufactures when we have ample means to produce them properly at home, and thus afford increased and ample employment for our industrious millions. Time is getting short with me, but so convinced am I that I am doing useful service to my country, that I shall, even at the risk of offending prejudices in favour of old customs, continue my exertions for improved agriculture and increased food, profit, and employment for our people. *J. J. Mechi*, *Tiptree*, *October.*

Summer and Winter Wheat.—My attention has been called to a paragraph in the *Mark Lane Express* of September 10, about the failure of nursery Wheat (a winter variety) sown in France in the spring of the present year, and, in consequence threatened litigation for disappointment and loss. This state of matters has, in all probability, arisen from not knowing the distinction between summer and winter kinds of this cereal. Linnæus ranks these wheats as distinct species, and facts point to the justness of that great botanist's classification. When in Canada West in 1833, I was shown a piece of ground which had been seeded in spring partly with the summer Wheat of Canada East and partly with winter Wheat from Scotland. On July 7 I found the crop of summer Wheat very promising and coming into ear, while the crop of winter Wheat was only 4 or 5 inches high and without an indication of earing. Since that time I have seen similar effects in different parts of England, where winter Wheat had been sown late in spring. Upon one occasion, by way of experiment, I sowed in this locality both kinds of Wheat on March 15, April 15, and May 15. The March seeding eared in the usual way with both Wheats. In the case of the April seeding the summer Wheat eared well, while only two abortive stalks and ears came forth from the winter Wheat—the rest of the plants being leaves. With the May seeding the summer Wheat eared and ripened, but the winter Wheat continued tufts of grass. On July 18, 1870, I sowed here a variety of Barley, which ripens a week sooner than the Chevalier, contiguous to a variety of summer Wheat named red Tuscany. Both of the cereals blossomed before being cut down by frost, and throughout their growth the Wheat appeared to be more robust and earlier than the Barley. The non-earing of winter Wheat, when sown late in spring, is a property inherent to the species, and is displayed in the climates of Canada West, Britain and France, and of which Wheat growers ought to be aware. *Patrick Shirreff*, *Haddington*, *Oct.* 18.

"Water" on the Brain.—In the *Times*, within the last few days, there has been an attempt to enlighten the public mind on the sewage difficulties. It is now admitted that altogether a wrong course has been followed; and, as the expressions used are rather pointed, I shall quote them in the few remarks I am about to offer. It is stated that "we have been floundering in the mud, and getting out of one stupidity into another;" that "we played the Hercules, and performed in every town—of course at the cost of the Thames or some other stream." These are very humiliating confessions, but they are appropriate; and it is not necessary to quote more from the article in reference to the waters of the rivers being polluted by the course adopted; but the more immediate attention of the public is directed towards a special view of the subject taken by Mr. J. Bailey Denton, that there may be no more "floundering in the mud." Mr. Denton objects to all that has been done—such as passing the sewage "over the surface of the land by the alternation of ridge and furrow"—that it "remains sewage still;" "it does not do its duty, but pollutes the stream into which it is discharged." "On the other hand, the artificial stagnation of sewage water is a most offensive nuisance," and it is "contrary to the order observed by Nature in the growth of plants." "Stagnation," he says also, "depresses, stiffles, and kills vegetation;" "it drowns the surface, and by consequent evaporation it chills the air;" "a wet surface is a cold surface," and it also prevents that aëration of the soil which is so essentially necessary to successful cultivation. These observations and deductions are so obvious, I presume no one will deny them. But nevertheless these are the results of the course which still is advocated by writers for the Press, and by many who are called engineers. However, there is said to be a new ray of hope in a scheme proposed by Mr. Denton for meeting all the difficulties alluded to. He would construct a filtering bed, of a friable and permeable soil, with drains 5 or 6 feet beneath the surface. The water, it is stated, "will re-appear at the aperture of the drain as fit for drinking as the Thames above the lock"—indeed, "fitter," Mr. Denton says. "Five acres, treated in this way and converted into a vast filter, will be sufficient for the sewage of a town with 10,000 inhabitants." As all other plans of utilising sewage by concentration, precipitation, evaporation, &c., are reported to be failures, it will be necessary to make a few observations and to employ a few figures, so that some idea may be formed of the result which may be expected from Mr. Denton's remedy for the difficulty, which is so prominently brought before the public; especially as the data are given—population and the area of the filter. The ordinary water supply of a town is at the rate of from 25 to 30 galls. average for each person per day. Say, 25 galls. for 10,000 persons will amount to 250,000 galls., which, divided by 224, will express the quantity—1116 tons—as the weight of sewage to be filtered through 5 acres of permeable soil, or 223 tons per acre every day, which is equal in quantity to about 2¼ inches of rain in 24 hours. The writer in the *Times* further says:—"It is encouraging to learn that 600 or 700 acres will do for the whole metropolis for a long time to come;" but he alludes to the possible necessity of requiring many more acres. However, this estimate is a fallacy, based on a gross arithmetical blunder. As to the possibility of such a quantity as 223 tons daily soaking through an acre of soil, it must be well known by the most careless observer that during heavy rains a very large portion of it passes off the surface into the gutters, brooks, &c., to the rivers—hence a flood occurs; and this, too, with much less than 2 inches of rainfall in a day. The quantity of water used in towns varies considerably; in some it is less than 25 galls. average per person, in others there is a supply of 50 galls. each. The effects of the flow of sewage into what were originally brooks or rivulets in many towns, may furnish materials for a very highly wrought water-colour illustration. In the meantime it may not be amiss to allude to the fact that an inch of rain on an acre amounts to rather more than 100 tons, and consequently the figures which are used in the published records of the rainfall as decimal fractions, may be read as representing the quantity in tons on the acre: for example, .55 would represent 55 tons; .07 would be 7 tons. This reading I communicated to the Registrar-General some years since, in the expectation that if generally known it would enable persons readily to appreciate statements as to the effects of rainfall on a district. It is presumed sufficient has been said from time to time to show that the difficulties in the way of a satisfactory solution of this question are not yet got rid of. But there are deep-rooted errors in the way: for instance, the water is frequently called the carrier of the manure to the point where it is wanted; it is rather the inseparable bulky companion which is carried along with the manure to its destination, and when there, it is in the way, and is the real cause of all the difficulties complained of. It is, however, an important step towards a cure when the knowledge of the cause of a disease is arrived at. Is it in this case water on the public brain? *Henry Phillips*, *Albion Place*, *Heavitree*, *Exeter*, *October* 11.

Landowners and Agricultural Labourers.—Your correspondent, "A Farmer," judging from the tone of his remarks, must surely imagine that the intention of my former letter on this subject was chiefly to inform the readers of the *Agricultural Gazette* that there was not a man of any honour amongst the farming community. I was not aware that my remarks could convey that impression, and certainly I never for a moment thought so. A word or two of explanation, therefore, may be necessary. First, as to retaining the labourers' sons on an estate. Possibly in some cases the supply would exceed the demand, but they would be very few, I am inclined to believe. It must be borne in mind that whatever might be done to keep these lads in the country, and train them as labourers, it is hardly likely that they would all turn out good workmen, and some would, therefore, go into the towns and cities to seek for employment more suited to their tastes. And, again, when these lads have grown up, and have become efficient workmen, it is probable that they would take the place of those who are not so well up to their work. Just for the time, of course, the supply would exceed the demand, but it is probable that things would soon right themselves, by the surplus workmen finding employment elsewhere. In these places, where the workmen are natives, and where there are plenty of them, of course nothing more can be done; but where the labourers are principally foreigners, it would be for the benefit of the farmer if the labourers' sons could be retained. Now, as to the workmen taking the cottage from the owner, instead of from his master. Most farmers object to it, because, as they candidly admit, they have not so much authority over them unless they are their tenants as well as their servants. I am quite willing to acknowledge, that by the majority of farmers this power would be rightly used; but, on the other hand, there are many who make use of it to gain their own ends, and as it would be unfair to make "fish of one and flesh of another" to remedy the evil it is necessary to take the cottage from all and let them to their workmen direct. But a higher and better reason for the proposal is, that if it was carried out the labourerer would be in a better social position; he would feel himself more independent, and I believe the result would be, that he would become a better workman. Anything that can be done to raise the condition of the agricultural labourer will, I am firmly convinced, bring forth good fruits, which will not only benefit the labourer, but also his master, the tenant-farmer. Certainly the suggestions contained in my former letter were made with a view to improve the labourer's condition rather than of showing up the injustice of some tenant-farmers, although as an additional argument, I was obliged to refer to some instances of the latter, which I have either known or heard of. *E. Minshall*, *Estate Office*, *Aston*, *Preston Brook.*

Steam Cultivation: Mr. Smith on the Contract System.—Farmers who fritter their money away in having a few acres done yearly by the contractor, are like children in a fair, scattering their money for the showman to pick up; and as they have done before they will again show my figures to the contractors as a badge against their high prices charged for the work done. Mr. Robinson (a contractor) gave, in a paper read last autumn before the Wisbech Chamber of Agriculture, some good and sufficient reasons why contractors must charge a high price for the work done. I can now give some evidence in support of his reasons. He told the farmers plainly that they must look to an increased produce for their means of payment. My heavy land produces yearly full 12 bush. of corn per acre more than it did under horse culture, and the dead fallow system. To get this I am obliged to get all my work (that is, steam-power work) done in the autumn, and so must every farmer in England, if England's 800,000 acres of dead fallow are to be made to grow corn yearly. To give all the work in the autumn, the contractor's season must be a short one. This year we had a late harvest. October 10 was the earliest moment I could start my steam tackle. It is possible that a contractor might have found work a little earlier; but we must remember that if the land is to be all in crop, these crops must be harvested. It will never do to keep land idle for the fun of finding the contractor land to practise upon. If I fix the middle of August as the contractor's entering point on an average of years, he will get 16 days in

August, 30 in September, and 31 in October, and that will end his season, for the dirty dark days in November will never do for him. In this way he gets 77 days. From this must be deducted 11 Sundays. This fixes him at 66 working days. What is his average daily earnings? is the next question. Here is some evidence upon the point. On September 20, when on my field, at about 10 A.M., I heard, I thought, an engine on the canal in distress. Half an hour later I heard it again, and from its heavy beat I thought it was in great distress: therefore I jumped to the conclusion that it had got stuck deeply in the mud; so I looked out to see what was up, when I found under the canal hedge a double engine set of Fowler's big tackle just starting on a 17-acre field Bean stubble. This field, although in another parish, joined my own land; so I jumped over the hedge to see the big things that had come to pay me a visit. Yes, and I took stock of them. The implement was a thoroughbred "Smith," not only in turning at land's-end, but in construction upon all points; even the means of guiding was copied from the Woolston man's combined machine. I had a ride upon it as ploughman, so I know all about it. The engines were 14-horse power each, and when starting the implement on a run of 250 yards the pressure gauge showed at 110 lb.; yet, after the run it stood at 80 lb.; therefore a run of 250 yards took 30 lb. of steam pressure out of the engine, and this in the face of a thundering fire in a big fire-box. This not only proves the need of these two 14-horse engines to work one big implement—the one to do the work while the other takes wind, or rather steam—but it also proves to my Lord Dunmore and others who advocate "road steamers" working upon the land, that a single engine cannot work a big implement even without having to take its own 10 ton weight over the land. This engine when standing still worked all its working power away while pulling a big implement 250 yards. Now let us look to the work done by these two big engines. They, working all their time (meal time for men included, there being an extra man sent with this set, to allow of a change of men to take their meals in turn), finished the 17 acres once over at 9 A.M. on Sept. 21, and then shifted to another field on the same farm, 9 acres, and did it twice over by dusk that evening, and then set themselves ready to start on to another job the next morning. I will put £1 an acre on the work done twice over, and 14*s.* an acre for the work done once over. In this way we get a total earning for two days' work of £20 18*s.*, or an average of £10 9*s.* per day. Multiply the contractor's 66 days for his season by this, and we fix his total earnings at £693. From this we must deduct 20 per cent. for wet days and breakages (the set, a new one, that I am remarking upon has lost all this in time already this season), which brings the total down to £554 8*s.* The four men must have £1 per day between them for 66 days. The cost of tackle is £1800; upon this we must allow 20 per cent. for interest of money, wear and tear, and depreciation, £360. These, together, make a total of £426 to be deducted from the £554 8*s.*, which leaves a balance of £128 to keep and pay the contractor for hunting about the country to keep his £1800 from slipping through his fingers. This is capital evidence in support of Mr. Robinson's, showing that the farmer must pay a high price for contract work. Taking the above as our guide, what will be the price of the work to the farmer? My neighbour's cost, £20 18*s.* for 26 acres, gives an average of 16*s.* 1*d.* per acre. To this must be added coal, quite 2*s.* per acre; a man, with a horse and cart, drawing coal from engine to engine, 4*d.* an acre, and water carting will cost 4*d.* an acre; therefore the total cost stands at 18*s.* 9*d.* My 4*s.* 7½*d.* an acre contrasts strongly against this; yet the contractor's balance of £128 a-year shows that the farmer has no chance in using it to cut down contractors' prices. Mr. Robinson is right; the contractor must have a high price per acre. England never will be farmed upon the contract plan, let the bigwigs try it on as they may. *William Smith, Woolston, Bletchley Station, Bucks, Oct.* 19.

Imperfect Tillage—Worn-down Implements—False Economy—Does it Pay?—Certainly not, especially on our tenacious, adhesive, tile-earth clays, where small horses are of little use, and where big ones answer all the better for having well-conditioned implements. If we expect to have, on such soils, friable moulds and well deposited seed, the drill coulter and harrow teeth must be sharp. We are now drilling winter Beans on a Wheat stubble, which has been well scarified or broadshared, the weeds and rubbish harrowed together and burned, manure carefully spread, and the land deeply ploughed with a pair of large strong horses. We had some doubt whether the furrow-slices could be sufficiently divided or crumbled, but our sharp steel harrows, used two or three times before and after drilling, have made a good job of it, and the drill coulters, being new and sharp, have cut through the furrow-slice, and thus deposited deeply, which I consider most important for Beans; they, like the Couch-grass, or Twitch, are sure to push their way to the surface, and send down their hard powerful tap-root into the dense subsoil. The roots of winter Beans should be thus well protected against the severity of winter. I expect that a good deal of land will next year be in a mess as to weeds, for in many cases there is no broadsharing, harrowing, and cleaning, but the whole is ploughed in to take its chance—a rather poor one for the delicate Wheat fibres on a dirty Bean stubble. Want of drainage on stiff clays will be felt this winter, for the heavy rainfall of September (5 inches, or 500 tons per acre) has well soddened the subsoil. There are many matters on our farms that are neglected because they are less obviously pressing than certain other things that dare not be omitted. Roads, fences, and implements, are too commonly neglected, and the "stitch in time" not having been taken, the nine stitches have not been saved. Dilapidations, in the matter of fences, roads, implements, and buildings, are much too common and unprofitable; and, unless a special duty is imposed on some individual, what is everybody's business becomes nobody's. Landowners, at the termination of a 14 years' lease, know something of these matters, and so do incoming tenants. It is no uncommon event to see implements half buried in mud, or eaten by rust, lying exposed, or grown over with grass or other vegetation. Landowners should consider that costly modern implements and machines require sufficient shelter, and the tenant should not object to pay a reasonable sum for the accommodation thus afforded. *J. J. Mechi, Oct.* 19.

Reclamation of Waste Lands.—In no part of the United Kingdom is there more scope for adding to the agricultural resources of the country than in that of North Lancashire; and in no part can there, I think, be more need for it, as I purpose shortly to show. With our vast national increase of population, the question of how to provide for this increase must at no distant date form a difficult problem for the Legislature to deal with, and it would be well to take "time by the forelock," ere the wants of the population become too pressing for instant action to supply. During the past 20 years the borough of Barrow-in-Furness has risen from an isolated fishing village of some 200 inhabitants to a thriving shipping port and manufacturing town, numbering 20,000 inhabitants; and there are now works in process of erection which it is computed will, on completion, add another 10,000 persons in the course of the year 1872. Added to this, several small villages in the immediate neighbourhood have, by the introduction of blast furnaces, steel works, opening out of iron-ore mines, &c., more than doubled their populations. At an ordinary computation, I should say that the past 10 years has added not less than 25,000 persons to the population of that once obscure part of England, known as North Lonsdale. The primary cause of this access of manufacturing industry to the iron trade of England is his Grace the Duke of Devonshire, assisted by the mayor of Barrow, James Ramsden, Esq., by whom all the details of this great work have been planned and carried out. The question—a vital one—arises, How are the wants of this large accession of mouths to feed to be met? Twenty years ago, the district population was some 10,000 or 15,000 souls. The year 1872 will probably see it from 50,000 to 60,000. Already the pressure is much felt, and farm produce is at an exorbitant price. What must it soon become? It seems scarcely possible of belief that whilst our local rulers are straining every nerve to erect new and gigantic works—some of which employ their thousands of men each—thousands upon thousands of acres of land are lying in close proximity to us totally unproductive,—useless, in every sense of the term. First, let us begin with the estuary of the Duddon Sands. The Furness and Whitehaven Railway crosses it at Foxfield, and some thousands of acres above the viaduct might be reclaimed at a trifling cost. A few years ago the company applied to Parliament, and obtained powers to cross the estuary of the Duddon a few miles lower down, but have since abandoned the idea. This would have given an immense area to the agricultural interest. We next come to Morecambe Bay. By a great triumph of engineering skill, the late John Brogden, Esq. (father of the present member for Wednesbury), constructed a viaduct across it a little to the eastward of Ulverston. Here, again, are thousands of acres lying waste, and requiring but a simple canal for the river Leven to transform this waste of sands into smiling farms on its banks. Farther to the eastward again, is another portion of Morecambe Bay, which the Ulverston and Lancaster Railway intersects, known as the River Kent. Here Mr. Brogden, M.P., has reclaimed a portion of the sands, with excellent results; but there is yet much more to be reclaimed. Lastly, I come to a gigantic project, the success of which was never doubted by the late Mr. Brogden; but its renunciation by him made many wiseacres shake their sage heads, as they did also when he propounded the feasibility of crossing Morecambe Bay at its present point, a distance of half a mile, on iron girders. The work was pronounced the chimera of a disordered brain, yet it has stood intact the storms and tides of 14 years. Mr. Brogden, foreseeing the influx of population which the discovery of rich iron mines and the erection of iron works in the district would bring, wished to carry the railway from Piel Island to Morecambe, about 10 miles lower down the bay than the course of the present railway, and was fully impressed with its practicability; and also that the miles and miles of sand which might thus have been brought into culture would have returned a princely outlay for the work. There is yet ample scope for it, and the queries how to provide for our wants cannot much longer be burked. Surely this is a question which might be made a national one, and which our rulers would do well to inquire into, seeing that the outlay required might be made so productive. *J. R. R.*

Societies.

SOCIAL SCIENCE CONGRESS, LEEDS.

The Utilisation of Sewage.—Mr. C. Rawson, of the Native Guano Company, read a paper on the "A B C" process. He said that in consequence of the unsuitable works in which their experiments had been carried on at Leamington, and from other unfavourable causes, he was quite prepared to admit that many of the objections which had been made to the process had some foundation in fact, although he must deny many of the theories or hypotheses that had been drawn from them. Only three schemes had been proposed for dealing with the sewage of towns—irrigation, filtration, and precipitation by chemical means, and circumstances might occur in which either would be preferred in practice, while in some instances their combination might be more effective, and lead to improvements in agriculture hitherto ignored. He claimed that by the "A B C" process all the suspended and from 60 to 75 per cent. of the soluble matter can be removed from the sewage, even by the ordinary working of the process. Still greater results might be obtained by further treatment, but even if some portions of the manure did remain in the effluent water, he believed these might be utilised by putting it over the land, and thus all waste must be avoided. With regard to irrigation, he might be allowed to point out certain difficulties that must necessarily occur, and were inseparable from the adoption of that system. At least one acre of land was required to utilise the sewage of 100 adults annually—according to many eminent authorities; but scores of towns could not secure the requisite land for their purposes. Again, neither landlords nor farmers had shown any very strong desire to receive this sewage on their lands; and land must generally be acquired by town authorities by means of Acts of Parliament. His object, however, was not to attack irrigation or any other process, but merely to explain their own; but he could not pass on without remarking the probable injury to the adjacent land by its propinquity to a sewage farm; and if the feeling of the richer class of the community was against such a course, what right had we to force on our poorer brethren a process which might result in serious illness to their families from the typhoid and other forms of disease from miasmatic exhalations? Not only, however, did he admit, but he proudly acknowledged, that magnificent crops had been obtained by a judicious use of sewage through irrigation. The constituents of sewage contained the finest known manure substances, and on this fact rested the success of the "A B C" process. These were the elements they claimed to retain in the native guano; and their only difference with the most enthusiastic irrigationist was how to give the land the benefit of these valuable constituents in the most remunerative and least objectionable way. The irrigationist would pour it on the land in what he thought a wasteful quantity, whilst the "A B C" process would convert the same sewage into a dry, portable, and effective manure. The name of the "A B C" process has been derived from the initials of the chief ingredients used: Alumina, Blood, Clay, and Charcoal. We have for a considerable time substituted for the expensive ammonia-alum, formerly used, a crude sulphate of alumina, which is just as effective, and much more economical. The proportions in which these ingredients are employed are adapted carefully to the nature of the sewage under treatment, both as regards quality and quantity; the latter conditions not only vary in comparing the sewage of one town with that of another, but also in respect of the changes which hourly occur during the day, arising from local causes, also equally varying. Thus, in the manufacturing districts, the condition of the sewage is subject to sudden and violent fluctuations, arising from the waste liquors of all kinds of processes, while in towns where few manufactures are carried on, domestic causes operate similarly, though in a less degree. It will be apparent, therefore, that the treatment of sewage by chemical precipitation demands a very careful study of all such circumstances. Experience is required to secure complete success; but as these changes in the sewage are exceedingly regular, both as to time and condition, it is not difficult, by a little attention and forethought, to be fully prepared to meet them with success. Our process has encountered much opposition, and I shall therefore conclude my remarks by giving some particulars as to results. The manure has been submitted to two tests—that of chemical analysis, and that of actual use by the agriculturists. From the former it meets with little favour, while I have scores of letters from the latter giving unqualified approbation of the native guano used in the garden, the field, and the orchard. Our second season (last spring) was a safe indication as to what our future course will be. The demand by those alone who had previously used our guano far exceeded all our powers of supply, and our agents did not solicit new orders, simply because we could not meet those of our former customers.

The price of our native guano has been, and still is, £3 10*s*. per ton at the works, and we have already disposed of upwards of 30,000 bags at that price, with this result—that in almost every case farmers who have made a trial of it in small quantities have eagerly sought for larger supplies. From the unfortunate defects of the Leamington works, I am not surprised at some of the unfavourable conclusions drawn by the Rivers Pollution Commissioners during their two visits to Leamington; nor that they, from circumstances with which they were unacquainted, should have felt suspicious of what they saw there. They were, however, quite unwarranted, I maintain, in publishing such an attack on this company without more thorough and patient investigation. Their strictures, however, were not thrown away; and I hope their future inquiries into our process will be conducted in a more considerate spirit, and without reference to the past. I would particularly mention that, in suitable works, not the slightest nuisance arises from the process. Another important feature in the process is, that in the "A B C" works the excreta collected from such receptacles as Moule's, Goux's, or other similar system, may be turned into native guano by mixture with our deposited mud, with probably but a slight addition of "A B C" mixture. The contents are at once deodorised, and can be dried without nuisance. It is the intention of the company to establish in some central town, in the neighbourhood of which the chemicals we require can be cheaply obtained, and where there is an abundance of suitable clay, a manufactory of dry "A B C" mixture. This will relieve towns from the necessity of having a chemical staff. Another important consideration connected with our "A B C" process is the comparative cheapness at which our works can be erected. Heavy expenses must naturally be incurred in preparing land for irrigation. I may mention, as a comparison, that Birmingham would have to incur an outlay of £1,200,000, whilst our "A B C" works would not cost above £50,000. Blackburn is spending £185,000 on her irrigation farm, while we would have treated her sewage at an expense of £15,000. I might adduce other instances, but think I have said enough to show that, in this respect also, our process has great advantages over other systems. The last argument I have to advance in favour of the "A B C" process is certainly not the least conclusive one. It is successful in a commercial point of view, and pays! Even in the south of England, where coals and chemicals are far more expensive than in the north, our native guano costs us only 30*s*. to 35*s*. per ton, leaving a clear profit of £2 per ton. Now, I will only instance the case of one city, to show what a profit of £2 per ton really means. The metropolis daily pours into the Thames 100 millions of gallons, or 448,740 tons of sewage. From experiments we have made with this sewage, we estimate that the "A B C" process would convert this into over 1000 tons of dry manure, worth, annually, at £3 10*s*. per ton, the enormous sum, for the metropolis alone, of £1,282,500. I cannot conclude this paper without mentioning to the section that the authorities of Leeds resolved some months ago to make an experimental trial of our "A B C" process. Their works are hardly yet completed, and certainly not yet in such neat condition as we hope shortly to see them; still, they will afford any gentleman interested in the solution of the great sewage question an opportunity of seeing our process in actual operation. We shall welcome any such visitor, and give fuller explanations than are possible here. I trust that these trial works will be found such a success by the Town Council that all their daily 11,000,000 galls. of sewage may shortly be treated by "A B C" to their profit and ours. The works are situated at Knostrop, to the south-east of the town, and adjacent to the river Aire. On the left of the entrance is a chimney, 90 feet high, which takes the products of combustion of two boilers having a nominal power of thirty horses each, and also the steam and gases from four drying-sheds. Each of these sheds has an area of about 1000 square feet; they are heated by steam, which passes below into floors, the mud being placed on these in a thick liquid state. Over the surface of these floors a current of hot air is drawn from the boiler flues, escaping at the further end of each shed by flues leading to the chimney. It will hence be seen that the principle of drying involves the double mode of applying heat both above and below the mud. For the purpose of increasing this upper drying, a cover is placed at a small height above the mud, removable when it is dry, and replaced when fresh mud has been spread on the floor. The effect of the cover is to increase the draught, and, at the same time it prevents waste of heat. The remainder of the arrangements in regard to machinery, "A B C" pits, and the agitating or centre pit, &c., are precisely similar to the general plans I have already described. The settling-tank, which is at the south-east of the works, has a length of 170 feet, is 24 feet in width, and about 12 feet in depth; but till we have had some experience in working the Leeds sewage, it is impossible to say the exact number of gallons of sewage we shall be able to treat in the twenty-four hours. In conclusion, I claim that our "A B C" process is pre-eminently suited for treating and utilising the sewage of large towns. The effluent water can be made clear, inodorous, and almost chemically pure; the process can be carried on free from nuisance, and the profits are large and certain. I feel confident that these will be admitted facts as soon as the works at Leeds, Bolton, and Crossness are in working order.

Discussion.

Dr. Hardwicke read a paper by Dr. Robert Elliott, Carlisle, upon "What are the best means of utilising sewage?"—The only practical system seemed to be an elaboration and extension of the plan of Mr. Alex. Macdougall, Penrith, which had now been in operation for upwards of 12 years at Carlisle—viz., of immediately carrying off all excreta by an underground system of drainage, with arrangements for ventilation into furnace chimneys, and which at some suitable place or places has its liquid sewage, free from putrefaction, pumped up by steam power, and suitably mingled with carbolic acid, applied in rotation by means of long movable channels or troughs to the adjacent fields, in which instance the irrigation has proved highly successful.

Mr. Symington read a paper descriptive of the method of dealing with sewage proposed by Mr. Strang, of Glasgow. As an example of the working of this method, excreta would be intercepted from the soil-pipe of each house or block of houses by the patent sewage filter, which forms the essential and distinguishing feature of Mr. Strang's scheme.

Mr. W. T. M'Gowen, town clerk of Bradford, read a paper holding the irrigation system to be impracticable for large manufacturing towns, if they are to undertake the whole operation themselves.

Dr. F. J. Mouatt said he had spent 30 years of his life in India, and approved of the dry-earth system, known as "Moule's."

Mr. W. H. Michael, London, said that the gentleman who read the first paper had said that a sewage irrigation farm was a bog. He could never have been at a good sewage irrigation farm. The same gentleman had said it would be detrimental to health. There, again, he had never been at a sewage irrigation farm properly conducted. The solid constituents of manure which one gentleman proposed to remove and economise were the worthless part of it, and the first thing in dealing with irrigation was to separate the whole of the solid constituents. Any process which might be proposed that tended only to separate the solid constituents of sewage, must be put aside as utterly worthless. The whole value of the manure lay in the fluid portion. Having been engaged for many years in seeing irrigation at work, he thought it did promise not only to remove any sort of nuisance, but to be extremely beneficial in producing food —because to talk only of Rye-grass being produced was another stupid absurdity.

Mr. Conyers Morell described a plan for dealing with refuse invented by himself, and undertook to fix closets in the town and remove the refuse for nothing.

Mr. R. Rawlinson, C.B., said that for modern communities, gathered together in towns, there were several things that had to be done to secure the public health. The question had to be discussed, for instance, how they were to remove the slops from the houses. Sewers and drains were necessary to dry the subsoil. There were a great many places where a vast proportion of the mortality was due to the damp and wet subsoil, and therefore there must be sewers and drains for that purpose. The sewers laid out upon a proper foundation, there was no cost of conveyance. Water found its own legs, and would flow to any distance that we chose to carry our commodity. It was said that the circumstances under which effete matter might pass along the drains corrupted the atmosphere of the houses, but if that were so, the drains did so very unnecessarily. No drain ought to communicate directly with any house; it ought to be cut off by a ventilating shaft opening up to the fresh air, so that any gas generated should not pass into the dwelling-house. The dry earth system might do for detached dwellings, for large establishments, for gaols, for barracks, for any place where persons were entirely under command, where there was no objection to bear the expense of the separate manipulation, and where the gardeners could be found. He took it for granted that the excreta must be removed, either in the dry state or in the wet state. If in the dry state, it was removed necessarily by mechanical means, or by human agency. If in the wet state, having made sewers and drains under proper conditions, and properly ventilated, the excreta removed itself to any point that was desirable, and, where necessary, they might call steam-power into use under such a system. With regard to irrigation, he would not go into the question further than to say that sewage might be applied to land with perfect success without causing the smallest nuisance, and that probably, according to circumstances, there would be a great income. The conclusions that he was brought to were these—that no human means, so far as we at present know, of treating sewage by chemicals did more than remove one-eighth of the salts of sewage from the effluent water; and that the brightest and best clarified sewage, nearly as bright as the water in the bottle before him, was then in the very best possible condition to be put upon the land for the purposes of irrigation. Mr. Blackburn, who had a sewage farm at Aldershot, would find an acre of ground for any of those patent manure manufacturers, and he would give them his sewage to manipulate —and it was the richest that could be got, there being 16 instead of 8 grains of ammonia to the gallon—if the water was returned to him when they had done with it. He could only say, that if such manufacturers by the "A B C" process could make the manure worth £3 to £4, or any higher amount per ton, they would do what all the chemists he had been in contact with tell him that it was impossible to be done. However, these gentlemen said they got that price for it, and there he must leave the question.

Councillor Mataers said that water had been more recommended than any other system, but the time had not arrived yet when any gentleman could take upon himself to say that this or that was the best scheme, because, dependent upon the position of towns would be the system to be applied. He thought the "A B C" system the best hitherto. The company certainly dealt with the sewage better than by any other system that had been made known to the Town Council of Leeds, and the manure, he reported, to have turned out well in the hands of several farmers.

Mr. W. Hope, V.C., gave interesting details as to the system of irrigation pursued on his farm of 121 acres at Romford, maintaining that his experience demonstrated irrigation to be a most successful method of utilising sewage. The quantity of sewage coming from a town with 8000 inhabitants was too great for use, and a portion was merely purified. In order to use sewage he should like an acre for every 20 persons, but to purify it a very much smaller area was necessary.

Mr. Webster, Q.C., held that there could be no question that the removal of sewage by the water system was the most economical; but there were, no doubt, places, such as Birmingham and Leeds, where the irrigation system involved enormous difficulties as to the extent and distance of land, and therefore such places must consider whether there was any other practical mode of dealing with sewage. He recommended those who were anxious upon the question of public health not to indulge in extreme opinions. There could be no question that the water system was the best for removal, and that the irrigation system succeeded most completely, but surely some chemical system might be found. As a matter of pure science, he thought it discreditable that some means could not be found of restoring what had been put into a fluid state.

Mr. Rawson, in his reply, said that the manure produced by the company cost from 30*s*. to 35*s*. per ton making, and they had no difficulty in selling at £3 10*s*. per ton all that they had.

The President (Geo. Godwin, Esq.), in closing the discussion, said he did not wish, in the interest of the community at large, to urge that irrigation should be employed extensively, and in all places where it could possibly be adopted, and he asserted, moreover, that he had the strongest ground for doing so. What was the use of a Royal Commission, of the labours of the British Association, and of the Rivers Pollution Commissioners, in all cases coming to a conclusion in favour of irrigation, if they, who could not possibly go into the subject minutely to the same extent, were not to attend to the recommendations made, and say that irrigation was, under the greater number of circumstances, the best mode to adopt. And he maintained that the evidence from these farms, from Mr. Blackburn's farm at Aldershot —of which he knew something—and a number of others, as at Croydon, and Mr. Hope's valuable farm at Romford, ought to induce them to say that irrigation was the best means to employ. With regard to the "A B C" process he was very anxious, knowing that it was a great interest, not to say anything unfair; but really he was compelled to say that these gentlemen said more than they could possibly prove. They said they got £3 10*s*. per ton for the manure. But would they prove that it was worth £3 10*s*. per ton? Such chemists as he had spoken to said it was not worth that. The expensive process which they went through could not possibly produce a manure at such a price as that manure was worth. It was all very well to say that they had sold so many thousand tons, but they had not yet proved the value of it, or that the farmers would continue its use. Then, with regard to this effluent water, which they said they were quite willing the irrigators should have. That did not answer the question at all. Was it true that this effluent water was sufficiently purified? Did they purify it sufficiently? He, however, feared to pursue the subject, seeing that the process was now a great commercial speculation, but nothing that the "A B C" advocates had said or done had affected his mind on the subject of irrigation. They had, then, seen that they must get rid of sewage immediately, that water was the readiest means of transporting it, and that when properly disposed of on land it really did no damage whatever to surrounding persons. There was China, for example, a country that had had irrigation generally at work for 1000 years, and a great deal longer period by their own records; and all the evidence was, he thought, in favour of irrigation. He hoped the people of Leeds would look into it. They must no longer delay, with a thousand middens—the death-rate told them of the work that had to be done—and of the "A B C" process they must satisfy themselves either as to its goodness or its badness. If good, let them adopt it entirely; but if bad, then at once they must set to work to get rid of the sewage, and put it on the land around.

Farmers' Clubs.

NEWBURY.

The Chalking and Liming of Land.—Mr. F. Everett lately read a paper on the above subject before this Club. He said:—

The inorganic or manual substances in the soil are silica, alumina, lime, oxide of iron, magnesia, potash, sulphur, phosphorus, chlorine, and fluorine. Among these, lime is one of the most important, and enters more largely into the composition of plants than any other. Without its presence in the soil, nearly all our cultivated plants refuse to flourish; notably among farm crops—Turnips, Barley, and grass seeds. The importance of a good root crop preparatory to Barley, and a good Clover stub in preparation for Wheat, cannot be over-estimated, and if by the application of chalk or lime we may reckon, with tolerable certainty, upon a good crop of roots and Clover, we secure a good yield throughout the four-course rotation. I think the most practical men will allow that no amount of farm-yard manure is an efficient substitute for chalk where land requires it. So thoroughly convinced am I of the importance of supplying lime in one of its various forms of combination when its application to the soil can be proved to be necessary, that I have made the subject a special matter of inquiry. It is eight or nine years since I had the soil of my own farm analysed by Dr, Voelcker, believing it to be deficient in lime. I have since proved the opinion then expressed by him to be entirely correct. "It will be useless," he said, "to go to any great expense in the purchase of manures till your land has been either limed or chalked." It is very remarkable, in my own case, how fully experience has proved to me the correctness of the above statement. "A dressing of chalk," remarked an old farmer to my men last year, when busy chalking, "will do this land more good than all the dung in Newbury." Here, at any rate, there appears to be no antagonism between what is called theory and practice, Dr. Voelcker and my practical friend being of the same mind. Before proceeding further, let me bring to bear the testimony of Johnson, who, in his work on "Use of Lime in Agriculture," has placed within the reach of agriculturists the richest possible store of information with respect to the subject we are discussing. At p. 124 of his work will be found the following remarks :—"On examining the chemical nature of the ash of plants, it is found that lime in all cases forms a considerable proportion of its whole weight. Hence the reason why lime is regarded as a necessary food of plants, and hence also its beneficial influence in general agricultural practice. The quantity of pure lime contained in the crops produced upon one acre during the four years' rotation, amounts, on an average, to about 200 lb., equal to 360 lb. (say 3⅗ per cwt.) of carbonate of lime in the state of mud, shell-sand, or lime-stone gravel. It is obvious, therefore, that one of the most intelligible purposes served by lime as a chemical constituent of the soil, is to supply this comparatively large quantity of lime, which, in some form or other, must enter into the roots of plants. But the different crops which we grow contain lime in unlike proportions. Thus the average produce of an acre of land under the following crops contains of lime :—

	Per Acre.	Grain.	Straw or Roots.	Total.
				lb.
Wheat	25 bush.	1	12	13
Barley	40 bush.	1½	15½	17
Oats	50 bush.	3	19	22
Rye	26 bush.	1⅓	15⅓	17
Beans	25 bush.	2½	34	36½
Turnips	20 tons	46	72	118
Potatos	8 tons	8	31	39
Red Clover	2 tons	..	77	77
Rye-grass..	2 tons	..	30	30

These figures speak for themselves, and in passing, I will only draw attention to the large proportion of lime contained in the Turnip and red Clover crops, which I have previously pointed out as crops especially benefited by the application of chalk or lime. Here, I think, may be aptly quoted Liebig's minimum law, which though for the present it may be scorned by practical men, is destined ere long to be acknowledged as lying at the root of all sound practice, and is a safe guide to all who are not unwilling to confess that the researches of scientific men materially assist us in working out our every-day practice. "Every field," says Liebig, "contains a maximum of one or several, and a minimum of one or several, nutritive substances. It is by the minimum that the crops are governed, be it lime, potash, nitrogen, phosphoric acid, magnesia, or any other mineral constituent : it regulates and determines the amount of continuance of the crops. Where lime or magnesia, for instance, is the minimum constituent, the produce of corn and straw, Turnips, Potatos, Clover, will not be increased by a supply of even a hundred times the actual store of potash, phosphoric acid, silicic acid, &c., in the ground. But a simple dressing of lime will increase the crops on a field of the kind, and a much larger produce of cereals, Turnips, and Clover will be obtained by the use of this agent (just as in the case of wood ash on a field deficient in potash) than by the most liberal use of farmyard manure." It becomes, then, a matter of primary importance to ascertain whether or not our land requires chalk. It is generally taken for granted that where roots "club," lime in some form must be applied to counteract this evil, and many years' experience has proved the soundness of such a conclusion. But I venture to think that there is a large area of land that would be greatly benefited by the application of chalk where the above direct proof of the necessity of applying it might be wanting, and where we must seek further for more subtle indications of the deficiency of lime in the soil. Many practical men may be able to call to mind cases in which they have not been satisfied with the general yield of their crops—though great pains may have been taken in their cultivation, and large outlay may have been made in the hope of profitable returns. I think that I could mention land and certain fields on some farms of this district, where, although the roots may not actually "club," yet there are indications that something is amiss—there is a short Clover crop, perhaps—a profuse quantity of weeds, or an unkind mechanical condition of the soil. Something is wrong, and yet we hardly know what. In such instances, I would suggest that it might be well to have the soil analysed, and carefully to note the character of the weeds growing upon it. There are certain weeds which are almost a sure indication of a deficiency of lime; many of them flourish upon my own farm, and those farming land requiring chalk will, I feel sure, bear testimony that they are indicative of the absence of lime. Many must be able to call to mind instances where an application of chalk has entirely changed the unkind nature of the soil, and rendered land productive which previously was incapable of producing remunerative crops. I am disposed to think that "Clover sickness," one of our stock grievances, is often owing to an insufficient quantity of lime in the soil, and it is stated by Sibson that the application of lime has, in some instances, proved a remedy for this disease. Another matter for practical consideration is the best mode of applying chalk, and the season of the year at which it is best to supply it. In connection with chalking, I think there is one point which, though worthy of careful consideration, often is disregarded. I refer to the different quality and value of various kinds of chalk. It will often be found that chalk dug from different pits, though on the same farm, will vary considerably in chemical composition and mechanical structure. Such is the case on my own farm. Suspecting it was so, I sent a sample from each of the pits I am working to be analysed by Sibson. The analysis of the two samples shows the following results :—

	No. 1.	No. 2.
Moisture	1.40	.38
Carbonate of iron	93.42	98.33
Oxide of iron, and alumina, with traces of phosphate of lime	1.72	.62
Phosphate of lime	..	.18
Silica	3.46	.67
	100.00	100.00

"No. 2," Sibson remarks, "is much richer in pure carbonate of lime than No. 1, and has also a notable quantity of phosphoric acid, which enhances much its value for the land. The fact of its disintegrating better is much in its favour, and it is evident that this description of chalk should be used in all cases where obtainable. A less quantity of this would also suffice, and might be used in more moderate quantities than is customary in the district." I was anxious at the same time to ascertain whether chalk containing phosphoric acid might be considered in any way as a substitute for superphosphate in the cultivation of roots. Sibson replied as follows :—"A chalk containing phosphate would take the place in part of superphosphate, although it could hardly be taken as a substitute." It only remains for me to remark that I have purposely connected the operations of chalking and liming, because what we endeavour to effect in this neighbourhood by the use of chalk, others in different districts have accomplished by the use of lime—that is to say, chalk or other limestone passed through a kiln, and deprived of its carbonic acid, in which form lime is more potent, but still in many respects performs in the soil the same offices as chalk. Pure lime is largely used in Scotland, and there farmers are especially careful to keep their land sufficiently supplied with it. Liming also is systematically carried out in south Durham and Worcester.

	Bush.	Years.	Bush. in a Year.	When applied.
Roxburgh	200	every 19 or	10½	To the fallows.
Ayr (Kyle)	40	,, 5 ,,	8	To the ley.
Carse of Stirling ..	50	,, 6 ,,	9	,,
South Durham ..	90	,, 12 ,,	8½	,,
Worcester	70	,, 6 or 8 ,,	10	Before grasses or Tares.

I am aware there is a prejudice entertained by some owners of land against the use of lime in a caustic or pure state, but it is a prejudice which, it may be hoped, will vanish under the light of more extended knowledge.

Notices of Books.

The Mechanics of Agriculture: *A Paper read at the Turriff Agricultural Association's Dinner, August* 9, 1870. By Alexander Leslie, Turriff. J. Murray, 28, St. Nicholas Street, Aberdeen.

We do not remember to have seen this lecture before, and are glad, as many of our readers will be, to see it in the form of an independent publication. It is a very fair and comprehensive review of the several classes of machines employed in the cultivation of the soil, the sowing and harvesting of crops, and the preparation of produce for the market. It is interesting also for the obvious desire of the author to award personal credit wherever it is due; and for the dexterity with which apt quotations from other writers are used to enforce the argument. Two of these extracts we shall re-quote here :—

(1). "'Man,' it has been said, 'is a tool-using animal. Weak in himself and of small stature, he stands on a basis, at most, for the flattest soled, of some half square foot, insecurely enough; has to straddle out his legs lest the very wind supplant him. Three quintals are a crushing load to him. The steer of the meadow tosses him aloft like a waste rag. Nevertheless, he can make tools, can devise tools. With these the granite mountain melts into light dust before him; he kneads glowing iron as if it were soft paste; seas are his smooth highways; winds and fire are his unwearying steeds. Nowhere do you find him without tools: without tools he is nothing, with tools he is all.'"

(2). "In concluding this survey, I may observe that we have found sufficient corroboration of the remark of a great living practical philosopher, Mr. Edwin Chadwick, that the number of improved agricultural implements and machines that might be profitably used and are not is greater than the number of those that are used."

The lecture occupies ten readable pages, and will repay perusal.

Wall's Manual of Agriculture for the Southern United States. By Major E. G. Wall, of Mississippi. Trubner & Co., 80, Paternoster Row, London.

Besides the above words this little book bears upon its title-page the statement that it is for every cultivator of the soils adapted to the "great staples"—by which, after consideration, it appears to be meant that it is especially adapted for Cotton, Sugar, and Tobacco growers. For them also it is illustrated, the coloured plates representing rot in Cotton and the ravages of the Cotton caterpillar. There are, nevertheless, notes also on the general chemistry of soils and manures, on the cultivation of Wheat, Potatos, grass, and other crops of temperate climates, and a few pages on stock feeding. It is a very crude and undigested collection of memoranda, and excepting here and there a single passage, it is not likely to be of much service to English readers. It is, indeed, beyond the power of any man, even of one who unites in his own person all the advantages of civil, military, and agricultural education, to write a complete manual of agriculture in 250 small pages. The following are the contents of three of them on the subject of cattle feeding, which is just now of the greatest agricultural importance :—

"There are some important points involved in the preparation of food which demand the farmer's attention. Economy in feeding requires not only the right kind of food, but also such preparation as will give the food its greatest value. It must be in such condition that the animals to be fed will relish it; that they will consume it entirely without waste, and that it shall all be digested, and thus fitted for the purposes it is intended to serve.

"We often see provender rejected by cattle because its condition is that of coarse, dry, hard stalks, or straw, difficult to masticate, and often insipid, when eaten alone. Again, we see choice portions of hay and fodder picked out by horses, and the remainder pulled down and trodden under foot. Then we often find whole grains passed through animals, as may be seen in the droppings of cattle when fed on unground corn, or of horses when fed on unground Oats. To avoid such waste, we must pay attention to the most economical means of reducing provender to the best and most palatable condition.

"The means best adapted to the preparation of food are cutting, grinding, mixing, and boiling, or steaming. Cutting aids both mastication and digestion. The question here arises, 'Will it pay?' This must be decided by the circumstances of the case. If the farmer has a great deal more straw and fodder than his stock will consume, and wishes to use the excess as litter to absorb liquid manure, he may not find any economy in cutting the food. And even in the case of feeding hay, if the supply is abundant and price low, as is frequently the case in grass-growing regions, it may be more economical to feed it whole, even with considerable waste, than to expend upon it the necessary labour to cut it up. In sections of country where such provender is scarce, or where there is a sufficient demand for it, to keep up the price, good 'cutters' will be among the most economical implements on the farm. And they are no less so in towns and cities when horses and cows are fed at considerable cost.

"Grinding sustains very much the same relation to grain that cutting does to long forage; but, as grain is more readily transported than other products of the farm, economy in its use becomes more highly important. Grinding is thought by many experienced farmers to add from 20 to 30 per cent. to the nutritive value of grain when fed to hogs or horses, and from 40 to 50 per cent. when fed to cows. The cow masticates grain much less completely than either the hog or the horse. In autumn, before corn has become hard, there is but little advantage in grinding it for hogs. Mixing may be added to cutting and grinding with marked advantage. When horses or cattle are fed on any kind of long forage (hay, straw, fodder, or shucks), together with meal or bran, the former should be finely cut, and the latter mixed with it—water enough being added to make the meal or bran adhere. There will then a double advantage arise; first, of having the whole completely eaten up without waste; and, secondly, more perfectly masticated and digested. A similar advantage arises from cutting Beets, Turnips, Carrots, Pumpkins, &c., and mixing them with meal.

"In localities remote from the sea-shore, where vegetation affords too little of the salts of soda to supply the demands of the animal fluids, common salt should be mixed with the food, or else a supply kept in a sheltered place, so that stock may get it when they want it. From four to five quarts sprinkled on a ton of hay or fodder, when stored away, will greatly improve its quality and aid in its preservation. A small quantity of salt is beneficial to hogs, if given regularly, but large doses are very poisonous.

"Boiling and steaming render substances more soluble, and in that way promote digestion. Steaming may be profitably applied to hay when fed to young animals, and to sheep, whether old or young. Green grass is more valuable than hay made from it. In making hay there are changes produced in the stalk and blades, partly physical and partly chemical. Among these changes is the greater insolubility of the fibre. This makes it indigestible. Steaming reduces it back to a condition somewhat similar to that of green grass.

"Boiling may be applied to grain, either whole or ground. It renders the starch more soluble; and if in the case of meal, a slight fermentation is produced before boiling, a large portion of the starch will be changed to dextrine. This is one of the steps in the progress of digestion already made. Roots should generally be boiled or steamed.

"If our object is to make food perform its office as rapidly as possible, that is, if we wish it to cause rapid growth and rapid fattening, the most digestible condition is the best. In such cases the animals should be kept comfortable and quiet, and there will be but little waste of food. Boiling is especially adapted to hogs, and almost indispensable to the thrifty growth cf young pigs.

"For horses and work oxen, the boiling of meal is a disadvantage. The digestion then goes on too rapidly. If the grain is ground and mixed with cut hay or straw, the digestion is made complete, and goes on more slowly. In this way the digestive organs are not so quickly left inactive, and the sensation of hunger is not so soon produced."

Farm Memoranda.

WHITTLESEA MERE.—A paper was written in the 21st volume of the Royal Agricultural Society's Journal on the drainage of Whittlesea Mere, and in it, besides other matter, a short account was given of the process of spreading, upon a part of the surrounding tract of peat-bog, a coating of soil, of an average thickness of 5 inches, taken from the bed of the Mere. From the point whence the soil was taken, to the farthest point of delivery, the distance was nearly 2 miles, and the expense of the operation very great. The cost, indeed, has so far exceeded the estimate given in the paper alluded to, that this opportunity should be taken of giving the actual result, now that the work is finished, the plant sold off, and the account closed. The closest calculation, then, which it has been found possible to make, gives for the cost of claying to the depth of 6 inches from £18 to £19, and for a depth of 4 inches between £15 and £16.

The land thus clayed lets readily for 30*s.* an acre, so that, even at the increased cost, it has proved a remunerative operation, especially when it is borne in mind that the land was previously in the state of rough bog, producing no rent whatever.

At a distance of 2 miles from the Mere, and near the village of Holme, a corner of the peaty tract runs up to the higher land of the surrounding country, and about 230 acres of this has been taken into a home farm, nearly 200 acres having been first covered with clay to an average depth of 3½ inches. The cost of claying this piece of bog-land has been small in comparison with that just referred to. Here the average distance to which the clay was carried did not exceed half a mile; the excavation was easier, and after a short time, steam-power was called in; and an engine, traction-rope, and portable rails, were substituted for horses, the cost, on the completion of the work, being found to have been little over £9 per acre.

It has been suggested that, as the operation was finished in the spring of 1866, sufficient time has elapsed to make it a matter of interest to record what the experience of nearly four years has shown to be advantageous or otherwise in the management of bog-land, recently reclaimed and clayed.

Of the 230 acres taken into the farm, although a small proportion had been more or less under cultivation, some for two or three years, and some for a longer period, by far the larger part consisted of the roughest kind of bog. Of the whole, about 190 acres have been clayed, and 40 remain unclayed. Of these 40 acres, about 15 had been for several years under cultivation, and 25 only for one or two years.

It would have been far better, doubtless, if, in anticipation of the claying, the rougher part could have been prepared, and brought into a state of semi-cultivation a few years previously, so that something like a top soil should have been forming, with which the clay, when deposited on it, would have readily amalgamated in the course of the usual farming operations. As it was, however, circumstances made it necessary that the whole tract should be taken in hand at once, and the clay being spread, on an average, at the rate of half an acre a day, the whole 190 acres were covered within a very limited time.

The surface of the rough bog, though levelled and prepared for its coating of soil as well as was possible, consisted mainly of lumps of fibrous, and nearly wholly vegetable, peat, having no sand in it, and looking much like masses of dark-coloured tow or oakum. Beneath this upper covering of a loose dry growth of vegetable matter there exists, at a depth of a foot or so, a stratum of a hard dry, red "moor," or peat in another form. This seam is from 10 to 18 inches in thickness, and is of such a nature that the roots of no plants appear able to penetrate it. Immediately below this obdurate band the character of the peat changes. It becomes soft, dark, and greasy, and, when reached in process of cultivation, is found to be very fairly fertile.

In that part of the farm which has not been clayed it is sought to get rid of this sterile seam of "moory" peat by very deep subsoil ploughing. This process, repeated at intervals, brings more and more of the objectionable substance to the surface, where it is raked into heaps and burned, until at length the band is broken up, and the roots of the various crops are enabled to pierce into the softer and richer soil beneath. Where the land has been clayed the breaking up of the land will require considerable time, and can only be done very gradually; any extra deep ploughing being avoided for fear of the clay being lost. Implements, however, which, without subverting the top soil, will cut deeply into and so break up the hard stratum below would be useful.

Even after the 4 inches of clay had been spread on it there was no inconsiderable portion of the newly reclaimed land on which horses could not work without constant danger of being bogged, and having to be drawn out with ropes; and attention was consequently directed to cultivation by steam, which system has now been adopted over the whole farm. So perfectly satisfactory has been the result of its adoption, that, although the better drainage and better surface which now exists would enable horses to work anywhere, it is demonstrable that a return to horse cultivation would be an unremunerative and retrograde movement. To the steam-engine, windlass, and wire-rope, which were used in the claying operations, there have now been added a Fowler's four-furrow plough, with wheels 12 inches wide, a Coleman's cultivator, covering 8 feet 4 inches of work, and a roller 8 feet in width; the last two implements being adapted to steam purposes, with a steerage apparatus—the joint contrivance of Messrs. Amies & Barford, and the bailiff, Mr. Crosbie—enabling them to turn with the utmost facility on their own ground on arriving at the headlands.

The management of that part of the peaty tract of land which had been for some time under cultivation, needs little remark here. The 3 inches of clay bestowed upon it has produced excellent effects, and, readily amalgamating with the existing top-soil, has formed a rich and fertile mould.

The treatment of the rough bog, which had only just been levelled and prepared to receive the clay, has been, to a great degree, exceptional and experimental. It is unadvisable to attempt to bring land in this raw condition too quickly under the system of rotation of crops adopted in the case of land which has long been under tillage.

Next to the thorough drainage of the land, the complete amalgamation of the peat with the clay being all-important, it has been found that, to this end, it was a mistake to sow, as was largely done for a first crop, either Rye-grass and Clover or mixed grasses. It was proved to be a better plan, after giving the newly clayed land as much cultivation as could be fairly bestowed upon it previously, to sow Coleseed, if possible, early in July; and, there being no sufficiency of straw as yet on the farm to make manure of, to feed it off with sheep requiring oilcake, that is to say, with fatting sheep or lambs, rather than ewes; to plough, as the weather might permit, in the winter, and in the spring to sow Oats. These should not, however, be sown early, as experience proves that such lands, being generally low, are peculiarly liable to suffer from spring frosts. In May a mixture of red and white Clover, Timothy, Parsley, Trifolium, Pacey, and Italian Rye-grass, should be sown and hoed in. These seeds should remain only one year down. It is bad economy, with the land in such a crude condition, to keep them even a second year, for not only do they deteriorate quickly themselves, but a year of cultivation and mixing of the soil is lost.

In the former of the two cases mentioned, where grass was sown as a first crop, Wheat, to a limited extent, was tried after the second, and even third, year of the seeds being down; but, as might have been expected, with very poor results.

In the other case, where the cropping has begun with Coleseed, followed by Oats and seeds, it has yet to be proved what the Wheat crop sown this autumn will be. The plant looks well at present, and the extra cultivation which the soil under this plan has received will doubtless tell its story at harvest time.

Speaking generally of the assistance to be derived from artificial manures for land of this quality and in this condition, it has been found that superphosphate of lime is by far the best to use, although phospho-guano, obtained from Messrs. Lawson, of Edinburgh, has produced very good results. Peruvian guano has almost wholly failed, alike on the clayed and unclayed land. The phospho-guano is as nearly as possible double the price of the superphosphate used, the cost being 11*s.* 6*d.*, and 6*s.* per cwt. respectively; and, an equal money value of each having been repeatedly tried, the results have been found in almost every case to be as nearly as may be similar. It is doubtful whether in the case of a rough bog just reclaimed and clayed, it is remunerative to go to much expense in artificial manures for the first year or two, and until the clay has become incorporated with the peat. Dr. Voelcker was consulted as to this, and in his reply he says,—"I fear you will not reap the full benefit from the artificials named in your note by applying them on peaty land recently clayed. When the clay has become more mellowed, these artificial manures would, no doubt, give you a much better crop than they are likely to produce on the land in its present condition." This opinion has been amply confirmed. On the more advanced land the benefit of the artificials named has been all that could be expected, while on the more backward portion of the land no results proportionate to the outlay have been realised.

Last year, on the unclayed peat land, the difference in the yield of two fields of Oats, one of which had 3 cwt. and the other 4 cwt. of superphosphate, was estimated at 12 bush. per acre. The fields lie near each other, are of precisely the same character, and their previous treatment had been nearly identical.

Less than 4 cwt. of superphosphate, or its equivalent in phospho-guano, has been found inadequate, whether for the corn, Coleseed, roots, and Potatos grown on the more matured land, or for the first two of these crops, which alone, as yet, it is thought prudent to grow on the more recently reclaimed bog.

An acre or two of the more backward of the clayed land was tried last season with Kohl Rabi, and with such good results that more will be sown with the same useful kind of root this year. In another year or two it is to be hoped that Potatos may be ventured on, seeing that already, in the somewhat more advanced clay land, very good crops have been produced; that of last season was at the rate of 8 tons per acre, the seed having been procured direct from Scotland, and sown with 4 cwt. of superphosphate to the acre.

A strong recommendation by Dr. Voelcker, to use burnt clay largely for mixing with the peat and raw clay, has not as yet been carried out on a scale large enough to make it worth recording the results; but, judging from the little that has been done, it seems probable that the advice "by all means burn the stiff clay extensively, for you cannot possibly get a better material in quantities for improving your peat land" will be found, subject to the cost of the operation, to be worthy of being acted upon.

The 40 acres of unclayed peat land, forming part of the farm, and lying side by side with the portion that has been clayed, afford excellent opportunities of comparing their respective values, and give abundant evidence of the superiority of the latter. The corn crops on the clayed land—speaking again of that part of it which is in a more matured state—are far better in quality; and, with the exception of one Oat crop in a peculiar season, in quantity. The straw is better, especially for feeding purposes, the difference in value having been sometimes estimated at 5*s.* per acre. The liability to damage by spring frosts is very greatly lessened, and an earlier ripening of the crop is insured. In the case of Potatos, the yield under circumstances other than that of clay or no clay precisely similar, has been found to be not far from double; while in the case of Coleseed and root crops—perhaps rather more in that of Kohl Rabi than of Mangels—the great advantage in the admixture of the clay is conspicuously apparent in the increased produce.

These are, perhaps, the points most worth recording in the treatment and farming of this tract of bog-land recently reclaimed and clayed; but, in considering them, the nature of the bog or peat itself must not be forgotten. The almost total absence of sand distinguishes it in a marked manner from peaty districts like that around Bagshot, and in a less degree from the bogs of Ireland, for the improvement of which considerable modifications in the above methods of cultivation, and manures employed, would have to be adopted. *W. Wells, M.P., in the Bath and West of England Society's Journal.*

Miscellaneous.

FOOT-AND-MOUTH DISEASE.—The following letter appeared in Thursday's *Times*:—

"The present complaint among cattle has assumed such terrible proportions, and its consequences are of such serious moment, not only to agriculturists, but, as regards our supply of meat, to the whole community, that though not a grazier I trust I shall be allowed to offer an opinion as to its origin, and the means by which it may be lessened, if not entirely removed. I am old enough to remember the introduction of this foot-and-mouth disease, and, having been born and brought up in one of the most important grazing districts, was early made aware of its mischievous effects. It came in with the great extension of the railway system some 20 years ago, and has increased as railways have spread more into the outlying agricultural districts of England, Wales, Ireland, and the cattle-supplying countries of the Continent. Like all affections of the kind, certain seasons — especially cold and wet ones — have been more favourable to its development than others, but it has never been entirely absent during any part of the period I have named. No one who has any knowledge of human or animal pathology, and has witnessed the treatment cattle are subjected to in their transit from the agricultural parts of Ireland to those of England, will be surprised that it results in serious illness. Driven—perhaps some miles—from the pastures to a fair in the interior, they there undergo for hours the greatest mental and bodily irritation and distress; immediately afterwards, without either food or rest, they are packed into open railway trucks as close as they can stand, and, utterly unable to change their positions, travel in all kinds of weather hundreds of miles to a fair in England, sometimes left stewing in a siding, sometimes in the draught produced by passing through the air at the rate of 25 to 30 miles an hour, with only the disagreeable and not very salutary interlude of a six or seven hours' sojourn on the deck or in the hold of a steamer. On arriving at the second fair they go through another day's ordeal such as they suffered at the commencement of their journey; and, even if fortunate enough to meet with a purchaser at once, must again travel a longer or shorter distance by rail or road before they reach their ultimate destination, the farm, where, with their nervous systems exhausted and their circulation deranged, they are turned into a damp straw-yard or a colder and damper field, to feed upon green grass or dry straw or hay, probably of not first-rate quality. The natural effect of all this unnatural treatment is to produce fever of a low typhoid character, accompanied by inflammation of the vessels of the lower extremities and irritative congestion of the mucous membranes, more or less extensive and severe in proportion to the amount and long continuance of the exhaustion and irritation and the constitutional power of endurance of the animal. How this affection is communicated from the sick, travelled beast to the sound, home-bred one will be easily understood by remembering the various uses to which the nose and tongue are applied by quadrupeds, and the tendency in the secretions from inflamed mucous membranes to set up similar morbid action in sound ones when brought into contact with them. Such I believe to be the source, and such the pathological character of this disease. The measures to be taken for its relief I will class under two heads,—preventive and curative. The first are simply questions of expense, and may be summed up as follows :—A proper time allowed to the cattle for rest and refreshment, after undergoing the excitement and fatigue of the first fair, before they are put on to the railway ; much more roomy and sheltered accommodation while travelling by rail and steamboat, with proper provision of food and water ; a warm, dry, but airy lair, with light, nutritious, and moist food for a few days after their journey ; and last, but not least, more considerate treatment while standing in the fair or market for sale. The curative treatment is directed by the nature of the disease. The sick animals should be placed in a warm, dry, sheltered, but not shut-up building, as thinly as possible, with plenty of dry litter under them ; the food, soft and nutritious, as boiled linseed-cake gruel, bran mashes, and a little steamed hay, but no dry hay or straw, nor green grass or roots—the medicines cordial and sedative, such as camphor and ammonia, with small doses of opium. The measures I propose will doubtless involve some expense and trouble, but I will ask my agricultural friends whether it is not better to pay a little more at first for the carriage of their cattle to the farm than to graze them through a summer, and, perhaps, sell them at the end of it for less than they cost when bought in ; and whether the trouble and annoyance of inspection, examination, obtaining orders for moving, &c.—in fact, the various measures of repression I remember being enforced during the outbreak of the rinderpest, and which are now being called for on all sides—will not be greater than to give the care and attention I have suggested to the poor creatures themselves ; especially as I am convinced no means of repression, no attempts to stamp it out, will be of any avail while the primary source of the mischief is constantly in action. *M.R.C.S.E.*, *Portmadoc*, *Oct.* 23."

SMALL FARMS.—Excellent, sound, and practical as is Lord Derby's judgment on most subjects he handles, yet many will agree with the writer of the letter to which I beg to call the attention of your readers, as it appeared in the *Times* of September 8, and more particularly to the last paragraph :—

"SMALL FARMS.

" *To the Editor of the ' Times.'*

"SIR,—I see that Lord Derby, in his speech at Liverpool, has said 'That the peasant cultivator has just as much chance of holding his own against the combination of capital and science as bows and arrows have of superseding breech-loading rifles, or handloom weaving of driving the powerloom out of the field.'

" This appears to me far too broadly stated. The civilisation of the present day needs both the large and small farm. An industrious man, occupier of a small holding, with a large family, can turn the labour of his own children to a more profitable account than can be done on large holdings, where the boys and girls are bred up too genteelly to work hard. On large tracts of poor or medium land, where little profit can be got out of a few acres, the application of capital and enterprise is needful ; but where the soil is naturally rich, and in the neighbourhood of towns, it will be found that the small holder or peasant cultivator will pay higher rent and produce more per acre than the great capitalist.

" In our large cities the demand for fruit, vegetables, and poultry (the last a branch of food supply too much neglected), is quite unlimited. These things are most important in a sanitary point of view, and are produced in greatest abundance in small plots, where manure is abundant and land rich.

" The small fruit and vegetable growers in France, in Belgium, or in the county in which I reside—Kent—will testify to this. The population, too, of Ireland, and the high rents which are obtained there, testify to the same class of facts.

" I believe that a healthy state of agriculture is best reached by a wise mixture of small and large farms, as I live in a rich district of Kent where I see much of the mixed system and its beneficial results.

" I remain, Sir, your obedient servant,
" WALTER C. JAMES.

" Betteshanger, Sandwich, Sept. 7."

The question raised by Lord Derby is not "Small and Large Farms," but whether the cultivation of the soil shall be carried on only by capitalists, to the exclusion of the working peasantry. I will not enter into the details of this question, which have been so frequently brought forward with the *pros* and *cons* ; my object being only still farther and again to call the attention of landowners and agriculturists to a broader consideration of the subject. The tendency of the age ("to commerce long a prey") to the accumulation of capital and monster establishments, is to shut out and overwhelm an industrious worker with moderate means, which, in the case of land, amounts to a monopoly. The landowner lets his farms of 800 or 1000 acres at their proper value, and with the best intentions, the belief being that a larger produce can be created at a less proportionate cost than in small farms or holdings. It is not my purpose to enter on this question comparatively, nor to oppose the creation of large farms, but to suggest the question whether the smallest capitalist or a successful and industrious peasant should have an opportunity of cultivating his native soil or be practically excluded. Many thinking and observant men have thought that for the last two or three generations the British race has physically degenerated, and this belief is now more generally entertained. The vigour and stamina of our race depend on the health and well-doing of the bodily hard-working man, the mechanic, and above all the worker in our fields ; the employment in various workshops and crowded factories under cover, although tending to an apparently precocious intelligence, tends also to delicacy of habit, want of robustness, and in a generation or two to a degeneration of the species. From different causes our race of agricultural labourers has fallen off ; the introduction of machinery and other circumstances have made work scarce and fitful, so that, independently of weather, many of our so-called labourers necessarily become idlers, and many of our best and most intelligent and energetic have emigrated. At the present season, for want of hands, much of our cereal crop is being seriously damaged, and if a strict calculation were made, it seems probable that it would have answered to farmers to have kept more labourers, even at half-work, during the winter. The damage created by want of hands to gather our crops "when the sun shines," will be a counterbalance to the skill which boasts of making "two blades of grass grow where one grew before." Already agitation has commenced on the subject of labour-wage, which from the state of the times will probably spread ; and although it is to be hoped that there will never be any land spoliation, it is obvious that there will be ere long some legislative enactments regulating its use and distribution. I am aware not only that much remains to be said on the above subject and its obvious ramifications ; "lengthy" as this communication may appear to many, my object has been only to call attention to an extensive subject already somewhat pressing and shortly to become urgent ; and I do not enter on it now merely on account of the present state, but, if I may use so hard a word, ethnologically as regards the future. The very best and pick of our working men and women are invited and courted where our world-wide language is spoken ; let us keep and cherish them, and hold out every chance and help for honest men to obtain recompense and comfort by their own self-reliant exertions ; let us lead them to respect themselves and their employers, and to love their native soil. *Thomas Warner, in the " Wilts and Gloucestershire Standard."*

The Week's Work.

OCTOBER 20.—*Wheat Sowing* is now in full swing. It should be concluded without delay on fallows, Clover and Bean stubbles, and also after root crops, as soon as they are removed from the ground.

Mangel Wurzel.—Finish harvesting as soon as possible, however promising the weather may be for the ensuing weeks. If frost has set in before they are stored, so as in the slightest degree to affect the bulbs, and if a frosty night is followed by a change, it is generally advisable to give them a day or two of fresh weather to recover, provided the risk is not greater than the advantage likely to be gained. Sudden changes have been the peculiar characteristics of the season in some places, and if there is any prospect of a return of frost, pull and store in small pits. If, in very bad cases, a deep outcasting is made with a plough, and three or four drills on each side thrown in and covered with the fresh earth, many, if not the whole of the bulbs, will recover, and be fit for storing in a week or so. Pits should be examined before they are finally earthed up for the winter, whether the bulbs were touched with frost or not. Small pits may be made sufficiently close to each other, that in turning two or three may be stored in one, and this is the safest plan when there exists any suspicion of frost-bitten Mangels. The expense, compared with the safety of so valuable a crop, is comparatively nothing. Select a fine drying day for turning, and throw aside all bulbs in the slightest degree affected. By cutting off the frost-bitten or rotten portion, what remains may be given to store cattle, so that the loss actually sustained may be trifling.

Turnips, Hybrid and Yellow, may be stored as Swedes. If intended to be consumed on the land by sheep, it is better to store in long narrow pits than to collect large quantities together. From 10 to 20 drills may be stored in a deep plough outcasting, and covered with the plough ; or if to be used immediately they may be covered with the tops. And when stored this way the shepherd folds close up to the outcasting, and when bulbs stored in one outcasting are finished he brings up his fold or nets to another, until the whole field is folded. Sometimes part of the crop is stored at the homestead, and the remainder in the field for folding ; but the only difference which this involves in the storing is a greater distance between the pits or outcastings in which the bulbs are stored. Turnips are sometimes "clamped," *i.e.*, pulled and carted to some spare ground, where they are set close two rows in depth, with the tops and tails on, and lightly covered with straw or horse-dung to defend them from frost.

Early Lambs force forward for Christmas ; and in doing so it should be borne in mind that fineness of quality as also weight depends much more upon the quality of the food of the ewes than on what the lambs themselves eat exclusive of milk, and that rich milk is the natural and best food for making fine rich lamb—that which will fetch the top price in the shambles ; and it should farther be borne in mind that quantity of milk in fattening lambs will not make up for quality. In point of fact, a large bellyful of thin milk, or washy food of any kind, is injurious to both ewes and lambs ; so that when put upon succulent green food of any kind the ewes should have an extra allowance of ground corn and Clover hay. Moreover, in cold or wet weather at this season, succulent, washy food is more objectionable than in the warm dry weather of summer. Corn is better for making rich milk than cake, Clover hay than meadow hay, other things being equal. Cabbages are better than Turnips, and the yellow-fleshed varieties of Turnips are to be preferred to the white-fleshed. But of all our root crops grown the Belgian Carrot is perhaps the best for milch ewes at this season. Sheltered pastures are essential for ewes and lambs, for nothing reduces the quantity and quality of milk more than exposure to cold wet weather. As a rule, the skins of ewes and lambs should be kept dry and comparatively warm, and if this cannot be done out-of-doors, house the flock at once in roomy pens, and feed wholly on artificial food ; and this applies to ewes that are lambing, or whose time is nearly up. In-lamb ewes for lambing in January and February should also have shelter, and where this cannot be had naturally, stuffed hurdles or straw webbing should be used, one row standing above the other, so as to form a semi-roof for the ewes to go under in bad weather.

Notices to Correspondents.

COMBINED THRESHING-MACHINE : *W. T.* desires to ask, through the *Agricultural Gazette*, some of our correspondents to inform him whose is the best portable combined corn threshing, dressing, and straw shaking and elevating machines? Also whose is the best portable chaff-cutting machine? His engine is 12-horse power.

FARMERS' CO-OPERATIVE ASSOCIATION : *A. B.* There is one in operation in Essex, under capital management ; and for particulars you may consult our advertising columns. The address is—"The Farmers' Supply Association, 69, King William Street, E.C."

FRUIT TREES : *An Anonymous Correspondent* asks :—" Where can fruit trees be obtained at the prices named by D. T. Fish in his article on Farm Gardens?" To this we reply :—Any respectable nurseryman can supply them.

SWEDE TURNIP : *Inquirer.* Top and tail them, and throw them into heaps on the land, and cover them with the tops, and then with earth. Let each heap contain the roots on one fold, or two folds, so as to suit the work of the Turnip-cutter.

THE WOOLSTON IMPLEMENTS : *Inquirer.* The best description of Mr. Smith's implements and mode of working, written by himself, is to be found at p. 84, 1870, of the *Agricultural Gazette.*

Markets.

HOPS.

BOROUGH MARKET, Oct. 26.

Messrs. Pattenden & Smith report a good demand for consumption, prices for all descriptions being fully maintained. Stocks are greatly reduced, the quantity of new Hops offering being surprisingly small for the time of year.

MARK LANE.

MONDAY, Oct. 23.

The supply of English Wheat to this morning's market was small. Good dry samples brought last week's quotations, but inferior were very difficult to sell. For foreign the demand was limited in extent ; prices were unaltered. Barley was a slow sale at late rates. White Peas rather dearer. The Oat trade was quiet. For Maize there was little inquiry. Flour unchanged in value.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s
WHEAT, Essex, Kent, Suffolk..White	55—61	Red......	55—58
— fine selected runs ....do.	58—62	Red......	57—59
— Talavera	60—64		
— Norfolk	—	Red......	—
— Foreign	50—69		
BARLEY, grind.& dist.,26s to 31s..Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....35s. to 38s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —s. to —s. ....Grey	—	Foreign ..	36—44
MAIZE	—	Foreign ..	32—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Oct. 25.

The Corn Exchange presented a quiet appearance There were fair supplies of English Wheat on offer, and the arrivals from abroad were on an extensive scale ; trade was inactive, and prices in some instances were slightly easier. Fine Barley was steady, but inferior qualities were quiet. Malt changed hands slowly, on former terms. Oats were in liberal supply. The demand was slow, but for sound corn prices were well sustained. Beans and Peas were quite as dear. Flour was dull, and prices favoured buyers.

ARRIVALS OF GRAIN, &c., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	1300	1420	—	—
Irish ..	—	—	—	—
Foreign ..	20,670	8910	8930	640 3780 brls.
	21,970	10,330	8930	

LIVERPOOL, Oct. 24.—The market opened with a very slow demand for Wheat, but with a fair attendance of sellers. It afterwards improved, and ultimately a pretty fair business in the aggregate was concluded. American spring 1*d.* to 2*d.* per cental lower on the week, and other descriptions proportionately in buyers' favour. The superior qualities of Flour commanded full prices, but inferior were neglected. Beans 6*d.* cheaper on the week. Oats and Oatmeal unaltered. Indian Corn in limited request, at Friday's rates; American yellow and mixed, 33*s.* to 33*s.* 3*d.*; white, 35*s.* to 35*s.* 6d. per 480 lb.

AVERAGES.

	Wheat.	Barley.	Oats.
Sept. 16	56*s* 7*d*	35*s* 8*d*	24*s* 9*d*
— 23	57 7	35 6	23 6
— 30	57 3	35 10	23 10
Oct. 7	56 3	35 8	23 8
— 14	56 5	36 2	22 6
— 21	56 6	36 10	23 2
Average ..	56 10	35 10	23 6

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Oct. 26.

Prime Meadow Hay,	85*s.* to	100*s.*	Clover, old	120*s.*	135*s.*
Inferior do.	45	65	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	110	120
Inferior do.	—	—	Inferior do.	55	95
Straw	36	45			

CUMBERLAND MARKET, Thursday, Oct. 26.

Sup. Meadow Hay	105*s.* to	112*s.*	Inferior Clover ..	90*s.* to	110*s.*
Inferior do.	80	92	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	44	48
Superior Clover ..	130	140			

JOSHUA BAKER.

METROPOLITAN CATTLE MARKET.

MONDAY, Oct. 23.

The number of Beasts is smaller than last Monday, and trade is active; on the average prices are rather better, and a good clearance is effected. The supply of English Sheep is larger and of foreign smaller than last week, the total number being rather less. Trade is brisk, at fully last Monday's quotations. Choice Calves are readily disposed of at our quotations. The foreign supply consists of 3100 Beasts, 11,000 Sheep, 246 Calves, and 30 Pigs; from Scotland there are 5 Beasts; from Ireland, 350; and 1195 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 8 to 5 10	Best Long-wools	6 6 to 6 8
Best Shorthorns..	5 6—5 8	Do. Shorn	— ..
2d quality Beasts	3 10—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn	— ..
Do. Shorn	— ..	Lambs	— ..
		Calves	3 8—6 0
		Pigs	3 4—5 0

Beasts, 4650; Sheep and Lambs, 18,220; Calves, 276; Pigs, 125.

THURSDAY, Oct. 26.

We have a few more Beasts than last Thursday, the excess, however, is in foreign, trade is good, and choicest qualities are rather dearer. The number of Sheep is also rather larger, still the supply is limited, and there is a fair demand at Monday's quotations. Choice Calves are scarce, and realise high rates. Our foreign supply consists of 480 Beasts, 4480 Sheep, and 165 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8 to 6 0	Best Long-wools	6 6 to 6 8
Best Shorthorns ..	5 6—5 8	Do. Shorn	— ..
2d quality Beasts	3 10—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do Shorn	— ..
Do. Shorn	— ..	Lambs	— ..
		Calves	4 0—6 4
		Pigs	3 4—5 0

Beasts, 900; Sheep and Lambs, 6940; Calves, 165; Pigs, 30.

METROPOLITAN MEAT MARKET, Oct. 26.

Best Fresh Butter	18*s.* per dozen lb.
Second do. do.	16*s.* „

Small Pork, 4*s.* 8*d.* to 5*s.* 0*d.*; Large Pork, 3*s.* 8*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

There has been recently a rather better tone in the market, and although buyers still act very cautiously, the trade is still so good in the manufacturing districts, and stocks of desirable grades of English wool so very small, that we anticipate a renewed demand before long, and somewhat stiffer prices.

COALS.—Oct. 25.

Walls End Haswell, 21*s.*; Walls End Seaton, 18*s.* 3*d.*; Walls End Heugh Hall, 20*s.*; Walls End Original Hartlepool, 21*s.*; Walls End South Keolle, 20*s.*; Walls End Tees, 20*s.* 9*d.*; Brancepeth Cannel, 18*s.* —Ships at market, 31; sold, 23; unsold, 8; at sea, 40.

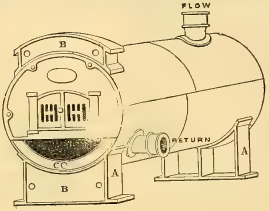
AUSTIN & SEELEY'S STOCK NOW COMPRISES

200 designs of FOUNTAINS, at from £10 to £400.
24 SUN-DIAL PILLARS, at from £2 to £9.
20 BASKETS, from 15*s.* to £35.
14 SHELLS, from 12*s.* to £15.
52 STATUES. 44 SMALL FIGURES.
70 FIGURES of ANIMALS and BIRDS.
300 kinds of FLOWER VASES, at from 10*s.* to £50.
PEDESTALS of all sizes.
18 FLOWER BOXES for Windows,
BALUSTRADING.
34 BAPTISMAL FONTS.
26 CRESTS and FINIALS for Gate Piers.
22 PORTE-FLEURS and TAZZAS, of large diameters, for Lawns.

AUSTIN'S STONE, invented in 1826, is Waterproof, and no Sand is used in it.
There is no necessity to remove the earth from Vases during winter.
All the kerbed flower-beds in the Royal Horticultural Gardens and the Regent's Park made by A. & S.

369 to 375, EUSTON ROAD, REGENT'S PARK, N.W.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.
"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,
"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.
"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Poiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

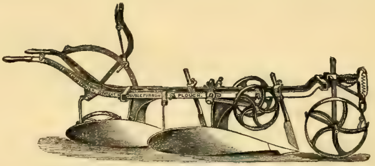
"Ingestre Hall, Stafford."
"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.
"W. PHIPPS."

"Huntroyde Park, Burnley.
"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.
"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.
"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.
"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.
LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.
From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

RANSOMES' DOUBLE PLOUGHS,



WITH PATENT CENTRE LIFTING WHEELS.

RANSOMES, SIMS, & HEAD!

Fit all their Double Ploughs with either long or short breasts as required, so as to leave the Furrows whole or in a broken or pulverised state. They are very simple and easy to manage. They are fitted with the best and most durable shares and wearing parts, as well as with their "Patent Axle" Plough Wheels, which entirely exclude dirt, and are very durable. RANSOMES, SIMS & HEAD guarantee these Ploughs to perform their work in a perfectly efficient manner, and to be unsurpassed for lightness in draught. Sold by all respectable Implement Dealers.

Prices, with Patent Wheels, Lifting and Turning Apparatus, and Adjustable Beams:—

R N D D, £7 15s., and **£8 15s.; R N F D, £9 15s.; R L C D,** with Swivel Head and Fixed Beams, **£7;** Adjustable, **£8.**

PRIZE LISTS and ILLUSTRATED CATALOGUES FREE on APPLICATION.

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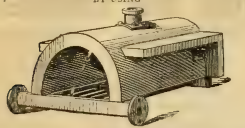
Simplicity, Efficiency, and Economy is Secured
BY USING



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It is easily set, and very powerful Illustrated Circulars post free.
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HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating GREENHOUSES, HOTHOUSES, CONSERVATORIES, CHURCHES, PUBLIC BUILDINGS, &c.

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Tubular Boiler.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

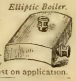
WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s each.

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s. 6d. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60s. each.

Portable Boiler.

Elliptic Boiler.



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INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

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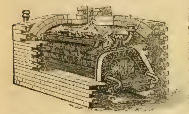
T. G. MESSENGER, HOT-WATER ENGINEER, Loughborough, is delivering HOT-WATER PIPES, &c., free to any Station on Midland Railways, for cash, as under (nett):—

4-in Hot-water Pipes, 2s 2d p yard
3-in. Hot-water Pipes, 1s. 9d. „
2-in Hot-water Pipes, 1s. 1d p yard
Connections at proportionate rates.



The Heating of all kinds of Buildings, by hot water, direct or exhaust steam, undertaken by Contract, and satisfactorily completed, in any part of the country.

MESSENGER'S PATENT VALVES for Water, Gas, or Steam, shut off perfectly, are full bore, and cheaper than any other made. Form a cheap and excellent Chamber and Valve for Pumps. Thousands at work.

Prices:—4-inch, 21s.; 3-inch, 17s. 6d.; 2-inch, 15s.

MESSENGER'S PATENT HOT-WATER BOILER is more powerful and economic in fuel than any other Boiler.

Further prices and descriptions on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS
and HOT-WATER APPARATUS MANUFACTURERS,
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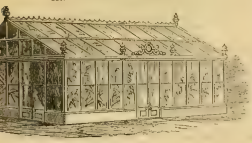
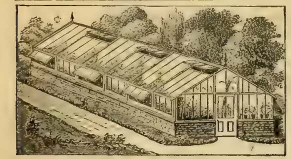


200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5s. each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C.
W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
„ „ glazed, 16-oz. good sheet glass	6s. „
6 ft. „ „ 2 in thick, unglazed	5s. „
„ „ glazed, 16 oz. good sheet glass ..	11s. „
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. „
Portable box containing two ditto, 6 ft. by 8 ft.	55s. „

Estimates given for Conservatories or Greenhouses to any Design.

The Patent Imperishable Hothouse.

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GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the
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Illustrated Price Lists free. A Pamphlet, with Views of these and other styles of Glasshouses, post free, 3d. Estimates given for Conservatories, &c., to any design in Wood; also for Heating Apparatus.

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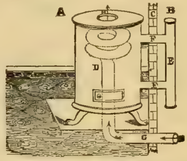
GEORGE'S PATENT CALORIGEN,
For WARMING and VENTILATING.

PRICES:—
COAL CALORIGEN, £6 6s. | GAS CALORIGEN, £3 3s.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

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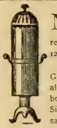

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The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12s. 6d. to Six guineas. PATENT FUEL, 18s. per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4s. 6d. and 9s.

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PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21s. and 10s. 6d. Medical Testimonials and Prospectus Free on application.

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Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps.

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In Three Vols., at all Libraries,

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New Work by the Rev. J. G. Wood, M.A.

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Early arrangements are specially recommended.

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Tenants may, with the consent of their Landlords, execute the necessary Improvements upon the Farms which they occupy, charging them with the cost.

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The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

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Principal Engineer, Mr. J. BAILEY DENTON.

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The outlay, with all official expenses, may be charged upon the Estate, and paid off by a Rent-charge of about 6 per cent., in 31 years, or at the option of the Landowners in a shorter term.

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Special arrangements will be made with Boards of Health, Sewer Authorities, and others, for undertaking Works of Sewage Irrigation, together with all Works incidental thereto. The outlay in respect thereof may be repaid either by a sum in gross, or by a terminable yearly payment, discharging in a fixed period the principal amount with interest thereon.

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THE LAND LOAN and ENFRANCHISEMENT COMPANY (incorporated by special Act of Parliament) ADVANCES MONEY—

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THE GARDEN is projected by, and will be under the editorship of, WILLIAM ROBINSON, F.L.S., Author of "Alpine Flowers for English Gardens," the "Parks, Promenades, and Gardens of Paris," &c., &c.; and the best writers in every department of Gardening will be contributors to its pages.

Advertisements, to insure insertion in the First Number, should be forwarded without delay to the office.

THE GARDEN may be obtained through all Newsagents and at the Railway Bookstalls, at 4d. per copy. It may also be had direct from the Office at 5s. for a Quarter, 9s. 9d. for a Half year, and 19s. 6d. for a Year, payable in advance. Single Copies (post free), 4½d.

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W. SAVILL, Curl's Farm, Clavering, has a good stock of RIVETT SEED WHEAT for SALE, requiring only from 1 bushel to 5 pecks per acre. During the last four years many of the heads have had six or seven set on each side, containing from 100 to 130 grains each, and producing from 6 to 8 quarters per acre without fallowing. Price 6s. 6d. per bushel; delivered within 8 miles at 2d. per bushel extra, in quantities of not less than one sack.

N.B.—There is a slight sprinkling of Kentish in the above Wheat, but a less quantity than is generally sown in Rivetts.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.

Printed by WILLIAM RICHARDS, at the Office of Messrs BRADBURY, EVANS, & CO., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, October 28, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 44.—1871.]
SATURDAY, NOVEMBER 4.
Registered at the General Post Office as a Newspaper.
Price 5d. Post Free, 5½d.

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THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is *£1 3s. 10d.* for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

THE STOKE NEWINGTON CHRYSANTHEMUM SOCIETY will hold its TWENTY-FIFTH ANNUAL EXHIBITION in the New Assembly Rooms, Church Street, Stoke Newington, on TUESDAY and WEDNESDAY, November 14 and 15. Admission: first day, 1*s.*; second day, 6*d.* Schedules, &c., to be obtained of W. T. HOWE, Hon. Sec.
1, Downs Park Road, Shacklewell, E.

THE PETERBOROUGH CHRYSANTHEMUM and FRUIT SHOW will be held on NOVEMBER 15. Schedules and Forms of F. G. BUCKLE, Secretary.

National Schools, Seer Green, near Beaconsfield.

THE REV. J. M. TAYLOR, VICAR, earnestly solicits AID towards the SUPPORT of these SCHOOLS. Living of small value. Population 400, almost entirely of the Labouring Class. Children in daily attendance, 40; on Sundays, 40. Donations kindly forwarded to the VICAR acknowledged in the *Gardeners' Chronicle.*

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading

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Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants. CATALOGUES gratis on application.

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32, Maida Vale, Edgware Road, W.
JOHN BESTER, Manager of the Nursery and Seed Department.
The Company guarantee to their Customers Punctuality, Liberality, and Genuine Articles. The favour of a visit is earnestly solicited.

EVERY GARDEN REQUISITE
KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

To the Trade.—Orders now Booked for

TUBEROSES, LILIUM AURATUM (not from Japan), and new kinds of AMERICAN POTATOS, on advantageous terms.
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ASPARAGUS, extra strong, for forcing. Price per 100 or 1000 on application.
HENRY PAGE, Walham Green, Fulham, S.W.

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J. GREEN, Garforth Nursery, near Leeds.

To Nurserymen and Others.

SEAKALE ROOTS for SALE, extraordinarily fine growth, 8*s.* per 100, cash on delivery; and also some 3-yr. old ASPARAGUS ROOTS, for Forcing.
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JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

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H. AND F. SHARPE'S Trade CATALOGUE of HOME-GROWN SEEDS is now ready. It contains all the very best varieties, cultivated under their own superintendence. The quality is very fine, and the prices low.
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Carriage free.

SUTTONS' COLLECTIONS of FLOWER ROOTS, for Pots and Glasses.
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Carriage free.

SUTTONS' COLLECTIONS of FLOWER ROOTS, for Summer and Autumn Flowering, in Open Ground.
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SUTTONS' IMPORTED FLOWER ROOTS are now ready CATALOGUES on application.
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In Collections to suit Large and Small Gardens.
10*s.* 6*d.* | 21*s.* | 42*s.* | 63*s.* | 84*s.*
No charge for packing. Carriage free.
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CARTER'S PRIZE DUTCH FLOWER ROOTS.
EVIDENCE OF QUALITY:—
From Miss J. Smith, *Enniskillen, April* 19, 1871.
"The Hyacinths supplied by you are the admiration of the country."
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In Collections for the Conservatory or Drawing Room.
10*s.* 6*d.* | 21*s.* | 42*s.* | 63*s.* | 84*s.*
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JAMES CARTER AND CO., 237 and 238, High Holborn, London.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.
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FOR SALE, Cheap (their usual bed being otherwise required), 700 ENGLISH SHOW TULIPS, excellent varieties, from the late Mr. Tibbutt's collection, 25*s.* per 100, the bed for £8.
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E. COOLING, Mile Ash Nurseries, Derby.

CZAR VIOLETS.—Strong blooming plants, from open ground, 6*s.* per dozen; 40*s.* per 100.
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J. BOOTH, FLORIST, Pole Lane, Failsworth, near Manchester, is now offering the above, in all the best named exhibition varieties. Trade supplied on reasonable terms.
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PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
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J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send free his special cheap LIST of above, containing many good things.

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ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
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A. STANSFIELD AND SON will forward their NEW CATALOGUE of FERNS, No. 9, for 1871-72, containing 40 pages, with descriptive and cultural remarks, for three penny stamps; also their HERBACEOUS and ALPINE PLANT LIST for 1872, containing more than 1000 species, for 2 stamps
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To the Trade.

BETA CHILENSIS (True), the variety grown so extensively in all the London Parks and Public Gardens.—The Undersigned have a small quantity to offer. Price per ounce on application.
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FOR SALE, 80 splendid PYRAMID YEWS, 6 to 7½ feet high, 4 to 6 feet through; price 10*s.* 6*d.* each, cash. Delivered to Railway Trucks.
GEORGE DAVISON, White Cross Nursery, Hereford.

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WANTED, a House or two of good BLACK HAMBURGH GRAPES, within a few miles of London; also a quantity of DESSERT APPLES.
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WANTED, in the Trade, Standard and Pyramid Double White and Double Scarlet THORNS, clean and well-grown. Address, stating lowest Trade price, to
J. Z., *Gardeners' Chronicle* Office, W.C.

TEA-SCENTED ROSES, in pots.—The largest stock of Tea-scented Roses in the Kingdom. They may be had in small pots, also established in 6-inch pots, for forcing and greenhouse culture.
WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

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HUSSEY AND SON have a large stock of the above to offer, in all the best kinds, selection left to themselves, good strong plants, at 30*s.* per 100.
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JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.
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W. KNIGHT intimates to intending Planters that his NEW CATALOGUE of HARDY TREES and PLANTS is now ready for distribution, containing faithful descriptions of his stock, which is unsurpassed in the Trade. Catalogues free.
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To the Trade Only.

ROSES, ROSES, ROSES.—Standards, 3 to 5 feet stems, fine heads, and consisting of all the most popular sorts, 75*s.* per 100; Half Standards, 2 to 3 feet stems, 60*s.* per 100.
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COMMON CHESTNUTS, 4 ft., 5*s.*; 5 ft., 10*s.* p. 100.
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Six bunches for 5*s.* | Twelve bunches for 10*s.* 6*d.*
The finest Canes in the Trade.
R. TANTON, F.R.H.S., The Nurseries, Epsom; and Boro' End, London Bridge, S.E.

CHEAP VINES (1-yr. old Canes from Eyes), ROSES, FERNS, and other Plants.
Priced LIST forwarded on application.
KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Cerasus Watererii, New Double Japanese Cherry.

ORIGINALLY INTRODUCED by MR. FORTUNE.

JOHN WATERER AND SONS are just now sending out the above new plant. The colour is white, edged with pink, very large double, and sweet scented. We recommend it as a very desirable plant. Price 10*s.* 6*d.* each, or 6 for 42*s.*
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New Strawberry, Cambrian Prince.

J. ROBERTS has much pleasure in offering this as the very best in cultivation, being the largest and heaviest cropper ever known; good colour. Seedling to British Queen, and equal in flavour. Will have 5000 to 6000 to send out early in the spring, at 2*s.* per dozen, or 10*s.* 6*d.* per 100.
JOHN ROBERTS, Sen., Nurseryman, Denbigh.

Mulberries—Mulberries.

SAM DYER offers to the Trade a fine stock of well-grown MULBERRIES. Price per dozen or 100 on application.
The Nurseries, Bridgwater.

Mulberries—Mulberries.

PONSFORD AND SON offer the above, by the dozen or hundred, fine, clean and healthy.
Loughborough Park Nurseries, Brixton, Surrey, S.W.

FIVE HUNDRED THOUSAND strong 2 to 6-yr. old Seedling and Transplanted WHITE HAWTHORN QUICK Must be Sold this season, as the ground has to be cleared.
GEO. WINFIELD, Gloucestershire Seed Warehouse, Gloucester.

EXTRA fine Transplanted COMMON LAURELS, 6 feet high, and very bushy; magnificent plants.
WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

Laurels, &c., at Less than Half Price.

WILLIAM ABRAHAM offers, for cash—
LAURELS, 1½ to 6 feet, from 2*s* to 15*s* per 100.
LAURUSTINUS, 9 in. to 2 ft., from 2*s.* 6*d.* to 15*s.* per 100.
Fort Prospect Nursery, Limerick.

Seedling and Transplanted Forest Trees, &c.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., hold a large stock of the above, quotations for which may be had on application.
One and two-yr. Seedling LARCH particularly fine this season.

Oaks.—Samples Sent on Application.

WOOD AND INGRAM offer BRITISH OAKS, fine plants, from drills, 3 to 4 feet, 35*s.* per 1000; 4 to 5 feet, 45*s.* per 1000. Trade prices on application.
The Nurseries, Huntingdon.

ENGLISH YEWS.—Some thousands to offer, 2 to 3 feet, very well furnished and good rooted. Prices on application to
J. SANDY AND SON, The Nurseries, Stafford.

Planting Season.

THE PRICED LIST of SEEDLING and TRANSPLANTED FOREST TREES, SHRUBS, ALPINES and FERNS of WM. URQUHART AND SONS, Dundee, may now be had on application.

MAURICE YOUNG'S NEW TRADE LIST of CONIFERÆ, HARDY EVERGREEN TREES and SHRUBS, ROSES, RHODODENDRONS, JAPANESE PLANTS, NEW AUCUBAS, &c., is now ready, and will be forwarded on application.
Milford Nurseries, near Godalming, Surrey.

Notice.

H. LANE AND SON'S Descriptive CATALOGUE of ROSES, FRUIT TREES, VINES, CONIFERS, DECIDUOUS and EVERGREEN TREES and SHRUBS, RHODODENDRONS, AZALEAS (Indian), CAMELLIAS, &c., may now be had free on application. The prices will be found moderate, combined with quality. An inspection of the growing stock is earnestly solicited.

The Nurseries, Great Berkhamsted, Herts.

New Tea-scented, Noisette and other Roses.

JOHN WATERER AND SONS are offering strong plants, in pots, at 12*s.* per dozen, comprising the following sorts.—MARECHAL NIEL, CLIMBING DEVONIENSIS, BELLE LYONNAISE, Chamois, Jeanne d'Arc, Le Mont Blanc, Madame Ducher, Madame Levet, Tour Bertrand, Lamarque a fleurs Jaunes, Reve d'Or, Isabella Sprunt.

CLEMATIS JACKMANII, | CLEMATIS RUBRA VIOLACEA, CLEMATIS STANDISHII, and others, 12*s.* per dozen, very strong stuff. Trade price on application.

American Nurseries, Bagshot, Surrey.

New English Rose (Hybrid Perpetual Climbing),

PRINCESS LOUISE VICTORIA

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, the raiser of this Rose, to be sent out this month for the first time. Good plants at 7*s.* 6*d.* each, or three for 21*s.* Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

It will be figured in the "Floral Magazine" for November.

Coloured Drawings will shortly be ready, for 12 stamps, post free.

Descriptive Priced CATALOGUES free on application.

Roses New Varieties for 1871-72.

EUGENE VERDIER, FILS AINÉ, NURSERYMAN, &c., 3, Rue Dunois, Paris, has the honour to inform his clients and friends that he will be ready to send out in November next, on the most advantageous terms, all the NEW VARIETIES of ROSES for 1871–72; also those of 1869, 1870, and 1871.

Descriptive CATALOGUE of above can be obtained direct from E. V., or of his Agents, C. J. BLACKITH AND CO., Cox's Quay, Lower Thames Street, London, E.C.

Standard Tea Roses, and Others, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), beg to offer the largest stock of ROSES ever seen, at the following prices.—

Standard Tea Roses, all the best sorts, £5 per 100. (This stock is beautiful, and very extensive.)

Standard Hybrid Perpetuals and Moss, £4 per 100.

Half-Standard Hybrid Perpetuals and Moss, £3 4*s.* per 100.

Dwarf Hybrid Perpetuals and Moss, £2 per 100, £18 per 1000.

On their own roots, grown in pots, splendid stock, £2 per 100.

Tea sorts, Dwarfs. Madame Falcot, Devoniensis, Jean Pernet, Madame Margottin, and all the best, £3 per 100.

Maréchal Niel, Standards, £5 per 100; Dwarfs, £4 per 100.

Fifteen per cent. discount on the new sorts of 1872.

LISTS on application. CATALOGUES now ready.

Gladioli Seedlings, by Name, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), offer the following:—

GLADIOLI SEEDLINGS, first class, 7*s.* per 100; £3 per 1000.

100 GLADIOLI, by name, 10 sorts	.. .. £0	8	0
100 ,, ,, 25 ,,	 0	14	0
100 ,, ,, 50 ,,	.. .. .. £1 to 2	0	0
100 ,, ,, 100 ,,	.. .. .. £4 to 6	0	0

And upwards, according to the novelty of the sorts; all in good flowering bulbs.

Caladiums.

CHARLES VERDIER, FILS, NURSERYMAN, 12, Rue Duméril, Paris, begs to offer this autumn for the first time the SIX UNDERMENTIONED CALADIUMS (Mr. Bleu's Seedlings). They have been carefully studied during the last 5 years, and surpass any that exist up to this time.

C. BUREL	16*s.*	C. LEPESCHKINII	20*s.*
C. DONIZETTII ..	12*s.*	C. LEPLAY	16*s.*
C. LAINGII	10*s.*	C. VESTA	16*s.*

Full description will be sent on application.

CATALOGUES of Roses, New Roses, Pæonies and Gladioli are now ready, and may be had post free either from CH. VERDIER, or of his London Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, E.C.

HOCK AND CO. beg to intimate that they can now supply fine and healthy BULBS of their unrivalled Collection of CANNAS, containing the newest and the best older varieties.

New CANNAS.—12 for £1 10*s.*, 3*s.* each: viz., Adolph Weick (Chaté), Alfred Dumesnil (Sisley), Auguste Férier (Sisley), Auguste Joigneau (Chaté), Dr. Gromier (Nardy), Gloire de Toulouse, Jacques Plantier (Nardy), Jean Vandael, Mdme. Devalloy (Robichon), Mdlle. Schmitt (Nardy), Prince Impérial, Sénateur Chevreau.

Best varieties, of former years.—21 varieties for 10*s.*, 6*d.* each; 12 of one variety, 4*s.*; 25 of one variety, 7*s.* 6*d.*

The whole Collection of newest and best varieties of former years, altogether 43 varieties, for £2.

Hock & Co. beg also to offer strong plants of DAHLIA ARBOREA at 2*s.* each; as well as 25 varieties of new PHLOX DECUSSATA for £1.—HOCK AND CO., The Rhine Nursery, Castel, opposite Mainz, Germany.

Chrysanthemums.

ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6*s.* and 8*s.* per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

Brunswick Nursery, Stoke Newington, N.

CHOICE TRICOLOR GERANIUMS.

Prince of Wales
Princess Beatrice
Coronet
Pre-eminent

Mrs. Dunnett
Sir R. Napier
Phœbus
Sunbeam

Sunray
Italian Beauty
Mrs. John Clutton
Mabel Morris

The 12 for 21*s.*, package included. Terms cash. Remittances requested from unknown Correspondents. A LIST of 250 varieties post free.

ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

1871.—Planting Season.—1871.

THOMAS KENNEDY AND CO. offer the following Transplanted TREES, &c., which are healthy, well grown, well rooted, and in excellent condition for removal. Prices on application.

100,000 ASH, Common, from 1 to 1½, 1½ to 2, 2 to 3, and 3 to 5 feet.
100,000 ASH, Mountain, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000 ALDER, Common, 1½ to 2, 2 to 2½, and 3 to 5 feet.
150,000 BEECH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
200,000 BIRCH, 1 to 1½, 1½ to 2, 2 to 2½, and 3 to 4 feet.
30,000 BLACKTHORN or SLOE, 1½ to 2, 2 to 2½, and 2½ to 3 ft.
100,000 HAZEL, Common, 1 to 1½, 1½ to 2, and 2 to 3 feet.
50,000 HORNBEAM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
LIMES.—An immense stock of fine handsome Trees, 2 to 3, 3 to 4, 5 to 6, and 8 to 10 feet.
200,000 LARCH FIR, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
1,000,000 SCOTCH FIR, grown from true native saved seed, the plants twice and three times transplanted, 9 to 12 inches, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
500,000 SPRUCE FIR, Norway, all three times transplanted, 9 to 12, 12 to 15, 15 to 18 inches, and 1½ to 2 feet.
50,000 SILVER FIR, 6 to 9, and 9 to 12 inches.
100,000 PINUS AUSTRIACA, 9 to 15, and 15 to 18 inches.
100,000 PINUS LARICIO, true Corsican, 6 to 9, 9 to 12, and 12 to 15 inches.
150,000 OAK, English, 1 to 1½, 1½ to 2, 2 to 2½, 2½ to 3, 3 to 4, and 4 to 5 feet.
200,000 PRIVET, Evergreen, 1½ to 2, 2 to 2½, and 3 feet.
50,000 SYCAMORE or PLANE, 1½ to 2, and 2 to 3 feet.
1,000,000 THORNS or QUICKS, of all sizes.
50,000 WILLOWS, Huntingdon, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000 WHIN or GORSE, 1½ to 2 feet.

Besides the above, they have an extensive general stock of FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., which they are selling at moderate prices.

Railway Station Nurseries, &c., Dumfries.—November, 1871.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

LEE'S PROLIFIC BLACK CURRANT.

FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY, 1869.

GEORGE LEE,

MARKET GARDENER, CLEVEDON, SOMERSET,

Will be prepared to send out the above Currant in October and November, in not less than one dozen plants, at the following rates (orders booked as received):—

1-yr. old Plants, 18s. per dozen Plants.

2 or more yr. old Plants, 24s. to 30s. the dozen Plants.

It will be found a great acquisition on account of its fertility and other good qualities. It is very prolific (name given by the Committee of the Royal Horticultural Society), 600 plants (on 5½ rods of ground) in a Nursery the second year after planting producing over 5 cwt. of fine fruit. The bunches are medium length, of almost uniform size in berry, long-stemmed, so as to be gathered without crushing the upper berries. It is very sweet, much more so than the Black Naples, which he has grown largely for near 20 years. It is much enjoyed as a dessert. Is very thin-skinned, and makes a fine preserve. Fetches a much higher price in the market. It will be a good variety for the Market Gardener. Plants can also be supplied by the following Nurserymen:—

Messrs. P. LAWSON AND SON, Edinburgh.
Messrs. T. RIVERS AND SON, Sawbridgeworth.
Messrs. J. GARAWAY AND CO., Bristol.
Mr. C. TURNER, Slough.
Messrs. FISHER AND HOLMES, Sheffield.
Messrs. J. AND C. LEE, Hammersmith.
Messrs. J. VEITCH AND SONS, Chelsea.
Mr. F. PERKINS, Northampton.

EAST SOMERSETSHIRE CHAMPION POTATO.

Report of the Royal Horticultural Society's Trial Committee.

"*Late Kidney, allied to the Fluke.*—A most extraordinary cropper, very handsome, and of good quality."

This is a Potato that we confidently recommend, not only as a late but as a second early, quite fit for the table second week in July, but good late-keeping.

This will be sent out in September and October, in not less than 28 lb., 6*s.*; 56 lb., 11*s.*; 112 lb., 18*s.*—bags included. Remittances from unknown Correspondents. ☞ Stock limited. Trade not supplied this Season.

Five per cent. discount allowed for prompt cash.

IMPORTANT PRIVATE SALE

OF

WINTER AND SPRING FLOWERING CONSERVATORY AND ORNAMENTAL DECORATIVE PLANTS AND FRUITING VINES.

J. & R. THYNE,

SEED MERCHANTS AND NURSERYMEN, GLASGOW,

Respectfully beg to offer the largest, best selected, and most superbly grown Collections of the above they have ever cultivated for Sale, and especially request a personal visit from intending purchasers.

Any parties leaving the selection to J. AND R. T. may fully depend on receiving their most careful attention.

DETAILED PRICE LIST under offer as follows:—

	Per dozen.—*s. d.*	*s. d.*
AZALEAS, well budded	21 0 to	42 0
BOUVARDIAS, in variety ..	18 0 ,,	30 0
BEGONIAS, in variety	12 0 ,,	24 0
CAMELLIAS, well budded ..	21 0 ,,	42 0
CROTONS, in variety	18 0 ,,	42 0
CINERARIAS, named sorts ..	9 0 ,,	18 0
CHRYSANTHEMUMS, in variety	9 0 ,,	18 0
CYCLAMENS, in variety ..	9 0 ,,	30 0
DEUTZIAS..	9 0 ,,	18 0
DRACÆNAS, in variety.. ..	24 0 ,,	60 0

	Per dozen.—*s. d.*	*s. d.*
EPIPHYLLUMS, in variety ..	30 0 to	60 0
ERICAS, in variety	18 0 ,,	30 0
EPACRIS, in variety	18 0 ,,	30 0
FERNS, in variety	12 0 ,,	60 0
GARDENIAS, in variety ..	30 0 ,,	60 0
IXORAS, in variety	18 0 ,,	60 0
LILY of the VALLEY, in clumps	18 0 ,,	21 0
PALMS, in variety	42 0 ,,	105 0
PANDANUS, in variety ..	42 0 ,,	60 0
PRIMULAS—Seedlings.. ..	9 0 ,,	18 0
,, nivalis	12 0 ,,	21 0

	Per dozen.—*s. d.*	*s. d.*
PRIMULAS—Cortusoides ..	6 0 to	9 0
,, ,, amœna	18 0 ,,	36 0
,, japonica .. each	7 6 ,,	10 6
ROSES, in pots	18 0 ,,	30 0
SPIRÆA JAPONICA	12 0 ,,	18 0
,, PALMATA .. each	2 6 ,,	5 0
SOLANUMS..	18 0 ,,	24 0
TREE CARNATIONS	24 0 ,,	30 0
VINES, strong fruiting, best sorts in cultivation .. each	10 6 ,,	12 6
,, strong, for planting each	5 0 ,,	7 6

Special quotations for large and specimen ORCHIDS, PALMS, FERNS, and STOVE, GREENHOUSE and ORNAMENTAL FOLIAGE PLANTS.

EXPERIENCED GARDENERS RECOMMENDED.

60, BUCHANAN STREET.

PHALÆNOPSIS GRANDIFLORA.

MESSRS. JAMES VEITCH & SONS

Having received an importation of the above in the finest possible condition, beg to offer them at the following Low Prices; all the plants are established on wood:

SMALLEST SIZE, HEALTHY YOUNG PLANTS, 25*s.* each or £12 12*s.* per dozen.
SECOND SIZE, „ „ „ 42*s.* each or £22 per dozen.
STRONGEST SIZE, „ „ „ 63*s.* each or £32 per dozen.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

BIOTA ZUCCARINIANA,

The most handsome of all Arbor-vitæ.

Is of neat, compact, and columnar habit, and as much superior to "aurea" in form, as that fine variety is to "compacta," and perfectly hardy. Was raised from seed received from Nagasaki, in Japan. Original Seedling Plants, all exactly alike, particularly handsome, about 30 inches high and 20 inches through, **15s.** each; smaller Plants, from cuttings, from 12 to 18 inches high, **2s. 6d.** to **3s. 6d.** each, or **27s.** to **40s.** per dozen.

FRANCIS R. KINGHORN,
SHEEN NURSERY, RICHMOND, SURREY.

THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

IS STILL AT

WILLIAM PAUL'S.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, HERTS, N.

PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

NEW GIANT PRIMULA,

WALTHAM WHITE.

This magnificent GIANT PRIMULA is far in advance of any White Primula ever yet offered. Plants 6 months old measured when in bloom 18 inches in diameter at base, and 15 inches in height, forming a perfect pyramid. The flowers are more than 2 inches in diameter, finely fringed, and of great substance; pure white, with large well defined yellow eye, free from any stain. The leaves are large and massive without being coarse, of a dark green with red foot-stalks, forming a rich and beautiful contrast to the flower. As the plant seeds but sparingly, the seed is not likely to be offered for some years.

Plants now ready, 5s. each.

Three Prizes of £5, £3, and £2 will be offered in the spring of 1872 for the best Three Plants of this remarkable novelty.

WILLIAM PAUL, PAUL'S NURSERIES, WALTHAM CROSS, LONDON, N.

WINTER FLOWERING HEATHS.

E. G. HENDERSON & SON

RESPECTFULLY OFFER A SPLENDID STOCK OF

ERICA HYEMALIS, E. WILLMOREA, E. GRACILIS AUTUMNALIS,
E. GRACILIS VERNALIS,

With many other kinds, in large 48's and 32's. The finest quality in the trade for growth and bloom; per 100 or 1000. Special Prices on application.

Also amongst numerous other New Plants—

HYDRANGEA JAPONICA SPECIOSA, with a beautiful broad silver bar in the centre of each leaf.

BOUVARDIA DAVISONII.—The habit of B. Hogarth, producing large trusses of snow-white flower-tubes.

RONDELETIA SPECIOSA BRILLIANTISSIMA.—With trusses of brilliant flame-scarlet bloom. A valuable exhibition plant.

PELARGONIUM MALVÆFLORUM.—Trusses of Mallow-shaped flowers, French-white, with violet lines.

AZALEA PRINCESS LOUISE.—A splendid double white variety.

AZALEA PICTURATUM ELEGANS.—Beautiful, spotted and streaked with rose upon a pure white ground.

YUCCA TRECULEANA.—The most unique and stately form in its group, producing a magnificent pyramidal flower-scape.

IN RARE PLANTS, IRIS IBERICA.—With remarkably large satiny-white and rich brown-purple colours.

LILIUM TENUIFOLIUM.—The most brilliant of the miniature scarlet Turncap flowered group of Lilies.

LILIUM COLCHICUM.—The most elegant of the cream yellow-flowered section, with turbinate-formed flowers.

The last three species are large bulbs or tubers, recently received from native localities.

WELLINGTON NURSERY, ST. JOHN'S WOOD, LONDON, N.W.

Seedsmen
to Her Majesty
The Queen

BULBS
For Autumn Planting.

Seedsmen
to H R.H. the
Prince of Wales.

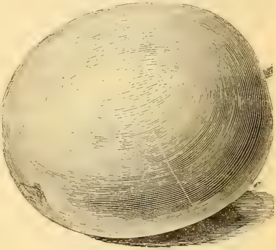
JAMES CARTER & CO.

Offer the following COLLECTIONS of BULBS for Present Planting, containing the most showy and popular varieties, selected from the choicest stocks in Holland.

CARTER'S
BULBS for INDOOR and OUTDOOR PLANTING.

Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.
Packing and Carriage Free.
DESCRIPTIVE LISTS Gratis on application.

NEW PLUM.



DUKE of EDINBURGH.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, roundish-obovate, with a shallow suture; outline very regular and smooth, skin thin, colour light purplish, with an exceedingly dense coating of light bluish bloom; flesh reddish yellow, thick, juicy, and moderately rich, parting freely from the stone; a very prolific bearer, and good for culinary purposes. First-class Certificate, Royal Horticultural Society.

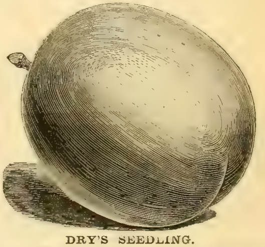
Maidens, **5s.** each.

CARTER'S
"SUBURBAN" COLLECTIONS

Of CHOICE FLOWER ROOTS for the DECORATION of the DRAWING-ROOM and GARDEN.

Price **25s.** packing and Carriage free, or half quantity for **12s. 6d.**

NEW PLUM.



DRY'S SEEDLING.

Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, or above medium size, roundish oval, marked with a very slight suture, skin reddish purple, covered with a thin bloom, slightly marbled when fully ripe, stalk long and stout; flesh dull greenish yellow or orange, firm yet melting and juicy, parting freely from the stone; it is of delicious flavour, and will make an excellent early dessert variety.

"The fruit is oval, of light purple colour, fine in size, remarkably good in flavour, and early. It was shown at one of the meetings held last year, and was then considered by the Committee to possess considerable merit, and its qualities having been again tested on this occasion, it was duly honoured with a First class Certificate."

Standards, **5s.**; Pyramids, **3s. 6d.**; Dwarf-trained 1 year, **5s.**; Maidens, **2s. 6d.** each.

CARTER'S AUTUMN CATALOGUE

Of DUTCH BULBS, FRUIT TREES, ROSES, &c., is now ready, and may be had Gratis and Post Free on application.

JAMES CARTER AND CO.,
SEEDSMEN TO H M THE QUEEN, AND H.R.H.
THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected

JAMES BROOKE AND CO , 16 and 18, Victoria Street, Manchester
Nurseries: Fairfield, near Manchester.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), beg to draw attention to their DUTCH BULBS, collections of which, amounting to 21s. and upwards, they forward carriage paid to any Railway Station in England and Wales Their Descriptive CATALOGUE, containing Cultural Notes for the Guidance of the Amateur, sent post free on application.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), supply GARDEN REQUISITES of every description.

14, Tavistock Row, Covent Garden, London, W.C.

CROYDON.

A. HENDERSON · EAST · SURREY · SEED · WAREHOUSE
ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon

---

WHEELERS' BROCKWORTH PARK PEAR.

"The handsomest and most valuable dessert Pear of recent years."

J. C. WHEELER AND SON offer fine young PYRAMIDS of this magnificent PEAR, at 10s. 6d. each, and a few DWARF-TRAINED TREES, at 15s. each. It obtained a First-class Certificate from the Fruit Committee of the Royal Horticultural Society, on September 20, 1870, and was exhibited a the Royal Horticultural Gardens on October 4, 1871, when it was again greatly admired. It is large, handsome, and fine flavoured, and is, without doubt, a great acquisition to our choicest and best dessert Pears. It may fairly be described (when grown against a wall, with a good aspect) as one of the handsomest, largest, and best dessert Pears ever introduced. It ripens the end of September and beginning of October.

J. C. WHEELER & SON have already received orders for it from nearly all parts of the United Kingdom; from Germany (for the Emperor's gardens at Sans Souci, Berlin); from France; and from the United States. Orders will be executed in rotation as received, the earliest getting the best plants.

J. C. WHEELER AND SON, Nurserymen,
Gloucester and London.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs
WILLOW CUTTINGS for Basket Makers' purposes.
BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts
WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"The Salix, or Willow," second edition, post free, 1s.; or of SIMPKIN, MARSHALL AND CO., London.

W. VIRGO AND SON, Wonersh Nurseries, near Guildford, Surrey, respectfully call the attention of Noblemen, Gentlemen, Nurserymen and Others, to the undermentioned stock; the whole of which is particularly strong and healthy, and in excellent condition for removal:—

Standard, Half-Standard and Dwarf Roses, upwards of 300 varieties; Standard, Pyramid and Dwarf Apples, extra fine; ditto Pears; ditto Plums; Dwarf-trained Apples, Pears, Plums, Peaches and Nectarines; Gooseberries; Black, Red and White Currants; Filberts, extra fine.

EVERGREENS.

Common Laurel, 2 to 4 feet.
Portugal Laurel, 2 to 4 feet
Green and Variegated Box, 2 to 4 feet.
Green Holly, 2 to 3 feet.
Yew, 2 to 4 feet.
Siberian and Chinese Arbor-vitæ, 3 to 4 feet.
Pinus austriaca, 2 to 5 feet.
Spruce Fir, 2 to 6 feet, fine and bushy.
Berberis aquifolia, 1 to 1½ foot.
American Arbor-vitæ for hedges, 3 to 6 feet.
Evergreen Privet, 2 to 3 feet, fine.
Hornbeam, 3 to 4 feet.
Cupressus Lawsoniana, 3 to 4 feet.

ORNAMENTAL TREES

Spanish and Horse Chestnut, 6 to 8 feet
Wych Elm, 6 to 8 feet.
Double, Scarlet, White and Paul's New Thorn, 6 to 8 feet
Black Italian Poplar, 6 to 8 feet
Turkey, English and Scarlet Oak.
Hornbeam, Laburnum, Lime, Norway Maple, Lombardy, Ontario, White or Abele, Balsam, &c.
Sycamore, Sumach, Acacia, Weeping Willow and Birch, 6 to 8 feet

Transplanted FOREST TREES for Covert and Copse Planting.

Ash, 2 to 3 feet.
Alder, 3 to 5 feet.
Birch, 3 to 5 feet
Beech, 2 to 3 feet.
Spanish Chestnut, 1½ to 2 feet
Horse Chestnut, 3 to 5 feet.
Spruce Fir, 2 to 3 feet
Scotch Fir, 1 to 1½ foot, and 2½ to 3½ feet
Hazel, 2 to 3 feet.
Hornbeam, 2½ to 3 feet.
English Oak, 2½ to 3 feet.
Sycamore, 3 to 4 feet
Plum-leaf Withy, 3 to 5 feet.

10,000 clean-grown CRAB STOCKS.
Strong transplanted QUICK, 2 to 2½ feet
Priced CATALOGUE and samples on application.

The Nurseries are 1½ mile from Bromley Station London, Brighton, and South Coast Railway; 2½ miles from Shalford Station, South-Eastern Railway; and 4 miles from Guildford Station, London and South-Western Railway. Goods delivered free to the above stations.

"The Best Catalogue."—*Vide "Horticulturist," October*, 1870.

GRATIS and POST FREE, a CATALOGUE of

DUTCH BULBS,

Fruit Trees, Dried Flowers, and General Autumn Requirements.

DICK RADCLYFFE & CO.,
SEEDSMEN, HORTICULTURAL DECORATORS, and GARDEN FURNISHERS,
129, HIGH HOLBORN, W.C.
SEED GROUNDS, ERFURT, PRUSSIA.

THE PINE-APPLE NURSERY COMPANY,

Maida Vale, Edgware Road, St. John's Wood, W.,

Beg most respectfully to announce that they have secured the services of MR. JOHN BESTER, the well-known Horticulturist, as Manager; and that they are now making extensive arrangements, which will enable them to execute Orders to any extent in the Horticultural profession. They guarantee Genuine Productions, and to transact all Business in a spirit of Liberality, which they trust will give general satisfaction to their Customers.

CATALOGUES of the respective Classes, and Designs for Improvements, on application.

ADDRESS TO MR. JOHN BESTER, PINE-APPLE NURSERY, MAIDA VALE, W.

NEW CRIMSON PRIMROSE,
PRIMULA JAPONICA.

MR. WILLIAM BULL

Begs to announce that he is NOW SENDING OUT this NEW HARDY PRIMROSE. It has been recently figured in the "Florist and Pomologist," "Floral Magazine," and "Botanical Magazine;" and the opinion of every one who has seen it in blossom may be expressed in the one word, "lovely!" When exhibited before the Floral Committee of the Royal Horticultural Society, it was voted a First-class Certificate by acclamation.

The "Florist" says of it,—"Hail! Queen of the Primroses! for so its introducer designates the lovely flower we now figure, which is hardy as a peasant, resplendent as a princess. It is just ten years since Mr Fortune met with it in Japan, a basketful of blooming plants having been brought to his door; they were, of course, secured, but the journey home was too much for them, and despite every care none reached England alive. Ever since that time endeavours have been made to introduce this lovely plant, but till now without success, the seeds having been found to lose their germinating power in the course of transmission to Europe At last, however, perseverance has been rewarded, and from seeds imported by Mr Fortune plants have been raised in the establishment of Mr. W BULL, of Chelsea. Our gardens have thus secured a perfectly new, thoroughly hardy, and exquisitely lovely Primrose, one which is really valuable on account of its intrinsic beauty. Of the hardiness of the Primula japonica there can be no doubt, since plants which have been standing all the winter, fully exposed, in the trying atmosphere of London, are perfectly healthy, and came into bloom about the middle of May, some two or three weeks later than the plants which had been potted and flowered under glass."

The "Floral Magazine" remarks,—"Since the day when Lilium auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as that which we now figure, when Mr. W. BULL exhibited it on May 3 of the present year. Its history is now well known, and of its merits too much cannot be said. To Mr. Fortune, already so successful in enriching our gardens, are we indebted for it; and Mr. BULL may well congratulate himself on being the first to introduce it into Europe. A Primula a foot and a half high, bearing four or five separate whorls of flowers, each flower an inch in diameter, and of a splendid magenta colour, and the plant, moreover, perfectly hardy—can anything be added to this to indicate its value? We hardly think so, and everyone who saw it will fully bear out our assertion, that a more beautiful and more useful plant has not been for many years introduced into Europe. Of its hardiness there can be no doubt, as it has stood the ordeal of the last severe winter in the neighbourhood of London."

The Plants now offered are very strong and healthy, in 4-inch pots, and will be sure to bloom beautifully next Spring. Early Orders are respectfully solicited to insure having the strong Plants, for the demand is expected to be very large. Price **10s. 6d.** each, or **£4 10s.** per dozen. Coloured Plates can be supplied at 1*s.* 6*d.* each.

Those wishing to add this splendid Primula to their Gardens, are recommended to procure Plants, for even if imported Seed should be offered this season, it can scarcely be expected to grow. Mr. Fortune imported Seeds many times during a period of 10 years, but they always failed to vegetate, except in one instance, when sent to this country in a special manner.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA,
LONDON, S.W.

THE STEAM-ENGINE TRIALS

OF THE

ROYAL AGRICULTURAL SOCIETY of ENGLAND, OXFORD, 1870.

The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz.:—
First Prize for Horizontal Fixed Engine of 10 H.P.; First Prize for Steam Engine, with Boiler combined.

At the previous Trials of Steam Engines, at Bury, 1867, CLAYTON AND SHUTTLEWORTH took ALL the FIRST PRIZES for ENGINES; also a PRIZE of £15 for THRESHING MACHINES, and the Society's SILVER MEDAL.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at all Trials of the Royal Agricultural Society of England at which they have competed since 1849. N.B.—All the principal Makers of Portable Engines, &c., Compete for this Society's Prizes, being the only Trials in Great Britain conducted by competent and impartial Engineers, and where the capability and value of each Engine is thoroughly tested by practical experiments. C. AND S. therefore do not Compete at any other Shows.

PORTABLE ENGINES, from 4 to 25-Horse Power.

THRESHING MACHINES, Single, Double and Treble Blast, with Patent Rolled Steel Beater Plates, and all other recent improvements.

GRINDING MILLS, SAW BENCHES, STRAW ELEVATORS, &c.

☞ *CATALOGUES ON APPLICATION, OR FREE BY POST.*

CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN;
78, LOMBARD STREET, LONDON, E.C.; and TARLETON STREET, LIVERPOOL.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

CAMELLIAS and AZALEAS.—Good plants, with and without buds, at 15s., 18s., and 30s. a dozen, fine varieties Package gratis for cash with order.

J. H. LEY, Exotic Nursery, Croydon, S.E.

Special Cheap List of Palms, Ferns, and Stove Plants

J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send above, with general CATALOGUE, free on application.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON & SONS, "NEWTON" Nurseries, Chester.

Moor Edge Nurseries, Tansley, near Matlock,
DERBYSHIRE.

JOSEPH SMITH, JUN., begs to announce that he holds large stocks of FOREST TREES, COVERT and HEDGE PLANTS of a moderate size, suitable for general planting; also EVERGREEN and FLOWERING SHRUBS, &c., of which CATALOGUES will be forwarded free on application, and special offers given for large quantities.

MAGNIFICENT PLANTS of PINUS AUSTRIACA, 4 times transplanted, 4 to 5 feet (perfect specimens); smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.

SCOTCH FIRS, extra fine, 3 times transplanted, 4 feet; smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, by the 1000.

SILVER FIRS, very fine plants, 3 times transplanted, 4 feet.

COMMON LAURELS, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet, by the 100, 1000, or 10,000.

CATALOGUES and Prices on application.

WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

To the Trade.

TWO MILLION 1 and 2-yr. Seedling THORN QUICKS.

300,000 Transplanted THORN QUICKS, 4-yr., 2 to 3 feet.
100,000 do. Common LAURELS, extra fine, 2 to 3 feet.
1,000,000 do. FOREST TREES, from 1 to 2 and 3 feet, consisting of Larch, Scotch, Spruce, and Silver Firs; Beech, Oak, Elm, Birch, Sycamore, &c.

The above will be SOLD cheap. They are well rooted, fine stuff, healthy, and well grown.

GEO. R. DAVIDSON, The Newry Nurseries, Newry, Ireland.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

Ornamental Trees and Shrubs.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, beg to intimate that in consequence of a large portion of their Ornamental Grounds having been Disposed of for Railway and Building purposes, they are now prepared to SELL at reduced prices their splendid stock of ORNAMENTAL TREES and SHRUBS. These being of all ages and sizes, are particularly well suited for giving immediate effect in the Formation and Improving of Ornamental Parks, Pleasure Grounds, &c. Inspection invited.

Quicks and Forest Trees.

SAMUEL ROBINSON, Shaw House, Melbourne, near Derby, will offer, at his ANNUAL SALE, about the 20th of this month, of which due notice, with particulars, will be given—

A very large quantity of 3, 4, and 5 yr transplanted QUICKS, suitable for Railway and Enclosure Planting; also about 50,000 LARCH, 3 to 4 feet; a larger quantity of a smaller size, fit for planting out
20,000 to 30,000 SCOTCH, 2 to 3 feet; a few hundreds of ELMS and BIRCH, 7 to 10 feet; two or three lots of well feathered SPRUCE, 3 to 5 feet; and strong OAKS, of similar size.

ROBERT CORNWELL AND CO. offer SILVER, SCOTCH, and AUSTRIAN FIRS, 3 to 5 feet; ARBOR-VITÆ, 3 to 6 feet; AUCUBAS, 1½ to 4 feet; PRIVET, 3 to 4 feet; Variegated and Green BOX, 2 to 4 feet; do. Edging; IRISH YEWS, 3 to 4 feet; LAURELS, 4 to 8 feet; bushy LAURUSTINUS, 2 to 3 feet, some extra handsome ones, 4 by 4 feet; Standard ROSES, strong GOOSEBERRIES, CURRANTS, and STRAWBERRIES of sorts; ASPARAGUS, 2, 3, and 4 yr.-old; RASPBERRIES, Cromwell's Seedling, 12s. per 100; do. Prolific, 10s.; Carter's Prolific, 10s.; Red and White Antwerp, 10s.; Fastolf, 10s.; Fillbasket, 10s.; Ead's White, 10s.; Semper Fidelis, 20s. Bushy LAURELS, 4 ft., £1 per 100.

NOTE—Opposite the Red Lion, Barnet, N.

Northampton Nurseries.

JOHN PERKINS, SEN., begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his extensive STOCK of the following, the whole of which will be offered at very low prices:—

Whitethorn or Quick, extra fine, 3-yr. transplanted
Spruce Fir, 2½ to 4 feet
Scotch Fir, 1½ to 2 feet
Larch Fir, 1½ to 2, 2½ to 3, and 3 to 4 feet
Pinus austriaca, 1½ to 2, 2 to 3, and 3 to 4 feet
Birch, 3 to 4 feet
Hazel, 2 to 3 feet
Hornbeam, 2 to 3 feet
Evergreen Privet, 1½ to 2, 2 to 3, and 3 to 4 feet
Berberis aquifolia, 1 to 1½ foot
Green Box, 1½ to 2, and 2 to 3 feet
Portugal Laurel, 1½ to 2, and 2 to 3 feet
Common Laurel, 1½ to 2, and 2 to 3 feet
Black Italian Poplar, 4 to 6 feet
Blackthorn, 1½ to 2, and 2 to 3 feet
Roses, &c., &c.

J. P.'s stock of all kinds of FRUIT, FOREST, ORNAMENTAL TREES, &c., is very extensive, and in the best possible condition for removal, having been frequently transplanted. Descriptive priced CATALOGUES free by post, or on application.

52, Market Square, opposite the Corn Exchange, Northampton.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them on terms unusually advantageous. Where selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. The plants we have sent out in execution of such orders have, we are informed, given unmixed satisfaction. The following list, with prices annexed, will be some guide to intending purchasers:—

Dendrobium Falconeri, 21s. to 63s. each; D. Wardianum, 63s. to 105s.; D. chrysotis, 21s. to 63s.; D. McCarthiæ, 42s. to 84s.; D. heterocarpum, 5s. to 21s. D. moniliforme, 10s. 6d. to 21s.; D. transparens, 5s. to 21s.; D. Devonianum, 7s. 0d. to 21s.; D. nobile, 5s. to 105s.; Odontoglossum grande, 7s. 6d. to 10s. 6d.; O. Insleayi, 7s. 6d. to 10s. 6d.; O. citrosmum, 7s. 6d. to 10s. 6d.; O. luteo-purpureum, 25s.; O. gloriosum, 25s.; O. Alexandræ (Bluntii), 21s. to 63s.; O. Pescatorei, 21s. to 63s.; O. Rossi superbum, 21s. to 31s. 6d.; O. crocidypterum, 42s.; O. platyodon, 31s. 6d.; O. ramulosum, 31s. 6d.; O. Bictonense, 15s.; O. Uroskinneri, 10s 6d. to 15s.; Vanda cœrulea, 10s. 6d. to 105s.; Pleione Wallichii, 3s. 6d. each, 30s. per dozen; P. lagenaria, 5s. to 10s. 6d.; Cypripedium hirsutissimum, 7s. 6d. to 21s.; Cattleya Mossiæ, 7s. 6d. to 21s.; C. maxima, 31s. 6d.; C. Trianæ, 15s.: C. Warneri, 21s.; Barkeria Skinneri, 10s. 6d. to 63s.; B. spectabilis, 10s. 6d. to 63s.; Calanthe vestita, 3s. 6d. to 21s.; C. Veitchii, 10s. 6d. to 42s.; Cœlogyne cristatum, 10s. 6d. to 63s.; Oncidium Papilio, 7s. 6d. to 10s. 6d.; O. Krameri, 21s.; O. Lanceanum, fine variety, 15s.

MAURICE YOUNG'S New Descriptive CATALOGUE of CONIFERÆ, HARDY ORNAMENTAL TREES, SHRUBS, and EVERGREENS, RHODODENDRONS, ROSES, cheap EVERGREENS for cover, WINTER BEDDING PLANTS, NEW AUCUBA, JAPANESE PLANTS, FRUIT and FOREST TREES, &c., is now ready, and will be forwarded on receipt of stamp for postage.

Milford Nurseries, near Godalming, Surrey.

EXTRA STOCK for SALE, Cheap.

5000 Spanish Chestnuts, 4 to 6 ft.
2000 ,, ,, 8 to 10 ft.
5000 English Oaks, 6 to 8 feet.
2000 ,, ,, 8 to 10 feet.
2000 Turkey Oaks, 8 to 10 ft.
5000 Pinus austriaca, 3 to 4 ft
5000 Laurustinus, full of bloom buds, 2 to 3 feet

The Oaks and Chestnuts are straight and well-grown, the austriaca and Laurustinus bushy, and all finely rooted

W. ROSSITER, Nurseryman and Seedsman, Paington, Devon.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Seed Potatos.

H. AND F. SHARPE'S Wholesale LIST of SEED POTATOS is now ready, and may be had, post free, on application. It comprises all the best early and late varieties, also all the American sorts worthy of cultivation. The quality is excellent, and the prices very moderate.

Seed Growing Establishment, Wisbech.

Turf, Turf, Turf.

RICHARD OWEN, Albany Wharf, Regent's Park Basin, N.W., Contractor to the Honourable Commissioners of H.M.'s Public Works, &c., is supplying most excellent TURF, also YELLOW LOAM, PEAT, ROTTED MANURE, GRAVEL, SHELLS, and some very superior TOP SPIT LOAM, at extraordinarily low prices.

THE LONDON MANURE COMPANY.
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—

PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

Autumn Sowing.

ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.
Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.
Chairman—Robert Leeds, Castleacre, Norfolk.
Managing Director—James Odams.

This Company was originally formed by, and is under the direction of, Agriculturists—circumstances that have earned for it another title—viz.,

"THE TENANT-FARMERS' MANURE COMPANY."

Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

WILKIE'S CONDENSED COMPOSITION,
THE CHEAPEST AND ONLY EFFECTUAL
MEALY BUG, SCALE, and THRIP DESTROYER.

One trial will be sufficient to give it a pre-eminence over all other Insecticides.

Sold in bottles at 2s., 3s. 6d., and 6s. each.

May be had of all respectable Nurserymen and Seedsmen, and Wholesale of

ALEX. WILKIE,
Oak Lodge Gardens, Addison Road, Kensington, W.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

Wheat Sowing.

DOWN'S FARMER'S FRIEND, for Preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wire-worm. A 9d. packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.

Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.

Full directions for use are given with each packet.

Prepared at the Manufactory, Woburn, Beds.

CAUTION.—To guard against fraudulent imitation, and consequent disappointment, see that the signature of HENRY DOWN is on the label.

Agents in every Town throughout England, Scotland, and Ireland.

Autumn-sown Cabbage Plants.

W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts:—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3s. per 1000; do. RED PICKLING, 5s. per 1000.

The Nurseries, Wonersh, Guildford, Surrey.

JOHNSTON'S ST. MARTIN'S RHUBARB.—Strong roots, 1s. 6d. each; 16s. per dozen. Price to the Trade on application.—The Subscribers have received, quite unsolicited, the highest testimonials as to the superiority of the above new variety of Rhubarb. It is undoubtedly the best sort in cultivation.

W. P. LAIRD AND SINCLAIR, Nurserymen and Seed Merchants, Dundee, N.B.

Seed Wheat.

W. SAVILL, Curl's Farm, Clavering, has a good stock of RIVETT SEED WHEAT for SALE, requiring only from 1 bushel to 5 pecks per acre. During the last four years many of the heads have had six or seven set on each side, containing from 100 to 130 grains each, and producing from 6 to 8 quarters per acre without fallowing. Price 6s. 6d. per bushel; delivered within 8 miles at 2d. per bushel extra, in quantities of not less than one sack.

N.B.—There is a slight sprinkling of Kentish in the above Wheat, but a less quantity than is generally sown in Rivetts.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

JAMES BOYD AND SONS, HORTICULTURAL BUILDERS and HEATING ENGINEERS, Paisley, N.B.

CONSERVATORIES, GREENHOUSES, VINERIES, FORCING HOUSES, PITS, and every description of Horticultural Building, manufactured in Wood or Iron by Steam-power Machinery, and erected in any part of the United Kingdom. Manufacturers of Hot-water Apparatus for Heating Churches, Mansions, Warehouses, &c.

Plans and Estimates on application.

London Office: 1, Church Court, Clement's Lane, E.C.

Horticultural and Window Glass Warehouses.

JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.

GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.

Prices upon application.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	15s. 0d.	19s. 6d.
Third quality	16s. 0d.	22s 6d.
Seconds	18s. 6d.	20s. 0d.
English	20s. 0d.	27s 0d.

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.
Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths. s. d.	3rds. s. d.	2nds. s. d.
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0 16 to 17 oz. to the foot.	16 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..			
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	12s 6d.
by 6	8½ by 6⅜	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	13s 6d.

Boxes 2s. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

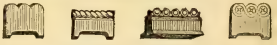
JAS. PHILLIPS AND CO., 180, Bishopsgate Street Without E.C.

J. TYLOR AND SONS' FOUNTAIN JETS.

A large variety to be seen in action at
THE MANUFACTORY,
No. 2, Newgate Street, London, E.C.

Illustrated Catalogues on application.

Rosher's Garden Edging Tiles.



THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design

F. AND G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

F. AND G. ROSHER, Brick and Tile Merchants.—See addresses above.

SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

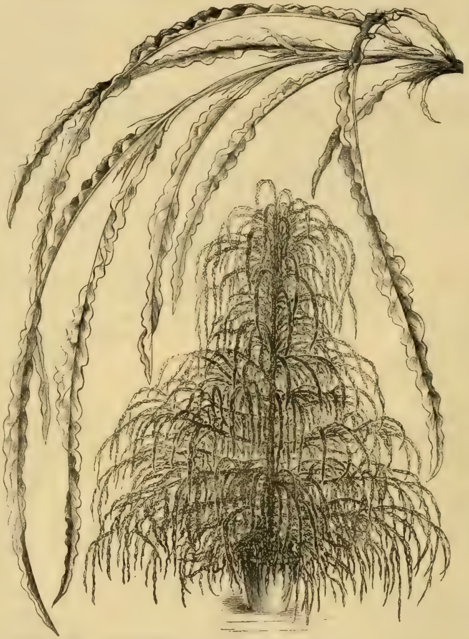
N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

TO THE TRADE.

JAMES VEITCH & SONS

Have much pleasure in offering the following First-class Novelties, which they confidently recommend as being of sterling merit :—

AMARANTHUS SALICIFOLIUS.



THIS remarkably beautiful annual was introduced by us from the Philippine Islands through the late Mr. J. G. Veitch, and we class it as one of his best introductions, and by far the finest Amaranthus ever offered to the public.

The plant is of pyramidal form, attaining a height of from 2½ to 3 feet, branching close to the ground, the lower branches being from 12 to 15 inches in length, and extending in a horizontal position.

The leaves, which are beautifully undulated, vary in the earlier stages of growth from a green to a bronzy green shade, and are from 5 to 7 inches in length, by about a quarter of an inch in width. As the plants get stronger, the leaves at the ends of all the principal branches assume a bright orange-red colour, and become more elongated, generally being from 10 to 15 inches in length, forming magnificent bright coloured plumes, and giving the plant a most elegant and picturesque appearance.

From its extremely graceful habit and rich colours this plant produces a striking effect when planted in large beds or masses; it also forms a very handsome object as a single specimen for the centre of a vase or small bed, and is invaluable as a pot plant for autumn greenhouse decoration.

It has been exhibited by us in Hamburgh, London, Edinburgh, and Brighton, and has invariably received First-class awards; it cannot be too highly recommended.

NOTICES OF THE PRESS.

"Messrs VEITCH & SONS exhibited the finest new annual of the season, Amaranthus salicifolius, an introduction from Manilla, which grows in a beautiful pyramidal form to the height of about 3 feet, with long narrow leaves, the predominating colour being orange red, which varies to a deep bronze. The plant had been lifted from the open ground, thus establishing its character as a first-class bedding plant, and for conservatory decoration at this time of year. A First class Certificate was awarded."—*Gardeners' Chronicle, September* 9, 1871.

"The only novelty in the plant way was an Amaranthus salicifolius, from Messrs VEITCH & SONS, a Manilla species, of remarkably elegant pyramidal habit, with the leaves undulated, ligulate, acuminate, not at all Willow-like, but none the less effective from the suffusion of Indian red and green and yellow that characterised them. It is certainly a fine-looking annual for individualising, and will become valuable for relieving the squatness of dumpy flower gardening. First-class Certificate."—*Report of the Edinburgh Show, Gardeners' Chronicle, September* 23, 1871.

"Foremost must be mentioned Amaranthus salicifolius, from Manilla, exhibited by Messrs VEITCH, of Chelsea. Of this two sets of half-a-dozen plants were shown, and excited general admiration. They average about 3 feet high from the pot, and few plants could be more ornamental, having long narrow graceful weeping leaves, most of them purplish rose, with an orange tinge, others bronzed metallic green. Their effect was extremely fine, and we believe, moreover, that the plants were lifted from the open ground, and therefore, probably, capable of being treated as half-hardy annuals; whether that be so or no, it is quite certain that this Amaranthus will prove a great acquisition."—*Journal of Horticulture, September* 7, 1871.

"Messrs. VEITCH & SONS sent eight or ten specimens of Amaranthus salicifolius, a magnificent species, likely to be of the highest possible value for the embellishment of the conservatory and flower garden. The specimens exhibited were perfect pyramids, 3 feet in height and 2 feet in diameter at base, and the leaves, which are narrow, and of the most brilliant hues of orange-red and carmine, droop gracefully, like those of the well-known Croton angustifolium; and full-grown specimens, such as those exhibited, bear a very close resemblance in habit of growth to well-finished pyramidal specimens of that well-known plant. Single plants will, from the graceful habit of growth and the richness of the leaf tints, be most valuable for centres of flower beds, as well as for planting in conjunction with sub-tropical plants. It was most deservedly awarded a First-class Certificate."—*Gardeners' Magazine, September* 9, 1871.

CENTAUREA CLEMENTEI.

This lovely Centaurea, sent out by us for the first time last season, has given great satisfaction during the past summer, and we have again secured the whole of the new crop of seed. It is a robust and free-growing variety, producing crowns of leaves deeply fringed and cut in lobes, these again being fringed and subdivided. To the elegance of the foliage must be added the beauty of colouring, the leaves, in their earliest stage, being so densely covered with down as to be perfectly white, and when matured and fully developed still retaining a bright silvery appearance. As the quantity is limited, early orders are necessary to secure a supply.

CAULIFLOWER, VEITCH'S AUTUMN GIANT.

This new and extremely valuable variety is perfectly distinct from any other sort. The leaves are long and tapering, and the habit of the plant is robust, but very upright and compact. The heads are magnificent, beautifully white, large, firm, and compact, and being thoroughly protected by the foliage, remain longer fit for use than any other sort. If sown in April and May it will succeed the Walcheren, and coming in between that variety and Snow's Winter Broccoli, is a great acquisition to all gardens. It was awarded a First-class Certificate by the Royal Horticultural Society, Nov. 2, 1870. We are daily in receipt of letters speaking in the highest terms of this fine Cauliflower, but so many articles commending it having appeared in the various gardening newspapers, we think it unnecessary to quote extracts or say anything further in its praise.

MELON, COLSTON BASSETT SEEDLING.

A beautifully netted yellow-skinned variety, of very handsome shape and medium size, averaging about 3 lb. in weight; the flesh is almost white, of delicious flavour, exceedingly tender and melting; the plant is of good constitution, and a very free bearer. It received a medal at the Royal Botanic Society's Exhibition, June, 1870, and at the Royal Horticultural Society's great Show at Nottingham in July last it was awarded two First Prizes for flavour.

POTATO, VEITCHS' IMPROVED EARLY ASHLEAF KIDNEY.

Although we have offered this splendid Potato in our Retail Catalogue for the last three seasons, the great demand has always kept our stock so low that it is only now that we are enabled for the first time to offer it in quantity to the trade. We have received many very flattering testimonials respecting it, and can recommend it with confidence. It is quite distinct from every other sort, and may fairly be described as the best Ashleaf Kidney in cultivation, being a very heavy cropper, of excellent quality, and a first-rate forcer.

CUCUMBER, BLUE GOWN .. .. .. per 100 seeds.
,, COX'S VOLUNTEER .. .. ,, ,,
AGERATUM IMPERIAL DWARF .. .. per oz.
SEMPERVIVUM CHRYSANTHUS (UMBILICUS) per pkt.

Prices on application. Retail Prices and a List of the Trade who have secured supplies will shortly be published.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

SUTTONS'
FRESH IMPORTED
DUTCH FLOWER ROOTS,
CARRIAGE FREE.

New Varieties, specially selected for Exhibition purposes, 25 choice Bulbs for 40s., 12 choice Bulbs for 20s., Carriage Free.

From R. PEARSON, Esq., Jun., *Altofts.*
March 28, 1871.—"My brother, Mr. H. Pearson, took First Prize for Hyacinths at the Pontefract Show, with Bulbs supplied by you."

100 HYACINTHS, in 100 sorts, Carriage Free	..	£4	4	0
100 ,, in 50 sorts, Carriage Free	..	3	10	0
50 ,, in 50 sorts, Carriage Free	..	2	2	0
50 ,, in 25 sorts, Carriage Free	..	1	15	0
25 ,, in 25 sorts, Carriage Free	..	1	1	0

Suttons' Superb Hyacinths.

The Best 12 HYACINTHS
for Twelve Shillings.

Finest Mixed, from named varieties, 5s. per dozen; 35s. per 100.

Fine Mixed (French Seedlings), 3s. per dozen; 20s. per 100.

SUTTONS'
CHOICE GLADIOLUS.

100 in 50 named varieties (our selection)	..	£4	0	0
50 in 50 named varieties ,,	..	2	2	0
25 in 25 named varieties ,,	..	1	2	6
12 in 12 named varieties ,,	..	0	12	0

For complete LIST of named varieties and complete Cultural Instructions, see
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AWARDS of the JUDGES.

CLASS 1.—Six large-flowered CHRYSANTHEMUMS, distinct. (Open.)
1st, Mr. E. Rowe, Gr. to Mrs. Lewis, The Rookery, Roehampton, £3.
2d, Mr. G. Goddard, Gr. to H. Little, Esq, Cambridge Villa, Twickenham, £2.

CLASS 2.—Six POMPON CHRYSANTHEMUMS, distinct. (Open.)
1st, Mr. E. Rowe, £2. | 2d, Mr. G. Goddard, £1 10s.

CLASS 3.—24 CHRYSANTHEMUMS, large-flowered, cut blooms, distinct. (Open.)
1st, Mr. E. Rowe, 15s.

CLASS 4.—12 CHRYSANTHEMUMS, large-flowered, cut blooms, distinct. (Amateurs.)
1st, Mr. E. Rowe, 10s.

CLASS 5.—Nine DECORATIVE BERRIED PLANTS, in pots, distinct. (Open.)
1st, Mr J. George, Gr. to Miss Nicholson, Putney Heath, £1 10s.
2d, Mr E. Rowe, £1 5s.

CLASS 6.—POTATOS, Collection of. (Open)
1st, Mr. R. Dean, Seedsman, &c., Ealing, W., £1.
2d, Mr. D. Lumsden, Gr. to the Right Hon. R. C. Nisbet Hamilton, Bloxholm Hall, Sleaford, Lincoln, 15s.
3d, Mr. C. Ross, Gr. to C. Eyre, Esq., Welford Park, Newbury, 10s.

CLASS 7.—Dish of GRAPES, consisting of 6 bunches of any variety, grown in the open air against the wall, without any protection whatever. (Prizes offered by the Rev. G. Kemp, F.R.H.S.)
1st, Mr. J. Norris, Francis Court, Broadclyst, near Exeter, £3.
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1st, Mr. C. Frisby, £1 1s.

Noteworthy Horticulturists and Botanists.
NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.	Professor REICHENBACH, of Hamburgh
W. WILSON SAUNDERS, F.R.S.	Rev. S. R. HOLE, M.A.
Rev. M. J. BERKELEY, F.L.S.	E. J. LOWE, F.R.S.
M. DECAISNE	JAMES MCNAB, of Edinburgh.
G. F. WILSON, F.R.S.	ROBERT HOGG, LL.D.
Dr. MOORE, of Glasnevin	

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, NOVEMBER 4, 1871.

IT is very amusing, and often highly instructive, to listen to the comments of travellers on the plants grown in this country in our Palm-stoves, Orchid-houses, and the like. "Oh! this is all very well, but you should see them as I have along the banks of the Amazon," or "What magnificent flowers! In the tropics we don't get such bloom as that." We are all of us accustomed to hear such expressions as these—referring to WILD and CULTIVATED PLANTS respectively, and the contradictions they involve are often more apparent than real. In the first place, it must always be remembered that plants in a state of Nature grow, not necessarily in the localities best suited for them, but where they can. The home gardener is very often enabled to place his charges under more favourable conditions than they enjoy in their own homes. The very absence of competing plants is in itself an enormous gain, and one which the gardener, with his wits about him, and moderate appliances at command, can in most instances secure. On the other hand, there are other circumstances, such as the intensity of light in tropical countries, which favour some phases of vegetation to a degree not realisable, in our more clouded atmosphere, by any art of the gardener. It follows from this, that the best gardener is not he who exerts all his efforts in the attempt to imitate the conditions under which any particular plant may happen to grow in its native country, but he who uses his skill in the endeavour to grow the plant to the best advantage under the conditions at his disposal. To endeavour to imitate in our stoves all the conditions of a tropical climate is to strive after the unattainable; to avail oneself to the fullest extent practicable of the circumstances and conditions under which plants will grow in this country is to deserve success, and to a large extent, it may be added, to command it. Moreover, we must never lose sight of the requirements of the plant as growing in its own country, and the requirements of the gardener who holds it in subjection here. In the one case leafage to utilise every sunbeam and drink in every breath of vapour or of gas; in the other only so much foliage as shall ensure the production of brilliant flowers and well ripened fruit.

The gardener must have a thorough knowledge of general principles to begin with, and then he must have sagacity and tact enough to know how to apply them to varying conditions and requirements. He can get his knowledge of general principles from books or lectures, but his practical sagacity must be developed by experience. Books, or the lessons of men of science, will supply him with the ingots, but it is he himself who must mint those ingots into serviceable coin.

These remarks have been suggested to us by the perusal of an excellent paper on the culture of Orchids in Bengal, by Mr. SCOTT, of the Royal Botanic Gardens, Calcutta, a copy of which is before us.

Lower Bengal has but a small number of indigenous Orchids, and the climatal conditions were deemed so unfavourable, that but little attempt was made till recently to cultivate them in that province. In 1866, however, the late director of the Garden, Dr. THOMAS ANDERSON, whose recent death all botanists lament, suggested that the Orchids should be grown in those thinly thatched structures used by the natives for their Betel (Piper Betel). These structures have flat roofs, consisting of a light framework of Bamboo resting on Teak rafters, on which latter a thin layer of dried grass is fixed. The sides are formed in a similar manner, so that while the direct solar rays are cut off, there is still plenty of diffused light. These buildings, writes Mr. SCOTT, modify very effectively the ungeniality of the climate, screening the plants in the cold season, and checking the intense nocturnal radiation which then prevails, while in the hot season they admit a light diffused as that of their native forests, and thus the plants require little besides a free supply of water to supply their wants during the growing season. "Tropical Orchids," further writes Mr. SCOTT, "with few exceptions, delight in an abundance of light and heat, but in their season of growth they none the less require a highly humid atmosphere; and thus, in the construction of our Orchid-houses, it should be our aim to afford screens, which, while securing the latter, also admit an abundance of sun-light and heat." In the resting season the Orchids, in the Calcutta Garden, require little or no water, but in the hot season, which begins about the end of February, when the majority of Indian Orchids begin to bloom, watering becomes necessary, care being taken not to water overhead when the plants are in flower. During the rainy season, from the middle of June to the middle of October, artificial watering is had recourse to when necessary, till the onset of the resting period, when it is comparatively discontinued. In this way nearly all the tropical Indian Orchids, as well as representatives of many of the South American genera, have grown well and flowered freely in the Calcutta garden. These results have been attained by the use of airy, light-diffusing screens of dry grass, and by affording water when required, as just indicated. Mr. SCOTT very properly insists on the careful study of the hygrometer, and gives Tables, showing the weekly means of the wet and dry bulb thermometers in the garden at Calcutta, which we commend to the notice of our Orchid cultivators as worthy of their inspection.

Many other suggestive hints are scattered through Mr. SCOTT's paper; amongst others, the circumstance that many of the Indian Orchids, which are deciduous in their native habitats, retain their leaves in the stoves of this country. Dendrobium Falconeri is cited as an illustration of this; moreover, says Mr. SCOTT, the flowers of this species in India are superior to those produced in this country, each shade of colour being distinct and well defined. Altogether Mr.

SCOTT'S paper, though of course written for Indian use, is one which may be perused with profit by our home growers.

As there seemed to be a great want of information regarding the observations which have long since been established respecting the POTATO DISEASE, it was thought advisable, on the occasion of the exhibition of Fungi, at the Royal Horticultural Society's rooms, on October 4, to make a short statement on the subject, accompanied by figures, some of which are reproduced here. It is so generally recognised by the best scientific observers that the disease is actually produced by a parasitic Fungus, that it was not thought necessary to touch at length on mere speculations, which really arise in the first instance from a notion that no Fungus will grow except on organisms previously diseased. This notion has, however, been so often refuted, that it would be mere waste of time and paper to dwell upon it, though it was once so prevalent that Dr. MONTAGNE, who advanced further than any one when the disease first became prevalent in Europe, and whose observations, in conjunction with those of Mr. BERKELEY, were published in the first volume of the octavo Journal of the Horticultural Society in 1846, gave up for a time his well founded opinion, returning to it, however, at a later period.

The first appearance of the Potato disease is indicated by the presence of brown spots on the upper surface of the leaves. If the reverse of these spots be examined, it will be found that the brown colour has been produced by the action of a parasitic mould, which gradually extends in the circumference of the spots, destroying the tissues as it proceeds, and ultimately gaining extensive possession of other portions of the plant.

The mould in question belongs to the genus Peronospora, of which some 40 species are known, all of which are parasitic on living plants. This mould had not been observed previous to 1844. It was not contained, either in the collections of DE CANDOLLE or SOWERBY, and a notion once prevailed that it was some species which had acquired a somewhat different character, from migrating to a plant of exotic origin. The distinctive character, however, of the swellings on the threads is so different from anything which has been observed in other species, that it is impossible to acquiesce in that opinion, and as the disease is known in the native country of the Potato, though the parasite has not been detected there, it is more natural to suppose that it was imported, unless we have recourse to the theory of spontaneous generation, which at present is a mere matter of speculation. The mould, Peronospora infestans (fig. 309, 1), bears abundance of spores on the tips of the branches, the mycelium, or spawn, burrowing amongst the cellular tissue of the leaf (fig. 2), and causing rapid decomposition, while the vertical threads, which branch and bear the spores, find their way through the stomates, or leaf pores. The spores themselves falling on different parts of the plant germinate (fig. 3), and penetrating the tissues (fig. 4), produce a brown tint not only in the cells with which they are in immediate contact, but in the adjacent cells.

It is, however, curious that some of the spores in which no perceptible difference can be found at first, undergo a peculiar process. The contents become differentiated, as first observed by Dr. MONTAGNE, though more perfectly by DE BARY, and are divided into a number of nucleated cells, which ultimately produce a multitude of zoospores*, that is to say, moving spores, which are exceedingly active so long as they have sufficient moisture in which to exercise the two thread-like processes by which they change their position (fig. 6). These bodies, like the ordinary spores, germinate (fig. 7), and penetrate the tissues (fig. 8), producing the same brown tint, and in the same way as in the former case.

In many species of the genus another more perfect form of fructification has been observed, in which there is clearly the action of a male element. In Peronospora alsinearum, for example (fig. 309, 11), there are distinct antheridia, or male organs, which come in contact with peculiar cells originating within or amongst the tissues of the leaves, and in consequence of this contact and interchange of the contents of the cells in question a resting spore is formed as in Peronospora viciæ (fig. 12), which is dormant through the winter, but can propagate the plant at a later period.

It is not quite certain whether this perfect form of fructification has been observed in the Potato mould. Dr. MONTAGNE, however, figured in the memoir above quoted (figs. 9, 10) a genus discovered in spent Potatos by Dr. PAYEN, to which he gave the name of Artotrogus, which there is reason to believe is the resting spore of Peronospora infestans. Resting spores, moreover, have not yet been observed in the Onion mildew and some other species of Peronospora, but these species so closely resemble the others, that it is very improbable that they should not have resting spores, though they may be produced more rarely.

Such is the character of the Potato mould, and we see at once that it is capable of producing the brown chemical change in the cellulose which is so characteristic of the Potato murrain; that it is far more easily propagated in wet than in dry weather; and that from its habit of infesting the intimate tissues of the plant it is exceedingly difficult to apply any remedy, the sulphur which is a specific in the Hop and Vine mildew because the Fungi to which these diseases are due are superficial, having little effect on the Potato mould.

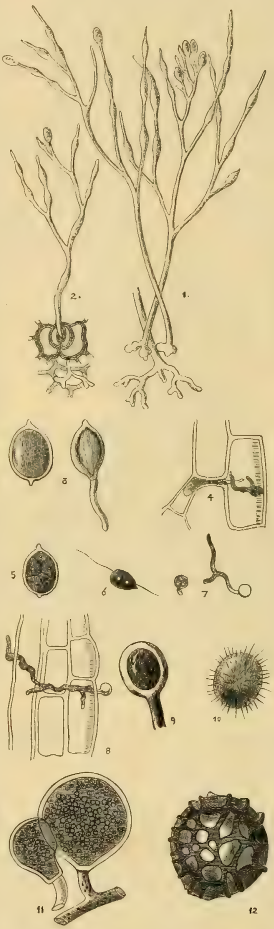

FIG. 309.—POTATO MOULD IN VARIOUS STAGES (see text).

The annexed illustration (fig. 309) represents, under various powers of the microscope:—

1. Peronospora infestans.
2. The same, burrowing amongst the tissues of the leaves, and making its way through the stomates.
3. Spores, or more properly speaking, conidia, germinating.
4. The same, sown artificially, and penetrating the tissues after 18 hours.
5. Spores with contents differentiated.
6. Zoospores.
7. Zoospores germinating.
3. Zoospores sown artificially in the stem, and, after 24 hours, penetrating the tissues and entering the intercellular spaces.
9. Young Artotrogus still in mother cell.
10. Young Artotrogus free.
11. Peronospora alsinearum, with an antheridium and mother cell.
12. Resting spore of Peronospora viciæ.

Peronospora infestans is frequently developed on other Solanaceæ, and is very common in the fruit of the Tomato.

It seems quite absurd, when the whole *rationale* of the Potato disease has been so amply explained, to look for an explanation in mere climatic conditions, exhaustion, weakness of constitution, or any of the empirical causes which are so often brought forward, and mostly by persons entirely ignorant of what has been observed by men of science. *M. J. B.*

—— SOME few years since, M. ALPH. DE CANDOLLE drew attention to the arrangement of the VEINS of the LEAF in some species of BEECH (Fagus), in which he pointed out that the lateral veins, instead of running up into the centre of the little lobes or teeth of the margin of the leaf, as is usually the case, terminated in the sinus or notch between them. Although in some cases both forms of nervation exist in the same leaf (a caution to fossil botanists), yet in other cases it appeared to M. DE CANDOLLE to be sufficiently constant to be used as a specific character. In this manner, for instance, M. DE CANDOLLE distinguishes our European Beech, in which the tendency is for the veins to run into the shallow notches of the leaf, from the American form, where the veins run into the teeth or lobes. M. DE CANDOLLE also cites as illustration of this unusual direction of the nerves, Coldenia procumbens, Cratægus Oxyacantha, the Hawthorn, and Rhinanthus. To this list, no doubt, many additions could be made; one is before us as we write, in the leaves of Ceratopetalum gummiferum. We have also seen a similar arrangement in the linear leaves of some Dryandra or allied Proteaceous plant; in some Saxifrages, *e.g.*, S. Geum, in Betonica officinalis, and obscurely in Hieracium murorum, Teucrium Chamædrys, and Tussilago fragrans. The point is one of some importance in structural botany, not only with reference to fossil leaves and their appropriate discrimination, but also to such cases as the venation of the flowers of Composites, and of the so-called gamopetalous corollas in general.

—— We hear that Dr. HOOKER has placed the LICHENS which he collected during his Morocco expedition in the hands of Rev. W. A. LEIGHTON, of Shrewsbury, for examination and determination.

—— It appears that VIRGIN FORESTS are still to be found in central Europe, that is, in Bohemia and Moravia. The forests consist of Silver Fir, Picea pectinata, Spruce, Pinus Abies and Beech. Some of the Firs measure 7 feet in diameter, and have a height of 160—170 feet, one even is registered to have measured 200 feet in height, with a diameter of 6 to 8 feet, though the majority of the trees do not attain such dimensions. Owing to the paucity of species the general aspect of the woods is monotonous. The trunks run up to a great height before branching into the head, and thus allow of the growth of underwood.

—— Not long since we had occasion to record the occurrence of MALE and FEMALE FLOWERS on the SAME TREE in ARAUCARIA IMBRICATA as grown at Bicton. It now appears that a similar circumstance has lately been observed by M. A. RIVIÈRE in the Experimental Garden of Hamma, near Algiers. The occurrence of so many cases of a similar kind in other ordinarily unisexual plants leads us to believe that, under suitable conditions, any plant can change its condition. But what are the suitable conditions? What are the conditions, for instance, which have led to the production during the same season of the monœcious state in an Araucaria at such very different places as Algiers and Bicton?

—— The MAXIMUM TEMPERATURES of the AIR during the week ending October 28, ranged from 68°.8 at Portsmouth to 54°.8 at Aberdeen, with a mean for the several stations in England of 60°.2, and for those in Scotland of 57°. The MINIMUM TEMPERATURES of the air ranged from 42°.1 at Liverpool to 32° at Wolverhampton and Hull, with a mean for English stations of 35°.8, and for Scottish of 36°.5. The MEAN TEMPERATURES were generally

---

[*] Dr. Montagne observed the production of a multitude of sporidia in the spores, but did not ascertain the fact that they were zoospores. See figure in Journal of Horticultural Society.

uniform. The highest, 50°.6, was recorded at Liverpool, and the lowest, 46°.4, at Norwich. Five out of the seven Scottish stations registered mean temperatures exceeding 48°, and the mean for the whole was 48°.3. The mean for the English stations only exceeded this by 0°.3. The RAINFALL at the various stations in England was generally small, the exceptions being Manchester, 0.92 inch, and Eccles, 1.08 inch; the mean being but 0.35 inch. In Scotland, Edinburgh recorded a fall of 0.70 inch, Glasgow 1.02 inch, Dundee 0.75, and Greenock 1.53 inch; the mean for the several places in that country being 0.78 inch. (See Mr. GLAISHER'S Tables, p. 1427.)

—— FRIES states in his "Epicrisis" that the three varieties of AGARICUS COLUMBETTA occasionally occur severally with red, brown, or violet spots. Some specimens of varieties were found by Mr. BROOME in Denbighshire, which were marked both on the stem and pileus with bright violet spots. Remembering that coloured specks occur now and then on Fungi, as figured by BULLIARD under Agaricus ulmarius, which in one case at least has been ascertained to be an early stage of Epicoccum, while the structure is that of the celebrated blood-rain of Dr. MONTAGNE (Palmella prodigiosa), it occurred to us that these violet spots might be something analogous. On examination under the microscope, it was found that they consisted of myriads of very minute granules, which rather confirmed our notion, but it was thought advisable to test the matter by sowing some of the substance on stiff paste. This accordingly was done, and now, after a few days, the surface is covered with the most brilliant violet coat. At present it is quite uncertain what the ultimate development of this substance may be, but the circumstance is worthy of record, as it belongs to a set of organisms which probably act a very important part in the diffusion of disease, and especially of hospital gangrene. The blood-rain was propagated with great ease and rapidity, and as, on experiment, it made a permanent dye, it was at one time thought that it might be of economical interest. It is very probable that this substance may have the same property, but the brilliant aniline dyes entirely put such minor succedanea out of the question. *M. J. B.*

—— Some few months since we mentioned a LATE-FLOWERING LILY of the VALLEY, shown by Mr. STANDISH, as an apparently distinct variety; and subsequenty it was observed by a correspondent, that late flowers accompanied by similar appearances were the result of very early forcing, under which treatment many plants would go blind, and develope only late blossoms. The exhibition of Mr. STANDISH's plants again at this season shows our first impression to have been correct. The foliage is in full vigour now, while that of ordinary potted Lilies has died down, and it is moreover totally different in form, being broadly ovate, as broad as long, instead of the usual elliptic-oblong figure. The variety, whatever it is, appears to be entirely unknown both in this country and on the Continent.

—— The new GLADIOLUS CRUENTUS, described at p. 105, 1870, has, as was anticipated, given rise to an entirely new form amongst these popular flowers. In a variety, which has been named Alice Wilson, raised, with many others, between cruentus and brenchleyensis, the regular form of the first-named parent has had the effect of producing a flower which, having its segments recurved, have much more the aspect of a Lily than of a Corn-flag. The segments are all white, tipped with a rich carmine-rose, the three sepaline ones, which are slightly the larger, having also rather more of this colouring than the three inner ones; but each set—the petaline and sepaline—being similar in form, and equally recurved, a beautiful flower, of an entirely novel character, has been obtained. Messrs. STANDISH & Co. are the fortunate possessors.

New Garden Plants.

MASDEVALLIA HARRYANA, *n. sp.*

Folio elongato oblongo spatulato obtuso basin versus late ac sensim attenuato; sepalis lateralibus lato semiovatis apiculatis, sepalo dorsali lineari porrecto.

There is a good deal to say about the purplish, violet, and crimson Masdevallias. After a long study and some correspondence and personal intercourse with A. van Branteghem, Esq., of Brussels, who grows Masdevallias and all cool Orchids like weeds, I have now some decided views about these curious plants; and I will soon give a general sketch of these plants in the *Gardeners' Chronicle*, but for the moment I must confine myself to the publication of a remarkable plant which has recently flowered in the wonderful collection of the Messrs. Veitch. The flower is a very dangerous, if not a victorious, rival of the Masdevallia that has been called M. Lindeni by Monsieur André. The large broad shining leaves may form a great attraction to Masdevalliophilists, but the blossom itself must move the admiration of every one who appreciates a wonderful flower. It has just flowered, I hear, for the first time in England. The flower reached me September 11. I feel a great pleasure in dedicating it to my excellent friend, Harry Veitch, Esq. *H. G. Rchb. fil.*

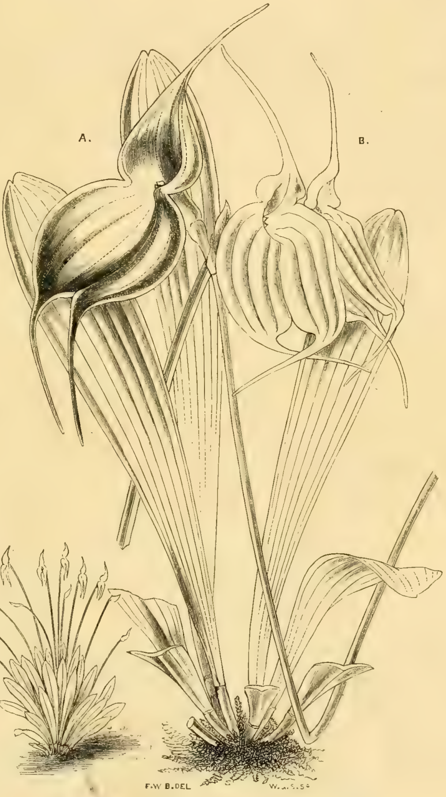

FIG. 310.—A, MASDEVALLIA VEITCHIANA. B, M. TOVARENSIS.

MASDEVALLIAS.

WE have here a charming genus of little plants—gems of the first water, one might say, seeing that they are most of them so chastely beautiful, and comparatively rare—a fact that detracts nothing from their value, as purchasers already know by experience. The fact of their rarity may be accounted for satisfactorily, if we remember that most of the species of this genus, not all, are found growing at exceedingly high altitudes, and doubtless many get their death-blow by being torn from their fresh and cool habitats on the Peruvian or New Grenadian ranges, and then subjected to the intense heat of the lowland plains below previous to their being dispatched hither to enrich our collections.

In 1864 we find that veteran orchidophilist, J. Bateman, Esq., F.R.S., writing as follows with regard to these plants:—"The range of this remarkable genus is higher than that of any in the entire family of Orchids. Its species are chiefly confined to the Andes of New Grenada and Peru, where they reach an elevation of more than 10,000 feet. They are of humble growth, resembling Pleurothallis, but with flowers of good size, great beauty, and presenting the utmost variety of colour and form. About 50 are known to botanists, but being of very difficult importation, scarcely more than half-a-dozen are yet to be found alive in Europe. They should be planted in small pots placed near the glass, but always shaded from the sun's rays, and kept in a cool and moist situation. A north house will probably be found indispensable. They grow freely, but are very impatient of the knife; hence it is difficult to increase them. M. coccinea is perhaps the finest species, but it has not yet flowered." In M. Linden's catalogue for the present year we find half a score species enumerated, with prices varying from 12*s.* to nearly as many pounds, while in 1865 Messrs. J. Backhouse & Son offered a species of this genus, imported from New Grenada, bearing "solitary, purplish rose-coloured flowers," for the extremely low sum of 10*s.* 6*d.*

On glancing over the catalogues of our own and foreign growers, I find about 20 species mentioned, viz.:—

Masdevallia amanda
,, Arminii
,, candida
,, caudata
,, civilis
,, coccinea
,, cuprea
,, elephanticeps
,, fenestrata
,, hians
,, infracta
,, Lindeni
,, maculata
,, ochracea
,, octodes
,, pumila
,, rio grandensis
,, tovarensis
,, venusta
,, Veitchiana

Unfortunately I have no means of ascertaining whether any of these so-called species are synonymous; but even supposing this not to be the case, it shows that there are some 30 or 40 species yet to introduce to our collections, which we possess at present only in our books or herbaria.

One of the most beautiful species in general cultivation is the Peruvian, M. Veitchiana (see fig. 310, A.) The gorgeous flowers of this novelty are solitary on long scapes, and are of the most brilliant orange-scarlet, set with short purple hairs, which latter give an indescribably rich appearance to the elegant long-tailed sepals.

M. tovarensis (see fig. 310, B) is from Tovar (Columbia), as its specific name implies, and must be considered as one of the best. Its curious shaped flowers are borne in pairs on the apex of a triquetrous scape, about 6 inches long. More rarely this plant produces three flowers on a scape. The flowers themselves are of the purest white, and remain perfect for weeks in a cool, moist atmosphere.

M. maculata is another choice species from Columbia, bearing yellowish flowers spotted with rose and purple, the sepals being also much elongated. This species flowered in the collection of the late Consul Schiller at Hamburg.

M. coccinea was introduced to our gardens from Pamplona, in New Grenada, and is a perfect little gem. Lindley described it as "a charming thing, with flowers as red as a soldier's coat."

M. infracta is another attractive form of the genus, with purplish-lilac flowers, and beautiful glossy foliage.

M. civilis is an extremely curious green flowered species, which I saw in flower in the old cool Orchid-house at Kew in 1868. Its flowers are borne solitary on short scapes, and are semi-tubular, with reflexed, long-tailed sepals, of a green colour spotted with brown within.

One of the finest of the recently introduced species is M. Lindeni, which was noticed in the *Gardeners' Chronicle* for June 25, 1870, as flowering in the collection of M. Linden at Brussels, its flowers being described as of "a puce or crimson colour."

Masdevallias, taken generally, may be characterised as being the "coolest" of Orchids, if we except the glorious South African Disa grandiflora, which Dr. Moore, of Glasnevin, has recently treated as a "sub-tropical," and bloomed it out-of-doors, planted in an artificial bog.

Masdevallias grow well in shallow pots, or small pans, in a compost composed of fresh, fibrous peat, with crocks, charcoal, and coarse smashed road-sand intermixed. The surface of the compost may be covered with fresh living Sphagnum, which not only adds to the neat appearance of the plants themselves, but also assists in preserving an equable moisture round their roots. They require an abundant supply of moisture whilst growing, both at their roots and in the atmosphere, and care must be taken to keep them as cool as possible during the hot summer months, as also to protect them from scorching. When well grown they bloom profusely, and are justly reckoned as being amongst the choicest "pets" of the cool Orchid-house. Who knows but that in a year or two's time we shall find some of them capable of enduring our winters when planted in sheltered localities out-of-doors? *F. W. B.* [It will be seen from the preceding article that Professor Reichenbach has described a new species, and further intends to give a general sketch of these plants, an announcement which will be received with great satisfaction by Orchid lovers. EDS.]

A NEW SYNOPSIS OF ALL THE KNOWN LILIES.—IX.

Subgenus 2. LILIUM PROPER.—Bulbs squamose; stigma a thick head to the style, with three blunt lobes—(*Continued*).

Group 4: MARTAGON (Turk's-cap Lilies).—Perianth broadly bell-shaped, always drooping, its divisions lanceolate, broadest about the middle, not distinctly clawed, reflexed (usually from half or two-thirds of the way down) when fully expanded. Stamens diverging much on all sides from the central axis of the flower—(*Continued*).

Key to the Species.

- Leaves verticillate
  - Three species already noticed.
- Leaves scattered
  - Leaves linear lanceolate, half an inch or more broad, 5—7 nerved.
    - Four species already noticed.
  - Leaves linear, ⅛—¼ inch broad, 3—5 nerved.
    - Perianth 1½—2 inches deep, with divisions ⅓—½ inch broad.
      - Leaves close, 50—80 to a stem.
        - Perianth bright red, not dotted. 26. L. CHALCEDONICUM.
        - Perianth bright yellow, dotted. 27. L. PYRENAICUM.
      - Leaves lax, about 30 to a stem. 28. L. CALLOSUM.
    - Perianth 2½—3 inches deep, with divisions ¾—1 inch broad
      - Leaves 60—100, perianth dull nankeen-yellow. 29. L. TESTACEUM.
      - Leaves 20—30, perianth bright yellow or scarlet. 30. L. LEICHTLINII.
  - Leaves narrow-linear, 1—1½ line broad, 1-nerved
    - Stem 1½—3 foot high, with 80—100 leaves 31. L. POMPONIUM.
    - Stem a foot or less high, with 30—50 leaves. 32. L. TENUIFOLIUM.

26. *L. chalcedonicum*, Linn. Sp. Plant. p. 434, *ex parte*; Bot. Mag. t. 30; Redouté, Lil. t. 276; Kunth, Enum. iv. 262 (excluding localities); Spae, Mon. p. 32; but not of Jacquin and many authors of local European Floras; *L. byzantinum miniatum*, Bauhin, Pin. 78. Stem stiff, erect, 2—3 feet high, striated, glabrous, or obscurely pubescent. Leaves at the flowering time 50—80; lower sub-patent, upper ascending, all scattered, linear, the lower 2—3 inches long, 2—3 lines broad at the middle, narrowed gradually to the point and the base, firm in texture, finely pubescent at the edge and beneath, distinctly 3—5 nerved, the upper reaching up to the base of the inflorescence. Flowers 1—6, subcorymbose, pendulous. Peduncles 2—4 inches long, sometimes bracteolate. Perianth 18—21 lines deep, bright scarlet, rarely yellowish, the divisions reflexed from below the middle when expanded, lanceolate, 5—6 lines broad at the middle, papillose in the lower half, not at all pubescent down the borders of the groove. Ovary 4—5 lines long. Style 6—8 lines, much curved; filaments about an inch; anthers linear-oblong, 3—4 lines; pollen red.

A native certainly of Greece and the Ionian Islands, and according to authors also of Asia Minor and Persia, but these last statements appear to rest only upon vague horticultural tradition. It is an old well-known favourite of our gardens, and was brought into cultivation in Western Europe as long ago as the middle of the sixteenth century. We have in L. chalcedonicum, pomponium, and pyrenaicum a parallel case to that of the Lebanon, Atlantic, and Deodar Cedars, three plants from different geographical areas excessively close to one another in character, so near that when they are cultivated it is often not possible to say to which of the three individual specimens they belong. It would, no doubt, be better to place them as sub-species only.

27. *L. pyrenaicum*, Gouan, Ill. 25; Redouté, Lil., t. 145; Kunth, Enum. iv. 262; Spae, Mon. p. 31; Reich. Icones Fl. Germ. t. 992; *L. flavum*, Lam. Gall, iii. 283.—Stem 2—4 feet high, strong, stiff, erect, finely furrowed, sub-glabrous. Leaves always scattered, very numerous, as many as 100 to a stem, erecto-patent, firm in texture, the lower 3—5 inches long, 2—3 lines broad at the middle, narrowed gradually to the base, and an acute point, usually distinctly 3-nerved, the edge slightly inrolled, distinctly minutely ciliated, the upper ones extending usually up to the base of the inflorescence. Flowers 1—6 in wild specimens, up to a dozen in cultivation, not forming so regular or elongated a raceme as in pomponium. Lower peduncles 3—4 inches long, sometimes bracteolate. Perianth pendulous, 1½—2 inches deep, bright yellow, the divisions reflexed from below the middle when expanded, lanceolate, 3—4 lines broad, dotted more copiously down the face with purplish-black, the groove not pubescent. Genitalia like those of pomponium, but the style rather thicker.

Confined to the Pyrenees, where it is tolerably frequent in woods, both upon the French and Spanish sides. It is very near L. pomponium, from which it differs principally by its broader usually distinctly 3-nerved leaves less inrolled at the border, and by its yellow flowers.

28. *L. callosum*, Sieb. et Zucc. Fl. Jap., fasc. ix., p. 86, t. 41; Kunth, Enum. iv. 262; Spae, Mon. p. 34; Miquel, Ann. Mus. Lug. Bat. iii., p. 156; *L. pomponium*, Thunb. Fl. Jap. p. 134, non Linn.—Stem 2—3 feet high, moderately slender, glabrous, subterete. Leaves ascending, much laxer than in its neighbours, not more than about 30 to a stem at the flowering time, the lower ones 4—5 inches long, scarcely over ⅛ inch broad at the middle, narrowed gradually to the base and with a long acute point, the edge slightly recurved, not perceptibly denticulate, the midrib with 1—2 distinct nerves on each side, the upper leaves growing gradually shorter, ceasing 2—3 inches below the base of the inflorescence. Flowers up to a dozen in a narrow regular thyrsoid raceme, all drooping till the capsule appears. Peduncles not more than 1—1½ inch long, subtended by a pair of small bracts, which are curiously indurated and hood-shaped at the tip. Perianth bright scarlet, 1¼—1½ inch deep, the divisions reflexed from about half way down when expanded, oblanceolate-spathulate, 2½—3 lines broad at the middle, cucullate at the tip, not at all dotted down the face in any of the specimens I have seen. Ovary and style each about half an inch long; filaments about an inch; anthers 3—4 lines; pollen bright red. Capsule 1¼—1½ inch deep, with a distinct neck, bluntly angled.

A native of Japan and the Loo-choo group, noticed long ago by Kæmpfer and Thunberg. It was confused by the latter with the European L. pomponium, from which it differs widely in both leaves and flower. The very narrow divisions, turning back from only about half down, are very different from those of any other species. It was introduced into cultivation by Siebold about 1840, and carefully described and figured by Zuccarini. The name refers to the bracts, which are very different from those of any other Lily.

29. *L. testaceum*, Lindl. Bot. Reg. 1842, Misc. p. 51, 1843, t. 11; Paxt. Mag. Bot. 1843, p. 221, *cum icone*; Kunth, Enum. iv. p. 673; Spae, Mon. p. 40; Flore des Serres, i., t. 39; Regel, Gartenfl. 1862, t. 349; *L. excelsum*, Hort., Walp. Ann. vi., p. 110; *L. isabellinum*, Kunze in Mohl et Schlecht. Bot. Zeit. i., p. 609; Linnæa, xvii., p. 570.—Stem reaching 5—6 feet in height, comparatively slender and wand-like, finely striated, sub-glabrous. Leaves always scattered, very close, 60—100 to a stem at the flowering time, erecto-patent, firm in texture, linear, the lower ones 3—4 inches long, 3—4 lines broad at the middle, narrowed gradually to the base and point, 3—5 nerved, the edge and midrib beneath distinctly ciliated, the upper ones growing gradually shorter, leaving a blank space of 3—4 inches below the inflorescence. Flowers usually 1—6, but sometimes up to a dozen, in a rather regular thyrsoid raceme. Lower peduncles reaching 5—6 inches in length, cernuous at the apex, after the ordinary Martagon fashion. Perianth 2½—3 inches deep, the lowest quarter connivent in a permanent cup, the divisions above this strongly reflexed, a peculiar ("nankeen") not very bright shade of yellow with a tinge of dull red in it, reaching ¾—1 inch broad a little below the middle, broader than usual up to the point, deeper in colour, and slightly papillose towards the throat, with a few orange-red spots. Ovary 6—9 lines long; style 12—15 lines; filaments 15—18 lines, the same colour as the petals; anthers half an inch; pollen orange-red.

A very distinct-looking plant, and now widely diffused. It is vaguely reported as Japanese (see Miquel, Ann. Mus Lug. Bat. vol. iii., p. 155), but has never been satisfactorily matched with wild specimens. If it be a garden hybrid, candidum would seem most likely to be its parent on one side, and pyrenaicum on the other. The general habit of the plant is very like that of candidum, but the shape of the perianth is of the typical Martagon type, and the colours are quite peculiar.

30. *L. Leichtlinii*, Hook. fil. Bot. Mag. t. 5673; Ill. Hort. t. 540; Flore des Serres, t. 1736; Belg. Hort. 1869, t. 11; Floral Mag. t. 509.—Stem 2—3 feet high, moderately slender, obscurely puberulous; leaves all scattered, lax as compared with its neighbours except callosum, erecto-patent, moderately firm in texture, the lower ones 3—4 inches long, ⅛—¼ inch broad below the middle, narrowed gradually to the base and with a long acute point, distinctly three-nerved, the slightly inrolled edge and under surface obscurely puberulous, the upper ones ceasing 3—4 inches below the base of the inflorescence. Flowers 1—2 in all the specimens I have seen; pedicels erecto-patent; perianth 2½—3 inches deep, bright yellow, the divisions rolling back from near the base when fully expanded, so that the flower reaches 3½—4 inches broad, lanceolate, ½—¾ inch broad at the middle, spotted copiously down the face with large purplish-red dots, the base broad with the groove bordered with hairy lines. Ovary half an inch deep; style 1¾—2 inches; filaments 2¼—2½ inches; anthers 6—8 lines; pollen reddish.

Var. *Maximowiczii*: *L. Maximowiczii*, Regel. Ind. Sem. Hort. Petrop. 1866, p. 26; Gartenfl. 1868, p. 322, t. 596; *L. pseudo-tigrinum*, Carrière, Rev. Hort. 1867, p. 410, with a coloured plate; Regel, Gartenfl. t. 664.—Stem dark purplish-brown, more distinctly cottony than in the type. Flowers 3—4, the groundwork of colour bright scarlet; style and filaments shorter.

The typical L. Leichtlinii of the Botanical Magazine came up amongst a bed of L. auratum, at Messrs. Veitch's, in 1867. Whether it be a wild Japanese species or a garden hybrid is not clear, but I believe it has never been matched yet with wild specimens. Whether L. Maximowiczii be a distinct species or a variety, or a hybrid with one of the parents different, I do not know enough to say with any confidence; but it clearly comes exceedingly near to Leichtlinii, both in the leaves and flower. By their broad divisions, spreading from very low down, these two plants come nearer to the Archelirions than do any other of the Martagons, but the outer divisions, especially, are much more narrowed at the base, and the flowers droop in typical Martagon fashion. Miquel has omitted them from his enumeration of the Japanese Lilies, in the third volume of the "Annals of the Leyden Museum."

31. *L. pomponium*, Linn. Sp. Plant. p. 434; Bot. Mag t. 971; Kunth, Enum. iv. 266; Spae, Mon. p. 30; Gren. Fl. France, iii., p. 181; Reich. Ic. Fl. Germ. t. 991; *L. angustifolium*, Mill. Dict., No. 6; *L. rubrum*, Lam. Gall. iii., p. 283.—Stem 1½—3 feet high, strong, stiff, erect, finely furrowed, inconspicuously pubescent. Leaves always scattered, very numerous, as many as 100 to a stem, ascending, firm in texture, the lower 3—4 inches long, 1½—2 lines broad at the middle, narrowed gradually to the point and the base, the edges inrolled, distinctly ciliated, the midrib only prominent, the upper leaves diminishing to 1—2 inches long, the uppermost leaving generally a space of 1—2 inches vacant beneath the inflorescence. Flowers 1—8 in wild specimens, up to 20 in cultivation, arranged in a broad rather regular thyrsoid raceme, which sometimes reaches a foot long and broad. Lower pedicels 3—4 inches long, sometimes bracteolate. Perianth 1½—2 inches deep, bright red or tinged with orange, the divisions lanceolate, reflexed from below the middle when expanded, 3—4 lines broad, pubescent at the tip, narrowed gradually to the base, with few or many minute black dots, and papillæ down the face, the groove glabrous. Ovary 5—6 lines long; style 7—9 lines, much curved; filaments 12—14 lines; anthers ¼ inch; pollen bright red.

An old well-known garden favourite, indigenous in Lombardy, Savoy, Dauphiné, and Provence. For remarks on its affinities, see what is said under chalcedonicum and pyrenaicum.

32. *L. tenuifolium*, Fisch. Ind. Hort. Gorenk. 1812, p. 8; Schultes fil. Syst. Veg. vii. p. 409; Kunth, Enum. iv., p. 263; Spae, Mon. p. 33; *L. pumilum*, Redouté, Lil. t. 378; Schultes fil. Syst. Veg. vii. p. 410; Kunth, Enum. iv. 263; *L. linifolium*, Hornem, Hort. Hafn. i., p. 326.—Stem ½—1 foot high, very slender, glabrous. Leaves closely placed, much ascending, 30—50 to a stem at the flowering time, linear-subulate, one-nerved, 1½—2 inches long, not more than a line broad, the edge enrolled and minutely denticulate, the upper ones ceasing 1—2 inches below the inflorescence. Flowers usually solitary in wild specimens, rarely two, drooping or sub-erect. Perianth 14—16 lines deep, bright scarlet, the divisions oblanceolate-spathulate, 3—4 lines broad at the middle, spreading from a little above the base when expanded, usually unspotted, rarely with a few minute nearly black dots in the throat, with more of a claw than is usual in the Martagons, with a distinct glabrous groove. Ovary 3—4 lines long; style 5—6 lines; filaments 8—9 lines; anthers ¼ inch; pollen bright red.

Stretches through Siberia from the Altai to the north of China. A very distinct species, which was brought into cultivation about 1810, and widely dispersed, and named almost simultaneously by three different authors in Russia, France, and Denmark. It comes nearest to pomponium, but differs abundantly in stature and the shape of the perianth, and is very much the smallest and most slender in habit of all the species of the genus. *J. G. Baker.*

ARTICHOKE GALLS.

ONE of your scientific correspondents, who from his initials ("Alb. M.") I may without conjuring assume to be my friend, Mr. Albert Müller, lately gave in your pages (p. 1162) a short but interesting account of the origin of Artichoke galls, in which certain points are taken for granted which seem to me to be either attended with doubt or erroneous. I should therefore like him to reconsider them, and as they involve some considerations which may be interesting to others of your readers as well as him, I shall take the liberty of stating my doubts in your pages.

He tells us that the Artichoke gall is caused by the puncture (meaning, of course, also the oviposition and its consequences) of a female Cynipideous fly called Aphilothrix gemmæ (better known as Cynips gemmæ). He does not say where the puncture is made, but from the context it is plain that he considers that the puncture is made in the bud of the future acorn, and that it is confined to the acorn; and he has, apparently, good grounds for saying so, for, as he points out, if we take an Artichoke gall, and remove the cone-like foliaceous covering, a small stunted acorn will be found within. Moreover, the foliaceous covering in question has all the appearance of the cup of the acorn with the bracts composing it run wild. This, I believe, is always the case. I have opened many, and I never opened one in which the acorn was not detectable. [We opened one a few days since, and found no trace of acorn, but only the leafy cup. Eds.] This may seem proof positive that the puncture is made and the egg laid and the grub developed invariably in the ovary of the young acorn.

But there is another side to the question. If you look at the Artichoke galls growing, you will see that they are not in the position where the acorns are usually found growing, but oftener in the place where leaf-buds would have grown [Yes.]; and they do not occur so frequently or in such numbers on the old bearing Oak as on young shoots, where an acorn is by no chance ever seen. I plucked them a few weeks ago on young suckers, only a couple of feet in length. I think the explanation of this apparent inconsistency is that the insect deposits its eggs indiscriminately in any bud, whether flower-bud or leaf-bud; and, when deposited in a leaf-bud, that the irritation caused by the grub at the outset stimulates the bud to develope into a flower-bud, although its continuance ends by destroying the formative action it had set up. We know that, by treatment or change of condition, the leaf-buds can be developed into flower-buds, and I imagine that this is what takes place here. To suppose that the attack is confined to the female flower-bud is to endow the insects with a greater knowledge of the future of the bud than the tree has itself; and although it is true that different species of Cynips are assigned to different parts of the Oak, as to the leaf, the bark, the bud, the root, the difference in the secretions which we know to exist in each of these is a sufficient direction for their instinct, but no such direction exists by which they can be enabled to distinguish between a leaf-bud and a flower-bud in their early stage.

One additional argument, from authority (although it is little that I care to bow to authority), may be worth mentioning, as showing that Linnæus at least, who gave the insect its name, did not look upon it as a denizen of the acorn, but of the bud. He called it Cynips gemmæ, not Cynips glandis—the gall-fly of the bud, not the gall-fly of the acorn.

As my pen is in my hand I may note that I find that a remark of Mr. Müller, which one would think sufficiently free from ambiguity, has been misunderstood, viz., that owing to the abundance of this gall this year, the idea of harvesting acorns must be abandoned wherever the fly has got a firm foothold. That must only be understood to mean that the idea must be abandoned where and because there are no acorns. It is not that acorns apparently good are to be rejected as in reality bad, but that the gall has been so destructive as to destroy all the acorns. From the view that I take of these galls I cannot refer any scarcity of acorns to their destroying them, and I scarcely think they can do so by affecting the health of the tree; but be the cause what it may, wherever any one has acorns he may use them with confidence. It is only Artichoke galls that are not to be harvested, and no one is likely to think of making a crop of them. And here I may say, *apropos* to the word harvesting as applied to acorns, that I think it rather leads to an erroneous impression on a point of practice. Some authorities tell us that the proper mode of raising acorns is to spread them on barn floors, for the purpose of drying them, but practical men will bear me out in stating that the true secret of growing acorns is to get them into the ground with all speed. Harvesting must therefore not be taken to be a recommendation of storing.

There is another portion of Mr. Müller's remarks which I do not like to pass without comment, viz., the cause to which he ascribes the present abundance of the Artichoke gall. He attributes it "to the reckless way in which our Oaks are often managed. Everywhere the fine timber is felled, giving place to unhealthy under growth or upshots from the ancient roots. Such copses are nurseries, from which issue swarms of these flies annually, whose oviposition in the buds of full-grown bearing Oaks destroys all hope of a harvest of acorns. We must give up 'saving our bacon' so long as we encourage the wholesale felling of mature Oak timber without taking care that its place is filled by properly planted healthy young trees." I am at issue with him on almost every one of the premises on which he comes to the above conclusion. I am at issue with him as to our Oaks being often managed in a reckless way. I maintain that generally throughout Britain the Oak forests and plantations are managed with consummate skill. Where there is so much properly held by private individuals there will always be cases where the owners are careless and ignorant, and their property mismanaged, but I maintain, without fear of contradiction from any one well acquainted with the subject, that the good management and cultivation of the plantations and forests in Britain, and particularly of Oak forests, bears as high proportion to the general average as does that of agriculture or horticulture. As the proportion of bad farming is to good farming, so is that of bad forestry to good forestry. Next I am at issue with him as to the fine timber being everywhere felled, and to its giving place to unhealthy undergrowth. I do not know whether this is a periphrasis condemnatory of the practice of growing copsewood — (that is a wide question, which I cannot touch on here), but the natural interpretation of the words are that fine old timber is recklessly cut, and that it is from its roots that unhealthy shoots spring. Why my friend considers them unhealthy, he does not say, but I dispute that they are so. It can hardly be copsewood that is meant, for the mode of making copse is not by cutting down fine old trees, but by cutting down trees of no great age in regular rotation. I am not at issue with him as to the young copsewood being a nursery of gall-flies, but I am at issue with him as to the copsewood being any more the nursery of gall-flies than plantations of "properly planted healthy young trees" would be. Wherever the fodder is, there will the forager be; and whether the young fodder is copse or plantation will, in my view, not make the slightest difference. The season suiting, they will thrive in both, and in that sense the young Oaks will be nurseries of gall-flies; and if the Artichoke gall-fly really makes the nidus of its young in the buds generally, and not solely in the acorns, there is then a very good reason why they should be in greater abundance in young plantations than about old Oak trees. The young shoots are healthier, more vigorous, and make more succulent buds, which are better fitted for the fly than those on the drier old Oak tree. That the greater abundance of the fly this year than in former seasons cannot be due to any such cause as Mr. Müller assumes must, I think, be apparent from the fact that there has been no recent change in the management of Oak woods throughout the country; and we know that the increase and decrease of other insect pests are sudden and mysterious without any corresponding change in circumstances to which they might be referred. The most general cause assigned in such cases has been some peculiarity in the season or in the preceding season, and to that I should in like manner be rather inclined to refer the increase noticed by Mr. Müller. My own observations this year, which have been tolerably widespread, confirm his to the extent that the gall has been very abundant, but I cannot say that I observed any corresponding deficiency in the acorn crop. *Andrew Murray.*

Home Correspondence.

Coniferous Nomenclature.—In my letter in the *Gardeners' Chronicle* of Sept. 30, I made a severe remark, touching the integrity of the late Mr. Jeffrey's character, viz.: "In Jeffrey's second (Oregon) expedition he plucked our Scotch friends and others of their cash, and then cut off to the diggings and left them in the lurch." At the time I penned the above paragraph I was not aware that Mr. Jeffrey was no more. My motive for writing it was that it might meet his eye in some distant part of the world. Shortly after it was published, Professor Balfour, of Edinburgh, wrote me a letter in vindication of Mr. Jeffrey's integrity. I answered the doctor, to the effect that a Scotch gentleman, personally connected with the Oregon expedition, of which the late Mr. Jeffrey was appointed botanical collector, had told me that "Mr. J. had much overdrawn his account, and that after the last sum (a considerable one) was sent out to him, he never afterwards sent either a letter, seed, or plant." This morning, just as I was about to start for town, I received a second letter from Dr. Balfour, enclosing one from Mr. Henry, the then secretary for the Oregon expedition; which letter I hope you will publish, with Dr. Balfour's opinion of Mr. Jeffrey and his fate. It is with pleasure that I have this opportunity afforded me of doing justice to the memory of the lamented collector, over whose death, both as to time and place, there is still the veil of mystery overspread. *Wm. Barron.* [From Mr. Anderson-Henry's letter we make the following extracts relating to the subject at issue:—

> "I beg to say, in reply, that I have re-perused Mr. Barron's remarks on Jeffrey's second expedition at p. 1257 of the *Gardeners' Chronicle*, in connection with his letter to you of the 13th inst. I have a very indistinct recollection of all the circumstances attending its failure. We had all of us our surmises, some of them far from charitable. But of this I am certain, we never heard of his having 'cut off to the diggings and left us in the lurch.' Neither was there any tangible ground for believing another vague rumour, to which Mr. Barron perhaps alludes, of his having made over the collection he had made for us to other parties. You will remember he was singularly and blameably remiss in writing, and we of the committee consequently judged hastily, and, of course, harshly of him. But all his antecedents were in his favour, and from some accounts we got long afterwards, there was little room left to doubt that he perished in some of these little-traversed deserts into which he had wandered."

Dr. Balfour says:—

> "Jeffrey I look upon as having been an honest man, although a bad correspondent. He fell a sacrifice to his zeal for collecting."

Botanical collectors do so much service, and incur such frightful risks in doing it, that the greatest caution should be exercised in making uncharitable statements. Eds.]

Covent Garden: Lighted, but not Covered.—A public meeting, convened by the Market Gardeners', Nurserymen's, and Farmers' Association, to which were invited the salesmen, shopkeepers, and all persons renting premises or stands in Covent Garden, was held at the "Bedford Head," Maiden Lane, on Tuesday, October 31, for the purpose of discussing what further steps should be taken to endeavour to obtain the much-needed covering for the open parts of the market. The meeting was informed of the result of the deputation, which waited upon Mr. Davison in reply to his lettter, printed in the *Times* some few weeks back, which was to the effect that the Bedford authorities had no objection to grant the request for the covering of the market, "if" they could get the present occupiers of the Grand Row and the other covered portions to agree to it. I think the uncovered frequenters of Covent Garden have in a great measure to thank the *Gardeners' Chronicle* and other insertions in the daily press for this so far satisfactory reply, for the "if" is so insignificant and unreasonable that it cannot long stand against the universal protest that must be raised against it; for one would almost think we were asking the Duke of Bedford to take the covering off them and put it over us, to say—Yes, I have no objection to cover you, if you get their consent. I do not see what we, *i. e.*, the uncovered ones, have to do with the Grand Row or the other covered portions, we simply ask for a protection from the weather, and we do not wish to interfere in the slightest with their position, although, as I have often asserted, if all united in one grand effort, Covent Garden might possess a Grand Row worthy of the name, the occupiers of which would soon have cause to thank the Market Gardeners' Association for originating such a general benefit. But to return to the meeting. After some little discussion it was resolved that a memorial should be presented, signed, if possible, by every frequenter of Covent Garden; and it is to be hoped that no one will lose this opportunity of signing their names for such a universal want. *M. C.*

Glass Copings.—If your correspondent "F." will refer to the *Gardeners' Chronicle*, of July 16, 1870, p. 958, fig. 178, he will see my article on these structures, which I have used with good effect for the last two years. Soon after I sent you that communication I carried out the plan to a greater extent, and, indeed, realised the conditions which you seem to think so essential in order to protect fruit trees, alluded to by you in p. 770 of the present year. I enclose you a sketch, from which you will see that no putty is required, and everything about it is easily managed by a gardener, if he can cut the glass for repairs, &c. I have grown very fair Melons under these frames when removed from the east wall. The advantage of using iron uprights is that they cast so little shade on the trees. *Edward Webb, Greenfield, London Road, Worcester.* [It will be seen, on reference, that Mr. Rendle's arrangement is almost identical with that of Mr. Webb, published about twelve months previously. Eds.]

Evergreen Fir Trees at Zurich.—Can any of your readers who have been in Zurich, in the gardens of the Pension Baur au Lac, and seen the pair of fine evergreen Fir trees in the garden near the lake, inform me what the name of that variety of Fir is? They are simply superb, being perfect pyramids of dark green foliage, 35 or 40 feet high, whose branches sweeping the grass—lying on it, in fact—are as thickly clothed with leaves, and as green, as any of those above them, with trunks, as well as I recollect, about 18 inches through. Now, as evergreen Firs of that size generally lose their lower branches before that time, and the symmetry of the tree is thereby destroyed, it will be at once seen that the above peculiarity is a valuable one. I should therefore be glad to know, either from some one who has seen these trees what they are, or to hear from any one else what variety of Fir answers my description. *A. Boyle, Whitland.*

Vines and their Water Supply.—All honour to Mr. Lane, of Berkhampstead, for the very excellent display of Grapes which he made at the recent International Fruit Show. His productions warmed up the old recollections of veteran Grape growers, and, as I saw in several instances, caused them to press the hand of the successful exhibitor in sheer enthusiasm and for dear "auld lang syne." The number of varieties (21, I believe), the uniform size of the berries, and the finish of the whole, were prominent—most prominent traits. The premier bunches of Mr. Bannerman were also excellent, and did him much credit. You, Messrs. Editors, have informed us that a stream of water flows by at the very toes of Mr. Lane's Vines, and would have us draw some very useful lessons therefrom. We are all agreed that Vines are a very gluttonous race of plants, feeding far or near, wherever their roots happen to be, upon almost every conceivable kind of vegetable or animal waste or refuse. Now many earnest and very able practioners still believe and persistently aver that an excess of cold moisture at the roots is the main cause of shanking. Mr. Lane's Grapes, however, grown beside this stream [Not stagnant, but perpetually flowing from an adjacent spring. EDS.] during such a cold wet season as the present was in its early part, afford a practical denial to this presumption. And really, when we look the facts fully in the face, there seems to be here a truthful sign-post planted upon an incontrovertible base, and indicating that the real enemy is dearth of supply at the roots, or semi-starvation, and not over-feeding. Take pot-Vines for instance—and I have in my mind's-eye the grand examples grown annually by the late gardener at Hatfield House, Mr. Burton—maintained in an atmosphere highly charged with humidity, and dosed with the rank ammoniacal waterings which all successfully grown pot-Vines receive daily, and the facts are startling. Why, the roots are capable of subsisting under an almost aquatic regimen; and, moreover, do they not often have pans of pungent ammoniacal liquid set beneath their pots? Now, I say, in support of your hypothesis, that if in the case of pot-Vines these waterings are upheld for a longer time than is really necessary, not half the ill-effects will attend the crop as when a too limited supply is afforded throughout their earlier stages of growth. The roots subsist amidst their most relished food, which does not become absolutely injurious even when the system is satiated. Depend upon it, the whole superstructure of the plant is based on the principle of the food supply being ready waiting, even it may be superabundant, ready against the moment when the young buds first call for support; and if just at this nick of time and onward the borders could be deluged, even as pot-Vines are glutted, I believe that good and not harm would follow. Outdoor Vines shank not; their roots spread far and wide, and are ever on the alert and ready for the demand. And mark the fact, that they often commence to ripen just as the rains, heavy dews, and coldness of early autumn set in. Our oldest Vines produce crops uniformly large and good, and seldom shank. It is the distance the roots ramble —the ready supply, without the need to say "hold, enough," which gives them such reliability. Mr. Lane's Vines, it may be, quaff rude health to the full from the waters of the passing stream—pure for all we know. Let me give another case in point. Lift an old Vine—one, say, 40 years of age; place it upon a bed of good soil, and surround it with the most unctuous food, leaving it to the indecision which marks our practice with most outdoor Vine borders, and the chances are that it will answer our expectations by renewing its lease of life; but deluge the border and the roots with fresh water or diluted manure, and the chances are that a crop of fruit will be afforded such as will set the grower thinking and wondering for the rest of the season. Here is a proof that the roots are in entire subservience to the branches. Even if every rootlet be destroyed, and you place the old roots rightly, and afford them a proper supply, their part of the contract will be duly performed. Mr. Lane's exceptional success upon the water side revives the memory of what are the most favoured conditions under which the Vine thrives, where it may be said to be indigenous and at home. Commencing with Noah, who "planted a vineyard," we are bound to surmise that if he did not find his Vines in the vicinity of a river he planted them there. Pallas tells us that the Vine grows naturally near the Black and Caspian seas. The stoneless Kishmish variety hugs closely, no doubt, the Persian Gulf. On the northern shores of the Arabian Sea it is met with. All this tends to show that the Vine thrives best at the base of mountainous districts, and in positions where deep and, if anywhere, moist fatty unctuous soils subsist, either alluvial, or where the driftings of ages are deposited. Its habit of growing in the vicinity of the sea shows a liking for sudden delugings of rain. In a word, taking pot-Vines as an example, we find that, first and last, the roots must have a superabundant supply, and that what they don't want they will reject [or not absorb]. The rational inference is, that a too limited supply of root nourishment must be the precursor of evil. *William Earley, Valentines.*

Hornets.—At p. 1358 of your number for October 21 is an inquiry as to the means to be used to prevent the attacks of hornets on Oaks and Elms, the insects being mentioned as having eaten such holes in them as to cause the sap to flow out in large quantities. In cases where the hornets can be observed at work, as occasionally I have seen them myself on Ash saplings, a little tar smeared over the place will preserve them perfectly from their attacks. Moreover, hornets being large insects can be readily traced in their flight, by a little watching, so that the nest they come from may often be found and destroyed. From your correspondent's description of the "large holes" in "fine Oaks and Elm trees," I should, however, guess there was a second cause of mischief. The hornets frequent the holes caused by the goat moth or leopard moth caterpillar, which often exude much moisture; and the death of the tree seems rather to point to the internal injury of these most destructive grubs than to the superficial injury caused by the hornets. By carefully probing down the holes with a stout wire, hooked at the end if possible, or even cutting down on the larger grubs with a chisel, the creatures may often be destroyed, and the tree saved. It is best where feasible to draw the grub out with the hooked wire. *E. A. O.*

—— Were not the holes in the Oak and Elm trees complained of by Mr. Lee, of Brandon, caused by the larvæ of Cossus ligniperda, the goat moth, rather than by hornets? The sap, exuding from the ravages of the larvæ within, proves exceedingly attractive to wasps and hornets: hence the probable error. *Dhune Thuack.*

Onions.—I was greatly surprised to hear from your correspondent, Mr. Evans, at p. 1359, that complaints have been made respecting the lightness of the Onion crop this season, as from observations in this neighbourhood I supposed they were unusually abundant. A piece of ground here, measuring 4½ perches, produced 20 bush., the kinds being James' Keeping, White Spanish, and Giant Madeira. I find that a bushel weighs about 50 lb., so that our total weight will be over 71 stones. Now Mr. Evans' ground, being 39 feet by 30, contains a little over 5 perches, and as his total is only 72 stones, his crop, though good, is not extraordinary. I may add that Onions are grown extensively in this locality for market, and the price at storing time was 2*s.* per bush., which certainly does not look like scarcity. *A. Bridgeman, Betteshanger, Sandwich.*

The Vintage in Germany, &c.—What pleasant ideas one always has of the vintage: a sunny hillside, gay colours, and merry voices. Now for reality: a bitterly cold morning, hard frost still on the ground, no sun, and people shivering over the half-ripe Grapes. This is what I saw a fortnight ago at Ems, close to where the dearest Rhine wine is made. Can you tell me whether the large black slug, which is sometimes brown, can be the same being as the awful looking red one to be met everywhere about Ems? it is red as red-lead, redder than ochre. *Somerset.*

Propagation of the Garden Varieties of the Bramble.—If your correspondent, "E. J. W.," experiences difficulty in increasing his stock of these plants, it may be removed by a stroll into a shaded wood where Brambles and decaying leaves abound. In the autumn he will see the long shoots of the year bury their extreme ends amongst the leaves, and there form a semi-bulbous knob, which during the winter months throws out roots in all directions, and in the spring developes a strong shoot, capable of a separate existence if removed. Imitate this process by planting the double variety in a shaded place, and about August bury the ends of the long fresh shoots an inch below the surface of the ground, covering it lightly, and transplant the young plant at the end of the year. By thinning out the old wood each year, in fact treating them like Raspberry bushes, I have no difficulty in flowering them. *T. B.*

The Seaham Hall Trial of Peas.—I thank Mr. Draper for his candid reply to my criticisms of his report on Peas, a few weeks since, but must take exception to his assumption that I considered the periods of blooming in Peas to be indicative of periods of podding. I rather pointed out that, according to Mr. Draper's figures, it was altogether unreliable, and therefore a fact of but little moment. I am surprised to hear from him that Multum in Parvo needs the support of sticks, as with me it has never exceeded from 16 inches to 18 inches in height, and crops most abundantly. *A. D.*

Tar for Tree Wounds.—As "tar" has often been recommended of late, as useful for healing wounds upon trees, I would suggest that the term should not be taken in its common or general signification. The only tar that can be used with success is the Stockholm tar—certainly not gas tar, in any form. *W. Earley.* [A fiitting caution. EDS.]

Araucaria imbricata Gumming.—There are growing here three good-sized specimens of the above-named tree, but I am sorry to say one of them is suffering very much from an exudation of the sap, or what is generally termed gumming. This tree stands in a part of the pleasure grounds, and is very much exposed to the west winds, which at different times blow it about very much, so much so that about four years ago the roots seemed to give way to the pressure that came upon them from time to time, and consequently the tree was growing crooked. At that time I had a trench cut all round about 4 feet from the main stem; then the earth was carefully worked away from the roots with our garden forks, until we had the tree, as it were, undermined. After we got it upright the space was filled in with a mixture of turfy loam, leaf-mould, and a little well decomposed manure, finishing the operation by chaining the tree to prevent its being blown about. I was in hope that when the roots made a good start in the new compost the tree would recover from the disease, but as yet I see no signs of improvement. It has now lost several of its lower branches, and others are looking very sickly, and undoubtedly will in course of time go like the former. This tree, I am told, is from 25 to 30 years old, and now stands from 18 to 20 feet high. The other two alluded to are much about the same height, and from what I can learn were planted about the same time. One of them is looking remarkably healthy now. As to the probable cause of the disease, it is my opinion that the tree was injured in some way or other when in a young state. Have any of your correspondents met with a similar case amongst trees of this Araucaria? If so, I hope they will have the kindness to make it known through the medium of your columns, and give their opinion as regards the cause of the disease, &c. *M. Stalker, Hemsted Park.*

The Ranunculus.—I was glad to see "R. D.'s" appreciative article on this lovely flower; to me it has ever been one of deep interest, for it was the sight of some beds of it when I was a boy that made me a florist, and I have always had a great love for it, and yet how rarely one sees it in perfection: it requires, we know, a great deal of care, more than in these days of "grand effects" and rapid results is likely to be bestowed on growing a collection of it, and it is one sign of its neglect, that I know of but one real grower of it for sale, viz., Mr. Carey Tyso, of Wallingford. I quite agree with what "R. D." said about those exhibited at the Crystal Palace: they were not (although mine won the 1st prizes) what they ought to have been, and what I hope they will be; it was not the fault of the sorts, for I think I may say I have the finest collection of them in the South of England, having, with my brother, become the possessor of Mr. George Lightbody's splendid stock, but as unfortunately he could not superintend their planting last year, the tubers were small. They have increased in size this year; and if the season be favourable, I hope to show them well. Why does the Royal Horticultural Society not include them in their schedule? They are surely as worthy of prizes as Lachenalias or Mignonette. *D., Deal.*

On Storing Vegetables.—As much, if not more, depends upon how a thing is stored, as it does upon how it is grown, to keep up a supply through those months of the year when the great enemy of vegetation silently enters every hole and corner, as if, not contented with laying bare the outer world, it seeks to destroy the remembrance of the joyous summer hours, when all things seem hopeful and satisfying, by spoiling first one thing and then another which was thought out of his way. Providing the garden or farm with convenient and efficient storehouses is one of those things which never ought to be overlooked, as, although it is one which is not thought of as it should be, it is beyond dispute a paying one. How many tons of Potatos are spoiled yearly in the United Kingdom for the want of such storage accommodation, is a question which is just now worthy of the attention of the leading men of all grades of society. Some of your correspondents have already given excellent advice on storing the Potato, but the great want still is more room. It is a fact now generally admitted by the leading growers, and one which I think will take hold on the people at large—that to have good crops, and these free from the disease, early varieties only should be planted. Now, to have good sets for planting, the old practice of storing them in heaps, and picking the tubers over every now and then, must be abandoned. Potatos for "seed" should never be placed in a heap nor be picked over. It is necessary, if you wish to have strong, early, Potato-yielding shoots, that the first shoot should be attached to the Potato when planted; but how is this to be done without convenient storehouses? To those who have large houses, where they have been accustomed to pile up from 10 to 20 tons or more of Potatos for use, I would say, have two or more false floors put up. By false floors I mean movable planks, which can be supported at the ends by other strong planks fastened against the wall. Some of the planks could be left out, say at the ends or in the middle, for the convenience of looking them over at intervals. This method would divide the bulk of the Potatos, and prevent that heating and spoiling which occurs in heaps of several tons, and which is commonly seen. A similar arrangement should be provided for the "seed" Potatos spread there, so that one shall not rest on another; and those who provide the same means will be more than repaid in the crop of Potatos that "seed" kept in such a manner will produce. I have been digging Potatos for use from seed thus treated, when a friend of mine who planted before me said that his were only breaking through the soil. The reason was, his had to make up for the lost shoots which had been ruthlessly pulled off, while mine started at once with vigorous shoots, which had been waiting, as it were, for the soil. It is quite evident that an increase of store room is the next move in the Potato question. Other things must not suffer much, however we are straitened already in this matter of store room. Onions keep best spread out thinly over a floor; and can we do without Onions? Tell the cook you have a poor crop of Onions, and the immediate demand will at once give you an estimate of the supply required. The first aim of the gardener is to get the best keeping variety. The rage for getting large ones is a mistake. Extreme growth, whether in vegetables or fruit, has many disadvantages; large samples, for instance, having rarely the proportion of flavour found in smaller ones. The practice of "forcing size" has, in my opinion, been two much encouraged. If flavour is the requirement, why aim at diffusing it through a larger body of matter when it can be had in a smaller compass? Shape even has something to do in the keeping of the Onion. I like an oval Onion. These, from their shape, never rest on the side where roots are emitted, lessening thereby the chances of growth, which often occurs when that part rests on the floor. A flat Onion is the very worst to keep, small Onions should be set apart for late keeping. I have never found "roping" or tying up Onions preserve them so well as spreading them over a floor. A good deal depends on the treatment they receive before housing. After they are pulled up they should be spread on a hard walk exposed to all weathers and frequently turned, and every time pulling off all the decomposed parts of the stem until nothing remain but the bulb itself, then when a dry day comes put them into the store-room. By observing these rules I never have occasion to scar the roots with hot iron or wish the Tripolis come. Carrots, Beet, Salsafy, &c., also want room. The heaps are too big, half of them rot or grow to be useless. All cry out "Room, more room!" *H. Mills.*

Grapes, New and Old.—While the merits of Grapes are being discussed in your columns allow me to give my experience of several varieties grown here. Mrs. Pince's Black Muscat I tasted the first time it was shown in London, now some 10 years ago, and I then pronounced it to be first-class, and after growing it myself I have no reason to alter my opinion; it sets freely, and keeps well. Muscat Hamburgh, raised by James Lane, many years gardener to Horsley Palmer, Esq., Hurlingham House, Fulham, is a delicate Grape, of good flavour; it does best grafted on the Black Hamburgh. I have, however, dug it up, Mrs. Pince's Muscat being a better sort. Golden Champion with me is a delicate Grape. White Lady Downe's is, in my opinion, a useful variety, growing in the same house, and setting as freely as the black variety, and I believe it will keep well. Royal Vineyard has disappointed me; like its parent, the Syrian, it grows very strong, but with me does not set well. Madresfield Court I have not fruited, but hear it well spoken of. Gros Colman is a fine, large, black late Grape, which sets well, keeps well, and produces fine bunches. The Alicante, when true, is another fine black Grape. Of West's St. Peter's I would say, let not those who possess this old variety be in a hurry to discard it, for when well done it is a good late Grape. *J. Rust, Eridge Castle.*

The Effect of Snow on the Douglas Fir.—Would any of your readers kindly inform me whether the snow, if it falls in heavy quantities, is at all likely to break the branches of the Douglas Fir in the way that it does those of the Cedar of Lebanon and even the Spruce? Also, is not 7 feet 10 inches, which is I think the girth of the trunk of the large Douglasii at Dropmore, a very small measurement of trunk for a tree 100 feet high? *G. F. M.* [A heavy fall of snow is assuredly likely to break the branches of the Douglas Fir; to what extent, depends on the weight of snow and the toughness of the wood. Eds.]

Societies.

Royal Horticultural: *November* 1.—J. Russell Reeves, Esq., in the chair. The usual preliminary business, which included the election of five new Fellows, being concluded, the Rev. M. J. Berkeley proceeded to address the meeting, first directing attention to a specimen of Polystichum angulare var. proliferum, which he recommended to the notice of artificial flower makers, as furnishing one of the most elegant designs for a wreath with which he was acquainted, and then stating that some doubt had been expressed as to whether the late-flowering Lily of the Valley exhibited by Messrs. Standish & Co. was a distinct variety or not, some writers in this journal having observed that the late flowering could be brought about by drying or otherwise starving the roots. Plants of the old Convallaria majalis and of the one under notice had, however, been seen growing side by side in the nursery at Ascot during the past summer, by members of the Council and of the Floral Committee, as well as by several distinguished foreign horticulturists, all of whom, as well as Mr. Berkeley himself, had come to the conclusion that it was undoubtedly in every way a distinct variety, and a valuable acquisition. A letter was then read from A. Trollope, Esq., confirming the testimony already given as to the productiveness of the Royal Ascot Grape, and stating that the writer had had two crops on the Vine at the same time this season, and this on a cane grown in an ordinary ground vinery. Some doubt, said Mr. Berkeley, had also been expressed as to whether the common edging Box bears seed, but Major Trevor Clarke had brought a seedling plant for exhibition, which he thought on examination would turn out to be a new variety. Major Clarke also brought up a good specimen of the fruit of what was generally called the Bush Squash, and which was also known under the name of the Custard Apple, the common name for Anona. The great inconvenience of the common Marrow, said Mr. Berkeley, was, that it grew to such a length, whereas the growth of the former was of quite the opposite character, and the fruits were equally good. Alluding then to a collection of autumn fruit from the gardens of W. E. Hubbard, Esq., the speaker stated that amongst the exhibits were cones of Pinus Webbiana, a plant which was not common in gardens, and the fruit of which was rarely seen in England. Mr. Berkeley then alluded to a very interesting subject, respecting colour in Fungi, which will be found mentioned at p. 1421, and concluded by reading the following communication from Mr. W. Jones, Kilboy:—

"Sir,—I have taken the liberty to send to the Royal Horticultural Society's gardens a small specimen of Spanish Chestnut, to illustrate the evil effects of close pruning, and also to confirm the theory that a wound in timber (native) never heals. The bit of timber in question shows the effect of sawing off a small branch, not thicker than one's thumb, and over this very small wound 200 (and upwards) of annual rings of growth have been formed, and still the wound is just the same as when the saw did its work, even the saw-marks give evidence that the saw that pruned the timber was in bad order. It may be seen that the bark healed over the small wound (perhaps in one season, as all is sound), but still, owing to the small flaw, all the valuable timber in its neighbourhood is quite worthless as timber for furniture, or, indeed, for any useful purpose whatever. Consequently, the sooner a reformation in forest pruning (in the British Isles) sets in the better, perhaps.

"Now, it is a very generally received opinion that the vegetable and animal kingdoms in many cases approximate very closely to each other, but in the case of wounds the parallel ceases, inasmuch as the wounds in animals heal, and wounds in the vegetable kingdom only close over, but never heal; and, at the risk of being considered tedious, I will give you a very practical illustration. About six years ago my left hand was shot clean off, and the shattered bone was sawn off 3 inches above the wrist joint; now, not only have the cuticle and muscle healed over, but the bone has rounded and lengthened out, I think, 2 inches (?), and the circulation is restored nearly as perfect as ever."

Scientific Committee.—A. Murray, Esq., in the chair.

Mr. Berkeley exhibited a branch of an Apple tree perforated by the larva of an insect; also a fasciated shoot of Myrica cerifera. He also read a communication from Mr. Bard, of the Wellington Nursery, St. John's Wood, relating to a disease on the leaves of Wigandia, analogous, in Mr. Berkeley's opinion, to that of the Verbena, and for the cure of which Mr. Bard had applied slaked lime, as also to some Bouvardias. Mr. Bard had been induced to adopt this plan from his previous success with diseased Potatos. Certainly most of the Wigandias exhibited presented no trace of the disease alluded to.

Messrs. E. G. Henderson also exhibited a series of specimens showing various sports in different varieties of Coleus.

1. Coleus Telfordii aurea.
2. A sport from No. 1, showing two distinct forms of growth.
3. Coleus Emperor Napoleon, a hybrid plant, the production of a cross between Coleus Berkeleyi and Plectranthus fruticosus, a well-known shrub, often seen in cottage windows; the object of which experiment was to obtain a hardier and more suffruticose habit of growth, adapted for garden decoration generally, which is found in the more robust character of the present plant.
4. Plants of Coleus Emperor Napoleon, selected from a large batch, showing a partial return to both parent types.

Mr. Munby exhibited a seedling Pelargonium, in which the thalamus of the flower was prolonged, and bore a number of scales and petal-like bodies, quite altering the character of the plant.

Mr. Murray exhibited specimens of an insect, Atropos divinatoria, which had been found destructive to Tea imported from Assam. A brisk discussion ensued among the entomologists, and the general opinion seemed to be that the insect in the first instance had taken up its quarters in the ship in which the Tea was brought.

A beetle, collected in Angola by Dr. Welwitsch, was exhibited, showing a curious parasitic growth, of a bright crimson colour, from the under surface, but whether of animal or vegetable origin seemed uncertain. Dr. Welwitsch himself believed that they were the eggs of some Crustacean.

Mr. Murray also showed a specimen of a woolly gall, of a pretty pink colour, growing on a spray of an Oak in Guatemala.

A series of specimens of canker in Ash trees was also exhibited by the same gentleman, as also specimens of Firs, distorted apparently in consequence of the roots coming in contact with some impervious material. Mr. Murray also showed a branch of a tree growing in Guatemala, and curiously deformed, apparently from the growth of some Loranth. A similar form, imported by Mr. Skinner, was figured in our columns many years since (fig. 311).

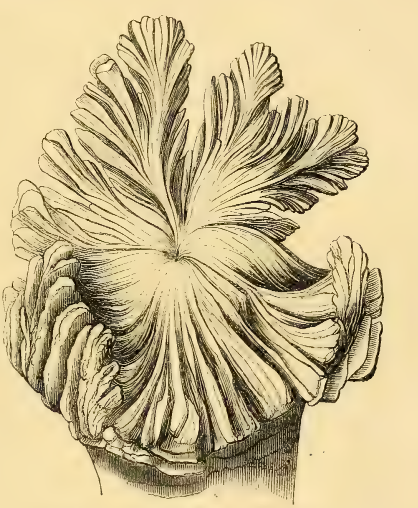

Fig. 311—Shows the effect of the growth of a parasite on a branch.

Dr. Masters showed male and female cones of the Deodar, which seem frequent this season.

Floral Committee.—W. Marshall, Esq., in the chair. At this meeting prizes were offered for specimen plants and cut blooms of Chrysanthemums, but, unfortunately, the date was too early to have this plant in perfection, and consequently the show was of a very poor description. In the amateur's class for 6 cut blooms, distinct, there was only one exhibitor—Mr. Rowe, gr. to Mrs. Lewis, The Rookery, Roehampton, who was also the only one who put in an appearance in the open class for 24. In both cases the 1st prize was awarded, though but few good flowers were staged. The best were of Lord Derby, dark purple, incurved; Empress of India, white; Mr. Brunlees, indian red, tipped with gold; Aurea multiflora, yellow; Mrs. G. Rundle, white; Prince Alfred, rose-crimson; Beverley, white; Golden Beverley, Guernsey Nugget, primrose-yellow; Novelty, blush white; and Cherub, golden amber. Mr. Adam Forsyth, Brunswick Nursery, Stoke Newington, also sent a dozen flowers of fair quality. Mr. Rowe also took the 1st prize for 6 large-flowered Chrysanthemums, distinct, Mr. Goddard, gr. to H. Little, Esq., Cambridge Villa, Twickenham, being 2d. The same order of merit was also observed in the class for 6 distinct Pompon Chrysanthemums. Mr. Rowe's plants in the first-named collection were severely trained in the conical bush form, and the flowers not half opened, whilst those from Mr. Goddard were grown in the more natural way of trees, from 4 to 5 feet in height, on clean stems, and for the most part well-flowered, especially a plant of aurea multiflora. The Pompon varieties were so backward as to require no further comments. In the class for 9 decorative berried plants, in pots, distinct, there was but a poor display, the principal things shown being Cotoneasters, Solanums, and Ardisias, whilst one exhibitor staged a dwarf Orange tree, on which were two fruit!—a beautiful berried plant, certainly. First-class Certificates were awarded to Messrs. E. G. Henderson & Son for Sedum acre elegans, a dwarf, vigorous-growing, greenish white variety, that will be very useful as an edging plant, and an acquisition for covering the prominent points of rockwork; and to Mr. Green, gr. to W. W. Saunders, Esq., for Lomatophyllum Sandersii, a green leaved species, margined with reddish spines; and Billbergia chlorosticta, a beautifully marked species from Brazil, the leaves being of a deep bronzy hue, spotted and mottled with green. Special Certificates were voted to Mr. Chaff, gr. to A. Smee, Esq., Carshalton, for a very fine specimen of Pteris scaberula, about 4 feet 6 inches through, which was planted in a hardy fernery in June last, and was sent to show the fine growth it has made in the open air; to Messrs. Standish & Co., for a collection of seedling Gladiolus, most of which were the result of crossing with G. cruentus. Several of them were of the most brilliant colours, and if not quite up to the florist's standard, they will be much in demand for late conservatory decoration. One of the varieties, named

Alice Wilson, is wonderfully distinct in shape, the individual flowers more resembling those of a Lily than a Gladiolus, and very rich in colour. A similar award was made to Messrs. E. G. Henderson & Son for a nice collection of alpine plants, including a great variety of Saxifrages. The same exhibitors also sent flowering specimens, in cutting pots, of Bouvardia Davisoni, a valuable new hybrid, having the white flowers of B. longiflora, with the vigorous growth and large trusses of B. Hogarthii It will be a fine variety for cutting for bouquets and for decoration in winter. Mr. Kemmery, gr. to E. G. Wrigley, Esq., Bury, Lancashire, sent some fine cut flowers of Cattleyas, Lælias, Miltonias, &c.

Fruit Committee.—G. F. Wilson, Esq., F.R.S., in the chair.—This was a very interesting meeting, greatly enhanced by the excellent competitions for dessert Pears and Potatos, very fine examples of which were exhibited. From Mr. C. Lidgard, Albion Road, Hammersmith, came a very fine and well-grown collection of Celery, including Williams' Matchless Red, Hooley's Conqueror, Williams' Matchless White, Manchester Solid Red, and Knight's New White Grove, and to which a Special Certificate was voted. A similar award was also made to Mr. S. Ford, gr. to W. E. Hubbard, Esq., Leonard's Lee, Horsham, for a collection of autumn fruit, which included cones of Pinus Webbiana, the fruit of Cydonia japonica, Siberian Crabs, and the pretty little yellow Wax Apple; to Mr. J. Gavett, Daventry, for a splendid single fruit of the Gloria Mundi Apple, grown on a tree three years old, in California; to Mr. Chaff for a dozen dishes of well grown and nicely coloured Apples; to Mr. Wells, Southend, for good examples of Black Hamburgh and Snow's Muscat Hamburgh Grapes, grown in ground vineries, the latter especially being very good; to Mr. Rose, The Royal Gardens, Frogmore, for three magnificent specimens of the smooth-leaved Cayenne Pine, which weighed in the aggregate 22½ lb., and which were cut from plants grown from rootless suckers planted September 20, 1870, thus confirming a statement made to us by that excellent Pine grower, Mr. Miles, gr. to Lord Carrington, to the effect that the best Pines he cut were from plants not exceeding 15 months old; to Mr. Jacques, gr. to J. C. P. Cunliff, Esq., Hooley House, Coulsdon, for a fine single fruit of Musa sapientum, cut from a plant on which 62 of a like size were grown; to Mr. Sage, gr. to Earl Brownlow, Ashridge, for a very fine fruit of Musa Cavendishii, weighing 46 lb., which, however, was not fully ripe; and to Mr. Johnston, gr. to the Earl of Strathmore, Glamis Castle, Forfarshire, for three exceedingly well-finished bunches of Muscat of Alexandria Grapes, weighing 10 lb. 6 oz., of which it was said there were 200 bunches of a like quality in the same house. The specimens shown were even in size, regular in shape of bunch, with well-proportioned shoulders, fine in berry, and capitally coloured. The house from which they were cut must be a grand sight, and a monument of credit to the successful grower. From Mr. J. Powell, Frogmore, came a seedling Pear, named Premier, raised by him, and which is, we believe, in the hands of Mr. Turner for distribution. The fruit sent were grown on an open standard, and stated to be smaller than usual; it was also said to keep in good condition for several weeks when ripe. The Committee considered it "very promising," but as it was rather past its best, requested to see it again another year. Mr. Gilbert, gr. to the Marquis of Exeter, sent nice examples of Telegraph Cucumber, and of a variety called Major Clarke's Seedling, which so nearly resembles the former as to be almost indistinguishable, but a fine type of a winter Cucumber for all that. Mr. Frisby, gr. to H. Chaplin, Esq., M.P., Blankney, Lincolnshire, sent specimens of a good type of garnishing Kale; and from Mr. Spary, Chailey, Lewes, came a new double-curled variegated Parsley. Messrs. E. G. Henderson & Son had examples of Xylaria polymorpha, a very curious, but not very rare, Fungus; and Mr. J. Cross, gr. to Sir H. Goldsmid, Bart., Rendcourt, Cirencester, had specimens of Walcheren and Veitch's Giant Cauliflower. Mr. C. Brown, gr. to D. P. Grenfel, Esq., Springfield House, Taplow, exhibited eight dishes of Apples, grown on horizontal cordons, planted in November, 1869. Mr. C. Ross, gr. to C. Eyre, Esq., Welford, Newbury, had a good and well-kept dish of Reine Claude de Bavey Plum, and good examples of Guthrie's Late Green, Impératrice Blue, and Golden Drop Plums, came from Mr. J. Gardiner, gr. to Col. Astley, Elsham Hall, Lincolnshire. Mr. Earley, gr. to C. M. Ingleby, Esq., Valentines, Ilford, exhibited specimens of Earley's Defiance Tomato, a seedling of great merit, raised by him. It is round in shape, of a deep crimson colour, and a very heavy cropper. Mr. Earley had during the summer months a row of single plants in 9-inch pots stood out on an open border. When transferred to a shelf in a cool house to help on the ripening process, the shoots presented the appearance more of ropes of Onions than of Tomatos. The produce of one of these plants was cut, and weighed no less than 42 lb., which fact speaks for itself of its productive character. The Committee considered it of very high promise, but adhered to their rule of not granting a certificate until it has been tried at Chiswick. As before mentioned, the prizes offered for 6 dishes of dessert Pears brought out a very good competition, which showed that in point of quality the English grower is nothing behind his foreign compeer. The 1st prize was taken by Mr. Fowle, gr. to Sir H. Mildmay, Bart., Dogmersfield, Hants, with remarkably fine specimens of Beurré Clairgeau, Conseiller à la Cour, Duchesse d'Angoulême, William's Pitmaston, Duchesse d'Angoulême (?), Hacon's Incomparable, and Flemish Beauty. The three first-named were gathered from bush trees on the Quince stock, and the latter ones from wall trees on the Pear stock. They were truly beautiful examples, fine in size, nicely coloured, and A 1 in flavour. The dish of Flemish Beauty attracted much attention on account of their fine size and high colour, indeed, in the latter respect we never saw better. The 2d prize was won by Mr. Garland, gr. to Sir T. Dyke-Acland, Bart., whose fruit nearly always stand high in the prize list. On this occasion he had Beurré Clairgeau, gathered from a pyramid, and weighing in the aggregate 5 lb. 4 oz., and good in flavour; Beurré Bachelier, from a pyramid, weight 6 lb. 3 oz., and of splendid flavour; Doyenné du Comice, from a pyramid, weight 4 lb. 3 oz., flavour very good, but not so high as we have tasted in specimens from Killerton; Maréchal de la Cour, from a pyramid, weight 4 lb. 3 oz., very fine; Gansell's Bergamot, from a pyramid, weight 3 lb. 10 oz., and very fine and excellent in flavour; and Van Mons Léon le Clerc, from a west wall, weight 3 lb. 15 oz., and excellent in flavour. Mr. Stephenson, gr. to F. C. Barker, Esq., Leigh Hill, Essex, was 3d, with medium-sized but well-flavoured examples of Urbaniste, Grand Soleil, Huyshe's Victoria, Marie Louise, Beurré Diel and Glou Morçeau. Capital examples were also contributed by Mr. Sage, Ashbridge, Mr. Miles, Wycombe Abbey, Mr. Lumsden, Bloxholm Hall, Mr. Frisby, Blankney, Mr. Chaff, Mr. O. Goldsmith, Mr. G. Craddock, Mr. W. Gardiner, and W. Thompson, Esq., Clements, near Ilford. For the prizes offered by the Rev. G. Kemp, a member of the Committee, for 6 bunches of Grapes, grown in the open air without any protection, the competition was not so interesting as last year, though the examples shown were by no means inferior in quality. The best came from Mr. J. Norris, Francis Court, Broadclyst, Devon, nice bunches of the White Sweetwater, and very well ripened. Mr. J. Tranter, Upper Assenden, Henley-on-Thames, was 2d, with nice examples of the same variety. Well ripened samples of the same kind were also shown by Mr. Garland, Mr. J. Hepper, The Elms, Acton, and Mr. T. Bellworthy, a garden labourer at Killerton.

The principal feature amongst the Potatos was the competition for the prizes offered by Messrs. James Carter & Co., which was for the best dish of Carter's Main Crop, and for the three best collections, to include Carter's Ashtop Fluke, Cambridgeshire Kidney, Red-skinned Flourball, and Carter's Main Crop. The best dish of the first-named was contributed by Mr. C. Frisby. It is a red pebble-shaped tuber, possessing much quality, and said to have been raised from seed in the neighbourhood of Birkenhead. In outline and smoothness of skin it possesses all the merits of the approved types, and is easily recognisable by the white spots which are evenly distributed over its surface. When cooked in a steamer, with its "jacket" on (as all Potatos should be), it turned out white and mealy, fine in texture, and of very good flavour. The best collection was contributed by Mr. Lumsden, who staged very good samples of 51 varieties, including those above named, a number of the leading American kinds, and a nice dish of Paxton's Wonder, a pebble-shaped round, smooth in outline, good in quality, and one of the earliest with Mr. Lumsden. The 2d prize was taken by Mr. C. Ross, with 23 dishes of well grown tubers, though many of the varieties were of the roughest description. The next best collection came from Mr. Frisby, which included 42 varieties. For the prizes offered by the Society, Mr. Dean, seedsman, Ealing, came in 1st, with a collection of 36 varieties, clean and well grown, and including most of the improved kinds raised by Mr. Fenn. Mr. Lumsden came in 2d with a collection in every respect similar to the one above mentioned, and Mr. C. Ross was 3d. Very creditable collections were also shown by Mr. Garland and an exhibitor whose name was not given. Messrs. Carter & Co. also exhibited a large collection of vegetables, which included very fine samples of the Long Surrey Carrot, Carter's Short-top Six-weeks Turnip, and a good sample of their improved Brussels Sprouts, which have the merit of hearting-in firmly whilst others are growing into leaf, as is the case to a great extent this season. With them were also some good specimens of their Drumhead Savoy, very large and hearted-in very solidly; several varieties of Beet, 58 varieties of Potatos, including most of the new American varieties; and a very fine assortment of Onions. A Special Certificate was awarded.

Notices of Books.

L'Art de Greffer, &c. Par Charles Baltet. (The Art of Grafting, &c.) Paris: Masson. Pp. 320, fig. 113.

This is a plain and practical treatise on the various methods of grafting, with numerous illustrations. Little is said, either as to the history of the process—a well-worn subject—or as to the physiological questions involved. Very numerous methods are alluded to, and many more, we have no doubt, might be added. Some of these seem to be mere matters of fancy, and to possess no special advantages of their own, though this is a matter on which we would gladly have had the benefit of M. Baltet's experience in somewhat greater detail. It is difficult to understand, for instance, that any notable advantage can be derived from grafting a cutting of an Aucuba on to another cutting, and letting the processes of adhesion and root making go on in both cuttings at the same time. The sympathies and antipathies of plants in the matter of grafting is a subject requiring much more extensive investigation than it has yet had; and, as the physiological information sought by this means could not be obtained without much valuable practical information being obtained at the same time, we earnestly hope some of our readers with the requisite means and leisure will take up the subject. The discovery of suitable stocks for fruit trees, &c., is one of the most important things an experimenter could turn his attention to, as it would often enable him even to set climatal rigours at defiance. M. Baltet's little book is most serviceable for practical purposes, and more especially for the eighth section, wherein he gives a list of trees and shrubs adapted for this mode of propagation, the best known stocks, the most suitable method to employ, the season, and other details which we know not where to find so readily in any other easily accessible work. The style is agreeable, clear, concise, and as free from useless verbiage as the veriest stickler could desire. We heartily commend the book to all young gardeners or amateurs conversant with the French language.

Florists' Flowers.

THE relative value of the new LARGE-FLOWERED or SHOW PELARGONIUMS of the present year may be summed up in a few words—they are among the most successful of the floral products of the season. They rank high up in the list of new flowers of the year, and so fine in character and grand in development were some of them, that—were not the florist's art one of illimitable achievements—it might be supposed the *ne plus ultra* of perfection had been reached. But it is not so. The moving finger writes its lines of fresh beauty, and having written, moves on again, now resting, and always producing inconceivable pictures of luminous splendour.

It is to Mr. Foster that the chief honours of the year must be awarded. That ten First-class Certificates should be given to flowers of his own raising in one year, is something almost unprecedented. The gratification derived from watching the gradual unfolding of these beautiful flowers—and who can conceive what pains have gone into the rearing of any one of them?—far outweighs their commercial value multiplied many times.

Arranged alphabetically, Mr. Foster's flowers come in the following order:—Achievement, lilac-rose lower petals, with bold maroon spot on the upper petals, and edged with lilac, and having a large white centre; a fine flower, of splendid quality and extra form. Blue Bell, a strikingly novel flower, lower petals pale bluish purple; glossy black spot in top petals margined with purplish-rose, and clear white throat. Cæsar, a bright looking painted flower of fine form; lower petals crimson, stained with dark maroon, dark maroon top petals, and a margin of crimson, Charlemagne, soft salmon-peach lower petals, with small maroon spot on the upper petals, and broad margin of bright rosy pink; large white centre; stout, large, and of fine form. Chieftain, clear rose lower petals, dark maroon top petals, and margin of shaded rose; bold white throat, fine form, and splendid truss. Conquest, rosy scarlet lower petals, with small maroon spots on the upper petals, and broad edge of purple; a bright and showy flower of fine quality. Pompey, warm orange lower petals, maroon top petals margined with fiery orange, clear white throat: a large, rich-looking flower, of the finest form. Prelate, lower petals shaded purplish maroon, glossy black top petals, with narrow purple. margin and white thread; a handsome and bold flower. Royal Bride, delicate soft salmon-pink lower petals, and large white throat; maroon spot on top petals, margined with lively violet-rose; a fine and attractive variety. Lastly, Rubens, rosy purple lower petals, and clear white throat; maroon spot on top petals; a medium-sized and attractive flower. Mr. Hoyle received a First-class Certificate for Zephyr, having heavily painted crimson lower petals, and black top petals, narrowly margined with a thin edge of crimson: fine form and substance, and splendid truss. Imperator is a rich dark flower, having narrow lower petals, and glossy black top petals, with a thin regular edge of crimson. Ada (Beck) also received a First-class Certificate. The flower has deep pink lower petals, and bold white throat, dark top petals, irregularly margined with bright rose, finely formed, and of good substance. Forcing Pelargonium Enterprise was exhibited by Messrs. E. G. Henderson & Co., and received a Second-class Certificate; this has white petals, much fringed on the edges, with a very dark blotch on each; good habit, and very free. Messrs. Foster & Hoyle's flowers will as usual be distributed by Mr. C. Turner, of Slough.

No new fancy Pelargonium has come to the fore during the same period. All the other sections are constantly receiving additions, more or less valuable, but the fancy varieties are augmented very slowly in comparison. There is no doubt a reason for this, and ere long new forms of the Ladies' Pelargonium will be forthcoming, for past experience proves there can be no standing still in the march of improvement. *R. D.*

Obituary.

ON the night of the 1st instant died, full of years, WILLIAM BAXTER, formerly Curator of the Botanic Garden, Oxford. Better known to a former generation than to the present, Mr. Baxter's reputation as a gardener and a botanist has been to the present race a tradition of the past rather than a fact of the present. Mr. Baxter was appointed to the Botanic Garden as long ago as 1813, and retired in favour of his son, Mr. W. H. Baxter, the present holder of the office, some 20 years since. In 1817 he was admitted as an Associate of the Linnean Society, and in this present month he sank to his rest in his 84th year. If to this we add that he was the author of an illustrated work on British botany, and that he distributed, many years ago, specimens of leaf Fungi, we shall probably be saying as much as is known to the great majority of our readers of Mr. Baxter's career. Those few, however, who were privileged to know him, even in his declining years, would feel with us that to let such a man pass to his grave with but the bare record of the fact would be to commit a great injustice to the memory of one whom modesty and diffidence kept in the background, in spite of his great talent as an observer.

When Mr. Baxter was first appointed to the Botanic Garden, Oxford, Botany had sunk to its lowest level; Sherard, Dillenius, and Sibthorp belonged to the past. Dr. Williams, who held the chair in the early part of Baxter's curatorship, was an elegant scholar, and an amiable man, but added nothing to botanical science; and for practical instruction in botany the undergraduates of that day had recourse to the teachings of Mr. Baxter. Among his pupils were many men who subsequently distinguished themselves in various ways, and some of whom, such as the present Bishop of Chichester, kept up their acquaintance with their instructor up to recent times. It was at this period of his career that Mr. Baxter edited his "British Botany," a work in several volumes, devoted to the description and illustration of British plants. The illustrations are of unequal merit, but the amount of information accumulated is extremely large, and bears witness, not only to great shrewdness of perception and accuracy of observation, but to indefatigable zeal and labour. But it was in Cryptogamic botany that Mr. Baxter specially excelled; in this proving himself a worthy compeer of his fellow labourers—Dawson-Turner, Borrer, Purton, and others. Even to comparatively late years, Mr. Baxter retained, in a remarkable degree, his knowledge of Mosses and Epiphyllous Fungi, gained at a time when the number of students in those departments of botany in this country might be counted on the fingers of one hand, and acquired before the compound microscope had become the valuable instrument it now is. But Mr. Baxter did not allow his botanical pursuits to interfere with his practical duties. It is on record that he made great changes for the better in the garden, raised its level so that it was no longer flooded, and stored it with rare plants to an extent that rendered the Oxford Botanic Garden one of the most remarkable of its time. The number of hardy herbaceous plants and of British plants under cultivation under Mr. Baxter's management was, considering the restricted space at his command, greater than that in almost any other establishment in the kingdom; and the reason is obvious—he knew plants, and loved them.

On the death of Dr. Williams, in 1834, Dr. Daubeny was elected to the professorship, and immediately proceeded still further to improve, and, indeed, remodel the garden. So eager was the Professor to commence operations, and so anxious was the Curator to carry out his views, that, as we have heard, on the very first night of his appointment, the Professor and Curator, lanthorn in hand, proceeded to the garden, and then and there projected much of the alterations that were subsequently carried into effect, and which, with modifications introduced by the present Curator, have rendered the Oxford garden, for its limited size, so complete an establishment. It is not improbable that unduly protracted labours induced those aggravated attacks of mental depression under which at various times Mr. Baxter suffered, but from which he had of late years completely recovered.

Mr. Baxter was, we believe, in the receipt of a trifling pension from the University—in amount, unless we are mistaken, quite inadequate to the merits of the recipient, and unworthy the liberality of a rich university. In this particular it is possible that Mr. Baxter's retiring habit acted prejudicially to his interest. Be this as it may, no one ever came in contact with him without being impressed by his amiable disposition, his great knowledge, extraordinary memory, and his willingness to oblige. Mr. Baxter had accumulated an extensive library of botanical works, which we presume will now be dispersed.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, OCT. 28, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	68.8	36.2	32.6	59.2	40.7	18.5	49.0	0.26
Blackheath ..	58.6	34.6	24.0	55.7	39.6	16.1	46.9	0.01
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	60.0	36.8	23.2	57.3	43.7	13.6	49.6	0.27
Wolverhampton	61.0	32.0	29.0	56.1	42.3	13.8	48.3	0.36
Leicester ..	61.0	34.0	27.0	57.1	40.3	16.8	47.8	0.02
Norwich ..	57.0	34.2	22.8	55.3	39.4	15.9	46.4	0.25
Nottingham ..	60.6	33.7	26.9	57.6	41.4	16.2	48.6	0.28
Sheffield ..	59.0	35.0	24.0	56.3	44.2	12.1	49.3	0.43
Liverpool ..	60.3	42.1	18.2	56.9	46.1	10.7	50.6	0.59
Manchester ..	60.5	34.0	26.5	56.4	41.4	15.0	48.0	0.92
Salford	60.1	32.8	27.3	56.3	40.1	16.2	47.3	1.08
Bradford ..	59.8	41.0	18.8	57.8	45.6	11.7	50.5	0.17
Leeds	60.0	37.0	23.0	56.7	44.0	12.7	49.4	0.28
Hull	59.0	32.0	27.0	57.0	42.0	15.0	48.6	0.14
Newcastle ..	58.0	41.0	17.0	55.5	44.5	11.0	49.1	0.18
Edinburgh ..	58.7	34.0	24.7	..	..	..	48.2	0.70
Glasgow ..	56.5	37.0	19.5	..	..	..	48.3	1.02
Dundee.. ..	56.0	36.0	20.0	..	..	..	47.3	0.75
Aberdeen ..	54.8	37.7	17.1	..	..	..	46.9	0.34
Paisley	..	..	..	..	..	..	..	..
Greenock ..	56.0	40.0	16.0	..	..	..	48.9	1.53
Leith	59.0	36.0	23.0	..	..	..	49.3	0.48
Perth	58.0	35.0	23.0	..	..	..	49.3	0.66
Dublin	63.4	38.0	25.4	..	..	..	50.3	0.81

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, NOV. 1, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
October and Nov.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity.	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
26. Thurs. .	30.17	44.2	44.2	44.2	100	3.3
27. Friday .	29.90	53.8	52.2	50.6	89	4.2
28. Satur. .	29.68	49.7	48.3	46.8	90	3.7
29. Sunday.	29.43	52.6	46.9	41.2	66	2.9
30. Monday	29.45	49.6	48.3	46.9	91	3.7
31. Tues. .	29.59	50.4	48.8	47.0	91	3.7
1. Wednes	29.78	47.7	45.3	42.7	84	3.1

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
October and Nov.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
26. Thurs. .	53.7	33.0	20.7	45.1	−2.5	S.S.W.	140	0.00
27. Friday .	58.6	47.1	11.5	52.4	+5.1	S.	185	0.00
28. Satur. ..	55.6	47.1	8.5	50.1	+3.1	S.S.E.	270	0.00
29. Sunday.	57.8	42.6	15.2	49.4	+2.6	S.E.	285	0.00
30. Monday	52.3	46.4	5.9	48.9	+2.3	E.N.E.	175	0.01
31. Tues. ..	55.0	45.8	9.2	49.3	+2.8	N.E.	340	0.03
1. Wednes	49.9	45.0	4.9	46.5	+0.1	NE: E	405	0.00

Oct. 26.—Generally cloudy till night; then variable. Slight fog
— 27.—Generally overcast. A little rain fell in the afternoon.
— 28.—Very fine and nearly cloudless in the early morning. Cloudy after 9 A.M. A little rain fell between 8 and 9 A.M.
— 29.—Light clouds prevalent throughout. A very fine day. Lunar corona and halo at night.
— 30.—Generally overcast. Rain fell from 11.30 A.M. to 2.20 P.M.
— 31.—Rain fell between 3 and 4 A.M., and occasionally in the afternoon. Overcast till night; then very variable.
Nov. 1.—Variable amounts of cloud prevalent. A fine day

JAMES GLAISHER.

Garden Operations,

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

Orchidaceous plants in general should now be induced by the gentlest means possible to settle down to rest. In instances where young growths are being made, or pseudobulbs are not freely swollen out, they should be encouraged to the utmost extent, if they are of primary importance to the plant, but not otherwise. No plant should be kept at this season in a state of excitement or activity, unless it is absolutely necessary. Attend particularly to any symptoms of drip that may occur, as it often does at this time, through the condensation of moisture upon the glass. The least drip, as is well known, which falls upon the delicate leaves of some Orchids, such, for instance, as *Phalænopsids*, is certain to cause them much injury. The temperature in the *Aerides-house*, or what is sometimes called the Indian-house, should not exceed 58° by night or 68° by day. In the cool Orchid, or Mexican-house, 48° will now be ample by night, whilst an increase to 58° will meet all their requirements by day. In the distribution of the plants in both houses it will be necessary to bear in mind that those plants which are decidedly at rest should occupy positions in the driest part of either structure; and that where a distinction can be made between evergreen and deciduous *Orchids*, it should be done, so that the truly deciduous ones may not only be kept apart from their associates, but be forced, even by somewhat harsh means, to divest themselves of their leaves. The only secret, in regard to blooming deciduous Orchids efficiently, is to thoroughly ripen off the young pseudobulbs, and to cause them to perform their other natural functions without loss of time. The successful cultivator knows too well what a mistaken kindness it is to maintain upon such plants the young leaves of the current season's formation beyond the natural period, that is, away into the winter months. Even by withholding water from the roots altogether some kinds will scarcely go to rest, in consequence of the somewhat close humid atmosphere to a certain extent maintaining them. Hence the need to resort to a somewhat extreme cold temperature. Take *Dendrobiums* as examples, and notably *D. nobile*, which seldom blooms more profusely, or produces finer flowers, than when wintered in a dry corner of an ordinary cool greenhouse. In my remarks upon *Chrysanthemums* last week a letter was transposed, and materially altered the meaning I wished to convey. I said that owing to the "frim" (which in gardening phraseology is a synonym for flourishing) growth these plants had made, they could not be anticipated to stand much severe weather, and so should be protected — not that they had made a "firm" growth, as such a growth would withstand many vicissitudes of weather. The cultivator of plants should now bear in mind that his greatest advancing enemy is damp, and that its most natural antidote is fresh air, which should be given with all possible abundance, at every opportunity that occurs. When a miscellaneous collection of greenhouse plants has to be wintered in one house, such for instance as *Heaths* and *Calceolarias*, *Cinerarias*, &c., each requiring different and very distinct treatment, it will be advisable always to separate them from each other as much as possible by placing the hard-wooded subjects at the driest, and the soft-wooded ones at the coolest and dampest end of each house, where the necessary amount of moisture can be allotted them with perfect immunity from direct injurious consequences to the others. A few of the finest plants of *Primulas*, double and single, which may not be showing flower prominently, would be benefited by a moderate shift into a light porous soil. In potting them at this time press the soil more firmly around the roots than previously, which will be beneficial in more ways than one. It is very important in all efforts at successful plant growing to take care that too much artificial heat be not used for the next few weeks.

FORCING HOUSES.

In regard to the protection of *Pine-pits* during only moderately cold periods and onward through the more severe winter weather, always have resort to external coverings of mats or other similar materials. By rolling these over the lights at dusk, and removing them early in the morning, we not only retain the latent heat of each day, but maintain besides a moderate amount of warmth throughout the night, at the same time obviating a great outlay of fuel. I scarcely need add that two thicknesses of mats are better than one, and that the use of them does not entail nearly so much expenditure as the fuel so saved would have amounted to were it used as the alternative. Forward successionals or spring-fruiting plants, though no check should be allowed, must now have the temperature brought down with a firm hand to a mean as near to 63° as possible. Actual fruiters, on the contrary, may enjoy a mean of from 73° to 75°, according to their previous treatment and the time when the fruit are required ripe. Push forward by all legitimate means the final ripening of late Grapes before the worst season for so doing arrives. *Pot Vines* for successional forcing should have the pots now placed in a position where no injury can accrue from frost. It will be as well also to so place them that they do not become too wet at the roots. Continue the removal of all leaves from vineries going to rest at the earliest moment possible, and so by maintaining a pure wholesome atmosphere help forward the final ripening process. I have repeatedly urged the great importance of early pruning, yet would again suggest that this process be undertaken in regard to all such as the above, which are intended for forcing as early as possible, the wood being properly ripened and the sap moderately at rest.

HARDY FRUIT GARDEN.

Remove immediately all dead or decaying leaves from *Vines* against walls, *Fig trees*, &c., and brush over all *Peach*, *Nectarine*, and *Apricot* trees to which the foliage still adheres too tenaciously. Just "wisp" the branches upward with a neat broom, and in such a manner as to cause the leaves to become detached without using such an amount of violence as is likely to injure the buds. Let all fruit be gathered without further delay, and endeavour to keep the *Fruit-room* as dry as possible, by an admission of fresh air periodically, closing the windows or other means of ventilation by night and during foggy periods when the air is greatly surcharged with moisture. See to the mulching of all young trees planted during the past spring and autumn, and restake standards of any kind before the winter winds with heavy snow and rain arrives. Make every preparation for planting young trees, by trenching and manuring the necessary space around the centres wherever they are to be planted, taking care to elevate the exact position sufficiently to insure the trees being set slightly above the surrounding ground when the soil has settled down permanently. It is customary to manure *Strawberry plants* at this time, but being a convert to spring mulching for such things, I say—don't.

HARDY FLOWER GARDEN.

It will be greatly to the advantage of all autumn-planted spring-flowering plants to hoe carefully amongst them at this time, choosing a fine drying day for the operation. Especially would I recommend that outdoor *Alpine Auriculas* be so treated, after being first divested of any decayed foliage that may adhere to them. Remove suckers which may continue to form from frame Neapolitan and other *Violets*, and break up the surface soil a little amongst them. Any of these latter which may show flower-buds freely should also on a fine day have a good watering with liquid manure. Every kind of semi-hardy plants maintained under the protection of ordinary cold frames should have the freest possible supply of air. Take up any choice stools of *Hollyhocks*, and pot them for sheltering in a cool frame. Cut down *Dahlias* and all herbaceous plants which have ceased to be ornamental, and by repeated use of the rake and broom lighten the ground of the falling leaves to forward the final efforts at collecting them.

KITCHEN GARDEN.

Broccoli, which is growing very strongly, will be far better taken up and laid with the heads to the north, placing soil nearly up to the collar of the plants. Take up roots of *Seakale*, the foliage on which is ripened, and put them in the Mushroom-house or some warm place away from the light. *Asparagus* plants should also be taken up and planted on the hotbeds already prepared, as lately suggested, taking care not to have too violent a heat at the outset, as it oft-times causes the supporting roots to rot away. *W. E.*

Notices to Correspondents.

BOOKS: *Old Subscriber, Inverness.* Kemp's "How to Lay Out a Garden."

CARROT GRUB: *Subscriber.* The refuse lime from gas-works is considered to be an efficacious application to ground affected with this grub. Soot, either alone or mixed with salt, may also be beneficially employed.

COCKCHAFERS. *Aspley* asks: "How shall I destroy the grubs of the cockchafer, which are making great havoc of the grass root s of my lawn?"

FUNGI: *A. W. F., Woodhall Spa.* We presume you are a new subscriber, and do not know our rule,—to name six sorts at a time only. Please remember this in future. 1, Lactarius uvidus, poisonous; 2, Russula furcata, poisonous; 3, Agaricus phalloides, poisonous: 4, A rubescens, edible; 5, A. muscarius, poisonous; 6, Lactarius blennius, poisonous; 7, L. turpis, poisonous; 8, L. torminosus, poisonous; 9, Agaricus fascicularis, poisonous; 10, A. rutilans (small); 11, A. laccatus; 12, A. rimosus; 13, A. pascuus; 14, Hygrophorus psittacinus; 15, Agaricus sublateritius; 16, A. æruginosus, poisonous; 17, Hygrophorus virgineus, edible; 18, Boletus edulis, edible; 19, Polyporus chioneus; 20, Lactarius quietus; 21, Agaricus butyraceus; 22, A. infundibuliformis, var.; 23, A. mutabilis; 24, A. procerus, edible; 25, A. rutilans (large). *W. G. S.*

FUNGUS ON PEAR LEAVES: *G. W., Trumpington.* Rœstelia cancellata: burn all the leaves immediately. *M. J. B.*

FUNGUS ON PEAR ROOTS: *J. A. P.* The affection of your Pear roots is very curious. The Fungus on them appears to be quite new. A further report will be given when there has been time to study it. *M. J. B.*

GALL ON HAWTHORN: *W. W.* The specimens sent are the leaf-roses inhabited by the larvæ of Cecidomyia cratægi. Have you any hedge infested with them?—if so, when you shear it, be careful to burn the clippings; the fly is difficult to get rid of, when once it is firmly established. *Alb. M.*

GESNERA EXONIENSIS: *Florist.* The particulars which you give are so meagre that we can only surmise your non-success in the culture of this beautiful plant to be due either to the want of a suitable amount of heat during their growing period, or that you have not afforded a proper season of rest. Start the plants into growth as early as convenient in February, and as soon as they commence growing actively, push them along vigorously in a temperature of not less than from 70° to 75°, though from 5° to 10° more would be better. Do not syringe them overhead whilst growing, but rely upon a good supply of atmospheric humidity to furnish the superficial moisture required. Immediately the plants show a tendency to ripen off, commence to limit the supply of water to the roots, and so decrease it that when the foliage actually dies down, a little latent moisture only will remain in the soil. *W. E.*

GLASS FOR VINERIES: *Thomas Green.* We have had no experience of the use of coloured glass for vineries, so cannot pretend to speak with any authority on the subject; we should be inclined, however, to prefer plain, inasmuch as all coloured substances tend to subdue the light. This has been thoroughly proved in the case of green glass in the Royal Gardens, Kew. And Vines, above all other plants, seem to enjoy the full and direct influence of the sun or light on them.

LAYING TILES: *Tyro.* The plan recommended by Messrs. Maw is to lay as evenly as possible a bed of concrete, composed of one part of finely riddled quick-lime and three of gravel, or an even layer of bricks or flag-stones will serve as a foundation. We cannot recommend you to be content with merely levelling the soil.

NAMES OF FRUITS: *Alexander Cramb.* Your Pear is Brown Beurré—an exceedingly fine sample.—*George Frost. Pears:* 2, Louise Bonne of Jersey; 3, Passe Colmar; 4, 5, and 6, Beurré Diel; 8, Duchesse d'Angoulême; 10, Old Crassane.—*J. H. V. Pears:* 1, Chaumontel; 2, Hacon's Incomparable; 3, Colmar d'Aremberg; 4, White Doyenné; 5, Autumn Colmar; 6, Beurré Diel.—*J. H. Apple:* Golden Noble.—*James Cocker. Pear:* Not known—very bad quality.—*A. B. Pears:* 1, Beurré Diel; 2, 4, 6, Marie Louise; 3, Urbaniste; 5, Louise Bonne of Jersey; 7, Beurré Bosc; 8, Vicar of Winkfield; 9, Chaumontel; 10, Beurré de Capiaumont.—*H. H. Pears:* 1, 12, Beurré Diel; 2, Beurré Rance; 3, Beurré Bosc; 4, Knight's Monarch; 5, Beurré de Capiaumont; 6, 11, Easter Beurré; 7, White Doyenné; 10, Glou Morçeau.—*C. R. Apple:* Yellow Bellefleur. *Pears:* 1, Easter Beurré; 3, Marie Louise; 4, Beurré Rance; 5, Triomphe de Jodoigne; 6, quite rotten; 7, Beurré d'Amanlis.—*A. F. B., Somerset,* sends us 50 (fifty) specimens of Pears to name! We propose to distribute them among our friends, for the benefit of their youngsters, as it must be obvious to any one but "A. F. B." that it is perfectly unreasonable to suppose that we can, with our multifarious duties to other subscribers, give the requisite time and attention to name so many varieties. Our rule for years has been to name six varieties at a time. Next time, perhaps, "A. F. B." will forward a handsome fee with his 50 Pears.

NAMES OF PLANTS: *J. M.* Polystichum aculeatum lobatum. *J. Boddington.* The common Pteris aquilina, or Bracken, developed from the spores.—*C. L.* 1, Oncidium tigrinum, otherwise known as O. Barkeri; 2, Oncidium ensatum; 3, Cymbidium pendulum; 4, Phalænopsis Parishii.—*M. D.* Your Fuchsia is F. magellanica, of Lamarck, a plant also known by the names of F. gracilis, Lindley; and F. macrostemma, Ruiz and Pavon. It has long been cultivated in gardens, usually, however, under the erroneous name of F. coccinea, which is a distinct thing entirely.—*J. Cocker.* 2, Calluna vulgaris, and 1, its var. alba; 3, Erica stricta (E. corsica); 4, E. cinerea.—*H. Doubleday (Epping).* Cosmos diversifolius, Otto, and, we suppose, the variety atrosanguineus, as figured in "Botanical Magazine," 5227; a plant introduced some few years ago by Mr. Thomson, of Ipswich, from Mexico.—*A Reader.* Dendrobium chrysanthum.—*W. S., Perth.* The plant you send is Matricaria inodora, of which we have previously, on rare occasions, seen double flowers.

SOOT-WATER. *S.* would feel obliged to "R. T." (p. 1358) if he would be so good as to say how he makes such clear soot-water in so short a time, that will not stain the leaves of plants.

ZAMIA PLUMOSA, &C.: *F. H.* We cannot tell you. It is a question for our advertising columns.

CATALOGUES RECEIVED.—F. & A. Dickson & Sons, Descriptive Catalogue of Roses and Hollyhocks.—Wm. Drummond & Sons, Catalogue of Forest, Ornamental, and Fruit Trees, Roses, Shrubs, Coniferæ, &c.—William Urquhart & Sons, Catalogue of Forest and Ornamental Trees, Shrubs, and Evergreens, Ferns, Roses, Fruit Trees, &c.

COMMUNICATIONS RECEIVED.—R. G.—A. Z.—A. B.—J. C. & Co.—D. G.—K. & S.—T. C. C.—G. H. S.—T. W.—S. C. H.—J. McD.—H. & S.—W. C.—T. H.—J. M.—Amateur.—D. T. F.—G. S.—J. T.—Rosarum Hortus.—E. M.—J. T. B.—H. K.—W. R.—C. D.—T. C.—M. M.—Vitis.

Markets.

COVENT GARDEN.—*Nov.* 3.

We have but little alteration to report here. General rates have been maintained, and a fair amount of business for the season is being transacted. Foreign goods are in request, especially of best qualities. A few samples of Newtown Pippins have been offered, but are not worth much attention.

FRUIT.

	s. d. s. d.		*s. d. s. d.*
Apples, per ½ sieve	2 0 to 5 0	Melons, each ..	2 0 to 5 0
Cobs, per 100 lb. ..	60 0 — 65 0	Oranges, per 100 ..	6 0 — 10 0
Figs	1 0 — 2 0	Peaches, per doz. ..	8 0 — 15 0
Filberts, per lb. ..	0 8 — 10	Pears, per dozen ..	2 0 — 4 0
Grapes, per lb. ..	1 6 — 5 0	Pine-apples, per lb.	2 6 — 6 0
Lemons, per 100 ..	7 0 — 10 0	Pomegranates, each	0 4 — 0 8

VEGETABLES.

	s. d. s. d.		*s. d. s. d.*
Artichokes, per doz.	6 0 to 8 0	Herbs, per bunch ..	0 2 to 0 4
Beet, per doz. ..	1 0 — 2 0	Horse Radish, per bundle	3 0 — 5 0
Broccoli, purple, per bundle	1 0 — 1 6	Leeks, per bunch ..	0 2 — 0 4
Brussels Sprouts, p. half sieve	2 6 — 3 0	Lettuces, per score ..	2 6 — 3 0
Cabbages, p. doz. ..	1 0 — 1 6	Mushrooms, p. pott.	1 0 — 2 6
Capsicums, p. 100 ..	1 6 — 2 0	Onions, per bunch ..	0 4 — 0 9
Carrots, p. bunch ..	0 6 — 0 8	Parsley, p. bunch ..	0 2 — 0 4
Cauliflowers, p. doz.	2 0 — 6 0	Radishes, per bunch	0 2 — ..
Celery, red, p. bun.	1 6 — 2 0	Seakale, per punnet	3 0 — 5 0
— white, do. ..	1 0 — 1 6	Shallots, per lb. ..	0 8 — ..
Chilies, per 100 ..	1 6 — 2 0	Spinach, per bushel	2 6 — 3 0
Cucumbers, each ..	0 6 — 1 0	Tomatos, p. sieve ..	4 0 — 6 0
— Ridge, p. dox.	1 0 — 2 0	Turnips, p. bunch ..	0 4 — 0 6

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GARDENER (HEAD).—A successful Cultivator of all kinds of Fruit, Flowers, and Vegetables. Wife a good Laundress. Good character.—GARDENER, 5, Cemetery Street, Biggleswade.

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GARDENER (HEAD), age 45, married, family.—The Advertiser, who is now disengaged, begs to offer his services to any Nobleman or Gentleman in want of a thorough practical Gardener. Eighteen years in last situation. Character will bear the strictest investigation.—J. E., 32, Lockington Road, Battersea Park.

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To Nurserymen, Florists, and Others.

TO BE DISPOSED OF, by Private Treaty, the old-established and well-known NURSERIES, situate about six miles south-west side of Manchester, so long and successfully carried on, comprising Six Greenhouses, Five Ranges of Pits, with Hot and Cold Water, with the whole of the GREENHOUSE PLANTS, &c. These Nurseries are over 20 Acres, and are well stocked with choice EVERGREENS, FOREST and FRUIT TREES, such as are rarely met with. None but Principals need apply.

For further particulars, apply to J. HOCKENHULL, Nurseries, Sale, near Manchester.

SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.

Dutch Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 4, at half-past 12 o'Clock precisely, a consignment of choice HARDY TREES and SHRUBS, from Holland, consisting of FRUIT TREES, RHODODENDRONS, HOLLIES, Standard and Dwarf ROSES, Climbing PLANTS, and Deciduous TREES and SHRUBS; also an importation of choice Double and Single HYACINTHS, CROCUSES, NARCISSUS, ANEMONES, IRIS, LILIUMS, GLADIOLI, and other Bulbs, just arrived from several well-known Dutch Farms.

On view the morning of Sale, and Catalogues had.

Bulbs and Plants from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 6, at half-past 12 o'Clock precisely, first-class FRUIT TREES, ROSES, RHODODENDRONS, Specimen CONIFERS, and a variety of other HARDY TREES and SHRUBS, from Holland; also an importation of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, and LILIUMS, from well-known Dutch Farms.

On view the mornings of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 7, at half-past 12 o'Clock precisely, PRIZE POULTRY, from Mr. Salter, of Oxford, consisting of Silver Grey Dorkings, Game Bantams, and Aylesbury Ducks; also a great variety of other young BIRDS, from well-known Breeders. About 40 Lots of CARRIERS, DRAGONS, ANTWERPS, POUTERS, BALDHEADS, and TUMBLERS, from Mr. Ord; and about 100 Lots of other choice PIGEONS, from well-known Fanciers.

On view the morning of Sale, and Catalogues had.

To Gentlemen, Nurserymen, and Others engaged in PLANTING.

IMPORTANT and EXTENSIVE SALE of NURSERY STOCK.

MR. POYSER will SELL by AUCTION, without reserve, at the Tansley Nurseries, Matlock, Derbyshire, on TUESDAY, November 7, and three following days, at half past 11 o'Clock each day (Mr. J. Smith, Sen., having decided on clearing off a portion of his extensive stock), EVERGREEN and FLOWERING SHRUBS and TREES, suitable for planting; FOREST TREES, RHODODENDRONS, IRISH YEWS, of large and small sizes, in large quantities; also large quantities of the following,—THORN QUICKS, SCOTCH FIR, LARCH, SPRUCE, OAK, ASH, and Mountain ASH. Upwards of 1000 Lots.

Catalogues may be had 10 days prior to Sale, and further information obtained, from Mr. SMITH, Sen.; or from Mr. POYSER, Auctioneer, Wirksworth, Derbyshire.

Re Mr. R. Glendinning, Deceased.

CLEARANCE SALE of the very EXTENSIVE VALUABLE NURSERY STOCK, CONSERVATORIES, GREENHOUSES, and COMPLETE PLANT of CHISWICK NURSERIES, TURNHAM GREEN and CHISWICK LANE.

MR. J. A. SMITH will SELL by AUCTION, on the Premises, as above, on MONDAY, November 6, and three following days, at 11 for 12 o'Clock punctually each day, the extensive NURSERY STOCK, &c., as previously advertised.

Catalogues of the Auctioneer, Hammersmith, W.

Ghent, Belgium.—M. Jean Van Geert, Deceased.

IMPORTANT SALE of STOVE and GREENHOUSE PLANTS.

MR. FERD. VERHULST, AUCTIONEER (Rue de la Confrérie, Ghent), will SELL by AUCTION, at the Establishment of the late M. Jean Van Geert, Ghent, Belgium—under the direction of M. Jean Verschaffelt—on MONDAY, November 6, and following day, at half-past 9 A.M., and half-past 2 o'Clock P.M. precisely, each day, all the STOVE and GREENHOUSE PLANTS, including a fine Collection of CAMELLIAS, splendid specimens, from 6½ to 13 feet in height, amongst which will be found fimbriata, alba-plena, Mathotiana, imbricata, Jeffersoni, &c.; 10,000 Camellias, including 5000 alba-plena nearly all in bud; 6000 do. stocks, suited for grafting; a fine Collection of splendid AZALEA INDICA, best varieties; do. 4000, 3 to 4-yr.; a quantity of STOVE and GREENHOUSE PLANTS, such as Banksias (16½ to 20 feet), splendid Araucarias, Dracænas, variegated and quadricolor varieties of Yucca, Agaves, Phormium tenax, variegated, &c.; BAYS and CONIFERÆ in splendid specimens; a Collection of AUCUBA JAPONICA, a splendid selection of hybrid RHODODENDRONS, and a fine Collection of TREE PÆONIES, in 30 varieties

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871

Gravesend, Kent.

IMPORTANT SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Gravesend Nurseries, Gravesend, Kent, on MONDAY, November 6, at 11 for 12 o'Clock precisely, by order of Mr. Thos. Eves, successor to the late Mr. England Clarke, without reserve, in consequence of a portion of one of the Nurseries being required immediately for Building purposes, a large quantity of VALUABLE NURSERY STOCK, comprising 2500 Green and Variegated Box, 2 to 4 feet; 2000 Laurustinus, 18 inches to 3 feet; 500 Berberis aquifolia, 2½ to 4 feet; 700 Chinese and Siberian Arbor-vitæ, 5 to 6 feet; 2000 bushy Aucubas, 18 inches to 3½ feet; 3000 bushy Laurels; 1500 fine Spruce Firs, 4 to 9 feet; a quantity of handsome specimen Thuja aurea, 3½ to 4½ feet; Hollies, Portugal Laurels, Lilacs, &c.; clean-grown FRUIT TREES, comprising 1500 Standard, Feathered, and Maiden Plums, 250 2-yr. Pears, 250 2-yr. Lord Suffield Apples; 3000 fine STANDARD ORNAMENTAL TREES, consisting of Poplars, Scarlet and common Chestnuts, Laburnums, Elms, Sycamores, Limes, Planes; 600 fine Irish Ivies, in pots, 7 feet; 150 strong Pampas Grass, &c.

May be viewed any day prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, E.

Auction Mart, Tokenhouse Yard, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the Mart, Tokenhouse Yard, E.C., on TUESDAY, November 7, at half-past 12 o'Clock precisely, a first-class COLLECTION of DUTCH BULBS, a choice assortment of 300 fine Standard and Dwarf ROSES, selected HARDY AMERICAN PLANTS, &c.

On view the morning of Sale. Catalogues may be had at the Mart, as above; and of the Auctioneers, Leytonstone, E.

Nursery Stock.—Sunbury, Middlesex.

MR. J. WILLMER begs to announce that he will submit to Public AUCTION, on the Premises, Springfield Nursery, Sunbury, on THURSDAY, November 16, at 12 o'Clock, the healthy and thriving STOCK of the above NURSERY, which comprises—Lilac, 4 feet; Thuja Wareana, 3 to 5 feet; Common Laurels, 2 to 6 feet; Striped Box, 4 feet; Green Box, 1 to 2 feet; Portugal Laurels, 2 to 6 feet; Cedrus Deodara, 8 to 10 feet; Spruce Fir, 2 to 6 feet; Green Hollies, 1 to 5 feet; Striped Hollies, 1 to 2 feet; Arbutus, 4 feet; Taxus fastigiata, 6 to 9 feet; Araucaria imbricata, 3 to 5 feet; English Yews, 1 to 5 feet; Red Cedar, 2 to 3 feet; Wellingtonia gigantea, 3 to 7 feet; Chinese Juniper, 3 to 6 feet; Pinus austriaca, 4 to 5 feet; Pinus Cembra, 3 to 5 feet; Abies canadensis; 3 feet; Thujopsis borealis, 3 to 5 feet; Cupressus Lawsoniana, 3 to 5 feet; Tulip Trees, 3 to 6 feet; STANDARD ROSES, Acacias, Poplars, &c.

May be viewed one week prior to the Sale, and Catalogues had at the principal Inns in the neighbourhood, on the Premises, and of the Auctioneer, Kent Villas, Station Road, Sunbury, S.W., who will forward the same by post, on application, enclosing a postage stamp.

THE TWENTY-SECOND ROYAL BERKSHIRE ROOT SHOW will be held in Messrs. SUTTONS' NEW LARGE WAREHOUSES, READING, on SATURDAY, November 18, when PRIZES amounting to upwards of SIXTY POUNDS will be awarded for the best Specimen Mangels, Swedes, Turnips, Kohl Rabi, Potatos, &c., including a £10 10*s.* SILVER CUP for the best 24 Specimens of SUTTONS' CHAMPION SWEDES, with £5, £3, and £2, for the next best Specimens, and a £5 5*s.* SILVER CUP (offered by Messrs Griffin, Wolverhampton), for the Best Collection of ROOTS.

For complete Particulars, and Form of Entry, apply to
SUTTON AND SONS, Reading, Berks.

CENTRAL CHAMBER of AGRICULTURE.—A MEETING of the CENTRAL COUNCIL will be held at the SALISBURY HOTEL, Fleet Street, on TUESDAY, November 7 (Time, 11 o'Clock in the Forenoon), when Deputed Members from Provincial Chambers and other Members of the Council are requested to attend.

Members of the Legislature who may be interested in the subjects for consideration are also invited to be present, and Members of the Central or of Provincial Chambers, who are not deputed or on the Council, are welcome to attend though not privileged to vote.

AGENDA.

To transact General Business

To consider and resolve upon the Report of the Committee upon the Constitution and Laws of Association of the Central Chamber. (*Discussion adjourned from May 3*)

To receive the Report of the Local Taxation Committee.

To receive communications with reference to the policy of Appropriating for Secondary or Middle-class Education Endowments left for the Education of the Poor.

To consider what steps shall be taken by the Council toward securing effectual legislation with reference to Imported and Contagious Diseases of Live Stock.

JOHN ALGERNON CLARKE, Secretary.
The Salisbury Hotel, Fleet Street, E.C.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

CARDIFF MEETING.

A SILVER CUP, value £100, offered by Sir WATKIN W. WYNN, Bart., M.P., President of the Society, and a SECOND PRIZE of FIFTY POUNDS, offered by the SOCIETY, will be awarded to the Occupiers of the Two Best Managed Farms in South Wales and Monmouthshire, which are not less than 100 Acres in extent, at least one-fourth of the land (not Sheep-walk) being under tillage. Competing Farms must be occupied by a tenant-farmer paying a *bona fide* rent for three-fourths of the land in his occupation, or by a Landowner occupying his own Farm, the total extent of whose property in agricultural Land (exclusive of Sheep-walk) does not exceed 200 Acres, and whose sole business is Farming. Forms of Entry will be forwarded on application to
H. M. JENKINS, Secretary.
12, Hanover Square, W.
N.B.—The LAST DAY of ENTRY is DECEMBER 1, 1871.

The Agricultural Gazette.

SATURDAY, NOVEMBER 4, 1871.

MEETING FOR THE ENSUING WEEK.

MONDAY, Nov. 6	London Farmers' Club (Mr. C. S. Read, M.P., on The Agricultural Labourer), at the Salisbury Hotel—6 P.M.

◆

PUBLIC opinion on the subject of TOWN SEWAGE appears to be still in a very unsettled plight. The belief of the so-called "A B C," or Native Guano Company, that they have the power of precipitating a valuable manure from it, seems to be shared by a large number of people. A Royal Commission, whose business it has been to investigate all possible methods of purifying the rivers, has however investigated this plan of dealing with the filthy drainage water of towns; and after careful examination, on more than one occasion, of a scheme which they would have welcomed as a short and easy remedy for one class of the difficulties which beset them, they were forced to the conclusion that the process neither purifies the water nor manufactures a valuable manure. It does not precipitate the dissolved organic matters from the filthy stream in which, in town sewage, they are so diluted; and the flocculent suspended matters which that stream carries along with it are of small value as manure. Walking last Monday across the Aldershot irrigation farm, where Mr. BLACKBURN deals with the sewage of the camp, we came upon subsidence ponds, where the dirty stream is supposed to leave the greater portion of its suspended filth before being let on the land. Some of the tanks were full, and stank abominably; but the foreman said the material was of very little use. It had been well washed on its way there, and all that was good lay in the water which had left it. But this material, further diluted with the clay employed in the process, is virtually the substance of the "A B C" manure: or, if the so-called native guano contains the finer flocculent matters, which a rough subsidence of this kind would not collect, these finer particles are really better washed than the larger masses, and are of even smaller value. Every 10 cwt. of this solid excrementitious matter is in the sewers of a town driven and tumbled along in 100 tons of water, and ere it reaches the sewer mouth it must have given up whatever soluble fertilising matter it contained. The water which carries these dissolved matters also carries the mere worthless skeleton which remains insoluble. In the so-called "A B C" process the sewage is subjected to the cleansing influence of "alum, blood, and clay," under which all these suspended matters are thrown down, and at some expense collected and offered for sale at, we believe, £3 10*s.* per ton. The clarified water then leaves the works, apparently cleaned, but really containing almost all the putrescible and almost all the fertilising matter it had originally contained. It will still make the river which receives it filthy, and it will still make the field over which it may be poured fertile. Considering the plague inflicted on the sewage farmer by the suspended matters with which he has to deal, it is even better sewage for his purpose than it was before, and the worthless matter which is thus lost out of it he is very glad to lose. It is this comparatively worthless matter, nevertheless, which is offered for sale under the name of native guano. Hitherto the agricultural evidence of its character has been very slight. There has not been much chance as yet of determining its value in the field. Such results of its trial this year as we are now, however, learning, entirely bear out the conclusions of the chemist. Thus the *North British Agriculturist* refers, as follows, to an experience of the past year in the North:—

> "Since the discussion of this question at the Social Science Congress, Leeds, we have had an opportunity of inspecting Turnips grown on land to which 'native guano' had been applied. The first field examined was Swedes—soil light loam, naturally fertile, situation between 100 and 200 feet above the level of the sea, by which it is bounded on the east. Farmyard manure had been applied to the whole of the field, and auxiliary manures used in addition. To 5 acres on one side of the field about 5 cwt. per acre of 'native guano' was applied. The other portion was manured with a mixture of guano and superphosphate of lime, applied also at the rate of 5 cwt. The weight of bulbs on the latter portion would be about 18 tons per acre; while on the portion where the 'native guano' was applied the weight of bulbs would not at the present time exceed 8 tons per acre. As the Turnips will not be stored for a month or two, the bulbs will doubtless increase in size, as the leaves of the whole crop are healthy and luxuriant. We next proceeded to examine a field of Green-top Yellow—land a light loam, and gravelly subsoil, elevation about 300 feet. The difference in the appearance of the crop, seen at a considerable distance, where the 'native guano' had been applied, was very marked, and when closely inspected the weight of bulbs might be about 3 or 4 tons per acre—the leaves partly decayed. Where farmyard dung had alone been applied the weight of bulbs would be about 20 tons. We estimated the crop to be worth about £7 an acre, and the Turnips where the 'A B C' manure had been applied at between 30*s.* and 40*s.* per acre. The occupier of this farm considered that the 'A B C' manure had injured the crop, but as no portion of the field was left unmanured, there were no means of judging as to the correctness of his opinion. We learned that on other four farms in the county (Kincardine) experiments of a similar character had been undertaken, and the results were equally unfavourable for the 'A B C' manure. The experiments on the two farms we examined convinced us that it was unnecessary to proceed further for the purpose of inspecting Turnips grown by the 'native guano.'"

The fact cannot be too strongly insisted on, that it is the soluble part of the contents of sewage on which its agricultural value depends.

This is present in the mass of water which contains it in so dilute a form that to separate it by precipitation is impossible. On the other hand, there are plants capable of dealing with large quantities of water; and to these it may be applied, and they will extract the manure which it contains and feed upon it with a resultant fertility which is quite unexampled otherwise. Cabbage, Broccoli, Mangel Wurzel, Italian Rye-grass, Celery, Rhubarb, yield enormous crops under sewage. The soil, the air with which the soil is mixed, the plants which fill the soil with their roots, are together a perfectly successful agency, not only for utilising it but for cleansing it. And if the highest scientific authority be desired we may quote Voelcker, Lawes, and Gilbert, Frankland, Odling, and Way as being unanimously of opinion that thus alone can sewage be at once cleansed and utilised; and they are also unanimously of opinion that in this way it can be cleansed and utilised without the creation of a nuisance to the neighbours; which is more than can be said of any of the plans for precipitating its filth which have been tried one after another, and found to fail.

—— Only best samples of English Wheat brought the previous Monday's prices at Mark Lane on Monday. Wednesday's business was trifling, at about previous rates. ——The prices for beasts were very little altered from those of last week at the Metropolitan Cattle Market on Monday. On Thursday choice beasts were not plentiful, therefore but little reduction in price; and there was scarcely any alteration in the price of sheep, but choice calves found a ready market, at higher rates.

—— Talking lately to a man who had been more than 40 years the tenant of a capital farm in Bedfordshire, we were delighted to hear him express a confident opinion of the great improvement in both Masters and Labourers, and in the relationship subsisting between them, since he had been in business. The labourers are better servants and worthier men, the farmers are better masters and worthier men. That is his belief, and he illustrated it by reference to opinions and to facts. Hear now Mr. Clift, of Whimple, Devonshire, who thus replied to the toast of the evening at the recent ploughing match dinner. He said Whimple was improving very much, and the farmers in the neighbourhood would compare favourably with any men of their class in the country. The reason of this was that they did not keep their money in their pockets, but spent it liberally on their farms. He had been in the parish 60 years, and could bear testimony to the progress which had been going on during that time. They had now got a railway and a new schoolhouse, both great improvements.—So much for fact, and there can be no better witness than a resident for so many years in the locality we describe. But now Mr. Clift proceeds to give an opinion on the new state of things, and here his judgment of course can be only speculative:—With regard to education, the effect of it was to make the labourer too independent, and the labourer's children did not care for farm work—one would be a dressmaker, another a policeman, and so on, and by-and-by they would not be able to get any one to do farm work. I hope no offence (he said), but that is my humble opinion, and I cannot be convinced it will be different. I am willing every child should have a certain amount of education, but they are going to have a better education than the farmers' children; this they are bound to do; the farmers' sons in this parish will have to go to work younger than the farm labourer. I was bound to go out to work and earn my own living at five years of age; now the labourers' children must get to 13 before they go out: but who's to pay for it? Our worthy member, one of the honourablest men in the county of Devon, says every labourer shall keep a cow. Let him do it, and he will be that independent of his farmer, his master; he will be home, and we shan't get him half his time. Mr. Clift concluded his speech, which seemed to be in accord with the feelings of a good many farmers in the room, by repeating his disapproval of the suggestion thrown out by Sir Thomas Acland, and approved of by Sir Lawrence Palk, that farm labourers should be allowed to have "cow leases."

—— Mr. Edward Wilson, who writes from the Reform Club, and says that he is a farmer in England with some hundreds of sheep and cattle, but with neither horn nor hoof in Australia, nor shares in any meat-preserving company, thus describes an experiment for the determination of the quantity of *food* there is in a leg of mutton. A comparison between the cost of butchers' meat purchased at the shops and preserved meat imported from Australia, had quoted the difference at about a third of the English price. He says:—

> "My little experiment seemed to show that the difference was more nearly twice that amount. Wishing to know exactly what was the loss in cooking and what the proportion of bone in an ordinary joint, I had a leg of mutton weighed as it came from the butcher's, weighed again when roasted fit for the table, and I then had the meat accurately pared off, and it and the bone weighed separately, with the following results:—Leg of mutton before roasting, 9 lb. 10 oz.; ditto after roasting, 6 lb. 12 oz.; weight of cooked meat, 4 lb. 13 oz.; bones, 1 lb. 15 oz.; gravy, 10 oz. By this calculation we find, what probably our thrifty housekeepers know, but very many of us do not know, that if we pay the butcher 9½*d.* per lb. for a leg of mutton, the cooked slice of mutton on our plate costs us about 19*d.* per lb.; and that we must compare English meat at that rate with Australian meat, cooked and without bone, at 16*d.* or 17*d.*, to judge justly between them."

—— We take the substance of the following account of the Adventures of a Road Steamer from the *Pall Mall Gazette*, which quotes from the *Scotsman* its account of a feat without parallel lately performed by a large road steamer—namely, running from Ipswich to Edinburgh by road, a distance of 450 miles, in 77 hours' travelling time. The engine, which is one of four now being built by Messrs. Ransome, Sims & Head for the Indian Government, under Thomson's patent, with india-rubber tires, is of 14 nominal horse-power, but has several times been worked up to 80 indicated horse-power; her weight is about 13½ tons; length, 15 feet; breadth, 8 feet 8 inches; height to top of chimney, 15 feet. The omnibus weighs about 3¼ tons, and is seated for 21 people inside and 44 outside—total, 65. She left Ipswich on Friday morning, September 15, under charge of Lieutenant Crompton. The first town reached was Stowmarket, where the road for miles was overshadowed by trees, and it was necessary to keep men on the roof with saws and axes to cut a passage for the chimney. She arrived at Bury St. Edmund's in time for breakfast, having run the first 25 miles in four and a half hours, including all stoppages. On arriving at Newmarket a difficulty also arose with the police, who directed the engine to "move on." It continued its journey in peace, reaching Ely at 6 P.M. Here, after coaling and getting dinner, the travellers engaged a guide to pilot them across the Fens to Peterborough; he commenced his task by losing his way about 10 miles from Ely, and finished by directing the engine along the brink of the 40-foot river. As the engine went on, the road got narrower and narrower, until it was only a few inches wider than the engine. The bank sloped down steeply on one side to the river, on the other to the fen; but for the utmost care taken by the steersman to keep the engine exactly central on what there was of road, the wheels would have cut away the rotten, boggy bank, and the engine would have gone into the depths of the fen. After about 10 miles of this nervous work a tube burst, which delayed the travellers several hours, and gave them an opportunity of resting in the omnibus, thus ending the first day's journey of 70 miles. The second day's journey was a short one, as, being Saturday, it was necessary to find a good place to lay up the train over Sunday. On Monday morning, at 6 A.M., the train started and made a splendid run from Wansford to Doncaster, 83½ miles in 10¼ hours, including unavoidable stoppages for water, coals, &c. Most of the miles on this days' journey were actually done in four minutes, some of them in less, or at the rate of 15 to 18 miles an hour. The following days' run was from Doncaster to Ripon, and thence to Darlington and Wooler. The road became very bad after leaving Morpeth, and as the travellers approached Wooler it was more like the channel of a gravelly burn than anything else. Outside this place a toll-gate man absolutely refused passage, and the gentle power of steam had to be applied before the party could proceed. He came on to Wooler to give the engine in charge to the police, but the "force" was extremely civil and obliging. Next day, after loading, the train crossed the border, and, by dint of running all night, crossed the Lammermoor ridge early in the morning, arriving at Edinburgh on the 5th. She came in by the Dalkeith road and the bridges, and swung round into Prince's Street in grand style. Although there were tramway obstructions in that street, she threaded her way through them all and distanced all the traffic, turning up into George Street, and so on to a coach-builder's yard in the West End, where she was laid up. Since that time she has made several trips of an experimental nature, in one of which she took 40 tons of gross load up Soutra Hill, which is an incline of 1 in 17, of upwards of a mile in length. After a return journey to Ipswich she will be shipped off to India. The chief difficulties encountered by the engine on her journey appear to have arisen from foraging for water and coal. She also had minor difficulties to encounter with the toll-gate people, who could with difficulty be persuaded that, being the property of Government, she did not pay toll.

OUR LIVE STOCK.

CATTLE.

Mr. R. W. Reynell's sale, which was unavoidably postponed some weeks since, took place on the 24th inst. at Killynon, Killucan, Co. Westmeath, under the management of Mr. John Thornton. The cattle were well brought out before a capital company, and bidding was spirited. The general average of £32 2*s.* over 28 animals was obtained, and a total of £898 16*s.* Twenty-one cows made £35 7*s.*, and seven bulls £22 7*s.* each, and the highest price was obtained for *Molly Connor* by Lord Spencer (26,708), and descended through *Molly Asthore* by Emperor (12,835), from *Fairy Queen* by Coriander (6895). This animal, really a splendid heifer, "nearly perfection, and with a coat of fine hair 3 inches long," to quote from an admirer and eye-witness, was sold to Mr. W. S. Garnett for 80 gs. The following is a list of the principal prices and purchasers:—*Lady Rose* by Duke of Leinster (17,724), 50 gs., E. K. Cox, Australia; *Arrah-na-Pogue* by Royal Prince (27,384), 53 gs., Mr. W. Barnes; *Ophelia* by Royal Prince (27,384), 45 gs., Mr. W. S. Garnett; *Ketchup* by Duke of Leinster (17,724), 40 gs., Mr. W. S. Garnett; *Molly Connor* by Lord Spencer (26,738), 80 gs., W. S. Garnett; *Princess* by Lord Spencer (26,738), 40 gs., Mr. W. S. Garnett. The bulls sold at prices varying from 15 to 32 gs., the latter price being given by Mr. W. Barnes for Prince Arthur Patrick by Royal Prince (27,384), and a descendant of *Pauline* by Prince of Northland (4826). We also append a list of prices given for Hereford bulls at the same sale, which averaged £15 17*s.* 4*d.* each. Eton Montem by Sir Harry (2767), 20 gs., J. Featherstonehaugh; White Hart, by a bull of Lord Berwick's, 22 gs., R. W. Reynell; White Nob, by Mr. Scally's Bull, 13 gs., Major Gayston: Sir John, by Mr. Scally's Bull, 11½ gs., Mr. S. Winter; Sir David by Mr. Scally's bull, 13½ gs., Mr. S. Winter; Wellington, 9 gs., R. Featherstonehaugh; Master Dick, 9 gs., O. Byrne; Master James, 22 gs., R. W. Reynell; Master William, 16 gs., R. W. Reynell. The sheep, bred from Leicester, Border Leicester, and Lincoln stocks, sold at prices varying from 55*s.* to 58*s.* 6*d.* for hoggets, and 58 gs. to 60*s.* for ewes. Some Berkshire pigs of a week old, bred from Sir Wm. Throckmorton's stock, were sold for as high as 70*s.* and as low as 27*s.* each.

—— Mr. R. P. Davies (late of Ridgeway) has published a private catalogue of his herd of Shorthorns now flourishing at Chipping Sodbury, Gloucestershire. The herd comprises 54 animals, 47 of which are females. All are well descended and belong to highly fashionable strains kept up by the use of first-rate bulls. The most striking feature of the catalogue is the large collection of Kirklevingtons, six bulls and 15 females, all direct descendants of *Kirklevington 7th* by Earl of Derby (10,177), and the results of crosses with General Canrobert (12,926), 4th Duke of Oxford (11,387), Delhi (15,856), 3d Lord Oxford (22,200), 7th Duke of York (17,754), 2d Duke of Claro (21,576), and other equally well bred bulls. The Kirklevingtons are succeeded, in the order of the catalogue, with *Fennel Duchess* by 13th Duke of Oxford (21,604), and tracing back through *Filbert* by 2*d* Cleveland Lad to *Fletcher* by Son of Young Wynyard (2859); next follow four Darlingtons, after which are half-a-dozen Wild Eyes, three Seraphinas, two Charmers, two descendants of *London Pride* by Janizary, four representatives of *Rhoda* by Harry of Glo'ster (14,674), three Honeys, descended from *Helen* by Oregon (8371), and six representatives of *Amity* by Chaffcutter (12,572). The bulls comprise 2d Duke of Gloucester by 7th Duke of York, and also of *Duchess* extraction on the female side through his mother, 11*th Duchess of Geneva*, and six young Kirklevington bulls.

—— At Sir William Stirling Maxwell's sale of Shorthorns, at Keir, on the 26th ult., an average of £37 6*s.* 9¾*d.* was obtained over 16 animals sold. The following is a list of the prices and purchasers:—Red Butterfly by Prince Imperial (27,150), £37 16*s.*, Mr. Davidson, Mains of Cairnbrogie; Prince Henry by Prince Imperial (27,150), £47 5*s.*, Dr. R. Williamson, Lawers; Imperial Prince by Prince Imperial (27,150), £58 16*s.*, Mr. J. Currie, Gorebridge; Keir Butterfly 10th by Royal Butterfly 11th (20,719), £42, Mr. Scott, Brotherton; Bannerman by Mr. Booth's Banner Bearer, £52 10*s.*, Mr. Hope, Fenton Barns; Standard Bearer by Mr. Booth's Banner Bearer, £29 8*s.*, Mr. Thomson, Ochtersyne; *Flower Girl* by Baron Killerby (19,280), £31 10*s.*, Mr. R. Arklay, Ethiebeaton; *Chambermaid* by Lord Chamberlain (22,129), £52 10*s.*, Mr. Cochrane, Little Haddo; *Butterfly's Heiress* by Royal Butterfly 11th (20,719), £33 12*s.*, Mr. J. Balfour, Balbirnie; *White Rose* by Van Tromp (21,012), £31 10*s.*, Mr. J. Young, Waterton; *Balm of Gilead* by Royal Oak (16,873), £28 7*s.*, Mr. R. Lucas, Bridge of Allan; *Butterfly Rosebud* by Keir Butterfly 1st (24,235), £44 2*s.*, Mr. D. R. Williamson, Lawers; *Redfly* by Prince Imperial (27,150), £28 7*s.*, Mr. J. Curris, Halkerston; *Red and White Butterfly* by Prince Imperial, £21, Mr. R. Arklay, Ethiebeaton; *Summer's Pride* by Keir Butterfly 1st (24,235), £35 14*s.*, Mr. Scott, Glendronach; *Sweet Violet* by The Chieftain (20,942), Mr. R. Arklay, £23 2*s.* The following prices for Ayrshire cows were also given:—*Susan*, £17, Mr. R. Monro, Covesea; *Nancy*, £16, Mr. W. Christie, Abbeyhill.

—— The following excellent prices for polled cattle were given at Mr. M'Combie's recent sale at Tillyfour, Aberdeen. Above half of the animals were calves and yearlings, many of which were sold at from 20 to 30 gs. each. We have restricted our list to those animals which realised higher prices:—*Elf*, 37 gs., Lord Airlie; *Flora*, 30 gs., Lord Cawdor; *Daisy*, 33 gs., Mr. Stevenson, Tillyfour; *Edith*, 37 gs., Mr. Walker, Ardhunchart; *Dido* and heifer calf, 45 gs., Mr. Paterson, Mulben; *Dora*, 49 gs., Marquis of Huntly; *Deceit*, 31 gs., Mr. Martine, Aberdeen; *Lady Magg*, 33 gs., Mr. Adamson, Balquharn; *Hopeful*, 30 gs., Mr. Todd, West Brackla, Kinross; *Mina*, 34 gs., Colonel Farquharson, Invercauld; *Haida*, 32 gs., Mr. Adamson, Balquharn. 2-year-old heifers—*Grace*, 60 gs., Marquis of Huntly; *Mysic*, 32 gs., Colonel Ferguson; *Joan*, 30 gs., Mr. Adamson, Bocharn. Sir J. M. Grant bought a yearling heifer for 40 gs., and a bull calf for 56 gs.; Mr. Stevenson, of Tillyfour, also bought a yearling heifer for 42 gs.

—— The following instances of a fact generally recognised by breeders are taken from Mr. Finlay Dun's lecture on the Principles Concerned in the Breeding of Stock, delivered last June before the Midland Farmers' Club:—

"In all animals the progeny are occasionally found to bear a resemblance, not so much to the parents or their immediate ancestors, as to some previous male—very usually the first—with which the female has had fruitful intercourse. Most breeders recollect Lord Morton's often-quoted case of a nearly pure-bred Arabian mare having a foal by a quagga, and afterwards producing to three thorough-bred Arabians three several foals with distinct quagga markings, which were, however, less and less pronounced in each of the three successive foals. Frequently a valuable bitch gets lined by some mongrel cur, and for several of her litters her whelps by pure, well-bred sires will exhibit many of the characters of those first dropped to the mongrel. We should not willingly purchase, as pure Shorthorns, the progeny of a pure Shorthorn cow which had previously had a calf by a Hereford or Longhorned bull. We should consider that she would require to bear several calves to a pure-bred animal of her own kind before the stain of her earlier *mésalliance* would be obliterated. I have found it almost hopeless to obtain pure white pigs from a pure-bred white sow, if once she has been hogged by a black boar. Blaine, in his 'Canine Pathology,' records a similar case. 'D. Giles, Esq., had a sow of the black and white kind, which was bred with a boar of the wild breed, of a deep chestnut colour; the pigs produced by this intercourse were duly mixed, the colour of the boar being in some very prominent. The sow was afterwards bred from by two of Mr. Weston's boars, and in both instances chestnut marks were prevalent in the litter, which in other instances had never presented any appearance of the kind.'

"In breeding horses, practical advantage is sometimes taken of this law. A thorough-bred mare that has had a colt by a good cart-horse will exhibit, in her subsequent progeny by a thorough-bred, an amount of substance and power which, however, gradually disappears with each successive union with the thorough-bred. Conversely, heavy cart mares are sometimes first put to thorough-bred or half-bred horses, in order that their subsequent offspring, by agricultural horses like themselves, may be possessed of greater cleanness of limb, and more energy and endurance.

"Two explanations are given of these curious phenomena. It is urged that the female, whilst pregnant with her first offspring, which is obviously half the sire's, thus becomes inoculated, as it were, with his characteristics. Another and more probable view is, that the first male that has fruitful connection with any female not only vivifies one or more of the ova, but also modifies others that are not fully developed, and which may not be fertilised for several years. The probability of this view is strengthened by analogy. It is well known that geese and turkeys will continue to lay perfectly fertilised eggs throughout the whole of a season, even if the male bird has only been with his mates for a short while when they first began to lay."

Mr. Darwin's explanation of the above described phenomena does not quite coincide with that of Mr. Dun. He considers that the *ovary* rather than the ova is affected by the male element, and this view is supported by many analogies in the vegetable world.

AGRICULTURAL NOTES.

By Mr. Mechi.

The Four-course Rotation of Cropping must, I think, especially on heavy lands, give way to a more free system. Under the old system of horse-ploughing, unaccompanied by guano, cake, or steam-power, such a system was well adapted to the circumstances, the horse work being regularly diffused or apportioned over the whole year; but now that we have the means by steam-power to cultivate the soil at our pleasure, and an abundance of artificial manures, the case is greatly altered. By steam cultivation we can now get our stubbles smashed up and cleaned; our winter Tares, winter Beans, winter Oats, and Rivett Wheat after red or white Wheat, can all be got in in good time, even if a late harvest. This cannot be done with the ordinary horse-power of the farm, because it would stop or retard other necessary farm operations, such as threshing, carting to market, carting home cake, guano, &c. The increased dryness of our soil and climate, owing to drainage, the removal of woods, trees, and fences, render it more and more desirable to take autumn-sown crops rather than risk the summer's drought. We know that heavy lands will grow Wheat more often and more abundantly than Barley, and that on light lands cake feeding will permit Barley to succeed Wheat, or Rivett Wheat to succeed white Wheat without injury to the soil. It is therefore very desirable that landowners and land stewards and agents should so modify leases that the tenant (if a good improving one) should be free to crop as he pleases, on condition of his not leaving the land in a deteriorated state. No farmer who farms profitably can injure the soil, if he produces heavy root and green crops as well as corn, and consumes them concurrently with the use of purchased feeding-stuffs, especially linseed and other cakes, Indian Corn, and bran and malt combs, &c. The great want of this country is more bread and meat, and I know from long practice that our supply of both can be very materially increased by making more meat and manure by means of purchased food, and by devoting a much larger area than 4,000,000 of acres (one-eleventh part of the farmed area of the kingdom) to the growth of Wheat. I am more and more convinced that the pastoral age must, in this densely-populated country, be dispensed with, and that a large portion of the 22,000,000 of acres (nearly one-half of our agricultural area) will be gradually displaced by deeply-culivated and well-manured corn and root-growing soil. Of course, every landowner on unentailed estates will do as he likes, but self-interest and sound calculation will gradually take the place of prejudiced attachment to ancient customs unsuited to the present steam age. Truth will prevail in the long run. It is enough to know that the average produce of our grass land can scarcely be 50*s.* per acre.

Arable versus Pasture—either for breeding, rearing, or fattening, especially on heavy lands. Methinks I hear a thousand voices exclaim—"Mechi, you're quite wrong, and we entirely disagree with you." I am quite prepared to believe that the battle will be a long and big job, but we must keep pegging away at it, and leave the rest to time and the steam-plough; the latter is sure to settle it in favour of arable, and that, too, with a high hand. It is a great mistake to suppose that heavy land farms are not stock farms—they will really produce much more food for stock than the light lands. It is true that we must on such soils give up the "roaming at large" principle, and instead summer fold and summer house cattle, and in winter provide shelter for our stock; great crops of winter Tares, winter and spring Beans, Clover, Cabbage, Mangel, and Kohl Rabi can be grown, and an abundance of straw, especially the valuable Bean stalks or straw—and all these are food for stock. Said my bailiff to me to-day, "We have ample food for 40 bullocks and 200 sheep," although we have only 14 acres of poor pasture, 8 of which I shall again break up. It is the stiff clays for which a "good time is coming." Drainage, deep steam cultivation, and an abundance of cake-fed shed manure, will produce such crops as cannot be obtained on light soils. But then we must trust more to art and science, and less to Nature. Cultivation, deep and frequent, is the farmer's best friend, and the absence of it in grass land is a serious individual and national loss, not only to the farmer, but to the people that it neither employs nor feeds. It is true that arable land well farmed demands much more capital and skill than grass land, but these abound in our country, and only require a profitable invitation. If this poor farm were in pasture, I know that the *£. s. d.* would be very much on the wrong side. Why, the straw of a good Wheat or Bean crop is worth nearly or quite as much as the produce of many of our poor pastures.

Covered Yards.—While I strongly advocate the use of covered and enclosed yards for cattle, it would be very improper to have them too lofty, a mistake that is sometimes made. If the roofs are thoroughly ventilated, on Watson's principle, they need not be high. Lofty roofs give too much space for cold air in winter, when animals require to be kept warm. By having open spaces under the wall-plate, we are enabled to regulate the temperature by closing them in severe weather. In fact there should be means to close the yard entirely at night in cold weather. Sliding doors suspended from a raised bar on which the rollers travel are very convenient, as they can be opened little or much, according to weather. Cattle will certainly not fatten satisfactorily unless kept at a proper temperature.

Hard-worked Horses.—When their powers are very fully taxed, give them about 3 to 4 lb. of pure linseed cake daily in addition to their ordinary food. It puts a healthy gloss on their skins. We give it late in the evening.

How much is the Total Money Value of our Available Annual Agricultural Produce, and What does it Amount to per Acre?—This is a question more easily asked than answered, for while proverbially doctors differ, so also do our statisticians, because, owing to the absence of those returns which we are now only beginning to obtain (and these of a very imperfect character), their calculations hitherto must necessarily have been mere guesswork. I hope, however, that we farmers will soon feel more disposed to give to Mr. Fonblanque the fullest information in our power, as I am no believer in the necessity for, or the advantage of, secrecy; for if we try to persuade people that farming can only be carried on at a loss, no one will believe us. It is a singular and interesting fact, that of all statisticians on this subject the most successful and least incorrect is a French gentleman, who made his estimates 15 years ago, before there were any official English agricultural returns. Ireland was always in advance of us in this matter, and even now her returns are far more complete than our own. This is not creditable to English agriculturists. Monsieur Lèonce de Lavergne, the eminent French statistician, published in 1855, for the information and instruction of his countrymen, a most valuable book, called "The Rural Economy of Great Britain." It contained the results of his personal examination, and his information obtained from our best agricultural mediums. This book was ably translated by a Scottish farmer, and published by Messrs. Blackwood. For many reasons I would strongly recommend this valuable work to every intelligent British agriculturist. His estimate that our agricultural productions are in value one-half animal and one-half vegetable is quite correct, although at one time I had my doubts on that point. The following are estimates in round or approximate numbers:—

Mechi	£183,000,000
Lavergne	200,000,000
M'Culloch	220,000,000
Spackman	250,000,000

I am inclined to believe that my estimate is still too high by several millions, although made this year. It certainly would have been much less had I made it 15 years ago, when the other estimates were formed. In reading Mr. Lavergne's book, it should be noticed that he reduces our values to the French prices—this rather misled me at first, as will be seen in my book. Mr. Spackman's estimate must be greatly excessive, for while our Wheat produce is only 12,000,000 qr. (after deducting seed), he estimated it in 1847 at 22,000,000 qr., and at 60*s.* per qr., which is 4*s.* more than the average tithe commutation price. This alone reduces his estimate by £32,000,000. The total quantity of Wheat required annually by our population of 32 million is 5½ bush. per head, or 22,000,000 qr.; 10,000,000 of these quarters we are obliged to import from abroad. Our own Wheat produce gives only 3 bush. per head of population. The farmed area of the United Kingdom, as returned to the Board of Trade, is 46,177,370 acres; therefore my estimate gives less than £4 per acre per annum for the farmed area. Should this be so? Permanent pasture occupies 22,085,295 acres, or nearly one half of the farmed area. Herein is a great source of our small acreable production. The total area of the United Kingdom is 77,513,585 acres. The total number of horses in the United Kingdom is 2,581,306, consuming probably the produce of at least 10,000,000 of acres, or nearly one-fourth of the whole farmed land of the United Kingdom. 1,250,000 of these horses are used by farmers and market gardeners, 1,000,000 by the general public, and about 250,000 or more are breeding mares and horses for sale in the farmers' hands. According to my estimate, the farmers receive from the public and from themselves (so far as their food is concerned) less than £183,000,000 annually. Let us estimate roughly how they dispose of it:—

Rent	£60,000,000
Tithes	10,000,000
Poor-rate	5,000,000
County rates for police, roads, justice, &c.	5,000,000
Labour	50,000,000
Tradesmen's bills	10,000,000
Purchased manures	10,000,000
Wear and tear and replacement of implements, losses by stock, &c.	7,000,000
Interest and profit on £200,000,000, farmer's capital, at 10 per cent.	20,000,000
	£177,000,000

This statement proves to me that I have overvalued our produce by some £6,000,000, or otherwise omitted some payments or charges. The grain, &c., used as seed would probably amount to more than 10*s.* per acre, or £11,500,000 on the arable land. I have deducted it in the case of Wheat, but think that it has not been deducted in the estimate of the other crops. My estimate of our Wheat production and consumption may be taken as accurate, for we have correct data to guide us, but our production and consumption of meat must remain an uncertain estimate. I have endeavoured to check my calculation by inquiries and observations of the ordinary consumption of meat as compared with bread and flour, by different classes of the community. With the upper ten thousand the meat bill is probably four to five times that of the bread and flour, the middle classes 2½ to three times—clerks 2, artisans 1¾, town labourers, 1¼, agricultural labourers not above one-fourth the cost of bread and flour; for bread and cheese and flour puddings form the principal food of the agricultural labourer, aided by Potatos and vegetables from his garden or allotment. They know by experience that this is the cheapest diet that they can procure, having due regard to effective nutrition. The proof of the correctness of their judgment is afforded by their power to endure laborious exertion. I have in my book shown, by reference to chemical analyses, how much cheaper cheese is than meat as a nutritive substance. An observant friend of mine estimates the expenditure of individuals in London by the amount of rent they pay for their residences:—Careful people five times, ordinary people six to seven times, very liberal people eight to nine times the rent of their houses. The agricultural labourer pays, as an average, £4 per annum for his cottage, and expends his income of £36 per annum, which is nine times his rent.

My object in writing this paper is to call attention to the humiliating fact that we are dependent on foreigners for a very large portion of our food, when we might, by the application of much more capital and skill on the part of landowner and tenant, profitably and greatly increase our supply of home-grown food, as has been done on my farm and very many others; £4 an acre produce is really a national disgrace. *J. J. Mechi, October.*

M. Lavergne's Estimate:—

Wheat	£36,000,000
Meat	70,000,000
Potatos	20,000,000
Milk, butter, cheese	10,000,000
Barley and Hops	8,000,000
Oats	4,500,000
Poultry	1,000,000
Wool, hides, tallow, and offal	15,000,000
Hay and Oats for non-agricultural horses	20,000,000
300,000 horses over three years, at £20	6,000,000
Flax, hemp, vegetables, and fruit	8,500,000
	£199,000,000
Landowner's timber	3,000,000
	£202,000,000

The above value of Barley and Oats are those for human use.

Details of my Valuation of our Annual Agricultural Produce.

Wheat	£33,600,000
Meat	48,000,000
Milk, butter, cheese, poultry, and eggs	16,000,000
Potatos	20,000,000
Barley and Hops for beer	15,000,000
Oats for man	4,500,000
Wool, hides, tallow, and offal	16,000,000
60,000 horses, £25 each	1,500,000
Hay, corn, and straw, for 1,000,000 of horses, non-agricultural	20,000,000
Flax, Hemp, vegetables, and fruit	8,500,000
	£183,100,000

The official value of cattle, sheep and pigs in Ireland is £32,000,000. The cattle, sheep and pigs of Great Britain, taken at the same value as in Ireland, come to £66,000,000, but as our animals are in better condition and perhaps of larger growth, I have added the very liberal increase of 25 per cent. on the Irish valuation. It therefore stands thus:—

Irish live stock	£32,000,000
English live stock	66,000,000
25 per cent.	16,000,000
	£114,000,000

Of these probably £60,000,000 are slaughtered annually, giving meat £48,000,000; offal, hides, wool and fat, £12,000,000. I imagine that half the amount would be beef and veal, and the other half mutton and pork. I am inclined to believe that my estimate of meat at £42,000,000, made in my paper "On the Undeveloped Power of British Agriculture," is more correct than the present one.

TOWN SEWAGE AND DRY EARTH.

I beg to thank your correspondent, "R. H. A.," for the encouragement afforded to me and my system by his sensible remarks in your last impression, especially on the important point that in the right disposal of town sewage there are three principal objects to be kept in view; not that, as to the ultimate prevalence of the dry-earth system, I have ever felt any great discouragement. The tediousness of delay, and the prejudice, the "flippancy," and, I may add, the injustice with which it has been opposed by some officials and some "semi-officials" of large public influence, has often called for an exercise of patience. But with a full conviction from the first of the soundness of my principles—with a perception, growing clearer every year, of the adequacy of this system to compass all three of those principal objects, and so to confer untold benefits on this and other countries—I have never faltered in my expectation of its ultimate success. And now, since the recent modification and enlargement of the system, of which I made to you a statement in the month of September last, and with reference to which I have had occasion since to write to the *Times* and to the *Echo*, I have the fullest confidence that it will speedily become that which no scheme for remedying "the great national evil" of the pollution of rivers by the water-sewerage system ever can be—a national system for the efficient and safe promotion of health and wealth. When by some mode of publication which, while opening a vast field of occupation to civil engineers shall keep the working of this system out of the hands of companies, I shall be able to make known its mode of action, I feel sure that "R. H. A." will admit "that it will single-handed manage all that is desired."

In the communications referred to above, I protested against "compulsory legislation" as to irrigation; and elsewhere, in reference to an assertion of Mr. Bailey Denton's, that on "confusion worse confounded," introduced into the irrigation theory by the report of the latest Rivers' Pollution Commission, "light is dawning," I have offered the remark, that at least until that light shall have cast its noonday radiance on such confusion, and until one or other of the many schemes for "separation," "precipitation, "filtration," or "irrigation," with or without filtration, shall be able to cleanse also our sewers and drains, and prevent the escape into our houses of offensive and noxious gases, any compulsory legislation on the subject would be reckless and unstatesmanlike. I now go far beyond this. Increasingly confident from daily practical experience that my mode of preventing the pollution of rivers will do all this in addition, and that in doing it the entire refuse of a town or village may be converted into a manure, the minimum value of which to that town or village shall be equal to £1 per head per annum of the entire population, I contend that voluntary action ought no more to be allowed as to irrigation schemes than it is with reference to the old system of middens and cesspools; for in the first place, as to health, those schemes will serve to perpetuate a system in which no due regard has been paid to the necessities of the working-classes. "A perfect water-closet" indeed! When did any inspector under any Board of Health ever dream of such a thing for the family of a working man? How can it be possible in any of those apologies for health and cleanliness set up under a Board of Health, for instance, in Sheffield? One place with a little trickling supply of water for the accommodation of a court of 30 houses! Mr. Rawlinson asserts, too, that earth-closets are much more frequently out of order than water-closets. I never asserted in the *Times* newspaper that the earth-closets, for some time constructed by the Earth-Closet Company, are almost incapable of disarrangement, and in particular those for cottages. And what, I pray, is the scale of comparison on which Mr. Rawlinson has grounded his assertion? Has he ascertained the fact that that horrid place I have mentioned in Sheffield (and there are thousands like it throughout England) was ever in order for a single day? Could he point to one dozen water-closets for the dwellings of the working classes within the parish of St. Giles, and especially in the yards of workshops, in anything like a state of decent order? If he can, then let him go and institute a comparison between those and the earth-closets in the village of Hulton, Herts, or in the Dorset County School for the Middle Classes, or at Queen's College, Cambridge, or at the works of Sir William Armstrong. Let him also pay some regard to the judgment of others on the subject, and if such an authority as Dr. Buchanan is not regarded by him, let him know this,—that after a careful inquiry into the subject a company has been formed in Berlin, with a capital of one million and a quarter of thalers for the manufacture of these very closets.

I object, however, to the continuance of voluntary action in irrigation and filtration schemes on another ground—that of the rights of property. If anything like that which I have stated be the value of the refuse of a town, there is in it a property, and that property belongs to the inhabitants. The authorities of such a town (and in my opinion the Legislature in its enactments on the subject) are under a moral obligation, with due regard of course to the health of the inhabitants, to turn that property to the best account. After its discovery they are no longer at liberty either to throw it into the river or, under the misnomer of utilisation, to waste on a few fields that which would supply manure to thousands of acres. Neither can they justly be allowed to hand over such a property under little more than a nominal rent to an individual, like the Earl of Warwick, or to a company, like the Native Guano Company, to get out of it such profits as shall pay from 12 to 50 per cent. on their capital.

Allow me to add a word with reference to national wealth. If, as it certainly may be, such an amount of valuable manure can be produced from towns and villages, and if, in addition to this, farmyard manure can be made of nearly equal value, and at the same time lessened in bulk, then within a few years both the produce of our fields and the live stock of the country may, with God's blessing, be doubled. *Henry Moule, Fordington Vicarage, Oct.* 23.

HEADS.

By Henry Corbett.

(*Continued from p.* 1402).

If we go by heads, indisputably the highest-bred looking sheep are still the two breeds to which most of the other sorts trace something of their excellence. I refer, of course, to the Southdown and the Leicester, either in its way of a very patrician type. Next only, indeed, to the thorough-bred horse or the Jersey cow, there is not an animal on the show-ground which carries more style and "stamp" on his countenance than the Southdown. Moreover, to see him at his best, you must bring him straight up from the Sussex Downs. I do not believe altogether in the positive advantage of mere size and weight, but I go rather with the conclusion to which Cline arrives in his admirable little treatise on form, where he says, "it is wrong to enlarge a native breed of animals, for in proportion to their increase of size they become worse in form, less hardy, and more liable to disease." And I would say, further, that they are apt to lose much of their fine character, so that they suffer alike in symmetry and quality. Thus, when we attempt to grow the Southdown to a greater size than he would reach to on the South Downs, we can only do this at the sacrifice of some other point. The best-bred sheep in appearance at this present time are surely to be found in the Duke of Richmond's flock; and no man could safely go further in improving the Southdown than the justly-celebrated Mr. John Ellman, of Glynde. It is to his standard that we must still look if we wish to work on right principles, as it is to him I shall turn for the definition, although he begins with a statement which cannot be passed without comment: "The smallness of a sheep's head is an indication of its being well-bred." There is nothing neater than the head of a Southdown; but, as a rule, as I have said, a very small head is objectionable in any animal, more particularly a male, and that capital judge of a sheep, Mr. Henry Lugar, confirms me in this opinion: "The head of a Southdown," he writes, "may be too small, and if the sheep be kept on for breeding purposes, delicacy will in time be the result." Mr. Ellman's description runs on thus:—"The head should be neither too long nor too short, the lips thin, and the space between the nose and the eyes should be rather thin;" but, as Mr. Lugar adds, "a little wider just above the nostrils than nearer the eyes." Ellman, in continuation, says, "the under jaw or chap ought to be fine and thin, the ears tolerably wide, well covered with wool, and not too thin;" while, according to Mr. Lugar, they should be "of a fair length, standing well up, but not prick-eared." Ellman could see "no merit in a very prominent eye;" he the rather "admires a tolerably full, bright-looking eye, but the eye-cup or bone should not project," for the reason, as he gives it, that the ewes would have more difficulty in lambing. In so smart a sheep as the Southdown the eye of the ram should be lively if not somewhat bold, in contradistinction to that placid gaze which men so covet in some other breeds of stock. Ellman concludes this description by stating that "the sheep should be well covered with wool on the forehead, and especially between the ears, as it is a great protection against the fly." Noticeably enough this authority, who flourished about the beginning of the present century, says nothing of the colour of a Southdown's face—a point which fanciers now often look to before any other, as one which breeders cannot always maintain. I have seen Southdowns exhibited but a few years since, from a very famous flock, nearly as light in their countenances as Leicesters, and I have heard of others getting their lambs as dark as Hampshires. The happy medium or proper tint is a beautiful mouse colour, in admirable keeping with the structure of the head and the texture of the wool. Were I asked to name a "set" of the most thorough-bred Southdown heads I ever saw, I think I should turn to the Duke of Richmond's 2d prize pen of ewes at the Royal Oxford Show of last summer. About the best-headed sheep they ever sent up from Merton was a Smithfield Club fat shearling; and the ram with the finest head for a Southdown, which Mr. Jonas Webb bred, was Plenipo, and this sheep was out of a Glynde ewe. In fact, we must go back again and again to the Sussex Downs for fine character, and we must go to heads to get this. In the autumn of last year I was spending a day at Angmering, near Arundel, and, of course, looking over the famous Sussex cattle and still more famous Sussex sheep. On the shepherd turning a flock of ewes towards us I went to face them, when one of the Messrs. Heasman said, "You won't be able to see much of their legs of mutton in that way." "No," was my answer, "perhaps not, but I shall be able to see something I think even more of in a sheep than a leg of mutton." And as they met me, so matchy and breedy, all showing a certain family likeness in their faces, I cannot but believe that I arrived at a glance at a better notion of their true character than by trying their backs, necks, or legs; and it is by his ewes you must prove a man's actual success as a sheep-breeder. A smart prize ram may be turned out occasionally; but it is to his home flock you must look for established and reliable worth.

As I walked down the lines at Manchester, and noticed the brown faces, the grey faces, and even the white faces, the long, somewhat Roman-nosed, old-fashioned cast of countenance, or the neat snug "nob" of the Down, and when I found that all these sheep, notwithstanding their diversity of character and expression, were classified as Shropshires, I must confess that I felt fairly at sea. The very judges, moreover, have not for some time past held very strongly to any particular line, and I thus feel it the more necessary to say so much as I do here, on the strength of the best evidence I can call. "It is very curious that I had for some weeks been thinking of writing to you on this subject, as it is very essential that we should have judges who thoroughly understand the characteristics and the history of the breed." So wrote Mr. Thomas Horley, of The Fosse, in answer to my letter; and it is through his kindness that I am enabled to sketch out the head of a true Shropshire, being the more induced to avail myself of such assistance, as, like Mr. Lugar with Southdowns, Mr. Horley no longer exhibits sheep, although he frequently acts as a judge.

The head of a Shropshire ram should be black; but this colour should not extend to the wool on the neck. In size the head should not be too small nor effeminate, with a bold, broad, but not coarse, forehead, full eyes, and tolerably prominent ears, self-coloured, but not mottled. Many good rams have their ears tipped with black round the edges, and show a kind of copper or copper-and-gold colour farther down; and if they be well woolled this is not in any way objectionable, saving that such a tint is more generally perceptible in rams which have been forced into high condition. The ear, although not so long as to be remarkable, should not be so short as to be hidden by the wool, which should come well up round the back of the head and ears, with a tendency to cover the top of the head. The nostrils must be fairly expanded, but there should be no inclination to bareness about the ridge of the nose nor between the nostril and eye,—any such want of covering being very objectionable, and never to be noticed in a ram of any repute. There is altogether a strength and force about the head of a true Shropshire that should never be disregarded when looking at such sheep. It will, indeed, be observed that this description does not go for the pretty grey mixture, as no doubt the Blackface is far more after the manner of the genuine Shropshire breed; but even from the true Blackfaces there will occasionally crop up a speckle-face cheek, which, as with the Hereford ox, is more a mark of being out of fashion than any positive detriment. The wool of the Shropshire should be close in texture, and not inclined to curl.

Any study of the heads of cross-bred animals or newly-established breeds is not so satisfactory in the way of a test, as the flock-masters themselves seem scarcely to have agreed as to precisely what they should go for. The subjoined synopsis of the head of an Oxfordshire Down ram may consequently not accord with the views of all, but it reads to me as a very good type to aim at. It should be long and tapering, with a forehead not too broad, but sufficiently so to give a good masculine expression, with a full, bold eye, and ears well set back—that is, not too near the eyes. The poll must be well covered with wool, adorned with an ample top-knot on the forehead, and the face of a nice dark colour, between a jet black and a fawn. Some of the ewes, like those I have seen at Biddenham, have really bloodlike heads; but the judges do not always go for style, but prefer a rather coarser kind of animal, and I must admit that I am not quite satisfied with the lineage as traced by the head of an Oxford Down sheep. Neither is the first impression of a good old-fashioned Hampshire Down ram easily obliterated; for the lop ear, the Roman nose, and coarse, heavy features, if faithfully sketched, would make up, as Charles Surface says of his aunt Deborah, "a very formidable likeness." Some visible improvement, however, has taken place of late, as it is rather against the spirit of the times to maintain that the plainer an animal is to the eye proportionately greater must be his use and value.

There is something very taking in the clean, finely-cut features of a Leicester, over whose head those two great men—Bakewell and Ellman—agreed to differ. The Longwool man considered the prominent eye in a sheep an indication of good breeding, whereas the other "could see no merit in a very prominent eye." A very successful breeder of Leicesters, when these sheep were more in fashion than they are now, tells me that a well-placed prominent eye, standing deer-like, rather beyond or outside the general contour of the head, must still be regarded as a good point. The face should be rather long, as denoting size, but should be shortened in effect by a broad indented forehead. The bridge of the nose should be somewhat broad and arched—or Roman-nosed—with wide, open nostrils, of a jet black in colour. The ears, of a fair length, should occupy a prominent position on the head, not too low, nor set very far apart; and the "high-quality" well-placed ear of the Leicester is a very safe sign of his purity. The ears and the head should be covered with beautiful silky wool,—another proof of good breeding; while there must be a peculiarly delicate tint of blue visible just beneath the wool on the head, as, in fact, your true Leicester is as proud of his blue blood as a Spanish Hidalgo. If there be, on the contrary, a white ground, this is suspicious or more directly indicative of inferior caste, strong, objectionable wool, and a taste of foreign or Lincoln blood. A red ground, again, is to be guarded against as telling of a weakly constitution, a feeble fleece, and a fineness of bone, carried to an undesirable extreme. The Leicester head should be especially bare and quite free from wool of any strength, the expression somewhat sedate, but of marked character in the ram, and his head set on rather bold and lofty, in preference to the low drooping carriage which, at one period in his history, was considered to be "the proper thing."

It is sufficiently suggestive to find that the breeders of Border Leicesters have a positive horror of the blue cast, a fact which of itself goes far to show that this variety of sheep has come from a cross, most probably with the Cheviot. The borderer, indeed, lacks much of the aristocrat in his appearance, so noticeable in the English Leicester of older pedigree. The head is longer and not so refined, the neck thin and weak; and, though the Border may by this time be perhaps ranked as a breed of itself, there is not much to go by in his frontispiece. He hardly looks as if he ever had a grandfather. *Bath and West of England Society's Journal.*

(*To be Continued.*)

SEWAGE IRRIGATION AND THE TAPEWORM.

[The following passage concluded one of Dr. Cobbold's lectures on the Parasites Residing in Food-producing Ruminants, delivered before the Society of Arts.]

As our time will not permit us to enter upon the consideration of certain other parasites, I shall conclude this course of lectures by some remarks having reference to the subject of sewage. I ought, perhaps, to feel very much honoured, in that the editor of the *Lancet* has been pleased to bestow a leading article upon my doings in this connection. Since, however, the aforesaid leader places me in a very unfavourable light, I will endeavour to defend myself in respect of all the hard things there said.

It would be immodest on my part to read the flattering remarks with which this article begins. But you can judge what occurs when I just mention that in the matter of helminthology, or study of parasites, the writer, employing the editorial "we," says that he is prepared to "sit most humbly at my feet." Then he passes on to observe, that when Dr. Cobbold "sets himself up for an oracle on sewage irrigation, we have a fair right to examine the facts upon which his reasoning is based." I wish to say in this respect, that I have never set myself up as an oracle on sewage irrigation. I have only stated my belief that sewage irrigation will certainly disperse the ova of various kinds of parasites, and be likely to give rise to a much greater degree of parasitic disease than at present exists. In proportion to the extent to which the irrigation of fresh sewage is employed, there will be a corresponding increase of parasitism. That is the proposition I laid down, and to that I am prepared to adhere. After a while, the article proceeds as follows:—"But Dr. Cobbold has not helped us yet to enlighten them (*i. e.*, the butchers). For years past he has been engaged in search of parasites. No part of the animal kingdom has escaped his observation; no organ of their bodies (*i. e.*, of the hosts) has he left unexplored. He tells us that cattle fed on sewage fodder die of parasitic disease by wholesale." I am really not aware that I ever made that last remark. "And yet we are compelled to retort that Dr. Cobbold has hitherto failed to produce a single specimen of beef or mutton measles which he has not himself artificially produced, and the history of which was not confined to his own experiments at the Veterinary College."

Now, I beg respectfully to submit that I have placed before those of you who have honoured me with your presence on former occasions the most cogent evidence of the presence of measles in beef that could possibly be produced. I showed you Dr. T. G. Hewlett's official report from Bombay, and also the report of the Sanitary Commissioner of India, and by these reports you saw that scores, not to say hundreds, of cattle were burnt in order that people might not eat those very things respecting the existence of which the editor of the *Lancet* says I have never produced satisfactory evidence. The thing is quite clear. It is in the Punjab of India that the cattle are chiefly affected with beef measles. And why are they more affected there than elsewhere? Because irrigation is extensively employed throughout the Punjab. Enormous numbers of cattle are sacrificed there, and those cattle have access to grounds which are extensively irrigated. "But," some one will say, "this is not sewage irrigation." That is quite true; nevertheless, I can explain that it comes pretty much to the same thing, because the water which is used to irrigate these fields is let off from tanks, pools, or ponds (call them what you will), to which both the natives and the animals have free access. The natives are not particular in their habits, many of them, to say nothing of our soldiers, being abundantly infested with the Tænia mediocanellata. So, when the editor of the *Lancet* says we have produced no facts, you see he is in error. But he says we have not seen a single specimen of beef or mutton measle in home-bred animals not subjected to experiment. The statement is correct as regards beef; but I have, on more than one occasion, removed cysticerci from joints on mutton brought to my own table. In the supplement to my large treatise on "Entozoa," I have figured a respectable cysticercus taken from the interior of a mutton chop. However, the writer goes on to say:—"Our conviction is, that the butchers, fleshers, and professors of veterinary art are practically right in refusing to adopt the opinion of Dr. Cobbold, that measled beef or mutton is produced to any great extent, or that there is any necessity for the public to adopt a vegetable diet, to avoid tapeworm." I am sure I should be the last man to encourage such a proceeding, and should be extremely sorry to adopt a vegetable diet myself. But the naughtiest thing I appear to have said is to the effect that "scores of animals are thoroughly measled." Now, what is the state of things in the Punjab. Only Saturday last a gentleman just arrived from India came to talk to me about this matter. He is an officer in Her Majesty's 92d Highlanders, and it his duty, as ordinary, to inspect the beef and other rations before they are served out. He has been giving me most valuable practical information. He is not acquainted with scientific matters, but he says:—"These are the steps we take when large portions of an animal are brought before us. We make a series of slices down the meat parallel to each other, and turn over these slices and inspect them. If we see any little cysts, we send the meat away to be burnt. If we only find one measle, the entire animal is burnt, or otherwise destroyed." Thus, you see, a valuable animal, worth many pounds, and enough to feed a whole regiment, is put aside and burnt. Now, the *Lancet* appears to think that that is exactly what I wish educated inspectors to do in this country. On the contrary, I protest that I never desired any such proceedings. I assert that the burning of these scores and hundreds of cattle is an entire mistake. Because you find a few measles, that is no reason for throwing away all this valuable food. What you have to do is, to instruct the men of the regiment that they have it well cooked; and, since even moderately well-cooked beef will preserve the men from danger, it were a sheer waste to burn the flesh of these animals. Now, the odd thing is that (according to my informant's statement) some of the authorities have very recently abandoned this stupid destruction of the flesh of cattle by burning. Why? Not because cooking will destroy the said measles, but, forsooth, because a medical gentleman has instructed the local government that these beef measles do not produce tapeworms. Was there ever such a farce? The authorities, you see, very properly put a stop to this unnecessary burning, but they do the right thing from instructions based on conclusions altogether erroneous. I venture to add that not one medical man in a hundred in England would display such ignorance as is hereby implied. We have proved incontestably that these little measles do produce tape-worms. The step to be taken, therefore, is simply this:—The cattle shall be inspected by one adequately accomplished man, and he shall pronounce whether the flesh is to be cooked with more care than is ordinarily observed. This would settle the whole matter.

The *Lancet*, turning to another part of the subject, says:—"Does Dr. Cobbold mean to say seriously that it is less dangerous to spread a field with manure than to irrigate it two or three times a year with sewage?" Certainly I do, if the sewage be freshly delivered. The irrigation process diffuses the eggs much more rapidly than any of the other processes; and I have been willing, on parasitic grounds, so to speak, to support what is called the dry-earth system. "But it is not only on the main question that Dr. Cobbold flounders in the mire. He is an advocate of the 'A B C' process—[I think that it is a good one, but I do not say it is perfect]—and talks of the dry-earth system as though it were absolutely safe. I do not say that; I think it is better than the other, but not absolutely safe. So that you see the criticism of the editor is not accurate; it is not true. Well, after some other matters which are touched upon, he also says:—"On one point we may avail ourselves of Dr. Cobbold's observations; he tells us that the ova are destroyed—[that is not quite correct; I did not say ova, but larval parasites]—by a continued moist temperature of 175° Fahr." Yes, you are perfectly safe at that heat; even trichina will not stand that. A continuous moist temperature of 175°, or one considerably below boiling-point will kill trichina, and a temperature many degrees below 175° suffices to kill the cysticerci of our meat. If people will eat meat not raised throughout to a temperature of 140°, then they must take the consequences, and be liable to play the part of host. For my part, I should say that it serves them right. If they choose to put themselves in the same attitude in this relation as the Cossacks and natives of the Baikal regions, and as the Abyssinians do, then they must, like the natives, become parasite bearers. In the Baikal territory all the natives play the part of hosts, being entertainers of the Tænia mediocanellata. And why? Because they do not cook their food; they eat it nearly raw; and therefore, of course, they rejoice in the privilege of being the hosts in which these creatures flourish. No doubt one may say it is possible to be benevolent, and to give these lower creatures a chance of existence; but I respectfully submit that the comfort of one man is of more value than the destruction of many tapeworms. "It is, therefore," concludes this not altogether unkindly-disposed article, "the duty of the Government to have the whole subject thoroughly investigated." That remark is to me highly gratifying. Clearly some of the facts I have brought forward must have been present to the mind of the writer as important, otherwise he would never have made that statement. Unfortunately, it is added—"Although Dr. Cobbold has so far exceeded—[see what I have done!]—the bounds of scientific caution as to come to conclusions without proof." Now that is too bad. I have every desire, as a teacher in various branches of science, to make no statement which does not rest upon a sound basis of fact. No man has a right to pretend to be a teacher of science who is not pre-eminently cautious in this matter. Science is good for nothing if its positions are asserted in a random fashion. A man who stands up and speaks on matters of social importance, and who is at the same time loose in his expressions, should be asked to leave the room, for such a man is not an ordinary nuisance, but he does uncommon injury to his fellow-creatures. Lastly, in order to smooth matters, the writer says:—"We cannot doubt that he (Dr. Cobbold) would be able to render valuable assistance whenever questions relating to the natural history of parasites present themselves to the commission we propose." I need not say that if such a commission exists, I willingly leave it to their discretion as to whether or not my services be worth seeking. I have come here, however, by favour of the authorities of the Society of Arts, and have unfolded to you a number of details, which I think you will allow are not only strange and astonishing, but are of real, practical, and social importance.

As to the final issue of such expositions, I care little or nothing, so long only as I retain the honest conviction that I have not been untruthful; yet, if the facts which I have enunciated are true, then, depend upon it, they must produce beneficial results. We can no more stop the progress of truth than we can abrogate the revolutions of the planet on whose surface there are those who love to "play the parasite."

A FARM RECORD.

As you seem to think a short account of my farming will interest the readers of the *Agricultural Gazette*, I beg herewith to forward the same, first premising that the Clavering land, a few years back, was considered some of the worst in the neighbourhood: 3 to 4 qr. of Wheat per acre was thought to be a very fair crop, and five very good, and a great part of it has been sold within the last 30 years at from £17 to £25 per acre; but the greater part now, I believe, is farmed as well any land in the country. In 1862 I had been master of the boys' British School in the village 17 years, but finding the salary insufficient for the support of myself and family, I hired Curl's Farm, very pleasantly situated about seven or eight minutes' walk from the school, which I intended to keep on, as I did not expect to get a living from the farm; but after a few months found my mind was so much engrossed by the farming that I could not do justice to my scholars, I therefore gave it up.

I took the farm on lease for 14 or 21 years, at a high rent, with few restrictions as to the cultivation of the land, except that the last two years were to be on the four-course system. It consisted of 115 acres of arable land and 18 acres pasture, including the house, farmyard buildings, &c.; 20 acres of the arable land were underlet to labourers for seven years, five of which were unexpired, and I underlet ten more. The greater part of the land, a heavy clay soil, having been rather badly managed for several years, abounded in Twitch, Charlock, Thistles, and weeds, and the whole of it was Clover sick. It would have been in a worse state, but my landlord, who had purchased the farm in 1861, and occupied the part not underlet one year, drained 9 acres 2 feet deep, clean fallowed 10 acres, and had roots and Tares on about 20 acres more. Having had but little previous practical experience in farming, and only Johnston's "Elements of Agricultural Chemistry and Geology," with several smaller books, I purchased Mr. Alderman Mechi's work on farming. I consider Mr. Mechi the great pioneer of agricultural improvement in this country. From these books I obtained much useful information. It was not in my power to obtain covered yards, or any costly implements and appliances for cultivation, but I set to work and well drained the land 3 feet deep, my landlord finding pipes, for which I paid him 7 per cent. interest on the outlay. I had the Charlock pulled every year, the Twitch dug, all my crops well hoed and handweeded, as long as it could be done without injuring them.

I occupied only 85 acres of the arable land the first three years, 89 the next two, and 100 since, hedges included. I could not grow much corn the first five years. I only averaged 25 acres of Wheat, 17 of Barley, and rather more than 6 of Oats. In 1868 I grew 30½ acres of Wheat—produce, 214 qr.; of Barley 11¼ acres—produce, 75 qr. In 1869 I grew 52 acres of Wheat—produce, 325 qr.; of Barley 12 acres (after Wheat)—produce, 63½ qr. In 1870 I grew 40¾ acres of Wheat—produce, 237 qr.; of Barley 4¼ acres (2¼ after Wheat)—produce, 27 qr. In 1871 I grew 46½ acres of Wheat and 14 acres of Barley. In 1869 I grew of Oats 8½ acres—produce, 100 qr.; in 1868 I grew 9 acres—produce, 68½ qr., on land steam-ploughed after Wheat; in 1870 I grew 9 acres—produce, 85 qr., steam-ploughed after Wheat.

My average produce of Wheat has been for the eight years 5 qr. 7 bush., and Barley over 6 qr. per acre, although 22½ acres of the Wheat in the time only averaged 3 qr. 6 bush. If I take two years out, the average for Wheat would be over 6 qr. 2 bush. In 1868 my Rivett Wheat produced on 20½ acres 159 qr.; it had once before produced 96 qr. on 12 acres; in 1869, 38 acres 3 roods produced 267 qr. 2 bush., 7 acres after Wheat, steam-ploughed. In 1870, 18 acres after Wheat, steam-ploughed, produced 5½ qr. per acre; and 9 acres, after Potatos, 7 qr. per acre. This year, although blighted, I have, after Potatos, 6 qr. 5½ bush.; some after Clover, 7 qr. It has been very fine-headed the last three years, and I believe will produce a good crop on any heavy land, if in fair order, and sown as directed. I have sold a good deal of it for seed to my neighbours, and others in the vicinity who saw it growing, since advertising. I manure my land with farmyard dung, 8 loads per acre, every three years, and put a top-dressing on the crops amounting to from 20*s.* to 30*s.*; or if it be a second corn crop sometimes £2 per acre, when not manured. I clean fallowed 7 acres the first year, and since then 20 acres, (through failure of crops, or of land that had been previously underlet. In the autumn of 1868 I had 36 acres of land steam-ploughed; in 1869, 31 acres; in 1870, 24 acres; and this autumn over 50 acres. This has been of great advantage to me, as I have kept a horse less the last three years; before, I kept five horses and the nag; I now get my work done much easier and better with four. The steam-plough is a fine thing on our heavy lands, where well drained, and seems to answer well for any kind of crop, especially for roots. I generally employ four or five men and as many lads, sometimes four or five extra men; and, during the summer, six or eight girls, from 13 to 16 or 18 years of age. The first four or five years I had 15 or 16.

I find my system of farming, by keeping the land clean and dry without fallow, with a fair quantity of artificial or farmyard manuring, has answered much better than I anticipated, and it does not exhaust the soil, as my crops have been very good the last three years, and worth 50 per cent. more than during the first five, and this year I believe will be as good—and would have been better, had it not been for the blight in Wheat and disease in Potatos. *W. Savill, Curl's Manor Farm, Clavering, Essex, Oct.* 26.

THE CULTIVATION OF SUGAR-BEET.

MR. W. VINCE writes to the *Bury Post*, from Wells Hall, Brent Sleigh, to say that he had grown Sugar-Beet for four years, averaging 10 or 12 acres a year, and realising 10 tons per acre and 20*s.* per ton. He believes he could have done better at stock feeding, and he advises farmers to consider the matter well, and to make a good bargain with Mr. Johnson or any one else who may wish to start a factory, and not to guarantee the greater growth for any number of years at 20*s.* a ton, for he thinks they are worth more. To him Mr. D. T. Fish replies:—

Mr. W. Vince advises the farmers not to sell their Sugar-Beet at £1 per ton, as he considers it is worth more, and, in proof of its value, he states that 1 ton of Sugar-Beet equals two of common Mangel for feeding purposes, inasmuch as it contains 30 per cent. less water. His estimate of its superior worth is possibly nearly correct, though the reason assigned for it—Sugar-Beet only 60 per cent. water, as against common Mangel, 90 per cent.—needs corroboration by some chemical authority before it can be accepted.

But were this a mere question of a few shillings, more or less, between the farmer and the sugar-maker, I should not have troubled you upon the subject. Both of these parties are strong enough to take care of their own interests. But the public at large, and especially the labouring classes, have likewise interests at stake in this matter, and hence its importance. Farmers, for instance, are perfectly justified in getting as high a price as possible for their sugar, but suppose they ask more than it is worth, no sugar factory will be erected in their neighbourhood, and the working classes will thus lose £1000, £2000, or £3000 in wages, as the case might be. As a case in point—Mr. Johnson comes over to Stowmarket, and offers the farmers £1 a ton for so many roots. They ask for 25*s.*, and the project of a factory hangs fire. And the legitimate influence of such letters as that of Mr. Vince is to hinder a sugar factory from being opened at Stowmarket, and, for that matter, to close the Lavenham one also. Fortunately, it is not likely to do either, as, with your permission, I intend to show that the reasons advanced are neither very sound nor strong, nor the statistics given the most trustworthy.

Mr. Vince endeavours to show that no profit can be made by the farmer growing Sugar-Beet at present prices. He exalts the feeding properties of Sugar-Beet to the utmost, mounts up the expense of production to the highest figure, and runs down the yield per acre as low as possible. As to the first. Suppose we accept his estimate of two to one in favour of the feeding properties of Sugar-Beet over Mangel, on his yield of 10 tons per acre, he would still be a loser by the growth of Sugar-Beet, and so we need not dwell on the matter. However, it is impossible to be blind to the fact, that the introduction of sugar growing into England seems to have pretty well trebled the value of common Mangel or other crops which it has displaced. In the neighbourhood of towns where there is a demand for roots for dairy and other purposes, a fictitious price could always be obtained for Mangel. But, taking the average of the rural districts, the estimated value of common Mangel for conversion into beef, mutton, milk, cheese, and butter, would not exceed 7*s.* 6*d.* per ton—some have even estimated it as low as 5*s.* —and yet no sooner do our sugar factors appear on the scene, and offer £1 for Sugar-Beet, than up bounds common Mangel to the same figure. And then what a rich field for eating into the profits of sugar-growing Mr. Vince and others have found in the cost of production. He even assures us that "he grows them on the flat, which is rather costly, compared with growing common Beet on the ridge;" but one cannot but inquire, why then does he grow them on the flat? The yield of 10 tons per acre is not a very flattering testimonial to flat husbandry. Neither do I remember that extra expense was one of the recommendations of cropping on the flat, advanced by Mr. Edgar, in his instructive paper on this subject, read before the Lavenham Farmers' Club. But all helps to run up the price of growing sugar to £12 per acre. Mr. Wm. Biddell, in his most instructive letter in another part of your paper last week, makes the total expense of an acre of Sugar-Beet, from the preparation of the tilth to its delivery at the factory, £11 15*s.*, including rent, rates, tithes, and interest on capital. As he gives all the items we must accept them, although I have other statistics before me as I write, of the actual cost of growing an acre of Sugar-Beet in Ireland, which, exclusive of the rent of land, the total cost of two ploughings, two scarifyings, harrowing, rolling, spreading manure, and sowing 5 bush. of bones, 3 cwt. of guano, three hoeings, pulling, stripping leaves, and drawing to the factory, was but £5 6*s.* per English acre; the yield in that special instance was 25 tons per acre. Still, I will not higgle over a pound or two more or less put on to the cost of production. With all the extras we will take in a round number at £12 per acre. Now the matter will stand thus. If it cost £12 per acre to grow sugar, it costs £11 to grow common Mangel, or from £9 to £12 to grow common Turnips or Swedes. The vital question for farmers is, do any of these crops pay the cost of production? and further, is it just and fair to charge them with the entire cost? On the contrary, have we not always been told that green crops don't pay? and is it not the constant practice to charge part of the manure, and the cost of superior cultivation given to such crops, to the succeeding Wheat and other crops? On what principle, then, does your correspondent charge the whole of this £12 against the Sugar-Beet? True, Mr. Biddell writes of an apparent profit of £3 12*s.* per acre; but most non-agricultural readers would think the expression meant more apparent than real. On the contrary, it means much more real than apparent; or, in other words, this £3 12*s.* should probably be doubled. Every farmer knows these green crops are preparatory to corn crops. They take the place of the bare fallow. To work this latter properly as much as £13 per acre has been expended, and the yield was *nil.* It needed a tremendous yield of Wheat to recoup the farmer for this outlay, and, in fact, the expense used to be spread over the whole course. The same principle is applied to all green crops, and I have yet to learn on what principle of true profits in husbandry Sugar-Beet alone is burdened with an expense which is never charged against any other green crop. Mr. Vince, however, reserves what would appear his strongest argument against sugar-growing to the last. By reducing the yield to 10 tons per acre he appears to saddle sugar with an absolute loss of £2 per acre. I also find this statement in Mr. Vince's letter, as a matter of advice to the Stowmarket farmers:—"Do not run away with the idea that 22 tons per acre will be grown. I believe that quantity never was grown at Lavenham." Happily, this belief can be confronted with facts published in all the local papers at the time, and verified by the growers in the presence of each other and myself. Now, these facts have never been challenged, that I am aware of, till now. Turning to a leading article in the *Agricultural Gazette* for October 16, 1869, I find the largest yield per acre was 30 tons gross, or 24 tons of roots and 6 tons of leaves. The next best crop was 31 tons gross, or 21½ tons of roots and 9½ of leaves. I leave these facts to balance the belief of your correspondent, and I confess nothing has surprised me more in connection with sugar-growing than these low estimates of the yield of Sugar-Beet. It is as plain as any simple sum in arithmetic, that if three or four small roots are grown in the place of one large one, the aggregate weight of the two yields should be equal. Especially should this be the case when, bulk for bulk, the smaller one weighs by far the heaviest.

It is something, however, to find that Mr. Biddell advances 5 tons on Mr. Vince. The seasons have hitherto been unfortunate, else doubtless before now the yield would have averaged 20, and be soon on the high road to 30 tons per acre. My experimental plots in the garden, without any manure, were one year at the rate of 28, and another 25 tons per acre. And, indeed, although we are told that such yields must never be looked for, far greater have been reached in Ireland. The commissioners appointed to inquire into the produce found that Sugar-Beet yielded from 18 to 42 tons per acre, and one crop, that of Lord Talbot's, reached from 48 to 52 tons per acre. In fact I quite believe with Mr. Samuel Copeland, the author of "Agriculture Ancient and Modern," whose authority will be acknowledged even by Lavenham magnates, that "it is possible to raise as large a crop of the Silesian Beet as of the Mangel." Or if not, why not? I have met your correspondent with facts. I only ask in return that my faith in a good yield of Sugar-Beet should be confirmed or destroyed by like arguments.

Of course every ton added to the yield swells the profit. As put by Mr. Biddell at 15 tons per acre, it pays better than any other green crop. The feeding value of Turnips and Mangels, which cost almost as much to grow—is estimated at from £6 to £8 per acre. Any farmer may put this and that together, and see where his interest lies. By asking too much for the roots, self-interest, like vaulting ambition, may easily defeat itself. It is necessary to bear in mind that the price of commodities is determined less by the value put upon them by sellers than the ability of buyers, the number of consumers, and the abundance or scarcity of the thing produced. The commercial value of Sugar-Beet is likewise complicated by other considerations; such as the capital invested in machinery, the short season when it is productive, the duties levied on the finished product, the price of labour, rent of land, and value of the roots at home and abroad, ranging from 13*s.* to 18*s.* per ton on the Continent; and the comparative profits on the manufacture of Sugar-Beet and that grown from the cane, &c. The price of Beetroot is therefore a question which requires careful consideration, and the farmers should ponder it seriously, wisely, and well, before rejecting the sugar-makers' liberal offer of £1 per ton. *D. T. Fish.*

Home Correspondence.

Pitting White Turnips.—Absence from home prevented my seeing Lord Essex' inquiry in your last week's number, as to whether white Turnips will keep good during the winter when put into pits. For many winters I have had them clamped like Swedes; and, if the work is properly done, they will keep very well up to March. I am going to pit 11 acres of Greystone Turnips immediately, and have no fear as to their keeping well. *J. Borlase Tibbits, Barton Seagrave, Kettering, October* 27.

Food for the People.—Without in the least desiring to cast doubt upon the propriety of following the advice of those who, like our good friend Mr. Mechi, insist upon improved and extended agriculture as the means of obtaining food and employment for our people, I would submit that after everything which they seek is accorded to them, there still remains the necessity of devising means by which the public shall be enabled to participate in the abundance which is in store. The introduction of fresh laws between landlord and tenant, which may invite the investment of more capital

—the employment of more labour—the general use of the new "key to the earth's treasures," or steam ploughing for deep tillage—the cultivation of every available foot of land, and although last not least, the acceptance by the country generally of its best fertiliser, town sewage, will all fail to accomplish the objects so dear to Mr. Mechi's heart, and to that of every thorough advocate of progress and improvement, unless the public directly feel the benefits which will result from all these. That no inducement is now given to market garden farmers either to invest more capital or incur more risk or labour, the present state of the markets will show; for although the prices paid by the public during this year of abundance have been the same as those which they paid with but slight variations during years of dearth, the growers have been at the expense of sending to market from two to thirty times as many loads of produce for the same money as one would have brought last season. Whilst Mr. Mechi and others have been fighting for improved cultivation, in order to secure large yields, farmers even within convenient distance from the metropolis have been ploughing in their crops because it would not pay them to market them, and discharging hands because they could no longer afford to keep them, whilst the public at the same moment have been complaining at being charged "war prices" for their vegetables, in ignorance of the heavy sacrifices entailed by the wholesale prices at which the farmers have been compelled, through its perishable nature, to part with their property. Some remedy to this might be found by the regular publication of the wholesale prices, thus affording the consumer an opportunity of exercising his judgment of the fairness of the retail prices demanded of him, as in the case of all other comestibles. I would urge Mr. Mechi, without relaxing from his efforts in favour of the land, to give some consideration to this matter, so that his ultimate object may be secured when success otherwise crowns his efforts. *Henry J. Morgan, Lodge Farm, Barking, Oct.* 30.

More Manure, much more Manure, is the general desire of all good farmers, so one would naturally conclude that every care was taken individually and nationally to preserve it—is this done? We all know that it is not, but that on farms as well as in cities there is a suicidal waste. That will be remedied some time within a hundred years, which is not long in the history of a nation. The country is not half-manured or half cultivated—I mean as to quantity of one and depth of the other. Our stiffest and coldest clays, if dug and intimately mixed with good rich manure, and then covered again with the top sort (or, better still, left exposed between two strips of cultivated soil, as was so judiciously done by the late Rev. Samuel Smith, of Lois Weedon), would at once become useful feeding-ground for the roots of plants. It is the intimate intermixing of the raw subsoil with the powerful manure that cooks the former and renders it good food. One of the best root growers I ever knew always, by several ploughings and rollings after manuring, effected a thorough intermixing of the soil with the manure. This is very much more effective than the mere depositing of the manure in a trench under the plants. Once get the poor subsoil dry, and then well saturated with town sewage or rich manure, and its noxious qualities will depart. I have heard farmers say they dare not manure too highly for their Wheat and Barley, because they would get it prematurely laid. Let me advise them, especially on heavy land, to richly manure the poor subsoil 12 inches below the plough-sole, and then take a great crop of Mangel or Kohl Rabi. Then their corn crops, to follow the removal of these roots, will bear 2 cwt. of guano and 1 cwt. of salt, and if not sown too thick, yield a handsome and abundant crop. These reflections arose upon reading the following extract of a letter I received from a clever, successful, and persevering friend of mine, who is applying business principles to his land. The time will come when the depth of cultivation, and the supply of manure will be tripled on British acres, and the meat-making produce proportionally increased, for it is not possible to cultivate and manure too deeply and heavily per acre gigantic root plants. But then what a lot of capital we must invest per acre to keep stock enough to consume them :—

> "I grow about 50 tons of Mangel, perhaps 60, but I fear 50 is nearer. Those in the open fields are not first-rate, arising, in my opinion, from improper cultivation; but I have from 17 to 20 tons grown in my garden, of the most beautiful quality you ever saw. I was my own bailiff in this case. I had the land dug two spades deep, and put on a good quantity of good manure made in my cattleyard; that I had in the field was farmed by my bailiff in any way he thought proper, and the result is such that in future I mean to be my own farmer and bailiff as well. I also grew in my garden a few Cabbages for sheep and bullocks—perhaps I had a quarter of an acre, but the feed I have from it is marvellous; one Cabbage weighed 31¼ lb., and three weighed 80½ lb. My brother, who has seen both the Cabbages and Mangel in my garden, says he never saw anything to equal them. I don't know what the Cabbages are called, but the Mangel is the Golden Globe. I take possession this Michaelmas of 7 acres of land adjoining my park wall; for several years it has grown nothing but Lavender, Mint, and suchlike things, and I hardly know how to begin. I wish I had your good counsel in the matter. I want root plants for my cattle, so I think of trying Cabbages, Mangel, and suchlike; only I am this year so short of manure, and, betwixt you and me, I don't like artificial. I may be driven to use artificial this year, but 'never no more' if I can help it. In this matter I expect I am opposed by my friend, Mr. Mechi, who, I think, is not artificial in anything but manure."

J. J. Mechi.

Dodder.—"Observer" and J. G. Nelson (pp. 1340, 1371) both notice the prevalence of Dodder amongst Clover that was sown last spring. This I have not seen, and my experience is, that it usually only appears with the full-grown Clover the second year; but in Cheshire, where I have lived nearly all my life, Dodder is exceedingly rare, and we see very little of it; it is certainly not a native plant with us. We have wide heaths and large peat bogs, and we have considerable stretches of moorland on the eastern borders of the county, all of which are covered with Heather and dwarf Gorse; but in botanising for 25 years I have never even once found a specimen of Cuscuta Epithymum, and during as many years I have seen the Clover Dodder in this county perhaps not more than five or six times. So rare is it, that no labouring man to whom I have shown it has ever noticed it before, or has even a vernacular name for it. But, strange to say, our farm labourers are well acquainted with the name Dodder, or, as they pronounce it, "Dother;" but they apply it generically to Polygonum convolvulus, Vicia hirsuta, Fumaria officinalis, Spergula arvensis, and any other agrarian weed that is of a choking or strangling nature. The extreme rarity of the plant in Cheshire shows us pretty plainly that when it does make its appearance it has been introduced with the seed. I have no doubt that the seed of Dodder could and would remain in the soil for several years, and appear again after an interval, but I suspect this is seldom the case on any ordinary farm, as the Clover is mowed too soon to allow either itself or the Dodder to shed very much seed. Certainly, on my own farm it does not reappear on the same ground, for I recollect finding many patches some years ago in a field which is cropped on a four-course rotation, but I have never had any more of the pest, though the field has been in Clover since. The reason that Dodder is observed this year amongst the Clover sown last spring I presume to be this: Being so purely parasitic, it grows simultaneously with the Clover, or rather, it requires the maturing Clover plant in order that itself may be fully developed. Owing to the peculiarity of the season Clover has, like the Mangels and Turnips mentioned by "Observer," arrived in a great measure at maturity during the first year. Where corn lost root during the winter, and was thin on the ground, Clover has gone a-head to such an extent that the "root" would have been a very respectable crop to mow. I have found it so, and I have at this present moment a stack of excellent Clover hay, of, at the least, 10 cwt. to the statute acre, which was shaken out of the butt ends of the Wheat sheaves before they were tied up, and there was almost as much left amongst the straw. The Dodder having thus something to grow in, has probably imitated its foster parent, and has attained a considerable growth a year sooner than usual. Seeing that the Dodder plant is so far advanced, mowing may serve to check its growth, and will at any rate prevent its ripening any seeds; but ordinarily mowing does not serve to kill Dodder, for in the field that I have mentioned, and on other occasions, I have seen none at all amongst the first crop of Clover, but have found it growing plentifully in the second crop. *Robert Holland, M.R.A.C., Mobberley, Cheshire.*

The Flax Crop in Ireland.—The great failure of this crop in Ulster has been more than counterbalanced by the growth in Munster, where, alike as regards yield and quality, it is above the average. In the South the yield is also very satisfactory, and the large supplies in the markets are excellent, some of the samples being described as "very prime." Some superior produce has realised 15*s.* and even 17*s.* per stone, but the average prices range from 7*s.* to 11*s.* 6*d.* per stone. With reference to an article which appeared some time since in the *Globe*, in which the writer argued that Ireland was not suited for Flax growing, and recommended the cultivation of Beetroot, the Earl of Bandon, in a speech at the Ballineen Farmers' Club, has shown that from the earliest times Ireland was a Flax growing country, and that even so long since as the reign of Henry VIII. an Act was passed to restore the manufacture of linen, which the old Irish chieftains used to wear. His lordship maintained that Ireland was peculiarly suited to Flax cultivation; and another agriculturist said that he had been an extensive Flax grower for the last three years, and intended to continue so, as he found the crop to be most remunerative. *G. H. P.*

Skilled Labourers.—When a farmer takes to himself steam machinery, his first difficulty will be the want of labourers accustomed to it, and a want of knowledge of it himself. I passed through this ordeal some 24 years ago, when farm steam machinery was unknown in this district, and of course proper machinists were wanting. Now the difficulty is much less, but it is highly desirable that the rising generation of farmers should at their schools, or, better still, at the Royal Agricultural College, Cirencester, get a theoretical knowledge of the steam-engine in its relation to the cultivating and other operations of the farm. The better education of our labourers will also give them a more ready insight to the use of steam machinery. How much we have improved in this respect during the last 25 years. My threshing-machine, on the Scotch principle, had at first feeding rollers, to prevent too much of the sheaf passing it at one time; but it was soon found out that increased velocity of the drum (mine revolves 1300 times per minute) greedily drew in the straw, and caused the ears (being the heaviest part) to fly off by centrifugal force, like water off a mop, and so strike or rub the grain out by a sharp blow against the concave, rendering it unnecessary to set the drum too close, and risk grinding the grain, instead of merely releasing it from its covering. Slow movements of the drum are very objectionable. No doubt the complicated drill at first bothered and plagued the farmer and his men; but time and practice have obviated that difficulty. Most of my men have been with me nearly 30 years. It is a great mistake to part with experienced men, but temper and want of a proper understanding often cause great inconvenience and loss. We are threshing Wheat to-day with our fixed engine, and as I saw how handily our people were readjusting the machinery of the fixed threshing-machine—it having previously been threshing Beans—the thoughts I have now expressed on paper passed through my mind. We agriculturists are fast approaching what I would call the age of machinery and steam; therefore it is highly desirable that the rising generation of agriculturists should become gradually "at home" in this matter. No doubt our ordinary farm blacksmiths will have to be also improved, and become, in some degree, machinists, having lathes, &c. It must be so, if every farm is to have its steam ploughs and fixed steam machinery. We have much less difficulty now in Essex than we used to have, but there is great room for further improvements in facilities for machine repairs; in fact, our steam boiler house should not be without anvil, lathe, and tools, and a handy farm labourer to use them. My engine has been driven for 24 years by one of my farm labourers—a sort of handy man for any job. Wages, 15*s.* per week. *J. J. Mechi.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, November* 1.—Present: Sir Watkin W. Wynn, Bart., M.P., President, in the chair; the Earl of Lichfield, Viscount Bridport, Lord Chesham, Lord Tredegar, Lord Vernon, Mr. Baldwin, Mr. Barthropp, Mr. Barnett, Mr. Booth, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Druce, Mr. Brandreth Gibbs, Mr. Hornsby, Mr. Bowen Jones, Colonel Kingscote, M.P.; Mr. Leeds, Mr. Milward, Mr. Pain, Mr. Randell, Mr. Shuttleworth, Mr. Thompson, Mr. Torr, Mr. Wakefield, Mr. John Wells, Mr. Wells, M.P.; Mr. Jacob Wilson, and Dr. Voelcker.

Sir A. K. Macdonald, Bart., Woolmer Lodge, Liphook, was elected a Governor of the Society.

The following members were elected :—

Bell, Robert, Mallsgate, Brampton.
Beswicke-Royds, C. R. N., Pyke House, Littleborough.
Bonehill, C. G., Bickford Grange, Penkridge.
Booth, E. Whitelock, Trent Park Farm, New Barnet.
Campbell, Arthur J., St. James' Place, Fermoy, Ireland.
Carruthers, G. Brockbank, Westbourne Terrace, Lancaster.
Cawley, W. Payne, Ashby St. Ledgers, Rugby.
Downing, John, Ashfield, Fermoy, Ireland.
Du Plessis, Gustave, Château du Plassi, par Mettray, Indre et Loire, France.
Ellis, P. P., Herbrandstone Hall, Milford Haven.
Grant, Colonel W. L., 13, Victoria Street, S.W.
Hurst, Robert, Rochdale.
Jowitt, Thomas, The Old Weir, Hereford.
Keir, Captain G. Lawrence, 33, Pembroke Road, Kensington, W.
Lascelles, F. Henry, Mayfield, Rowledge, Farnham.
Lenthall, E. Kyffin, Besselsleigh Manor, Abingdon.
Lenton, W., jun., Oundle.
Norman, George, Dinnaton, Swimbridge, Barnstaple.
North, Charles, The Hall, Rougham.
Page, Joseph, Winnerton House, Kidderminster.
Parker, T. Townley, Charnock, Chorley.
Peterson, A. T. T., Drumdnar, Lymington, Hants.
Williams, Robert Ap Hugh, Bodelwyddan, St. Asaph.

FINANCES.—Viscount Bridport presented the report, from which it appeared that the Secretary's receipts during the past three months had been duly examined by the committee, and by Messrs. Quilter, Ball & Co., the Society's accountants, and found correct. The balance in the hands of the bankers on October 31 was £670 15*s.* 4*d.*, and £2000 at deposit. The quarterly statement of subscriptions and arrears to September 30, and the quarterly cash account, were laid on the table. The arrears then amounted to £1509. The committee recommended that 28 members in arrear of their subscriptions be removed from the list of members.—This report was adopted.

JOURNAL.—Mr. Thompson (chairman) reported that the committee requested the instructions of the Council in reference to the President's offer of a silver cup for the best managed farm in the South Wales district, but that they did not recommend the offer of a second prize. They also reported that the cost of the farm prize competition of 1871 was as follows :—

Prizes offered by landowners and local committee..	£250
Society's prizes	100
Society's expenses, including advertising, inspection, and report	225
Total	£575

This report having been presented, a conversation ensued, in which Lord Bridport, Mr. Randell, Mr. Cantrell, and Mr. Bowly advocated the offering of a second prize, while Mr. Thompson and Mr. Jacob Wilson defended the recommendation of the committee, on the ground that the special circumstances of the district did not require it. Finally, it was moved by Mr. Bowly, seconded by Mr. Cantrell, and carried by 11 votes against 8, "that a second prize, of the value of £50, be offered by the Society."—Subject to this amendment the report of the Journal Committee was received and adopted.

CHEMICAL.—Mr. W. Wells, M.P. (chairman), reported that, in accordance with the resolution passed at a previous Council meeting, the opinion of counsel had been obtained on the questions then raised, and a letter had been written by the Secretary in the terms recommended; but to this letter no reply had as yet been received.—This report was adopted.

GENERAL, CARDIFF.—Lord Vernon (chairman) reported that a correspondence had been held between Mr. Randell (at the request of the committee) and Mr. Corbett, the Steward of Forage for the Cardiff meeting, in reference to the quantities of forage and roots required for the ensuing exhibition, and that the committee recommended the purchase of the quantities which were likely to be required. This report was adopted. The President announced that in the course of a few days there would be a conference between the authorities of the London and North-Western and of the Great Western Railway in reference to the fares for passengers, stock, and implements, in connection with the Cardiff meeting. The Honorary Director and the Secretary were thereupon instructed to draw up a memorandum of the concessions which the Society was desirous of obtaining for its members, visitors, and exhibitors.

IMPLEMENT.—Colonel Challoner (chairman) reported that, with reference to the engineers' bill for additions to the Society's plant, they recommended that the Secretary be requested to inspect the plant with the consulting engineers, and ascertain whether some of the apparatus specially supplied for the Wolverhampton meeting might not with advantage be disposed of, and carried to the credit of the account.—This report was adopted.

SHOWYARD CONTRACTS.—Mr. Randell (chairman) reported that the whole of the works connected with the showyard at Wolverhampton were satisfactorily completed, and that the Society's portable buildings are now safely deposited within the intended showyard, at Cardiff, under the new contract with Mr. Penny, who is entitled to receive £561 9*s.* 3*d.*, the final balance of the account for works at Wolverhampton. It was also recommended that the plan produced of the Cardiff showyard be adopted, subject to any modification which the Honorary Director may find necessary.—This report was adopted.

STOCK PRIZES.—Mr. Milward (chairman) reported that the committee had arranged a draft of the stock prize-sheet for the Cardiff meeting, and that they recommended that the Secretary be directed to prepare a proof, and send a copy to each member of the Council previous to their next meeting in December.—This report was adopted.

SELECTION.—Mr. Thompson (chairman) reported the following recommendations of the committee :—

1. That Mr. E. Holland be elected a trustee of the Society, in the place of Lord Berners, deceased.
2. That Sir A. K. Macdonald, Bart., be elected a trustee of the Society, in the room of the late Sir Thomas Dyke-Acland, Bart.
3. That Mr. M'Intosh, of Havering Park, Essex, be elected a member of Council, to fill the vacancy caused by the death of Mr. Clayden.
4. That the Hon. W. Egerton, M.P., be elected a member of Council, to fill the vacancy caused by the election of Mr. B. T. Brandreth Gibbs as a Vice-President.

This report having been adopted, it was moved by Mr. Thompson, seconded by Mr. Shuttleworth, and carried unanimously, that Mr. Holland be elected a trustee of the Society. On the motion of Lord Bridport, seconded by Mr. Torr, Sir A. K. Macdonald, Bart., was unanimously elected a trustee of the Society. It was then moved by Mr. Milward, seconded by Colonel Kingscote, M.P., C.B., and carried unanimously, that Mr. M'Intosh, of Havering Park, Essex, be elected a member of the Council; and, on the motion of Mr. Wells, M.P., seconded by Mr. Randell, it was unanimously resolved that the Hon. W. Egerton, M.P., be elected a member of the Council.

VETERINARY.—Major-General Viscount Bridport (chairman) presented the following report :—The Veterinary Committee have had under consideration the letter of the Principal of the Royal Veterinary College, dated July 17, stating that a reply to the communication of the Royal Agricultural Society would be sent after the next meeting of the "General Purposes Committee" of the College. The committee now recommend that the Secretary shall write to the governors of the College, stating that the Society has been anxiously awaiting such reply, and further to request that the same may be communicated not later than December 1 next, in ordered that it may be considered at a special meeting of the Veterinary Committee to be held previous to the next monthly Council Mr. Torr, having called the attention of the committee to a disease prevalent amongst, and fatal to, lambs in various parts of the country, and also to a resolution of the Lincolnshire Agricultural Society, requesting him to bring the subject under the notice of the Council of the Royal Agricultural Society, the committee reported that they considered the subject of sufficient importance for this to be done, and that they had therefore requested Mr. Torr to take this step at the present Council meeting.—This report having been adopted, Mr. Torr submitted the following extract from the minutes of the general meeting of the Lincolnshire Agricultural Society, to the consideration of the Council :—

"The committee appointed at the last meeting of the Council are of opinion that the prevailing disease amongst lambs ought to be thoroughly investigated by competent authority.

"They, therefore, recommend that Mr. Torr be requested to bring this subject under the notice of the Council of the Royal Agricultural Society, at their meeting to be held on Wednesday next, and be requested to report to the Council of this Society on November 10 next.

"That in the event of the Royal Agricultural Society deciding not to take action in the matter, that the Council of this Society be empowered to nominate a committee to investigate the subject, and to expend such moneys in the investigation as may be found necessary.

"(Signed) J. H. THOROLD,
"October 27, 1871." "Chairman.

It was thereupon moved by Mr. Thompson, seconded by Lord Bridport, and carried unanimously—

"That the thanks of the Council be given to the Lincolnshire Agricultural Society for their communication, and that Professor Simonds be requested to make a thorough and immediate examination of the nature of the disease and the circumstances under which it most commonly occurs, and to give suggestions for its treatment and prevention."

The President having then called attention to the importation of foot-and-mouth disease through the medium of Irish cattle, his statement was confirmed by Mr. Thompson and Colonel Kingscote; it was, therefore, moved by Colonel Kingscote, seconded by Mr. Torr, and carried unanimously, "That numerous complaints having been made of the unhealthy state of the Irish cattle imported into England, it is resolved that the Secretary be instructed to write to the clerk of the Privy Council, calling the attention of the Government to the subject. Lord Vernon then moved the resolution, of which he had given notice, slightly altering its terms, as follows :—

"That a special committee be appointed to consider the whole question of the receipts and expenditure of the Society, and the possibility of securing equal results at less cost."

In advocating the appointment of this committee, Lord Vernon gave a sketch of the causes which had led to a continual increase in the expenditure of the Society for many years, more particularly in connection with the annual shows. He particularly noticed the increase required of late years in accommodating exhibitors and visitors, and the expenses attending the trials of implements and the exhibition of stock on so large a scale; and while indicating generally several directions in which it was possible that inquiry might result in economy, he expressed his conviction that no body of men could be more vigilant than the Council in controlling the expenditure of the Society in accordance with the policy which was decided upon from time to time. He concluded by moving the appointment of the committee, suggesting that the following noblemen and gentlemen should be invited to act as representatives of some of the standing committees of the Council :—*Finance:* Lord Bridport, Colonel Kingscote, and Mr. Davies. *Showyard Contracts:* Lord Vernon, Mr. Randell, and Mr. Shuttleworth. *Stock Prizes:* Mr. Dent, Mr. Milward, Mr. Torr, and Mr. Jacob Wilson. *Implement:* Lieut.-Colonel Wilson, Mr. Booth, Mr. Ransome, and Mr. Thompson. Lord Bridport, in seconding the motion, expressed his belief that there was no cause for alarm at the expenditure incurred by the Society of late years, for although it was undoubtedly large he considered that it had produced very good results, and he was not of opinion that the Society should lay by a large sum of money for the use of a future generation. At the same time, he thought that investigation might be beneficial without curtailing the usefulness of the Society. Mr. Thompson, in supporting the resolution, expressed his conviction that the control of the finances of the Society at the present time must meet with the approval of all members of the Society; but as all old societies have a tendency to run in grooves without taking sufficiently into account the changes required by altered circumstances from time to time, he thought that Lord Vernon's committee might point out some improvements, which would otherwise not be accepted.

Letters were read from winners of farm prizes requesting certificates of their success, and the Secretary was instructed to prepare a document suitable to such occasions.

A letter was read from Messrs. Eastons, Amos & Anderson, announcing the retirement from the firm of Mr. J. C. Amos, and that in future their designation would be Eastons and Anderson.

The date of the general meeting in December was fixed for Thursday the 7th, at 12 o'clock.

Farmers' Clubs.

HEXHAM.

Insects Injurious to Turnips.—Mr. T. J. BOLD'S paper, recently read before this Club, is here slightly abridged from the *Hexham Courant*:—

Instead of long descriptions, I have sent specimens of the insects treated of, hoping thereby both to add interest to a dry subject and help the farmer to more readily identify his enemies than he would be able to do by any array of words.

Turnip-fly.—Notorious above all other destroyers, most generally spread, found on all kinds of soil, and most persistent and destructive in its attacks, is the Turnip-fly or Turnip-flea; under which names are included several species of small insects of the order Coleoptera, or beetles, belonging to the family Halticidæ so named from the leaping habits of the perfect insects. Every farmer knows how this pest works out the destruction of his crop—on that I need not dilate, but will first glance at its economy, and then point out such of the many remedies proposed as appear to me of practical use. Differing from nearly all other pests of the farm—which do most damage when in their larvæ state—this is only to be feared when it has become a perfect beetle. The parent insect lays its eggs on the underside of the rough leaf of the Turnip, or other plant of the same order. As soon as hatched the young caterpillars eat their way into the leaf, where they feed between the cuticles until full grown, when they fall to the ground, in which they become pupæ, assuming in the course of a few days the dress of imagos. There appears to be several broods in one year, all of which become beetles before the winter season, which they pass in a semi-torpid state, beneath the bark of trees or of thorns, in the chinks of posts or rails, in hedge-rows, or any other shelter that offers. Thence they issue on the first sunny days of the spring following to pursue anew their circle of destruction : falling in myriads upon the newly sown fields, they attack the Turnip plants when in the seed leaves, and, by biting out the central portions, effectually prevent any further growth. This short life-history shows us, I think, that the egg, larva, and pupa, are beyond our reach, and, therefore, all remedial measures must be applied to the perfect insect.

Remedies.—To render the young Turnips plants distasteful to the beetles, many plans have been recommended, such as steeping the seed in brine, in oil, in turpentine, &c., or by keeping the seed mixed with sulphur, sowing the sulphur with the seed in the drill,[*] using offensively smelling manures and other substances of unsavoury odour; but in most cases with little effect : nor could we expect it to be otherwise when we consider the powerful deodorising effects of the earth and atmosphere. No better effect appears to have attended the powdering of the plants with lime, soot, sulphur, guano, &c., as the creatures have been found to live and thrive in their midst. Tar barrows, tarred boards on wheels, and tarred cloths have all been recommended to catch the beetles when drawn over the drills, but it appears to me that if mechanical means of capture have to be adopted, an entomological "sweeping net" would prove a more efficient engine of destruction. This net is simply an iron ring[†] fixed to the end of a stout stick, with a bag from 2 to 3 feet deep made of stout linen sewed to it. This worked along the drills by a boy or woman (against the wind if possible), would take the beetles in thousands, which might then be destroyed by emptying the net, at short intervals, into a large tub half-filled with soap-suds or dirty water of any kind. But I apprehend that the true cure must be sought for in another direction, to wit, in keeping the farm free from such weeds as the beetles feed on in a state of nature, such as Runch, wild Mustard, refuse Turnips, and many others. Wherever such plants are allowed to prevail, swarms of beetles are sure to be found. Every means in the farmer's power should be used to induce rapid growth in the first stage of the Turnip plants; once in the rough, they are safe. In dry years I have known great benefit derived from mixing salt, at the rate of 2 or 3 cwt. an acre, with Peruvian guano; the salt creates moisture in the driest seasons, enables the guano to be sown without waste, and also fixes the ammonia. Water, or weak solutions of salt, nitrate of soda, guano, or liquid manure, applied twice a-week, would cause the plants to grow so rapidly that they would soon be out of all danger from the fly, which would be killed at the same time by the excessive moisture, for all insects are injuriously affected by wet, especially if accompanied by cold. Another remedy, and one well worthy of your attention, is that of sowing with the Swedes another variety of

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[*] This was tried by several of our farmers some years ago, but was of little use, and in many instances the mixture was found to prevent the drill working.

[†] The ring may be of any width, but one from 12 to 18 inches across is the most handy.

Turnip, which, being of more rapid growth, will attract the fly and engage its attention until they are out of danger. The white varieties of Turnip are said to be the most attractive to the beetles, from their stronger smell, which Curtis fears would attract all those living in the neighbourhood and ensure the destruction of the whole crop. Now, if this be so, it points to a remedy. Sow all round the field, next the hedges, a row of whites (perhaps some of the yellow varieties may be equally attractive, and in case they escaped the fly they would keep better), and when they are found to have fly upon them set boys or women to work with the sweeping-nets.

Wireworms and Weevils.—Under the general name of wireworms we find the larvæ of several species of beetles of the family Elateridæ. Some of these creatures pass as much as five years in the larvæ state, all the while feeding upon the roots and stems of plants; the damage they do must, in the aggregate, be enormous. Those parts of the land most trodden down by the cattle during wet weather in winter are always least affected by the pests; perhaps heavy and repeated rolling might have the same effect. Bare fallowing, especially if weeds be carefully kept down, will undoubtedly cause numbers of larvæ to die from want of food, and if frequently turned over so much the better, as they would then be more exposed to their natural enemies, which are very numerous. They form a much relished article of food to birds; rooks devour immense numbers, so do partridges and pheasants, which are often found to have their crops distended by them in hundreds: a female of the latter, shot in January, was found to have swallowed 1225! Fowls and turkeys are said to eat them with great gusto. Lapwings, starlings, thrushes, and many others, are constantly on the look-out for them, and must destroy myriads. The robin watches the gardener at his work, and picks them up as fast as they are exposed by his spade. They have also many enemies among the carnivorous ground beetles, which eat them with avidity.

The Saw-fly.—So called because the female is furnished with a serrated ovipositor, by which the eggs are deposited; it belongs to the order Hymenoptera, family Tenthredinidæ. This pretty little thing is the parent of the black caterpillars which in some years do such enormous damage to the Turnip crop, and at a time when, having outgrown the fly, it is generally considered to be safe. Fortunately, their visits to this district are not frequent, but when they do take place are most disastrous. The perfect insects appear with us in May and June, generally in small numbers; these deposits their eggs, which produce other and more numerous broods in July, August, and September; the last remaining in the ground as pupæ until the following spring. This short account will, I think, show that a remedy must be sought for more in the way of prevention than cure. When the pest is known to be astir, a sharp look-out should be kept for the first appearance of the perfect insects, and boys set to work to catch and kill them, which is easy to do, as they are only sluggish creatures. Every female of the first brood which is destroyed will, in all probability, prevent the birth of thousands afterwards. Should the eggs have become hatched, the Turnips should be looked over daily, and the infested plants, which are very few at first, collected into a sack, removed from the field and burnt. The sweeping net before mentioned would take them in numbers, and they could then be removed from the field and destroyed. Rooks are said to be very fond of the caterpillars, and swallows have been noticed to devour the imago. I doubt very much their being eaten by small birds, for they always refuse the larvæ of a nearly allied species which destroys the foliage of the gooseberry.* The parent insects are said to come over from the Continent, where they are abundant, being found even so far north as Lapland; and their arrival in clouds is said to have been observed on the Norfolk coast and elsewhere. Nothing of the kind, however, has been seen in our district, so far as I am aware; on the contrary, the mischief always had a small beginning. Thus, in the year 1858, when it was so abundant and destructive, I paid a good deal of attention to the Turnip fields in the vicinity of Newcastle, finding the routine to be much as follows:—Small openings in different parts of the field would appear, which enlarged slowly for a few days, and then suddenly spread and run into each other with amazing rapidity. On going over the land, the caterpillars were found nearly full grown twisting about the stumps of the mid-ribs, every particle of green leaf having been devoured. Myriads must occasionally perish of hunger, as I have seen a field completely cleared of the young crop before the caterpillars were half grown, and nothing whatever left for them to feed upon, even the Runch having been eaten up.

Butterflies and Moths.—Next, we have a few individuals belonging to the great order Lepidoptera, so well known as butterflies and moths:—The large white Cabbage butterfly, the small white or Turnip butterfly, the rapeseed or green-veined Turnip butterfly. Wherever Turnips and Cabbages are cultivated, those three butterflies are of common occurrence. With us, they generally confine their ravages to gardens, only when exceptionally numerous becoming pests to the farm; and then it is generally the second broods in July and August to which that term can be applied. As these caterpillars feed during the day on the surface of the leaves, their presence in a Turnip field may be readily detected, and measures taken for their destruction. If very numerous, a good plan would be to set a couple of boys to work with sweeping nets; working simultaneously, one on each side of the row of Turnips: if industrious and careful, they would soon clear the infested portion or portions of the field, as this pest is seldom widely spread. When not so numerous, they may safely be left to their natural enemies. Poultry, and birds generally, are fond of them as food, devouring enormous numbers, besides which their insect enemies are numerous. The Cabbage moth, the common dart moth, the heart and dart moth, the yellow underwing moth, night-flying moths, and other larvæ known to farmers and gardeners as surface grubs. That of the cabbage-moth is exceedingly injurious to both Turnips and Cabbages; it devours the leaves of the first and penetrates to the very hearts of the latter, leaving its burrows filled with excrement, and often rendering a whole crop unfit for human food. The caterpillars of the two next are those to which the greatest amount of damage must be attributed. They conceal themselves in the earth, or beneath clods or stones, during the day, issuing thence on the approach of night, to prey upon such vegetation as is within reach; their tastes being so omnivorous that scarcely any cultivated plant comes amiss. When the Turnip plants are young, they are bitten through at the surface of the soil, and, as the caterpillars quickly travel from plant to plant, immense destruction is the result. When the bulb becomes well developed, the pest eats holes in its lower part, beneath the soil, and there lives and thrives as long as the crop remains on the ground. The last, the yellow underwing moth, is also a frequenter of Turnip fields, but the damage done by it is trifling in comparison. The habits of these pests render them very difficult to deal with, and no feasible plan has been suggested which is at all likely to be of use on the farm. The most promising is bare and clean fallowing, on which every weed is kept down, so as either to starve or compel them to shift their quarters. If land is known to be much infested, then frequent and heavy rollings would be most beneficial. Should the caterpillars be numerous on the leaves, they could easily be taken in numbers by the net formerly mentioned, and destroyed.

Plant Lice, of all farm pests, are most difficult to deal with, for, soft and fragile as they individually are, their numbers and peculiar economy render them truly formidable. As these pests only frequent the under surface of the leaves, where they are completely sheltered, no remedy has yet been found which is not at the same time injurious to the Turnip. Powdering the leaves with lime or other substances can have very little effect, as the aphis draws its support from the interior of the leaves. Cutting off the leaves has been recommended: no doubt a perfect cure, but it must ruin the Turnips. There seems to be no better plan than to leave them to the mercies of their very numerous enemies. Small birds devour numbers; many Hymenoptera store them up in cells as provision for their young—acari and many plant bugs feed upon them, and so do the larvæ of several beetles, flies, and other creatures, whose histories are set forth in many of the books of popular natural history.

Two-winged Flies.—Anthomyia radicum is a pest in the shape of a small white footless grub, which eats into the heart of the Turnip when nearly full grown, and, admitting air and moisture, causes it to decay. This is quite common in our district, and seems to affect all kinds of Turnips, but is most destructive to the white varieties from their softer nature. The Greystone Turnip is very liable to be attacked. I have seen fine crops of it utterly ruined, and that, too, when the bulbs were very large. The parent fly appears to lay the eggs on the crown of the Turnip, between the leaf-stems, and the larvæ, as soon as hatched, eat directly downwards until full fed, when they enter the soil immediately below the bulb, and change into pupæ before the winter commences, not becoming flies until the following year. A large number of the pupæ, found just beneath the Turnips, were sent to me by a farmer friend in Yorkshire. He observed a flock of lapwings to frequent the field daily. Game, from their scratching habits, will be very likely to be amongst their greatest enemies, and beyond doubt they will be sought for and eaten by smaller birds. Occasionally I have seen considerable damage done by the larvæ of one of the "Crane flies," or, as they are called here, "Tommy long legs." This has often been the case when damp land, which had lain long in grass, was broken up. Naturally they feed upon the roots of grass and other plants, and when those are destroyed they devour whatever may be sown on the land by the former. When Prestwick Carr was drained and cultivated, immense numbers of larvæ appeared, and for a year or two did great damage both to cereal and other crops. A phial full of these larvæ was brought to me by one of the occupiers, but all of them were dead; they were, I think, the produce of Tipula paludosa, a species very abundant in damp meadows. So numerous were they that from 10 to 20 would be found beneath a single clod.

Note on Books.—Curtis, "Farm Insects," royal 8vo, col. pl., Blackie & Son. Kirby and Spence, "Introduction to Entomology," crown 8vo, 7th edition, Longman & Co. These two books ought to be in every library. They not only contain an immense amount of general information on insects injurious or beneficial to mankind, but they are also of special value to every one connected with agriculture and horticulture. As the name implies, the first is more particularly devoted to the farm; most of the insects are beautifully figured, and the text is illustrated by a great number of woodcuts. The fame of the second is world wide, and its price a marvel of cheapness.

IXWORTH.

Double Ploughs.—Annual Meeting and Dinner.—On this occasion Mr. GEORGE SYMONDS, one of the judges of the ploughing, said he and his colleagues had done all they could to do justice in the matter of the ploughing. If they had not succeeded in pleasing everybody, he might say they had at any rate satisfied themselves. With respect to the character of the work, the judges considered that the ploughing in Class 1 (ploughing with wheel-ploughs) was remarkably good. Some of it, however, he might say was not quite so deep as the rules of this Club required, but taking it as a whole it was a very good piece of work. In the other classes the ploughing was not done so well. It missed several inches of being the required depth, according to his own opinion and the opinion of the other judges. He was now referring to the stubble land where it was ploughed for summer land—it was only 4 inches in depth, and on such land as that he thought it ought to be ploughed at least 8 inches in depth. After having gone over the ploughing for prizes, the judges went to the land ploughed by the double ploughs, without knowing the work of the particular ploughs. They observed one piece of land which had been ploughed particularly well, very much better than the other. The number was "3," and he was glad to find this evening that it was done by Messrs. Ransomes' double plough. He considered that that piece of land was ploughed much better than any other land he had inspected that day, with the exception of the first class.

Mr. JAMES EDWARD RANSOME said double-furrow ploughs had a good many advantages, which, perhaps, were not seen at first sight. On light land, two horses were usually employed to draw a single plough. That was generally an excess of power which was not really wanted, and if it was possible to divide the two horses into other subdivisions of the two parts, they would not probably use so much power as they now did, but, inasmuch as one horse was not sufficient, two had to be used; but the double-furrow plough, properly made, did not take more than half as much again draught-power as a single plough, and two horses were often sufficient to work a double plough on a light land farm. He was not, of course, speaking of special work, done 7, 8, or 9 inches deep, but of ordinary ploughing, at 5 or 6 inches. In the case of mixed soil land, three horses on a double plough were often equal to do the work of four, and there was, therefore, a saving of one horse out of four. On very heavy land, where three horses were employed on a single plough, four horses would generally be able to do the work with the double-furrow, and there would then be a saving of two horses out of six. As to the experiments which had been made that day, Mr. Manfield stated that the draught of their R N D D, working on a good mixed soil, averaged 4¾ cwt., the furrows being each 9 inches wide and 6 inches deep. Taking the draught of a single plough on the same land at 3 cwt., it would be seen that their horses could comfortably perform the work with the double-furrow plough. The horses would not be working harder than with the single plough, inasmuch as they took only one-half more draught; and it must be patent to every one who considered the subject that there was an advantage beyond any reduction that could be made in the draught of the ordinary plough. Take, for instance, the single plough, which required two horses. In order to make that into a suitable draught for one horse, it would be necessary to reduce the draught one-half, and that would not be possible. It might be reduced a fourth, but by putting two together it was possible to effect some of it by using three horses, because then the draught power was exactly equal to the work. Another advantage was, there was not so much treading of the bottom of the work. There was also the saving of the men, and the getting over the work at the proper season of the year. There was in the new plough a considerable saving in the draught in some soils by the use of the friction-wheel. He might, perhaps, be allowed to point out what the actual money saving effected by the use of double ploughs would be. The ploughing per acre with two horses, putting them at 2*s*. 6*d*. each, and the man at 2*s*., with a single plough, would make 7*s*. per day. That was exclusive of the wear and tear of the implement. The double plough, with three horses at 2*s*. 6*d*., and the man at 2*s*., would make 9*s*. 6*d*., half of which was 4*s.* 9*d.*, showing a saving of 2*s.* 3*d.* per acre on all the ploughing that was done. It would be found that on an average the whole of the arable land on a farm was ploughed twice a-year, some parts requiring but one ploughing, others three or four, and it therefore made a saving of 4*s.* 6*d.* per acre on all the ploughed land. On the other hand, there was no gain if the horses, which had been saved by the use of double ploughs, were standing still; but he took it that on most farms more horses were kept than would be necessary for the other operations, provided the ploughing could be got over, at the right time of the year, with a lesser number. He had made some remarks on this subject a short time since, and had given some data on this point, which had not been quite understood. It would now be understood that the basis upon which he went was this, that more horses were used than would be the case if the ploughing could be accomplished at the right time of the year. Supposing, to illustrate his remarks, he took a farm of 300 acres of arable land. He did not think it would be an extreme calculation to say that on such a farm 12 horses would be required, six men, and six single ploughs. If three double ploughs were used, only nine horses and three men would be required to work them, and they would get over the same quantity of work, and there would then be a saving of three men and three horses. These three horses, or at least two of them, might be dispensed with during the greater portion of the year, and perhaps the whole; and the time of the men who would otherwise have been employed in single ploughing would be saved. Taking an average of farms, some light, some mixed, and some heavy soils, an acre per day was accomplished with an ordinary plough, and double this quantity, or 2 acres a day, might be considered a fair day's work for a double plough. At this rate, the ploughing on the farm would take about 17 weeks per annum. The following calculation would show the saving effected:—

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* This lays its eggs on the under side of the leaf along each side of the ribs, and the larvæ as soon as hatched eat small holes which are easily seen. If these leaves be taken off, or dusted with powdered white Hellebore, the larvæ will be prevented spreading, and the crop saved.

Interest on the value of three horses at £30 = £90, at 5 per cent.	£4	10	0
Annual decrease in value, at £2 each	6	0	0
Hazard of loss at 5 per cent.	4	10	0
Annual value of food: three horses, at 12*s.* a week	93	12	0
Shoeing and farriery, at £1 each	3	0	0
Wages of three men, for 17 weeks, at 10*s.*	25	10	0
Total	£137	2	0
Deduct interest on value of three double ploughs, at £10, at 5 per cent.	1	10	0
	£135	12	0

On 300 acres this amounted to 9*s.* per acre. If only two out of the three horses could be dispensed with, the saving would still amount to £100, or 6*s.* 6*d.* per acre. If the gentlemen present would consider these figures, they would find that there was something substantial at the bottom of them. Some advocated the using of the spare horses in other work. If the horses were turned to another account, and the produce was increased thereby, there would, he thought, still be a saving of the amount he had named. It did not matter to the firm he represented whether they sold single or double ploughs, but it was a matter of considerable importance to farmers, if by the use of double ploughs they could effect such a saving, or even half as much as he had named.

HADDINGTON.

Harvest Wages.—The Chairman (Mr. George Hope, of Fenton Barns) said he might first make a remark or two on the past harvest. They all knew what a wet and disagreeable summer it had been. Indeed, until the end of July there was no summer; and it looked as if the grain was never to reach its golden hue: but the blaze of hot weather which set in at the beginning of August saved the crops, which generally were equal to an average. The Wheat crop, however, from having been in bloom during the wet weather, was by no means a good crop. His own estimate was that it was short a fourth, particularly when they took into consideration the quantity shaken by the high winds. The remarkably hot weather at the early part of August brought on all the crops with unexampled rapidity—ripening almost the whole country at once. He did not know what they would have done in former times in such circumstances; but fortunately they had now the reaping machines, which were of the greatest possible advantage in enabling them to secure their crops. Formerly, for every labourer on his farm, the farmer had at harvest to hire two at least. Now, it was the reverse; and for every two men they had on the farm they hardly required to hire one. Formerly, when so many were needed, labourers came to the county in considerable numbers, and a weekly market was held at Linton, at which great difficulty was often experienced in making the wages; but when these were once fixed, they were generally adhered to throughout the county. Since the introduction of the reaping-machine no such market was held; and the fixing of the wages was generally done by a number of farmers meeting together on the Fridays at the market, and arranging what the wages for that week were to be. Now, he did not think this was a very proper way of conducting the matter, and he was astonished that year by year the number of labourers was constantly diminishing. Thus this year those who were quick in beginning procured a number of hands; but those who were two or three days behind could scarcely get a single labourer. Now, the question was whether this system of settling the harvest wages in the market, after the week's work was actually nearly done, was a good and proper one. He did not think it was, and he thought it must tend year by year to reduce the number of people who came here to work. If he was a labourer, he would not come to a district where beginning to work he knew not what wages he was going to get until the end of the week. Surely the labourer should know what he was going to work for. It was not possible to fix the wages for the county one way or another. It depended so much upon the supply and demand, and other circumstances; and so it was not possible for any committee to fix the hire of labourers before harvest began, or make the wage to last over the harvest. The wages were generally fixed for a single week, and varied from week to week. His opinion was that it would be better were farmers themselves to engage harvest hands and fix their own wages for the three or four weeks he was to have work for them. If that was done, and every man left at full liberty to do as he chose in the matter of wages, he thought it would be an improvement. The theory at present was that one man did not like to act differently from his neighbours, and feared that in fixing wages with labourers he was doing something wrong. It would be much better if it was at once understood that every man was to make his own bargain about wages, and his own arrangement about lifters and binders, and not to be held responsible in doing so that he was fixing what his neighbours should pay. That was his own solution of the question, and he believed it was the practice generally adopted in all other districts throughout Scotland.

Mr. Douglas (Athelstaneford) said there could be no doubt that reaping-machines had made farmers much more independent of outside aid at harvest. They could now command three-fourths of the necessary labour on their own farms; and strangers knowing this, did not now come in large numbers to the county. Still, a few strangers were necessary to complete the work, and everything like good and fair encouragement should be offered to these people. He advocated a difference of wages between bandsters and stookers—the latter being considered the heavier work of the two, and requiring to be better paid; while wet-and-dry men, he considered, were now absolutely obsolete, there being nearly no work for them. He agreed with Mr. Hope that it would be a good thing to engage hands at the beginning for the whole harvest—giving them a good respectable wage; but as there was diversity of labour so there should be diversity of remuneration. He did not wonder at reapers not liking the present system of fixing the wages on the Friday for the current week. They did not know when they began work how they were to be paid, and were apt to think that the matter was concocted by the farmers in their own interest. At the same time, a uniform wage throughout the harvest could not, he was afraid, be maintained. It would give rise to heart-burnings in different parts of the county. Some general approximation to uniformity was, however, more desirable than everyone being left to make his own bargain. At all events, whatever system was adopted, he was sure farmers had no desire to take advantage of their work-people; on the contrary, he was convinced it was their desire to give fair and reasonable remuneration to those they employed.

Mr. Harvey said that his experience of the old Linton port system was the reverse of satisfactory. Very considerable difficulty had then been experienced in making the wage; and he had known a second wage made after one had been agreed to, and, after all, farmers paying 2*s.* more than the port. As to the present system, he thought there had been less difficulty or complaints during the last two or three years in the matter of wages than previously. At the beginning of the harvest strangers were willing to work for anything they were offered; but after 10 days or so, they would go to Berwickshire, where they knew they would get 24*s.*, whatever they were offered in East Lothian. It was therefore hopeless to expect to prevent them going into Berwickshire. For his own part, he generally gave 14*s.* for the first two weeks; and he had paid as high as 18*s.*, and found that the men so paid were the cheapest he had. At the present time, when the labour market was so agitated, and strikes so rife, he thought it very injudicious to introduce and discuss this subject. The work-people might misconstrue their motives, and think it was for the purpose of keeping down wages. He was in favour of every man taking his own way in the matter, and he meant to do so, whatever decision the Club might come to.

Mr. Scott Skirving said that as far as he could see, Mr. Harvey was going to do very much what Mr. Hope had advised the Club to endorse with their approval. He thought that Mr. Hope, having introduced such a subject, was bound to have come before them with a more matured scheme. Mr. Hope proposed to unsettle something which existed, without putting anything definite in its place. The present plan of fixing wages was an improvement on the Linton port; but he did not think Mr. Hope's suggestion an improvement on the Haddington system. Personally, being an early man, he experienced no difficulty whatever in getting labourers at harvest time. On the contrary, his difficulty was to say "No" to those wanting work; and any year he could get his corn cut at 11*s.* and 12*s.* a week. He had therefore no interest in discussing the question. Had it been proposed to vary the wage according to the efficiency, he would have set his face against it because, however good in theory, that was quite wrong in practice, and would create a mutiny on every farm. The lifters were generally men from colliery districts, who came to the harvest for a change of air—a kind of holiday. They could make far higher wages at home than farmers could give them at harvest; and to give them lower wages than the binders would be to prevent them coming altogether. In the present discussion, they were dealing with a very limited number of the harvest labourers. Their own people, and wet-and-dry men, had their wages fixed before hand; and it was only with the residue that they had to deal. He held that the present system was a better way than Mr. Hope's proposal, that everybody should act on their own hook. Nothing could be worse than total absence of co-operation in the matter of the wages to be paid during the harvest. Unless Mr. Hope could propose something better, he would be inclined to suggest that a committee should be formally appointed to fix the wages week by week. The constitution of the committee might be made more formal and representative—if the work-people would take part in it by all means—but at any rate anything almost would be better than the Chairman's suggestion.

Mr. Harper said there could be no doubt the subject was attended with difficulties; but he thought it would simplify matters very much, and remove most, if not all, grounds of complaint, if the wages, in place of being fixed at the end of the week, as at present, were settled a week in advance. It was a just cause of complaint to ask a man to work a week before telling him how much he was to get for his labour. Were that altered, he did not see how the present system could be further improved upon. The fluctuations of supply and demand, and the exigencies of different districts, rendered it impossible to fix one wage for the whole harvest. It was complained that larger wages were paid in Berwickshire. That was true, but it was only first-class men who were taken on there. The farmers in Berwickshire would not employ the hands employed in this county, and give them the high wages which they paid to first-class men. The question lay in a nut-shell. Let them fix the wages before the work was begun, and then no one could have any reason to complain.

Mr. Smith (Whittingham) did not like Mr. Hope's suggestion. Although not intended, it had an unfriendly and unneighbourly tendency, and would lead to greater complication and dissatisfaction among all parties than the present system. Mr. Harper's suggestion was a very good one, to fix the wages in advance, and he thought that was all the length they could go in the matter at present, and that it would go far to remove any complaints against the present system.

Mr. Upton said that these travelling bands of bandsters and stookers, who went about making bargains, and then taking the highest wage offered after engaging with other farmers, were the curse of the district; and Mr. Elliot deserved the thanks of the agricultural community for the case of the kind which he had brought before the sheriff. He agreed with fixing the wage beforehand, and blamed the early men, by the low wages they paid, for driving labourers out of the county. They could not expect men to come to the county for 9*s.* or 10*s.* a week.

Mr. Skirving: I never paid 9*s.*

Mr. Paton: I have even heard 7*s.* 6*d.* mentioned.

Mr. Durie likewise concurred with Mr. Harper's suggestion.

Mr. Robertson (Newmains) thought the wages at the beginning of the harvest were generally fixed at too low a rate. It was absurd to ask an able-bodied man to work six days for 10*s.* The consequence was that after the first week they were left to get through the harvest with their own people on the farm. He proposed that the wages should be fixed on the plan suggested by Mr. Harper, by a committee composed of representatives from different districts in the county meeting at Haddington every Friday.

Mr. Smith (Stevenson Mains) said that even although a certain wage was agreed to by such a committee, no farmer in the county would be bound to adhere to it, if the circumstances of his farm, or other contingencies, were to make it advisable for him to pay a higher wage.

Mr. Hope briefly replied. He thought that substantially most of the speakers seemed to be very much of his own opinion as to farmers being left at liberty to make their own terms for harvest work. He had no wish to act in an unneighbourly or unfriendly way towards his brother farmers. Quite the reverse. But the present system was admitted to be unsatisfactory, and, although it would be an advantage to fix the wages for the coming in place of the current week, still he saw difficulties in the way of its working out, such as their forestalling the state of the labour supply. All he wished was, that, without doing any injury to their neighbour, they should be left to make their own terms for harvest labour.

Mr. Skirving said it would be a pity, since the subject had been brought up, not to do something in it, and with that view, he proposed that it should be remitted to a committee to consider the whole subject, and bring up a report at the December meeting of the Club.

Mr. DOUGLAS seconded the motion, which was agreed to; and the following committee appointed: Messrs. Hope (convener), Harvey, Douglas, Robertson, Scott Skirving, Durie, and Harper.

Notices of Books.

Annual Report on the Management of the Government Experimental Farm, for the Year ending March 31, 1871. Madras.

This blue book contains Mr. W. R. Robertson's report on the Government Experimental Farm and Farm Estate at Madras, with appendices on Dolichos uniflorus (Horse Gram) as a green fodder plant—on the Sorghum vulgare (yellow Cholum), another fodder crop—on the cultivation of Carolina Paddy—on cattle and sheep feeding experiments—on water lifts—on the cultivation of Queensland Maize. It bears, certainly, capital testimony to the energy and industry of the farm manager, and it contains a great deal of useful information for those interested in the agricultural prosperity of India. And the following extracts show that it contains good reading even for those interested in the agriculture of England:—

Deep Ploughing in Drought.—"Ransome & Sims', and Howard ploughs have been in constant use whenever weather permitted. Both large and small ploughs have been employed, the former we find useful when the ground is so dry and hard that the light plough cannot penetrate it. Both cattle and coolies work them well. The coolies readily learn the use of the plough; some are very good ploughmen, and are as proud of their skill as any English ploughman, indeed, I have seen some of them turn as straight and regular a furrow as I ever witnessed in any of our champion ploughing matches. A remarkable change has taken place in the observations of the ryots who come to see our operations. Twelve months ago, one of their greatest objections to our ploughs was, that they ploughed too deep; now, after we have had a very dry season, and they have seen for themselves how our crops throve and looked fresh and healthy while theirs were parched and dried up, they no longer make this objection. The chief objection they now advance against our ploughs is their great cost in comparison with native ploughs."

Boiling or Steeping Grain (Gram) for Food.—"In cattle feeding the results of my experiments with steeped gram have been most successful, For some time the cattle on these farms were all fed on steeped gram. Amongst many others the following experiments were made, to test the relative feeding values of boiled and steeped gram. A lot of 16 draught cattle, similarly worked, was equally divided. One lot was fed daily on 12 lb. of boiled gram and 12 lb. of ground-nut cake, while the other lot received daily 12 lb. of steeped gram and 12 lb. of ground-nut cake.

"The animals on the boiled gram—

	lb.
Weighed at the commencement of the experiment ..	6339
27 days afterwards they weighed	6576
Showing an increase of	237

The animals on the steeped gram—

Weighed at the commencement of the experiment ..	6310
27 days afterwards they weighed	6576
Showing an increase of	266

"I am so satisfied with the general results of these experiments that I will, in future, abandon altogether the boiling system, and adopt the cold water method.

"It is difficult to state the exact number of hours that it is necessary to step gram before it is fit for consumption; so much depends upon the temperature of the air: if the weather is very hot, a shorter time is necessary than during cold weather. But each experimenter can decide this for himself; it is only necessary, at a known time, to put, say, an ounce of raw gram into a tumbler of cold water, and to note at what time it ceases to expand. Under ordinary circumstances, 15 hours is sufficient."

Rotation of Crops.—"Undoubtedly many benefits result from the adoption of a rotation in cropping; still, these advantages may be purchased at too high a cost. In a well-cultivated district which is not subjected to any great atmospheric changes, but where the seasons recur with clockwork regularity and with perfect uniformity, it may be desirable to introduce a regular system of rotation. A properly-arranged rotation of crops not only enables the farmer to make the best use of the plant food in his soil, but tends to conserve these fertilising ingredients. One tribe of plants thrive and luxuriate upon food which may not only be useless, but even noxious to another tribe. One order of plants delight in lime, another in phosphoric acid, a third in potash, and so on. Some plants have tap-roots, some fibrous roots. The roots of some plants feed on the surface of the land, while the roots of others derive their sustenance from the lower stratum. Some plants are consumed by stock on the farm, and the excrements of the animals fed on them are again returned to the soil; while others are removed from the farm, and none of the fertilising matters they contain are returned to the soil. Some plants have narrow leaves, and have an upright habit of growth, and encourage the growth of weeds; while others have broad leaves, and put out lateral branches, which shade the ground and check the growth of weeds. If a certain crop is cultivated year after year on the same piece of ground, it will ultimately remove such a quantity of the particular plant food it delights in as to render the raising of a remunerative crop of this particular plant a matter of great difficulty. Granting that, by careful manuring, the elements of plant food taken up by a certain crop can be regularly returned to the soil, there are still many difficulties to contend against. Thus, it has been found that certain insects prey on particular crops, and that if these crops are repeated too frequently, they increase to such an extent as to interfere very seriously with the profitable culture of these particular crops. Again some plants—many of the leguminous for example—have large fleshy roots, in which they have stored up a large amount of nitrogenous matter, which they have elaborated from the ammoniacal matter their leaves have taken from the air; these roots, when left in the soil, decay, and afford a large quantity of excellent food for the following crop. This is well known in England, where a good Clover crop—and therefore plenty of fleshy roots—is invariably followed by a good crop of Wheat, and I have noticed here that a cereal crop after a gram crop is generally a good one. Though a large crop of gram removes a good deal of lime from the soil, it is nevertheless considered by ryots as a restorative crop, and the reason I have just given explains this apparent paradox. This farm being devoted exclusively to experimental cultivation, I have adopted no rotation of crops; it is useless to attempt to fix a rotation until we have discovered all the qualities and peculiarities of the different crops we are called upon to grow. We might afterwards devote a portion of the farm to experimental rotations, but at present we have not the space to lay aside for the purpose. On the 'Model Farm,' however, as we get the land under regular cultivation, I intend to adopt a rotation in cropping: still this cannot be done for some time. The uncertainty of our spring cropping in this locality, owing to the irregularity of the rainfall during the prevalence of the south-west monsoon, will always be a hindrance to the establishment of a fixed rotation, as the possibility or otherwise of growing a spring crop will always affect the rotation. A failure in the crop of Turnips or Clover always upsets a rotation in England; but the case must be much worse here where the weather may be such as altogether to prevent the sowing of one of the crops in the rotation. As far as my experience in this country enables me to judge, I would suggest the following dry land rotation as one worth trying on the better kinds of sandy loams in districts circumstanced like this:—

"Autumn Crop.—Maize: well manured; followed by horse gram, consumed on the land by sheep.

"Spring Crop.—Gingelly.

"Autumn Crop.—Cotton: manured with well rotted foldyard manure, with about 1 cwt. per acre of bonedust.

"Spring Crop.—Cumboo: as a fodder crop; consumed while green on the land by sheep and cattle.

"Autumn Crop.—Yellow Cholum: well manured with foldyard manure; first crop seeded, second crop eaten on the land by cattle and sheep.

"Spring Crop.—Cumboo.

"Autumn Crop.—Green gram: well manured; followed by Tenney.

"Spring Crop.—Indigo: ploughed in.

"Autumn Crop.—Maize: as before.

"This is a four years' rotation, but, instead of only including four crops as it would in England, it includes ten crops. Of course many modifications of this rotation could be adopted; indeed it is impossible to suggest a rotation that will suit all. In this rotation we have seven crops, the produce of which can be sold; the other three are restorative crops, being consumed on the land. This rotation provides for an abundant supply of fodder at all seasons of the year—also for the frequent change of crops—and it is arranged for the manure to be applied to the autumn crop during the heavier monsoon, as when applied to the spring crop, with a light rainfall, it either forces the plant too much at first, rendering it unable to withstand the effects of a drought, or, if the weather be very dry, it remains undecomposed in the land, making the soil light and puffy, and adding greatly to the injurious effects of the drought. A 'hundred acre farm,' under this rotation, will annually have 25 acres under Cotton, a much larger area than I think it would be safe to grow under any present arrangement; while during the year a surface equal to 150 acres will be available for growing crops for human consumption."

Farm Memoranda.

BANFFSHIRE, BOYNE DISTRICT: *Oct.* 28.—Crops of every kind being now secured, the plough is again at work turning over the clay to receive the action of the frost. A good portion of the grain crops was secured in this district before the weather broke, and was got in good condition, and will be of fine colour and quality; but a remainder stood long under the wet weather, and was a good deal spoiled, and was taken to the stackyard in very indifferent condition; but, thanks to steam, it has been quickly manufactured and put out of harm's way, and to all appearance the bulk is about an average of former years. But owing to it being in very indifferent condition when carried, on most farms a good portion of the stacks have wood in them, so that it is not so good judging by the size of the stackyard.

A great quantity of Barley has been threshed in this district, but is not turning out so well as last year, neither as to quantity or weight, 57 lb. and 58 lb. per bushel being the highest; but Oats are turning out well and heavy. Beans were a very good crop, and have been got in fine condition. Potatos are mostly now lifted, and are an excellent crop, and almost free from disease. Turnips in some cases are almost a failure from canker, but where free from canker are a very heavy crop, and with the open weather we have in the meantime are bulbing well. They are letting at from £9 to £10 per acre, with straw and accommodation for cattle.

We have a long list of farms in the county infected with "foot-and-mouth," but it is not of a very severe kind—it wears off lightly, but spreads very rapidly; we are, however, nearly clear of the more fatal pleuro-pneumonia.

Draining is going on mostly on every farm in the district, and the quantities of tile pipes laid down on some fields indicate that they are to be thoroughly dried.

Wheat-sowing has been going on for some time, but there does not seem to be a great breadth laid down this season. What has been sown has been got in well.

Very little of the Wheat crop has been threshed yet, except for seed, but is expected to turn out well.

Live stock of every kind is selling at high prices, grain also at a fair price; so that farmers in the meantime have little to complain of, and labourers are mostly all employed at good wages: so we are, and ought to be, thankful. *W. J.*

A PICTURE OF LANDLORD LIFE IN ABERDEENSHIRE.—We take from the *Aberdeen Press*, quoted by the *Farmer*, the following admirable speech by Sir John Clark, Bart., of Tillypronie, on the recent occasion of a dinner and ball given by his tenantry. It may be mentioned that Sir John made no response until the health of the "gudewife of the toast of the evening," as he phrased it, was proposed, "as he wanted to kill two birds with one stone." Sir John, after a few preliminary remarks to the effect that he believed the kindness shown to him and Lady Clark was due to the fact that both had resided among them, and both were sorry to confess that they had not been able to go about so much as they could have desired, observed:—

"It is a matter of pleasant surprise to us that you have been able to divine our good intentions, and taken them for the deed. Indeed, this over-appreciation of our merits is only explained to me by this—that it does so chance that in this lone corner of the Braes, since the old House of Pronie, on the very spot where we now stand, was burnt down in the '45—you have never, I believe, had a 'laird o' the lan'' fairly living and moving about among you, and really have not had an opportunity of knowing what manner of men lairds are,—in these days, at all events. I verily believe that the only ideas of many of you, as regards a laird, were those taken from Burns' 'Twa Dogs.' Now, I am not one of those who are inclined to exaggerate the great benefit derived from the residence of the 'laird o' the lan'.' Not unfrequently, in their very anxiety to improve, as they believe, the manners and habits of a district, they are all too apt to disregard too much the legitimate independence of their neighbours, and in their very benevolence, but too frequently by injudicious doles, they are also apt to destroy their self-respect and self-reliance. Indeed, I have often thought that if a landlord is but just, considerate, and reliable with his tenants and dependants, he may do many worse things than absent himself from his land. Nevertheless, in the main, I do think it most desirable that all classes should see and try to know as much as possible of each other; and I do regard it as a great misfortune to you, and to us all—for Lady Clark and I feel it very keenly—that by a most unlucky chance it does so happen that the three or four other owners in this little corner of Cromar of ours, are by circumstances precluded from living amongst us. I regret this the more, inasmuch as it also so chances that they are, one and all, as well as the good landlords we know them to be, exceptionally genial, courteous, kindly folk,—one and all of them eminently embued with the great Christian principle that 'a man's a man for a' that.' And if they could but live among us, we should all delight in their presence. Beginning, then, to the east, with Mr. Duguid Milne, at Melgum, we have one of the most cultivated lawyers of Aberdeen—an accomplished writer, a genial, friendly man, full of Scotch humour, delighting in a Scotch joke, and, altogether, a man such as would delight us to have here; but unfortunately, reversing the old saying, he has 'twa roods o' Don for ane o' Dee,' and we all know what that means, and on his 'roods o' Don' he has a large house; and he tells me that, although greatly tempted to build another here, he found he could not manage to live in three places; and therefore, to his loss and ours, we cannot have him among us. Coming over the sky line to Blackmill, young Lord Huntly, besides showing a hearty interest in the improvement of his estates, the well-being of all on them, is full of frank, friendly courtesy to all, and we should delight to have him too with his young presence among us. But his forbears set down his castle in a stupid swamp at Aboyne, instead of the dry braes here of Tulloch, and we can only have a gliff of him now and again. Hopewell is not up to our corner, rightly speaking. Moreover, Dr. Robertson is here among us, as it happens, to answer for himself; but I do not like to pass round so near it, without reminding you of the spirited manner in which he has improved that little estate. He has the advantage of us all in his great experience and knowledge of the wants of the district, and is turning that knowledge to account in bringing about improvements, sanitary and others, by which we shall all benefit. But sticking to the Braes, for which I am specially answering, and going west to Migvie, in Mr. Farquharson we have, too, the gentlest, kindliest of men, and one, if anything, most considerate of the feelings—I was almost going to say prejudices—of his tenants—and in Migvie we have just an instance of what I was saying as to the absence of a landlord, when considerate and reliable—where will you find in the district tenants who have done and are doing so well? Still I do wish it was not so far a cry to the House of Finzean. Of my brother-in-law, Mr. Coltman, I have greater delicacy in speaking. Still, I think anybody looking down from the Birkhill over his lot of the face of Cromar, and seeing snipe-bogs converted into fine farming land; whole hillsides drained and planted; crofts shaping out; plantations and belts made specially to shelter the farms; and labourers' cottages, so much wanted, gradually springing up—would be unobservant indeed if he did not perceive that we have a good landlord among us there. Unfortunately, as a comparatively young barrister, only rising into practice at the Chancery bar, he does not feel himself justified in taking any but a very short holiday, but I know that it is great self-sacrifice to him not to be able to stay longer. And it is to be recollected that it is greatly and chiefly by sticking thus perseveringly to his profession that he is enabled to carry out more improvements at Deskry. I believe his own tenants have learnt already to value him; and when he does come to stay longer in the parish, and to be more generally known in the district, they will soon find how single-minded, simple, kindly, and public-spirited he is, too. Indeed, they are all, as I said, as well as good lairds, exceptionally good chiels; and, moreover, Mr. Duguid Milne, who has written so sympathetically upon the rights of women, would never forgive me for forgetting this—they have every one of them couthy, weel-faur'd gudewives. It has been the intention of Lady Clark and myself to live more and more among you; and the assurance that this unmistakeable expression of good wishes on your part gives us that our presence among you is a pleasant one, will make us all the more inclined to do so. Indeed, if we go on piling stone upon stone, cutting drain upon drain, and making fence upon fence, as Corrie there wants me to do, upon this wee hillside, we shall very soon not be able to live anywhere else, and even to live here we shall be obliged to get you down there at the foot of the Braes to keep your eye on the bailiffs, and give us intimation of their approach in time to let us slip away, as the old laird did in the '45, by the pass of the Louise Well. But we are not come to that yet."

The Week's Work.

NOVEMBER 4: *Manure, Economy of.*—The old plan, still common, is to mix the daily cleanings from the stables, cow-houses, and stalls for fatting bullocks and young stock, in the strawyard, where the older store cattle are kept. Under this system, the liquid which flowed from the yards in wet weather, and the drainings from the housed stock were conveyed either into a tank for application to the land in a liquid form, or on to earth in a pit for making compost. Most farmers have both a liquid manure tank and a compost pit. The liquid from cattle fed in boxes or sheds is wholly absorbed in the manure. Under this mixed system there is a great waste of manure both from the housed stock and the yards, with the exception of the feeding boxes and sheds; and the two exceptions, more especially the latter (sheds), are often attended with much waste from being unequally trodden and mixed with the droppings of the cattle, so that decomposition sets in unequally. Where cattle have sheds to go under, for example, they leave much of their droppings outside, so that what is inside is often poor—fire-fanging taking place less or more all round the walls, in the corners and under racks, &c. The same takes place in feeding-boxes, where the droppings and wetted litter are neglected to be mixed equally all over the box, and trampled hard at the sides and corners with the foot, where the fatting bullock cannot tread it down.

A Covered Homestead is to be preferred to open yards, under proper ventilation and management, there being a threefold economy in favour of the former. Thus there is (1) a saving of food, (2) stock thrive better, and (3) there is no waste of manure. But the mere covering of a homestead will not of itself effect such results; on the contrary, it requires increased skill and labour under each of the above heads before the threefold economy can be effected; more attention requires to be paid to the preparation of food, the health of cattle, and the management of the manure, so as to have it of uniform quality, and free from waste and noxious gases. A sprinkling of dry earth, on the principle of the earth-closet system, is the best deodoriser, but unless the manure in the feeding-boxes and covered yards is properly mixed, the different kinds together, and the wet with the dry, and all uniformly consolidated, there will be a waste of both dry earth and manure.

Swedes and Kohl Rabi are harvested in the same way as Mangel Wurzel. They are less liable to be injured by frost than Mangels; but the difference, so far as storing is concerned, is not so great as is generally imagined; so that an equal degree of precaution is necessary to avoid rotting in the pits. Both crops suffer much in the pits, where the bulbs are broken or cut too close in topping and tailing so as to bleed, for although they may not rot, yet mouldiness takes place, thereby injuring their dietetic value to neat cattle and sheep. It is always better to throw aside broken bulbs for immediate use than to store them in pits, for, whether they become mouldy or rot, they affect and injure the whole pit.

The Stable.—Farm-horses keep in healthy working condition. Some begin about this time to reduce the allowance of corn for the winter months, but the practice is based upon old notions out of date; for by starting early and working late the horses can do nearly as much work in winter as in summer, whether ploughing or carting. Many farm-stables are dirty, badly lighted and ventilated, and horses suffer much during the long night's confinement in such places: the smell when they are entered in the morning is enough to kill a dog, so to speak.

Gorse comes into use when the grasses fail. When properly bruised it makes an excellent diet for milch cows, ewes, and lambs, and Gorse should be more extensively grown for both these purposes. Sheep also browse the plant greedily, and therefore it should be grown more largely on mountain walks both for shelter and food. If a man can cut as much in a day as will supply 16 cows, and if an acre and a half will yield this supply for a month, it is easy to calculate the value of an acre in comparison with grass or any other crop. The calculation thus made is at the rate of 3 bush. of bruised Gorse to each cow daily; with 2 bush., and roots of some kind, an acre would serve the 16 cows six weeks, and so on.

Fatting Stock, as they take to their winter food, will bear a little forcing. The expression will not perhaps be relished by some, any more than the practice itself, but successful experience has long ago proved to farmers that unless their bullocks and sheep begin to lay on carcase weight fast about this time, it will not pay; hence the practical rule, "Start your beef and mutton manufactories into full play in November." To have animals in the full enjoyment of the highest degree of health on winter food, is a totally different thing from gross obesity. The latter should be carefully avoided.

Notices to Correspondents.

BONE DUST: *H. T.* You had better boil the bones in the first place, as you propose, and then, when the bones are dry, they may be broken small with a hammer, if you have no other implement for the purpose. When broken into half-inch dust, apply about 50 lb. of sulphuric acid to every cwt. of bones, in a small pit dug in the clay soil, having first poured in as much water as the dry bones will take up.

SUGAR-BEET: *Mush.* Land in good condition will grow Sugar-Beet without manure, but you ought to apply a dressing in autumn. It is worth your while to pay a visit to Lavenham, Suffolk, and learn their experience there. We do not know of any market for it on the South-Western Railway.

Markets.

HOPS.

BOROUGH MARKET, Nov. 1.

Messrs. Pattenden & Smith report the market very firm, with a good retail inquiry for consumption, and all the best brewing descriptions are rapidly becoming absorbed. Really choice sorts are with great difficulty to be met with.

MARK LANE.

MONDAY, Oct. 30.

The supply of English Wheat to this morning's market was moderate. The best samples were taken at last week's prices, but out-of-conditioned parcels were rather cheaper. The attendance was good, and for foreign there was a fair retail demand, at late rates. Malting Barley was 1s. per qr. cheaper, grinding unaltered in value. There was no change in Beans or Peas. New Oats were rather lower, good old Corn fully as dear. Maize was 6*d.* to 1*s.* per qr. cheaper. No alteration in the value of Flour.

PRICE PER IMPERIAL QUARTER.	*s. s.*		*s. s.*
WHEAT, Essex, Kent, Suffolk..White	55—60	Red......	55—58
— fine selected runs ....do.	58—62	Red......	57—59
— Talavera	60—64		
— Norfolk	—	Red......	—
— Foreign	50—69		
BARLEY, grind. & dist., 26*s* to 31*s* .Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....35*s.* to 38*s.*..Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s.*..Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	36—44
MAIZE	—	Foreign ..	31—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Nov. 1.

The Corn Exchange to-day was poorly attended, and the business transacted was insignificant. There was a limited supply of English Wheat, which changed hands slowly at about late rates. Foreign Wheat was a good supply. The demand was inactive, but prices were without important variation. Choice Barley was steady, but inferior was neglected. Malt was cautiously dealt in, at previous values. The supply of Oats was good. Sales were effected quietly, on former terms. Beans and Peas were steady in value, with a fair inquiry. The Flour trade was dull, and prices occasionally easier.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	100	640	—	—
Irish ..	—	—	—	—
Foreign ..	14,660	1750	13,380	720 1430 brls.
	14,760	2390	13,380	

LIVERPOOL, Oct. 31.—There was a fair average attendance. Fine qualities of old red Wheat bring Friday's full rates, whilst new is irregular in value, say 1*d.* to 2*d.* per cental lower; white unaltered, and the business is only small. Flour a dull sale, and nominally cheaper. Beans without change. Oats and Oatmeal firm. Indian Corn pressed ex quay at 6*d.* per qr. decline; mixed, 33*s.* 6*d.*

AVERAGES.

	Wheat.	Barley.	Oats.
Sept. 23	57*s* 7*d*	35*s* 6*d*	23*s* 6*d*
— 30	57 3	35 10	23 10
Oct. 7	56 3	35 8	23 8
— 14	56 5	36 2	22 6
— 21	56 6	36 10	23 2
— 28	56 7	37 7	23 5
Average ..	56 10	36 2	23 4

METROPOLITAN CATTLE MARKET.

MONDAY, Oct. 30.

The number of Beasts is considerably larger, but the average quality is not so good as on last Monday; trade is active for the choicest descriptions, and slow for other kinds; prices on the average are very little altered. Sheep are more plentiful, both of English and foreign; we have a fair average demand, yet prices are scarcely as good as of late. Calves are lower in quality, and trade is slow. Our foreign supply consists of 3420 Beasts, 12,780 Sheep, 224 Calves, and 10 Pigs; from Ireland, there are 700 Beasts; and 1220 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. .	5 8to5 10	Best Long-wools	6 6to6 8
Best Shorthorns..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	3 4—5 8
		Pigs	3 4—4 8

Beasts, 5340; Sheep and Lambs, 21,030; Calves, 255; Pigs, 175.

THURSDAY, Nov. 2.

The number of Beasts is larger than last week, but choice qualities are not plentiful; in consequence there is little reduction in price, although trade is slow. The supply of English Sheep is again very small, of foreign rather larger than last Thursday; trade is not brisk, yet there is scarcely any alteration in prices. There is a better demand for Calves; choice qualities are readily disposed of, at considerably higher rates. Our foreign supply consists of 448 Beasts, 5920 Sheep, and 201 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8to5 10	Best Long-wools	6 4to6 8
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	3 8—6 4
		Pigs	3 4—4 8

Beasts, 1160; Sheep and Lambs, 8120; Calves, 294; Pigs, 60.

METROPOLITAN MEAT MARKET, Nov. 2.

Best Fresh Butter	18*s.* per dozen lb.
Second do. do.	16*s.* ,,

Small Pork, 4*s.* 8*d.* to 5*s.* 4*d.*; Large Pork, 3*s.* 4*d.* to 4*s.* 4*d.* per 8 lb.

ENGLISH WOOL.

During the past week we have had a steady market, without material change in price; the tendency, however, is good, and if monetary matters settle down quietly, we think there is every chance of an improvement before the close of the year. Prices of colonial wool are perceptibly dearer, and those kinds which compete with English are in short supply, and much inquired for.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Nov. 2.

Prime Meadow Hay,	85*s.* to	100*s.*	Clover, old	120*s.*	135*s.*
Inferior do.	45	65	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	110	120
Inferior do.	—	—	Inferior do.	55	95
Straw	36	45			

CUMBERLAND MARKET, Thursday, Nov. 2.

Sup. Meadow Hay	105*s.* to	112*s.*	Inferior Clover ..	90*s.* to	115*s.*
Inferior do.	70	95	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	126	135			

JOSHUA BAKER.

SEED MARKET.

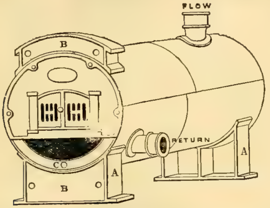
Our markets have been fairly attended during the past week, but the amount of business passing has been limited. New American red Clover excites as yet but little attention in this country; there is a large demand both from France and Germany. Cable advices just to hand from New York quote an advance there of 1*s.* to 2*s.* per cwt. White Clover is in fair supply, and is held at late rates. Alsike is without alteration. For new imported Italian we have a brisk trade, at enhanced currencies; prices are rising in France. Perennial Rye-grasses are also tending upwards. Of Sainfoin seed the English crop is said to be poor. Hemp seed is for the moment exceedingly scarce, and must be noted 2*s.* per qr. higher. Canary seed is now offering at a very moderate figure. For Rape and Mustard values are steady. Feeding Linseed is firm. Haricot Beans and Boiling Peas are without change.

JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

COALS.—Nov. 1.

Ryhope Hartley, 18*s.* 6*d.*; Walls End Harton, 18*s.* 6*d.*; Walls End Braddyll's Hetton, 19*s.* 3*d.*; Walls End South Hetton, 20*s.* 3*d.*; Walls End Heugh Hall, 19*s.* 6*d.*; Walls End Original Hartlepool, 20*s.* 6*d.*; Walls End South Kelloe, 19*s.* 6*d.*; Brancepeth Cannel, 18*s.*—Ships at market, 17; sold, 17; at sea, 20.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,
"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.
"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

AUSTIN & SEELEY'S STOCK NOW COMPRISES

200 designs of FOUNTAINS, at from £10 to £400.
24 SUN-DIAL PILLARS, at from £2 to £9.
20 BASKETS, from 15*s.* to £35.
14 SHELLS, from 12*s.* to £15.
52 STATUES. 44 SMALL FIGURES.
70 FIGURES of ANIMALS and BIRDS.
300 kinds of FLOWER VASES, at from 10*s.* to £50.
PEDESTALS of all sizes.
18 FLOWER BOXES for Windows.
BALUSTRADING.
34 BAPTISMAL FONTS.
26 CRESTS and FINIALS for Gate Piers.
22 PORTE-FLEURS and TAZZAS, of large diameters, for Lawns.

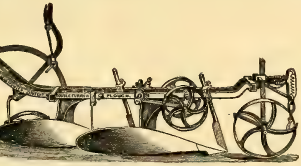
AUSTIN'S STONE, invented in 1826, is Waterproof, and no Sand is used in it.

There is no necessity to remove the earth from Vases during winter.

All the Kerbed Flower Beds in the Royal Horticultural Gardens and the Regent's Park made by A. & S.

369 to 375, EUSTON ROAD, REGENT'S PARK, N.W.

RANSOMES' DOUBLE PLOUGHS,



WITH PATENT CENTRE LIFTING WHEELS.

RANSOMES, SIMS, & HEAD

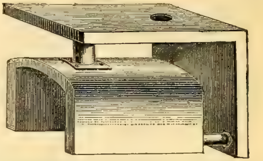
Fit all their Double Ploughs with either long or short breasts as required, so as to leave the Furrows whole or in a broken or pulverised state. They are very simple and easy to manage. They are fitted with the best and most durable shares and wearing parts, as well as with their "Patent Axle" Plough Wheels, which entirely exclude dirt, and are very durable. RANSOMES, SIMS & HEAD guarantee these Ploughs to perform their work in a perfectly efficient manner, and to be unsurpassed for lightness in draught. Sold by all respectable Implement Dealers.

Prices, with Patent Wheels, Lifting and Turning Apparatus, and Adjustable Beams:—
R N D D, £7 15s., and **£8 15s.; R N F D, £9 15s.; R L C D,** with Swivel Head and Fixed Beams, **£7;** Adjustable, **£8.**

PRIZE LISTS and ILLUSTRATED CATALOGUES FREE on APPLICATION.

RANSOMES, SIMS, AND HEAD, IPSWICH.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 ,,	18 ,,	24 ,,	450	6 0 0
20 ,,	18 ,,	30 ,,	600	7 0 0
24 ,,	24 ,,	24 ,,	700	8 0 0
24 ,,	24 ,,	30 ,,	850	10 0 0
24 ,,	24 ,,	36 ,,	1,000	12 0 0
24 ,,	24 ,,	48 ,,	1,400	15 0 0
28 ,,	28 ,,	60 ,,	1,800	20 0 0
30 ,,	30 ,,	72 ,,	2,600	30 0 0
36 ,,	36 ,,	96 ,,	4,500	50 0 0
48 ,,	48 ,,	108 ,,	7,000	75 0 0
48 ,,	48 ,,	144 ,,	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES & SONS.

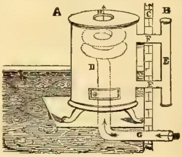
Price Lists of HOT-WATER PIPES and Connections, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

GEORGE'S PATENT CALORIGEN,

For WARMING and VENTILATING.

PRICES: —
COAL CALORIGEN, £6 6*s.* | GAS CALORIGEN, £3 3*s.*



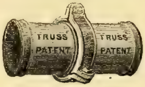
A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

J. F. FARWIG AND CO.,
36, Queen Street, Cheapside, London, E.C.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

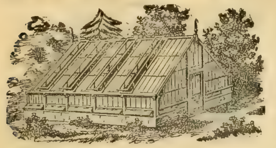
TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

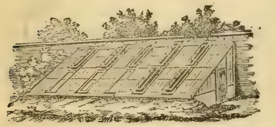
T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S.E.

RICHARDSON'S
PATENT HORTICULTURAL BUILDINGS





Are STRONG, DURABLE, ORNAMENTAL, and CHEAP. The MOST PERFECT SYSTEM OF VENTILATION, combined with COMPLETE PROTECTION FROM THE WEATHER. A free and copious circulation of air in any length of range obtainable instantaneously through every part, or at the top alone, by a single handle

These Houses are PORTABLE, and most easily fixed, without the disturbing of any glass, the use of nails, or a screw-driver.

Improved Portable and other kinds of GREENHOUSES, CONSERVATORIES, &c, of the best construction, designed and supplied, carriage paid, to any part of the country.

Illustrated Price Lists free on application to the Makers, enclosing a stamp for postage.

Apply to W. RICHARDSON AND CO, Horticultural Builders, Darlington.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating
GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

Improved Conical.

Tubular Boiler.

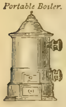
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24s each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52s. 6d. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60s. each.

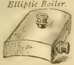
Portable Boiler.



Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

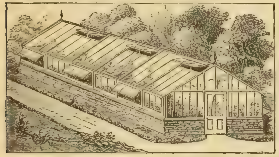
INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.



Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S E. (Surrey side Blackfriars Bridge). Price List on application.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C. W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft by 12 ft.	40 ft by 16 ft.	60 ft. by 20 ft.	100 ft by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s.	each
" " glazed, 16-oz good sheet glass	6s.	"
6 ft. " " 2 in thick, unglazed	5s.	"
" " glazed, 16 oz good sheet glass ..	11s.	"
Portable box containing one 6 ft by 4 ft. light, painted four coats, ready for use	30s.	"
Portable box containing two ditto, 6 ft. by 8 ft.	55s.	"

Estimates given for Conservatories or Greenhouses to any Design.

Smokeless Stoves.—No Flues.

NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming; require no attention; with one supply of fuel burn 12 hours.

The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12s 6d. to Six guineas PATENT FUEL, 18s. per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4s. 6d. and 9s.

AMERICAN CHARCOAL BOX IRONS.
Price 5s., 6s., and 7s.

PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21s. and 10s 6d Medical Testimonials and Prospectus Free on application

SWAN NASH, Ironmonger, 253, Oxford Street; and JOYCE'S STOVE DEPOT, 119, Newgate Street.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

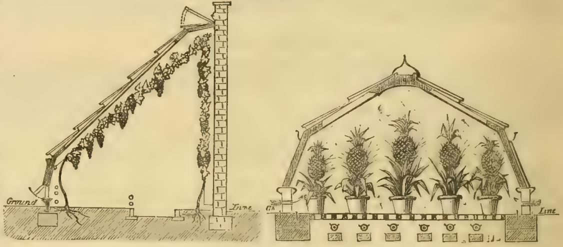
Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May 24, 1862, page 476.*

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

BY ROYAL LETTERS PATENT.



THE MOST PERFECT HORTICULTURAL STRUCTURE IS THE

IMPERISHABLE HOTHOUSE,

Perfectly portable, formed of Glass, Iron and Concrete. No Masonry, no Brickwork, no Putty, and little Paint.

Manufactured under the Patent of Mr. W. P. AYRES by the IMPERISHABLE HOTHOUSE COMPANY

NEWARK-ON-TRENT, NOTTINGHAMSHIRE.

The Company are now in a position to execute orders to any extent, for Plant and Forcing Houses of all descriptions, Railway Stations, Market Halls, Workshops, and Glass Roofs of all kinds.

A BOOK of DESIGNS, with explanatory particulars, will be forwarded in exchange for six stamps, and Special Designs and Estimates will be supplied when required. HEATING by HOT WATER upon the most approved principles. Noblemen or Gentlemen waited upon in any part of the country.

MANAGER—WM. P. AYRES,
IMPERISHABLE HOTHOUSE COMPANY, NEWARK-ON-TRENT.

J. C. & J. S. ELLIS,

HORTICULTURAL ENGINEERS,

NORFOLK FOUNDRY, SHEFFIELD,

MANUFACTURERS and ERECTORS of HOT-WATER APPARATUS

OF EVERY DESCRIPTION, FOR
HEATING GREENHOUSES, CONSERVATORIES, HOTHOUSES, CHURCHES, PUBLIC BUILDINGS, PRIVATE RESIDENCES, WAREHOUSES, &c.

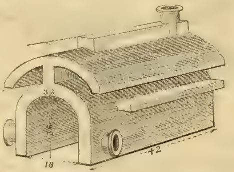
The great advantages of these Boilers are:—

The fire acting directly under the flow pipe, the water begins to circulate immediately.

The Flues all being formed by a continuous water-way, the fire and all the hot gases are brought in direct contact with the heat-absorbing surface of the Boiler, thereby giving a greatly increased amount of power, and by which an immense saving of fuel is effected.

These Boilers offer great facilities for banking-up the fire, and will burn easily from 12 to 14 hours without attention.

The arrangement of Soot-doors in the brickwork is such that all the flues can be cleaned in a few minutes.



PATENT DOUBLE-ARCH BOILER.

TESTIMONIALS.

"The Gardens, Chatsworth, January 19, 1871.

"DEAR SIR,—After using your Patent Double-Arch Boiler for the past 12 months, enables me to speak with a practical knowledge of its merits; and I have no hesitation in saying, out of many Boilers, of all sorts of construction, we have in use, it is the most efficient, and I believe it to be the best Boiler extant; neither do I think there is another that exposes so much surface to the direct action of the fire. Its efficiency, economy in fuel, and the minimum of attention, renders this Boiler a valuable improvement in Horticulture, and it reflects great credit on your good sense in designing it. I shall be glad to show the one I have in use to any person calling at Chatsworth.
I remain, dear Sir, yours truly,
"THOMAS SPEED.
"Mr. Ellis."

"Westbourne Gardens, Sheffield, October 27, 1870.

"DEAR SIR,—Your Patent Double-Arch Boiler, that you have put down for us lately, to heat the whole of our houses, answers admirably. Its heating surface exceeds all others which I am acquainted with. The small amount of fuel required, the way it is set, and the arangement of soot-doors, renders it the most complete and economical Boiler I have had to do with.—Believe me, Sir, yours truly,
"W. H. BIRD.
"Mr. Ellis, Norfolk Foundry, Sheffield."

BICKLEY'S PATENT HORIZONTAL SASH-BARS require neither Paint nor Putty; an orchard-house or greenhouse, &c., may be easily, cheaply, and quickly made with them by an amateur. Four hundred feet can be firmly glazed or unglazed in one hour. Drawings, &c, for 1 stamp, of the Inventor and Patentee,
THOMAS A. BICKLEY, 70, Smallbrook Street, Birmingham.
Proceedings in Chancery will be taken against any person infringing this patent.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.

They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti Cloche can be made any size.

Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

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MESSRS. G. D. MARENDAZ AND FISHER, importers of ARCHANGEL and St. PETERSBURG MATS, dealers in TANNED GARDEN NETTING, TIFFANY, LABELS, TARRED and other TWINES, LINES, &c.
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4-4 Scrim, from 2*d.* to 5*d.* per yard, advancing ¼*d.*
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Three yards wide	2*s.* 10*d.* per yard.
Four yards wide	3*s.* 10*d.* per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.
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GARDEN BOXES, not liable to rot, can be made of any size
Prices from 16*s* 6*d* [Prices from 35*s.*
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
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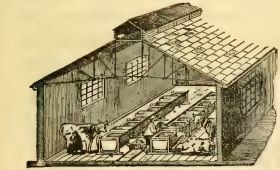
For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

Prospectuses free of COTTAM AND CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

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THE PUBLIC ARE CAUTIONED AGAINST
DANGEROUS IMITATIONS.

The Improvement of Landed Estates.

THE LAND LOAN and ENFRANCHISEMENT COMPANY (incorporated by special Act of Parliament) ADVANCES MONEY—
1st,—To the Owners of Settled and other Estates, for the Erection of FARM BUILDINGS and COTTAGES, and/or the DRAINAGE, IRRIGATION, ENCLOSING, CLEARING, and general improvement of Landed Property in any part of the United Kingdom.
2d,—To the owners of Settled Estates in England, for the ERECTION or COMPLETION of MANSIONS, STABLES, and OUT-BUILDINGS.
3d,—To Landowners generally, to enable them to Subscribe for Shares in Companies for the Construction of RAILWAYS and NAVIGABLE CANALS which will beneficially affect their Estates.
4th,—To Incumbents, for the IMPROVEMENT of their GLEBE LANDS, by DRAINAGE, and the Erection of FARM-BUILDINGS and COTTAGES.
5th,—To Copyholders, for the ENFRANCHISEMENT of COPYHOLD LANDS.

The amount borrowed, with the expenses, would be charged on the Estates benefited, and repaid by a Rent-charge terminating in 25 years.

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Forms of application, and all further particulars, may be obtained of Messrs RAWLENCE AND SQUAREY, 22, Great George Street, Westminster, S W., and Salisbury; of Messrs. ASHURST, MORRIS, AND CO., 6, Old Jewry, London, E.C.; of Messrs. GILLESPIE AND PATERSON, W.S., 81A, George Street, Edinburgh, Agents for the Company in Scotland; and at the Offices of the Company as below.
T. PAIN, Managing Director.
EDWIN GARROD, Secretary.
Land Loan and Enfranchisement Company,
22, Great George Street, Westminster, S.W.

THE LANDS IMPROVEMENT COMPANY.
(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT.)
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Notice.

NEW GARDENING JOURNAL. On November 25 will be published the First Number of THE GARDEN, a Weekly Illustrated Journal, devoted solely to Horticulture in all its branches.

THE GARDEN is projected by, and will be under the editorship of, WILLIAM ROBINSON, F.L.S., Author of "Alpine Flowers for English Gardens," the "Parks, Promenades, and Gardens of Paris," &c., &c.; and the best writers in every department of Gardening will be contributors to its pages.

Advertisements, to insure insertion in the First Number, should be forwarded without delay to the office.

THE GARDEN may be obtained through all Newsagents and at the Railway Bookstalls, at 4*d* per copy. It may also be had direct from the Office at 5*s* for a Quarter, 9*s* 9*d.* for a Half-year, and 19*s* 6*d.* for a Year, payable in advance Single Copies (post free), 4½*d.*

The Office of THE GARDEN will be at 37, Southampton Street, Strand (next door to the *Saturday Review* Office), where all Communications should be sent.

Just Ready,
REPORT on the CULTIVATION, by MEANS of SEWAGE IRRIGATION, of the LODGE FARM, BARKING, for the year ending August 31, 1871. By H. J. MORGAN.
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Now ready, price 1*s.* sewed, or 2*s.* bound and interleaved as a Diary,
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(*By Appointment to the Royal Horticultural Society.*)
To HORTICULTURAL IMPLEMENT MAKERS, NURSERYMEN, FLORISTS, and OTHERS.

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Moderator Lamps, and Lamps for India.
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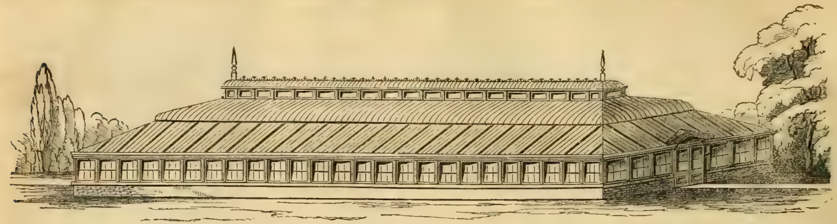

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Designed and Built, combining all the latest Improvements, so as to answer their intended purposes without risk of disappointment.

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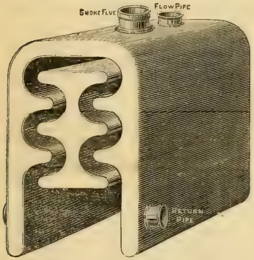

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Are better than Cast-Iron Boilers, because—

THEY DO NOT CRACK,
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THEY WILL BURN ANY KIND OF FUEL,
THEY ARE SAFE FROM SUDDEN FAILURE.

The internal curved lines of this Boiler giving FOUR INTERNAL CURVED SURFACES to the DIRECT ACTION of the FIRE, which being STOPPED at EVERY PROJECTION or CONVOLUTION, must, to those who understand the Science of Heat, be a convincing proof of the perfect combustion and exhaustion of Heat on the surfaces of the BOILER BEFORE ESCAPING INTO the CHIMNEY. In addition to the foregoing ADVANTAGES, the Fire also acts on the ENTIRE EXTERNAL SURFACE, which undoubtedly gives it the IMMENSE ADVANTAGE of being decidedly

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A trial will convince all who use this Boiler of its VAST SUPERIORITY over all others in point of ECONOMY, and being made of the best WELDED WROUGHT IRON, its safety and durability may be thoroughly relied upon. There is no danger of cracking and breaking down, so common to all forms of Cast Iron Boilers.

List of Prices on application; also, "Book of Designs of Horticultural Buildings."

H. ORMSON is prepared to make a Boiler on his Patent Convoluted Principle to Heat WITH SAFETY a larger amount of Pipe than any "One" Boiler in the World can now be found doing.

H. ORMSON also supplies the WELDED WROUGHT-IRON COMBINED SADDLE and FLUE BOILERS.

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by William Richards, at the Office of Messrs. Bradbury, Evans, & Co, Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said William Richards, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, November 4, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 45.—1871.] SATURDAY, NOVEMBER 11. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Notice to Subscribers.

THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

ROYAL HORTICULTURAL SOCIETY,
SOUTH KENSINGTON, W.
DATES of MEETINGS for 1872.
JANUARY 17.
FEBRUARY 14.
MARCH 6 and 20.
APRIL 3 and 17.
MAY 1, 15, and 16.
JUNE 5, 6, 7, and 19.
JULY 3 and 17.
AUGUST 7 and 21.
SEPTEMBER 4 and 18.
OCTOBER 2.
NOVEMBER 6.
DECEMBER 4.

Schedules are now ready, and can be had on application to
JAMES RICHARDS, Assistant Secretary.

THE PETERBOROUGH CHRYSANTHEMUM and FRUIT SHOW will be held on FRIDAY, November 24, and NOT on the 15th, as previously advertised. Schedules and Forms of F. G. BUCKLE, Secretary.

National Schools, Seer Green, near Beaconsfield.

THE REV. J. M. TAYLOR, VICAR, earnestly solicits AID towards the SUPPORT of these SCHOOLS. Living of small value. Population 400, almost entirely of the Labouring Class. Children in daily attendance, 40; on Sundays, 40. Donations kindly forwarded to the VICAR acknowledged in the *Gardeners' Chronicle.*

JOHN WATERER AND SONS, Bagshot, Surrey, are the EXHIBITORS of RHODODENDRONS at the ROYAL BOTANIC GARDENS, Regent's Park. Their Descriptive CATALOGUE of these Plants is now ready, and may be had on application, by letter, addressed to Bagshot.

☞ The Catalogue fully describes colours, prices, &c., of the Rhododendrons.

TELEGRAPH CUCUMBER SEED (true).—New Seed can be supplied, from own saving, in 1s. packets, post free.
A. WATKINS, Nurseryman, Bishop Stortford.

SEEDLING SEAKALE, 1-yr. old.—30,000 of these to offer. Prices extremely moderate.
J. GREEN, Garforth Nursery, near Leeds.

To Nurserymen and Others.

SEAKALE ROOTS for SALE, extraordinarily fine growth, 8s. per 100, cash on delivery.
SAMUEL ALLAWAY, Earl's Court Farm, Old Brompton, S.W.

MAGNIFICENT SEAKALE ROOTS, extra strong, for forcing, 12s. 6d. per 100; magnificent ASPARAGUS ROOTS, extra, for forcing, 10s. 6d. per 100.
WILLIAM HOOPER, New Wandsworth, S.W.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

To the Trade.—Orders now Booked for

TUBEROSES, LILIUM AURATUM (not from Japan), and new kinds of AMERICAN POTATOS, on advantageous terms.
HOOPER AND CO., Covent Garden, London, W.C.

PAMPAS GRASS.—Stong plants, in pots, 3 feet high. Price by the 100 or 1000 on application.
SUTTON AND SONS, Nurseries, Reading, Berks.

New Grass Seeds, &c., for Exportation.

MESSRS. SUTTON AND SONS, having completed the cleaning of their NEW GRASS SEEDS, will be pleased to make special quotations for large quantities. NEW GRASS SEEDS are the best for exportation.
Royal Berks Seed Establishment, Reading.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
In Collections to suit Large and Small Gardens.
10s. 6d. | 21s. | 42s. | 63s. | 84s.
No charge for packing. Carriage free.
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
EVIDENCE OF QUALITY:—
From Miss J. Smith, *Enniskillen, April* 19, 1871.

"The Hyacinths supplied by you are the admiration of the country."

JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
In Collections for the Conservatory or Drawing Room.
10s. 6d. | 21s. | 42s | 63s. | 84s.
Packing and carriage free.
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

Roman Hyacinths.

HOOPER AND CO. have a quantity of these to DISPOSE OF.
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Dutch Flower Roots.

G. M. KEMP-WELCH'S CATALOGUE of the above is just published, and will be sent free by post on application. The Bulbs are of the finest quality, and moderate in price Early orders will oblige. The Catalogue is of a convenient size for the pocket.
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Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived. and have every appearance of being above the average quality, for which they have been noted so many years.

CATALOGUES of the above, also FRUIT TREES and general NURSERY STOCK, post free on application.
Highgate Nurseries, London, N.

SUTTONS' EXHIBITION HYACINTHS.
See page 1449 of this day's *Gardeners' Chronicle.*

SUTTONS' HYACINTHS for BEDS.
See page 1449 of this day's *Gardeners' Chronicle.*

SUTTONS' HYACINTHS for RIBBON BORDERS.
See page 1449 of this day's *Gardeners' Chronicle.*

SUTTONS' CHOICE TULIPS.
See page 1449 of this day's *Gardeners' Chronicle.*

HYACINTHS and TULIPS Selling off, with 20 per cent. discount for cash, to the Trade only, at G. ROELINK'S, 14, John Street, Minories, E., Agent for E. DE BOER, Jun., Florist Uitgerst, near Haarlem, Holland.

LATE SHOW TULIPS.—A choice assortment, comprising the leading varieties exhibited at Manchester and the Crystal Palace. 100 Roots, with names and description, 42s. The property of a very old Grower, compelled to decline their cultivation. LIST on application to
Mr. H ALEXANDER, Seedsman, 299, Goswell Road, E.C.

VIOLETS, VIOLETS.—Strong Plants, in BLOOM, from the open ground, of the following varieties for SALE, viz., Single—The Czar; red, Obliquia striata variegata, 4s. 6d. per dozen; Scotch Blue and White, 2s. per dozen. Double Varieties—Neapolitan; red, The Queen, and King of Violets, at 5s.
T. L. MAYOS, Seedsman and Florist, Lugwardine, Hereford.

FIVE HUNDRED THOUSAND strong 2 to 6-yr. old Seedling and Transplanted WHITE HAWTHORN QUICK. Must be Sold this season, as the ground has to be cleared.
GEO. WINFIELD, Gloucestershire Seed Warehouse, Gloucester.

EXTRA fine Transplanted COMMON LAURELS, 6 feet high, and very bushy; magnificent plants.
WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

LARCH for SALE.—A large quantity of fine transplanted Larch, from 1½ foot to 3½ feet; also some WELLINGTONIA GIGANTEA, ABIES DOUGLASII, Common SPRUCE, and ABIES MENZIESII, from 6 to 8 feet.
H. CARRIER, Dodington, Sittingbourne, Kent.

Forest Trees to Offer.

TRANSPLANTED LARCH, SPRUCE, SCOTCH, SYCAMORE, BIRCH, OAK, ALDER, and HORSE CHESTNUT.
JAMES HUDDART, Farrington Hall Nursery, Preston.

Oaks.—Samples Sent on Application.

WOOD AND INGRAM offer BRITISH OAKS, fine plants, from drills, 3 to 4 feet, 35s per 1000; 4 to 5 feet, 45s. per 1000. Trade prices on application.
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Seedling and Transplanted Forest Trees, &c.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., hold a large stock of the above, quotations for which may be had on application
One and two-yr. Seedling LARCH particularly fine this season

MAURICE YOUNG'S NEW TRADE LIST of CONIFERÆ, HARDY EVERGREEN TREES and SHRUBS, ROSES, RHODODENDRONS, JAPANESE PLANTS, NEW AUCUBAS, &c., is now ready, and will be forwarded on application.
Milford Nurseries, near Godalming, Surrey.

HAWS, HOLLYBERRIES, ACORNS, HORSE CHESTNUTS, and BEECH MAST, 2 and 3-yr.; ASPARAGUS and SEAKALE ROOTS. For prices f.o.b. at Waterford apply to
D. H. HIGGINS, The Clonmel Nurseries, Clonmel, Ireland.

WANTED to PURCHASE, a quantity of good healthy Standard CHERRY TREES, 6 feet stems—Eltons, Biggareaus, Blackhearts, Napoleon, and Waterloo. State price p 100.
EDWARD THOMAS, Harold Nursery, Sittingbourne, Kent.

WANTED, RED, WHITE, and BLACK CURRANTS, also named GOOSEBERRIES, good Saleable Plants.—Address, stating age and lowest price per 1000 or per 100 to
A. Z., *Gardeners' Chronicle* Office, W.C.

WANTED, BLACK ITALIAN POPLARS, 1-yr. Cuttings.—Apply, stating height, price and quantity, to
EDWARD SANG AND SONS, Nurserymen, Kirkcaldy.

WANTED, strong, clean LARCH, from 2½ to 3 feet, and 3 to 4 feet; also strong ASH, 4 to 5 feet. Send samples, and state price per 1000, to
Messrs. WOOD AND CO., Barbourne Nurseries, Worcester.

WANTED, in the Trade, Standard and Pyramid Double White and Double Scarlet THORNS, clean and well-grown. Address, stating lowest Trade price, to
J. Z., *Gardeners' Chronicle* Office, W.C.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford.

TEA-SCENTED ROSES, in pots.—The largest stock of Tea-scented Roses in the Kingdom. They may be had in small pots, also established in 6-inch pots, for forcing and greenhouse culture.
WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

ROSES.—Standards, 20s.; Half, 15s.; Dwarfs, 12s. per dozen. And other Nursery Stock. LISTS on application.
A. C. WILKIN, Tiptree, Kelvedon, Essex.

COMMON CHESTNUTS, 4 ft., 5s.; 5 ft., 10s. p. 100.
OAK, BEECH, ELM, 3 to 4 feet, 30s. per 1000.
SYCAMORES, 7 to 9 feet, 6s. per dozen. And other Nursery Stock.
A. C. WILKIN, Tiptree, Kelvedon, Essex.

Planting Season.—Roses, Fruit Trees, &c.

W. KNIGHT intimates to intending Planters that his NEW CATALOGUE of HARDY TREES and PLANTS is now ready for distribution, containing faithful descriptions of his stock, which is unsurpassed in the Trade. Catalogues free.
Floral Nurseries, Hailsham, Sussex.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

CHEAP VINES (1-yr. old Canes from Eyes), ROSES, FERNS, and other Plants.
Priced LIST forwarded on application.
KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Vines—Vines.

JOSEPH MEREDITH has this season a splendid stock of all the best and newest kinds of well-ripened and short-jointed CANES. Descriptive CATALOGUES free.
The Vineyard, Garston, near Liverpool.

GRAPES the FIRST YEAR.
Six bunches for 5s. | Twelve bunches for 10s. 6d.
The finest Canes in the Trade.
R. TANTON, F.R.H.S., The Nurseries, Epsom; and Boro' End, London Bridge, S.E.

Mulberries—Mulberries.

PONSFORD AND SON offer the above, by the dozen or hundred, fine, clean and healthy.
Loughborough Park Nurseries, Brixton, Surrey, S.W.

Mulberries—Mulberries.

SAM DYER offers to the Trade a fine stock of well-grown MULBERRIES. Price per dozen or 100 on application.
The Nurseries, Bridgwater.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading

---

ENGLISH YEWS.—Some thousands to offer, 2 to 3 feet, very well furnished and good rooted. Prices on application to
J. SANDY AND SON, The Nurseries, Stafford.

Planting Season.

THE PRICED LIST of SEEDLING and TRANSPLANTED FOREST TREES, SHRUBS, ALPINES and FERNS of WM. URQUHART AND SONS, Dundee, may now be had on application.

Novelties of the Season.

SWEET-SCENTED RHODODENDRONS and AZALEAS, raised by ISAAC DAVIES, and awarded First-Class Certificates of Merit at the Spring Flower Shows of Manchester and Liverpool. A descriptive priced LIST forwarded to any address on application to
ISAAC DAVIES, Nurseryman, Ormskirk.

Trade List of Palms, Ferns, &c.

J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send free his special cheap LIST of above, containing many good things.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

To the Trade.

BETA CHILENSIS (True), the variety grown so extensively in all the London Parks and Public Gardens.—The Undersigned have a small quantity to offer. Price per ounce on application.
BUTLER, McCULLOCH AND CO., Covent Garden Market, W.C.

EVERY GARDEN REQUISITE
KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

Transit Agency for Plants, Seeds, &c.

C. J. BLACKITH AND CO., late BETHAM & BLACKITH, Cox's and Hammond's Quays, Lower Thames Street, London, S.E.
Forwarders to all parts of the World.

THE PINE-APPLE NURSERY COMPANY,
32, Maida Vale, Edgware Road, W.
JOHN BESTER, Manager of the Nursery and Seed Department.
The Company guarantee to their Customers Punctuality, Liberality, and Genuine Articles. The favour of a visit is earnestly solicited.

New Soft-wooded Plants, 1871.

H. CANNELL begs to inform his Friends and Customers that his AUTUMN CATALOGUE, containing all the above, is now ready, and will be sent free on application.
New Florist Flower and Florist Flower Seed Merchant, Woolwich.

To the Trade.

STUART AND CO., of Nice, and No. 5, Tavistock Row, Covent Garden, London, W.C., will shortly forward their WHOLESALE LIST for 1872, containing many NOVELTIES and CHOICE SEEDS.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON & SONS, "NEWTON" Nurseries, Chester.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

Orchids.

HAVING A VERY LARGE STOCK,

MR. WILLIAM BULL begs to offer the following ORCHIDS, at the extremely Low Prices annexed :—

	Each.		6 Plants.	
	s.	d.	s.	d.
VANDA ROXBURGHII	12	6	63	0
AERIDES LINDLEYANUM	12	6	63	0
DENDROBIUM DEVONIANUM	10	6	52	6
„ CAMBRIDGEANUM	10	6	52	6
ONCIDIUM ORNITHORRHYNCHUM ..	5	0	27	0
ANGRÆCUM PERTUSUM	5	0	27	0
ONCIDIUM WENTWORTHIANUM	4	0	21	0
TRICHOPILIA SUAVIS	5	0	27	0
EPIDENDRUM CONSPICUUM	5	0	27	0
ONCIDIUM CRISPUM	6	0	30	0
CYPRIPEDIUM BARBATUM	4	0	21	0
„ PEARCEI	4	0	21	0
EPIDENDRUM DICHROMUM	5	0	27	0
CATTLEYA MOSSLE	10	6	52	6
BROUGHTONIA SANGUINEA	5	0	27	0
ONCIDIUM TRIQUETRUM	7	6	30	0
DENDROBIUM HETEROCARPUM	10	6	52	6
„ TRANSPARENS	10	6	52	6
CATTLEYA LEOPOLDII	10	6	52	6
ONCIDIUM PUBES	4	0	21	0
ODONTOGLOSSUM INSLEAYI	12	6	63	0
BRASSAVOLA CORDATA	7	6	36	0
ONCIDIUM FUSCATUM	31	6	157	6
„ BARBATUM	4	0	21	0
ODONTOGLOSSUM LINDLEYANUM ..	7	6	36	0
„ GRANDE	7	6	36	0
ONCIDIUM KRAMERIANUM	15	0	72	0
TRICHOPILIA DOWIANA	7	6	36	0
CALANTHE VESTITA	7	6	36	0
ANGRÆCUM FUNALE	5	0	27	0
ODONTOGLOSSUM PESCATOREI	21	0	105	0
„ ALEXANDRÆ	21	0	105	0
LÆLIA AUTUMNALIS	12	6	63	0
DENDROBIUM SPECIOSUM HILLII ..	7	6	36	0
ODONTOGLOSSUM AUREO-PURPUREUM	21	0	105	0
„ PLATYODON	12	6	63	0
BARKERIA SPECTABILIS	10	6	52	6
ONCIDIUM PANCHRYSUM	21	0	105	0
„ ROEZLIANUM	21	0	105	0
DENDROBIUM JAPONICUM	7	6	36	0
AERIDES ODORATUM	7	6	36	0
EPIDENDRUM SCEPTRUM	6	0	30	0
„ AURANTIACUM	7	6	30	0
LÆLIA PURPURATA	12	6	63	0
CATTLEYA ACKLANDIÆ	12	6	63	0
VANDA GIGANTEA	5	0	27	0
SACCOLABIUM BLUMEI MAJUS	21	0	105	0
EULOPHIA LURIDA	5	0	27	0
ONCIDIUM PAPILIO MAJUS	7	6	36	0
„ LANCEANUM	7	6	36	0
EPIDENDRUM AFRICANUM	5	0	27	0
AERIDES WARNERI	10	6	52	6
DENDROBIUM MACROPHYLLUM	5	0	27	0
ANGRÆCUM DENSUM	7	6	36	0

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them on terms unusually advantageous. Where selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. The plants we have sent out in execution of such orders have, we are informed, given unmixed satisfaction. The following list, with prices annexed, will be some guide to intending purchasers :—

Dendrobium Falconeri, 21*s* to 63*s*. each ; D. Wardianum, 63*s* to 105*s*. ; D. chrysotis, 21*s* to 63*s*. ; D McCarthiæ, 42*s*. to 84*s* ; D. heterocarpum, 5*s*. to 21*s* D. moniliforme, 10*s*. 6*d* to 21*s*. ; D transparens, 5*s* to 21*s*. ; D. Devonianum, 7*s* 0*d* to 21*s* ; D nobile, 5*s* to 105*s*. ; Odontoglossum grande, 7*s*. 6*d*. to 10*s*. 6*d*. ; O Insleayi, 7*s*. 6*d*. to 10*s*. 6*d*. ; O citrosmum, 7*s*. 6*d* to 10*s*. 6*d* ; O luteo purpureum, 25*s*. ; O. gloriosum, 25*s*. ; O. Alexandræ (Bluntii), 21*s*. to 63*s*. ; O Pescatorei, 21*s*. to 63*s*. ; O Rossi superbum, 21*s* to 31*s*. 6*d* ; O crocidypterum, 42*s* ; O. platyodon, 31*s* 6*d* ; O. ramulosum, 31*s*. 6*d*. ; O. Bictonense, 15*s*. ; O. Uroskinneri, 10*s* 6*d*. to 15*s*. ; Vanda cœrulea, 10*s*. 6*d* to 105*s* ; Pleione Wallichii, 3*s*. 6*d* each, 30*s* per dozen ; P. lagenaria, 5*s*. to 10*s*. 6*d* ; Cypripedium hirsutissimum, 7*s* 6*d*. to 21*s*. ; Cattleya Mossiæ, 7*s*. 6*d* to 21*s*. ; C maxima, 31*s*. 6*d*. ; C. Trianæ, 15*s* : C. Warneri, 21*s*. ; Barkeria Skinneri, 10*s* 6*d*. to 63*s*. ; B. spectabilis, 10*s*. 6*d*. to 63*s*. ; Calanthe vestita, 3*s*. 6*d*. to 21*s*. ; C Veitchii, 10*s* 6*d*. to 42*s*. ; Cœlogyne cristatum, 10*s*. 6*d*. to 63*s*. ; Oncidium Papilio, 7*s*. 6*d*. to 10*s*. 6*d*. ; O. Krameri, 21*s*. ; O. Lanceanum, fine variety, 15*s*.

M. DUCHER, NURSERYMAN and FLORIST, Chemin des Quatre Maisons, Guillotière, Lyons (France).

NEW ROSE TREES for the AUTUMN of 1871.

TEA ROSE, MARY VAN HOUTTE.—A very hardy shrub ; large, well shaped flowers, yellowish-white, the petals edged with bright pink ; a handsome tree.

THE NANKIN.—Very hardy ; flowers very full and symmetrical, bright yellow, fading towards the middle ; a very striking plant.

LOUIS GIGOT.—A hardy bush, with large handsome flowers, pure white in the early blossom, and pale variegated pink in the fall—a very curious and pleasing effect

BIANQUI.—A very hardy and rich-flowering plant ; large well-shaped flowers, pure white ; very suitable for shrubberies.

COUNT TAVERNA.—Very hardy, large flowers ; very full and well shaped, straw-coloured, and paler towards the centre ; somewhat in the style of the Louise de Savoie

HENRY LECOQ.—A hardy shrub, medium sized, pink chubby flower, with large Pear-shaped bud.

LA JONQUILLE.—Diminutive sized stem, with short shoots ; medium-sized flowers, rather open, deep lemon coloured ; the handsomest yellow in the whole series of the Noisette Lamarque variety of Tea Roses.

Price, 25 francs each.

TEA ROSES for 1870.

COQUETTE DE LYON.—A hardy plant ; medium, well-shaped flower, of a fine canary shade.

VICTOR PULLIAT.—Strong stumpy shrub ; large handsome flowers, with pale lemon tint ; a variety of the Melanie Willermoz.

MADAME GAILLARD.—A hardy plant, with large, well-made flowers, salmon-coloured ; a really handsome shrub.

BELLE MACONNAISE.—A strong, healthy plant ; full sized and well shaped flowers, pale pink.

LE FLORIFERE.—Very hardy shrub, with large shoots ; medium-sized flowers, well shaped, white with light salmon tint.

HORTENSIA.—Strong, hardy plant, with stumpy shoots, and bulky, well-made flowers, pink with slight orange tint

Price—5 francs each, or 30 francs the half-dozen.

M. DUCHER begs specially to recommend his New Varieties to Amateurs, and to recall to their attention those introduced last year, the delivery of which has been interfered with by the War.

THE PINE-APPLE NURSERY COMPANY,

Maida Vale, Edgware Road, St. John's Wood, W.,

Beg most respectfully to announce that they have secured the services of MR. JOHN BESTER, the well-known Horticulturist, as Manager ; and that they are now making extensive arrangements, which will enable them to execute Orders to any extent in the Horticultural profession. They guarantee Genuine Productions, and to transact all Business in a spirit of Liberality, which they trust will give general satisfaction to their Customers.

CATALOGUES of the respective Classes, and Designs for Improvements, on application.

ADDRESS TO MR. JOHN BESTER, PINE-APPLE NURSERY, MAIDA VALE, W.

GRAVESEND NURSERIES and SEED GROUNDS (Established 1810).

THOMAS EVES (late ENGLAND CLARKE).

These Nurseries have recently been much enlarged by the addition of half those adjoining, and now contain a very large and choice stock of healthy free-grown FRUIT and FOREST TREES, SHRUBS, &c., all in splendid condition for removal, and well worthy the attention of intending planters and the Trade. The New Seed Warehouse and Office is at the Wrotham Road Nursery, which adjoins the Mid-Kent Cricket Grounds, and is within five minutes' walk of the Railway Stations.

Special attention is called to the following :—

Large THUJA AUREA and ARBOR-VITÆ.
Fine bushy AUCUBA JAPONICA and COMMON LAURELS.
Strong IRISH IVIES, to 10 feet.
A fine lot of LAURUSTINUS.
TREE BOX and EVERGREEN PRIVET.
FOREST and FRUIT TREES of every description.
RED, WHITE, and BLACK CURRANTS.
RHUBARB and ASPARAGUS.

T. E. begs to state that but a very small portion of his Stock was included in the late Auction Sale, only one acre of the land being required for building purposes.

All Orders addressed, THOMAS EVES, GRAVESEND NURSERIES, will receive prompt attention.

WINTER FLOWERING HEATHS.

E. G. HENDERSON & SON

RESPECTFULLY OFFER A SPLENDID STOCK OF

ERICA HYEMALIS, E. WILLMOREA, E. GRACILIS AUTUMNALIS, E. GRACILIS VERNALIS,

With many other kinds, in large 48's and 32's. The finest quality in the trade for growth and bloom ; per 100 or 1000. Special Prices on application.

Also amongst numerous other New Plants—

HYDRANGEA JAPONICA SPECIOSA, with a beautiful broad silver bar in the centre of each leaf.

BOUVARDIA DAVISONII.—The habit of B. Hogarth, producing large trusses of snow-white flower-tubes.

RONDELETIA SPECIOSA BRILLIANTISSIMA.—With trusses of brilliant flame-scarlet bloom. A valuable exhibition plant.

PELARGONIUM MALVÆFLORUM.—Trusses of Mallow-shaped flowers, French-white, with violet lines.

AZALEA PRINCESS LOUISE.—A splendid double white variety.

AZALEA PICTURATUM ELEGANS.—Beautiful, spotted and streaked with rose upon a pure white ground.

YUCCA TRECULEANA.—The most unique and stately form in its group, producing a magnificent pyramidal flower-scape.

IN RARE PLANTS, IRIS IBERICA.—With remarkably large satiny-white and rich brown-purple colours.

LILIUM TENUIFOLIUM.—The most brilliant of the miniature scarlet Turncap flowered group of Lilies.

LILIUM COLCHICUM.—The most elegant of the cream yellow-flowered section, with turbinate-formed flowers.

The last three species are large bulbs or tubers, recently received from native localities.

WELLINGTON NURSERY, ST. JOHN'S WOOD, LONDON, N.W.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard :—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden :—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia ; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

EDWARD TAYLOR, NURSERYMAN, Malton, Yorkshire, offers as under :—

PAMPAS GRASS, strong, in pots, 20s. per 100.
TRITOMA UVARIA, strong, 20s per 100.
" " GRANDIFLORA, 25s. per 100.
GIANT ASPARAGUS, 1-yr., 7s. 6d. per 1000.
" " 2-yr., 12s. 6d. per 1000.
" " 3-yr., 15s. per 1000.
" " 4-yr., 20s per 1000.
SEAKALE ROOTS, 1, 2, and 3 yr
GOOSEBERRIES, 100 varieties, E. T.'s selection, 9s. per 100, 80s per 1000
DOUBLE GERMAN WALLFLOWERS, 5s. per 100.
TRITONIA AUREA, fine bulbs, 8s. per 100
YUCCA FILAMENTOSA, strong, 4s. to 6s. per dozen.
ROSEMARY, in pots, 4s. per dozen.
SCILLA SIBIRICA, 8s. 6d. per 100.

CATALOGUES gratis on application as above.

Transplanted Scotch Fir.

J. ROY, JUN., NURSERYMAN, Aberdeen, has a very extensive stock of Transplanted SCOTCH FIR, of various growths; as the whole has to be cleared off this season he offers as under to the Trade :—

2-yr SEEDLINGS, 2-yr. transplanted	5s. per 100.
3-yr. SEEDLINGS, 2-yr. transplanted	7s. 6d. per 1000.
Strong and fine do , 18 to 24 inches	10s. per 1000.
2-yr Seedling Native SCOTCH FIR	1s. per 1000.

Of RHODODENDRONS he has a very extensive stock, and to clear out he now offers his stock, which consists of upwards of 100,000 of PONTICUMS and HYBRIDS and other excellent kinds, from 9 inches to 2 feet high, at 8s. to 30s. per 100.

LIMES.—His stock of these is upwards of 100,000, from 3 feet to 9 feet. Prices will be forwarded on application : they are all clean-grown and fine straight stems.

W. VIRGO AND SON, Wonersh Nurseries, near Guildford, Surrey, respectfully call the attention of Noblemen, Gentlemen, Nurserymen and Others, to the undermentioned stock; the whole of which is particularly strong and healthy, and in excellent condition for removal :—

Standard, Half-Standard and Dwarf Roses, upwards of 300 varieties; Standard, Pyramid and Dwarf Apples, extra fine; ditto Pears; ditto Plums; Dwarf-trained Apples, Pears, Plums, Peaches and Nectarines Gooseberries; Black, Red and White Currants; Filberts, extra fine.

EVERGREENS.

Common Laurel, 2 to 4 feet.
Portugal Laurel, 2 to 4 feet.
Green and Variegated Box, 2 to 4 feet.
Green Holly, 2 to 3 feet.
Yew, 2 to 4 feet.
Siberian and Chinese Arbor-vitæ, 3 to 4 feet.
Pinus austriaca, 2 to 5 feet.
Spruce Fir, 2 to 6 feet, fine and bushy.
Berberis aquifolia, 1 to 1½ foot.
American Arbor-vitæ for hedges, 3 to 6 feet.
Evergreen Privet, 2 to 3 feet, fine.
Hornbeam, 3 to 4 feet.
Cupressus Lawsoniana, 3 to 4 feet.

ORNAMENTAL TREES

Spanish and Horse Chestnut, 6 to 8 feet.
Wych Elm, 6 to 8 feet.
Double, Scarlet, White and Paul's New Thorn, 6 to 8 feet.
Black Italian Poplar, 6 to 8 feet.
Turkey, English and Scarlet Oak.
Hornbeam, Laburnum, Lime, Norway Maple, Lombardy, Ontario, White or Abele, Balsam, &c.
Sycamore, Sumach, Acacia, Weeping Willow and Birch, 6 to 8 feet.

Transplanted FOREST TREES for Covert and Copse Planting.

Ash, 2 to 3 feet.
Alder, 3 to 5 feet.
Birch, 3 to 5 feet.
Beech, 2 to 3 feet.
Spanish Chestnut, 1½ to 2 feet.
Horse Chestnut, 3 to 5 feet.
Spruce Fir, 2 to 3 feet.
Scotch Fir, 1 to 1½ foot, and 2½ to 3½ feet.
Hazel, 2 to 3 feet.
Hornbeam, 2½ to 3 feet.
English Oak, 2½ to 3 feet.
Sycamore, 3 to 4 feet.
Plum-leaf Withy, 3 to 5 feet.

10,000 clean-grown CRAB STOCKS.
Strong transplanted QUICK, 2 to 2½ feet.
Priced CATALOGUE and samples on application.

The Nurseries are 1½ mile from Bromley Station, London, Brighton, and South Coast Railway; 2½ miles from Shalford Station, South-Eastern Railway; and 4 miles from Guildford Station, London and South-Western Railway. Goods delivered free to the above stations.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.
WILLOW CUTTINGS for Basket Makers' purposes.
BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.
WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"THE SALIX, OR WILLOW," second edition, post free, 1s.; or of SIMPKIN, MARSHALL AND CO., London.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester.
Nurseries : Fairfield, near Manchester.

Orchids.

HAVING A VERY LARGE STOCK,

MR. WILLIAM BULL begs to offer the following CHOICE and RARE ORCHIDS, at the extremely Low Prices annexed :—

	Guineas.
MASDEVALLIA HARRYANA	4
" CORDATA	2
" VEITCHII	8
" COCCINEA	6
" INFRACTA	3
ODONTOGLOSSUM REICHENHEIMII	3
" CORONARIUM	3
" ZEBRINUM	4
ONCIDIUM SUPERBIENS	4
" MACRANTHUM	5
" SESSILE	1½
STENIA FIMBRIATA	15s.
MILTONIA CANDIDA GRANDIFLORA	3
SACCOLABIUM GIGANTEUM	3
" REEDI	3
" AMPULLACEUM	2
" FURCATUM	3
CYPRIPEDIUM HARRISIANUM	5
" BIFLORUM	1
" PARISHII	5
" NIVEUM	1½
" PARDINUM	3
" LONGIFOLIUM	4
" SUPERBIENS	2
CATTLEYA AMABILIS	3
" WARNERI	1
" AMETHYSTOGLOSSA	2
WARREA LINDENIANA	2
DENDROBIUM TAURINUM	1½
" BENSONIÆ	3
" FALCONERII	2
" LITUIFLORUM	2
" McCARTHIÆ	2
" FORMOSUM GIGANTEUM	15s.
VANDA CATHCARTI	4
" BENSONIÆ	3
" JENKINSII	2
CALANTHE VEITCHII	1
" VESTITA TURNERI	1½
DENDROCHILUM FILIFORME	2
ANGRÆCUM CAUDATUM	2
AERIDES MACULOSUM	2
" JAPONICUM	2
RODRIGUEZIA PLANIFOLIA	1½
ASPASIA LUNATA	15s.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

IS STILL AT

WILLIAM PAUL'S.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, HERTS, N.

PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

LEE'S PROLIFIC BLACK CURRANT.

FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY, 1869.

GEORGE LEE,

MARKET GARDENER, CLEVEDON, SOMERSET,

Is now sending out the above Currant, in not less than one dozen plants, at the following rates (orders booked as received) :—

1-yr. old Plants, 18s. per dozen Plants.
2 or more yr. old Plants, 24s. to 30s. the dozen Plants.

It will be found a great acquisition on account of its fertility and other good qualities. It is very prolific (name given by the Committee of the Royal Horticultural Society), 600 plants (on 5½ rods of ground) in a Nursery the second year after planting producing over 5 cwt. of fine fruit. The bunches are medium length, of almost uniform size in berry, long-stemmed, so as to be gathered without crushing the upper berries. It is very sweet, much more so than the Black Naples, which he has grown largely for near 20 years. It is much enjoyed as a dessert. Is very thin-skinned, and makes a fine preserve. Fetches a much higher price in the market. It will be a good variety for the Market Gardener. Plants can also be supplied by the following Nurserymen :—

Messrs. P. LAWSON AND SON, Edinburgh.
Messrs. T. RIVERS AND SON, Sawbridgeworth.
Messrs. J. GARAWAY AND CO., Bristol.
Mr. C. TURNER, Slough.
Messrs. FISHER AND HOLMES, Sheffield.
Messrs. J. AND C. LEE, Hammersmith.
Messrs. J. VEITCH AND SONS, Chelsea.
Mr. F. PERKINS, Northampton.

EAST SOMERSETSHIRE CHAMPION POTATO.

Report of the Royal Horticultural Society's Trial Committee.

"*Late Kidney, allied to the Fluke.*—A most extraordinary cropper, very handsome, and of good quality."

This is a Potato that we confidently recommend, not only as a late but as a second early, quite fit for the table second week in July, but good late-keeping.

This will be sent out in September and October, in not less than 28 lb., 6s.; 56 lb., 11s.; 112 lb., 18s.—bags included. Remittances from unknown Correspondents. ☞ Stock limited. Trade not supplied this Season.

Five per cent. discount allowed for prompt cash.

Cerasus Watererii, New Double Japanese Cherry.

ORIGINALLY INTRODUCED by MR FORTUNE.

JOHN WATERER AND SONS are just now sending out the above new plant. The colour is white, edged with pink, very large double, and sweet scented. We recommend it as a very desirable plant. Price 10s. 6d each, or 6 for 42s.

American Nurseries, Bagshot, Surrey.

STRONG STANDARD APPLES, PEARS, and WALNUTS.—Fine Standard and dwarf-trained APRICOTS, PEACHES, and NECTARINES, Standard and Dwarf Perpetual ROSES, Evergreen and Deciduous Flowering SHRUBS, FOREST TREES of sorts, from 2 to 10 feet Prices on application to

CHARLES BURGESS, The Nurseries, London Road, Cheltenham.

The Fairy Apple.

JOHN JENNINGS has fine PYRAMIDAL TREES, with bloom-buds, of the above beautiful dessert Fruit to DISPOSE OF, at 5s. each. The fruit is in season from December to April.

"Destined and worthy to take its place amongst the worthiest of its kind." Nurseries, Shipston-on-Stour.

WHEELERS' BROCKWORTH PARK PEAR.

"The handsomest and most valuable dessert Pear of recent years."

J. C. WHEELER AND SON offer fine young PYRAMIDS of this magnificent PEAR, at 10s. 6d. each, and a few DWARF-TRAINED TREES, at 15s. each. It obtained a First-class Certificate from the Fruit Committee of the Royal Horticultural Society, on September 20, 1870, and was exhibited a the Royal Horticultural Gardens on October 4, 1871, when it was again greatly admired. It is large, handsome, and fine flavoured, and is, without doubt, a great acquisition to our choicest and best dessert Pears. It may fairly be described (when grown against a wall, with a good aspect) as one of the handsomest, largest, and best dessert Pears ever introduced. It ripens the end of September and beginning of October.

J. C. WHEELER & SON have already received orders for it from nearly all parts of the United Kingdom; from Germany (for the Emperor's gardens at Sans Souci, Berlin); from France; and from the United States. Orders will be executed in rotation as received, the earliest getting the best plants.

J. C. WHEELER AND SON, Nurserymen,
Gloucester, and 59, Mark Lane, London.

Fastolf Raspberry (True).

ISAAC BRUNNING begs to offer strong, well-ripened CANES of the above unrivalled RASPBERRY, in packages containing 25, for 3s.; 50 for 5s.; 100 for 9s. Also choice CARNATIONS and PICOTEES, 18s. to 24s. per dozen pairs; PINKS, 8s. to 12s. per dozen pairs (List of varieties on application); true old CRIMSON CLOVE CARNATIONS, 3s. per dozen; PRINCESS ALICE, fine, pure WHITE CLOVE, 6s. per dozen; BRUNNING'S PRINCE of SCARLETS CLOVE, 4s. per dozen; GLADIOLUS BRENCHLEYENSIS, extra large bulbs, 2s. per doz., 12s. per 100; ditto flowering bulbs, 1s. 6d. per dozen, 9s. per 100. No charge for package. The usual discount to the Trade.

ISAAC BRUNNING, Great Yarmouth Nurseries.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

ROBERT CORNWELL AND CO. offer SILVER, SCOTCH, and AUSTRIAN FIRS, 3 to 5 feet; ARBOR-VITÆ, 3 to 6 feet; AUCUBAS, 1½ to 4 feet; PRIVET, 3 to 4 feet; Variegated and Green BOX, 2 to 4 feet; do. Edging; IRISH YEWS, 3 to 4 feet; LAURELS, 4 to 8 feet; bushy LAURUSTINUS, 2 to 3 feet, some extra handsome ones, 4 by 4 feet; Standard ROSES, strong GOOSEBERRIES, CURRANTS, and STRAWBERRIES of sorts; ASPARAGUS, 2, 3, and 4 yr.-old; RASPBERRIES, Cromwell's Seedling, 12s. per 100; do. Prolific, 10s.; Carter's Prolific, 10s.; Red and White Antwerp, 10s.; Fastolf, 10s.; Fillbasket, 10s.; Ead's White, 10s.; Semper Fidelis, 20s. Bushy LAURELS, 4 ft., £1 per 100.

NOTE—Opposite the Red Lion, Barnet, N.

To the Trade.

TWO MILLION 1 and 2-yr. Seedling THORN QUICKS.

300,000 Transplanted THORN QUICKS, 4-yr., 2 to 3 feet.
100,000 do. Common LAURELS, extra fine, 2 to 3 feet.
1,000,000 do. FOREST TREES, from 1 to 2 and 3 feet, consisting of Larch, Scotch, Spruce, and Silver Firs; Beech, Oak, Elm, Birch, Sycamore, &c.

The above will be SOLD cheap. They are well rooted, fine stuff, healthy, and well grown.

GEO. R. DAVIDSON, The Newry Nurseries, Newry, Ireland.

MAGNIFICENT PLANTS of PINUS AUSTRIACA, 4 times transplanted, 4 to 5 feet (perfect specimens); smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
SCOTCH FIRS, extra fine, 3 times transplanted, 4 feet; smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, by the 1000.
SILVER FIRS, very fine plants, 3 times transplanted, 4 feet.
COMMON LAURELS, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet, by the 100, 1000, or 10,000.

CATALOGUES and Prices on application.

WM WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex

Quicks and Forest Trees.

SAMUEL ROBINSON, Shaw House, Melbourne, near Derby, will offer, at his ANNUAL SALE, about the 20th of this month, of which due notice, with particulars, will be given—

A very large quantity of 3, 4, and 5 yr transplanted QUICKS, suitable for Railway and Enclosure Planting; also about 50,000 LARCH, 3 to 4 feet; a larger quantity of a smaller size, fit for planting out.
20,000 to 30,000 SCOTCH, 2 to 3 feet; a few hundreds of ELMS and BIRCH, 7 to 10 feet; two or three lots of well feathered SPRUCE, 3 to 5 feet; and strong OAKS, of similar size.

The Planting Season.

TO BE SOLD, well-grown SURPLUS SHRUBS, to be shifted at once by the Purchaser, consisting principally of YEWS and LAURELS—PORTUGAL and COMMON—with a few MISCELLANEOUS SHRUBS, now growing less than a mile from the Whatstandwell Bridge Station of the Derby, Matlock, Buxton, and Manchester Railway.

The Shrubs are good, well-furnished specimens, that would be invaluable where an effect is desired at once, and, if carefully got up would move with perfect safety. Application to be made to the

GARDENER, Chase Cliffe, Derby.

RENDLE'S PATENT PLANT PROTECTORS,

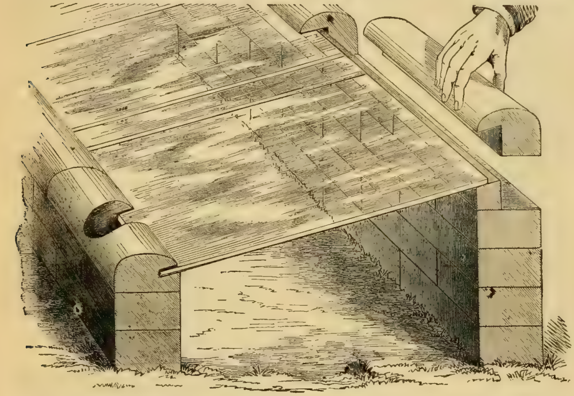
ORCHARD HOUSES, AND GROUND VINERIES.

Secured by Her Majesty's Royal Letters Patent (two separate and distinct Patents, 1869 *&* 1870*).*

Under the Distinguished Patronage of—

H.R.H. the PRINCE OF WALES.
HIS ROYAL HIGHNESS PRINCE CHRISTIAN.
HIS HIGHNESS the MAHARAJAH PRINCE DULEEP SINGH.
HIS GRACE THE DUKE OF RUTLAND.
HIS GRACE THE DUKE OF SUTHERLAND.
HIS GRACE THE DUKE OF DEVONSHIRE.
THE MOST NOBLE THE MARCHIONESS OF ANGLESEY.
THE RIGHT HON. THE EARL OF STAMFORD AND WARRINGTON.
THE RIGHT HONOURABLE THE EARL OF PORTSMOUTH.
THE RIGHT HONOURABLE THE EARL OF DARTMOUTH.
THE RIGHT HONOURABLE THE LORD PORTMAN.
THE DOWAGER COUNTESS OF AYLESFORD.
THE RIGHT HONOURABLE LORD ALFRED CHURCHILL.
THE RIGHT HONOURABLE LORD BERKELEY PAGET.
THE RIGHT HONOURABLE LORD BOLTON.
THE RIGHT HONOURABLE LORD DE L'ISLE AND DUDLEY, &c.

RENDLE'S PATENT PORTABLE PLANT PROTECTORS.



NEW PATENT

"PERFECTION" BELVOIR CASTLE PATTERN,

IN TWO SECTIONS.

The Back-Grooved Brick is now made in Two Parts. The Invention is now "PERFECT," as all the Glass can be instantaneously removed.

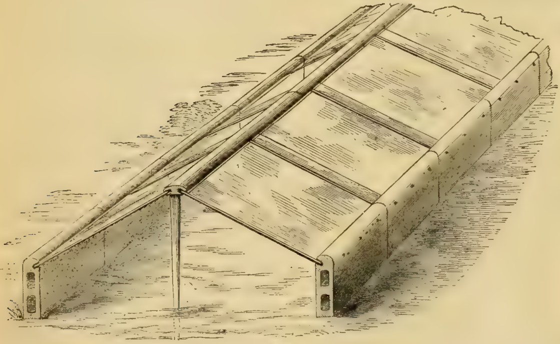
Purchasers who have had the Old Pattern can have the New ones at *6d.* per foot.

The following Prices are for the Patent Grooved Bricks and the Glass.

GROUND VINERIES AND PLANT PROTECTORS.		For Delivery in London or Bridgewater.			Carriage Paid to any Railway Station within 100 miles of London or Bridgewater.			Carriage Paid to any Railway Station in England and Wales, or Edinburgh, Dublin, Cork, or Belfast.		
Ft. long.	Wide.	£	s.	d.	£	s.	d.	£	s.	d.
10	Glass 9 in.	0	12	0	0	14	6	0	17	0
10	Glass 12 in.	0	14	0	0	17	0	1	0	0
10	Glass 18 in.	0	16	0	1	0	0	1	3	0
10	Glass 24 in.	0	18	0	1	2	0	1	7	0
100	Glass 9 in.	5	0	0	5	10	0	6	10	0
100	Glass 12 in.	6	0	0	6	10	0	7	10	0
100	Glass 18 in.	7	0	0	7	10	0	8	10	0
100	Glass 24 in.	8	10	0	9	0	0	10	0	0

NEW SPAN-ROOF ENVILLE PLANT PROTECTORS,

As used at Frogmore, the Residence of His Royal Highness Prince Christian.



PATENT SPAN-ROOF PLANT PROTECTOR, THREE AND FOUR FEET WIDE.		Delivered in London.			Carriage Paid to any Railway Station within 100 miles of London.			Carriage Paid to Edinburgh, Dublin, or any Railway Station within 200 miles of London.		
Long.	Wide.	£	s.	d.	£	s.	d.	£	s.	d.
6 feet ..	3 feet	0	18	0	1	4	0	1	8	0
6 feet ..	4 feet	1	0	0	1	7	0	1	10	0
12 feet ..	3 feet	1	14	0	2	5	0	2	10	0
12 feet ..	4 feet	1	18	0	2	10	0	2	15	0
100 feet ..	3 feet	11	10	0	12	0	0	12	15	0
100 feet ..	4 feet	14	0	0	14	10	0	15	0	0

All complete, with Patent Grooved Bricks, Glass, and Central Platform.

A Protector 100 feet long by 4 feet wide will cover a piece of ground containing 400 square feet.

These Span-Roof Proectors have given the greatest satisfaction. They can be made to cover a large space of ground by the addition of the Patent Zinc or Galvanized Iron Grooves.

NEW PATENT SPAN-ROOF ENVILLE PATTERN, TWO SECTIONS.—This is a vast improvement on the original Pattern, as all the Glass can be instantaneously removed. Purchasers who have been supplied with the Old Pattern can have the New one at *6d.* per foot.

The New Illustrated Catalogue for the present season is now published, and contains many novelties. Copies can be had gratis on application to the Inventor and Patentee,

MR. WILLIAM E. RENDLE,
3, WESTMINSTER CHAMBERS, VICTORIA STREET, S.W.

Seedsmen to Her Majesty The Queen.

BULBS For Autumn Planting.

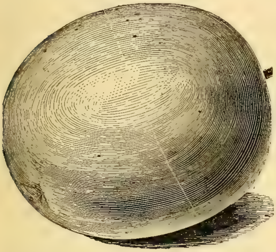
Seedsmen to H.R.H. the Prince of Wales.

JAMES CARTER & CO.

Offer the following COLLECTIONS of BULBS for Present Planting, containing the most showy and popular varieties, selected from the choicest stocks in Holland.

CARTER'S
BULBS for INDOOR and OUTDOOR PLANTING.
Collections, price 10s. 6d., 21s., 42s., 63s., and 84s.
Packing and Carriage Free.
DESCRIPTIVE LISTS Gratis on application.

NEW PLUM.



DUKE of EDINBURGH.
Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, roundish-obovate, with a shallow suture; outline very regular and smooth; skin thin; colour light purplish, with an exceedingly dense coating of light bluish bloom; flesh reddish yellow, thick, juicy, and moderately rich, parting freely from the stone; a very prolific bearer, and good for culinary purposes. First-class Certificate, Royal Horticultural Society.

Maidens, **5s.** each.

CARTER'S
"SUBURBAN" COLLECTIONS
Of CHOICE FLOWER ROOTS for the DECORATION of the DRAWING-ROOM and GARDEN.
Price **25s.** packing and Carriage free, or half quantity for **12s. 6d.**

NEW PLUM.

DRY'S SEEDLING.
Awarded a First-class Certificate by the Royal Horticultural Society.

Fruit large, or above medium size, roundish oval, marked with a very slight suture; skin reddish purple, covered with a thin bloom, slightly marbled when fully ripe; stalk long and stout; flesh dull greenish yellow or orange, firm yet melting and juicy, parting freely from the stone; it is of delicious flavour, and will make an excellent early dessert variety.

"The fruit is oval, of light purple colour, fine in size, remarkably good in flavour, and early: it was shown at one of the meetings held last year, and was then considered by the Committee to possess considerable merit, and its qualities having been again tested on this occasion, it was duly honoured with a First-class Certificate."

Standards, **5s.**; Pyramids, **3s. 6d.**; Dwarf-trained 1 year, **5s.**; Maidens, **2s. 6d.** each.

CARTER'S AUTUMN CATALOGUE
Of DUTCH BULBS, FRUIT TREES, ROSES, &c., is now ready, and may be had Gratis and Post Free on application.

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
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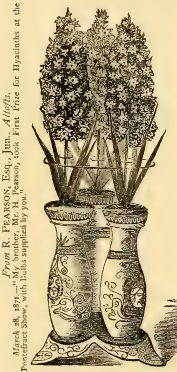

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,, All Colours, mixed ,,	2	6	18	0
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,, White	4	0	30	0
,, Dark Blue	4	0	30	0
,, Light	4	0	30	0
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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Professor REICHENBACH, of Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, NOVEMBER 11, 1871.

MEETING FOR THE ENSUING WEEK.

THURSDAY, Nov. 16 { Royal Horticultural of Ireland (Winter Exhibition).

◆

SOME time since we had occasion to refer to the FERTILISATION of the VINE, and we pointed out certain circumstances which were favourable or unfavourable, as the case may be, to the proper SETTING of the FLOWER in that plant. By way of supplementing these remarks, which were founded on our own personal examination of the flowers of several varieties of Vine. we now call attention to a recent publication of M. CHARLES BALTET, the well-known nurseryman, of Troyes.* The design of the writer is to explain the causes of the imperfect fertilisation or abortion of the fruit in the Vine, a condition known in France as *coulure*, and to point out the appropriate remedies for this defect. M. BALTET'S remarks of course apply to the culture of the Grape on a large scale in the vineyard, but there is much in them that may profitably be applied, *mutatis mutandis*, to the cultivation of the fruit under glass. Moreover, M. BALTET'S remarks are stated with a clearness, precision, and brevity of expression which will go far to recommend them to the attention of practical men. M. BALTET does not refer to what we believe to be a natural tendency in the Vine to assume a unisexual condition, neither does he allude to the numerous observations and experiments that have been made on the fertilisation of plants in general, and the circumstances favouring or opposing the process, which have been made known of late years, and some of which are referred to in our previous article. He looks at the matter from the point of view that a practical man might be expected to do: his remarks are founded on his own experience — and the experience of such a man is eminently worth having. The principal causes of the "bad setting of the Vine," says M. Baltet, "are to be attributed to abrupt alternations of the temperature, or to its sudden lowering in spring, to excessive vigour or grossness of the vegetative organs (leaves, &c.), or to the opposite condition of feeble growth."

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* La Coulure du Raisin, ses causes et ses effets, moyens de l'empêcher. Par Charles Baltet. Troyes, 1871. Pamphlet.

Establishing these as the principal causes of the imperfect fertilisation of the Vine, M. Baltet then goes on to show how they may be prevented, and their injurious effects obviated.

An excessive vegetative growth may be checked, or rather diverted into a profitable channel, by a judicious mode of cultivation; feeble growth may be stimulated by the proper use of manure; unfavourable climatic influences may be counteracted by causing an accumulation of nutritive material in the flower by means of one or other of the following processes—stopping the fruit-bearing branches, suppression of the tendrils, removal of the extremity of the bunch, girdling of the rods.

If the vegetative organs are unduly vigorous, the following methods are recommended:—Long spur-pruning, moderate removal of buds, continual pinching, suppression of gross shoots, gradual removal of leaves, and abstinence from the use of liquid or other manures. By such procedures, and others which need not be referred to here, as they apply more particularly to the cultivation of the Vine in the vineyards, the over-vigour of growth may be checked.

For an opposite state of things, as that wherein a Vine has been weakened by over-cropping or other causes, a compost of well fermented dung and loam may be employed, and to this may be added, if wood formation is to be encouraged, fertilising matters of tardy decomposition, such as night-soil, street sweepings, pond mud, wood ashes, cinders, woollen rags, leaves, horn shavings, nitrate of potash, sulphate of iron, and a variety of similar materials, which it is recommended should be mixed with the compost, and watered with house slops, &c. The whole should be frequently stirred and turned. This compost should be judiciously applied after the fall of the leaf. If the fault arise from climatic causes, the shoots are to be stopped by pinching off their extremities at the end of May, when vegetation is in full vigour; and this pinching is to be repeated as circumstances demand, taking care not to remove too many leaves, and thus deprive the fruit of the requisite amount of leaf-action. The principle of this suppression of leaves is no doubt good, but it would require to be carried out with judgment.

Removal of the tendrils is also advocated, on the ground that it favours the development of the berries. This may be done at any time, but those tendrils which form on the same stalk as the bunch should of course be removed before the full maturity of the flower is reached, otherwise it will be too late.

Removal of the end of the flower-bunch serves to concentrate the vigour in the flowers that are suffered to remain—has the same effect, indeed, as the thinning of the berries subsequently practised.

The ringing of a branch, which is effected by the removal of a very narrow band of bark from the branch, is an old practice as regards fruit trees. In some cases M. Baltet recommends only the making of a circular incision around the branch, without the removal of any of the bark. This should be done when the Vine is in flower, and at a short distance below the blossom. The *rationale* of this process has long been known and acted on, and M. Baltet cites the experience of numerous practitioners and authors in its favour, and also goes into detail as to the merits of the Grapes and of the wine made from them, in the case of Vines so treated, in comparison with those of Vines left to themselves. On this latter point the evidence is conflicting, though the general advantages of the procedure are, according to M. Baltet, incontestible.

We have lately met with an example of Common Sense Gardening, to which, inasmuch as the results have been marked by real and substantial success, it may be of advantage to some classes of our readers that we should devote a few brief observations.

Thirteen years ago, the garden to which our remarks refer was, as we are informed, comparatively sterile, and anything but well suited for the growth of good crops of vegetables and fruits. The soil was naturally light and poor, and beneath, at no great depth, was a pan, which intercepted the descent of the roots, and which, of course, rendered the production of well-developed vigorous growth, under ordinary treatment, a matter of impossibility in all ordinary seasons. The first thing done in the remedial process was to trench the ground deeply, and to break up and remove this pan, which prevented the roots from striking freely downwards and drawing up adequate support and nourishment from the well-furnished storehouse which is formed by a soil of deep tilth. Into a soil of this latter description the fertilising rains of heaven penetrate, and become, as it were, fountains in the desert ready to supply the requirements of the thirsty vegetation during the hot summer months, when most of our esculent garden crops and our fruit trees should be actively engaged in the processes of development or maturation—both of which require the ungrudging assistance of the roots.

A deep tilth having thus been secured, the next consideration was that of manuring the soil, and this in many small gardens—and it is a comparatively small garden we are alluding to—is either a matter of some difficulty, or of considerable cost. Now we must at the outset confess to having great faith in the stimulating virtues of sound honest muck, whether it be in the shape of farmyard manure, hotbed manure, or in whatever form the gardener can lay hold of it. Therefore we say not a word in disparagement of the manure or muck-heap as a garden institution. But what if the muck-heap is either of a very limited capacity, or altogether *nil?* Where shall we look for the substitute? A substitute may indeed be found, for we have to record of the garden to which we now refer that during this course of years it has scarcely had any dressing of ordinary animal manure, such as gardeners use whenever they can get it. Dressings of green Mustard — one of the most efficient of quick acting manurial agents—have been occasionally dug in, and dilute waterings from a house-tank have been to some extent resorted to in dry weather, but the chief of the manure employed has been the refuse vegetable matter produced on the premises. The motto adopted has been, "Waste not, want not." A sunk bed of sufficient capacity is formed in a convenient part of the garden. Here are brought together all rakings and sweepings and trimmings, in fact the entire waste produce of the garden; as this accumulates, it is levelled down, sprinkled with quicklime to hasten decomposition, and covered up, layer after layer, with road scrapings. The heap is turned over after a month or two, again covered up if necessary to secure more thorough decomposition, and eventually the matter is sifted through a coarse sieve, so as to get out the undecayed portions, which are returned to the rot heap, while the finer portion, which is sufficiently decayed, is reserved to be applied as required to form a dressing to the ground.

This, briefly and hastily sketched, is the manner in which Mr. P. H. Rooke, of Weybridge, manages his neat and well-kept garden, on what we have ventured to describe as common-sense principles. The system he adopts, it will be seen at once, is one which any person similarly circumstanced may carry out for himself. Its results show vegetable crops as vigorous and thriving as can be desired, on what was formerly poor pan-bound and unfertile land, and fruit trees, such as espalier Pears, in excellent health and in the most fruitful condition, covered with short sturdy spurs, and producing, as we can testify, fruit of first-rate size and quality. The plan followed out, which is simplicity itself, is one which commends itself to the good sense of cultivators; and we should be extremely glad if Mr. Rooke could be induced, for the benefit of others who may have similar difficulties to contend with, to describe his garden operations more completely than we have here been enabled to do.

—— Fellows of the Royal Horticultural Society, paying a subscription of four guineas, will, it appears from an official circular now before us, be entitled "to receive gratis two non-transferable season tickets for the International Exhibition (of 1872), admitting their owners at all times that the Exhibition is open to the public. Subscribers of two guineas are entitled to one such ticket." Another privilege is offered to the Fellows of the Royal Horticultural Society. Mr. Mapleson, the Director of the Royal Italian Opera, has expressed his willingness to allow Fellows of the Society to purchase tickets for any concert in the Albert Hall that may be given by him during the remainder of this year at a reduced rate, on production of their tickets at the offices of the Royal Albert Hall.

—— Our contemporary, the *Gardeners' Record*, in its report of the last meeting of the Dublin Horticultural Club, states that "Mr. Moore showed the meeting a new, beautiful, and unique Variegated Cineraria, of his own raising, which elicited from the members present the most unqualified remarks of approval, and was pronounced by them to be a very decided and most useful addition to this class of plants. About one-third of the centre of each leaf is composed of a mixture of light and dark green colour, whilst the remaining two-thirds of the outer margin is white, of a light purple shade. The colour of the flower is bright lake, forming a nice contrast to the rich foliage. As a plant for house or dinner-table decoration it was thought to be a most desirable and useful acquisition. The under-surface of the foliage had a very pleasing effect by gas-light."

—— With regard to the suggestions made by correspondents in our columns, during the past few weeks, that some one "should address himself to the task of collecting and tabulating particulars as to the Elevation at which Orchids Grow in their native countries, and also as to the temperature and rainfall of the respective districts," we are enabled to give the following Table, from a Moulmein paper, communicated by Mr. J. H. Gilbert to Dr. Hooker, showing the comparative rainfall (in inches and tenths) at Rangoon and Moulmein during the months of May, June, and July last:—

Rangoon.		*Moulmein.*	
May	27.0	May	36.0
June	30.9	June	55.4½
July	26.0	July	42.4
Total	83.9	Total	133.8½

It is also stated that from August 1 to 15 the total rainfall at Moulmein amounted to 37.8½. The heaviest fall yet on record occurred on August 30, 1865, when Moulmein was almost deluged with 15 inches of rain in one day! A Table, showing the monthly rainfall at Moulmein for the past 20 years, also accompanies this extract. From this Table we learn that the largest fall occurred in 1865, when 279 inches are recorded; this was made up as follows:—April, 0.4 in.; May, 26.7½; June, 51.1½; July, 68.3½; August, 72.2; September, 38.7; October, 12.8; November, 8.6½. The average yearly rainfall in Moulmein may be set down at about 216 inches.

—— The Maximum Temperatures of the Air during the week ending November 4 ranged from 57°.8 at Blackheath to 49°.7 at Edinburgh, with a mean for English stations of 54°.2, and for Scottish of 51°.5. The Minimum Temperatures of the air ranged from 42°.5 at Manchester to 32°.9 at Nottingham, with a mean for the several places in England of 38°.7, and for those in Scotland of 38°.3. The highest Mean Temperature was recorded at Manchester, viz., 47°.9, and the lowest (43°.8) at Edinburgh. This week the mean temperatures were, as a rule, higher at the English stations than at the Scottish, the mean for the former being 46°.5, and for the latter 45°.2. Rain is recorded as having fallen at all stations on one day or another during the week, but, as was observed last week, heavier in the northern country than in the southern. The greatest fall in England was 0.98 inch at Bradford, and in Scotland 1.11 inch at Greenock. The mean fall for the English stations amounted to 0.39 inch, and for the Scottish 0.75 inch. (See Mr. Glaisher's Tables, p. 1459.)

—— A series of photographs devoted to the illustration of Linnean Relics has been recently issued in Sweden, and copies are, we believe, to be procured in London. We subjoin the description of these plates, which are of the greatest interest to naturalists and gardeners. The photographs themselves are excellent, and the series forms a worthy tribute to the memory of the great naturalist. We are indebted to Mr. James Dickson, of Gothenburgh, Sweden, for the privilege of inspecting them. A similar series was exhibited some months since at one of the meetings of the Linnean Society, and is, we believe, deposited in the library:—

"Plates 1 and 2 portray the marble statue of Linné, erected in the botanical garden, seen from different points of view: it was erected at the expense of the Upsala students, who, by contributions raised each term, collected the means necessary for the purpose. The statue is the work of our renowned Bystrom.

"Plate 3.—The botanical garden with the entrance to the botanical lecture-room, where the statue erected by the students of Upsala stands. This garden, which formerly belonged to Upsala Castle, was by King Gustavus III. attached to Linne's professional chair, as an acknowledgment of his vast services to science and to his country.

"Plate 4 delineates Linné's dwelling-house in the town, situated at the south-east angle of the old botanical garden. It is still preserved in unaltered condition, but it contains no relics of Linné.

"Plate 5 shows the old Linnean garden, in which Linné made his observations. The aspect of this garden with its small and humble greenhouses, is upon the whole very well preserved, but the inner arrangements have been changed by the removal of the hedges, the transforming of the flower-beds into grass-plats and filling up of the ponds.

"As the old garden was situated in a low and swampy tract, the new one has been formed in a higher locality, to the south of the town. But the old garden still retains its historical interest: trees are there shown, planted by the hand of Linné.

"At present it is let out as a place of meeting for the students of the East-Gotland Nation (Gens).

"Plate 6 is a view of Upsala Cathedral, in which the ashes of Linné are deposited. This magnificent edifice is also considered as an architectural monument deserving of attention, and contains the tombs of many men celebrated in the history of Sweden.

"Plate 7.—Linné's monument erected in the old baronial chantry of the Banérs in Upsala Cathedral, and bearing the inscription: 'Carola v. Linné Botanicorum principi Amici et discipuli MDCCXCVII.' Outside the chantry, in the floor of the church, is the stone that covers the grave in which Linné and his only son and successor, together with his wife, repose, and on which are the following words: 'Ossa Caroli v. Linné, equ. aur. marito optimo filio unico Carolo v. Linné patris successori et sibi Elisabeth Moræa.'

"Plate 8 represents Linné's country seat, Hammarby, situated in the parish of Danmark, five English miles from Upsala.

'The main building has been preserved unchanged, not only externally, but in some measure also as regards the division of the interior into rooms, but the surrounding houses have in part been rebuilt.

"Here it was that Linné spent the summer months, here his most important works were written; and hither he was often accompanied by his pupils, who desired to profit by his instruction during the summer.

"At Hammarby Linne had laid out his own botanical garden, in which he chiefly cultivated Siberian plants. Now it is a wilderness, but still a few decennia ago several plants were remaining that had been there in the time of the great naturalist. Even to this day one may see Sempervivum globiferum, Crepis sibirica, Asarum, and some others.

Plates 9 and 10 represent two rooms (Linné's study and bed-chamber) at Hammarby, preserved in the same condition as in Linné's time, together with sundry instruments and pieces of furniture used by him.

"Plate 11 gives us a view of Linné's museum, situated on a hill above Hammarby, surrounded by a Pine wood, and thus protected from fire. Here Linné also gave lectures to the multitude of pupils who there gathered round him during the vacations. Now it is deserted, but as regards its exterior it is unaltered.

"Plate 12.—A portrait of Linné at the age of 40, together with sundry articles belonging to him, *e. g.*, his doctor's hat, his walking-stick, his easy chair, together with tea-cups on which the 'Linnæa' is represented, and which belonged to a service which one of his admirers in Holland had caused to be manufactured especially for him in the far distant empire of China.

"Plate 13 is a portrait of Linné after an original picture (by Roslin), which Linné himself declared to be the best among his portraits; there are, it is true, more portraits of Linné published, but they are generally not successful.

"Plate 14.—One of Linné's letters, one of the last written with his own hand, being dated '1776, Maji 26,' and accordingly written during the period of his last illness and bodily weakness, one year and seven and a half months before his death (1778, Jan. 10).

"Plate 15 represents, on a diminished scale, but taken from Nature, one of the prettiest plants that, by its colours and its exquisite Vanilla-like perfume, enlivens the dark Pine woods of Sweden, and which has been considered worthy to bear the great naturalist's name, and is accordingly called Linnæa borealis. *E. Fries.*"

New Garden Plants.

ONCIDIUM PELIOGRAMMA, *Lindl., Rchb. f.*

(Pentapetala macropetala.) Paniculatum; sepalis lanceis, lateralibus valde divaricatis; tepalis oblongis acutis; labello basi subhumerato auriculis porrectis, isthmo sensim attenuato portione antica reniformi, lobulosa, nunc quadrilobula; callo baseos oblongo medio apiculato, seu antice tridentato; columna exalata, buccis porrectis, rostello porrecto.

This plant has pale-coloured flowers, in the way of those of Oncidium Baueri, with very pale dots and a similar bar over the isthmus of the lips. It flowered with Director Linden, who obtained it from Chiriqui through Mr. Wallis. *H. G. Rchb. fil.*

KŒLLENSTEINIA IONOPTERA, *Lind., Rchb. f.*

Aff. Kœllensteiniæ Kellnerianæ, Rchb. f. Labello sessili pandurato quadrifido sinubus lateralibus insilientibus valde angustis; laciniis lateralibus oblongis angustis, lacinia antica brevi emarginata, callo inter sinus humili carnoso bilobo seu quadrilobo; columnæ androclinio trifido; lacinia postica humili retusa, laciniis anticis porrectis retusis: pede recte deciso supra labellum.—*Kœllensteinia ionoptera*, Lind., Rchb. f.; Cat. Lind. ex. an. 1868.

Caules foliati basi vaginis nonnullis, sursum monophylli folio cuneato oblongo ligulato acuto usque ultra pedali. Pedunculus basilaris ultra pedalis vaginis paucis distantibus apice racemosus; bracteæ triangulæ ovariis pedicellatis bene breviores; sepala oblonga obtuse acuta, lateralia subfalcata; tepala oblonga acuta; labellum sessile transversum pandurato-constrictum, laciniæ laterales oblongæ transversæ, lacinia antica emarginata transversa; callus carnosus retusus bilobus inter sinus isthmi; columna utrinque retuso brachiata juxta androclinium, cucullo postico abbreviata.

A very interesting member of that herd of odd plants allied to Warrea, Aganisia, Zygopetalum, &c. The flowers, not very much larger than those of the Lily of the Valley, are white, with violet petals, and violet tips and streaks on the sepals; the lip has numerous transverse violet bars. I am not very sure what are the results of management on these plants. From what I have observed they are not much to be relied upon, since they grow one year well, while the next year they will not do well at all. Hence it appears they will never be good guests in our collections, but will now and then appear and disappear. There would appear not to be enough of a bulb on these plants. Our species, a very nice thing, which was discovered in Peru by Mr. Wallis, flowered freely enough with Mr. Linden. I have three dry spikes at hand. *H. G. Rchb. fil.*

POLYCYCNIS GRATIOSA, *Endr., Rchb. f.*

Racemo deflexo nec nutante plurifloro, rhachi velutina, bracteis lanceis acuminatis dorso scabriusculis, ovaria velutina non attingentibus; sepalis ligulatis acutis extus barbulatis; tepalis a basi lineari-lanceis, brevissime unguiculatis; labelli auribus in basi oblongis retusis antice juxta callum medium utrinque obtusangulis; callo interposito rhombeo antrorso velutina, disco antebasilari papillis linearibus obsito, ima basi callo tridentato, lacinia antica a basi oblonga late attenuata in apicilarem partem ligulatum.

This is a species in the way of Polycycnis lepida, yet it appears very distinct by the very short claw of the lip and the anterior part of the same organ. As to the size of the flowers there are two varieties, the fairer one reaching that of the Polycycnis barbata, the other minor one that of the P. lepida. It is a very elegant thing, discovered by M. Endres in Costa Rica. Last autumn it flowered in the celebrated collection of Messrs. Veitch. *H. G. Rchb. fil.*

INDIAN LORANTHS.

The following remarks on the structure and habits of the parasitical Loranths, are taken from a paper of Mr. Scott's, in the "Journal of the Agricultural and Horticultural Society of India." We insert them here, in the hope that, some day or other, some zealous experimentalist will be able to hit upon a plan of cultivating these splendid plants. To such experimentalists Mr. Scott's hints are very suggestive.

"It is generally believed that as the Mistletos have an independent eliminating power, these qualities will be but slightly, if at all, modified by, or partake of, the qualities of their foster-parent. As opposed to this view, I may here give the following quotation from Balfour's 'Cyclopædia of India,' under Viscum monoicum, which has been supposed to be the plant referred to:—'In 1837, Lieutenant Kittoe, then with his regiment at Cuttack, received information of the existence of a parasite on the Nux vomica trees, to which extraordinary medicinal powers were attributed by the natives. They called it Kuchila-kemulung, held it to be an extremely powerful narcotic, and poisonous in small doses, and they used it in the treatment of agues and rheumatism. Lieutenant Kittoe having procured specimens of the leaves, sent them to Dr. O'Shaughnessy, for experiment. Given in three grain doses to dogs and kids, tetanic spasms set in, in the course of from five minutes to a quarter of an hour, recurring at intervals, and proving fatal by fixing the diaphragm, and causing asphyxia.' These results, remarkable though they undoubtedly are, have not been quoted in any of the class-books on Botany, or Floræ Medicæ, which I have seen, and probably require confirmation, in case of any mistake in the kind of leaves actually submitted for examination. From the above statement, Lieutenant Kittoe had never seen the plant growing, but had only heard from the natives of the existence of such a parasite, and been furnished with leaves only (not improbably in a dry state) to determine the character of the plant. It must also be remembered, that the natives do not usually distinguish parasites from epiphytes, so that considering the innocuous qualities of all the known plants of the order, there is a pardonable suspicion of the plant in question having other than an analogical relationship to Mistletos. I have looked in vain on all the trees of Nux vomica which I have seen for Loranthi, but have never found them fostering one, even though surrounded by other kinds, truly overburdened."

Mr. Scott describes the mode of attachment of the seed, its germination, the manner in which the root penetrates the bark, and then goes on to say:—

"A simultaneous growth is afterwards maintained between the parasite and prey, and the consequent result is the imbedding of the lower parts of the former in the subsequently formed woody layers of the latter. The cambium tissue of both being thus on the same plane and in close contact, it is important to observe that they never, as I believe, effect with each other anything approaching a permanent organic union; and thus as it appears to me parasitism in the Loranthus and their allies, as probably throughout the vegetable kingdom, is essentially dependent on the immediate contact of the cellular regions of parasite and prey. I am aware that the physiological relations of parasitic Loranthi have been regarded as analogous to the scion and stock in grafting; this is a mistake, they are essentially distinct, the relations of the parasite and the prey being strictly analogous to the latter and the soil in which it grows, the individuality—organically and physically—being equally as complete; and thus we find the stems of the Loranthi forming snags in the branches in which they have been imbedded: a somewhat remarkable result when we reflect on the interconnexion of their respective cambium regions. This view is, I am aware, opposed to the observations of Unger and others, who consider the inosculation of the vascular tissues of the parasite and its prey an essential condition of all cases of parisitism. I quote from Dr. Harley, in his elaborate paper on the 'Parasitism of the Mistleto' (see Transactions of the Linnæan Society, vol. xxiv., p. 183): 'In fig. 17, tab. iii., he has represented the scalariform ducts of the extremity of the root-substance of Viscum regularly opposed to, and directly inosculating with, the dotted vessels of Cratægus, and opposed to none other of its tissues.' A similar view appears to have been adopted by Adolphe Pitra, in the 'Botanical Zeitung' for 1861, and in the figure he represents the fibro-vascular bundles of the foster-plant curving towards the sides of the roots against which their extremities abut at various angles. Dr. Harley, on the other hand, considers that the phenomena in question are produced by the absorption of the fibro-vascular bundles about the angles of convergence or of divergence, in the extension of the root in these directions, and, therefore, to be independent of any tendency to inosculation of the ducts. Though Dr. Harley thus opposes the inosculation of the vascular tissues of the parasite and its foster-parent, he, on the other hand, considers that a confluence does take place in the cellular system, and that, indeed, this is an essential condition of the parasitism of the Mistleto. Thus, in his remarks on the cortical systems of the two plants, he says that 'the growth of the Mistleto causes great thickening of the bark in its vicinity, and its older layers are pushed outwards and cracked by the distending base of the parasite, and thus a superficial appearance of necrosis is produced; but on closer examination, it is found that the younger layers of the bark are in intimate living contact with the corresponding layers of the bark of Viscum. The contiguous margins of the barks are mutually levelled—that of the Mistleto at the expense of its outer surface, that of the nourishing plant at the expense of its inner surface; and the bark of the parasite is received within, and thus shortly invaginated by the bark of the nourishing plant. At the surface, and for some little distance inwards, the barks are often separated by a little chink; there is, in fact, no union between the dead outer layers of the barks; but more internally they form a continuous living stratum, covering over the smooth line of junction the wood of the two plants, and thus the uninterrupted circulation of the sap through both is secured.' Again, he states that 'the young roots of the Mistleto and the bark of the nourishing plant live contiguously in organic union with each other.' My observations on the relations of the cellular systems of the two plants differ from Dr. Harley's; though it may be as well to state that Dr. Harley's have reference to the Viscum album, whereas mine have been made on Loranthus buddleoides, L. longiflorus and Elytranthe globosus. I have particularly examined these relations under lenses of 150 to 300 diameters, in both milky and limpid juiced plants, as also in that of the gamboge-coloured Xanthochymus; and I am convinced that the two cellular systems rarely, if ever, form true inosculations: the two tissues, though closely applied to each other, seem to me to preserve their individuality, and are in most cases separable without mutilation of the parts, which could of course not be effected in a living and organically united tissue."

With reference to Dr. Harley's theory, according to which there is a direct relation between the number and magnitude of the medullary rays and the attachment of the parasite, Mr. Scott observes—

"In all my observations on Loranthi, the relations between the medullary rays and the secondary roots in any infected branch are decidedly casual; and the parallelism that may exist between them is but a natural result of the mode of development of their rhizomes. Thus, as it appears to me, the theory that 'other conditions being equally favourable, the size and number of the medullary rays is the chief cause which determine in any given case the attachment of the Mistleto' is untenable.

"On the other hand, I believe that the habit and chemical qualities of the bark of plants chiefly determine their relations to the Loranthi, as indicated by the following observations. First, *habit:* trees of compact habit and heavy evergreen foliage, as some of our Magnolias, Guatteria, Garcinia, Nephelium, Jambosa, Diospyros, Artocarpi, Putranjiva, &c., are all unsuited to the Loranthi, and apparently for no other reason than the above. It is curious to observe how strictly the Loranthi, when seen on healthy specimens of any of the heavier foliaged species of the above genera, are confined to the extremities of the shoots. There they live and flourish, only so long as they can extend apace with the lengthening shoots; failing this, as they become enveloped in the dense foliage, their vigour fails them, and sooner or later they die out. Secondly, heavy-foliaged deciduous trees are also generally unfavourable, partly owing to the dry, scaly nature of the bark, the loss of foliage in the cold and hot season, and the heavy shade afforded throughout the rains. It is thus as I believe that we rarely find Loranthi on several of the species of the following genera: Dillenia, Flacourtia, Salmalia, Sterculia, Schleichera, Melicocca, Spondias, Erythrina, Terminalia, Nauclea, &c. Again, dry and thick-barked species, as Eucalypti and Melaleuca of various sorts, Adansonia, Xanthoxylon, Ailantus, Poupartia, Boswellia, Balsamodendron, various Araliaceæ, &c., are all unfavourable; and though I have frequently found seedlings on some of them, I have rarely found them supporting old plants: the seedlings generally dying ere their roots can penetrate and draw support from the inner layers of bark. I find also that trees whose bark has acrid, bitter, or astringent qualities, whether limpid or milky juiced, are but little liable to the attacks of Loranthi, and the less so as these qualities become the more pronounced. Thus: on Melia Azadirachta, with a nauseous and bitter bark, we never find a Loranthus; whereas on that of the blander Melia composita and sempervirens they are by no means uncommon. On the specimens of the following genera, growing in the Botanic Gardens here, I have never seen a single plant of Loranthus establish itself, though all are more or less in proximity to other trees bearing them. These are:—Ochna, Brucea, Simaruba, Averrhoa, Rhamnus, Cæsalpinia, Hæmatoxylon, Acacia Catechu and A. arabica, Lebidibia, Hymenodictyon, Ilex paraguayensis, all of our Apocynaceæ (with the exception of Nerium), Loganiaceæ, and Emblica, &c. The rare occurrence of the Mistleto on the Oak is probably largely due to the astringent qualities in the bark of the latter, and partly, as in the case of Elms, Chestnuts, and others, from the heavy foliage which shrouds them in the growing season, and drops to expose their unripened shoots to a winter's rigour. Again, those with a resinous juice, as the Dipterocarpi generally, the Canariums, many of the Guttiferæ, Melanorrhæa usitatissima, Piscidia, Schinus Molle, Semecarpus, Styrax, and others, are not at all liable to the attacks of the parasitic Loranthi, and indeed I have never found specimens on any of them in the Botanic Gardens here. On the other hand, light airy foliaged trees, with a bland, limpid, or milky juice, and a soft, thinnish, coarse-textured bark, are all especially liable to become the prey of the Loranthi.

(*To be Continued.*)

KEELE HALL GARDENS.

For picturesque arrangement, as well as for completeness, Keele Hall is a most enjoyable place for a horticulturist to visit. Its position, its surroundings of woodland, hill, and dale, its pleasant grounds, excellently kept, with many charming and unique features met with here and there, constitute it one of those fine places, the which, while they excite the envy of Continental visitors, are at once the glory and the boast of Old England. Sameness cannot be laid to the charge of Keele, for there is so much of variety in its manifold features that chill monotony is far removed. "The bounties and tendernesses" of Nature are there in rich profusion, and there are also touches of wild, and even rugged, outlines.

Keele wants to be seen in the spring, when rolling wave after wave of green—every shade of green, too—comes stealing over the mass of trees, shrubs, and underwood, and soft, balmy days are reversing the wrong done by winter; when huge tree-like examples of Rhododendron arboreum are aglow with tints that gleam and glisten in the sun; and many spring flowers blossoming at the foot of the broad Elms and kindred trees, peep out from the dense undergrowth of shrubbery, and light up sundry nooks and woodland ways; or in the full glow of summer, when the sweet sunlight falls in silvery brightness over all the land, and mellows the landscape—when Nature presents herself laden with the teeming wealth of harvest yet unreaped, of clustering fruits and lovely flowers.

There is one defect about Keele—it is too much shut in by outlying belts of woodland. Outside these limitations—not to be too hastily denounced, notwithstanding, for it is right and fitting that we be conservative of our wood-crowned heights—there lie magnificent stretches of vision—

> "Scenes so fair,
> Of stream, and vale, and hill,
> and flocks, and herds,"

that it seems a pity to lose them. The Rev. W. Sneyd has already opened up charming vistas at a few points, where grand natural pictures can be seen through the "skyed loops of shady leaves;" and as the undoubted advantage of doing this presents itself, more openings will probably be made in the dense growth of the trees that are everywhere present.

Figs. 312, 313.—Vista and Holly Hedge at Keele Hall.

Keele Hall being close to that busy commercial centre, the Staffordshire Potteries, can be reached by rail from three different points, viz., Keele Hall Station, Newcastle-under-Lyne, and Whitmore, on the North-Western Railway. It is by the latter that any one visiting the Hall should approach it, the route being through an avenue of great beauty. The view southwards, from a handsome gateway forming the entrance to the stable-yard, is supported by fine specimens of pyramidal Hollies on either side, and then there stretches away for a considerable distance an avenue of fine young Sweet Chestnuts. From the stable entrance the road dips for a considerable distance, and then rises again. The view from this point is very striking, and the eye is enabled to range over a considerable tract of country. The road passes through the stable-yard, and on leaving it, by a ravine excavated out of the sandstone rock, and passing under a handsome stone bridge in the pleasure-grounds above, is continued on to the mansion in the form of a bold sweep, which passes under a grove of Beeches and Sycamores. The ravine is 20 feet in depth, and is overhung by trees on both sides, and with an undergrowth of Hemlock Spruce hanging down over the sides, Yews, Rhododendron ponticum, British Ferns, Ivy, &c. The common Ferns grow out of the crevices of the rocks with native luxuriance; and this passage, during the greatest heat of summer, is always deliciously cool and inviting. The mansion can also be reached, from the entrance to the stable-yard, by means of a winding path, with fine pyramidal Hollies on either side, overtopped in their turn by tall trees, and with a free growth of Laurels and other evergreen shrubs beneath. The mansion is quite new, and is a square solid superstructure, built of the native stone of the district. That used for the facings was brought from Hillington, near to Alton Towers. The foundation stone was laid in 1855, and the gables are in true Elizabethan style. On the south side there is a sunken garden, as seen in the figure opposite (fig. 314), which is separated from the mansion only by an open terrace walk, and reached by means of a descending flight of steps. The various beds in the garden were filled with flowering and foliaged plants, and Irish Yews are dotted about also. At the southern extremity is a handsome stone fountain, and on either side such examples of the variegated Agave americana as are rarely met with. Beyond these stretches away in a gentle declivity a rich grassy sward, and about it are planted very fine specimens of pyramidal Yews, Hemlock Spruce, &c. Much more steeply the ground slopes away from the mansion on the east side. It is a soft green sward, on which are set down beds of flowering shrubs, both deciduous and evergreen; masses of various coloured Belgian Azaleas, that are very fine in the spring months, &c., with specimen ornamental and Coniferous trees beyond.

From this point are obtained fine views of woodland, overlooking Trentham and Barlaston Halls. On the left, and to a great extent hidden from view by the umbrageous branches of thriving trees, lies a sheet of ornamental water, behind which is a thickly wooded tract; and further on lies Springpool Wood, covering a considerable space, and extending a long distance. Semi-wild woodland walks traverse these woods, and are lined with countless numbers of Rhododendron ponticum that thrive here with great luxuriance. This and the Hemlock Spruce line the sloping banks on either side of a natural valley, with water along the bottom—sometimes only a narrow running stream, and occasionally widening out to a large pool. Everywhere, especially where the trees are thickest, the Hemlock Spruce luxuriates; moisture and shade it has in abundance, and it flourishes with unwonted vigour. Spring flowers innumerable light up these woodland ways,—the vernal Squill, the wood Anemone, Primroses, Cowslips, a wild Allium growing in huge masses crowned with numberless white flowers (but a thing to be kept on the leeward side of one's track), and others can be seen here, growing unchecked amid the quiet of the woods. On the opposite side of the pool from the house there is a nice piece of artificial rockwork and waterfall, a glimpse of which is obtained from the north and west sides, and partly so on the east; huge Beeches and other trees serve as screens from the rude winds that come from these quarters, and beneath the trees, in one or two places, a piece of artificial rockery has been thrown up, that comes into the panorama with excellent effect.

To describe in detail the other parts of the pleasure grounds, it is necessary to start from the gardener's residence, which forms the north-western corner of the quadrangle, of which the stables are a part. Mr. William Hill, the gardener at Keele Hall, has made the place famous for the high class quality of the Grapes he has grown there in times past. He is not less successful now that he has retired with the laurels he so worthily won. He has been many years at Keele, enjoying the confidence and respect of the late and present proprietors of the Hall, as well as the kindly regard of many brother gardeners the country through. In such a cottage as the one he occupies, so charmingly situated and fitted up, and finished with such unobtrusive elegance, one could wish to spend the decline of life, softly sinking down in age to the quiet sleep of the grave. Before it lies stretched out three oblong gardens, two of them walled in, and known as the upper and lower kitchen gardens, and in these are contained the glass structures. A central walk runs longitudinally through each garden, till the third is reached. It is here the descriptive account of the pleasure grounds will be resumed, leaving the glass structures and the kitchen gardens (which are full of interest) for a later paper.

Passing from the second oblong garden in a westerly direction, admittance is gained to a third by means of a leafy archway, under the shade of splendid Beeches and other trees; and here is an orchard, and also a rosary, with other features. A broad turf walk, 8 feet in width, and about 160 yards in length, runs throughout it, and for a considerable distance there is a broad ribbon border on either side. These borders are very effective indeed during the summer months. They were planted thus:—At back, Hollyhocks and Tritoma Uvaria alternately, the latter fine plants but showing the scathing effects of the severe winter; next, the purple Zelinda Dahlia; then double white Feverfew, one of the best white flowering bedding plants we possess; then Stella Nosegay Pelargoniums, Lobelia Erinus speciosa, and an outer margin of Cerastium. Right and left was a fruit garden containing pyramidal Pears and Apples; then, passing on, came a rosary in the centre of the garden, having as a centre a huge conically trained Yew, and round this a series of girdles divided into segments, each about 3 feet in width, edged either with Yew, Cotoneaster, or Box, with narrow circular gravel walks between each girdle. Outside this was a flower border, backed up by a ring of standard and dwarf Roses. Then another divison, forming fruit gardens right and left. The ribbon border here diverges to the right and left, and, taking a transverse direction, is continued till the sides of the garden are reached. Next comes one of the features of Keele, viz., a splendid avenue of Cedrus Deodara, 20 yards in width, the specimens planted on a fine piece of closely-shaven turf; there are 12 trees in each line, planted about 24 feet apart; the length of the avenue being about 100 yards. The specimens, which were all of handsome proportions and well furnished, averaged in height 30 feet. In the first flush of their early growth they might have been likened to fountains of living liquid green. Looking down this avenue, a magnificent vista is opened out, and the visitor can look away for miles over a fertile country on to the splendid woodlands of Shropshire. Next the avenue of Deodars ran a Holly hedge in the same direction, and between this and an avenue of Limes, kept very closely clipped because planted so closely together, were a number of flower beds, mainly oblong in shape, and planted with Stocks, Asters, Lavender, Honeysuckle, Cabbage Roses, Moss and old Provence Roses, Clove Carnations, &c., from which to obtain supplies of cut flowers. At the extreme end of this garden, westward, there is a Holly hedge, forming the boundary line between it and the Park; and between the Limes and this hedge, which is kept well clipped, was a promenade on the turf, running parallel with the Cedar avenue, and shaded by the Limes. The northern boundary of this garden, parallel with the broad turf walk between the ribbon borders, is a magnificent Holly hedge, perhaps without a parallel in the United Kingdom; and running parallel with it a broad gravel walk. This hedge is an arboreal wonder, and when it was planted is a matter for conjecture, but it is supposed quite 100 years ago. In length it is 200 yards, height 25 feet; it is 20 feet in width at the bottom, and 8 feet at the top. It is kept closely clipped, and in appearance looks like a solid piece of masonry, or a powerful breakwater. One could almost walk on the top of it, so dense is the growth; and at all parts it is like a compact fortress wall. The opposite view (fig. 313) gives this magnificent hedge as looked at from the north-west corner of the garden, and the commencement of the Cedrus Deodara avenue can be seen on the right. Rather more than half way down the walk seen in the view, the hedge is carried across it in the form of an archway, which is 25 feet in height. The annexed view of the hedge (fig. 315), taken from the north-east corner of the garden, brings out more fully the outline of the archway. This hedge is a most effectual screen from the northern blasts, and Mr. Hill stated that during the winter months hundreds of small birds make it a roosting place. The girth of the stems of some of these Hollies equals that of the trunks of the Beech, and a great deal of labour is requisite to keep the hedge nicely clipped and trimmed.

At the end of the walk, and just at that point from which the first view is taken, there is a handsome pair of gates, which open into the park, and close by, inserted in the Holly hedge, and commanding a view of the promenade under the Lime trees, quite an unique summer-house, the walls of which are lined with handsomely designed examples of Minton's tiles.

From this point, passing along by the broad walk under the Holly hedge, there is reached at the north-east end of it a small circular garden, surrounding a thick closely trimmed Holly hedge, with niches cut in it for the reception of statuary, and with marble busts on tall pedestals. The centre is occupied by a raised turf mound, surmounted by statuary, with wedge-shaped beds cut in the sloping banks; and round these, on the ground level, a girdle of circular beds. Then passing through a shady grove, with spreading Beeches overhead, and Rhododendrons beneath, and on through a pair of handsome iron gates, a charming Italian garden is reached, formerly the site of an old bowling-green. A magnificent grove of Beeches and other trees come in on the west and north, with shrubs as an undergrowth; there is a Yew hedge on the south, and large examples of Rhododendron arboreum and R. ponticum on the east. Perhaps the former are among some of the finest to be found. In the Rhododendron bank is placed a very curious sun-dial.

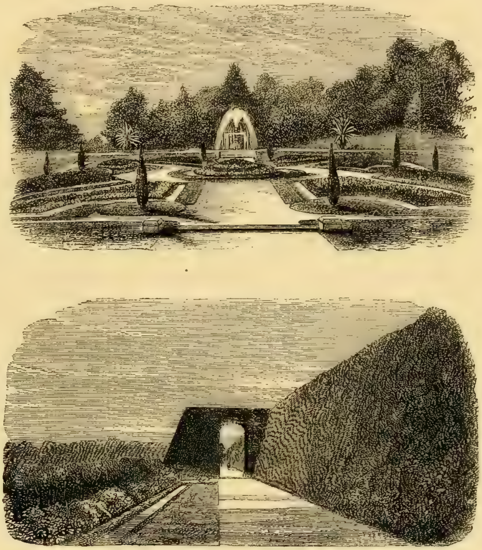
Passing from the Italian garden, access is gained to a broad gravel walk running eastwards towards the mansion. Evergreen shrubs and Rhododendrons closely grown together as a hedge skirt the walk on the left hand; on the right, further fine examples of Rhododendron arboreum and various ornamental trees. We give (fig. 312) a view of the vista formed by this walk. A delightful repose prevails here, broken only by the soft summer breeze fanning the trees, or the pleasant music of singing birds. The far end of this walk forms a terrace, from which the kitchen garden can be overlooked. Running parallel with this walk, but at a higher elevation, reached by a flight of steps, is a Chestnut grove, containing some fine old trees of great age, their time-honoured trunks memorials of past generations. There is a line of these Chestnuts on the left hand; on the right, a corresponding line of Scotch Firs, also of great age, with huge trunks that must represent the growth of many, many years, and with heads towering aloft above the trees that surround them. On either side, at their feet, are Rhododendrons, Hollies, &c. A broad grassy walk runs beneath these trees, a spacious and most pleasant promenade—a truly delightful spot to lounge in, and hold communion with the visible forms of Nature—

> "When winter storms have ceased to chide,
> And all the new-leaved woods, resounding wide,
> Send out wild hymns upon the scented air;"

or when the sun goes down in glory over the western mountains on a calm summer's eve.

Skirting the grove on the left, we strike into a walk through the pleasure ground, and find ourselves among handsome specimen Coniferous trees, such as Cedrus Deodara, Araucaria imbricata, &c. Specially noticeable are the really grand specimens of the large-leaved Ilex Aquifolium Hodginsii, very tall and splendidly furnished. The examples of this Holly, met with all over the pleasure grounds, are an admirable feature at Keele. Fine old Sycamores come in at this point, and near them other towering Scotch Firs; and it is a matter for deep regret that evidences of decay are appearing in some of them. Close by is a remarkable group of large specimens of Rhododendron arboreum, of great height, and there is a good example of the Fern-leaved Beech, but the top of the tree has sported back to the old form. Hard by these is gained a charming peep at a piece of artificial work in a secluded valley, like the half-dried course of a mountain stream. Round it are growing Cedars covered with climbing Roses, and there is a thick growth of underwood. It reminds one of a mountain pass, and it would form an excellent site for an alpine and rock garden. Artificial walls formed of stone surround it in part, and in the crevices such things as Viola cornuta, London Pride, and other things were growing must luxuriantly. Then passing from this by means of a subterranean passage, access is gained to a secluded garden, with rocky dells here and there under overhanging trees, and a rustic summer-house, forming a most refreshing retreat from the heat of the noon-day sun. Then, by means of an ascending path, the end of the Chestnut grove is reached, hard by the gardener's residence, and the visitor emerges on to the terrace overlooking the kitchen garden. From this point fine views of the surrounding country could be had southward, were it not that the thick belt of trees on that side of the kitchen garden obstructs the view. A few fine vistas could be opened up by thinning the trees, some of which could be well spared, as they are planted very thickly.

Such, then, is a sketch of some of the leading features of Keele Hall. But no visitor should go there without walking through the pleasant village of Keele, where the tasteful cottage residences remind one of villa residences about the suburbs of a well-to-do town. The handsome new church well repays an inspection. It stands a monument to attest the generosity and the piety of a fine example of the English country gentleman—the late Ralph Sneyd, of Keele Hall. *D.*



FIGS. 314, 315.—FLOWER GARDEN AND HOLLY HEDGE AT KEELE HALL.

POTATOS.

MESSRS. SUTTON & SONS, the well-known seedsmen of Reading, recently lifted a large trial of Potatos, in their trial ground, near Reading. This ground occupies a huge angle between the Great Western and South-Eastern Railways, and is mainly used for selecting stocks of various agricultural and garden seeds, from which to grow produce for general sale. Such a trial ground as this is not only indispensable to, but of the highest value to a large business establishment, and at no season of the year is it destitute of interest. It was in this ground that the trial of Potatos was exhibited.

The soil having recently been converted from pasture into arable land, and being somewhat stony and shallow in regard to the surface soil, the Potatos were not so much remarkable for size as for general good cropping qualities, moderately-sized handsome tubers, and a pretty general freedom from disease. To save time, several roots of each variety included in the trial were lifted, ready for inspection. It may here be stated that Messrs. Sutton & Sons do a very large business in seed Potatos, which are grown for them by neighbouring farmers and others; and it is their invariable rule to plant a line of any variety received from their growers; thus it may, and does happen, there may be six, or eight, or even more samples of any one variety. It was noticeable that these were all of one general excellence of character.

A few odd sorts were at first looked over. Among these were the Canadian Kidney, which was identical with Dawe's Matchless; Paterson's White Kidney, which nearly resembled the latter, but had a rather stronger and stouter growth; a good early round variety, not yet distributed, and provisionally named Sutton,s Berkshire Round; the Ram's horn Kidney, a somewhat mean-looking Potato, turned up at the ends, and leading one to wonder why it was ever distributed; Erdington Monarch, a good Lapstone type, but producing many round tubers; Oxfordshire Kidney, a late variety, and a good cropper, but with very compact foliage; and Golden Zone, a golden-foliaged Regent, and a much stronger grower than Golden Gem.

Passing on now to inspect the trial varieties, which came in regular order, commencing with the earliest, the first to challenge attention was Sutton's Early Racehorse, a very good-looking early kidney, said by the Messrs. Sutton to be the very best early kidney grown; the foliage is somewhat curled, and the tubers larger than the Early Ashleaf. Next came Rivers' Royal Ashleaf, a fine free-cropping variety, but three weeks later than Racehorse; the samples clean and handsome. Caversham Defiance had a sort of half Lapstone shape, and was early, a good cropper, and short in the haulm; Sandringham Kidney, a good walnut-leaved kidney type; the Old Ashleaf, cropping better than is generally seen; Mona's Ashleaf, the tubers large and good-looking, a variety much grown to give an early supply to the Liverpool markets; several capital samples of Myatt's Ashleaf, looking as nice as anyone could desire to see this variety; some good samples of the American Rose, the tubers fine and handsome, and without the coarseness frequently observed in that variety during the past summer; the Early Goodrich, one of the best of the American varieties, white flesh, and a good cropper: this Potato many persons seem to be much pleased with;

Jackson's Kidney, a sound early kidney of the type of the Prince of Wales; King of Potatos, a good second early variety that keeps well, being a large cropper, and the produce being round, flat, and kidney-shaped; Prince of Wales, a coarse kidney, but yielding handsome tubers; Sutton's Berkshire Kidney, a seedling, raised from the Fluke, a free bearing main-crop variety; Haigh's Kidney, very handsome in shape, and a stronger grower than the Lapstone, which it much resembles; Headley's Nonpareil, a handsome clear-skinned Potato, but in the case of the trial here not a heavy cropper; Golden Blossomed Kidney, much recommended as a fine main-crop Potato; some excellent tubers of the old Lapstone, all handsome in appearance and very smooth; the Belgian Fluke, a large white kidney of coarse appearance, the foliage distinct in character from that of the Fluke; some good samples of the Fluke and Red Ashleaf; the Early Coldstream, a capital round variety, handsome in shape, and a good cropper; Shaw's and Early Oxford, both deep in the eye, and spare producers; Fox's Seedling, a good-looking round type; Daintree's Seedling, Drummond's Prolific, Dalmahoy and Early Regents—four round types, appearing to be identical; Wellington, a good-looking variety with coloured eyes, and fine in sample; Gryffe Castle Seedling, said to be one of the best of the Regent type; Wood's Scarlet Kidney, which appeared to have been selected from the Early Red Emperor, and, like many other Potatos, has a tendency to throw kidney-shaped tubers; and Milky White and Paterson's Victoria represented by excellent samples of each. Sutton's Red-skinned Flourball proved to be remarkably good in the light soil of the trial ground. It is only just to Messrs. Sutton and Sons to mention that this variety was said to have been raised as a seedling within a very short distance of their trial ground, and that they distributed it in the full belief that it was entirely distinct in character, an opinion which they still hold, notwithstanding what has been stated to the contrary. Snowball, Walker's Regent, Paterson's Regent, Improved Rock, and the Old Rock, appeared to be very similar.

Several of the American varieties could here be seen; in fact, there had been a very interesting trial of them. Peach-blossom was as like the Red-skinned Flourball as could be, but paler in the skin, it also had a clear white flesh; Prairie Seedling, apparently the same type as the Goodrich, but larger and later, and said to be the best of the American varieties. Pink-eyed Rusty Coat, a dark red round Potato, white flesh, said to be of good quality, and a fine cropper; King of Earlies, white tubers, slightly suffused with pink, short haulm; appears early. Bresee's Prolific, the tubers slightly tinted with red round the eyes, a very heavy cropper; quality said to be good. Peerless, the type of Early Goodrich, and a heavy cropper; and Early Silver, apparently a worthless yellow-fleshed round variety.

Yet another miscellaneous group, formed of a few sorts that came too late to be classed with the others. This included Early May, a second early kidney of little merit; Gloucestershire Kidney, which seemed to be identical with Prince of Wales; Lady Duff Kidney, same as the Old Walnutleaf; Paterson's Zebra, a rough-looking red round, blotched with white; Paterson's Red, a red round, not large in size, but a great cropper; Rivers' Early Ten-week, a handsome round Potato, apparently a good cropper; Fox's Scarlet King, a second early kidney variety, with a clear red skin; Red Fluke, a half round, pale red-coloured tuber of very coarse growth; Early Red-skin, a kidney-shaped variety, rather paler in the skin than Scarlet King; Prussian Raspberry-leaved, a red tuber, much like the Red Emperor, the foliage said to resemble that of the Raspberry; and the New Giant Red Mammoth, and New Giant White Mammoth, the former a red, the latter a white Bovinia, both received from Benary, of Erfurt, and altogether worthless for table purposes.

As some prominence is now being given to the Potato, a record of this trial may be of service to those who are interested in a more correct classification of the many reputed varieties in cultivation. *R. D.*

THE RATIONALE OF HOT-WATER CIRCULATION.

PERMIT me to thank your able correspondent, the Rev. J. M. Taylor, for his paper in reply to mine. So-called controversialists, that is, those who see different phases of the same truth from different stand-points, should be like schoolboys—hit each other hard if the interests of truth, or right, fancied or real, seem to require it, and love equally hard and fast ever afterwards. I never, either as boy or man, could understand why difference of opinion should sever or prevent the formation of friendship. It is less our opinions than the spirit in which we hold or relinquish them that ought to commend us to each other. Hence I gladly take the proffered hand of friendship held out to me in the concluding sentence of Mr. Taylor's letter, and re-echo his wish that the discussion may be perfectly friendly. I think it was Charles Lamb who paid Scotchmen the equivocal compliment, that they knew but one mood—the positive. Their attitude, he declared, was never a doubtful or uncertain one. They were ever ready to cut the subtle web of speculative doubt with their sharp, incisive "I know." Your correspondent seems to have formed a similar opinion of me, when he ventured to open his paper with, "Caloric, Mr. Fish says, is the driving force of the universe." Rather a sledge-hammer style of announcing a virtual fact. My statement was somewhat more modest, as will be seen on turning to p. 1327, col. *b*: "We speak and write of caloric as the driving force of the universe. . . . Nevertheless, this seems but one side of the truth." And what is the other side presented by me? Why, this—that gravitation is a motive power of equal or perhaps greater potency. That, in fact, is the whole purport of my article, as proved by my illustration from the natural circulation of hot air and water from the equator to the poles and back. Motion, I contend, is not solely the product of either caloric or gravitation; it is born of the difference between the two. Does your correspondent mean to affirm that gravitation alone is the cause of motion? If so, then we differ widely indeed; but if not, it seems to me we are substantially agreed. So far am I from contending that heat alone is the cause of motion, that I even state that it is difficult at times to affirm whether heat or cold takes the initiative. This sentence is severely censured by your correspondent, who, however, does not stop to explain which of the racers, heat or cold, is first or last in the contest for equality. Had he done so, I submit, greater service would have been rendered to the theory and practice of perfect heating than by the critical dissection of sentences such as that referring to the upward bounding of caloric, &c.

Such severe handling of detached sentences may be all very well in literary reviews, but seem hardly in character in the pages of the *Gardeners' Chronicle*, where we are more careful about the truths taught than the trappings or style of their dress. Neither is so severe a handling of mere phrases quite in character with the spirit of an age in which a distinct function is assigned to the imagination—in scientific investigations and the wildest dreams of speculation, the most erratic fancies of poets are outdone by the presidents of our most philosophical associations, when they venture to clothe our earth with the left-off clothing of other and older worlds, or to stock it with the fragmentary *débris* of worn-out or fractured planets. In comparison with such fancies as these, my expression of caloric ever aiming at its source, the sun, is mild and commonplace, "the spokes of the wheel and the hands of the clock" notwithstanding. Indeed, such corrections are just as *apropos* to our everyday "up and down," as to the upward bound or rush of heat—neither less nor more. From this mere dissection of sentences, which the writer himself virtually confesses to have overdone, I invite your readers to read my paper on p. 1327, in connection with that of your correspondent on pp. 1389, 1390.

Unless the Rev. J. M. Taylor is prepared to hold that gravitation is the sole motive power in heating—which he cannot mean—our theory seems identical; and we differ, if at all, about the relative proportions of the two motive forces, and the mode of their application, rather than about these forces themselves. But as this gentleman has promised further contributions on the principles that govern the movement of fluids and bodies immersed in them, and their bearing among other things upon hot-water apparatus, I shall gladly await their appearance before going at any length into the subject.

There is one point, however, of so much practical importance, that it will brook no delay. It is this. I advised, as a means of adding to the force of the circulation, the keeping of the crown of the boiler hot, and its base cool. "Now," says the Rev. J. M. Taylor, "if gravitation be the motive power, no instruction with respect to the lower part of the boiler could be more mischievous." I stop not to inquire a second time whether this gentleman holds gravitation to be the sole power,—from other parts of his letter, it would seem that he is totally opposed to caloric being recognised as a mode of motion. He cites other cases of a change of condition or of bulk in bodies being the cause of motion, but surely such changes are also the result of heat previously expended on such bodies, and hence attributable to caloric.

Again, supposing gravitation the sole cause of motion, it by no means follows that my instructions to keep the crown of boilers hot and their base cool, would be half so mischievous as the Rev. J. M. Taylor supposes. Surely there are degrees of coolness. Your correspondent assumes that the water in the bottom of the boiler, and that returning in the return-pipe, would be of equal temperature. His calculations of the 6 or 12 inches of cool water in the base of the boiler being an equipose to the cool water in the bottom of the descending pipe, is based upon this assumption. Such, however, would assuredly not be the case. The water that had made the circuit of the house would of necessity be much colder than that at the base of the boiler, and every increment of heat to the latter would lessen the power of resistance to the returning stream. In fact, practically, and with a fair elevation, the resistance offered by the water in the bottom of the boiler, being somewhat cooler than that at the crown, would not prove a perceptible obstacle to circulation. But all this is on the assumption that gravitation alone is the motive power, a hypothesis which I by no means accept, any more than that caloric alone is the sole moving force; but admitting the action of both, my instruction to keep the crown of the boiler hotter than its base, is sound in theory as it is helpful to a vigorous circulation in practice. It hinders the possibility of that reverse action, which is one of the greatest hindrances to the continued and regular circulation of hot water. Allow the base of the boiler to be as hot, or hotter, than its crown, and back circulation will happen at times in almost all heating apparatuses. Make the highest pipe the return, and you increase the risk, the certainty of this reverse action, by every inch you gain in altitude, by the reversal of the usual arrangements. Your correspondent seems to ignore the fact, that the higher the vertical plunge of the cold water, the greater the inducement of the hot current to meet and master it on its own ground. Hence the economy of force, in the advice to keep the base of your boiler cooler than its crown. In other words, offer no resistance to gravitation in its proper mission of returning back the cold, and aid caloric all you can in sending forth the hot water.

Thus will these two seemingly opposing forces be so disposed of as to aid each other in maintaining a constant and vigorous circulation. If the Rev. J. M. Taylor can show us how gravitation alone does all the work, then may not only my instruction about boilers but probably fires likewise be dispensed with, as the more cold the more weight, and hence the stronger the moving power. *D. T. Fish.*

Home Correspondence.

Fern Fronds for Decoration.—Lovers of Ferns must often have remarked with surprise that the London flower markets offer so miserably small a variety of kinds of Fern fronds for decoration. The sort most commonly met with is Maidenhair, not our English species, but Adiantum cuneatum; and this is too frequently grown in heat instead of in a greenhouse. Besides the Maidenhair there is only one other that comes into the market in any quantity, and that is Pteris serrulata. It may be that, as these two species come up like weeds in every part of a Fern-house and are found suitable by the florists, there has been no pressure put upon growers to provide greater variety. Yet I cannot help thinking that if any one were to grow for market some of the Ferns I propose now to mention, their fronds would command remunerative prices. The demand for fronds from 4 to 6 feet long is so exceptional, that it would of course not pay to grow Cyathea dealbata, Cibotium Schiedei, or Goniophlebium subauriculatum, though for large decorations their fronds are probably the most glorious examples of foliage that could be picked out. But of fronds of the size generally used, from 6 to 18 inches long, surely we might have a little more variety. One of the most beautiful is Pteris scaberula, a finely divided, hard, wiry kind, which lasts a long time in a vase. Another very elegant and durable sort is Hypolepis distans, a deep green, though not a dark green. As a contrast to this, Lastrea decurrens, Pteris flabellata, P. straminea, and Anemidictyon Phyllitidis give useful fronds of a pale green colour. If long elegant forms are wanted, of a good bright green, there are Davallia dissecta, D. tenuifolia, and Onychium japonicum to choose between. There is probably nothing in the Fern world more lovely than a fine frond of Adiantum farleyense, which I fancy must force its way as a market plant; indeed, I received one frond of it the other day (with some Maidenhair and other Ferns) from Covent Garden, so I have hopes of finding it plentiful there in the course of time. But I fear that it is of little use hoping that Gleichenias will ever be grown for the sale of their fronds. Their lasting powers are unequalled amongst Ferns, since they are so firm, hard, and dry, that they will preserve their good looks well for many hours without water, and for many days in a vase. For forming light arches over a dinner table there is nothing so pretty; Gleichenia hecistophylla, rupestris, and Speluncæ (true, and of gardens) are, I think, the four most suitable for this purpose, while G. flabellata stands unrivalled as a drooping fringe for flower vases. I have repeatedly been under obligations to Mr. Sim, the nurseryman at Foot's Cray, for opportunities of using all these species, as well as very many other kinds of rare Ferns, when the size of his plants would admit of his cutting fronds from them. *W. T.*

The Seedsman's Assistant.—The public generally, and but few gardeners, are aware of the "four months' hard labour" to which the seedsman's assistants have to submit every year, viz., January, February, March, and April. When I say "hard labour," I mean not so much hard work as the long hours during these months. As an assistant, I have been connected with the retail seed trade both in England, Ireland, and Scotland for upwards of 18 years, and on an average during the "busy season" (the four months named) had to be hard at it, so as to meet the requirements of the season, from 8 o'clock in the morning till 11 and 12 at night, and very often till 1 and 2 o'clock the following morning, and this I believe to be the general rule of the trade. Of course all seed establishments are closed (with but few exceptions) at not later than 8 o'clock P.M. during these months, the remaining eight months somewhat earlier, but still we are working inside for hours after the shop is closed to the public. We lose our rest in consequence of these long hours, and as a consequence our health. This is a well-known fact in the trade. Again, it is of the utmost importance that all orders be executed with the greatest care. It is a very serious thing for the gardener to have sent him Cabbage seed instead of Cauliflower, or Borecole instead of Broccoli, but how can mistakes be prevented when it is "all work and no play" (or, if you please, little sleep)? Can any of your numerous readers suggest a remedy for this mutual evil and disadvantage? I know many gardeners in reply will say,—Why not employ extra hands? Quite right, but how would you employ "extra hands" during the remaining eight months? It is not reasonable to suppose the employer would keep the young men to do nothing. There are two or three remedies which suggest themselves to me, and which I think are to the point. The first, and perhaps not the least important, is to have early orders. Most gardeners know their requirements for the season, but how few there are who send in their orders till actually required; the consequence is, all the orders come in a rush, and are wanted at once, and we poor assistants have to suffer. Do think on us early in January; never mind the frost; and, though the ground be covered a foot deep in snow, we are in a position then to execute your orders, only let us have them early; they can be forwarded any time to suit your convenience. Another remedy is, for gardeners to write their orders distinctly: not half-a-dozen articles in one line and on both sides of the paper; this gives the assistant endless trouble and annoyance: he very often has to write the order out afresh before it can be executed or passed to the clerk for booking. For the sake of convenience, and to obviate the trouble of writing out a seed order, most seedsmen now send out with their seed catalogue what we call a "return list," with blank columns, so that the quantity required may readily be filled in. I hope all gardeners who are fortunate enough to receive these "return lists" will kindly use them. My third remedy I may at some future time suggest, in the meantime I wait the opinion of others. *An Assistant*, *October* 27.

Cedar of Lebanon Seeding.—May I ask your readers whether they have ever known a Cedar of Lebanon to produce perfect seeds in this country? We are all intimately acquainted with their very characteristic-looking cones, so densely borne by some trees. I have personally seen squirrels very busily engaged amongst them, but whether on a test search, or for absolute gain of the seeds they may by instinct have known them to possess, I could not define. *William Earley*, *Valentines.* [We have seen perfect seeds in the cones of this tree, and believe they are made use of by the nurserymen to keep up their stock of plants. EDS.]

Bees Combing Outside Trees.—It may be interesting to some of your readers to know that instances of the honey bee forming combs outside of trees are not so rare as your correspondent, "M. J. B." imagines. I have observed it on three occasions since 1866. The most remarkable case was at Cargen, Kirkcudbrightshire, in September, 1866; three large pieces of comb were suspended from a branch in the centre of a common green Holly; the three combs weighed 5 lb., and were all very pure. The combs were invisible on account of the bees clustering on them, and before disturbing the bees you had to be prepared to make a speedy exit. The other two cases were not so remarkable; they were at Jardine Hall, near Dumfries, in October, 1868. In both cases, pieces of comb were suspended from the boards on which hives were set. *J. J.*

Evergreen Firs at Zurich.—Your correspondent, A. Boyle, holds a very common error, that trees have their lower branches killed by the influence of their upper branches. Any tree of our climate, except a few with perpendicular growing branches, will have its lower branches feather towards the ground, if it be planted originally far from other trees or shrubs, and kept so. The "evergreens" were probably Spruce or Silver Fir [or Pinus Laricio?]. It would probably be too cold for most of the newly imported Conifers, such as P. insignis, P. excelsa, or even the Weymouth Pine. *Somerset.*

Deodar Catkins and Cones.—Your reporter says, p. 1425, "Dr. Masters showed male and female cones of the Deodar, which seem frequent this season"! Some of your readers may be able to swallow both kinds, but an old man with spectacles cannot possibly bolt a "male cone"—a male catkin or flower conically formed, if you please; but a male cone is too much akin to an "Irish bull" being "a good milker." *W. B.* [Our correspondent is hypercritical. The female cone is a catkin, and there is nothing botanically wrong in calling the male catkin of a Conifer a cone, using the word in a general sense. We have had, moreover, several male catkins of the Deodar sent to us as "cones,"—*i.e.*, seed-cones—by persons who did not recognise the pollen cone from the seed cone, which is a worse lapse than the use of the word cone in a general and not in a restricted sense. EDS.]

The Effects of Snow on the Douglas Fir.—My friend, "G. F. M.," will hardly be satisfied with your answer to his query, viz., a heavy fall of snow is assuredly likely to break the branches of the Douglas Fir, &c. My experience is opposed to this assurance; 1st, practically, after 35 years' observation with hundreds of specimens; 2d, the comparison between the Cedar of Lebanon and Douglas Fir does not hold good, because the ramification of the Cedar is totally different to that of the Douglas Fir. The former forms limbs with tabulæform branches, and will not bend, but break; and for a twofold reason, because the texture of Cedrus Libani is very fragile. *W. B.* [We believe we have seen a branch of Douglas Fir broken off by weight of snow. EDS.]

Araucaria imbricata Gumming.—If Mr. Stalker will examine his trees, he will find they have been root-bound from infancy. In such cases, when the compressed roots become strangled, the elaborated sap cannot pass to elongate the roots, and the corresponding vessels in the trunk become ruptured; the sap oozes out to the surface, the aqueous portion evaporates, and the resinous portion forms a white deposit, not "gummy," as it is erroneously called, as gum does not belong to resinous trees, but to stone fruit trees. *W. B.*

—— I observe some remarks at p. 1424, by Mr. Stalker, Hempsted Park, respecting the gumming, or rather the oozing out of turpentine from the stem of the Araucaria imbricata. I should imagine by the description given that the trees are planted low—that is, level with the earth's surface, so that the loose soil about them absorbs the moisture from the surrounding locality; or else that the subsoil is cold and unkindly. But then the one forked about was filled round with turfy healthy soil and manure. I don't know about manure, as I don't believe in its use for Coniferous plants of any kind. Well decomposed vegetable soil and leaf-mould, if intermixed with plenty of coarse sand or stones, would do good on cold, stiff soils. Moreover, all Araucarias, when planted on stiff cold soil, in damp localities, should be planted on methodically raised mounds, as they are naturally mountainous plants, growing in high and dry localities. I was obliged to have every Araucaria at Bicton removed, and placed on a mound, in consequence of their oozing out turpentine, or gum if you like, and they all and everyone recovered and became healthy. I have just returned from my tour, and in my travels have been through France, the Channel and other islands, and every county in England, Wales, and Scotland. During this journey I have seen many Araucarias, and have observed many of them to be affected by this gumming, and becoming rusty and unhealthy, losing their lower branches, &c. I am also able to assure my friends that I am still alive, although it has been currently reported that I and my wife were both lost at sea; and, therefore, Messrs. Editors, I hope, through my long experience, as well as from observations made during my tour, to be able to give you some interesting articles respecting this noble, curious, and interesting tree, as promised some time since. *James Barnes*, *Exmouth.* [Pray do. EDS.]

Glass Copings for Walls.—When I wrote the notice of Mr. Rendle's glass copings I had forgotten those of Mr. Webb, otherwise, in justice to that gentleman, I should have noticed them—though, indeed, in that case I ought likewise to have described a very efficient protector offered by Mr. Beard, whose patent system of glazing Mr. Webb touches, if he does not infringe, by the use of felt as a buffer between the glass and iron. And after all, Mr. Rendle's invention is none the worse, but the better, for something very similar having been tried and found efficient by others. As to the question of novelty or originality of invention, I say only this, that the origination of grooved bricks for glazing of necessity suggested grooved metal bars; and for such purposes as copings the latter are by far the more useful. I hope these few sentences will satisfy both inventors; and, what is of more consequence, that your readers will find glass copings capable of sustaining the high character Mr. Webb is able to give them from experience. *F.*

—— I have noticed the letter from Mr. E. Webb in your last week's paper, and had not the least idea that he had introduced my glass copings. I do not think either he or I can lay any claim to originality in these, but I do lay claim to a new system of fixing the glass in metal grooves. You will observe that Mr. Webb uses a wooden strip to fix the glass; this will soon perish and decay. I use only metal, and have not any wood exposed to the action of the atmosphere. I am glad to find that the copings answer so well, and hope they will soon get into general use. *William Edgcumbe Rendle*, 3, *Westminster Chambers*, *Victoria Street*, *S.W.*

Fruiting of Pteris scaberula.—Seeing a paragraph at p. 1359 respecting the rare production of fruitful fronds on Pteris scaberula, I enclose you a few in that condition, and for the information of your readers may state that my plants constantly produce spores on some of their fronds. I account for it by the mode of treatment, for the plants that bear spores are growing in a wall built up of sods of bog peat, and run freely over the surface, rooting as they run. Other plants, grown in pans, fruited as long as they had plenty of room, but since the pans have become full they have ceased to produce. I may add that another Fern on the same wall, Hypolepis distans, which rarely produces spores, is now full of them. *Thomas C. Copland*, *Dublin.* [The specimens sent are abundantly fructified, as are others from Welwyn, where Mr. Parsons informs us he obtains an abundance of young seedling plants. On the other hand, the magnificent specimen from Mr. Smee's garden, shown on the 1st inst. at Kensington, did not, so far as we could discover, bear any fertile fronds. EDS.]

Certificating Grapes.—Who is "Vitis?" who if "Lynx Eye?" I think I can guess one of them. It either has any fault to find with the Fruit Committee, why does he not sign his real name? I hate anonymous attacks. If a man is in anything an authority, his communications will have the greater weight if his name be attached, whatever the subject he writes about; but to attack any man, or any body of men, under the mask of a cognomen, is unworthy of a man. I am thankful that no Editor can say he has received a paper from me on any subject without my real name. I owe no man a grudge for pricking me in a bout at fencing, but a stab in the back is another affair. We have had too much of this bush fighting: come out into the open and say what you want. It would be well if the names of the men usually sitting on the Fruit Committee were published in the *Gardeners' Chronicle*. Many are unknown to me except by sight, but amongst them I do know there are men whose honour and whose knowledge cannot be called in question. When a fruit is shown its merits are canvassed freely, and its character is determined by vote, and I have seen no instance where fear or favour has influenced the vote. No doubt great mistakes have been made in certificating Grapes, and equally great ones in refusing certificates. I myself voted for Golden Hamburgh having a certificate, and so would any one who saw it as it was shown, and yet most growers have discarded it. The fact is, too much is demanded of the committee. No man, no body of men, can determine the value of a Grape by viewing a bunch or two. The bunch submitted may have been from a weak pot Vine; it may be so stated to have been produced by the raiser; but, alas! if the committee take such statements into consideration in determiniug the value of a variety, they will soon be reminded of David's exclamation—"All men are liars!" On the other hand, if they take it for granted the bunch is the product of first-rate culture, they are still more likely to be mistaken. Then again there are more things to be considered than can be settled by a sight or a taste of the fruit alone. A Vine to be valuable must be a good healthy grower; its fruit ought to set freely, and continue good after it is ripe. Who can, without seeing the Vine, determine these points? I well remember a committee meeting many years ago, when Mr. Rivers was in the chair, and many of our best cultivators present. On that occasion some bunches of the old Black Morocco, beautifully grown, were judged as new, and a certificate given to them under a new name, "Kempsey Alicante." Now, if some of us had seen the Vines from which these Grapes were cut, we should have recognised them as belonging to the worst setting kind known. "Vitis" says it is so easy to raise a new Grape. Is it indeed? Well of course it is easy to sow Grape seeds, but it is anything but an easy matter to cross-breed Grapes, and there are few things more difficult or expensive than the raising a new good Grape. Ferdinand de Lesseps was the only Vine I saved out of about 100 seedlings. Now to fruit 100 seedlings will cost, say £150, and according to "Vitis" I did not get a good one, only a "curiosity." That it is curious I grant; it is not only a new Grape, but a new fruit. The flavour is so peculiar that it is unlike any known variety, whilst a few bunches will fill a house with the scent of Strawberries. I never puffed it, and nearly every plant I sold was bought by persons who saw and tasted it, and I have not a dozen left; so, as far as my interest is concerned, "Vitis" may write what he likes. I should not have alluded to the subject except to prove that it is no such easy thing to raise a new good Vine. The certificating of Grapes is an important matter: it is important to the public, who wish to buy good ones and avoid bad ones; and it is still more important to a raiser, who has spent hundreds of pounds in getting one or more he thinks good. As to the Royal Horticultural Society proving every seedling submitted to their notice, that is out of the question; those thought worthy of a commendation might be proved before getting a First-class Certificate. But some would be found to object to this, fearing to part with their pets to anyone's care. Then, again, I contend that some things will not do well in some places, and a variety might do badly even at Chiswick. In such a case the raiser might, and perhaps would say, he had been unfairly treated, which would be a very disagreeable affair for our "directors." Some persons like and speak well of Royal Ascot: it is very second-rate with me, producing bunches of ½ lb. only, though otherwise good; and yet at Chiswick it was a perfect wretch, which no one would have at any price. Vines, like other plants, have their specialities, and will not do equally well in all situations; hence we find one gardener famous for one thing and one for another. Surrounded as the subject is with difficulties, what steps are the committee to take to arrive at a just conclusion? I would recommend the following course. When a Grape, or other fruit, is shown, which meets with general approbation, let it be commended or highly commended. This will signify that the Grapes shown are good. If the raiser has confidence enough to demand it, let the committee appoint a sub-committee of, say, three members, who shall, at a fixed expense, say £5, go down and report on the growing Vines; and after such report, and not till then, let a certificate be awarded, if the report be favourable. It would always be easy to select three men, in whom all had confidence, who would give their time for such an object. Granted after such an investigation, a certificate would have an increased value in the estimation of the public. *I. R. Pearson, Chilwell.* [We are not at liberty to say who "Vitis" and "Lynx Eye" are, neither has our correspondent any right to require these gentlemen to abandon their *incognito* unless they choose to do so. It may be of some interest to him to know that both are practical men of the highest standing, and we believe with no personal interests of their own to serve in this matter. EDS.]

Aucubas.—I enclose for your inspection two leaves of Aucuba japonica taken from the same plant, the one spotted in the usual manner, the other with a large unequally defined blotch in the centre of the leaf, not unlike some of the new Japanese varieties; the plant from which these leaves were taken is growing at Restalrig Park, near Edinburgh, and is about 15 or 20 years old. One side of the plant has all the leaves with the large spot on each. I suspect most, if not all of the new varieties have been procured from sports, for I observe among my seedling plants in the nursery most of those which came up quite green, and remained so for two or three years, are now becoming more or less spotted, and appear as if they had a tendency to revert to the common spotted form. *Peter S. Robinson, Trinity Nursery, Edinburgh.*

Preserving Tomatos.—The Tomato is a native of South America and Mexico, but is also found in the East Indies, and the recipe which I give herewith was given to me by a distinguished admiral who had spent some time in the East Indies, and who was on a visit to the late Dowager Countess of Ellesmere, at Hatchford, near Cobham, Surrey. We had a great quantity of Tomatos at the time, and the admiral kindly informed me how they preserved them in the East Indies, which was as follows:—Make a strong brine or pickle of salt and water; it should be made strong enough to float an egg on the surface; then gather your ripe Tomatos, perfectly dry, and free from cracks in the skin or bruises of any description—or, in other words, they must be perfectly sound, and free from blemish of any kind. Place them carefully in large wide-mouthed earthenware jars (with lids to them) until filled, then pour the pickle over the Tomatos so as to completely cover them, place the lids on the jars, then cover with a piece of bladder, and tie tight round the neck of the jar to keep air-tight. Keep them in a dry, cool place, and the operation is completed. If these directions are attended to, they will keep good for any length of time. When wanted for use, take the quantity required, and soak them in fresh water for a while to extract the salt previous to using, and secure the jar again. *Thomas Campbell, Chorlton Road, Manchester.*

—— Seeing, at p. 1391, that Mr. Morgan prefers making green Tomato preserve to leaving them to Jack Frost, allow me to inform him that there is no necessity for either, as the Tomato ripens its fruit well if pulled up by the roots and hung up in a dry warm shed. I hang about one-half of mine along the back wall of a late vinery, and they never fail to ripen equally as well as those ripened outside. They come into use from now to Christmas, and those in the potting shed from January to March. I fear I should get into trouble with the cook before the winter was over if I were to send them all in green as I took them from the walls. *John T. Burns, Gr. to J. B. Rudd, Esq., Tollesby Hall, Middlesboro'-on-Tees.*

The Black Slugs found about Ems.—Your correspondent, "Somerset," in a short paragraph on the vintage at Ems, asks for information regarding some large slugs which he saw there. Without a more minute description than "a large black slug," it is rather perilous to give a positive opinion, as there are three species, belonging to two distinct genera, which occasionally assume this colour; but my impression is, that he alludes to Limax cinereo-niger of Nillson, an animal entirely unknown in the British islands, although reported as native many years since. It is generally of a brilliant black on the back and sides, the foot-belly has three stripes, the two outer nearly the same colour as the back, but the middle pure white; length of a fine adult specimen, from 4 to 6 inches. They are occasionally, but rarely, found of an olive-green and dirty white colour. They are not so nocturnal in their habits as Limax maximus, which is nearly as large, but is more generally of an ashy-grey or brown-yellow colour, often in that neighbourhood beautifully marked with large blotches of black. This is rarely entirely black, but Arion empiricorum assumes many liveries—in England more generally black, but in Germany orange, red, brown, and yellow, and generally with a band of bright orange along each side of the foot. Your correspondent might also have met with several other species, had he used diligence or been desirous of so doing—as Limax flavus, L. arborum, L. agrestis, L. Sowerbii, and possibly L. tenellus, a rare and interesting little slug, as also the not well-known Arion flavus. *John E. Daniel, Epsom.*

Cedrus Deodara and Wellingtonia gigantea Coning.—We have here a Cedrus Deodara, and also a Wellingtonia gigantea, with cones on them. The Cedrus is a very nice specimen, about 18 or 20 feet in height, and has been planted, so I am told, about 10 or 12 years, in a very exposed situation. There are several cones on the tree, but almost hidden from sight by the overhanging branches. The Wellingtonia is about 12 or 14 feet in height, with a fair number of cones upon it. *G. Warren, Balcombe Place, Sussex.*

Notes on Pine-apples.—I have this day cut a fruit of the Smooth Cayenne Pine, weighing 7 lb. 11 oz., the produce of a rootless sucker planted exactly 16 months ago. On the 4th of last July, too, I exhibited at our Chelmsford Flower Show seven Queen Pines weighing collectively 34¾ lb., the largest being 5 lb. 9 oz., and the smallest 4 lb. 10 oz., the produce of plants from 14 to 17 months old. These results help to confirm Mr. Miles' statement, as mentioned by you at p. 1426. For the past two years I have grown all my Pines in one enlarged house, instead of two houses and a pit, as formerly, and the result is a very much quicker return, at a correspondingly less cost. I should be happy to lay before your readers my experience in this matter, when I could show that, except for the sake of mere numbers, it is quite unnecessary to employ two or three or more houses to maintain a constant supply of good Pines. The truth is, there is a great deal too much "fuss" about Pine-growing, and many a gentleman with small means is afraid to grow them in consequence. *Thomas Simpson.* [We shall be glad to hear further of your success in Pine-growing. EDS.]

Lee's Prolific Black Currant.—This new variety is I see being advertised in your columns, and if any one can judge of its merits by seeing it growing on two different occasions in one season, I can truly say that I believe it is the very best variety we have in cultivation. The habit of the plant is good, and I should think it is impossible to have a more prolific variety, as the bushes that I saw (several hundreds in number) were huddled thickly together in nursery beds, and they were this season (which has been an exceptionally bad one for Currants in this neighbourhood) literally covered with fruit of a large and very even size. They are much sweeter than any variety I ever tasted, and will hang on the bushes a long time after being ripe without dropping or shrivelling. This latter quality in itself is sufficient to recommend it, especially to those who prize the Black Currant for dessert. I venture to predict that this variety will, when better known, become the general favourite of its class in every garden establishment. *Thomas Foote, Gr. to Sir Arthur H. Elton, Bart., Clevedon Court, Somerset.*

Artichoke Galls.—If your correspondent, Mr. Andrew Murray (p. 1423), will open what he calls the small, stunted acorn within the foliaceous covering, I think he will find the grub of the gall-fly inside, usually one grub, but sometimes two. I have opened many of these galls in which I could not see the small acorn-shaped body, and am of the opinion that they would have produced no gall-flies. *T. J. W.*

Trees for the Yorkshire Coast.—Perhaps the experience gained by a 14 years' residence on a most exposed part of the coast of the adjoining county (Durham), may be of use to your correspondent, "Arbor," who inquires what trees, shrubs, &c., he should plant on an exposed part of the coast of Yorkshire. I would recommend him to plant at once,—the size to be, what nurserymen call, for the trees, 4 feet to 5 feet; deciduous shrubs, 2 feet to 3 feet; evergreens, 1½ foot to 2 feet. The following thrive best here: I have, with indifferent success, tried many others:—Trees: *Sycamore, Turkey Oak, Horse Chestnut, and Beech. Deciduous Shrubs: *Elder, *Lilac, Ribes, Syringa, Snowberry, Privet, &c. Evergreens: *Aucuba, *Laurustinus, *Portugal Laurel, *Minorca Holly, *Whin (Furze or Gorse), double and single; and *Rhododendron, if planted in peat. Pampas-grass also does well. Those marked * do best of all. *T. Dobson, Whitburn Hall, Sunderland.*

Roses for North and South Walls.—Kindly inform me what Roses (name sorts) you think are best adapted for a north wall, 4 feet high. The border is well made and drained. They will have to be nailed to the wall. Also say what sorts will suit a south wall of the same description. *Hortus Rosarum.* [We forwarded your note to our valued correspondent, the Rev. W. F. Radclyffe, who kindly replies as follows:—"I am always pleased to answer any question. If, however, such questions were more explicit I could answer them better, and in a shorter space. The length of the wall is not stated. I suppose the north and south walls are the same height. The best Roses for a south wall are the yellow Roses; they are the most prolific—early, mid-season, and late—of all Roses. They are: Solfaterre, Lamarque, Céline Forestier, Triomphe de Rennes, Maréchal Niel, and Gloire de Dijon. The three first will fill a great space of wall; the three last, still in abundant bloom here, would not require so large a space; still, trained against a wall 4 feet high, they will fill a great space. Beware of cutting the flowers or branches from the base and centre, as when these strong growers become bare there you will never fill them up again, unless you cut the trees back very hard at the terminals. If coloured Roses are wanted—Empereur de Maroc, Jules Margottin, Charles Lefebvre. Anna Alexieff, Mademoiselle Louise Casique, may be planted between the yellow Roses to break the "jaundice." Lamarque is the finest scented of all Roses, but it is tenderer than any of the other yellow Roses named. You might devote the whole south wall to yellow Roses; and, if your border is wide enough, you might plant coloured Roses in advance between the yellow ones. In such cases Casique and Anna Alexieff would grow too high for this purpose. The following would suit—Maroon: Dr. Jamin or Maroc; cerise: Edward Morren; rich red: either Sénateur Vaisse or Mademoiselle V. Verdier; rose: Felix Genero or Marguerite de St. Amand; deep crimson-purple: Pierre Notting; pink: Cécile Chabrillant. For a north wall—Gloire de Dijon, Louise Casique, Anna Alexieff, Jules Margottin, Baronne Prevost, W. Griffiths, and Général Jacqueminot. For this situation they must be free-bloomers, and must have a little extra protection in winter if the wall is much exposed. *W. F. Radclyffe.*]

Grapes and their Merits.—The merits of different kinds of Grapes being under discussion in your columns, I venture to record my experience, which is contrary to that of many of your correspondents. Mrs. Pince's Muscat is described (p. 1425) as being a free setter but I have found it, when grown side by side with Muscat of Alexandria, neither to set as well nor keep so long as that variety; when grown by the side of Hamburghs it was simply worthless, far different from the Madresfield Court, which when grown under the same conditions I found to be first-class. As a pot Vine I consider this last the finest Grape grown; it is a free setter and very prolific, both when grown by the side of the Black Hamburgh and Muscat of Alexandria. Muscat Hamburgh I have found to do best on its own roots, at least the variety under my care. There are, I think, two varieties of this Grape, which accounts for the different opinions regarding its merits: one is a Grape which sets badly when on its own roots, but better when inarched on the Hamburgh, and is of a much finer colour; the other is the best-flavoured, and comes best on its own roots, but does not colour so well as the other variety when inarched. The Alicante is a true gardener's Grape; it has a strong constitution, is of good flavour, and keeps well. Foster's Seedling is one of the best White Grapes; it forces well by the side of the Black Hamburgh, but requires using immediately, as it will not hang long in perfection. The old Black Morocco, when true, is one of the finest late Grapes, and keeps well. *J. H. H., Twickenham.*

Parasitic Trees.—In a recent number you allude to so-called parasitic trees, and instance one that existed on the Cherwell. I beg to inform you that the tree is still increasing in growth. It stands on the outer bank of the stream that winds round the "Magdalen Walks," and is a few yards distant from the mill. *Edward Charrington, Beachborough, Hythe.*

Golden Champion Grape.—Seeing that writers in the *Gardeners' Chronicle* are condemning this fine Grape, I beg to say that it has done splendidly with me this year, inarched on the Bowood Muscat. I had 11 bunches of it, weighing 28 lb., on one rod, 5 feet long, every berry being perfect. My employers were so delighted with it that they wish me to plant a whole house of it. These are simple facts, that are well known in this neighbourhood. *William Alves, Gr. to James Dalrymple, Esq., Langlee, Galashiels.*

—— The prospects of this Grape are improving, for has not Mr. Cramb taken it under his wing (p. 1393). The raisers of some of the new Grapes ought to return him their sincere thanks, for when any of the varieties they send out lose their characters, he is sure to come to the rescue with a vengeance. Bear witness the Golden Hamburgh, as one of the varieties he tried hard to make us believe to be one of the best white Grapes in existence, but somehow or other it is now seldom seen on the exhibition tables. The Madresfield Court, however, having a good character, Mr. Cramb quite upsets it, and his description of the shrivelling and atrophy of its bunches with him this year is one of the most melancholy records of Grape failure known, far outdoing the death of Mr. Cannell's Vines at Portnall Park. Facts, however, are "chiels that winna ding," for in the last two or three years the murmurs have been loud and deep amongst nearly all growers of the Golden Champion as to its spotting propensities and general bad properties. Now, the Madresfield Court has not come under this category, and has been exhibited in very fine condition this year, even when ripened in a cool vinery; there is no question about its flavour, and it has likewise been recommended for its keeping qualities in late vineries. As Mr. Cramb does not state whether the Vine borders on which he grew the Madresfield Court and Golden Champion were composed of soil from the magnesian limestone or red sand formation, we are warranted in believing that the soil had nothing to do with the shrivelling of the one, or the beautiful finish of the other. It would be a most instructive example should Mr. Cramb send a few of the withered husks of bunches of his Madresfield Court to the next meeting of the Horticultural Society; and if one of the fine finished bunches of the Golden Champion could be sent with them, many growers would be glad to see it when grown as it should be. *Vitis.*

To Protect Fruit Trees from the Attacks of Rabbits.—About 12 years ago I planted some hundreds of Apple and Pear trees, numbers of which were barked by the hares and rabbits. I tried tar, oil, and grease, but did no good until I tried the following very simple plan:—As soon as a tree was planted I set my boy to bind a sheet of newspaper (I used that of the *Gardeners' Chronicle*) [You are *too* complimentary!] round the stem from the ground upwards, which will reach about 15 inches. Take a piece of bast matting, tie the bottom of the paper, give it a turn or two round the tree, and tie it again at the top, so as to keep the wind from blowing the paper off. It will last a year, can be put on in a minute, and no hare or rabbit will touch the tree so simply guarded. Another preventive is to place a 3-inch drain-pipe without a bottom against the tree so as not to touch it, or else when the wind blows it will bark the tree. Hares or rabbits will not go near it. I have planted hundreds of trees, and have not had one bitten or barked since I have bound the trees with paper, and used the drain-pipes. *J. T.*

Veitch's Giant and Walcheren Cauliflower.—Allow me to inform your correspondent, Mr. Gilbert, that the condemnatory remarks which I made at p. 1359 respecting the Walcheren Cauliflower, is simply drawn from my own personal experience, and which did not in any way villify the merits which this old and trusty friend of so long standing possesses. My stock of Walcheren might be an exception, but I doubt if a great many of your readers have not experienced the same disappointment, the cause of which I need not attempt to particularise, since Mr. Earley and Mr. Fish have so ably endeavoured to explain it. I certainly agree with Mr. Gilbert, that small compact heads are more desirable than large ones for the table. But allow me to remind him that the Giant, although large, possesses the most delicate flavour, and is fit for the purest palates. If Mr. Gilbert prefers small heads, three to a dish, he has only to cut them before getting too large. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Mixed Bedding Plants.—I was surprised to find at p. 1392 a statement to the effect that Viola cornuta Perfection was raised at Rotherfield Park. If your correspondent will look at p. 410 of the *Gardeners' Chronicle* for 1870 he will see that I denied its being a seedling, or that Mr. Jobson was the raiser of it, and which Mr. Jobson has not disputed. The beauty of my Viola during the last spring and summer, in fact, for years past, has been beyond all praise. My own experience in this respect is corroborated by many correspondents from distant parts of the country. Many persons who have bought seed, have no doubt been disappointed, and I do not wonder at it. The plant flowers too freely to seed much; and much of the seed produced does not "come true." The only successful mode of propagation is by means of cuttings. *George Smith, Wilton Road Nursery, Salisbury.*

Trees for Seaside Planting.—Tamarisk, Atriplex glauca, Phlomis, and Euonymus will stand the best in exposed positions near the sea; next to which come the Ilex Oaks, Pinus austriaca, Poplars of sorts, Bupleurum, Rock Cistus, Double Gorse, Escallonia, Lilac, Laurustinus, and Phillyrea. *W. Rossiter, Paington, Devon.* [At Folkestone this year we saw Pittosporum Tobira forming a fine bush. EDS.]

Foreign Correspondence.

CALAIS: *October* 10.—There is not much that can be called of horticultural interest in this place. Historical associations as many as you please,—quaint old gateways, forbidding looking walls, stagnant fosses, a busy port, consequential police-officers, hangdog soldiers, pictural fishwives, tall lighthouses, antique spires, two long piers stretching out as it would seem into illimitable distance (but the sand is reached even at high water at a depth of but a few metres), and outside the town on all sides sands and dunes, dunes and sands; and away in the offing sail-flecked sea, and on the horizon a dim cloudy mass which represents the shores of Old England. Yes! we are only an hour and a half's steam journey from Dover, and yet we are in a different world. Everything, if not novel, is at least strange. I don't believe, if I were set down in the steppes of Tartary, I should find much greater differences, barring the language, in the manners and customs of the people, as compared with those of London, than I do in the course of an hour's walk in the streets of this old, old town. Certainly those who rush on direct to Paris, as most do who land here, will find in that capital less difference at 12 hours' distance from the Strand than they might do here at four hours' journey from Charing Cross. "But what has all this to do with horticulture?" Mr. Editor, I told you at the outset I had no story to tell; let me go on in my own way.

I implied, only a sentence ago, that I was in a foreign land, and if it were not for the language, I might think it was Holland—somewhere between Scheveningen and Leyden—but happily for me they don't speak Dutch hereabouts; or if I look to the dunes only, I might fancy myself among the sandhills of Kent, away beyond Deal. Patience, good Mr. Editor, I am coming to the point; those busy, cleanly, cheerful, chattering, brightly-clad fishwives, those storied walls and spires and chirruping chimes shall not absorb all my thoughts, I will roam among the sandhills, and see what I can pick up that may interest your readers. First of all the shells—not oysters, for they have vanished since my former visit to this place, but mussels and cockles, and cyclas, and a great number of others—not found on the coast directly opposite, though found higher up on the Norfolk shores. "Shells are not plants." Well, well! they are not, but I found among them a real live Fungus—only just beyond high water-mark—an ochrey-brown Agaric, with alternate long and short gills, confluent with the stipes, and growing in solitary state—one at a time, so to speak. I didn't know its name, but I wondered when I saw it growing in so salt a place, and in so close proximity to edible molluscs, whether it also would not prove good eating. Whether or no, there it grows intermixed with Mat-grass, Elymus arenarius, and other sand grasses, which serve to bind the loose sand in some degree; and here is that really noble plant, for its size, the Eryngium maritimum, the Sea Holly. I repeat, it is a noble plant, and its neighbour—I cannot, from a sense of botanical propriety, call it its ally—the horned Poppy, Glaucium luteum, is close by. Not far inland, say a stone's throw from the tidal marge, are bushes of Hippophaë rhamnoides, the Sea Buckthorn, covered with orange berries—a sturdy plant in truth, and almost indifferent, as it would seem, as to the soil in which it grows; here it is in sea-sand, on the other side of the water you may see it indifferently on chalk and on the greensand; but you won't see it, or much else either, save Rushes and Coltsfoot, on the gault.

Seaside planters, mark the Sea Buckthorn for your outer fence; back up with the elegant feathery Tamarisk, which is in bloom nearly all the year round; fill in with Lavateria arborea, Eryngium and Glaucium. If you want colour, look at the autumn leaves of that lowly Glaux maritima and the Convolvulus Soldanella: Golden Feather is pinchbeck by the side of the autumn leaves of the Glaux. How it would be inland I cannot say; moreover, I speak of time present. Glaux in summer time is of an unpleasant green in gardeners' eyes. And here is Silene conica, no gardener's plant truly, but pleasurable to meet with, as it shows the analogy of situation with the Deal sandhills, where also this rare plant grows. Here, too, is the Erodium, white and pink, also a Deal plant; the Sea Pink, Armeria, and a fine variety of Viola tricolor, the so-called V. lutea. On the shore, inland, on the walls, in chinks, under bridges, and on towers, everywhere is Diplotaxis tenuifolia. This is not a Deal plant, so far as I remember, but it is a Dover plant; there it grows on the chalk. There is no chalk here, nevertheless it flourishes to perfection, and its flowers put the Dover ones to shame by their greater size and brilliancy. Here and there, too, the lucky botanist may light on that other Eryngium, E. campestre—not to be mentioned in the same breath, so far as beauty is concerned, with its brother, but so much rarer than it, and no doubt with more elegant foliage. Deal sandhills—no, nor Dover cliffs, nor Folkestone leas, possess this rarity any more than they do Euphorbia Paralias. Why? It can't be discrepancy of soil or climate; but when one sees, year after year, such a plant as Erigeron canadense in profusion on one side of the railway cutting at Kew Bridge, and not a plant of it on the opposite bank, the fact does not seem so strange.

But our walk has brought us to a cemetery—a resting place for ashes in the midst of sand. Road or path there is none; if there were, the sand would obliterate it, but there is an enclosure, and a few stunted sea-spoilt Poplars try to form a shrubbery, and fail lamentably in the attempt. And here are graves and monuments, so simple in some particulars, so childish in others. No pompous, fulsome epitaphs—no stonemason's eulogies on the character of the departed. A simple cross at the head, four planks sunk in the sand, and serving to keep together a little flower bed—a little sand-heap, one ought to say—but there is an attempt at floral decoration here and there, and, as showing what will grow in pure sand, I note the plants used by these simple faithful village folk to testify their love for the departed ones. Crambe maritima thrives, its pinkish flowers and blue-green leaves answer the intended purpose well. The old-fashioned Costmary, so seldom seen now-a-days, also thrives; Diplotaxis, of course, Marigolds and China Asters, and Lycium, the so-called Tea tree, also do well: but it is but a sorry garden, to say the best, and the lapwings with their shrill wee piping note, don't make it look any the more horticultural. One does not like to comment on such sacred matters, but it cannot hurt any prejudice or wound any higher feeling, to note the contrast between the simplicity and pure faith shown by the monumental crosses with their simple legends, the humble but appropriate attempts at floral decoration, and the tawdry-babyish decorations of toys, beads, and what-not, with which they are associated. However, here of all places one feels that prejudice and difference of opinion should have no place, and so let us walk across to the public garden of the manufacturing suburb of St. Pierre. Though called a suburb, this is really a manufacturing town of no small importance, larger and more populous than the old fortified town it adjoins. There is here a noble modern church in the Late Norman style of architecture, with a lofty spire; but not to wander into such irrelevant details, let me note the most splendid plant, some 9 or 10 feet high, of Campanula pyramidalis, or some closely allied species, that I ever set eyes on. It was placed before a picture of the Madonna, and, apart from all questions of dogma, a more beautiful thank or praise-offering could hardly be conceived. In all the Londow shows this season—and I saw most of them—there was not a plant to come near this one for symmetry of proportion, beauty, and profusion of bloom. It was the feature, in the horticultural way, of Calais. In truth it must be said, this ancient city does not excel in matters horticultural; the public park of St. Pierre is well nigh a desert; the garden on the ramparts is not very much better; the grass is comparable only to that of a suburban villa in a third-rate suburb of London, which has been to let for the last five years; not an evergreen is to be seen, and the deciduous trees are for the most part pickled with salt air, and stunted with sea gales. Sand and grit are everywhere—no gravel, none is to be had,—but good paths may be had without gravel, a fact the Calais folk don't seem to know. Poplars of many sorts, and Sycamores stand the salt air well; the Limes look miserable; the feathery Tamarisk, the Snowberry, and the Bladder Senna all do well, the first especially. But clearly the taste of Calais folk does not lie in the direction of gardening. An hour on the opposite coast of Dover, or Folkestone, would show more in the gardening line than a week in the neighbourhood of Calais.—I told you I had nothing of horticultural interest to relate, and I have kept my word. *The Rambler.*

Societies.

SCOTTISH ARBORICULTURAL: *Nov.* 1 (*Annual Meeting*).—R. Hutchison, Esq., F.R.S.E., Carlowrie, in the chair. This, the 18th annual meeting, was held in Craigie Hall, St. Andrew Square, Edinburgh. There was a large attendance of members from England, Ireland, and all parts of Scotland, including Dr. Cleghorn, Professor Balfour, Messrs. E. Loraine, M'Nab, Botanic Gardens; Gorrie, M'Corquodale, Scone Palace; France, Methven, J. Sadler, Syme, M'Donald; Anderson, Perth; W. Gilchrist, J. Grant, Thomson, Strathspey, &c. After the usual formal opening of the meeting, Mr. Hutchison was again unanimously re-elected President of the Society, and proceeded to deliver the inaugural address. They had, he said, much cause to congratulate themselves on the progress they had made as a society. Not only had the roll of membership continued to increase, as in former years, but the zeal and interest of the members in the cause of arboriculture had been abundantly evidenced by the number, quality, and variety of the papers sent in for competition. He suggested that in future the annual meeting should extend over at least two, if not more days, during which time papers on various subjects connected with arboriculture might be read and discussed, and any new theories or observations bearing upon them might be ventilated and criticised. He spoke at length on the value of correct observation and practical work in the forest and woods, and he hoped that the different members would pay attention to and in the course of next year's ordinary operations either try to verify or disprove the following theory which he had started:—Having observed in pruning that at one time the surface of the wounds made upon the tree limbs seemed fresher and more moist than at others, and that this phenomenon varied during winter from time to time, there being apparently frequently less exudation of sap, or bleeding, the one week than there had been during the previous one, or even during the previous month, he was led to advance the theory that there is a periodicity in the circulation of sap in trees, both Coniferous and hard wood, and perhaps in vegetation generally, during those months when we are accustomed to look upon Nature as dormant, and her ordinary functions as suspended, and that this periodicity is caused and regulated by lunar influence. For example, he observed that for about four or five days from the third day after new moon, the action of the sap seems to be disturbed, and the circulation more free and abundant, than it is during the other parts of the month. If this were so, and he thought he was justified in asserting that it was, pruning operations performed during these few days, when the wood was greener, could be not only better done than when it was drier and less quickened, and was not only more easily performed, but more good work could be done in less time, and with equal safety to the tree. This theory of periodicity was so akin to a universal law of Nature necessary for the procreation of life in the animal kingdom that it might be a similar process was equally necessary for the reproduction of growth, and in sustaining vitality, in all perennial vegetation—a strange and mysterious process by which, during the cold bleak months of frost and winter-storm, when the snow-wreaths drift athwart the silent forest, the silvery beams of our earth's attendant planet were exciting and controlling, by their benign, attractive influence, not merely the regulation and movements of the tides of ocean, but were aiding likewise in maintaining the vitality of growth in the vegetable kingdom for the future benefit of the human race.

A vote of thanks was accorded to the President for his interesting address. Professor Balfour, Dr. H. Cleghorn, of Stravithy, F.R.S.E.; Mr. E. Loraine, The Riding Mill; Mr. W. M'Corquodale, Scone Palace; and Mr. J. G. Thomson, Strathspey, were elected Vice-Presidents for the ensuing year. Mr. J. Sadler, F.R.P.S., was re-elected secretary; Mr. T. Methven, treasurer; and Mr. D. Syme, of Messrs. Peter Lawson & Sons', auditor. Sixty-two new members were afterwards admitted. The Chairman stated that the British Association Committee had succeeded in getting the donation of £20 renewed from the British Association for the purpose of making observations of the effects of the denudation of trees upon the rainfall of the country. Last year a grant of £20 had been apportioned, but for want of observers the money could not be taken up. This year, however, care would be taken that careful and trustworthy observers would be got. The President, Dr. Cleghorn, and Professor Balfour, were appointed to attend the British Association meeting at Brighton, as representing the Society. The Treasurer's report showed that the expenditure for the past year had been £178 15*s.* 7*d.*, and the income £192 9*s.* 6*d.*, leaving a balance of £13 13*s.* 11*d.*, including a donation of £6 10*s.* from the President, who had agreed to give £5 for every 100 members who doubled their subscription. The Secretary reported as to the publication of the Society during the past year. He stated that 25 miles of printed proceedings, inches broad, and weighing 6 cwt., had been issued to the members within 10 months. Dr. Cleghorn reported that the judges on the competitive essays had awarded the following prizes:—On the soils best suited for the different kinds of forest trees indicated by the plants that grow naturally upon them (silver medal)—W. Gilchrist, forester, Cluny Castle, Aberdeen. Report on plantations under the management of the competitor (gold medal)—A. Peebles, forester, Highclere Castle, Newbury, Berks. On the effects of the dry seasons of 1868-69-70 on forest trees and shrubs (gold medal)—Mr. R. Hutchison, of Carlowrie. [Note, Mr. Hutchison presented the value of the medal, £5 5*s.*, as an additional donation to the Society.] Report on the comparative advantages of home-grown timber to foreign (bronze medal)—D. Hamilton, forester, Tulliechewan Castle, Dumbarton. On the Scots Fir, its cultivation and varieties (silver medal)—W. Gilchrist. Report on the more extended cultivation in Scotland of charcoal-producing plants for gunpowder manufacture—grown either as a crop or as underwood (silver medal)—C. Y. Michie, forester, Cullen House, Banff. For the best and approved collection of Cones, exhibited by a practical forester, and produced in Britain—1st prize, 5 guineas (offered by Messrs. T. Methven & Sons, nurserymen and seedsmen, Edinburgh)—C. Y. Michie, Cullen House; 2d (a gold medal), J. Bell, forester to the Duke of Wellington, Hampshire. On a simple method of measuring the angles of plantations (bronze medal)—J. Kay, forester, Bute estates. Report on trees grown on undrained moorband pan (silver medal)—A. Gilchrist, Ury House, Stonehaven. Report on a new pruning chisel (silver medal)—A. Gilchrist. Report on a tape for measuring timber (bronze medal)—D. Tait, Ouston Park, Doncaster.

The remainder of the business was of a formal nature. The members dined in the evening in the Albert Hotel—the President in the chair, when, after the usual loyal toasts, the following, among others, were given:—"The British Association," by the Chairman; Prof. Balfour replied. "The Forest Department of India," by Mr. Sadler; replied to by Dr. Cleghorn, late Conservator of Forests in India.

YORKSHIRE GALA: *Oct.* 24.—The annual dinner of the guarantors and friends of the Yorkshire Gala took place at Harker's Hotel, York. About 60 gentlemen sat down under the presidency of Mr. Alderman Steward and vice-presidency of Mr. Alderman Dove (those gentlemen holding the same position in connection with the Gala). After the usual loyal and patriotic toasts had been disposed of, the Lord Mayor proposed "Success to the Yorkshire Gala." He said he need not say a single word to those who had not only been the originators, but who had subsequently been the earnest supporters of the Yorkshire Gala, to ensure for that proposition a very enthusiastic reception. It was desirable on all those occasions to try to realise what was the position of an institution like that. He would remind them that that gala had now been in existence 12 years—that it was formed for the purpose of promoting floriculture in their own immediate district—that it had a further object in the advantage of the city at large—and also in its origin there was the desire on the part of the promoters to contribute to the public charities of the city. Well, for the first five years he need not remind them that it had a somewhat varying success. From 1859, when the society was formed, down to 1864, there was no doubt that the success that attended it was of a very varied character; but still, during the whole of that time it had an extent of success which did enable it to divide £300 amongst the public charities of the city. In 1864, as they would be aware, the mode of operation was in a degree changed; it was felt desirable that a guarantee fund should be formed, and those who became the guarantors had had the satisfaction of having their money returned to them, inasmuch as from 1864 to 1869, such was the success that attended the institution, that it was enabled to amass to itself the sum of £1000. That £1000, with the exception he was just about to mention, remained as a reserve fund. And he believed the true success of that gala would depend upon that reserve fund being retained at the amount to which it had now arrived. The gala in 1870, as they knew, was marked by unpropitious weather, and the effect had been to reduce that fund from £1000 to £700; and in 1871 there was a great fear on the part of those who had the management—especially on the first unfavourable day—that the reserve fund would be more diminished. But the weather on the second and third days was better, and it was satisfactory to know that at all events they came out of the gala of 1871 without loss. Accordingly there remained that £700 still invested to the credit of the gala fund. The point he wished to bring them to was this. Those who were present at the luncheon held at the gala ground, on the first day of the exhibition this year, would not fail to remember what was said by Mr. Williams, of London. He said that the York show stood the third in the kingdom, London being the first, and Manchester the second. He (Mr. Williams) also supplemented that statement by saying that it was most important to the continuance of the success of the gala that there should be somewhat more of special prizes than they offered then. It was perfectly true that the prizes at the last show amounted to £500. It was perfectly true that it was a strong inducement for gentlemen to send their flowers and fruits to the gala. But those prizes were not only taken by their own citizens, but by parties who were good enough to send to the gala from very considerable distances. They had exhibitors from London, Manchester, Cheshire, Hereford, and nearly every part of the kingdom; and if they were to preserve the interests of that institution aright they must do something more to tempt in the way of special prizes. How then were the special prizes to be obtained? He believed that the annual subscribers to that institution had been reduced to ten, and he asked if that was creditable to the city, or for the interests of the institution that it should be so? They should bear in mind what the gala did for York. He had said that one of the original objects was to benefit the city by attracting within its walls large numbers of people. He made these remarks because he knew they would go forth to the public, and with the object of inducing his fellow-citizens to look upon the gala as a beneficial institution.

Notices of Books.

THE fourth part of the 27th volume of the *Transactions of the Linnean Society* has recently been issued. It contains three papers only, but those of considerable importance. The first is devoted to the description of sundry fishes or molluscs, &c., collected by Dr. Cunningham during the voyage of H.M.S. Nassau, chiefly in the Straits of Magellan, and calls for no special notice at our hands. The second paper is entitled a Revision of the Genus Cassia, and is from the pen of our great systematist, the President of the Society. Mr. Bentham gives a complete monograph of the genus, which consists, according to this enumeration, of more than 300 species, many of great beauty, some of great interest from the variety or singularity of their forms, and some, such as the species producing Senna and the Cassia Fistula, of importance from a medicinal point of view. The following remarks are invested with additional weight, as coming from one whose experience, practical sagacity, and logical acumen in all matters connected with classification are unrivalled:—

"In all considerations," writes Mr. Bentham, "of geographical distribution of species or other groups, it seems necessary to consider, as an established fact, the great principle that natural affinity results from community of descent. The admission of a separate arbitrary creation of species, unmeaningly modified from an imaginary type, not only reduces the science to a dry, statistical enumeration, but entails the preliminary exact determination of what is a species, which no one has yet succeeded in giving; whereas, by adopting the doctrine of descent, natural genera, sections, species, and varieties become superior, and (or) subordinate groups, similar in nature and differing only in degree. Under this aspect, when treating of the area occupied by a group, it matters little whether you call it a section, species, or variety, provided only you make yourself clearly intelligible as to what is the grade of subordination you have in view, and, following the terminology which you believe to be the most generally received, you keep to the same term for what you consider the same grade throughout the genus or order you are considering."

These words, from so eminently cautious a naturalist as Mr. Bentham, and one who for so many years was an adherent of the opposite views, redound as greatly to his credit for freedom from prejudice as the similar recantation on the part of Sir Charles Lyell. The doctrine of evolution, however, seems so natural in its application to classification, that it seems now only wonderful how it could so long have been disputed. The so-called natural system, apart from genealogical relationship of group to group, is an utter paradox. In what manner the evolution took place is another question, and one on which there is still room for much diversity of opinion. The third paper is entitled "Contributions to the Natural History of the Passifloraceæ," by Dr. Masters, and includes a general sketch of the structure, anatomy, and mode of development of the organs in the principal genera, together with notes on their physiological office. A complete classified list of all the species of the tribe Passifloreæ, with the principal synonyms, is given, which may be of some service to horticulturists. In connection with this part of the subject, the author goes into some detail as to the relative importance of "characters" and the use to be made of them in classifying plants upon philosophical principles, the main points insisted on being the great relative importance of primordial or congenital characters in the formation and distinction of the larger groups of plants, and of the secondary or "acquired" characters in distinguishing the smaller groups. These acquired characters are often furnished by special developments intended to fill a particular office, or are adaptations of the fundamental organs to fulfil a special end. The congenital characters are present in all cases, are essential to the life of the plant, and are subject comparatively to but little variation, while the acquired "characters" may be peculiar in each separate species, and are, of course, associated with peculiarities in the manner in which the life-functions are carried on.

The Apiary.

IN answer to "A. H.'s" questions, at p. 1363, I advise him to give up his idea of lining a beehive altogether. No practical apiarian has ever even attempted such a thing, and there are numerous objections to it. Instead of that, let him case the outside of the hive described in the number for September 10, 1870, either with a movable case standing on legs, and a ridge roof, or, what appears better, by nailing slips 2 inches broad, and half an inch thick, at each corner, and then ⅜-inch stuff over to cover all the hive, with a space of half an inch between. Either a flat or a ridged top could be placed upon this, care being taken that ample space was left for the escape of heated air from the sides. It is difficult to understand how it could have been intended to place the hive, as described and figured, in the open air, without protection from sun-heat, &c., as the combs would almost certainly melt down in a warm situation. Perhaps it was intended that it should be covered in the rough and ready way that Mr. Pagden tells us in his book he practises—throwing a washed superphosphate bag over, and then putting an earthern pan, &c., on the top.

By acting as above advised, "A. H." can preserve the form of the hive as figured by "M. D.," and will require no feeding drawer, as a bottle feeder can be placed over a hole in the flat cover. Of course, supers would require some similar casing, which could be made to fit over that of the hive by a hip, that is, a slip nailed on the bottom of the upper case. The cover for the super should be movable. Outside covers may be painted a light colour with advantage, hives themselves not at all. *A. Boyle, Whitland, Nov.* 4.

Obituary.

WE regret very much having to announce the death of Mr. ALEXANDER CAMPBELL, SEN., which took place at his residence, Churchill, Glasnevin, on Monday, October 30, at the age of 67 years. For a considerable time he had been suffering severely, so that his death was not altogether unexpected. There are none who knew Mr. Campbell personally who will not regret to hear of this event. For many years he led the van of Irish horticulture with Roses, Dahlias, Pelargoniums, and other florists' flowers. As a friend he was constant, cordial, and sincere; and as a neighbour kind, generous, and benevolent, upholding in all his relations through life a charitable feeling and an honourable forgiving disposition towards all he came in contact with. The members of the Dublin Horticultural Club will have much cause to regret him. In him they always had a willing fellow worker, ever ready to aid with his purse and sound advice any object for the good of Irish horticulture. *Gardeners' Record.*

THE WEATHER.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, NOV. 8, 1871.

1871. Month and Day.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
November.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
2. Thurs.	29.94	45.2	43.0	40.4	84	2.9
3. Friday	29.92	45.5	41.7	37.1	73	2.5
4. Satur.	29.90	44.7	43.5	42.1	91	3.1
5. Sunday	29.97	43.3	39.5	34.9	74	2.4
6. Monday	29.74	37.8	34.7	30.4	70	1.9
7. Tues.	29.46	41.9	41.4	40.8	96	3.0
8. Wednes	29.30	47.7	47.0	46.2	95	3.5

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
November.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
2. Thurs.	48.5	44.4	4.1	45.7	—0.6	E.N.E.	262	0.00
3. Friday	51.0	42.5	8.5	45.8	—0.3	E.N.E.	170	0.00
4. Satur.	50.5	41.8	8.7	41.7	—1.2	E.N.E.: E.	182	0.00
5. Sunday	45.4	35.5	9.9	39.9	—5.8	E.S.E.	339	0.00
6. Monday	43.0	32.2	10.8	37.0	—8.5	S.E.: E.S.E.	153	0.00
7. Tues.	49.4	37.0	12.4	42.6	—2.7	Calm: W.	32	0.00
8. Wednes	50.0	36.0	14.0	42.4	—2.6	WSW: W.	218	0.00

Nov. 2.—The sky was generally covered with cloud throughout.
— 3.—Cloudy in the morning; overcast afterwards.
— 4.—Variable: a little thin rain fell occasionally.
— 5.—Light clouds in the morning; cloudless afterwards.
— 6.—Fine in the morning; afterwards generally cloudy.
— 7.—Overcast; fog.
— 8.—Overcast, foggy and gloomy, and a little rain fell in the morning; light clouds in the afternoon; cloudless at night.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, NOV. 4, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg	In.
Portsmouth ..	56.4	39.4	17.0	52.1	43.0	9.1	46.8	0.40
Blackheath ..	57.8	41.8	16.0	52.1	44.1	8.0	47.3	0.04
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	56.2	38.3	17.9	50.7	43.5	7.2	46.4	0.33
Wolverhampton	51.1	37.7	13.4	50.1	43.4	6.7	46.0	0.39
Leicester ..	55.7	35.2	20.5	51.2	42.7	8.5	46.2	0.32
Norwich ..	53.0	38.2	14.8	50.1	42.0	8.1	45.3	0.06
Nottingham ..	55.5	32.9	22.6	52.1	42.5	9.6	46.6	0.30
Sheffield ..	53.0	39.5	13.5	49.4	43.7	5.7	45.8	0.60
Liverpool ..	51.7	35.7	16.0	50.3	43.6	7.3	45.9	0.48
Manchester ..	54.5	42.5	12.0	51.6	45.6	6.0	47.9	0.31
Salford	54.0	39.3	14.7	50.7	43.7	7.0	46.5	0.34
Bradford ..	54.0	39.0	15.0	51.2	43.8	7.4	46.8	0.98
Leeds	54.0	40.0	14.0	51.3	44.3	7.0	47.1	0.69
Hull	53.0	39.0	14.0	50.9	44.3	6.6	46.9	0.16
Newcastle ..	53.0	42.0	11.0	49.6	44.8	4.8	46.5	0.51
Edinburgh ..	49.7	36.0	13.7	..	..	..	43.8	0.80
Glasgow ..	53.0	38.0	15.0	..	..	..	45.9	0.33
Dundee.. ..	50.0	38.0	12.0	..	..	..	44.8	0.35
Aberdeen ..	52.2	38.7	13.5	..	..	..	45.6	0.94
Paisley	..	..	..	..	..	..	..	..
Greenock ..	51.5	40.5	11.0	..	..	..	45.5	1.11
Leith	51.0	40.2	10.8	..	..	..	45.2	0.88
Perth	53.0	37.0	16.0	..	..	..	45.9	0.87
Dublin	59.0	38.8	20.2	..	..	..	48.1	0.64

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

As *Liliums* succeed well if potted about this time, those who intend to perform the operation should do so now; though I shall take the opportunity of calling attention to the subject at a later date, when the subtle influences of increased light suggest an early return of spring. I wish, however, to impress upon my readers that, whichever period is chosen for potting Lilies, they should not under any consideration allow the bulbs which are now resting to become too dry, or, as some would say, to "dry off." Encourage the surface-growth to ripen effectually by natural exposure; nevertheless, if there is one thing more hostile than another to the successful culture of the gorgeous *L. auratum*, it is to be found in this practice of "drying off" the bulbs and the balls of soil containing them. It must be understood, however, that there is a great difference between keeping an unvarying latent moisture in the soil, and the actual resort to periodical waterings. The main thing is to keep them in a cool temperature, without going much below 45°; but in this respect no better lesson can be inculcated than a study of the climatic condition of their native country—Japan, which, notwithstanding that we have no extensive data to guide us is, so far as we know at present, remarkably free from great or sudden fluctuations. Perhaps, too, more rain falls there on the average than upon the British Isles; whilst the mean summer temperature does not exceed 60°, that of winter being about 50°. These, I take it, are an essential and reliable guide to us in the culture of Japanese Lilies. With such a moderate winter temperature the soil of necessity maintains a certain amount of latent moisture, apart from rainfalls, in consequence of the no very great extent of evaporation going on, whilst the incessant condensation of aqueous vapours takes place. Besides, Japan is within the margin of the limit of the fall of snow on the northern hemisphere, and snow, as we are all aware, possesses a great moistening capacity. If we compare these simple facts with the practice of placing our "resting" *Liliums* near to flues, &c., at a temperature in excess of the above, and dry to a degree, we cannot fail to see wherein we err. A cool frame wherein they can be plunged in cocoanut-fibre or cinder ashes, with proper protection from frost, will be found of all situations the best for them, and one more in keeping with the conditions which surround them in their far distant habitat. In potting them, efficient drainage is of the first importance, and the soil they thrive best in is an admixture of equal parts of peat and good fibrous loam, a good dash of silver sand, and a fourth of the whole of thoroughly decayed manure. Press the soil moderately firm, and bury the crowns of the bulbs to just above their tips. Persist at this date in watering all plants as early in the day as possible, more especially those growing in cool houses, conservatories, &c. By these means much of the extraneous water distributed will dry up during the day, and the plants will be in a more fitting condition to withstand the adversely moist air of night. I would urgently suggest that "damp" should be constantly dispelled from all such cool structures by the aid of occasional firings, as it often takes hold of plants in an incredibly short time at this season, and prevention in this manner saves disappointment, and a material outlay of both time and subsequent fuel.

FORCING HOUSES.

A fine day should now, if possible, be chosen upon which always to water the younger stock of *Pines*, an operation not calling for very frequent attention at this time. Always be particularly careful with those which have their pots in the vicinity of pipes, flues, &c., as they will require watering more frequently than others. Those *Pines* which are progressing for a "show" in a couple of months' time or so, must only be pushed along very gently, and so as to "get them up" when the influences of lengthened days and increased light become more felt, and good sound progress can be anticipated. On the other hand, in all instances where the fruit is in process of formation, no check whatever must in any shape be permitted. As the fruit is the aim and the end, all ulterior considerations regarding the plant must be set aside, and the operations of swelling, ripening, &c., be excited to the end. Finish pruning *Pot Vines*, and wash them once with the usual preventives of mildew and insects. Lay such as are not required for the present upon their sides in a dry situation. Keep all *Vineries* which are just now being denuded of their last bunches of Grapes as cold as possible by giving air freely was to cause the Vines to go to rest with all possible dispatch, as the longer they rest naturally, so much the better for their future vigour. *Figs* in pots may now be either potted or deeply mulched. If they are potted, a very moderate "shift" only should be given, and, if the main object is fruiting, a light, somewhat poor soil, composed of loam, old mortar, rubbish, &c., be used. It should be borne in mind, however, that much potting is more conducive of growth than of an abundant crop of fruit.

HARDY FRUIT GARDEN.

Prepare the necessary protection for *Fig-trees* grown in exposed situations. In some counties this is not so much required as in others, but in northern latitudes the protection cannot be dispensed with. Now that the leaves have mainly fallen off *Peach* and *Nectarine trees*, it will be desirable to remove the little sticks which supported the latest summer growths, to unnail some of the younger wood, and so aid the atmosphere in surrounding them more freely, to insure better ripened wood and greater hardihood.

HARDY FLOWER GARDEN.

As soon as the frost destroys the upper growths of the following and similar subjects, cut away their destroyed parts to within a few inches of the ground line, and subsequently take them up carefully:—*Marvel of Peru*, *Salvia patens*, *Lobelias* of the fulgens type, and *Dahlias*, &c. *Gladiolus* bulbs should also be taken up now without further delay. Do not cut away the decaying leaves and old flower-stalks, but by hanging them up together in a dry shed, or, what is better, a dry vinery, aid and encourage them to ripen off effectively. Very minute bulbs will, in many instances, be found around the base of the old ones, and should not be rubbed off at this time.

KITCHEN GARDEN.

The frost experienced on the morning of the 6th inst., which here in south Essex approached nearly to 6°, will oblige those who have hesitated hitherto to do so, to make their final arrangements for the approaching winter. Where fine flourishing rows of *Endive*, &c., have not yet been covered, and it is not materially injured ere this appears, have resort to the customary coverings forthwith. For this purpose, Rendle's plant protectors are an excellent and very economical aid, as they may be placed over the rows as they now exist, without the too general drawback of having to uproot them and carry them hence to frames, sheds, &c., which, to say the least, makes the young growths tough, however well they may be blanched. *Sorrel*, *Mint*, *Tarragon*, &c., may now be potted up for forcing by all who would be prepared for eventualities. Finish getting in all crops of *Beet*, and the like, and clean and protect *Globe Artichokes* from frosts. *W. E.*

Notices to Correspondents.

⁂ CARRIAGE OF PARCELS.—We are at all times willing to render assistance in the matter of naming plants, fruits, fungi, &c., but our correspondents should remember that this entails, on our part, a very considerable expenditure of time, labour, and expense, and the least they can do is to pay the carriage of their parcels. In cases where this is not done, we shall rigidly adhere to our rule of not receiving such communications. We cannot undertake to name more than six varieties at one time.

BEGONIA: *A. Z.* The flowers of your seedling were so much faded and shrivelled that we are unable to pass any opinion upon it. It does not appear to have any very striking characteristics.

BEET: *C. D., Ryde.* We have tried your Beet, and can report favourably on it. In comparison with Waterloo, it is of fuller flavour, while it is not so coarse as the Pine-apple. The colour is rich.

BOOKS: *Ad. B.* McIntosh's "Book of the Garden" (Blackwood & Sons), and Thompson's "Gardener's Assistant" (Blackie & Son), will probably meet your requirements.

BRONZE-LEAVED HARDY PLANTS: *Devonian.* The best we remember are the dark-leaved forms of Oxalis corniculata and of Ajuga reptans, which you mention. You might add to them the somewhat larger and coarser purple-leaved Plantain, Plantago major purpurea.

CLEMATIS: *T. H.* Clematis seed, in many cases, comes up very slowly, and comparatively few seeds vegetate. It is best to sow as soon as ripe, and keep the seed-pans in a warm propagating-house, waiting patiently for the result. As an exception, it may be mentioned that the small yellow C. graveolens, sown as soon as moderately ripe, germinates in a few days, as freely as Mustard and Cress.

GERMINATION OF SEEDS: *R. D.* asks if any of our correspondents could inform him where he can find a Table showing the depth or degree at which different seeds will not germinate.

GOOSEBERRY, MAYOR OF OLDHAM: *G. S.* We do not see this variety mentioned in any of the catalogues before us, but should think that any of the Lancashire growers could supply you with it. Will some of our correspondents kindly assist "G. S." in the matter?

GRUBS: *S. S.* We can't pretend to tell you what they are without seeing them.

INSECTS: *R. W.* Your "two species of beetles," which have proved so pernicious to Pines, by gnawing the flowers and burrowing into the fruit, are the male and female of one of the many species of Blattæ, or cockroaches, which has been imported with the plants. The eggs are deposited in a mass enclosed in a large bean-shaped case, fixed in some corner of the frames, where they might be looked for, and the insects may be trapped by sinking basins or cups in the plunging material, baited with crumbs of bread, the insects not being able to crawl up the sides. *I. O. W.*

MAGNOLIA: *G. P.* It is rare for Magnolia conspicua to set and perfect its seeds in this country.

NAMES OF FUNGUS: *G. E.* A fine specimen of Clavaria abietina, a fleshy branching Fungus, of which we give an illustration. It varies in character in different situations, and sometimes assumes a green appearance when bruised.—*T. W., Eastwell Park.* Agaricus cepæstipes, common in such situations, viz., Cucumber frames, &c.—*G. H. S.* Merulius tremellosus, a rare Fungus.—*J. McD., Magnell Langley.* Agaricus nudus, scarcely edible. *W. G. S.*

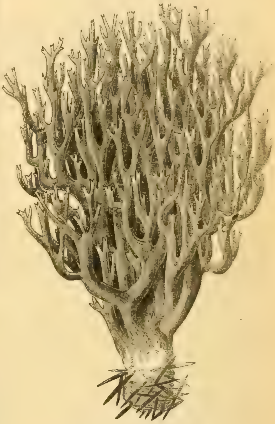


FIG. 316.—CLAVARIA ABIETINA.

NAMES OF PLANTS: *K. & S.* Asplenium lucidum.—*D. G.* 1, Cyrtomium falcatum; 2, Athyrium Filix-fœmina.—*J. Robson, Bowdon.* Lonas inodora, Gaertn. (syn. L. annua); otherwise Athanasia annua, L., or Achillea inodora, L.; native of Sicily and the S. Mediterranean shores generally.—*Rev. H. H. Crewe.* Fuchsia magellanica (F. macrostemma, F. gracilis), the plant long cultivated in gardens under the erroneous name of F. coccinea.—*J. Carter & Co.* Salvia Horminum.—*J. T. M.* Iochroma grandiflora, *not* I. tubulosa.—*C. B.* Polygonum vaccinifolium.—*F. F. S.* 1, Amaranthus tricolor, E. Indies; 2, Ruscus Hypophyllum, Italy.—*Mrs. P. P. B.* Francoa ramosa.

SOIL FOR TRICOLOR PELARGONIUMS: *Amateur.* Mr. Grieve in that excellent little work of his on "Ornamental Foliaged Pelargoniums," recommends the use of "a somewhat rich soil, composed of turfy loam, enriched with a small portion of thoroughly rotted hotbed manure or leaf-mould."

SWEET POTATO: *A. Y., Hereford.* Batatas edulis, sometimes met with in Covent Garden.

VARIEGATED ELDER: *J. G.* A very beautiful form of variegation, more distinctly mottled than any we remember to have previously seen. The Lycopodium is difficult to cultivate; the best plan is to pot in sphagnum and peat, and keep in a cool, moist frame.

VINE DISEASE: *J. B.* We are sorry to say that it is the true Phylloxera. Either destroy the Vines, if only one or two are affected, or lift; root prune wherever you see the insect, wash the roots well, burn all dead leaves, and replant in fresh soil. When the insect forms little bags on the upper surface of the leaves, immediately remove and burn them. It will require constant watching to get rid of the pest. *M. J. B.*

WILD GARLIC: *H. L. C.* asks if any of our subscribers will kindly inform him as to the quickest and best way to eradicate Wild Garlic. He has a wood of about 40 acres (adjoining the lawn and pleasure-grounds) full of it, and in summer the smell is most disagreeable.

WINTERING MESEMBRYANTHEMUMS, &c.: *J. H.* The heat in which you have the plants named at present will make them tender, therefore the sooner it is reduced the better. The Mesembryanthemums will stand with impunity a temperature of 25° if dry. They will keep well in the spare room you mention, if they have plenty of light. The latter condition is essentially necessary, as they have a natural tendency to grow during winter. Echeveria glauca will keep in a cold frame; E. metallica, however, must be kept in a temperature above 35°. Sempervivum californicum is hardy, but S. Lindeni must be kept in a temperature above 40° to keep it sound.

CATALOGUES RECEIVED.—Ewing & Co., General Catalogue of Nursery Stock.—James Cocker, Descriptive Catalogue of Ornamental Trees and Shrubs, Roses and Fruit Trees, &c.—B. Whitham, Descriptive Catalogue of Roses, Stove and Greenhouse Plants, &c.—Masters & Kinmont, Hortus Durovernensis, a Catalogue of Useful and Ornamental Trees and Shrubs, Fruit Trees, Roses, Herbaceous Plants, &c.

COMMUNICATIONS RECEIVED.—Rev. W. F.—Mrs. P. P. B.—M. T.—Rev. W. E.—S. S.—T. R.—J. G.—H. H. C.—J. L. H. K.—P. H. G.—G. F.—C. N., Collioure.—H. & Son.—A. F.

Markets.

COVENT GARDEN.—Nov. 10.

The markets are not so firm as they were a week ago. The provincial inquiries for goods will now relax until we get nearer to Christmas. Outdoor produce is plentiful and good, especially some of the Broccolis. Some large shipments of Almeira Grapes are to hand, but the fruit bears no comparison with that received last autumn. Hothouse Grapes and Pears are sufficient for the trade, and Peaches are nearly over. Potatos have very much advanced in price, Regents making 100*s.* to 130*s.*, Flukes 120*s.* to 140*s.*, and Shaws 80*s.* per ton.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve	2 0 to	5 0	Oranges, per 100 ..	6 0 to	10 0
Cobs, per 100 lb. ..	60 0 —	65 0	Peaches, per doz. ..	8 0 —	15 0
Filberts, per lb. ..	0 8 —	10	Pears, per dozen ..	2 0 —	4 0
Grapes, per lb. ..	1 6 —	5 0	Pine-apples, per lb.	2 6 —	6 0
Lemons, per 100 ..	7 0 —	10 0	Pomegranates, each	0 4 —	0 8
Melons, each ..	2 0 —	5 0			

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Artichokes, per doz.	6 0 to	8 0	Herbs, per bunch ..	0 2 to	0 4
Beet, per doz. ..	1 0 —	2 0	Horse Radish, per bundle	3 0 —	5 0
Broccoli, purple, per bundle	1 0 —	1 6	Leeks, per bunch ..	0 2 —	0 4
Brussels Sprouts, p. half sieve.. ..	2 6 —	3 0	Lettuces, per score..	2 6 —	3 0
Cabbages, p. doz. ..	1 0 —	1 6	Mushrooms, p. pott.	1 0 —	2 6
Capsicums, p. 100..	1 6 —	2 0	Onions, per bunch..	0 4 —	0 9
Carrots, p. bunch ..	0 6 —	0 8	Parsley, p. bunch ..	0 2 —	0 4
Cauliflowers, p. doz.	2 0 —	6 0	Radishes, per bunch	0 2 —	.
Celery, red, p. bun.	1 6 —	2 0	Seakale, per punnet	2 6 —	3 6
— white, do. ..	1 0 —	1 6	Shallots, per lb. ..	0 8 —	..
Chilies, per 100 ..	1 6 —	2 0	Spinach, per bushel	2 6 —	3 0
Cucumbers, each ..	0 6 —	1 0	Tomatos, p. sieve ..	4 0 —	6 0
— Ridge, p. dox.	1 0 —	2 0	Turnips, p. bunch..	0 4 —	0 6

Chrysanthemums.

ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6*s.* and 8*s.* per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

Brunswick Nursery, Stoke Newington, N

Chrysanthemums, both New and Old.

H. CANNELL begs to inform his friends and Customers that he has now the finest lot of STOCK PLANTS in 60's perhaps ever seen, consisting of 300 of all the most popular varieties, and about three dozen of each kind are continually kept on hand. Every kind is planted out and bloomed every season, on purpose to keep the whole collection perfectly true. They are now in fine condition, and all admirers of this family are invited. For price of Plants, Rooted Cuttings, and Cuttings, see H. C.'s FLORAL GUIDE, which also contains a great deal of valuable information, including how to grow them to the highest perfection for decoration. Sent free for four stamps.

New Florist Flower and Florist Flower-Seed Merchant, Woolwich.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W

Fern and Alpine Catalogues.

A. STANSFIELD AND SON will forward their NEW CATALOGUE of FERNS, No. 9, for 1871–72, containing 40 pages, with descriptive and cultural remarks, for three penny stamps; also their HERBACEOUS and ALPINE PLANT LIST for 1872, containing more than 1000 species, for two stamps.

Vale Nurseries, Todmorden, Lancashire.

To the Trade.

TO BE DISPOSED OF, 20,000 EVERGREEN PRIVET, 2 to 3 feet, bushy, at 20*s.* per 1000.

8000 GREEN BOX, 1½ to 2 feet, 18*s.* per 100.
3000 Dwarf SAVIN, at 10*s.* per 100.
2000 AMERICAN ARBOR-VITÆ, 2 to 2 feet, at 10*s.* per 100.
50 bushels JERUSALEM ARTICHOKES, at 2*s.* 6*d.* per bushel.

WILLIAM RUSHFORTH, Woodhouse Hill, near Leeds.

Moor Edge Nurseries, Tansley, near Matlock, DERBYSHIRE.

JOSEPH SMITH, JUN., begs to announce that he holds large stocks of FOREST TREES, COVERT and HEDGE PLANTS of a moderate size, suitable for general planting; also EVERGREEN and FLOWERING SHRUBS, &c., of which CATALOGUES will be forwarded free on application, and special offers given for large quantities.

SURPLUS STOCK of the following to be SOLD, cheap:—PRINCE ALBERT, LINNÆUS, and VICTORIA RHUBARB; FASTOLF RASPBERRIES; 4 yr old ASPARAGUS; SKIMMIA JAPONICA; CLEMATIS LANUGINOSA; CUPRESSUS LAWSONIANA; PERNETTYA SPECIOSA, the berry-bearing variety; AUCUBA LIMBATA, bicolor and viridis; SALIX BABYLONICA SALOMONII, the hardy Weeping Willow. Prices, &c., on application.

ISAAC DAVIES, Nurseryman, Ormskirk.

New Tea-scented, Noisette and other Roses.

JOHN WATERER AND SONS are offering strong plants, in pots, at 12*s.* per dozen, comprising the following sorts:—MARECHAL NIEL, CLIMBING DEVONIENSIS, BELLE LYONNAISE, Chamois, Jeanne d'Arc, Le Mont Blanc, Madame Ducher, Madame Levet, Tour Bertrand, Lamarque a fleurs Jaunes, Reve d'Or, Isabella Sprunt.

CLEMATIS JACKMANII, | CLEMATIS RUBRA VIOLACEA, CLEMATIS STANDISHII, and others, 12*s.* per dozen, very strong stuff. Trade price on application.

American Nurseries, Bagshot, Surrey.

New English Rose (Hybrid Perpetual Climbing), PRINCESS LOUISE VICTORIA.

WM. KNIGHT, Floral Nursery, Hailsham, Sussex, the raiser of this Rose, to be sent out this month for the first time. Good plants at 7*s.* 6*d.* each, or three for 21*s.* Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

It will be figured in the "Floral Magazine" for November.
Coloured Drawings will shortly be ready, for 12 stamps, post free.
Descriptive Priced CATALOGUES free on application.

Notice.

H. LANE AND SON'S Descriptive CATALOGUE of ROSES, FRUIT TREES, VINES, CONIFERS, DECIDUOUS and EVERGREEN TREES and SHRUBS, RHODODENDRONS, AZALEAS (Indian), CAMELLIAS, &c., may now be had free on application. The prices will be found moderate, combined with quality. An inspection of the growing stock is earnestly solicited.

The Nurseries, Great Berkhamsted, Herts.

Standard Tea Roses, and Others, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), beg to offer the largest stock of ROSES ever seen, at the following prices:—

Standard Tea Roses, all the best sorts, £5 per 100. (This stock is beautiful, and very extensive.)
Standard Hybrid Perpetuals and Moss, £4 per 100.
Half-Standard Hybrid Perpetuals and Moss, £3 4*s.* per 100.
Dwarf Hybrid Perpetuals and Moss, £2 per 100, £18 per 1000.
On their own roots, grown in pots, splendid stock, £2 per 100.
Tea sorts, Dwarfs—Madame Falcot, Devoniensis, Jean Pernet, Madame Margottin, and all the best, £3 per 100.
Maréchal Niel, Standards, £5 per 100; Dwarfs, £4 per 100.

Fifteen per cent. discount on the new sorts of 1872.
LISTS on application. CATALOGUES now ready.

Gladioli Seedlings, by Name, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), offer the following:—

GLADIOLI SEEDLINGS, first-class, 7*s.* per 100; £3 per 1000.

100	GLADIOLI, by name,	10 sorts	.. ..	£0 8 0
100	„ „	25 „	.. ..	0 14 0
100	„ „	50 „	.. .. ..	£1 to	2 0 0
100	„ „	100 „	.. .. ..	£4 to	6 0 0

And upwards, according to the novelty of the sorts; all in good flowering bulbs.

Caladiums.

CHARLES VERDIER, FILS, NURSERYMAN, 12, Rue Duméril, Paris, begs to offer this autumn for the first time the SIX UNDERMENTIONED CALADIUMS (Mr. Bleu's Seedlings). They have been carefully studied during the last 5 years, and surpass any that exist up to this time.

C. BUREL	16*s.*	C. LEPESCHKINII	20*s.*
C. DONIZETTII ..	12*s.*	C. LEPLAY	16*s.*
C. LAINGII	16*s.*	C. VESTA	16*s.*

Full description will be sent on application.

CATALOGUES of Roses, New Roses, Pæonies and Gladioli are now ready, and may be had post free either from CH. VERDIER, or of his London Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, E.C.

CHOICE TRICOLOR GERANIUMS.

Prince of Wales
Princess Beatrice
Coronet
Pre-eminent
Mrs Dunnett
Sir R Napier
Phœbus
Sunbeam
Sunray
Italian Beauty
Mrs. John Clutton
Mabel Morris

The 12 for 21*s.*, package included. Terms cash. Remittances requested from unknown Correspondents. A LIST of 250 varieties post free.

ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Hardy Spring Bedders.-Surplus Stock, Cheap.

MYOSOTIS DISSITIFLORA (True)—best Blue Forget-me-Not; DACTYLIS GLOMERATA VARIEGATA—Silvery Ribbon Grass, 8 inches high. The above, in quantities of not less than 100, separately or assorted, for 8*s.* Stamps to accompany orders by post.

W STANTON, Gardener, Chase Side, Southgate, near London, N.

MAURICE YOUNG'S New Descriptive CATALOGUE of CONIFERÆ, HARDY ORNAMENTAL TREES, SHRUBS, and EVERGREENS, RHODODENDRONS, ROSES, cheap EVERGREENS for cover, WINTER BEDDING PLANTS, NEW AUCUBA, JAPANESE PLANTS, FRUIT and FOREST TREES, &c., is now ready, and will be forwarded on receipt of stamp for postage.

Milford Nurseries, near Godalming, Surrey.

Ornamental Trees and Shrubs.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, beg to intimate that in consequence of a large portion of their Ornamental Grounds having been Disposed of for Railway and Building purposes, they are now prepared to SELL at reduced prices their splendid stock of ORNAMENTAL TREES and SHRUBS. These being of all ages and sizes, are particularly well suited for giving immediate effect in the Formation and Improving of Ornamental Parks, Pleasure Grounds, &c. Inspection invited.

WANTED, as WORKING GROUND FOREMAN, for a Nursery in the United States, a steady, active young Man—good Budder and Grafter, with a general knowledge of Nursery Work. Single, or, if married, with a small family Also, a JUNIOR CLERK—one acquainted with Packing small Packages of Seeds and Plants by Post preferred.—Both to apply in own handwriting, and, in order to avoid delay, enclose references or testimonials to J. S., Waite, Burnell, Huggins & Co., Southwark Street, London, S.E.

WANTED, by a Florist, at a distance from London, a steady, active, young MAN, who thoroughly understands the Forcing of Gardenias, Stephanotis, Roses, and Geraniums, as well as the general treatment of Greenhouse and Stove Plants.—Address, stating full particulars, FLORIST, *Gardeners' Chronicle* Office, WC.

WANTED, a PROPAGATOR and GROWER of PLANTS.—A married Man, without family, preferred.—JAMES HUDDART, Farrington Hall Nursery, Preston.

REQUIRED, the SERVICES of FOUR or FIVE YOUNG MEN accustomed to Nursery Work and Outdoor Propagating.—Address, stating terms, to WM. WOOD AND SON, Nurseries, Maresfield, Uckfield, Sussex.

To Nursery Foremen.

WANTED, a good SECOND MAN, who understands Grafting and Budding, and general Outdoor work.—Apply to J. C. WHEELER AND SON, Nurserymen, Gloucester.

Seed Trade.

WANTED, as IMPROVER, a young Man or Youth, good Penman, quick, and who has some knowledge of the Trade. State age, wages, in what capacity lately employed, &c.—S. FINNEY AND CO., Seed Merchants, Newcastle-upon-Tyne

Wholesale.

WANTED, an INVOICE CLERK.—Must be thoroughly conversant with the London Trade, and have filled a similar situation.—Apply, by letter only, to C. A. S., 26, Maude Road, Camberwell, S.E

WANTED IMMEDIATELY, in a Wholesale Provincial Nursery, an energetic Man as SALESMAN and OFFICE ASSISTANT.—Apply, enclosing references, to R. N. N., Messrs. Nutting & Co., 60, Barbican, London, E.C.

JAMES VEITCH AND SONS REQUIRE for their SEED WAREHOUSE an ASSISTANT, who has had two or three years' experience. He must be expert at Parcelling, and a good Penman.—Apply by letter, stating age, experience, and wages required, Royal Exotic Nursery, Chelsea, S.W.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St John's Wood, N.W.

Gardeners and Under Gardeners.

WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N.

TO CURATORS, NURSERYMEN, &c.—A well-educated young Man, having an extensive knowledge of Orchids and other Exotics, desires a situation in a Botanic Garden or first-class Nursery at home or abroad. Is an excellent Correspondent, and a good Botanical Artist. No obection to Travel. Experienced as Amanuensis, &c. Certificated in Botany and Drawing by the Society of Arts, and in practical Horticulture by the Royal Horticultural Society, London. Excellent references, &c.—LITHO, 19, Alfreton Road, Nottingham.

GARDENER (HEAD).—Married, one child; thoroughly understands the duties in every branch. Eight years' unexceptionable reference.—C. W., Post Office, Gumby, Market Harborough, Leicestershire.

GARDENER (HEAD).—Age 32, married; has had many years' experience in all branches of Gardening. Can be highly recommended by his present employer, with whom he has been 12 years, and is leaving in consequence of the place being given up. No single-handed place accepted.—WM. GREENWOOD, Alderwasley Hall, Derby.

GARDENER (HEAD).—Age 40, married, family. The advertiser, who is now disengaged, begs to offer his services to any Nobleman or Gentleman in want of a thorough practical Gardener. Twenty years in the previous situation, and three years in the last. Leaving on account of the establishment breaking up. Character will bear the strictest investigation.—J. ADAMS, 4, Southsea Road, Surbiton, Surrey.

GARDENER (HEAD, WORKING).—Age 28, married; thoroughly practical in every branch of the profession. Good character.—H., Cook's, 4, St. Mark's Villas, Tollington Park, Hornsey, N.

GARDENER (HEAD, WORKING).—Age 35, married, no family; well up in Early and Late Forcing of all kinds of Fruits, Flowers, and Vegetables, also Flower and Kitchen Gardening. Has been nine years Head Gardener. Good character.—A. B., 3, Myrtle Terrace, Hamilton Road, Norwood, S.E.

GARDENER (HEAD), where one or more are kept.—Thoroughly practical; five years' first-class reference.—G. L., Ivy Cottage, Esher Road, Leytonstone, N.E.

GARDENER (HEAD), where one or more are kept, and where a house could be had.—A good practical, active, and trustworthy Scotchman, who understands all Indoor Work, also Flower and Kitchen Gardening. Satisfactory reasons for leaving. Good references from present and previous employers.—J. K., Post Office, Tarland, Aboyne.

GARDENER.—Age 21; has had experience in Stove and Greenhouse Plants, Vines and Pines, and Flower and Kitchen Gardening. Can have first-class character from last situation.—J W., Post Office, Whissonsett, near Litcham, Norfolk.

GARDENER (JOURNEYMAN).—A strong, active Man, who wants an insight, and is not afraid of work. First-rate character as a Man and Workman.—Apply to GEORGE EDWARD, Seedsman, Aberdeen.

FOREMAN, in a good Establishment.—Age 22; strong, active, and well up in all branches. Good reference.—Mr. BUCHANAN, Dyrham Park, Barnet, Herts.

FOREMAN, or Single-handed.—Age 27, single; five years' experience in Gardens. Can Milk or take care of Horse and Carriage.—A., Miss Cooke, Beckley, near Oxford.

PROPAGATOR in general, or PROPAGATOR and GROWER.—Age 26; good character from last situation.—A. B., Post Office, Leytonstone, Essex.

PROPAGATOR (SOFT-WOODED) and GROWER.—A thorough knowledge of the profession; can grow for Exhibition or Market if required. Nine years' good character.—R. C., 13, Hill Road, St. John's Wood, London, N.W.

To Head Gardeners.

IMPROVER (age 20).—M. SAUL, The Gardens, Stourton, Knaresborough, can with confidence recommend a very steady, respectable, and industrious Man, as above.

TO GARDENERS.—A LADY wishes to recommend a YOUTH, age 18, where he could Improve, under a good Gardener. Has been four years with her.—C. WOOD, Mrs. Sumner's, Great Bookham.

IMPROVER, where he will have a good chance of improving himself in Gardening in all its branches.—Age 19; has been two years in a Garden under a practical Man. Good character—The GARDENER, Mrs. Samuel Thompson's, Fordingbridge, Hants.

To Noblemen, Gentlemen, and Others.

FARM BAILIFF, or to have the Care or Management of Blood Stock.—Age 38, single; first-class Horseman, with unexceptionable character.—S. G. W., Alvechurch, near Redditch.

ESTATE BAILIFF, or ESTATE BAILIFF and GARDENER.—Age 29, married; understands all kinds of Estate Work, including Fencing, Draining, Road-making, Timber and Plantations, and General Repairs; can Prepare Plans and Specifications for Farm Buildings, &c. Also a good practical Gardener: has had a good deal of experience in Laying-out and Planting New Gardens and Pleasure Grounds. References from present and previous employers.—A. B., Post Office, Devizes, Wilts.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

To Nurserymen.

TRAVELLER.—Has had many years' experience in the above capacity, and commands a first-class connection; is now open to an engagement with any leading firm.—ALPHA, *Gardeners' Chronicle* Office, W.C.

To Publishers and Others.

CLERK.—Young Man, who is a good Writer, accurate at Figures, and has a practical knowledge of Printing.—H., 14, Great Castle Street, Regent Street, W.

To the Seed Trade.

ASSISTANT, &c.—Age 23; seven years' experience in the Seed Trade. Has been some time in the London Retail Trade. Satisfactory testimonials from former employers. Has no objection to go abroad.—G. S. Y., 60, Buchanan Street, Glasgow.

SHOPMAN.—A young Man, who has had nearly six years' experience in the Seed Trade, is now open for an engagement.—R. C., Post Office, Alyth.

GOVERNESS.—A young Lady, lately returned from France, desires a re-engagement as above. Acquirements—English, French, German, Drawing, Music. The highest references offered.—K., *Gardeners' Chronicle* Office, W.C.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Seed Wheat.

W. SAVILL, Curl's Farm, Clavering, has a good stock of RIVETT SEED WHEAT for SALE, requiring only from 1 bushel to 5 pecks per acre. During the last four years many of the heads have had six or seven set on each side, containing from 100 to 130 grains each, and producing from 6 to 8 quarters per acre without fallowing. Price 6*s.* 6*d.* per bushel; delivered within 8 miles at 2*d.* per bushel extra, in quantities of not less than one sack.

N.B.—There is a slight sprinkling of Kentish in the above Wheat, but a less quantity than is generally sown in Rivetts.

Autumn-sown Cabbage Plants.

W. VIRGO AND SON can now supply good strong Plants of the undermentioned sorts:—EARLY BATTERSEA, EARLY YORK, ENFIELD MARKET, NONPAREIL, LITTLE PIXIE, and ROBINSON'S CHAMPION DRUMHEAD, at 3*s.* per 1000; do. RED PICKLING, 5*s.* per 1000.

The Nurseries, Wonersh, Guildford, Surrey.

JOHNSTON'S ST. MARTIN'S RHUBARB.—Strong roots, 1*s.* 6*d.* each; 16*s.* per dozen. Price to the Trade on application.—The Subscribers have received, quite unsolicited, the highest testimonials as to the superiority of the above new variety of Rhubarb. It is undoubtedly the best sort in cultivation.

W. P. LAIRD AND SINCLAIR, Nurserymen and Seed Merchants, Dundee, N.B.

Peas for Market Gardeners and Others.

SUTTON AND SONS having completed picking and cleaning their stock of these PEAS, will be happy to make special quotations for large quantities.

SUTTONS' IMPROVED EARLY CHAMPION, the largest early Pea for Market Gardening purposes.

SUTTONS' RINGLEADER, the forwardest known.

DANIEL O'ROURKE
ADVANCER
NELSON'S VANGUARD
VEITCH'S PERFECTION
FORTYFOLD
CHAMPION OF ENGLAND
PRIZETAKER
SCIMETAR

and others.

Lowest price per bushel or quarter on application.

SUTTON AND SONS, Seed Growers, Reading.

Late Rose Potato.

THIS valuable NEW SEEDLING WINTER POTATO is now for the first time offered to the Public. In its colour, habits of growth and general appearance, it resembles its parent, the Early Rose, but is superior to that variety in the following highly important particulars:—

1st, It is of much better quality for table use, being white fleshed and fine grained, cooking very dry and mealy. It has a peculiar, rich and delicate flavour, not surpassed by any variety yet tested.

2d, Its yield is enormous. The stock was grown at the rate of from 250 to 300 bushels per acre, common field culture. On the same soil and under the same treatment, the Early Rose yielded less than 100 bushels per acre.

3d, Its keeping quality is unsurpassed. In the same cellar, at planting time, when the Early Rose were so badly sprouted and wilted as to be unfit for table use, this Seedling had not sprouted, and were as crisp and solid as when first dug. They remained in good condition for cooking until the new crop of Early Rose came upon the table.

☞ For Sale by the London Seed Trade generally.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

WANTED, from ONE to SIX or more ACRES of good LAND (where a good supply of Water can be obtained at all times), with or without a good Eight-roomed House, suitable for a Florist, within 12 miles of Covent Garden, on long Lease. Near a Station preferred. State particulars to

A. B., Post Office, King Street, Covent Garden, London, W.C.

WANTED, on Lease, TWO to THREE ACRES good LOAMY SOIL, for TRIAL GROUND, within about half-an-hour by Rail from Charing Cross, Waterloo, or Victoria Stations. If a Cottage or small House on the land, so much the better.—Apply by letter, with full particulars, to

MINIER, NASH, AND NASH, Seedsmen, 60, Strand, London, W.C.

HOTHOUSES.—A range of SIX HOTHOUSES, with LAND, from 5 to 35 acres, to be LET.—Apply, by letter, to V., Messrs. Gilbert, Copthall Buildings, London, E.C.

Market Garden Ground to Let.

WIMBLEDON PARK.—SEVENTEEN ACRES, COTTAGE, STABLE, COW-HOUSE, PIG-STYES, BINDING SHED, and CORN STORE, £100 a-year; GROWING CROPS at a valuation. Immediate possession.

Mr. THOMAS C. SCOTT, Land Agent, 19, Kings' Arms Yard, Moorgate Street, E.C.

To Nurserymen, Florists and Others.

TO BE DISPOSED OF, by Private Treaty, the old-established and well-known NURSERIES, situate about six miles south-west side of Manchester, so long and successfully carried on, comprising Six Greenhouses, Five Ranges of Pits, with Hot and Cold Water, with the whole of the GREENHOUSE PLANTS, &c. These Nurseries are over 20 Acres, and are well stocked with choice EVERGREENS, FOREST and FRUIT TREES, such as are rarely met with. None but Principals need apply.

For further particulars, apply to J. HOCKENHULL, Nurseries, Sale, near Manchester.

SALES BY AUCTION.

Second Poultry Sale of the Season.

LUCAS'S REPOSITORY, LIVERPOOL.

MESSRS. LUCAS AND CO. will SELL on FRIDAY, November 24, at 11 o'Clock prompt, at their Repository, Liverpool, THREE HUNDRED LOTS of choice DOMESTIC POULTRY and PIGEONS. Entrance Fee for Poultry, 1*s* per Pen. No Entrance for Pigeons if of 10*s* value for Lot. Commission on Sale 10 per cent. Entrance Closes on Monday, the 10th inst. No more than 300 Lots offered. All Birds to be at the Repository by Thursday evening, or before 9 on Friday morning.

NOTE.—Three Birds in each Pen, except of great merit; Pigeons in pairs.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871.

SALE THIS DAY, at HALF-PAST 12 O'CLOCK PRECISELY.

Plants and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 11, at half-past 12 o'Clock precisely, Specimen CONIFERS, RHODODENDRONS, HOLLIES, ROSES, FRUIT TREES, CLIMBING PLANTS, &c., from Holland; also an importation of choice Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, LILIUMS, GLADIOLI, and other Bulbs, just arrived from well-known Dutch Farms.

On view the morning of Sale, and Catalogues had.

Bulbs and Plants from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 13, at half-past 12 o'Clock precisely, Specimen CONIFERS, RHODODENDRONS, Variegated and Green HOLLIES, FRUIT TREES, ROSES, CLIMBING PLANTS, and a variety of HARDY and ORNAMENTAL TREES and SHRUBS, from Holland; also an importation of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, LILIUMS, GLADIOLI, RANUNCULI, and other Bulbs, just arrived from Dutch Farms.

On view the morning of Sale, and Catalogues had.

Greenhouse Plants from Belgium; Hardy Plants and BULBS from HOLLAND.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 15, at half-past 12 o'Clock precisely, choice CAMELLIAS, INDIAN AZALEAS, PALMS, ORANGE TREES, JASMINUMS, DRACÆNAS, and other Plants, from Ghent. A consignment of HARDY and ORNAMENTAL TREES and SHRUBS, FRUIT TREES, ROSES, HOLLIES, and other Plants, from Holland; also an importation of choice Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, LILIUMS, ANEMONES, IRIS, RANUNCULI, GLADIOLI, and other Bulbs, just arrived from several well-known Dutch Farms.

On view the morning of Sale, and Catalogues had.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, November 16, at half-past 12 o'Clock precisely, 800 LOTS of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, LILIUMS, GLADIOLI, and other Hardy Bulbs, just arrived from Holland, and Lotted to suit the Trade and private Buyers.

On view the morning of Sale, and Catalogues had.

City Auction Rooms, 38, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, as above, on THURSDAY, November 16, at half-past 12 o'Clock precisely, a FIRST-CLASS COLLECTION of DUTCH BULBS, a superb assortment of 300 Standard and Dwarf ROSES, selected FRUIT TREES, HARDY CONIFEROUS SHRUBS, and AMERICAN PLANTS, &c.

May be viewed the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, Leytonstone, E.

Joyning's Nursery, Waltham Cross, N.

IMPORTANT UNRESERVED SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from the Executrices of the late Mr. R. Joyning to SELL by AUCTION on the Premises, Joyning's Nursery, Waltham Cross, N., on MONDAY and TUESDAY, November 27 and 28, at 11 for 12 o'Clock precisely each day, without reserve, in consequence of the lease of a portion of the Nursery having expired, a large quantity of VALUABLE NURSERY STOCK, comprising thousands of fine bushy Aucubas, extra large Laurels, fine Phillyreas, Variegated and Green Hollies, Spruce Firs, English Yews, Rhododendrons, Hardy Azaleas, Laurustinus, Arbor-vitæs, fine Portugal Laurels, Box, Guelder Roses, a quantity of fine Limes, and other Ornamental Trees, clean grown FRUIT TREES, Standard and Dwarf ROSES, &c.

Further particulars next week.

Clapham, S.

IMPORTANT SALE of NURSERY STOCK, CHOICE GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. F. Muskett, to SELL by AUCTION, without reserve, on the Premises, The Nursery, High Street, Clapham, Surrey, close to the Railway Station, on WEDNESDAY, November 29, and following days, at 11 for 12 o'Clock precisely each day, a large quantity of surplus NURSERY STOCK, comprising an excellent assortment of many thousands of choice Evergreen and Coniferous Shrubs, many of which are remarkably fine specimens; also clean-grown Fruit Trees, Standard and Dwarf Roses, selected Greenhouse Plants, consisting of English-grown Camellias, full of bloom-buds; fine Azalea indica, and a large quantity of Ericas, in variety, remarkably well grown and abundantly furnished with flower-buds, &c.

Full particulars will appear next week.

Battle, Sussex.

To GENTLEMEN, NURSERYMEN, FRUITERERS, and OTHERS.

SALE of an ENTIRE NURSERY STOCK, CONIFERÆ, HARDY ORNAMENTAL EVERGREENS, DECIDUOUS and FLOWERING TREES and SHRUBS.

THOMAS AND SON beg to announce that they have received instructions from Mr. Edmund Eldredge, to OFFER by PUBLIC AUCTION, on TUESDAY, November 14, commencing at 10 o'Clock punctually, the whole of his STOCK, now standing and growing in three separate nurseries at Black Horse, Battle, consisting of about 3500 Common Laurels, 600 Laurustinus, 350 Portugal Laurels, 10 Araucarias, varying from 5 feet to 9 feet; 12 Wellingtonias, from 6 feet to 10 feet; 18 Cupressus, Lawsoniana and upright, from 2½ feet to 10 feet; 100 Arbor-vitæ, from 3 feet to 10 feet; 30 Irish and Golden Yews, Sweet Bays, Pinus, insignis and austriaca; Silver, Spruce, and Scotch Firs; Variegated and Green Hollies, Euonymus, Sumach, Cedrus Deodara, Berberis, Rhododendrons, Aucuba, Weeping Ash and Willow, Poplar, &c.; about 12,000 strong and well-grown Quicks, a quantity of Privet plants, ditto of Pyramidal, Standard, Espalier and Dwarf APPLE, PLUM, FIG, and CHERRY TREES, of new and good varieties; and an assortment of GOOSEBERRY and CURRANT BUSHES.

The Auctioneers in directing attention to the above Sale, would state that the Stock is generally fine and free grown; much of it was removed last season, and Plants from these Nurseries have seldom failed to give satisfaction.

Descriptive Catalogues may be had on application at the Nurseries, Swan Hotel, Hastings; Sussex, Tunbridge Wells; Anchor, Eastbourne; King and Queen, Brighton; Cinque Port, Rye; Royal Oak, Hawkhurst; and of the Auctioneers, Sidley, Hawkhurst.

The place of Sale is distant about half a mile from Battle Station, South-Eastern Railway, and 5 miles from Hastings.

Nursery Stock.—Sunbury, Middlesex.

MR. J. WILLMER begs to announce that he will submit to Public AUCTION, on the Premises, Springfield Nursery, Sunbury, on THURSDAY, November 16, at 12 o'Clock, the healthy and thriving STOCK of the above NURSERY, which comprises—Lilac, 4 feet; Thuja Wareana, 3 to 5 feet; Common Laurels, 2 to 6 feet; Striped Box, 4 feet; Green Box, 1 to 2 feet; Portugal Laurels, 2 to 6 feet; Cedrus Deodara, 8 to 10 feet; Spruce Fir, 2 to 6 feet; Green Hollies, 1 to 5 feet; Striped Hollies, 1 to 2 feet; Arbutus, 4 feet; Taxus fastigiata, 6 to 9 feet; Araucaria imbricata, 3 to 5 feet; English Yews, 1 to 5 feet; Red Cedar, 2 to 3 feet; Wellingtonia gigantea, 3 to 7 feet; Chinese Juniper, 3 to 6 feet; Pinus austriaca, 4 to 5 feet; Pinus Cembra, 3 to 5 feet; Abies canadensis; 3 feet; Thujopsis borealis, 3 to 5 feet; Cupressus Lawsoniana, 3 to 5 feet; Tulip Trees, 3 to 6 feet; STANDARD ROSES, Acacias, Poplars, &c.

May be viewed one week prior to the Sale, and Catalogues had at the principal Inns in the neighbourhood, on the Premises, and of the Auctioneer, Kent Villas, Station Road, Sunbury, S.W., who will forward the same by post, on application, enclosing a postage stamp.

THE TWENTY-SECOND ROYAL BERKSHIRE ROOT SHOW will be held in Messrs. SUTTONS' NEW LARGE WAREHOUSES, READING, on SATURDAY, November 18, when PRIZES amounting to upwards of SIXTY POUNDS will be awarded for the best SPECIMEN MANGELS, SWEDES, TURNIPS, KOHL RABI, POTATOS, &c., including a £10 10*s.* SILVER CUP for the best 24 Specimens of SUTTONS' CHAMPION SWEDES, with £5, £3, and £2, for the next best Specimens, and a £5 5*s.* SILVER CUP (offered by Messrs Griffin, Wolverhampton), for the Best Collection of ROOTS.

For complete Particulars, and Form of Entry, apply to
SUTTON AND SONS, Reading, Berks.

COGGESHALL ROOT SHOW.—PRIZES offered by JOHN K. KING, Coggeshall, Essex, for SPECIMEN ROOTS of MANGEL WURZEL, SWEDES, TURNIPS, &c., from Seed supplied by him. Entries Free. All Roots must reach J. K. KING by THURSDAY, November 16. Full particulars and conditions of Competition Post free on application to

JOHN K. KING, Seed Grower, Coggeshall, Essex.

Carter's Root Show.

JAMES CARTER AND CO. have the pleasure to announce that their ANNUAL ROOT SHOW will be held on NOVEMBER 24, on the Premises of the Pneumatic Despatch Company, 245, High Holborn, when PRIZES to the value of upwards of SIXTY POUNDS will be awarded for the best specimens of
SWEDES, TURNIPS, MANGEL, KOHL RABI, CARROTS, &c.

Including a SILVER CUP, value Ten Guineas, for the best 24 roots of
CARTER'S IMPERIAL HARDY SWEDE.

JAMES CARTER AND CO., Seedsmen to H.M. The Queen and H.R.H. The Prince of Wales, 237 and 238, High Holborn, W.C.

CRYSTAL PALACE, NOVEMBER 14, 15, 16, and 17.—The GREAT LONDON POULTRY and PIGEON SHOW, comprising specimens of all the Domesticated Birds, in every class, variety, and colour. The Show will be arranged in the Nave. PRIZES, in value nearly NINE HUNDRED POUNDS, including many Silver Cups and articles of Plate, will be awarded. Admission on Tuesday, November 14 (to witness the judging), Half-a-Crown; other days, One Shilling; each day by Guinea Season Ticket.

CRYSTAL PALACE.—SECOND CAT SHOW, DECEMBER 2 and 4. Schedules and Entry Forms can be had on application to Mr WILSON, Natural History Department. PRIZES, ONE HUNDRED POUNDS. Special Prizes offered by the Royal Society for the Prevention of Cruelty to Animals, for Working Men's Cats.

ENTRIES CLOSE NOVEMBER 20.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

The Exhibitors and the Public will be admitted to Bingley Hall, to witness the whole of the Judging, on Saturday, November 25, at 9 o'Clock A.M., upon payment of 10*s.* each.

Admission, on Monday, November 27, to Non-subscribers, until 5 o'Clock, 5*s.*; after that hour, 1*s.*

The Exhibition will also be open on Tuesday, Admission, 1*s.* all day; on Wednesday and Thursday, until 5 o'Clock, 1*s.*; after that hour, 6*d.*

For special Railway Arrangements, see the Advertisements and Bills of the several Companies.

JOHN B. LYTHALL, Secretary.
Offices of the Society, 39, New Street, Birmingham.

The Agricultural Gazette.

SATURDAY, NOVEMBER 11, 1871.

MEETING FOR THE ENSUING WEEK.

MONDAY, Nov. 13 { Institute of Surveyors (12, Great George Street, Westminster)—8 P.M.

THE discussion which followed the very able speech made by Mr. C. S. READ, M.P., on "THE AGRICULTURAL LABOURER, his Employment, Wages, and Education," before the London Farmers' Club on Monday evening last, was full of interest, but by no means exhaustive; indeed, so much was this felt, that it was suggested by the Chairman, Mr. SPEARING, that the same subject, or one closely related to it, should be brought forward early next year, so that the debate might in a manner be adjourned until that time.

The first speaker was Mr. S. SIDNEY, who compared the condition of the agricultural labourer with that of the artisan employed in towns, and stated his belief that the former was generally but a few degrees removed from the condition of pauperism, a remark which called forth expressions of dissent. He proceeded to explain that this was in a measure the effect of the great agricultural depression which followed the wars of the early part of the century, but that it was especially due to the pernicious system of granting parish relief in such a manner that he who had the largest family had the largest share of support, thus at once lowering his independence, and putting self-help in his case very much out of the question. To raise the standard of the agricultural labourer, he must be made to feel himself an independent man; and the first thing to be done in this direction is to provide him with a good cottage to live in, and with that a suitable amount of garden ground. As to the education question, he believed that it would do but little good until the labourer was raised into a position above that of a pauper, which can only be done by giving him constant employment, better cottages, and good garden accommodation. But this, he intimated, cannot be accomplished until the land is relieved from the fetters of entail; though by that he did not mean that it was desirable to convert all the country into small freeholds.

Mr. Masfen indorsed some of Mr. Sidney's observations, but was directly at issue with him upon others. He would like to know in what county he could go and not find a good garden attached to the labourer's cottage. He also said that the great occupiers are frequently accused that they do not adequately pay the labourer; but the fact is, that they pay much more per acre now than they did 20 years ago, though the labourers do not put so much muscle into their work as they used to do. He compared their circumstances with those of the skilled artisans and colliers in his district; and it was forcibly shown that the labourer did not lose anything by the comparison. The only complaint he could make against his brother farmers was their continuance of the system of doling out beer during harvest.

Mr. Albert Pell, M.P., thought the condition of the agricultural labourer was on the whole satisfactory. He commented upon the long hours of toil and meagre pay of railway servants, a class largely recruited from the rural population, and explained his views on the nine hours movement and the gang system of employment. It should not be forgotten that the pay of the labourer is good and increasing. He referred to the immense advantage which the keeping of a cow gave to the labourer, and on the subject of cottages stated, that he knew a large landed proprietor who had a system on his property of granting building leases of ground for the erection of cottages. He mentioned a curious case of entail on an estate in Norfolk, which had very recently come under his notice, and which was that the rent of certain cottages was not to exceed a stated sum, and that so much land was always to be attached to them. He thought something in this way might be usefully done by philanthropists.

Mr. James Howard, M.P., thought the farmer need not trouble himself much in making comparisons between the labourer and the artisan, in relation to the supply of skilled labour, as this question would settle itself by natural laws. He thought that when they talked of the increased cost per acre, they should remember that the production also was double that of 20 years ago. He agreed with Mr. Read, that the old men on the farm should, where capable, be employed in tutoring the young hands; and it would be much to the interest of the farmer if they also initiated them into the way of working and properly looking after machinery.

Mr. Neild said that in no place was the question of labour so much felt as in Lancashire. He stated that at his harvest dinner a fortnight ago, one of his labourers had suggested that they ought to grow more stuff, and his machineman had told the farm labourers that it was a great mistake on their part to condemn machinery, as he believed the time would come when no farmer would be able to do without it. After that statement he thought it was time for farmers to see to the education of their sons, or the agricultural labourer would soon beat them. He was of opinion that the more they improved the land and increased the crops, so would the price of labour increase. In the matter of cottages there ought to be built on every estate as many cottages as there were families of labourers to occupy them. Much might also be done on farms of mixed soils, if the farmers would endeavour to keep on the same number of men in winter as in summer, which he could easily manage to do.

Mr. Trethewy quite concurred in the opinions expressed by Mr. Read on the subject of cottages, and expressed his opinion that the labouring class would be much benefited if they would endeavour to equalise the supply and demand for labour by migrating from those districts where work is scarce to others where it is more plentiful.

The Rev. E. Smythies thought the question one of the most important ever discussed—farmers never having passed through such a difficult period as the last harvest, in consequence of their inability to command the amount of labour required to get in the crops.

Mr. Read, in replying, said that he agreed with Mr. Sidney that they could not expect much from the agricultural labourer whilst the present Poor-laws exist; and he agreed with Mr. Masfen on the question of beer, which he did not give on his own farm as a part of the wages. As regards the increase of crops mentioned by Mr. Howard, he found the thickest crops the cheapest to cultivate and keep clean.—The usual vote of thanks concluded the meeting.

Russia is entering with eagerness on the career of Progress which the recent alterations in the political and social *status* of her inhabitants have thrown open to her. These alterations (however much some individuals may have suffered from them) have already conferred a certain degree of material prosperity on the great body of the people, which is obviously only a foretaste of what is to come; and the State itself, the Government in contradistinction to the governed, has shared in the general amelioration. We have it on excellent authority, that the heavy arrears of unpaid taxes, which used to burden the State ledger, have, since the liberation of the serfs, gradually and rapidly diminished. The people are able to pay, and do pay, the assessments which their owners formerly were unable to do, or at least did not. This prosperous state of things naturally encourages the Government to persevere in the liberal and enlightened course which has proved so successful, and a general impulse is being given, by judicious patronage and support, to all enterprises that hold out a fair prospect of benefiting the country.

There is no doubt a great deal yet to be done, and in many points the Russian statesmen still follow what we here consider a very erroneous policy. But let us not on that account depreciate or undervalue the good they are really doing. We are not without expectation, too, that even on those points where they appear to us to go farthest astray (their prohibitive protectionist tariff), their eyes may in time be opened. They are learning that commerce, like mercy, is twice blessed,—blessing him that gives as well as him that takes. A great International Polytechnic Exhibition is by Imperial permission to be held at Moscow next year, and for its purposes a relaxation of the tariff is to be made so far as concerns it. It is to be opened on May 30 (June 11), 1872 (the 200th anniversary of the birth of Peter the Great), and a long list of the highest dignitaries of the Empire lend it their support, so as to make it worthy of the great name with which they have connected it.

This exhibition is intended to represent a consecutive series of scientific appliances, or the results of the influence of science on practice, and will admit within its limits not only models worthy of imitation in the respective spheres of domestic economy, trade, and art, but also indications of all the ways and means by which the best results may be obtained therein. All competition among the exhibitors is excluded, the exhibition being based on the principle of invitation and selection by competent judges. The great object which lies at the basis of this undertaking is that of the education of the people, and the exhibition will, therefore, endeavour to supplement all the objects exhibited in it by, as far as possible, full explanations, informations, and practical illustrations. It is therefore desired that exhibitors should take part in the Exhibition, not with the object of comparing their products with those of other exhibitors, but for the purpose of acquainting the public with those ways and means which a certain manufacture, &c., possesses for the attainment of the best possible results.

This, of course, so far as concerns us and other nations similarly situated, is very much like an invitation to teach them how to beat us; but the dread of that has never yet deterred exhibitors from showing their skill. They know that the chance of such a result is small, distant, and problematical, while the benefits of showing the articles manufactured is immediate and practical.

This is the light in which it has been viewed by the Society of Arts, which has readily met the wishes of the Muscovites, and taken up the subject with zeal. A powerful committee to aid in obtaining exhibits from this country has been appointed, and we do not doubt that many of our manufacturers, and notably a section of our own readers (the agricultural implement makers) will see it their interest to avail themselves of the opportunity. Hitherto, although some of our manufacturers, particularly of machinery, have been pushing their way, and have indeed succeeded in establishing a large trade in Russia, this has only been done to a small extent compared with what may be done; and no more effectual way of getting over the difficulties which stand in the way could be devised than the exhibition of the articles with their prices in the heart of the country whose inhabitants we wish to tempt to buy them.

—— There was a moderate supply of English Wheat on Monday at Mark Lane, and as it was mostly in an inferior condition, less money had to be accepted to effect sales. On Wednesday, though the supply was short, it was in excess of requirements.——At the Metropolitan Cattle Market on Monday there was an increase in the supply of beasts, but as the average quality was only middling, prices were lower than last reported—prime qualities, which were scarce, brought fully late rates. Sheep maintained previous quotations, and choice calves were scarce and dear. At Thursday's market beasts sold at Monday's quotations; and though it was difficult to effect a clearance in sheep, there was no quotable alteration in prices.——Hops are reported firm, choice sorts being difficult to procure.——In the Seed Market there is an increased animation to report.

—— The Council of the Central Chamber of Agriculture met on Tuesday at the Farmers' Club, Salisbury Square, Fleet Street, Sir Massey Lopes, M.P., in the chair. The secretary, Mr. J. A. Clarke, announced that the Duke of Rutland, the Earl of Leicester, and Lord Leigh had become life members, and that the Shropshire Chamber had doubled its subscription. The chairman presented the report of the Committee on Local Taxation, congratulating the Chamber on the increased interest taken by the public in the subjects connected with this important matter since it had been pressed by the Chamber. The report entered very fully into a history of the last Parliamentary session in connection with the proposals to throw increased burdens upon the local rates, and concluded by saying:—

> "The committee would point out that the tendency of legislation has hitherto been to throw upon the ratepayers various new charges for objects which, however good in themselves, have more a national than a local character. Chancellors of the Exchequer have thus been enabled to take credit for Budgets which by no means represent the actual taxation of the country, but, by relieving Imperial at the expense of local taxation, give a very delusive impression of the actual amount of our national imposts. The committee, therefore, feel it incumbent upon them to urge upon all their supporters the necessity for increased exertions. Those of the committee who are members of the House of Commons will not fail, when addressing their constituents, to place the bearings and present aspect of the subject fully before them, and when they re-assemble next Session they hope that the number of their supporters will be so increased as to insure a speedy attention on the part of the Government to the injustice of the anomalies complained of. The prospect of the more prominent place in the legislative labours of next Session which the revision of local taxation may fairly expect to claim will, the committee trust, induce all ratepayers, urban and rural alike, to press on their representatives the interest they individually feel on a subject of such vast import to the social well-being of the entire community."

The report was adopted, and ordered to be printed and circulated. A long conversational debate then ensued upon the subject of the cattle disease. On the motion of Mr. C. S. Read, M.P., seconded by Mr. H. Neild, it was agreed "That the meeting considers the failure of the Contagious Diseases (Animals) Act has demonstrated the necessity for compulsory slaughter or 14 days' quarantine of all imported foreign animals, as uniformly demanded by this Chamber." A second resolution on the subject was moved by Mr. A. Pell, M.P., and seconded by Mr. J. Smith, of the Essex Chamber, "That Government officers should make their present inspection of all cattle and sheep previous to embarkation in Ireland, and of all vessels engaged in conveying animals between Ireland and Great Britain, as complete as possible." This was also carried, as was a third, proposed by Mr. T. Duckham, seconded by Mr. Jabez Turner, "That Government officers should be appointed to enforce the provisions of the Act with reference to the cleansing and disinfecting of railway trucks, yards, and pens, and the watering and transit of animals on railways in Great Britain and Ireland." A fourth resolution expressed the opinion that, if the objects contemplated by the foregoing resolution were secured, the interests of stock-owners and consumers alike demanded the removal of the cattle *cordon* from the metropolitan district. It was also agreed that copies of these resolutions should be forwarded to Mr. Gladstone and Mr. Forster, and that the former should be requested to see a deputation from the Chambers of Agriculture on this subject.

—— Mr. Mechi returns, undaunted by his opponents, to his attack upon the Pasture Lands of the country—now, however, confining his remarks to poor pasture. Writing to the *Times*, he says:—

> "Despite the outcry against breaking-up poor pasture land, its doom is sealed. It is a mere question of time, for mighty and cheap steam will enable farmers to offer a much greater rent than poor pasture can afford to pay. Pasture must have greatly decreased in this country, for I

find the following remark in the history of our agriculture relative to the period prior to 1400:—

"'The proportion of pasture land to arable gradually decreased, but was still as 20 to 1.'

"Now it is barely 1 for 1. I also see it recorded that in 1490 the Abbot of Bury, in Suffolk, let 18 acres of pasture on a lease of 80 years at 4½*d.* per acre. This was before the discovery and conquest of South America by the Spaniards and Portuguese, which flooded Europe with gold and silver, and increased the price (if not the value) of land and its productions 500 per cent.—There exists a mistaken belief that grass land is the main or only source of our meat supply; much more meat may be, and is, in fact, produced on our arable land by means of root and green crops and by the consumption of cake and corn, the result being also a large produce of Wheat and Barley for human use. No doubt, the change from pasture to arable will necessitate a great additional investment of capital on the part of both landowner and tenant; but this should be a source of congratulation, for our large surplus population and capital would then find profitable employment at home, instead of being sent to foreign countries to enable them to grow food for us which we might produce here.

"The average capital of British agriculture is about £5 per acre. That will be multiplied by four when we have arable land, our own steam machines, and plenty of live stock. I know many farmers who have a capital varying from £20 to £30 per acre."

—— Here is another note of Mr. Mechi's on Sugar-Beet and Beet-sugar:—

"The great reformers of our poor pasture system will be the steam-plough and the growth of Beetroot for sugar. We shall then see these pastures producing from 15 to 20 tons of Beetroot, sold to the sugar factories at 20*s.* per ton, or an average of £16 per acre, their present produce being only about £2 10*s.* per acre. The intermediate crops will be valuable grain, pulse, and artificial grasses; and, in lieu of a wretched pastoral inactivity, there will be a vast employment of labour and capital, with increased rents for the landowner and food for the people. This is no speculative anticipation, for its realisation is successfully proved at Lavenham, in Suffolk, and is about to be extended, and will no doubt become general over a considerable portion of the United Kingdom. There is one difficulty about the matter—that is, the conveyance of the roots to the factory. The cartage of roots costs about 1*s.* per ton per mile, and a radius of supply of two to three miles is considered a limit of distance by road, unless brought by rail; but the steam pump and underground iron pipes will remedy this, and cause the juice of the Beetroot (17-20ths of its weight) to flow to the factories at a probable cost of less than 1*d.* per ton per mile. I am told that in France this plan is adopted for a distance of 10 miles by one large sugar factory. Squeezing of the juice from the root is so simple a matter that it requires but little machinery, and no supervising by the revenue officer, who only attends constantly at the central factory, where the machinery for converting the juice into sugar is of the most costly and complicated description. The pulp to be returned to the farmer is only one-eighth the weight of the root, so that he pays 12*s.* for the pulp of 8 tons of roots, and uses it mixed with other feeding stuffs for his cattle. Dr. Voelcker values it at 30*s.* per ton. The difficulty of passing a line of underground pipes through other people's properties will probably be met by Act of Parliament, as it has been with drainage, under the late Lord Lincoln's Act; for, irrespective of the consent of the owner, the outfall drain pipes may be carried through any property, even a garden or park, under condition, of course, of restoration or avoidance of damage. The growth of Beetroot tends to increase the supply of meat by the consumption of the pulp, mixed with other food."

—— The demand which has been made during the past few years for increased remuneration for all classes of paid labour, on the plea of increased prices in most articles of daily necessity, seems not to be confined to our own shores. From a report on the Condition of the Industrial Classes of the Azores, we learn that the labouring population is extremely depressed. In St. Michael's, where wages are highest, the pay of an agricultural labourer varies from 9*d.* to 10½*d.* per day. These low rates of pay are said to be probably 50 per cent. higher than those which prevailed 20 years ago. But as, within the same period, a large advance had taken place in the price in the Azores of Indian Corn and some other articles largely consumed by the labouring class, it may be doubted whether, notwithstanding the rise in wages, the labourer is better off now than formerly. The superabundance of labour has had an effect on the tenure and cultivation of land in the Azores, similar to what has been observed in Ireland and in other countries. Nearly all the arable land is let in very small portions to labourers (or men whose means and habits are very little above those of labourers), who, cultivating the soil in great measure with their own hands and those of their families, can, and do, pay their rents which no farmer with capital could afford to pay for any considerable portion of land. In the Island of St. Michael's good arable land is very commonly let at rents equivalent to from £5 to £7 10*s.* per English acre. The produce of the land, however, though large, must be much less than it might be under a different system, for very little manure is used, and the agrcultural tools and implements commonly employed are of the rudest kind, consisting almost entirely of a large hoe, which the peasant uses with great dexterity, and a small rough plough and harrow drawn by oxen. A few of the large proprietors have made efforts to introduce agricultural improvements and modern inventions, and in perhaps half-a-dozen of the largest farms the threshing and winnowing machines of Messrs. Clayton & Shuttleworth and other eminent English firms may be found in use, but such novelties have not found any very general acceptance. The soil of the islands is volcanic and rich in decomposed vegetable matter; it is, consequently, very fertile, and the same land will yield, year after year, crops of Wheat and Indian Corn. In the months of November and December the land is ploughed and sown with the large blue Lupin; this, in April and May, is eaten down by the cattle, and the stalks and roots hoed into the land to enrich it. This system of culture is asserted to be peculiarly successful, and suitable to the nature of the soil; at any rate, it is implicitly believed in, and considered incapable of alteration for the better. The country population live in villages, scattered all over the island, and isolated homesteads being unknown. They go in gangs very early in the morning to their labour, and return together at night. In summer the peasant works from half-past 5 or 6 A.M., to half-past 7 or 8 P.M., or until dark (in these latitudes the longest day closes at 8 P.M., with a brief twilight); and in winter from daylight to dark, taking half-an-hour at 8 A.M. for his breakfast, and an hour at noon for his dinner. He takes his supper on his return home. The diet of the peasant consists of a light morning meal of Indian Corn bread—very substantial and wholesome—made of Indian Corn flour, once slightly sifted, leavened with a home manufactured leaven of fermented Indian Corn. With this they generally eat a few little fried fish, cooked Yams, Pepper-pods, or in the summer season, Cucumbers, Water Melons, or other fruit. A species of small fish, resembling sprats, is largely taken off these islands, and is sold very cheaply, at about 2*d.* per 100. The peasant's dinner is merely a repetition of his breakfast, and at night his supper consists of some kind of vegetable soup. Meat is rarely eaten by the poorer classes, except at Christmas-time, when every poor household kills its fatted pig; but the best joints, such as the hams, are almost invariably sold.

—— We give in another column a letter from Sir G. Jenkinson, Bart., to Mr. Forster, M.P., for which he desires publicity, on the subject of the foot-and-mouth disease.

OUR LIVE STOCK.

We have received accounts of two Shorthorn sales from the far North, which, while they do not speak of hundreds of guineas given for a single high-bred heifer, at least show us that the favourite breed is steadily encroaching upon Kyloes and Polls even on their own ground. The annual sale of a portion of the Keithmore herd, the property of Mr. Cantley, took place on Thursday, the 3d inst., at Keithmore, near Dufftown, Banffshire. Mr. Cantley has improved his stock by the use of the Duke of Richmond's Resource, the Duke of Buccleuch's Argus, and other good bulls, until his herd is looked upon by many persons as the best—reared at such a height above the sea—in the north of Scotland. The attendance was good, and the sale was considered successful. The following prices were given for yearling bulls:—Ivan, 26gs., Mr. Smith; Keithmore, 53 gs., Mr. Gewall; Wallace, 38 gs., Mr. Gordon; Richmond, 37 gs., Mr. Peter Grant; Darnley, 27 gs., Mr. Green; Rufus, 26 gs., Mr. Green; Bezique, 31 gs., Mr. Russell. Heifers made from 20 to 29 gs. each. Cows: *Ella*, 50 gs., Mr. Gewall; *Victoria*, 30 gs., Mr. Morrison; *Money*, 35 gs., Mr. Bruce. At Mr. William Johnston's sale of Shorthorns, at Cairnbeg, Laurencekirk, Mr. Mitchell gave 43 gs. for a cow, and others were sold at from 24 to 40 gs. Yearling heifers brought 28 gs., 19 gs., 21 gs., and 13 gs. each. Duke of Kent was bought by Mr. Duttrie for 48 gs., and Gladiateur for 24 gs. by Mr. Mitchell.

—— The *Albany Cultivator* calls attention to the increasing demand for Ayrshire cattle in the United States. Messrs. E. L. and J. N. Sturtevant, of Massachusetts, propose to publish a monograph of the breed, and have already issued circulars to breeders, asking for information. Mr. N. S. Whitney, of Montreal, Canada, has just imported some of these cattle, comprising *Rosie*, winner of the 1st prize at Perth last July, as best cow in calf, and also of other prizes; *Flora*, two years old, 1st prize at Strathaven; *Beauty*, three years, and heifer calf born on the voyage; *Stately*, two years, 2d prize at Strathaven; and a handsome yearling heifer.

—— The condition of "our live stock" in mediæval times contrasts strangely with the highly artificial rural economy of the present day. This comparison becomes possible to us by reference to Professor Rogers' "History of Agriculture and Prices" (vol. i., p. 51), a work consisting of the edited records of Merton College, Oxford, during the 13th and 14th centuries. At that time the estates belonging to this Society were visited periodically, and "the most minute and varied examination of income and expenses was taken," and it is in these careful accounts that Professor Rogers found materials for his work. The following passage has reference to the condition of live stock before systematic breeding was rendered possible by a continuous supply of food throughout the year:—

"Winter roots and artificial grasses were, as I have said before entirel unknown. Hence stock were always starved in winter. The practice was to keep the oxen and to kill down sheep to the largest number which could be maintained from the produce of the farm, that is, from its winter pasture, and such hay as could be spared for their subsistence. The sheep, too, must have been small. The price at which they are commonly sold, even taking into account the general cheapness of meat, is conclusive as to their being like the Welsh, or mountain sheep of modern times, Besides, the weight of a fleece is seldom more than 2 lb., often very much less, as may be seen from the Table; and the quality of the wool, as may be gathered from existing specimens of cloth, was coarse, and the fibre was full of hairs. Under such unfavourable conditions it is not likely that cattle should be large. I have, indeed, no direct evidence of the time before me as to the weight they reached, for meat is never, or very rarely, sold by the pound. But I have copied an account from the Public Record Office of the weights of 40 oxen purchased for the navy in 1547. There is no reason to believe that cattle had deteriorated in this time; it is possible that they may have improved, judging from the rise in price in the period before me. But the average weight of these oxen is less than four hundred.

"There are occasional entries of the price of sheep, which suggest attempts to improve the breed. Rams, called invariably *hurtardi* in these accounts, are generally high priced, and sometimes, relatively speaking, costly. Thus (vol. ii. p. 221, ii.), the bailiff of Westshene (then and long after an estate of the king) purchases some rams in Essex at prices varying from 5*s.* 5*d.* to 3*s.* 6*d.*—the latter being a rate seldom reached, the former being quite unprecedented. But no such attempt seems to be made with cattle. Bulls are always low priced. The losses of stock sustained by the mediæval farmer were enormous. As has been said, all deaths were grouped under the general name 'murrain.' But at Maldon the farmer, in 1333, reports the loss of more than half his sheep and lambs; at Leatherhead the loss is little short of the same rate; at Farley it is more than 25 per cent.; at Wolford and Basingstoke it is about 34 per cent.; at Watford a little less than 14, and at Cuxham about 11. Similarly heavy losses will be found in the other years, and it will be remembered, again, that these are times of singular cheapness (see also vol. ii. p. 608, ii.) It must not be imagined that the loss in these cases was absolute. Though meat was, comparatively speaking, cheap, according to the lowest estimate of the size of the animal, the flesh of animals who died of disease was often eaten. Braxy mutton, that is, the flesh of sheep who had died of disease, was, perhaps is, a common dish with the Highland shepherds. Besides, there was the woolfell, and the skin of cattle. It is possible, however, that diseased meat is as much consumed now as it was in bygone times."

SWINE.

At the National Swine Exposition, Chicago, 5000 hogs from the best American herds were exhibited. Mr. Swanwick's two boars, "Sambo" and "Sambo 2d," which received 1st prizes at Wolverhampton, were purchased by Mr. John R. Craig, of Edmunton, Canada, for high prices, and again appeared as successful competitors at Chicago. The first animal received 40 dols. as the best Berkshire boar of two years old and over; the second received 100 dols. as the best Berkshire boar of any age; and these two excellent English-bred pigs no doubt contributed much to the success of the same gentleman in obtaining the 500 dols. prize for the best display of hogs of one breed, not less than 10 or over 20, and the 100 dols. prize for the best boar and three sows.

THE FOOT AND MOUTH DISEASE.

To the Right Honourable W. E. Forster, M.P.

Eastwood Park, Falfield, R.S.O., Gloucestershire.
October 26, 1871.

Sir,—As President of the West Gloucestershire Chamber of Agriculture, I have the honour to forward to you the copy of the resolutions unanimously passed at a meeting held by that Chamber at Bristol on Thursday last. I beg also to be allowed to take this opportunity of asking your attention to other resolutions passed unanimously at Gloucester on Saturday last by the Gloucestershire Chamber of Agriculture, presided over by Captain de Winton, and at which our county chairman, Mr. Curtis Hayward, attended, as well as myself and others; those resolutions, as well as some extracts from newspapers relating to the spread of foot-and-mouth disease, will be forwarded to you by Captain de Winton, on behalf of the Chamber. I beg also to ask your attention to the enclosed report of a discussion that took place on the 17th inst. at the quarter sessions held at Gloucester, at which I was prevented attending by illness. I beg also to point to some resolutions of a similar nature on the foot-and-mouth disease to be sent to the Privy Council from Shropshire and Wiltshire quarter sessions and Hertfordshire and Warwickshire, of which I have seen reports in the public journals, as well as from other counties which I cannot now recollect. To these may also be added the letter on this subject not very long ago addressed to the Privy Council by the lord-lieutenant of the county of Northampton. Surely all these facts prove beyond the possibility of doubt the existence of the pressing evil of the want of means for guarding against the spread of the disease, which can be traced beyond all question to the importation of diseased and infected cattle from Ireland, and notably to the port of Bristol, whence they are recklessly dispersed into the neighbouring districts and to London and other places.

"At the Bristol police-court an Irish cattle dealer, named Joseph Steady, was fined £15 and costs for exposing for sale in the Bristol cattle market a cow infected with the foot-and-mouth disease. The defendant said he sold the cow to a person who was going to send it to London. The market inspector (Mr. Cade) stated that these diseased animals were sent to London, and sold to persons there who made them into soup.

"Mr. John Fenner, cattle dealer, of Dedham, near Colchester, has been fined by the Cambridge borough magistrates £12 10*s*. and costs, for sending 41 bullocks from Leicester to Cambridge, 25 of which were suffering from foot-and-mouth diseasé. It appears that Mr. Fenner purchased them at Leicester Fair, whence they had come from Ballinasloe, Ireland. The cattle have all been since attacked."

From the proceedings above reported it would appear that, beyond fining the cattle dealer for the exposure in the market of the one palpably diseased animal, no steps are taken to prevent that diseased animal being sent in a cattle truck to London with the other lot of (probably) infected animals, thereby infecting the cattle truck, and spreading to an infinite degree the infection; while the ship that brought over these diseased and infected beasts, as well as the market at Bristol, where so many diseased beasts have been for many weeks past exposed for sale, are still used without any let or hindrance, to spread the infection far and wide.

Sir, I ask you in the interest, not only of the agricultural classes—especially of the dairy farmers in these western counties now filled with the disease from Ireland by Bristol, but also in the interest of the consuming part of the public, will you not, as a member of the Government, take some step—by the issue of some more effectual regulations than now exist—to enable and to compel the local authorities of infected places and markets to prevent the further spread of infection from diseased imported cattle? There can be no doubt—from a perusal of the various resolutions sent to the Privy Council from several counties, both from courts of quarter sessions, as well as from Chambers of Agriculture—as to what the universal wishes of farmers are upon this subject, which to them is of such vital importance. The argument that the slaughter of fat cattle at the port where landed, and the compulsory quarantine of store stock, and even the stoppage temporarily of the importation of cattle from counties where disease exists—Ireland included—will largely increase the price of meat to the public is, I believe, entirely fallacious, because the spread of disease entirely destroys the produce of dairy stock, and also injures the meat of fat stock, which must increase the price of sound stock and meat to the consumer. But, setting that aside, surely the indiscriminate spread of disease amongst the cattle of this country is a more serious consideration as regards the future than the temporary rise in the price of meat, even if that allegation were true, which I do not believe to be the case.

One other point remains to be mentioned. By the regulations now in force in counties whenever the disease appears amongst the stock on any farm the occupier is bound to give instant notice to the police (a magistrate in this county was lately fined by his brother justices for not doing so, though he explained that he had only just returned home, and had not had time to learn the facts as to his cattle being diseased); on this notice being sent to the police the owner of the diseased cattle is bound to keep them wherever they may be located, and not to move them to any other part of his own farm, under a penalty if convicted. The regulations on this point, as against every farmer, are most stringent, and until the police inspector gives him a clean bill of health, the diseased cattle, and all others with them, must remain in the one place. That is my own case at this time with respect to 12 Irish steers bought by me six weeks ago at Bristol; and I consider the regulation a most proper and salutary one. But why is it not equally applied to infected market places, crowded with diseased and infected cattle, week after week? Why are such cattle allowed to be removed from such infected places by rail and by road, spreading the disease broadcast, and no stop put to such removal; and still more, why are fresh cattle allowed to be sent to such infected markets each succeeding week, for even if such are sent there sound, they are bound to become infected from being placed in the pens reeking with the disease, as the Bristol market is and has been for months past? Why not apply the same regulations to the towns and markets as to farms? I must apologise for the length of this letter, but the serious importance of the subject must be my excuse; and as the subject will come on for discussion at the Council meeting of the Central Chamber of Agriculture in London, on the 7th of next month, I hope you will not object to my making public both what I have now written to you as well as any reply with which you may favour me.—I have the honour to be your obedient servant, *George S. Jenkinson.*

TOWN SEWAGE.

In reply to your question, where sewage irrigation plans have failed and been abandoned for others, I should have said wet plans of treating sewage. That was what I intended. Still, considering the great confusion of opinion on the whole subject of sewage treatment, both in regard to details and to fundamental principles, I think the charge of several instances of failure might be readily sustained, and even that failures must still be expected until we pass still further "out of the domain of opinion into that of knowledge."

As to sewage irrigation being abandoned, I do not know of an instance. To adopt sewage irrigation is to accept an enormous responsibility, and it may not be lightly abandoned even though its success should be only partial. I have seen it stated that the Aldershot irrigation farm is the greatest success in England, and I have also seen it stated that it was a very great nuisance.

It has been stated on the one hand that the sewage at Hertford is too weak for sewage irrigation, and on the other, that after it has passed through all the processes that are in operation to purify it, the effluent water is strong enough for the purpose.

At Hertford they try to keep out as much of the spring water as possible, but we are told by a high authority that one principal use of sewers is to drain the subsoil. The Edinburgh meadows have been generally unfavourably spoken of, but we are told by an upholder of sewage irrigation it is because the principle adopted is fundamentally wrong.

I dare scarcely say a word about cattle dying of pleuro-pneumonia or entozoa, with other disagreeables of the kind asserted to be attendant conditions of sewage irrigation, which assertions however have been promptly contradicted; nor even about ridges and furrows, filtration, whether intermittent or otherwise; drains or the want of them, excepting that one set of people would have no drains at all, while others would construct them with the preatest system and regularity 6 feet deep.

Some authorities give us as a basis of calculation 5 acres of ground for 10,000 inhabitants. This has been characterised as "a gross arithmetical blunder." I express no opinion, but should like to see the case of Hertford successfully worked out on that basis. It is a town of under 8000 inhabitants. If it admits all its subsoil water into the sewers it produces 1,750,000 galls. of sewage daily; at present it groduces 1,000,000 galls., and if the remaining spring water were stopped out as far practicable, there will still be 800,000 galls. daily left, and we must also take into account the rainfall on the 5 acres—sufficient moisture by itself for natural vegetation.

As to the value of manure,—sewage irrigationists, if they do not assert that there is no manure of any use excepting ammonia, have latterly made it the sole guage of the value of sewage, and have carried this idea so far as to call solid refuse worthless. Yet the managers of the "A B C" process at Leeds believe that their "native guano" is worth £3 10*s*. a ton, because they can readily obtain that price after preliminary trials by farmers, and they do not profess to eliminate the ammonia from the sewage at all, or not to any appreciable extent.

Again, some say that earth-manure contains only a small percentage of ammonia, and that it has therefore very little value, yet there are not wanting those who believe that it is as valuable as Peruvian guano in practice, notwithstanding the small quantity of ammonia compared with the bulk.

It may be said that there always were differences of opinion and crotchetty people, and that though these contradictions may be amusing, they are in no way important or instructive; and this might be so, were it not that, conflicting though they are, they are the opinions of thoughtful, honest, earnest, and able men, and that the question itself is one of, if not the most important of the day.

Some of the conclusions arrived at must be erroneous, but it is probable that there is something of good in most of the various schemes that have been advanced, whether wet or dry, and that the problem, "How to deal with town sewage," will be solved by a combination of them, and by none singly. *R. H. A.*

ANOTHER FARM RECORD.

The following is a copy of my steam-plough diary for 1871:—

September 18, 1871. Finished harvest.

October 10. Started the smasher on No. 1, heavy land, 39 acres, and did about 6 acres.

11. Did about 8 acres.
12. Did about 8 acres.
13. Did about 8 acres.
14. Finished No. 1 at 4.50 P.M., then shifted the tackle to No. 2, heavy land, 29 acres. Consumption of coal, 3 tons 5 cwt., at 12*s*. per ton.

The cost of the 39 acres stands thus:—

Men at 16*s*. per day for five days	£4	0	0
Coal—3 tons 5 cwt., at 12*s*.	1	19	0
Oil, at 9*d*. per day for five days	0	3	9
Extras, at 1*s*. 6*d*. per acre	2	18	6
Total	£9	1	3

Or an average of 4*s*. 7½*d*. per acre for the 39 acres.

15. Sunday (I note Sundays to make all quite understandable).
16. Did about 5 acres ridging and subsoiling.
17. Did about 5 acres.
18. Did about 6 acres.
19. Did about 5 acres.
20. Did about 6 acres.
21. Finished No. 2, 29 acres, at 9.20 A.M.; then shifted the tackle to No. 3, 24 acres, and just started when it came on very wet at 1 P.M., thereby we lost half a day's working.
22. Sunday.
23. Did about 6 acres ridging and subsoiling.
24. Did about 6 acres.
25. Did about 6 acres.
26. Finished No. 3 heavy land, 24 acres, at 3.50 P.M., and then shifted the engine and windlass to No. 6, light land, 14 acres.
27. Shifted the rest of the tackle to No. 6 light land, and did about 5 acres ridging and subsoiling.
28. Did about 6 acres.
29. Sunday.
30. Finished No. 6, light land, at 11.30 A.M.; then shifted the tackle to No. 2 light land, 13 acres, and just started the ridger and subsoiler.
31. Did quite 6 acres.

Nov. 1. Finished No. 2, light land, 13 acres, at 4.40 P.M.; then shifted the tackle to No. 5 light land, 12 acres.

2. Did about 6 acres.
3. Finished No. 5, 12 acres, at 5.15 P.M.

Consumption of coal for the 92 acres, 9 tons 5 cwt.

The cost of the work stands thus:—

Men at 18*s*. 4*d*. per day for 17 days	£15	14	6
Coal, 9 tons 5 cwt., at 12*s*.	5	11	0
Oil, at 9*d*. per day for 17 days	0	12	9
Extras, at 1*s*. 6*d*. an acre on the 92 acres	6	18	0
Total	£28	16	3

Or an average on the 92 acres of 6*s*. 2*d*. an acre.

Now, I will take each field separately, and remark upon the several operation.

No. 1, heavy land, 39 acres. It may now be seen how the 4*s*. 7½*d*. an acre for a smashing (as shown in my last letter) is made up. I showed a fortnight ago that it had been planted with Wheat; I will now add that the Wheat is up-looking, strong, and well. This is my old heavy clay land, and has got its 17th crop under steam upon it.

No. 2, heavy land, 29 acres, is for Beans next year, and the ridging and subsoiling is all that will be done to it; therefore, the cost of seed-bed will be only 6*s*. 2*d*. per acre. This field has been in my occupation only two years. I have had Beans the first year, Wheat the second year, and next year it will be in Beans again. The cost of seed-bed for the three crops is as follows:—

1870.	For Beans	4*s*. 8*d*. an acre.
1871.	For Wheat	5*s*. 11½*d* an acre.
1872.	For Beans	6*s*. 2*d*. an acre.

This field is not quite clean; but when the Beans come off next year, it will be quite so. The ridges will be forked and picked this winter. Heretofore it has been forked, leaving the Twitch on the surface to be killed by the harrow. The cost of forking this winter may be about 5*s*. an acre. The two years before it was not so much.

No. 3, heavy land, 24 acres, is for Barley next year. The ridges will, after picking the same as No. 2, need splitting by a subsoiler worked by horses in the winter, at a cost of 3*s*. per acre. This, added to the ridging and subsoiling at 6*s*. 2*d*. per acre, brings the total cost of seed-bed up to 9*s*. 2*d*. per acre. This, like No. 2, has been in my occupation only two years. The forking this winter will cost about 5*s*. per acre.

No. 6. Light land, 14 acres, is for Barley next year, which will be the sixth white-straw crop in succession. The ridging and subsoiling is all that it will require; therefore the cost of seed-bed stands at 6*s*. 2*d*. per acre. This field is very clean, although it has had five white-straw crops in succession. Thirty years ago this field was in grass. The grasses that it grew were of the worst sort possible, giving a very light produce on an average of years. From 20 to 30 years ago, when I ploughed it up, the yellow clay, which ploughed up at not over 4 inches from the surface, looking like good stuff to adulterate butter with, yet, by the aid of the ridger and subsoiler, I have managed to convert this yellow stuff into black mould to the depth of a foot.

No. 2, light land, 13 acres, is for Beans, and the ridging and subsoiling is all that will be done to it, therefore the cost of seed-bed will be 6*s*. 2*d*. per acre. This field is by the roadside, so farmers look at it as they pass by. Their remarks are various, yet they all admire the work, seeing that neither the spade nor plough, worked by man or horse, can equal it in quality at any cost. The fact is, it is this kind of work that enables me to keep my land clean under a yearly system of corn cropping, and it has a great deal to do with keeping it in condition. Let Dr. Voelcker witness upon the point. Here is what he says in a report written nearly twelve years ago on the soils of my farm:—

> "At the request of Mr. Smith I paid a visit to Woolston Farm in November, 1859, and on that occasion took for analysis four samples of soil. The chemical examination of these soils, I think, will throw some light on the *rationale* of the particular mode of steam cultivation which has been adopted with manifest success by Mr. Smith."

A brief note on each field follows, then comes the analysis of the soils, and he sums up thus:—

> "It must ever be the aim of the intelligent farmer to prepare a good seed-bed, and this cannot be obtained if the well-pulverised surface is mixed up with a large mass of obdurate clay subsoil. Mr. Smith's plan of cultivation altogether avoids the temporary injury which a wholesale turning up of the subsoil is sure to produce in almost every instance. In all three subsoils we have seen a large proportion of mineral food exists in an unavailable condition. Mr. Smith's subsoil implement provides for the

admission of abundance of air into the subsoil, mineral food thereby is gradually rendered soluble, and prepared for assimilation by plants.

"By breaking up the land thus treated the second year a good deal of aërated and partially prepared subsoil is mixed with the surface, and thus a constant supply of new mineral food is provided. It is foreign to my chemical pursuits to inquire into the economic advantages likely to result from steam cultivation in general, and from the system pursued by Mr. Smith in particular, but I cannot help observing that his plan of preparing the land is in many respects in singular accordance with my own scientific views on the subject. I have long maintained that steam cultivation is indispensable in the management of clay land; that it is undesirable to bring up much of the subsoil at one time; that putting up the land into ridges before the frost sets in, and subsoiling between the ridges completely alters the character of clay land, and that many heavy soils will yield abundant crops, with scarcely any manure, when due care is bestowed upon the mechanical preparation of the land."

No. 5, light land, must now come in for a notice, to clear up the year's work. It is for roots, and the ridging and subsoiling is all (excepting a couple of harrowings in the spring) that will be needed for a seed-bed, then the cost will stand at 6*s.* 2*d.* per acre.

No. 3, light land, 11 acres, has been ploughed with horses and planted with Wheat after Clover; No. 1, light land, 12 acres, is in Clover; and No. 4, light land, 12 acres, in roots; therefore the whole of my work for 1871 is done, excepting job work for my horses. My land for Barley, Beans, and roots, 92 acres in all, is "put into ridges before the frost sets in," as Dr. Voelcker says should be done.

Some of our best farmers will grin at the cost of my seed-beds—4*s.* 7½*d.* an acre for Wheat and 6*s.* 2*d.* an acre for Beans on my heavy clay land—and they may do so, for my land is not only heavy but it is very hilly and uneven, such that needed, under horse culture, four good horses to plough 3 roods per day. Our best horse farmers cannot on such land make a clean seed-bed on an average of years for so little as £1 per acre, yet some of them would give me a leg up. One would put digger-breasts into my implements, another would hook on a harrow, and so on; in fact they want to be teaching me, instead of taking a lesson themselves from my 17 years' practice. The other day, one of the best horse farmers in this neighbourhood told me that we should soon have something marvellous from our big makers that would do the job almost for nothing. I told him at once that they had got a job to beat my little figures. The fact is, they are looking to our great makers (for help), who know nothing of farming, yet will make anything that they can sell. My win is, that I am a practical farmer, with mechanics enough in my head to know how to make implements that are of use to me. Look back to Chelmsford in 1856. I insisted upon it, that a smasher and ridger and subsoiler was the thing needed. My 17 years' practice, with cost of seed-beds as they now stand, backed up by the great makers who have adopted my smasher, is good evidence that I was right; and my ridger and subsoiler, which at Chelmsford was the only cultivator that attempted to turn over the soil, can in practice beat both the plough and the spade, therefore it must have won the Chelmsford prize. The Royal Agricultural Society asked for a cultivator that the most efficiently turned over the soil, as a substitute for the plough or the spade. It was known to some that they would have the old plough. The great makers knew it, and tried a bit to make it for them.

Some persons who visit Woolston go away with the notion that the clay land in their own neighbourhood is of a lower class than my clay lands are. That may be. I do not pretend to know the exact quality of any particular district but my own. This much I do know,—that my own clay land under horse culture did not produce on an average of years over 20 bush. of corn per acre, and that the best-farmed land of a like kind in this neighbourhood does not now produce over 24 bush. per acre on an average, taking the cropping thus: Vetches fed on Barley, Clover fed on Wheat, Beans, and Wheat. The profits on the Vetches and Clover are but a mere trifle. They go to make the other four fields, when divided by six, give an average of 24 bush. per acre. My own clay land now produces full 36 bush. of corn per acre on an average, and Dr. Voelcker, above cited, gives good and sufficient reasons why I should obtain such results. I can see by my own eye that the character of my land appears entirely changed, and my candid opinion is, that clay soils in other districts would change if they were treated as mine are. I will fetch Dr. Voelcker into the witness-box upon the point. "The examination of the soil and subsoils from Woolston Farm fairly represent the chemical constitution of a great many heavy and light soils in England."

The landlords and farmers of England must bestir themselves, if they mean to pick up treasure from beneath their feet. The latter would do well to teach their sons how to work an engine and superintend the working of tackle, instead of crying out "Help, help!" to the contractor; and this makes it clear to the world that the farmers of England are rich enough to stock their own farms again, and the former would do well to make agreements and buildings, &c., that would enable their tenants to do so. Tenants now-a-days look very shy at their landlords upon many points. One tenant says that they are obliged to be as mute as mice in the presence of their landlords; another says that they dare not spend their money to increase their produce as I have done, lest their landlords were to pounce unfairly upon them. These two tenants tell truly. I have one word to say upon the point. The mineral in the land belongs to the landlord, but the skill in working it out does not; therefore landlords ought at once to make substantial arrangements that would benefit not only landlords and tenants, but the busy hive of England. *William Smith, Woolston, Bletchley Station, Bucks, Nov.* 3.

HEADS.

By Henry Corbett.

(*Concluded from p.* 1433).

I wish we could see more at the West of England meetings of a far more ancient family, which should furnish one of the leading sections of the show. I, of course, refer to the grand towering Cotswolds, of which Mr. Well, of Hampnett, writing many years since, says, "The head should be long and thin, the ears rather wide and not too thin, having no wool but a tuft on the poll;" whilst I am indebted to Mr. Robert Garne of Aldsworth for a better and more elaborate reading of a Cotswold countenance. The head should be wide between the eyes, and the eye itself full, dark, and prominent, but mild and kindly, and in no way coarse about the brow. The face should be proportionately wide to the space within the eyes, but not too flat, and should run of much the same width to the nostrils, which must be well expanded, and somewhat broader than the face, with the skin on the nose of a dark colour. The cheek is full, and, as the face, well covered with white hair; a just perceptible blue tinge on the cheek and round the eye being rather "fancied." The ear, long but not heavy, of medium thickness, and covered with the same short soft hair, should be carried well up, while black spots on the point of the ear are not considered objectionable. The top of the head should not be coarse nor bald, but covered with wool, not hair, and the Cotswold is to be distinguished by a fine tuft of wool on the forehead. Mr. Wells says the head should be long and thin; Mr. Garne, that it should be sufficiently long to save it from being called a short thick head, but that it should not have a long lean appearance. Grey faces still crop up occasionally in all the best hill flocks, but these are the exception.

Of the other breeds the improved Lincoln now looks to take much after the Leicester head, although coarser in its character; while the true Dorset, with his nicely curled horn, should have a white eye in harmony with the colour of his countenance, although the best sheep of last season showed an eye as black as a sloe. As for the Scotch Black-face, he is as handsome in his degree as the Highland beast, as he tells alike by his head of the wild country from which he springs.

Can there be anything more terrible than the long-snouted, lop-eared, narrow head of such a pig as we may still occasionally see by the roadside, who breaks away as you approach him, with a rush and a grunt, into a round swinging trot, and is out of reach before you can attempt to reckon him up. Does not such a head augur too surely of his pinched razor back, his flat sides, and his coarse quality? A kind of pig who will eat any given quantity, without this having "the least effect on him," as the three-bottle men would boast of their potations. On the contrary, what can be a better assurance of "breeding nice pork," as the Fat Boy said of his master, than the round dumpling head of a small black? Full but yet fine, positively pretty in its plump contented expression, and bound to make flesh even in its sleep. Mr. Fisher, of Carhead, in his scale of 110 points for a perfect pig, allows eight for the head, while he has thus sketched for me the chief features:—The forehead should be broad, as indicating a general width of frame and strength of constitution, with a face just long enough to enable the animal to collect its food, for anything beyond this indicates excess of offal. The ears should be slightly pointed forwards to keep out the wet, and sufficiently erect not to interfere with the sight, as they should be well covered with hair, more particularly on the under side, and the orifice nicely filled in to keep out litter, dirt, and so forth. The ear should further show a good fringe of hair on the outer edge. In a full-grown pig of the small breed, the length of the ear from the tip to its insertion in the forehead should be from 6 to 7 inches, and in the improved large breed from 8 to 9 inches may be taken as a fair length. The chap should be well filled up to the eyes and ears; and, commencing near the point of the under jaw, should extend to the brisket, leaving no tucked-up appearance under the gullet. The head of the improved Berkshire, of course a very different animal from the old-fashioned Berkshire or Hampshire hog, should be something after the shape of a cone, though not too pointed nor at all turned up at the nose, but short, straight, and deep; in fact, about as long as thick through, at a line to be taken from between the ears. There should be but little white about the face, if still with a sprinkling of lighter coloured hair on the centre of the forehead, as well as on one or both eyes; whereas black markings on a white pig are not liked, and I have known very keen hands try to burn them out by show time.

This paper might be extended to almost any length, as where, for instance, could we wish to see more character than in the head of the dog—the long square, if I may so put it, head of the foxhound, so thoughtful and dignified in repose,—

> The wise, bench-like sagacity of brow; the same
> Jaw of the old Ellenborough-size;

or the handsome intelligent countenance of the colley, which Landseer loves to paint; or the refined features of the greyhound, which Miss Mitford sketches so charmingly, when writing of her own Moss-trooper:—"His face was singularly beautiful; the finest black eyes, very bright, and yet sweet, and fond, and tender—eyes that seemed to speak; a beautiful complaisant mouth, which used sometimes to show one of the long white teeth at the side; a jet black nose; a brow which was bent and flexible, like Mr. Fox's, and gave great sweetness and expression, and a look of thought to his dear face—there never was such a dog!" It is noticeable that while one writer compares the jaw of a foxhound to that of a chancellor, we have here the brow of the greyhound likened to that of a statesman, and the idea in either case is almost equally happy. Or, looking in another direction, how thoroughbred is the long, thin head of the game-cock, set off by his quick, bright, defiant eye; a bird who, by way of exception, seems scarcely "natural" unless he be in close cut fighting trim! Foxhounds and fighting cocks, however, may be not altogether in place in an agricultural journal, and so let me conclude, as I commenced, with a word from Lavater:—The farmer walking through his grounds, regulates his future expectations by the colour, the size, the growth, the exterior; that is to say, by the physiognomy of the bloom, the stalk, or the ear of his corn, the stem and shoots of his vine-tree. He remarks in their appearance, as the physiognomist in the countenance of shallow men, any want of native energy. It is tolerably clear from this that Lavater was the first man who cultivated Pedigree Wheat, when he extended his theory to the study of the ear, or head of corn. *Bath and West of England Society's Journal.*

Home Correspondence.

The Leicester Head.—Your critic asks if I take my type of the head of a Leicester "from the well-trimmed and shaven countenances of our Royal and other agricultural meetings?" Most assuredly I do. Can he point to a better type, or are we to assume that the judges and exhibitors at the national meetings are all wrong? If so, the sooner your critic puts us all right the better, although I should say, from the tone of his letter, that he is not a Leicester but a Lincoln breeder, and of a somewhat old-fashioned order. Picking out certain words to suit certain purposes is a trick best answered, perhaps, by giving the text itself, and, as I infer that you will pay me the compliment of giving my paper in full, I am quite content to leave the answer in this way. Your critic, however, avoids one material point. I said in the outset that my Leicester authority was "a very successful breeder of Leicesters," a frequent exhibitor and judge; and he still assures me that I have taken the right type, although I may have gone away from the top-knots and coarser sorts. *Henry Corbett, Nov.* 1.

The Cultivation of Sugar-Beet.—The consideration of this subject having been recently revived by letters from some of your correspondents, I venture to contribute the results of recent experiments, in the hope that they may be interesting to your readers. I regret that no record has been kept of the weight of the leaves which have been left upon the ground, but the weight of the roots passed over the weighbridge gives a return of 38 tons an acre. The tendency of the plants to "bolt" has been general, and the weight per acre has been somewhat diminished by the numbers which were from this cause pulled for the cattle during the growth of the crop; on the other hand, no reduction in the general weight has been made for the dirt which adheres to the root in a greater or less degree as they are grown in light or stiff soils. Ours being grown in the former description of land, and lifted in dry weather, come out tolerably clean; but those who are accustomed to the growth of the crop will be enabled to form an opinion of the sufficiency of the allowance when put at from 10 to 15 per cent. The season has been unfavourable to the growth of this crop, and the cry comes from all quarters that the yield of saccharine matter is at least 2 per cent. below that which is ordinarily obtained; it is therefore satisfactory that the application of sewage at the proper time, and in such quantities as shall be sufficient to secure a good crop, may be made without injuring the percentage of sugar in the roots. Amongst the roots sent for analysis were some (as will be seen by reference to the accompanying Table) of as much as 10 lb. in weight, the sugar in which is in all cases insufficient for sugar-making purposes though the roots are still valuable to the distiller. These roots grew in the neighbourhood of an earthen main sewage carrier, the soakage from which encouraged a luxuriant growth, but they are not examples of the crop generally, the roots averaging about 4 lb. each. The experiments were two. The first consisted in the growth of Sugar-Beet in land which had been cultivated for some years under sewage irrigation, which, with the addition of 2 cwt. of superphosphate of lime per acre, was considered sufficiently manured for the crop. The second consisted in the growth of the crop in land of similar nature and under similar conditions, direct dressings of sewage being substituted for the superphosphate of lime. The great advantages which would have belonged to the second experiment in a dry season were lessened last summer, owing to the great quantity of rain which fell, but, nevertheless, the percentage of sugar in the roots grown under it is higher than that found in the roots in the superphosphated land. There is scarcely any difference in the weight taken from either plot, and, therefore, if in considering the expense of cultivation we do not include the cost either of sewage or of superphosphate, it may in both cases be taken at £10 per acre. To the one, however, may be added 11s. for the superphosphate and to the other £1 for levelling, gutter cuttings, and labour in applying the sewage, and whatever is a proper charge for the sewage used. In either case there should be a charge per acre for general expenses on the farm. In the charge of £10 per acre I include an item of £4 for rent and taxes, but as this is probably greater than that for which suitable land may often be obtained, and as experiments are always costly, it will be quite safe to accept the charge of £12 per acre, which Mr. Fish takes to be a sufficiently accurate estimate of the cost of growing this crop. It is very desirable that it should be made known what percentage of sugar is given by the roots for which £1 per ton is being offered this year by sugar manufacturers. If the percentage is less than 8 per cent. on an average, as I understand is the case, the same amount of labour in the manufacture will in a favourable year produce 2 per cent. more sugar, without, under the present rates, any advantage being offered to the producer. If it pays the sugar-maker this year, it will pay him very much better when the season is favourable to the formation of saccharine in the roots; and although I should be very glad to obtain a ready sale for large quantities of Sugar-Beet at £1 per ton (and we sold it last year in small quantities for feeding purposes for 25*s.* a ton), yet it must be evident that the object of the sugar manufacturer will be better obtained by his offering to the growers of roots which average 10 per cent. of sugar a higher price than he does to those whose roots yield but 7 or 8 per cent. I have been informed that after 7 per cent. is obtained every ½ per cent. of sugar which the roots yield is 3*s.* clear profit to the manufacturer. I put this forward with great submission to correction, but if it be true—or nearly true—that £1 per ton is paid for roots yielding 7 or 8 per cent., there is room for a fair division of profits between the grower and the manufacturer when roots yielding 10 per cent. and upwards are purchased. The superiority of Sugar-Beet for feeding purposes is becoming understood, and when people see their interest in paying for quality instead of for quantity, I have no doubt its growth will become general. Our friends must not turn with disdain from the prospects of 20 to 25 tons of Sugar-Beet because they sometimes grow 35 or 40 tons of Mangel per acre. Whilst I write this we are carting off a crop of Yellow Globe Mangel which it will be very difficult anywhere to equal, the weight of which is over 50 tons an acre (over the weighbridge), but if the value of the crop could have been more concentrated (as in the case of Sugar-Beet), how much less costly would have been the labour of transport, and above all things what a saving of time in the removal of the crop—time which is now so valuable. The following is the Table referred to above:—

No. 1.—*Dressed with 2 cwt. of Superphosphate of Lime per Acre.*

Weight of Roots.	Average Weight.		Percentage of Sugar in Roots.
lb. oz. lb. oz.	lb.	oz.	
1 13 to 3 6	2	9	7.83
2 1 to 4 11	3	2	6.93
6 11 to 9 11	8	10	4.09

No. 2.—*Dressed with* 528 *Tons of Sewage per Acre.*

Weight of Roots.	Average Weight.		Percentage of Sugar in Roots.
lb. oz. lb. oz.	lb.	oz.	
1 0 to 3 10	2	10	8.03
4 8 to 5 7	4	15	7.13
9 2 to 10 13	9	15	3.06

Henry J. Morgan, Lodge Farm, Barking, Nov. 8.

Australian Meat.—The following is one of the many communications I receive from various parts of the globe on agricultural subjects. I send it for publication, for the information of those who could probably turn it to good account, and thus add something to our profit and manurial wealth. I know that a great many pigs are in this country fattened on butchers' offal. I could of course give the name of my correspondent, if required for business transactions. It is certainly a pity that we have not yet been able to avail ourselves of the flesh of the vast flocks and herds of Australia. *J. J. Mechi, Tiptree, Nov.* 1871.

"*To J. J. Mechi, Esq., Tiptree Farm, Essex.*—Although living at your antipodes, I hear and read of the lively interest you have always taken in any matter appertaining to agriculture, so this has induced me to bring under your notice an article of food which I think is admirably suited for pigs, and to request you will give it a trial on your farm; for this purpose I forward you by the overland mail one case, containing four kegs, of about 32 lb. each. This you will receive through my agents, who will first take a sample from one of the kegs. The article is concentrated mutton soup. I may mention that I am largely engaged in boiling down sheep for tallow, and in that process obtain a large quantity of very rich soup. This I have hitherto only made into a manure compost, but feeling that such was a great waste, I have been making experiments to utilise it, and I think have succeeded. I make 1st quality for human food, a tin of which you will also receive; and 2d quality as per sample. From the number of sheep (80,000 to 100,000) I boil down for tallow during the season, from August to February, I can get a large quantity of this essence (say 1 lb. 1st quality, 2½ lb. 2d) per sheep, amounting to several tons during the season, and shall require a corresponding market for it. The introduction of any new food, I am aware, is always attended with great difficulty, owing to a prejudice against novelties. This has been a further inducement to me to apply to you to give this new article of food a trial, as I believe from what I have for years read of your doings, you are just the man to take this matter up, and show that this essence is of value, as I am certain it must be. Of course, the question of cost will be a material consideration after the suitableness of the essence is proved. This I am not at present able to determine, but I think I shall be able to deliver it at London wharfs at about £25 per ton, in three casks. Keg No. 4 is put up in a more liquid state than the other three. I should be glad of your opinion as to which state is best. I find that when highly concentrated this essence takes some time to dissolve in water, so have sent No. 4 less concentrated. I must apologise for troubling you in this matter, but knowing that this essence can be produced in very large quantities in these colonies if once a market is established for it, thereby partaking of a national character, must be my excuse. Messrs. —— & Co. will communicate with you, and I shall gladly receive your reply to this. *Adelaide, South Australia.*"

"*Mechi's Sample of Concentrated Mutton Soup for Pigs and Dogs.*—This consists of the concentrated soup from the boiling down, and contains all the soluble portions of the flesh and bone, but is not fit for human consumption on account of flavour. It is most nutritious, and contains abundance of flesh-producing nitrogenous compounds. One part by weight represents the soluble portions of eight parts of flesh, and will make, when dissolved in boiling water, a due proportion of soup, which can be used for pig wash, or with biscuits for sporting dogs. Its ash, amounting to 3 parts in 100, consists of chlorides of potash and soda, phosphates of lime, magnesia, &c., and other salts found in flesh. There is no chemical of any kind or salt used in the manufacture, and the water employed is quite soft, like rain water; it therefore will not be scouring, but will, with the meal food, give as much strength as about six times its weight of fresh flesh, which includes all the coagulable and fibrinous matters not in the soup. Salt should be added to it when used. No. 4 keg was not so much concentrated as Nos. 1, 2, 3. *G. F., Analyst and Manufacturer.*"

Seed and Cultivation.—I am aware that it may be retorted against what I may advance on this subject that a man cannot be a farmer unless his father and grandfather and great-great-grandfather were so also, as the same intelligent people believe that a man cannot be a skilful physician unless he be a seventh son of a seventh son; and if he happens to be such he is lauded up and employed as the prince of all doctors, whether he has walked the hospitals, as it is called, and studied under skilful practitioners, and read learned treatises on the science of medicine and the knowledge of diseases, or not. But there have been eminently skilful physicians who were not the seventh sons of such prolific parents, and there have been skilful farmers whose fathers and grandfathers, aye, and grandmothers, knew nothing whatever about farming. But as it is my intention to adduce some gentlemen of learning and science, who have studied the art of land cultivating and seeding, I shall not now go to those who know little or nothing of the profession they are practising for their livelihood (though they are legion), more than what they learned from their fathers and ancestors. Now, as a proof or two of this. I have taken a handful of Wheat and another of Barley and another of Oats from bins or heaps of each kind, and without counting the number of either handful, and then have taken them to our union workhouse boys' school, and there told the boys to inform me how many grains of each a bushel of it would put into every square foot of an acre of ground, and they have given me the exact number of each. I have said also to the same boys, "There is a stack of hay near the stable, let me know how many cubic feet the stack contains;" and they have let me know near enough for any practical purpose for using or buying or selling the hay. Now, I have my doubts whether I should obtain equally correct answers were I to put the same questions at any meeting of the Royal Agricultural Society. But if I am correct, what does this prove? but that of all the arts practised by mankind, the practice of agriculture is the least understood by those who make a livelihood by it; or would it be believed that the members of the Royal Agricultural Society would have decided that 2 bush. of Wheat, and of all kinds of Wheat, and at all times of the Wheat-seeding season, should be put into an acre of land? Now, my respected readers, you would consider a gardener as a mere duffer who should put into the ground Knight's Marrowfat Peas, which will run 8 and 10 feet high, in rows no wider apart, and as thickly in the rows, and at the same time of the year, that he would seed his plot of ground with my late lamented friend, that pre-eminent naturalist, Dr. Maclean's Little Gem Pea, which grows but about 1 foot or 1½ foot high! If, therefore, the gardener would be justly considered to be an ignorant one who would act in this way in the growing of Peas, what is your opinion of a farmer who acts in the same way, and is by authority advised to do the same in the growing of Wheat? For observe, there is nearly as much difference in the kinds of Wheat as in the kinds of Peas. For example, there are long-strawed kinds and short-strawed kinds, and there are kinds which branch out very much more than other kinds, and there are kinds of Wheat which are so delicate and tender that if they are not sown early in the autumn, frosts set in and clear cloudless nights, and thus great parts of such crops are destroyed by the severities of winter, whilst other kinds are so hardy that no weather can injure them: and yet the intelligent farmer treats all kinds alike, and is commended for doing so by those who, from the position they assume among their fellow men, ought to be pioneers, leading them out of the darkness visible into the glowing and refulgent light which science never fails to shed around all its votaries who have wisdom and discretion enough to be led by it. *George Wilkins, Vicarage, Wix, Oct.* 31.

Asphalte Walks.—Everyone would prefer a clean, smooth path of a cheerful colour, to either a rough, dirty, or black mournful walk. The expense, however, of carrying out any improvement is a most material consideration, for everyone of ordinary means. I have read from time to time of various methods of asphalting walks with different kinds of materials, but the expense of the operations has been so high as to deter one from entering upon such an outlay. The asphalting of the London streets is said to cost about 14*s.* per square yard. Some garden walks have cost as much as 4*s.* per yard. Now, the asphalting I am to describe need not cost 3*d.* per yard. The materials used were merely tar and burned turf ashes. The ashes were burned in large heaps in the course of converting old pasture into arable. The cost of burning 20 cube yards of ashes was rather under 2*d.* per yard after the ground was ploughed; the cost of the tar, 1*d.* per gallon. The ashes were procured from the middle of a heap of a bright red colour. About 450 square yards of paths, &c., were asphalted with 336 galls. of tar, or rather less than 1 gall. per yard. The garden walks were quite firm with fine gravel previously to being operated upon with tar and ashes. The walks were asphalted by various systems. Only 10 cubic yards of ashes were required for the 450 superficial yards, as previously mentioned. The modes of proceeding were as follows:—A strong stand about a foot high was placed against the ashes shot down in cart-loads. Every barrel of tar, containing 36 galls., was placed upon the ashes in the first place, and from the ashes was easily rolled upon the stand. A common pail was used to pour the tar on, which for convenience in emptying was only filled about two-thirds full. About a barrowful of ashes was then mixed up with the tar until saturated enough, so that when patted with the back of a shovel the mixture did not adhere to it. After the mixture was prepared it was wheeled to the spot where required, shovelled out of the barrow, laid upon the walk about an inch thick, patted down quite smooth, and after some 10 or 20 yards was so prepared a sprinkling of dry ashes was thrown regularly over the top of the asphalte. The time the work was done, we refer to, was in June and July, so that the surface of the asphalting generally became dry enough to bear a garden roller over it in about half a day after being done. The rolling cannot be overdone, and may be continued day after day for a week, until so solid as to bear walking upon without showing any impression of the feet. In a few weeks the asphalting becomes solid enough to bear a cart or carriage without doing any material injury, merely making a slight mark, which either disappears of itself, or may be rolled out of sight. The other methods of asphalting were merely, in some cases, to hoe the walks, pour tar over them, and then throw ashes over the tar, rolling afterwards, as before; or by picking up the surface about 2 inches deep, smoothing down, applying the tar to soak the gravel regularly, then adding dry ashes on the surface, and rolling as stated. The hoeing or picking of the walks is a much quicker process than by mixing the tar and ashes together first, but at the same time this—the mixing first—makes the most finished job. A man may asphalte about 40 square yards a day. Burned soil of a clayey character turns quite red in the middle of a heap of considerable size. The greater part of the ashes is so fine as to be readily blown away by the wind, while there is a part in small lumps of various sizes. Without a most intense heat, however, in the course of burning every lump is easily reduced to comparative dust. The small lumps, about the size of Peas or Beans, are most suitable for applying on the surface of the asphalting. The roller presses these into the yielding mass, renders it firm, and in course of wearing afterwards gives a gravelly colour to the walks, which cannot of course be obtained by using coal-ashes alone with tar. Tar walks have rather an unpleasant smell for some time after being done. Hot weather softens the asphalte a little, but by using ashes liberally upon the surface, there is no danger of the tar adhering to the feet. The surface ashes can be swept up after the walk becomes firm, or in the course of time they wash away by the ordinary rainfall. The walks above referred to were asphalted in the course of some weeks when some half dozen children and others were constantly moving about; yet, in no instance was any one smeared with tar. If the soil to be burned contains stones, of course the ashes will also contain stones; these must be either picked out by the hand, or the ashes must be sifted. There could be no difficulty in procuring materials for burning about any farm, and if ashes were required in towns, the cost of carriage would not much increase the expense of asphalting. *Leighton Buzzard.*

Foreign Correspondence.

BERLIN: *Schleswig-Holstein.* — I have just, at least not long, returned from a trip through Schleswig-Holstein, that famous land, which was all German in sympathies when it belonged to Denmark, and which is all Danish in its desires now it belongs to Germany. Such, you see, is life. What you can have, you don't care for. Coming home, I saw a heap of papers ready, like a snake, to devour me; and it would have been a most melancholy sight, but for the *Agricultural Gazette* on the top,—which I may here publicly declare there is not the like of in Germany, and which always reminds me of those dear old English homes, jolly lanes and greens, verdant fields and copses, parks, pies and plum-puddings; all of which, however good acountry it may be, Germany as yet has not been able to afford—afford being the very term I want, though it may sound queer, somehow.

I have been thinking much of England all these days, so long as I have been in Schleswig-Holstein; for there is a very close resemblance between the two countries, if you look at the landscape side of them. Beef, sir, beef also is the ideal product of both. There are more cattle in Schleswig than people. The difference, however, is also obvious. For Schleswig-Holstein, being so thinly populated, cares little for grain—Wheat, Barley, &c.; and there is, I am tempted to say, not a steam-plough, nor any implement of intense culture in the whole land—excepting the exceptions. All the western slope of the peninsula and up into Denmark consists of permanent pastures, which are done nothing to, being fertile in the highest degree. The middle part is elevated, like the spine of a fat-sided pig, and, indeed, meagre in proportion; full of bogs and mires, Alder beds, Buckwheat fields, peat moors, rushes, storks stalking about, and grey clouds hanging above—altogether, a Cambridge-Boston panorama. Then, again, there is the eastern slope down to the Baltic, with regular landscapes, such as painters paint to put nymphs and satyrs in, and reminding you of Kent, Surrey, Sussex, with regular cornfields, hedges, Oak woods, but no Hops, Beetroots, great Potato fields, nor anything connected with the factory principle. The main character of the Schleswig-Holstein economy will be at once apparent when I tell you, confidentially, that I boarded and lodged for 10 dols. a month; which is exactly a pound and a-half a month, I emphatically repeat.

Supposing a few hundred working people, hearing of these paradisiacal prices, to come over and settle in this land, where they can having everything for nearly nothing (excepting books, though, and looking-glasses), how long would they like it, and how soon would they go back to, let us say, Manchester? There is no work to be done here, no money, no intelligence, no risking, there are not even houses to live in.

May I talk politics? I believe I may, for it has been politics that has kept Schleswig-Holstein out of the streams of the financial, industrial, and commercial progress, and has reduced the home value of her products to so low a level: England, you see, has had the best of it, and Denmark has done it. Look at the market prices of meat in 1866, and you will find a sudden rise—nor is there any mystery about it. For these neglected provinces have, indeed, been systematically stupified by Denmark, and are now slowly, but surely, and somewhat severely, too, being re-cultivated and educated by Prussia. There is, in proportion, a rise in the value of money, as new ideas, desires, and wants are springing into life; and this will be apparent when the new generation, which has gone through the course of compulsory instruction, has been taken out of the country for military training, has seen what a source of wealth even the poor soils of Brandenburg can be converted into—when, I say, this generation will come to the helm.

England of course, I am in duty bound to say, has had a hand in the brutalising process which Denmark has kept up in Schleswig-Holstein; on the contrary, English trade and demand for the products of the land have in a great measure counteracted the influence of Copenhagen, so likewise has Hamburgh on the western coast. But come to the east; there you are, I should like to say, in a land of fettered minds. Nor would the Danish Government have followed so unprofitable a policy but for the necessity of exterminating the German language in the two Duchies, and of dislocating, as much as possible, their natural vocation, viz., of being the great colonial soils for Germany. The German language, however, it was impossible to extinguish, without first extinguishing all the mental wealth of the people, inseparably connected with this language, and ever and ever repleted from the old source. This would have been a work of centuries. In the meanwhile Denmark might have moderated her own language for the science, life, and literature of our days, and might then have followed in office. This, however, could never have been attained without first creating a blank. A country that is unable to keep up her integrity without allowing her subjects full liberty of thought, speech, and individual culture — to say nothing of trade, industry, and locomotion—is unable to be a country at all. For men are men before they are subjects, and even Englishmen are born as human beings ignorant of the constitution; nor are they, like the Jews, capitalists and tradesmen before they are anything else, or like the Paris Communists, who were setting aside every mortal consideration, Parisians only. One's country is one's house, not one's prison.

There is no mistake about this, Prussia's victories are but the ripe fruits of economical development, and she could hardly help gaining them. It is natural for the Duchies to see what they are growing into being, the marine forelands of Germany. This consideration is in some way, I believe, important for English agriculturists. Up to this time the Duchies have been beef, butter, and cheese suppliers to England; up to this time there has only been one single railway through these rich and fruitful regions, and they have had hardly any connection with Germany at all; up to this time no more than two trains a day have gone up and down this single line, and did that slowly too; up to this time no part of the Duchies has been densely populated except the mad-house in Schleswig, idiotcy and delirium being quite at home in so secluded and slow alcohol-consuming and meat-eating a country. But all this is rapidly changing, people are already beginning to stir, exceptions to be the standard, and, ere long, the rule. There is a great Beetroot factory building, brightening eyes are squinting after all sorts of machinery and after hands to work them, Governments and Boards are projecting and plotting about the Eider Canal, for sea-ships to pass in from the Baltic to the German Ocean and back, the University in Kiel has been enlarged, the harbours on the eastern coast are beginning to be alive; Holstein beef, butter, cheese, fish, and oysters are becoming in vogue in Berlin; and those Danish sympathies I spoke of in the opening of this letter are slowly vanishing, like the drowsiness after a long sleep.

Here then, again, is a reason for the English agriculturist to turn to the production of meat on a greater scale, for one of England's chief markets is gradually at first, but fast after a while, growing into a home-consuming place of trade and industry; and is at all events, with every year becoming more and more overcrowded by the growing demands of the Germans, who have, till now, hardly been a meat-consuming people at all. There are some other points of interest, for Englishmen, in Schleswig-Holstein, and upon these I will touch in a subsequent letter. *O. Beta.*

Societies.

SMITHFIELD CLUB.

COUNCIL MEETING: *Nov.* 1.—Present, the Most Hon. the Marquis of Exeter (President), in the chair; Lord Bridport and Lord Tredegar, Vice-Presidents; Messrs. C. S. Bigge, T. C. Booth, J. N. Beasley, Thos. Duckham, J. Druce, Brandreth Gibbs (Hon. Sec.), John Giblett, R. Hornsby, R. Leeds, E. W. Moore, R. J. Newton, Wm. Sanday, C. Stephenson, T. L. Senior, Wm. Torr, and Jacob Wilson.

The minutes of the last Council meeting were read and confirmed.

The report of the stewards on the detention of the animals destined for the country, in consequence of one having been attacked with foot-and-mouth disease at the last show, having been read and adopted, the Hon. Secretary was authorised, in reference to the licence from the Privy Council, to take the necessary steps to secure, as far as possible, the recommendations of the stewards being carried out, the particulars of which will be communicated to exhibitors and made public as soon as finally determined upon.

The Council appointed the usual committee in reference to the arrangements for cattle conveyances, and their being disinfected under the superintendence of a properly appointed officer.

Mr. Joseph Stratton, of Manningford Bruce, Marlborough, was elected a member of the Council, in the place of the late Mr. Richard Stratton.

The Council prepared the house list of the eight members recommended for election on the Council at the next general meeting, in the place of the eight who retire by rotation, and who are not eligible for re-election for one year.

The Right Hon. Lord Tredegar, V.P., was elected President for the year 1872, in place of the Right Hon. Lord Penrhyn, who had signified to the last meeting his inability to act, and had at the same time presented £100 donation to the funds of the Club.

The proposition of the Agricultural Hall Company, in reference to the implement catalogue, was agreed to, viz., that the separate catalogue of implements be discontinued, but that in lieu there shall be added to the stock catalogue an index giving:—1. The name, address, and trade of each exhibitor or firm; 2. The number of the stand; 3. A plan of the galleries, showing the position of each stand, and its reference number; also, 4. The name, address, trade, and number of stand of each exhibitor or firm, on the ground floor.

The reply of the Agricultural Hall Company to the Council respecting the ventilation of the pig hall was read.

The chairman of the Agricultural Hall Company engaged to see that the matter of ventilation in the pig department should be seen to, and as far as practicable remedied.

It was resolved that the Hon. Secretary be requested to invite the butchers, purchasing cattle at the Club's shows, to send an account of the dead weights for publication, and that the name and address of each butcher complying with this request be published in conjunction with his return.

Authority was given for the silver cups, &c., to be ordered as usual of the Club's silversmiths, Messrs. Thomas, of Bond Street.

A letter from Mr. Robert Wortley, suggesting that no animal exhibited at Birmingham should be admitted to the Club's show, was read, and the Council determined that it was too late to entertain this proposition under existing circumstances.

The following were elected members of the Club:—

The Right Hon. the Earl of Aylesford, Packington, Coventry.
Jeremiah James Colman, M.P., of Carrow House and Easton Lodge, Norwich,
The Right Hon. Earl Cowper.
R. B. Baxendale, Kimpton, Welwyn, Herts, and Gresham Street, E.C.
John Seaman Postle, Smallburgh Hall, Norwich.
Hedworth Barclay, Eastwick Park, Leatherhead.
Charles Dorridant, Aldershot Park, Aldershot.
Charles Whitehead, Barming House, Maidstone.
W. A. Hope, Wellingborough.
Thomas Latham, Whittenham, Abingdon.
John Pears, Mere, Lincoln.
Walter Scott, Glendronach, Huntly, N.B.
John J. L. Lubbock, Catfield Hall, Norfolk.
John Gervis Sharp, Broughton, Kettering.
John Carter Clayden, Barnet, Herts.
Joseph Stratton, Alton Priors, Marlborough.
W. de Chair Baker, St. Stephens, Canterbury.
Colonel Kingscote, M.P., Kingscote, Wootton-under-Edge.
The Right Hon. Lord Burghley, Burghley House, Stamford.
James Messenger, Reading.

The best thanks of the meeting were voted to the Most Hon. the Marquis of Exeter, President, for his Lordship's able conduct in the chair.

Farmers' Clubs.

LONDON.

Nov. 6: *The Agricultural Labourer—his Employment, Wages, and Education.*—At a meeting of this Club last Monday evening—the first after the summer and autumn recess—which was presided over by the Chairman of the year, Mr. J. B. Spearing, the subject fixed for discussion was introduced by Mr. C. S. Read, M.P. After a few opening remarks from the Chairman, in which he alluded to the great damage done to the crops during the late harvest for want of an adequate supply of manual labour—

Mr. READ delivered—not reading—an address which occupied an hour and a quarter, and of which the following is an epitome: After observing that at no period of English history had the transitional position of the labourer been more remarkable than it is now, the hon. gentleman said that not wishing so much to give his own opinions as to show what were the conclusions of impartial and competent witnesses, he had consulted the Reports of the Commissioners on the agricultural gang system, and the employment of women, young persons and children; Mr. Kebbel's book entitled "The Agricultural Labourer;" Mr. Bailey Denton's paper on the same subject, read before the Society of Arts; and Mr. Dent's recent and excellent essay in the Journal of the Royal Agricultural Society. The division of agriculturists into landlord, tenant, and labourer, he went on to say, though recently assailed, was, he believed, in a small, rich country like this a wise division; the result being better rents, larger produce, and higher wages than were obtained in any other country in the world. The "middle ages" were very well to write about, but very middling times to have lived in. The labourer was then nothing but a slave. He was the villein of his lord; he was confined to one parish, and if he left it was branded with the letter F; and his wages were settled by statute. History taught us that in times of civil strife and commotion the agricultural labourer suffered as much as his rich neighbour, and that he flourished most when monarchical and aristocratic institutions, now so much assailed, were in the ascendant. Did any one present, he asked, remember a time when the labourer was better off than he is now? (A voice: "Certainly not.") His wages were slowly but surely rising. In 1851 Mr. Caird, after visiting six of the lowest-waged counties—Gloucestershire, Wilts, Suffolk, Cambridgeshire, Berkshire, and Dorsetshire—reported in the *Times* that in those counties the average pay of agricultural labourers was *7s.* 1½*d.* per week. The Agricultural Commissioners said that Dorsetshire was still the lowest county as regarded wages, and, according to those gentlemen, the average there was now 8*s.* per week; but then the labourer had a cottage, fuel, and perquisites, and Mr. Stanhope said that he really obtained from 10*s.* to 12*s.* In the Cotswold Hills, Bishop Fraser said, wages ranged from 10*s.* to 14*s.* Thus, they had now a medium of something like 12*s.* against 7*s.* 1½*d.* in 1851. Mr. Bailey Denton divided the country into seven districts, and said:—

> "The mean weekly day-labour wages of able-bodied men throughout the whole of England may be taken at 12*s.* 6*d.* To this must be added the gains by occasional piece-work, extra payments at hay-time and harvest, when double the ordinary wages is frequently given. In the aggregate, the actual income derived from these employments is equal to from 1*s.* 6*d.* to 3*s.* a-week, according to the custom of different districts. When piece-work can wholly take the place of day labour a labourer may earn 25 per cent. more than by the day. The total value of the beer and cyder supplied to each labourer as his allowance at hay-time and harvest, when employed in drilling and machine-threshing, and when engaged in piece-work, if spread over the whole year, would amount to from 1*s.* to 2*s.* a-week more, according to locality. With these additions to his direct money wages, the farm-labourer gains from 13*s.* to 15*s.* per week, taking the mean of England."

Thirteen to fifteen shillings a week without the earnings of his wife or children! Any farmer who examined his labour-book would find that he paid a good deal more per acre now than he did then. He (Mr. Read) recollected a time when 25*s.* per acre, on light arable land, was considered a good amount to spend on wages; now the expenditure under that head was often 35*s.*, and he feared that he did not get off under 40*s.* This increase of wages occurred in spite of the increased use of machinery. He believed that in future the cost of manual labour would be one of the most difficult items that farmers would have to deal with, and it would tend more than anything else to turn the land into grass, notwithstanding all Mr. Mechi's efforts to put it under the plough. The rural labourer had many advantages over the urban labourer; he had pure air, and consequently as a rule good health; the rent of his cottage was about 1*s.* 6*d.* a week, against 3*s.* or 4*s.* for a similar dwelling in a town, while the use of a fruit and vegetable garden raised this pecuniary advantage to 4*s.* a-week; he was nearer to his work than the artisan, and there was more demand for the children's labour. Mr. James Howard, in the paper which he read before that Club on Continental farms, showed that English agricultural labourers, in the receipt of good wages, were better off than the poor peasant proprietors or farmers of Belgium and other countries, and he (Mr. Read) was told the other day by a gentleman from New York that the wages of an English agricultural labourer, if they amounted to £35 a year, were, taking into account the cost of the necessaries of life in America, quite equal to £80 a year in the United States. As to the varying rates of wages, any single man who chose to save a week or two's wages might transfer himself to any part of England. From 1800 to 1841 there was a gradual increase in the agricultural population. It was checked by about 1851, and had since declined, except in sheep-farming or stall-feeding districts. Machinery did not account for the decrease, but it was not surprising when, as the Registrar-General had stated, half London came from the country, and the ranks of soldiers, policemen, railway guards, porters, carters, &c., were all more or less recruited from the rural districts.

Correspondents of newspapers asked how a labouring man and his family could live on 2*s.* a day. If the labourer got 2*s.* a day all the year round, winter and summer, he ought to be well contented. Taking the bricklayer's slab, the dock labourer, shoemakers, hand-loom weavers, and the lower class of manufacturing operatives, he maintained that agricultural labourers generally received as much as was paid for the same style of work in towns. His hours of labour were not excessive, nor his strength unduly taxed. They had all heard a great deal lately about "the nine hours" movement in towns. He, for one, was quite ready to accept nine hours for actual work on the farm, the agricultural labourer's working day being sometimes only about seven hours. He looked to task, or piece, or taken work, as it was differently styled in different localities, as "the future" of the agricultural labourer. If a high rate of day wages were paid there would not be much piece-work. It was remarkable that in all trades in which piece-work prevailed there existed great development and great prosperity, both of masters and men. He was sorry to be obliged to confess that in agriculture task-work was rather losing than gaining ground. Perhaps the chief cause of this was, that a great many young farmers were not at all acquainted with the value of piece-work. If they were to take many of the young dandies of the present day round their farms, and ask them the prices of hedging, ditching, hoeing, and ploughing, half of them, he believed, would be unable to tell. Piece-work not only made better and more skilful labourers, it also made more practical and intelligent farmers. He admitted that there were some things which could not be paid for by piece. There was hardly an old man on their farms who had not some special qualification for usefulness. One old labourer had the bump of order, tidiness, and neatness; another was great in the management of implements, another in dressing corn, another in training lads, another in preserving the health of stock; and such persons might often be found as useful as younger and stronger men. Notwithstanding all that had been said on the subject, there was still a kindly interest in the relations between farmers and labourers, and long might it last. In many cases he feared all the skim milk was given to the pigs. Why should it not be given to the labourer whose family required it? Surely that would be much better than every man's keeping a cow, with all the difficulties and risks attending that, including the loss of the animal by death! Twenty years ago, agricultural machinery was in its infancy, and it was still often regarded as having been invented for the sole purpose of depriving the poor man of his hard-earned wages. Machinery had eased the labourer's excessive toil, and left what remained to be done by him easier for the muscles, though, perhaps, harder for the brain. It was surely easier to direct a great power than to exert that power oneself. There was no severer labour than swinging a flail all day, no stronger exertion than mowing with a scythe, no more back-breaking work than reaping; and harvest wages were now certainly no less than they were, and men were better employed and better paid during winter. Where the steam-plough was used the best man got the best wages. Moreover, the best enginemen employed on farms were invariably agricultural labourers; a fact which showed that many men of that class had a great deal in them, and that it was only waiting to be brought out.

As regarded cottages a great evil still existed, although a great work had been accomplished all over the country; and the noblemen and gentlemen who were supposed to have interested themselves in the new "social movement," as it was called, could not be better employed than in improving the cottage accommodation for the labourers on their estates. On settled estates great facilities had been lately afforded for the building of new cottages, but, unfortunately, the Inclosure Commissioners did not advance money for altering and repairing old ones. He had never seen any reasonable objection to the letting of the cottages with the farm; and if the landlord did not like that, he should, at all events, allow the farmer to nominate the tenants. He (Mr. Read) entirely objected to weekly notices to quit. However badly a labourer might have behaved, he should have at least three months to remove. Allotments, to be of any use, must be near the labourer's home, and they should never exceed a quarter of an acre.

As regarded the emploment of women in agriculture, he did not know any subject on which a greater amount of twaddle had been uttered. The Commissioners who investigated the matter, said there was a great deal of farm work that could be done by women, with benefit to agriculture and without injury to themselves. Bishop Fraser had attacked the dress of women employed in farming operations as unfeminine, instancing nailed boots, leather gaiters, and short skirts. Such things, if not ornamental, might be useful, and they were certainly not more unfeminine than the pilot jackets and billycock hats which adorn many of the young ladies of the present day. Lengthening the field-dress condemned was certainly not more likely to unsex those who wore it than half what was uttered on the subject of "women's rights." He believed, however, that the employment of women in agriculture was dying out, and with better wages and openings for more suitable employment would in time become extinct. He did not at all agree with the Commissioners that 16 was the lowest age at which girls should go out to work. Such a limit was too high for education, and was wrong also in relation to morality and health. With respect to the prohibition of the employment of boys under 10 years of age, one of the Commissioners, Mr. Tremenhere differed from his brother Commissioners. In Mr. Kebbel's work, to which he had before referred, Mr. Tremenhere's views were thus stated:—

> "He contends, first of all, that the earnings of children under ten are often indispensable to the parents, while in many of the most important agricultural counties there is an 'imperious demand' for their labour. He denies that their earnings are more than absorbed by the extra food which they require, and the extra wear and tear of clothes which ensue when they are at work; and he scouts the notion that, with the exception of house-work, young children are put to any kind of agricultural labour which is physically injurious to them. He draws a very clear distinction between the farm and the factory. 'In a factory or a workshop a child is liable to' work in a close and heated atmosphere; and when working in connection with machinery, its attention is ever on the stretch, and its movements are often rapid and continuous for various periods of time together. The effect of such a mode of employment upon the very young was shown to be physically injurious to them, and therefore to justify legislative measures for their protection. But it has been seen that employment in the healthy occupation of agriculture cannot be shown to be attended with physical injury, even to the very young."

The working of the Agricultural Gangs Act had, on the whole, been satisfactory. Being a mild measure it was more likely to be accepted than a violent one. Agricultural gangs were, after all, a transitory evil, arising out of the peculiar character of the fen district while being drained. Now the fens were drained, cottages were built, ague was gone, and in a few years agricultural gangs would be a thing of the past. As to commons it was generally better for the country that they should be enclosed; that more corn might be grown, and more people employed. As a rule they were surrounded by the worst description of cottages, and a miserable race of squatters, and in many cases some sharp farmer, or dishonest dealer, reaped the chief benefit of the grass. As to the comparative value of large and small farms it would, he thought, be a mistake to do away with all small holdings, particularly near large towns, but, on the other hand, a good skilled labourer would generally save more money than a very small farmer; and if the latter succeeded, it was, as Mr. Charles Howard had well remarked, by doing the work of two labourers while living at the expense of one.

They all knew his (Mr. Read's) opinion about game; but let him read the following words of Mr. Kebbel:—

> "Among the peculiar sources of demoralisation to which the English peasant is exposed, the preservation of game is often cited as the worst. This is a very great mistake. Nobody knows better than the poacher the real character of the game. If his apologists like to shelter him behind a wholly mistaken conception of it, of course he will avail himself of their kindness; but as for supposing that the poacher himself is led away by the delusion that pheasants are wild animals, in which nobody has any right of property, it is one of those fond inventions which only personal acquaintance with a single member of the profession is required to dispel. Game is no more a temptation to dishonesty than other luxuries; and whatever is to be said against the Game Laws is to be said against them rather as a farmer's grievance than a labourer's."

They could not farm against ground game, and on estates where game was preserved to an unlimited extent, the land was but half cultivated, and labourers often took to poaching for want of employment. Farmers, generally, should encourage sound benefit clubs more than they did. They should encourage clothing societies, shoe clubs, building societies, saving's banks, even co-operative stores—anything, in short, that tended to make the labourer thrifty and provident. At present, labourers, as a rule, had not the slightest thought for the future—an evil which arose, no doubt, in a great degree from the operation of the Poor-law. Some distinction should be made in England as well as in Ireland between sickness and destitution, so that, through the action of dispensaries, medical assistance would no longer pauperise a man. The custom of paying wages partly in beer was, happily, going out of fashion. Wherever it existed the matter should certainly be optional. Public-houses in the rural districts were very generally condemned. The subject of education had now been thoroughly threshed out. It was once said that the agricultural labourer had two things to do—"to get a living and to get to heaven." He did not believe the compulsory attendance of children up to 12 years of age at a secular school would help them to do either of those things. Education would enable labourers to leave farms with a little more alacrity than they did now, and farmers, as a body, would probably derive less benefit from it than any other class of society. The Elementary Education Act would not work in the rural districts. In the towns he hoped it would do some good, but thus far it had produced no end of talking without teaching a single child to say its letters. He was in favour of some indirect compulsion among the agricultural population. If it were determined that no child should go out to work until it could pass an examination in the three R's, that would be a great inducement to parents to send their children to school early, and regularly, and to keep them there for a considerable period. Man's primary object and desire was to satisfy his animal wants: that done, he began, as a reasoning being, to think of comfort and decency. The Legislature appeared inclined to force upon the labourer mental culture, hoping thereby to give him sounder ideas of decency and comfort; but he must earn more wages before he could materially increase his comforts, and this he could not do without becoming a better workman. Fortunately, the mitigation of the labourer's hardships pointed to reform rather than revolution. All the suggestions of the Commissioners ran in that direction, and he could not conclude his remarks better than by quoting from Mr. Kebbel, who thus fairly summed up and impartially balanced the present condition and future prospects of the agricultural labourer:—

> "On the one hand is his life of silent, secluded, uncomplaining toil, his undeniable privations, his honesty, his simplicity, his helplessness, so unlike the loud self-assertion and menacing pugnacity of the city artisan; all prepossessing us in his favour, all imbuing us with the idea that a system which does not do more for him must be radically indefensible. On the other hand, we see in him but one link in the social chain which has endured for centuries, the origin of which was noble and generous, and the continuation of which has been secured from age to age by the accumulative force of kindly traditions and immemorial symathies. If we fail to give its full value to every reflection which is suggested by every side of the shield we are dashed headlong into error; and it is the certainty of this which should make us so cautious of dogmatising. But I am happy in believing that the more the question is studied, the more will it be seen that the highest interests of the landlord, the tenant, and the labourer, harmonise with each other, and that in a logical

development of, rather than a total departure from, the ancient social system of England lies our best hope for the future."

BOROUGHBRIDGE.

Grass Lands.—Mr. JACOB SMITH lately read a paper on this subject. He said :—

Although at present the improvement of grass land is very little attended to by many farmers, I feel sure the day is not far distant when it will be much more seriously considered than it is at present, for when we look at the great increase of population, and, what is more, the greater increase of meat consumers, we may well ask how these wants are to be supplied ; for though the increase of cattle from abroad has been large, still there are many difficulties and much uncertainty attending the importation of foreign cattle. If, then, we have to increase our supply of beef, how is it to be done? Certainly not by adopting Mr. Mechi's idea of ploughing out all our old pasture land. I think in this Mr. Mechi will have very few supporters ; but I am sure a great deal may be done by improving these pastures. When we look back at the great advance made within the last 20 years both in the cultivation and the increase of beef and mutton from arable land, it does appear wonderful that grass land should remain very little, if at all, improved during the same period. This is perhaps accounted for in a great measure, because the improvement in many ways is not immediate. Then, again, some manures have great value upon some land, upon others none, and in using artificial manures it is necessary to be careful.

I will briefly state to you what experience I have had in some of these manures. Bones I have seen applied with wonderful results, so marked that, in walking across the fields, no one could fail to notice the difference where the bones had been put on—grass, beautiful and rich, where there had not been any, and not a bite for anything to eat ; but I put 30 qr. on 10 acres in the middle of a 30-acre field some years ago, and I have never been able to see that they did any good. Lime, too, I have seen great results from in some fields, and in others a slight improvement the first year, but very little afterwards. Prepared manures, and guano, I have tried, and found in a wet summer a great increase ; in a dry one none, and I cannot say much for the lasting improvement. I shall now give you my ideas as to the effectual way of benefiting grass lands. In the way of manures, I think there is no doubt that good farmyard manure has no equal, it always shows itself, and in mixed farms (by mixed farms, I mean those that are partly tillage and partly grass) I think more manure might be spared for the grass land than there is at present. In farms, principally grass, of course farmyard manure is not to any great extent available, and what there is is generally used for the meadow land.

In order to improve pastures you must stock properly ; grass lands must be stocked with beasts, as sheep are injurious to grass—especially good grass. Some landlords are very particular about tenants taking two white crops, &c., off arable lands, but in my opinion a tenant that stocks grass land with sheep, damages the landlord's property far more. I think you may stock good grass with sheep until it will scarcely grow anything ; many people run a few sheep amongst their cattle, but it is bad both for the cattle and the land. Keep horses out of grass if you wish to improve it. I do not say that one or two horses in a field will do much, if any, harm, but you see many who have mixed farms, and many who have only a small proportion of grass, turning all their cart-horses out into pasture fields. They will probably tell you it is only poor land, and well it may be, when grazed year after year with a lot of cart-horses. You may take the best field in the country and graze it with cart-horses until it is a very poor one ; besides, cart-horses can be so much more cheaply kept in the yards by mowing green meat. Therefore, if you wish to improve your grass keep sheep and horses out of it, and stock with such cattle as are best adapted to the nature of the land, and give them a liberal allowance of cake, and you will soon see a marked improvement. Of course, you do not see it the first year, but you see your cattle feed much faster, and every year you will see your land alter, keeping more stock year by year, and the quality of grass wonderfully improved. I have tried it now for some years, and I am quite satisfied with the results. I think, in most years, the cattle quite pay for the cake, and sometimes more. I am sorry I am not able to give you a quicker remedy.

I have no wonderful specific which will transform all the grass land in the country in a year or two into rich pastures, but, if my remedy is slow, it is sure, and by using cake you are always increasing the amount of beef for consumption. Some men may say it is all very well for men to do so who feed cattle for the butcher, but it will not do for a man who only breeds. I don't agree with this, as I think no cattle pay better for cake than young cattle. By keeping young calves well, you may make a 2-year-old nearly as good as, with ordinary keep, it would be at three. If so, this is going a great way to an equivalent to making two blades of grass grow instead of one ; and so sure am I that there is scope for improvement in grass land that I think we shall soon live to see two blades of grass growing where only one grows now. If by reason of this discussion we help to bring this about, our time will not have been mis-spent, and surely there never was a time when there was such inducement to rear and feed as much stock as we can. I have mentioned Mr. Mechi before, because just now we all, I dare say, know he has been writing letters, advocating the ploughing out of grass. So far from this, I think there is poor, bad land, especially any that is far from the homestead, that would be much more profitably farmed were it laid down to grass, as it would answer well for the rearing of young cattle. For breeding purposes, care ought to be taken that it should be clean, and in good order, where laid down ; and liberal treatment used afterwards will greatly assist it after it has been laid a few years. I should strongly advise anyone who has a field of this kind to let it rest for one half-year, that is, neither stock it nor mow it, but let the crop of grass grow. The seeds will shake, the roots will spread, and the land be warmer. The next spring there will be as much keep for stock as if you had the hay crop. I have tried it myself, and I am sure I had more keep on the land in spring than if I had taken the hay and fog as well. It was perfectly astonishing. Since then, the field has been more like an old pasture, and grows more than double the grass. I have now introduced the subject, and I am sure I have left room for plenty of discussion. If gentlemen will give some of their experience, and also their opinions, I shall be in hopes that good may come out of the consideration of the subject.

Mr. FORD said : Undoubtedly grass lands were capable of great improvement to make them properly available for the production of beef. He looked forward to the time when every rood of sward land should be brought into thorough grass cultivation. As agriculturists the question was asked them, How were they to provide the nation with beef and mutton ? He was not quite sure whether Mr. Mechi was not right in his views with regard to the ploughing out of grass land, as he adopted enlightened ideas on farming. He did not advocate the ploughing out of grass land in a wild and reckless manner, without exercising any judgment, as such a course of husbandry must be regulated according to their knowledge of the condition and capabilities of the land. He considered that a great quantity of land in the country now in grass would be better in tillage, and at the same time he thought that there was a great area of land which ought to be laid down in grass. He did not agree with Mr. Smith as to allowing certain kinds of fields to rest for a time by neither mowing nor stocking them, because, in his opinion, a close, compact sod could not be obtained without cutting the grass. This was important in procuring rich grass.

Mr. BENNETT said that Mr. Smith had not alluded to the drainage of grass lands. Where there was a bad description of grass, it could not be improved without the land being drained. He agreed with Mr. Ford as to the ploughing out of certain kinds of land ; but this ought to be very carefully done. The grass land of the country might be materially improved by a judicious system of management.

Mr. CALDER said that the price of beef and mutton made the subject under discussion of very great importance, especially at the present time, and if the great demand for beef and mutton was to be met, there must be great improvements made in the condition of grass land. He did not agree with Mr. Mechi in his opinions about the ploughing out of grass lands. For his own part he did not like the idea of ploughing out grass land, which could be greatly improved by a liberal application of manure, and by giving the animals grazing on such land as much cake as they could eat in a reasonable way. From what he knew of grass land, great judgment was required in draining it. In the laying down of grass land he should advocate cutting it the first year, and avoid eating it off with sheep.

Mr. T. SCOTT, said that he trusted the laying down of grass land would not be introduced into the discussion that day, but that some gentleman would deal with it on a future occasion, when it would form the topic of another interesting discussion. After alluding to the effect produced upon lands by the application of lime and bones, he recommended the trying of a small portion of these substances as an experiment before they embarked upon their use in an extended manner. He quite agreed that it was judicious to use linseed and other cakes upon land in preparing their stock for the butcher, as by this plan the grass was improved. He scarcely agreed with Mr. Smith in letting the grass rot upon the land for a season as a means of improving it, because he knew that, in some districts especially, the grass wanted well eating down. In old pastures they should not put on sheep and horses, and he agreed with Mr. Ford that grass land was improved by cutting, as it made the roots spread, and the crop grew closer and more compact.

Mr. POWELL said that he knew many farmers who applied all their manure to arable land, and left the pastures to Providence, a course which he condemned.

Mr. FORD said that sheep eat very deeply into the roots of grass, which were permanently injured, and some kinds of grass were so eaten down as to cause them to die out. Sheep undoubtedly did injury to grass land.

Mr. SMITH entered into some details in justification of the course he pursued with regard to allowing some land in his occupation to rest for a time by neither stocking nor mowing, showing that the plan had answered remarkably well, and that the land had become improved. He quite agreed, however, that old and permanent grass land wanted eating down once a year, but not too bare. He condemned the folding of sheep on grass land, and horses, especially cart horses, did harm to grass fields. He did as little as possible in feeding sheep on grass land, besides which the animals did not do so well on such land. Beasts ought to be kept on grass land. As to the drainage of land, it was a great advantage in low wet districts. Wet grass land required drainage, but drainage upon this kind of land was not so much required as upon arable land.

Mr. T. SCOTT referred to some grass lands which he knew being worth very little an acre, because they received little or no attention from the occupiers, whereas the same description of land, when occupied in small parcels by cottagers who cultivated it, was worth 50*s.* per acre, when before it was not worth 2*s.* 6*d.* per acre. This fact showed that land, however inferior it might be, was capable of very great and wonderful improvement.

Notices of Books.

On the Economical Production of Peat and Peat Charcoal; *with Incidental References to the Processes Pursued at the Red Moss Works, Horwick, near Bolton, Lancashire.* 28, Church Street, Liverpool.

This is an advertisement pamphlet, issued by the company whose cause it advocates, and whose works it describes. "Nearly every acre," it declares, "of the 6,000,000 of peat bog in the United Kingdom is capable of yielding, in charcoal alone, after deducting all manufacturing expenses, not less than a thousand pounds sterling."

> "Assuming that only half these acres were suitable for the manufacture of charcoal, their most valuable product, and excluding all other means of profit, the aggregate value of the peat-bog property of the country would be greatly under-estimated at 3000 millions (£3,000,000,000), or nearly four times the amount of the national debt. Add to this the value to the State of thousands of labourers finding reproductive employment in a new industry, and the further consideration that, when the land has been divested of its peat, it is so much reclaimed land, in a rich virgin condition, ready for agricultural and pastoral purposes, and how much is its importance magnified!"

So much is extract, which we prefer to place within inverted commas, and thus put the responsibility of the statement on its author. The next two sentences of the pamphlet, however, we might very well take for our own.

> It must be granted that if this view of the real, though at present latent, value of the peat-bogs of the United Kingdom be only approximately true, the practical means of realising and rendering active such enormous wealth deserves elucidation. Nor will the importance and immediate pertinence of this be diminished by the consideration that the rapid consumption of our staple fuel, coal, has already begun to create anxiety for the future of manufacturing England.

It is unquestionably a remarkable circumstance that, in itself a fuel, and therefore capable of generating all the power required, no attempt at manufacturing peat, or manufacturing from it, has yet been a complete success. Even the attempt to manufacture food upon its surface has, when all is told, proved a very doubtful venture. It is, indeed, in its relation to the fuel question, an example of the superiority of what may be called the small farm, or allotment system, to operation on the great scale. Everyone living near the bog finds it his interest to manufacture fuel for himself, but a company started for the same purpose, and bringing steam-power to bear, generally fails. The reason, no doubt, is two-fold. There is first the fact, that it is only for home consumption that the residents find it answer. It would probably be unprofitable even for them were coal as cheap as it is nearer the wharf or station, or if they had to carry it many miles for consumption. And the second reason probably is that the power wanted is simply one which can cut the turves and lay them out to dry. The application of steam-power to crush or squeeze the turf, or drive off the water by evaporation, has been hitherto a failure economically. Even a company with steam-power at its command must in the first place use a man to dig the turf. That man, if he were digging for himself, lays it out to dry, and is at no further expense. The company, on the other hand, proceeds perhaps to grind the material up or make it into bricks, or possibly to apply artificial heat to drive the water off. And most of these processes hitherto have failed to "pay." "But," says the writer of this pamphlet :—

> "Because of these failures, it would be a great mistake to suppose that peat cannot be worked with profit. In France, Germany, Holland, Denmark, Sweden, and other parts of the Continent, peat works are as common as coal pits in England and Scotland, and that not merely because of the scarcity of coal, but also because of economical reasons peculiar to themselves. In the United States also, they have been of late carried out extensively. In some of the larger towns on the Continent, such as Hamburg, Copenhagen, Bremen, Berlin, and many others, peat is the staple fuel for household use. In whole districts along the Weser, the Oder, and other rivers ; in Holstein, Hanover, Westphalia, Lower Saxony, Pomerania, Mecklenburg, &c., hardly any other fuel is known but peat. It must be presumed that its producers find it pay, or they

would not continue, year after year, to supply these markets. In France, near Liancourt, on the Northern Railway, Messrs. Debonne & Co. employ about 300 workmen during five months every year, producing annually from 10,000 to 12,000 tons, a large portion of which is converted into charcoal for the supply of the Paris market, where it fetches from 14 to 16 f. per 100 kilogrammes—equal to 140 to 160 francs, or £5 10*s.* to £6 per ton. In Rheims large quantities of excellent peat are produced. One firm alone produces about 14,000 tons per annum, part of which is likewise made into charcoal. Peat fuel is made and used in the departments of Somme, Loire Inferieure, Pas de Calais, Oise, Marne, Eure, Seine et Oise, Meurthe, Vôsges, and others. The French official statistics of 1852 show that the actual annual consumption of raw and carbonised peat was then 359,319 tons, since, no doubt, largely increased.

"The process of peat-making on the Continent is mostly carried on by hand labour. The peat is either cut in sods of from 4 to 5 inches square, and 12 to 15 inches long, direct out of the bog, and, without any further operation, dried in the open air; or it is dug anyhow with a common spade, or, as in France, with a tool fixed to a long shaft, cut and raised from under the water, and prepared into a pulp by men tramping it with their feet, after which it is struck into moulds similar to those used in brick-making, and then laid out to dry.

"The first process requires two men, one cutting, the other wheeling the peat to the drying place and spreading it there. An average of 3000 sods per day are cut and laid out in this way, making about 10 tons of wet peat.

"The second process requires four men; two digging and pulping, one moulding, and one wheeling, &c. In this way 4000 bricks or sods are made daily, corresponding to about 12 tons of wet peat.

"In the former, the daily yield is about 5 tons per man; in the latter, 3 tons per man. The former, therefore, has the advantage in quantity, but the latter has it in quality; for in the latter, the peat, being rendered more dense, equal and homogeneous, gives an intenser heat, is less liable to break into fragments when dry, and yields, when charred, a better charcoal. An additional recommendation for the latter process is, that it is applicable to almost any bog; whereas the former can be applied only where the bog is sufficiently dry, or where it can be drained so as to leave the part intended for cutting dry."

We do not proceed further to describe the works at Red Moss near Bolton. The pamphlet is worth reading for the information on this point which it gives. We believe, however, that there would have been a better use of the bog near Bolton if, after drainage, the sewage of that town had been pumped upon it, than is likely to be realised even by the manufacture of a fuel from its substance.

Farm Memoranda.

CASTLE ACRE, NORFOLK.—The following report of a day at the farm of Mr. Robert Leeds, appears in the *Albany Cultivator*:—

The farm is some 20 miles or more east of Lynn, and is reached by a carriage drive of 6 miles north from Swaftham station on the railway between Lynn and Norfolk. It lies in the chalk district, and the soil is everywhere underlaid by that substance, which is only a foot or two beneath the surface. The land is rolling, the soil loamy, and sufficiently dry to need no artificial drainage. The farm comprises 1200 acres, of which 1060 are under cultivation, 70 in permanent pasture, and the remainder in the grounds about the homestead and buildings. There are cattle sheds and feeding places at four places on the farm, so that the hauling of manure and of heavy crops for feeding may be shortened. No barns or sheds are provided for storing grain or hay, stacks being considered as economical and safe. Neither is any shelter provided for the sheep.

Mr. Leeds went with me over the farm, walking steadily for more than five hours. He explained in detail his method of manuring, cropping, tillage, and stock-keeping. His aim is to keep one-quarter of his farm in Wheat, one quarter in Barley, one quarter in roots, Mangels, Swedes, and common Turnips; and the remaining quarter in Clover and cultivated grasses. It should be remarked, however, that the rotation is varied from as the exigencies of the market and the judgment of the farmer dictate; thus, on very good ground two crops of Wheat are taken in succession, and a crop of Turnips between them. Mr. Leeds had a fine field of early sown Rye after Wheat, which was intended for early pasturage for sheep—3½ bush. of seed per acre were sown. A crop of Oats may take the place of the Barley, and for purposes of tillage or improvement some one of the leading crops may be greatly in excess of the others; for example, the root crop on this farm covered more than 300 acres last year.

The tillage of the land is thorough—steam cultivation is used as far as possible, pulverising the soil to the depth of 10 inches. For the crop of Mangels the ploughing is done in the late autumn to the depth of 11 inches; and it is again ploughed to the same depth in the spring. For the Turnip crop, simple cultivation, without inverting the soil, is generally practised. The ploughing for Wheat is very shallow, only about 4 inches; and after the ploughing the ground is rolled, and then harrowed with a very large harrow with numerous small teeth; the intention being to get a very fine seed-bed of 1½ or 2 inches deep, leaving the rest of the soil pretty solid. The Wheat is drilled in, and on the light soil the ground is again rolled after sowing.

The crop of Wheat averages from 32 to 36 bush. an acre, though in exceptional seasons it has gone as high as 56 and even 60 bush. an acre, and in other unfavourable seasons, on the same land, has fallen to 28 bush. The Barley varies from 40 to 48 bush. an acre—last year it was only 40 bush. Of the weight of the root crop I can give no distinct report; it is enormously large both in the Turnips and the Beets. The men were gathering a crop of long red Mangels, and hauling them off to clear the ground for Wheat. The foreman said they were taking off 35 large cartloads from an acre. The cart had high side boards, and must have held nearly a ton. They were gathering the Turnips in other fields, and the piles seemed to be nearly as large as those of the Beets. Of the crops of Clover and cultivated grass I got no definite idea. They are not so highly valued as with us, and are used in feeding stock nearly in the same way that straw is.

Enriching the soil is an important part of the farm economy; everything that will help to increase the manure heap, or improve its quality, is most carefully done. The manure is kept under shelter; enormous quantities of feed for cattle and sheep are bought; artificial fertilisers are used largely; and only the sheep, cattle, Wheat and Barley, are sold off the farms, and just as large a stock of bullocks and sheep is kept as the straw, hay, and Turnips will support. The amount of dung made is 3 tons or more an acre for the whole farm. This is used mainly on the Wheat and Turnips; none is used on the grasses or Barley, and artificial manures are bought for the Mangels, and some additional fertilisers for the Turnips and Wheat. Both superphosphates and Peruvian guano are used.

Mr. Leeds feeds and fattens about 2000 sheep yearly. He keeps Hampshire and other Southdowns, and the lambs raised are a cross of these with the Lincolnshire. I noticed in particular a flock of 300 fine Southdown ewes, which were to be kept over the winter for raising lambs. From these he expected to get from 450 to 500 lambs. But the largest part of the sheep are bought to fatten, change the Turnips into meat, and help to prepare the ground for crops. They were feeding off the Turnips when I was there—a plot just large enough to yard comfortably; the sheep were enclosed by hurdles; feeding-troughs were regularly arranged in the yard for the sheep; the Turnips nearest were pulled, sliced, and put in these troughs by boys, and the sheep stood up to these troughs in ranks on both sides. As fast as the Turnips were consumed from the ground, the hurdles and troughs were moved forward, the latter being moved about 6 feet each time, so that ultimately the whole ground was trodden by the sheep, and mixed with their dropping. In addition to the Turnips, the fattening sheep are fed from half a pound to a pound of oilcake daily.

One hundred and fifty bullocks were fattening for the butcher, and 250 are fattened on the farm every year. They are all Shorthorns, mostly 3-year-olds, but a few are 4-year-olds. They are bought at the markets, and are intended to be fattened in the shortest time possible. A judicious selection of these cattle, so as to get those which will make the most growth for the time and feed consumed, is the first element for success in this business. They are bought at prices varying from £20 to £30, and sold at from £28 to £35, and some very fine ones he had were engaged at £48. The average increase iu value while fattening is about £10 each. These bullocks are all kept in yards or boxes, and never turned out to graze. At each of the four sets of sheds there are boxes for 30 or 40 cattle, and these are occupied by the fattest animals; and the remaining ones are kept in the yards waiting their turns to enter those little boxes, from which they are never turned out till ready for the butcher. The boxes are in two rows under the sheds, and there is a passage-way between the rows by which the feed is carried in. They may be 10 feet square; the trough is along the side next the passage, and has parts in it for holding water, Turnips, cake, meal, and cut straw. The boxes are not cleaned out from day to day, but are kept dry by throwing in a little straw; and as they fill up, the feeding-troughs have to be raised. The manure accumulates in the boxes until they contain 8 or 9 tons each. The daily feed averages 2 bushels of roots, from 12 to 14 lb. of oilcake, and as much cut straw as they will eat. He fed out 300 tons of oilcake last year to his cattle and sheep.

The work on the farm requires 28 or 30 horses. The number of hands employed is variable; labourers' wages, at the time I was there in November, were 10*s.* a week, and the average through the year is about 15*s.* a week. Much of the harvesting is done by contract, a gang of hands taking the whole work to do at a fixed price. In the dry weather of last year it was very favourable to the workmen, and for the 17 days it lasted they earned between 7*s.* and 8*s.* a day. The expense for labour on the farm is usually said to be equal to the rent, which may be 35*s.* to 40*s.* an acre. The amount paid out for labour on Mr. Leeds' farm is not far from £1800 a year. The amount paid out for fertilisers I could not learn.

A visit to such a farm was of the highest interest to me, and the skill, the energy, and the success with which all the operations of the farm were carried on, made it both instructive and encouraging. With such examples before us, we cannot but feel that farming is worthy the attention of the ablest men. *Geo. H. Cook.*

The Week's Work.

NOVEMBER 11.—*Thorough Drainage* execute on all wet lands requiring it, placing the drains sufficiently near each other, and the pipes of a proper size, to remove the heaviest shower of rain as fast as it falls. Much clay land is only half drained, from the drains being placed too far asunder. Thus, when placed 24 and 36 feet apart, it will often pay to put an additional drain between every two, and when 36 feet apart we have opened two drains with advantage, the distance being then 12 feet apart. At this season the pipes or stones should be put in, and covered close up to the digging, so as to obviate falling in of the sides from the weather.

Subsoiling is subsidiary to drainage, whether the land is drained naturally or artificially, and therefore all lands ploughed this month should also be subsoiled, if the bottom requires loosening, as all subsoils occasionally do. Thus, the soleing of the plough, and the treading of the horses in the bottom of the furrow, together with the action of the roots of plants, produce "bottom-bound," "heath-pan," or "moorband," which covers a much larger area of the country than is generally imagined; and now that ploughing and subsoiling can be done at one operation by steam or double-furrow horse-ploughs, the work should be done at this season. Calcareous limestone and clay soils require subsoiling as well as ferruginous, sandy, and gravelly soils, on which a hard pan of moorband often exists several inches deep, through which the roots of plants cannot penetrate. And, besides being impervious, it is generally poisonous also, so that in subsoiling it should be broken as fine as possible, and left below until either changed by oxidation, or else washed out by the rains. It has justly been said that to double the depth of the staple by subsoiling and after deep cultivation is equivalent to doubling the area of the land subsoiled, *i.e.*, the roots of plants have twice the area of land in which to obtain plant-food.

Straightening Watercourses, if not already done in cases where the new cuts could not be opened in the summer time when the crops were on the land, should now be finished without delay. Where there is much carting in filling up the old channels, the work may be delayed until frosty weather. A drainpipe should be placed in the bottom of the old cut before it is filled and levelled.

Live Fences finish plashing and switching, grub up crooked and superfluous ones, and plant new where required, so as to lay out the land in the most profitable manner for steam culture. Where there is a command of stone from quarries near at hand, walls built with lime mortar make the best fences, and they are cheaper in the end than either dry stone dykes or live fences, as they occupy less ground, last longer, afford better and healthier shelter for live stock, and are free from the objection of nursing weeds and harbouring vermin of various kinds.

Land-fast Stones, and other obstructions to steam culture and subsoiling, remove. A great many stones in the subsoil that cannot be brought to the surface by horse-teams, can be loosened by steam; others require very little manual labour to enable steam to bring them to the surface. There are, however, large stones that require to be blasted with blasting powder, and rock cropping out to the surface that requires to be quarried, and removed before steam can be started. Few improvements pay better than the removal of large stones and the deepening of shallow rocky ground, such soils being naturally grateful for all they receive.

Trenching, with pick and spade, when the land is very full of large stones or rock, is generally to be preferred, and often absolutely necessary, both in reclaiming new lands and in deepening old. If the land requires to be drained, the stones may be broken and used in filling the drains; and the several works of draining, trenching, removing the stones, and filling the drains, may proceed together. Thus open and fill two or three drains—let the draining proceed,—start a "gang" or company of hands to trench each space between the drains, the one gang keeping in advance of the other; start a third set of hands to gather the stones into small boxes made for the purpose, and to carry them across the untrenched land to the drains. Let a fourth company break the stones and fill in the drains. In this way we have drained and trenched large areas of old and new land by contract, at about £10 per acre. Any quantity of stones may be consumed in the drains, but when the stones from the land do not fill them, either tiles must be used, or a supply of stones got from somewhere else to fill up deficiencies. In each case the increase of produce redeemed the expenses within two rotations. In two cases the first crop paid off the whole, with a large margin over.

Surface Drainage attend to everywhere, so as to prevent pools of stagnant water after heavy rains, on farm roads, grass lands, and in water furrows. Thorough underdrainage should render open water furrows unnecessary, but such thorough drainage is more frequently the exception than the rule, and therefore open water furrows, in which water flows, should be gone along after every heavy storm, and any clod that has fallen in, or silting up that has taken place, should be removed, the clods and silt being spread thinly over the land. Where land is being ploughed that requires cross water furrows they should be opened with the spade daily as the work advances, so as effectually to remove any rainwater overnight, or what may fall during the day. The ditches should also be gone over, and the mouths of the main drains, so as to detect in time any stoppage that may have taken place. As a general rule, half the expense will keep things right that is required to put them to rights when once they are allowed to go wrong, and it must be borne in mind that this latter expense is but a fraction of the loss sustained.

Notices to Correspondents.

BOOKS: *W. Carr.* "Stephens' Book of the Farm," "Morton's Cyclopædia of Agriculture,"—published, the one by Blackwood, the other by Blackie, Paternoster Row,—are £2 and £3 books. The "Farmers' Calendar" (Warne & Co., Bedford Street, Covent Garden), price 15*s.*, will, perhaps, be as good a book to begin with as any. It should be read and studied, month by month, upon a farm.

BRUISED GORSE: *Mr. E. H. Palmer* writes:—At p. 1440 of your paper, under the heading of "The Week's Work," is a recommendation of bruised Gorse as an article of food for cows in the winter time. As I have a farm in a county where Gorse is plentiful I should like to act upon the advice, and shall feel obliged if you can tell me in your next paper what is the implement or machine that I ought to have for the purpose of crushing the Gorse. [Messrs. Barrett, Exall & Andrews used to manufacture a Gorse crushing machine. Probably their successors, the Reading Company, can supply one.]

MANURE PIT: *H. R. P.* asks our correspondent, Mr. Forsyth, to give our readers a more detailed account of the mode of construction of the manure pit made for "Mr. Fraser."

ERRATUM.—In p. 1432, col. *b*, line 17, for "never," read "have."

Markets.

ENGLISH WOOL.

The market keeps good, more especially for the choicer grades, and prices are hardening; and when manufacturers have worked out their present stocks—which, at the actual rate of consumption, will not take long to do—we may anticipate a very good demand and a still higher range of prices.

MARK LANE.

MONDAY, Nov. 6.

There was a moderate supply of English Wheat to this morning's market, the condition of which was mostly inferior, and to effect sales it was necessary to accept rather less money. The attendance was good, and for foreign Wheat, particularly Russian, there was a fair consumptive demand at last week's prices. Barley, Beans, and Peas were unchanged in value. The Oat trade was steady at late rates. Flour as last quoted.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk..White	54—59	Red......	54—57
— fine selected runs ....do.	57—61	Red......	56—58
— Talavera	59—63		
— Norfolk	—	Red......	—
— Foreign	50—69		
BARLEY, grind. & dist., 26s to 31s..Chev.	38—40	Malting ..	33—38
— Foreign . grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan.... 35s. to 38s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —s. to —s. ....Grey	—	Foreign ..	36—44
MAIZE	—	Foreign ..	31—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Nov. 8.

An increased amount of dulness was apparent here today. The supply of English Wheat was short; but it was much in excess of requirements. Foreign Wheat was in large supply. The demand was inactive, and prices generally were easier. Barley changed hands quietly on former terms. The malt trade was dull, at drooping prices. There were good supplies of Oats on offer. Trade was slow, at about late rates. Beans and Pears were purchased cautiously, at previous quotations. Flour was depressed, prices ruling in favour of buyers.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	350	870	—	—
Irish ..	—	—	—	—
Foreign ..	32,910	5650	12,490	{ 70 — brls.
	33,260	6520	12,490	

LIVERPOOL, Nov. 7.—There was a fair attendance of millers, but they bought Wheat only on a limited scale, and prices were 3*d.* per cental lower than on Tuesday last. Flour was quiet, at a reduction of 6*d.* per barrel and 1*s.* per sack. Beans 6*d.* per qr. lower. Oats are rather in sellers' favour, and Oatmeal realised fully previous rates. Indian Corn dull of sale, at the rates of this day week.

AVERAGES.

	Wheat.	Barley.	Oats.
Sept. 30	57*s* 3*d*	35*s* 10*d*	23*s* 10*d*
Oct. 7	56 3	35 8	23 8
— 14	56 5	36 2	22 6
— 21	56 6	36 10	23 2
— 28	56 7	37 7	23 5
Nov. 4	56 8	37 5	23 8
Average ..	56 7	36 7	23 4

METROPOLITAN CATTLE MARKET.

MONDAY, Nov. 6.

We have a considerable increase in the number of Beasts, but the average quality is very middling. Choice qualities being scarce are readily disposed of, at fully late rates; trade is slow for other descriptions, at lower prices. There are a few more Sheep than last Monday; the demand is, however, good, and that day's quotations are pretty well maintained. Choice Calves are still scarce and dear. Our foreign supply consists of 3550 Beasts, 14,170 Sheep, and 362 Calves; from Ireland, there are 800 Beasts; and 1530 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. .	5 8 to 5 10	Best Long-wools	6 4 to 6 8
Best Shorthorns..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 4
		Pigs	3 4—5 0

Beasts, 5880; Sheep and Lambs, 22,190; Calves, 382; Pigs, 155.

THURSDAY, Nov. 9.

The supply of Beasts is shorter than last week, quite sufficient, however, for the demand. Choice qualities are scarce, and Monday's quotations are maintained. The number of Sheep is small, but buyers are by no means numerous. A clearance can scarcely be effected; there is no alteration in prices. Choice Calves continue to be scarce and dear. Our foreign supply consists of 320 Beasts, 3270 Sheep, and 123 Calves.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 8 to 5 10	Best Long-wools	6 4 to 6 8
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	3 8—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 4
		Pigs	3 4—5 0

Beasts, 930; Sheep and Lambs, 5300; Calves, 246; Pigs, 75.

METROPOLITAN MEAT MARKET, Nov. 9.

Best Fresh Butter .. .. .. 18*s.* per dozen lb.
Second do. do. .. .. .. 16*s.* „

Small Pork, 4*s.* 0*d.* to 4*s.* 8*d.*; Large Pork, 3*s.* 2*d.* to 3*s.* 8*d.* per 8 lb.

HOPS.

BOROUGH MARKET, Nov. 8.

Messrs. Pattenden & Smith report the market very firm, with a good retail inquiry for consumption. All the best brewing descriptions are rapidly becoming absorbed. Really choice sorts are with great difficulty to be met with.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Nov. 9.

PrimeMeadowHay,	84*s.* to	95*s.*	Clover, old	115*s.*	130*s.*
Inferior do.	48	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	36	45			

CUMBERLAND MARKET, Thursday, Nov. 9.

Sup. Meadow Hay	98*s.* to	105*s.*	Inferior Clover ..	90*s.* to	115*s.*
Inferior do.	70	92	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	48
Superior Clover ..	130	140			

JOSHUA BAKER.

SEED MARKET.

We have an increase of animation in our markets. Red Clover is in brisker demand, and has advanced during the week 2*s.* to 3*s.* per cwt. Higher quotations are reported by cable from New York, and German advices speak also of enhanced currencies. White Clover is now receiving more attention, and must be noted 3*s.* to 4*s.* per cwt. higher. Trefoil is exceedingly firm. For French Italian there is a strong demand, at the recent advance. Perennial Rye-grasses are steady. Winter Tares have now reached so low a limit, that they are being bought up for speculation. New Dutch Hemp has come to market, at a moderate figure. Canary seed is without alteration. Blue Peas are in good request. For feeding Linseed there is a fair trade. Rape and Mustard seed are firm.

JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

COALS.—Nov. 8.

Cowpen Hartley, 18*s.* 6*d.*; Ryhope Hartley, 18*s.* 6*d.*; Walls End Kelloe, 20*s.* 6*d.*; Walls End East Hartlepool, 21*s.*—Ships at market, 7; sold 7; at sea, 20.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.
REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

Autumn Sowing.
ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.
Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.
Chairman—Robert Leeds, Castleacre, Norfolk.
Managing Director—James Odams.

This Company was originally formed by, and is under the direction of, Agriculturists—circumstances that have earned for it another title—viz.,
"THE TENANT-FARMERS' MANURE COMPANY."
Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.
Chief Offices—109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY.
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

The Cheapest and Best Insecticide.
POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy Thrip, Red Spider, Green and Black Fly, and Mealy Bug, and burns without the assistance of blowing, and is entirely free from paper or rags. Price 3*s.* 6*d.* per lb., carriage free. A reduction in price for large quantities.
To be had of Messrs. ROBERTS AND SONS, Tobacco Manufacturers, 112, St. John Street, Clerkenwell, E.C., of whom Copies of Testimonials may be obtained; and of all Seedsmen and Nurserymen.

GISHURST COMPOUND.
Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*
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PRICE'S PATENT CANDLE COMPANY
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Battersea, London, S.W.

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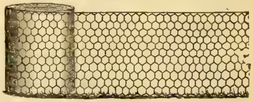
Awarded "Mention Extraordinaire" at the Amsterdam Exhibition, 1869.



Prices per Lineal Yard, 24 inches high.

Mesh.	Mostly used for	Light.	Medium.	Strong.
in.		s. d.	s. d.	s. d.
2	Poultry	0 3¾	0 4½	0 5¾
1⅝	Rabbits, Hares, &c.	0 4¼	0 5¼	0 6¼
1½	Smallest Rabbits	0 5¼	0 6¼	0 8

All guaranteed, and carriage paid to any railway station.
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Offices—90, Cannon Street, London, E.C.; Netting Warehouse and Factory, 4, Laurence Pountney Place (close to the Offices).

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.
They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.
Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.
PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.
WOOL NETTING, 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."
Two yards wide .. .. 1*s.* 10*d.* per yard.
Three yards wide .. .. 2*s.* 10*d.* per yard.
Four yards wide .. .. 3*s.* 10*d.* per yard.
SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.
ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.
NOTICE.—Removed from 7, Great Trinity Lane.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
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200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

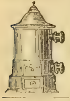
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s* 6*d* each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s.* each.

Portable Boiler.



Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Elliptic Boiler.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E (Surrey side Blackfriars Bridge). Price List on application

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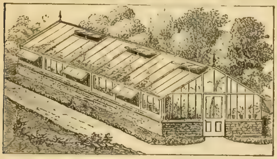


GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C. W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

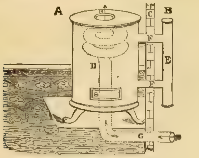
3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

Estimates given for Conservatories or Greenhouses to any Design.

GEORGE'S PATENT CALORIGEN,
For WARMING and VENTILATING.

PRICES: —

COAL CALORIGEN, £6 6*s.* | GAS CALORIGEN, £3 3*s.*



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

J. F. FARWIG AND CO.,
36, Queen Street, Cheapside, London, E.C.

AUSTIN & SEELEY'S STOCK NOW COMPRISES

200 designs of FOUNTAINS, at from £10 to £400.
24 SUN-DIAL PILLARS, at from £2 to £9.
20 BASKETS, from 15*s.* to £35.
14 SHELLS, from 12*s.* to £15.
52 STATUES. 44 SMALL FIGURES.
70 FIGURES of ANIMALS and BIRDS.

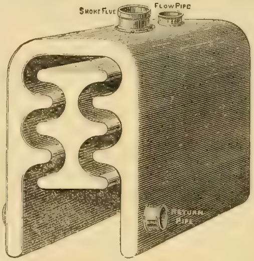
300 kinds of FLOWER VASES, at from 10*s.* to £50.
PEDESTALS of all sizes.
18 FLOWER BOXES for Windows.
BALUSTRADING.
34 BAPTISMAL FONTS.
26 CRESTS and FINIALS for Gate Piers.

22 PORTE-FLEURS and TAZZAS, of large diameters, for Lawns.

AUSTIN'S STONE, invented in 1826, is Waterproof, and no Sand is used in it.
There is no necessity to remove the earth from Vases during winter.
All the Kerbed Flower Beds in the Royal Horticultural Gardens and the Regent's Park made by A. & S.

369 to 375, EUSTON ROAD, REGENT'S PARK, N.W.

ORMSON'S PATENT IMPROVED
WELDED WROUGHT-IRON CONVOLUTED BOILERS



PATENT CONVOLUTED BOILER.

ARE BETTER THAN

CAST-IRON BOILERS

BECAUSE

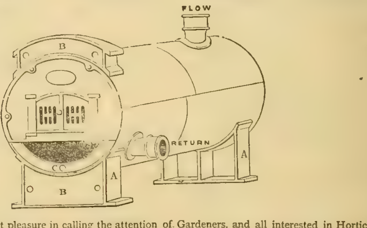
THEY DO NOT CRACK,
THEY REQUIRE NO INSURANCE,
THEY WILL BURN ANY KIND OF FUEL,
THEY are SAFE from SUDDEN FAILURE.

The most economical Boiler known at the present time.

List of Prices on application; also, "Book of Designs of Horticultural Buildings."

HENRY ORMSON, HORTICULTURAL BUILDER TO HER MAJESTY,
AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,
"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4 inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.
"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

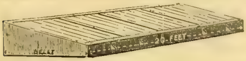
"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.
LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.
From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

W. S. BOULTON AND CO., Norwich, Horticultural Builders and Hot-water Apparatus Manufacturers.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c , at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

Prices.—Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above :—

10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
17½ feet long by 6 feet wide..	£5 0	31½ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.

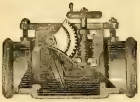
PLANT PRESERVERS.

Illustrated Catalogues free on application.

Rose Lane Works, Norwich.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

T. G. MESSENGER, Hot-water Engineer, Loughborough, is delivering HOT-WATER PIPES, &c., free to any Station on Midland Railways, for cash, as under (nett) :—



4-in. Hot-water Pipe, 2s 4d. p. yard
3-in. Hot-water Pipe, 1s 10½d. ,,
2-in. Hot-water Pipe, 1s. 2d. ,,

Connections at proportionate rates.

The Heating of all kinds of Buildings by hot water, direct or exhaust steam, undertaken by Contract, and satisfactorily completed, in any part of the country.

MESSENGER'S PATENT VALVES for Water, Gas, or Steam, shut off perfectly, are full bore, and cheaper than any other made. Form a cheap and excellent Chamber and Valve for Pumps. Thousands at work.

Prices :—4-inch, 21s. ; 3-inch, 17s 6d. ; 2-inch, 15s.

MESSENGER'S PATENT HOT-WATER BOILER is more powerful and economical in fuel than any other Boiler.

Further prices and descriptions on application.

JAMES GARVIE AND SONS, Horticultural Builders, beg respectfully to intimate that they have now special facilities for the Manufacture and Erection of HORTICULTURAL BUILDINGS of every description, all the departments of the work being executed by experienced workmen in their own employment and under their personal superintendence.

CONSERVATORIES, GREENHOUSES, VINERIES, STOVES, &c., in a great variety of designs, plain and ornamental, and with the latest improvements in VENTILATION and HEATING, at very moderate prices.

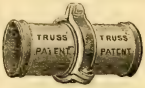
SASHES, HOT-BED FRAMES, and every requisite of the kind for the Garden.

HOT WATER APPARATUS of the most efficient description fitted up in New and Old Houses.

Old Houses Repaired, Painted, and Fitted up with Improved Ventilating Apparatus. Designs and Estimates on application.

STEAM JOINERY WORKS, 60, Huntly Street, Aberdeen.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

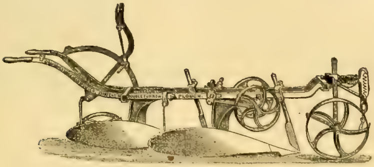
TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

T. S. Truss begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,
Friar Street, Southwark Bridge Road, London, S E.

RANSOMES' DOUBLE PLOUGHS,



WITH PATENT CENTRE LIFTING WHEELS.

RANSOMES, SIMS, & HEAD

Fit all their Double Ploughs with either long or short breasts as required, so as to leave the Furrows whole or in a broken or pulverised state. They are very simple and easy to manage. They are fitted with the best and most durable shares and wearing parts, as well as with their "Patent Axle" Plough Wheels, which entirely exclude dirt, and are very durable. Ransomes, Sims & Head guarantee these Ploughs to perform their work in a perfectly efficient manner, and to be unsurpassed for lightness in draught. Sold by all respectable Implement Dealers.

Prices, with Patent Wheels, Lifting and Turning Apparatus, and Adjustable Beams :—

R N D D, £7 15s., and **£8 15s.**; **R N F D, £9 15s.**; **R L C D**, with Swivel Head and Fixed Beams, **£7**; Adjustable, **£8.**

PRIZE LISTS and ILLUSTRATED CATALOGUES FREE on APPLICATION.

RANSOMES, SIMS, AND HEAD, IPSWICH.

Smokeless Stoves.—No Flues.

NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming; require no attention; with one supply of fuel burn 12 hours.

The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12s. 6d. to Six guineas. PATENT FUEL, 18s. per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4s. 6d. and 9s.

AMERICAN CHARCOAL BOX IRONS.
Price 5s., 6s., and 7s.

PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21s. and 10s. 6d. Medical Testimonials and Prospectus Free on application.

SWAN NASH, Ironmonger, 253, Oxford Street; and JOYCE'S STOVE DEPOT, 119, Newgate Street.

S. OWENS & CO.,

HYDRAULIC ENGINEERS,

WHITEFRIARS STREET, LONDON, E.C.

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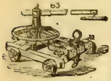

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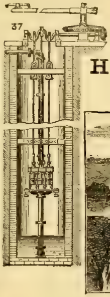

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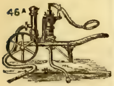

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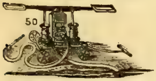

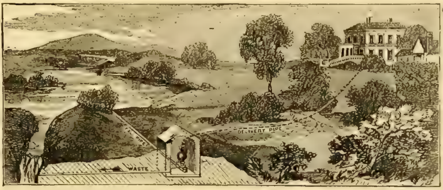

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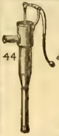

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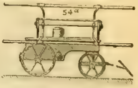

THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
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No. 49a. GALVANIZED SWING WATER CARRIERS, for Garden use.
No. 50 and 54a. FARM and MANSION FIRE ENGINES of every description.
No. 38. PORTABLE LIQUID MANURE PUMPS, on Legs, with Flexible Suction.
No. 49. GARDEN ENGINES, of all sizes, in Oak or Galvanized Iron Tubs.
No. 54b. THE CASSIOBURY FIRE EXTINGUISHER, as designed for the Right Hon. the Earl of Essex.
No. 44. WROUGHT-IRON PORTABLE PUMPS of all sizes.
No. 4. CAST-IRON GARDEN, YARD, or STABLE PUMPS.
No. 39b. IMPROVED HOSE REELS for Coiling up Long Lengths of Hose for Garden use.

S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GAS WORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c. *Particulars taken in any part of the Country. Plans and Estimates furnished.*

ILLUSTRATED CATALOGUES CAN BE HAD ON APPLICATION.

The Patent Imperishable Hothouse.

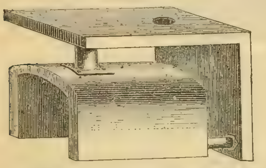
AYRES'S PATENT.
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the
IMPERISHABLE HOTHOUSE COMPANY,
Newark-on-Trent, Notts.
MANAGER—W. P. AYRES, C.M.R.H.S.,
Imperishable Hothouse Company, Newark-on-Trent.
Plans, Specifications and Estimates supplied upon the shortest notice.

GREENHOUSES, FORCING-HOUSES, VINERIES, and ORCHARD-HOUSES, made of the best Yellow Deal, Glazed with 15-oz. Sheet Glass, painted four times; 20 feet by 12 feet, £40; 30 feet by 12 feet, £60; 40 feet by 15 feet, £85; 50 feet by 18 feet, £110; 100 feet by 20 feet, £230.

The above prices include Brickwork, Staging, Delivery, and Fixing, within 50 miles of London. Plans and Estimates sent on receipt of size required to
R. STEVENS, Horticultural Builder, Simpson's Road, Bromley, Kent.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4 in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 ,,	18 ,,	24 ,,	450	6	0	0
20 ,,	18 ,,	30 ,,	600	7	0	0
24 ,,	24 ,,	24 ,,	700	8	0	0
24 ,,	24 ,,	30 ,,	850	10	0	0
24 ,,	24 ,,	36 ,,	1,000	12	0	0
24 ,,	24 ,,	48 ,,	1,400	15	0	0
28 ,,	28 ,,	60 ,,	1,800	20	0	0
30 ,,	30 ,,	72 ,,	2,000	30	0	0
36 ,,	30 ,,	96 ,,	4,500	50	0	0
48 ,,	48 ,,	108 ,,	7,000	75	0	0
48 ,,	48 ,,	144 ,,	10,000	100	0	0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES & SONS.

Price Lists of HOT-WATER PIPES and Connections, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

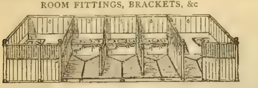
A CONSERVATORY and VINERY for SALE.—It is in good condition, a Lean-to, 30 feet by 15, with 3-feet Vent Lights top and bottom, and a Cucumber Pit attached, all fitted with proper Apparatus for Heating with Water. Cost £120 six years ago Price £35. Can be seen at the Manor House, 378, Mare Street, Hackney, E.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

By Appointment to H.R.H. The Prince of Wales.

BARTON'S PATENT STABLE and HARNESS ROOM FITTINGS, BRACKETS, &c



Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps

For ALTERATION of STABLES a competent person can be sent to any part, to inspect and give Estimates
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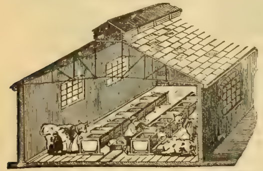
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



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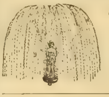

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5 ,, ,,	0	6½	15 ,, ,,	3	0
6 ,, ,,	0	8	16 ,, ,,	3	6
7 ,, ,,	0	10	17 ,, ,,	4	0
8 ,, ,,	1	0	18 ,, ,,	5	0
9 ,, ,,	1	2	19 ,, ,,	6	0
10 ,, ,,	1	4	20 ,, ,,	7	0
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7 ,, ,,	1 1	12 ,, ,,	3 0
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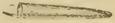

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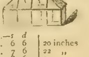

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12 Dessert Spoons ..	1	2	.	1	7	.	1	10	.	1	11	.
12 Tea Spoons	.	14	.	.	19	.	1	1	.	1	2	.
6 Egg Spoons, gilt bowls	.	9	.	.	12	.	.	12	.	.	13	6
2 Sauce Ladles	.	6	.	.	8	.	.	8	.	.	8	.
1 Gravy Spoon	.	6	.	.	8	6	.	9	.	.	9	6
2 Salt Spoons, gilt bowls	.	3	.	.	4	.	.	4	.	.	4	6
1 Mustard Spoon, gilt bowl	.	1	6	.	2	.	.	2	.	.	2	3
1 Pair of Sugar Tongs	.	2	6	.	3	6	.	3	6	.	4	.
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1 Butter Knife	.	3	.	.	4	.	.	4	.	.	4	3
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Table Glass of all kinds,
CHANDELIERS IN BRONZE AND ORMOLU,
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This celebrated and most delicious old mellow spirit is the very CREAM of IRISH WHISKIES, in quality unrivalled, perfectly pure, and more wholesome than the finest Cognac Brandy. Note the words, "KINAHAN'S . LL ." on seal, label, and cork.

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They unite the recommendation of a mild operation with the most successful effect; and where an aperient is required nothing can be better adapted.

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KING'S ROAD, CHELSEA, LONDON, S.W.

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MR. LAXTON'S NEW PEAS FOR 1872.

MESSRS. HURST & SON,

HAVING BEEN ENTRUSTED WITH THE DISTRIBUTION OF

THE FOLLOWING DISTINCT NOVELTIES IN GARDEN PEAS,

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Average Size.
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The finest Pea yet sent out for earliness, flavour, and appearance combined. It is a first early variety, with long and well-filled deep greenish pods ; ripe seed parti-coloured, like " Ne Plus Ultra." It has been thoroughly tested and recommended at the Royal Horticultural Society's Gardens at Chiswick on several occasions, and was the only Pea exhibited in Mr. Gilbert's first prize " Gardener's " collection of Vegetables at the Society's Exhibition at Nottingham in July last. Height 3 feet.—For further description see " Hogg's Gardeners' Year Book for 1871," page 73.

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A remarkable and distinct variety, as early as " Sangster's No. 1," of a fine colour and flavour when cooked ; the ripe seed is also of a bright grass-green colour, and well calculated to supply " Green Peas all the year round." Pods medium-sized : height about 2 feet 6 inches.

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For general crop this Blue Wrinkled Marrow will be found earlier, more prolific, and to have better filled pods than those of " Champion of England," to which variety it is quite equal in flavour, and against which it should be tried. Height above 4 feet

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The largest and finest podded variety yet raised : indispensable as an Exhibition Pea. The pods, which have been exhibited 7 inches in length, are more than twice the size of those of the parent Pea, " Laxton's Supreme," which during the last three seasons has taken nearly every first prize when shown in competition. It is also quite as early as that variety, and very prolific. As " Superlative " sometimes runs 7 or 8 feet in height, it should be slightly pinched in when the growth is about 5 feet. The colour and flavour of the Peas, when cooked, are excellent.

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MESSRS. HURST & SON,
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To whom the Trade can apply for Terms.

Editorial Communications should be addressed to " The Editor ;" Advertisements and Business Letters to " The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by William Richards, at the Office of Messrs. Bradbury, Evans, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said William Richards, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, November 11, 1871.

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

No. 46.—1871.] SATURDAY, NOVEMBER 18. { Registered at the General Post Office as a Newspaper. } **Price 5d.** POST FREE, 5½d.

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THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3s. 10d. for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

ROYAL BOTANIC SOCIETY, Regent's Park. The following are days fixed for the FETES next season:—

EXHIBITIONS of SPRING FLOWERS—WEDNESDAYS: March 13, April 10, May 8.

SUMMER EXHIBITIONS—WEDNESDAYS and THURSDAYS: May 22 and 23, June 19 and 20, July 10 and 11.

MUSICAL PROMENADES—WEDNESDAYS in May, June, July.

LECTURES—FRIDAYS in May, June, July.

By Order of the Council. WM. SOWERBY, Secretary.

THE PETERBOROUGH CHRYSANTHEMUM and FRUIT SHOW will be held on FRIDAY, November 24, and NOT on the 15th, as previously advertised. Schedules and Forms of F. G. BUCKLE, Secretary.

National Schools, Seer Green, near Beaconsfield.

THE REV. J. M. TAYLOR, VICAR, earnestly solicits AID towards the SUPPORT of these SCHOOLS. Living of small value. Population 400, almost entirely of the Labouring Class. Children in daily attendance, 40; on Sundays, 40. Donations kindly forwarded to the VICAR acknowledged in the *Gardeners' Chronicle.*

To the Trade.—Orders now Booked for

TUBEROSES, LILIUM AURATUM (not from Japan), and new kinds of AMERICAN POTATOS, on advantageous terms.

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MR. LAXTON'S NEW PEAS for 1872.—For particulars of Mr. Laxton's latest and remarkable Novelties in Garden Peas, which will be sent out by us this season in trial packets, see page 1508 of this week's *Gardeners' Chronicle*, or page 1476 of last week's Number.

HURST AND SON, 6, Leadenhall Street, London, E.C.

To the Seed Trade.

FOR SALE, in large quantities, the following PEAS:

Ne Plus Ultra	Hair's Dwarf Mammoth
Champion of England	Laxton's Early Prolific

All new seed and true stock. For price apply to

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MAGNIFICENT SEAKALE ROOTS, extra strong, for forcing, 12s. 6d. per 100; magnificent ASPARAGUS ROOTS, extra, for forcing, 10s. 6d. per 100.

WILLIAM HOOPER, New Wandsworth, S.W.

To Nurserymen and Others.

SEAKALE ROOTS for SALE, extraordinarily fine growth, 8s. per 100, cash on delivery.

And also some 3-yr. old ASPARAGUS ROOTS, for Forcing.

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PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to

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SUTTONS' EXHIBITION HYACINTHS.—For prices and full particulars, see p. 1480 of this day's *Gardeners' Chronicle.*

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In Collections to suit Large and Small Gardens.

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Planting Season.

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Seedling and Transplanted Forest Trees, &c.

W. P. LAIRD AND SINCLAIR, NURSERYMEN, Dundee, N.B., hold a large stock of the above, quotations for which may be had on application.

One and two-yr. Seedling LARCH particularly fine this season.

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TRANSPLANTED LARCH, SPRUCE, SCOTCH, SYCAMORE, BIRCH, OAK, ALDER, and HORSE CHESTNUT.

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JOHNSON AND WILLIAMSON, Market Gardeners, Lichfield.

Trade List, 1871-72,

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EDWARD SANG AND SONS, Nurserymen, Kirkcaldy.

WANTED, RED, WHITE, and BLACK CURRANTS, also named GOOSEBERRIES, good Saleable Plants.—Address, stating age and lowest price per 1000 or per 100 to

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WANTED, 500 good CUTTINGS of GAINES' YELLOW or VISCOSISIMA CALCEOLARIA. State price to J. C. HIGGS, Caversham Park, Reading.

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THE FLOWER MART, Villiers Street, Charing Cross, W.C.

FEATHER GRASS WANTED. — Samples and price to

HOOPER AND CO., Covent Garden, London, W.C.

PEACH TREES, in pots, for Forcing, 5s. to 7s. 6d. each. CATALOGUE free.

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TO THE TRADE.—Very superior grown trees of Standard and Dwarf-trained APRICOTS, PEACHES, and NECTARINES; Standard APPLES, PLUMS and PEARS; strong GOOSEBERRIES and CURRANTS. Prices upon application.

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Standard and Half Standard Apricots,

Of all the leading kinds. The Trade supplied.

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Pyramidal APPLES, PEARS, PLUMS, and CHERRIES, 1s. ea.

Dwarf-trained PLUMS and CHERRIES, 2s. 6d. each.

Very fine RED and BLACK CURRANTS, 2s. 6d. per dozen.

W. HOOPER, New Wandsworth, S.W.

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The Nurseries, Bridgwater.

Mulberries—Mulberries.

PONSFORD AND SON offer the above, by the dozen or hundred, fine, clean and healthy.

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ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.

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CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in pots. Descriptive Priced LIST on application to

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

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AMATEUR ROSE GROWERS should at once get my CATALOGUE. It contains all the good sorts, and the plants are the finest that can be produced.

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To the Trade Only.

ROSES, ROSES, ROSES.—Standards, 3 to 5 feet stems, fine heads, and consisting of all the most popular sorts, 75s. per 100; Half Standards, 2 to 3 feet stems, 60s. per 100.

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JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.

Nurseries, King's Acre, near Hereford.

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A PRICED LIST of the best Hybrid Perpetual Show ROSES; also a PRICED LIST of choice Variegated GERANIUMS, post free, on application to

ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

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N. LAWRENCE, Nurseryman, Station Street, Chatteris, Cambs.

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A. C. WILKIN, Tiptree, Kelvedon, Essex.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading

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Trade List of Palms, Ferns, &c.

J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send free his special cheap LIST of above, containing many good things.

To the Trade.

STUART AND CO., of Nice, and No. 5, Tavistock Row, Covent Garden, London, W.C., will shortly forward their WHOLESALE LIST for 1872, containing many NOVELTIES and CHOICE SEEDS.

To the Trade.

BETA CHILENSIS (True), the variety grown so extensively in all the London Parks and Public Gardens.—The Undersigned have a small quantity to offer. Price per ounce on application.

BUTLER, McCULLOCH AND CO., Covent Garden Market, W.C.

EVERY GARDEN REQUISITE

KEPT in STOCK at

CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

THE PINE-APPLE NURSERY COMPANY,

32, Maida Vale, Edgware Road, W.

JOHN BESTER, Manager of the Nursery and Seed Department.

The Company guarantee to their Customers Punctuality, Liberality, and Genuine Articles. The favour of a visit is earnestly solicited.

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PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON & SONS, "NEWTON" Nurseries, Chester.

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PHLOX VERNA, 10s per 100; ARABIS ALBIDA, 6s and 10s. per 100; MYOSOTIS SYLVATICA, 6s. per 100; MYOSOTIS S. ALBA, 8s per 100. Good stocky bedded stuff, for present planting.

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HOTEIA JAPONICA, nice roots, for forcing, in 6-inch pots, 6s. per dozen. For SALE, by

ROBERT H. POYNTER, Taunton, Somerset.

APPLE STOCKS, 2-yr., twice transplanted, good.

PEAR STOCKS, 2-yr., twice transplanted.

PEAR STOCKS, extra strong.

LARCH, 18 to 24 inches, 24 to 32 inches, 36 to 42 in., stout good roots

HAZEL, MAHONIA, TREE BOX, APPLE, PEAR and PLUM TREES, in Pyramids, Espaliers, Cordons, &c.

STRAWBERRY PLANTS, best varieties. For SALE, cheap, by

ROYERT H. POYNTER, Nurseryman, Taunton.

To Market Gardeners and the Trade.

FASTOLF RASPBERRY CANES, by the dozen, 100, or 1000, grown by the Advertiser, warranted true to name, and is the best of all summer-bearing varieties. Price on application

THOMAS C. EDMONDS, Market Gardener, Caister, next Great Yarmouth

To the Trade.

TRUE FASTOLF RASPBERRY, CARNATIONS, PINKS, DAISIES, VIOLETS, &c.

JAMES HUNT, having a stock of fine FRUITING CANES of the above, begs to offer packages containing 50 for 4s. 6d., 100 for 8s.

Golden Variegated DAISY, BELLIS AUCUBÆFOLIA, 3s. per dozen, 20s per 100.

DAISIES, of finest kinds, to name, 8s. per 100

New CLOVE, KING of CLOVES, vivid scarlet, the largest and finest, 5s. per dozen plants.

True old Crimson CLOVE, 3s. per dozen plants.

True old Flake CLOVE, fine, 4s. per dozen plants.

Finest mixed border CARNATIONS, 4s. per dozen plants.

SWEET WILLIAMS, HUNT'S very fine strain, 6s per 100

Finest show PINKS, to name, 25 pairs for 8s., 50 pairs for 14s. 100 pairs, 20s.

VIOLET, THE CZAR (double red), ARBOREA, &c., 8s. per 100.

GAZANIA RIGENS, hardy, 8s per 100.

All packages included. The above are fine strong healthy plants.

Apollo Nurseries, Great Yarmouth.

ROBERT NEAL, NURSERYMAN, Wandsworth Common, Surrey, S.W., begs to offer to Gentlemen who intend planting this season his large and varied stock of FRUIT, FOREST, and ORNAMENTAL TREES, Standard and Dwarf ROSES, RHODODENDRONS, CONIFERÆ, SHRUBS, &c., which are now in fine condition for removal. CATALOGUES may be had free on application

The Nurseries are within a few minutes' walk of the Clapham Junction, and Wandsworth Common Railway Stations.

Quicks and Forest Trees.

SAMUEL ROBINSON, Shaw House, Melbourne, near Derby, will offer, at his ANNUAL SALE, on MONDAY NEXT, the 20th inst. :—

A very large quantity of 3, 4, and 5-yr. transplanted QUICKS, suitable for Railway and Enclosure Planting; also about 50,000 LARCH, 3 to 5 feet; a larger quantity of a smaller size, fit for planting out.

20,000 to 30,000 SCOTCH, 2 to 3 feet; a few hundreds of ELMS and BIRCH, 7 to 10 feet; two or three lots of well feathered SPRUCE, 3 to 5 feet; and strong OAKS, of similar size

---

ROBERT CORNWELL AND CO. offer SILVER, SCOTCH, and AUSTRIAN FIRS, 3 to 5 feet; ARBOR-VITÆ, 3 to 6 feet; AUCUBAS, 1½ to 4 feet; PRIVET, 3 to 4 feet; Variegated and Green BOX, 2 to 4 feet; do. Edging; IRISH YEWS, 3 to 4 feet; LAURELS, 4 to 8 feet; bushy LAURUSTINUS, 2 to 3 feet, some extra handsome ones, 4 by 4 feet; Standard ROSES, strong GOOSEBERRIES, CURRANTS, and STRAWBERRIES of sorts; ASPARAGUS, 2, 3, and 4 yr.-old; RASPBERRIES, Cromwell's Seedling, 12s per 100; do. Prolific, 10s.; Carter's Prolific, 10s.; Red and White Antwerp, 10s; Fastolf, 10s.; Fillbasket, 10s.; Ead's White, 10s; Semper Fidelis, 20s. Bushy LAURELS, 4 ft., £1 per 100.

NOTE.—Opposite the Red Lion, Barnet, N.

Transplanted Scotch Fir.

J. ROY, JUN., NURSERYMAN, Aberdeen, has a very extensive stock of Transplanted SCOTCH FIR, of various growths; as the whole has to be cleared off this season he offers as under to the Trade :—

2-yr. SEEDLINGS, 2-yr. transplanted	5s. per 100.
3-yr. SEEDLINGS, 2-yr. transplanted	7s. 6d. per 1000.
Strong and fine do., 18 to 24 inches	10s. per 1000.
2-yr Seedling Native SCOTCH FIR	1s. per 1000.

Of RHODODENDRONS he has a very extensive stock, and to clear out he now offers his stock, which consists of upwards of 100,000 of PONTICUMS and HYBRIDS and other excellent kinds, from 9 inches to 2 feet high, at 8s to 30s per 100.

LIMES.—His stock of these is upwards of 100,000, from 3 feet to 9 feet. Prices will be forwarded on application: they are all clean-grown and fine straight stems

1871.—Planting Season.—1871.

THOMAS KENNEDY AND CO. offer the following Transplanted TREES, &c., which are healthy, well grown, well rooted, and in excellent condition for removal. Prices on application.

100,000	ASH, Common, from 1 to 1½, 1½ to 2, 2 to 3, and 3 to 5 feet.
100,000	ASH, Mountain, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000	ALDER, Common, 1½ to 2, 2 to 2½, and 3 to 5 feet.
150,000	BEECH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
200,000	BIRCH, 1 to 1½, 1½ to 2, 2 to 2½, and 3 to 4 feet.
30,000	BLACKTHORN or SLOE, 1½ to 2, 2 to 2½, and 2½ to 3 ft.
100,000	HAZEL, Common, 1 to 1½, 1½ to 2, and 2 to 3 feet
50,000	HORNBEAM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
	LIMES.—An immense stock of fine handsome Trees, 2 to 3, 3 to 4, 5 to 6, and 8 to 10 feet.
200,000	LARCH FIR, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
1,000,000	SCOTCH FIR, grown from true native saved seed, the plants twice and three times transplanted, 9 to 12 inches, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
500,000	SPRUCE FIR, Norway, all three times transplanted, 9 to 12, 12 to 15, 15 to 18 inches, and 1½ to 2 feet.
50,000	SILVER FIR, 6 to 9, and 9 to 12 inches
100,000	PINUS AUSTRIACA, 9 to 15, and 15 to 18 inches.
100,000	PINUS LARICIO, true Corsican, 6 to 9, 9 to 12, and 12 to 15 inches.
150,000	OAK, English, 1 to 1½, 1½ to 2, 2 to 2½, 2½ to 3, 3 to 4, and 4 to 5 feet.
200,000	PRIVET, Evergreen, 1½ to 2, 2 to 2½, and 3 feet.
50,000	SYCAMORE or PLANE, 1½ to 2, and 2 to 3 feet
1,000,000	THORNS or QUICKS, of all sizes.
50,000	WILLOWS, Huntingdon, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000	WHIN or GORSE, 1½ to 2 feet.

Besides the above, they have an extensive general stock of FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., which they are selling at moderate prices.

Railway Station Nurseries, &c., Dumfries.—November, 1871.

W. VIRGO AND SON, Wonersh Nurseries, near Guildford, Surrey, respectfully call the attention of Noblemen, Gentlemen, Nurserymen and Others, to the undermentioned stock; the whole of which is particularly strong and healthy, and in excellent condition for removal :—

Standard, Half-Standard and Dwarf Roses, upwards of 300 varieties; Standard, Pyramid and Dwarf Apples, extra fine; ditto Pears; ditto Plums; Dwarf-trained Apples, Pears, Plums, Peaches and Nectarines Gooseberries; Black, Red and White Currants; Filberts, extra fine.

EVERGREENS.

Common Laurel, 2 to 4 feet.
Portugal Laurel, 2 to 4 feet.
Green and Variegated Box, 2 to 4 feet.
Green Holly, 2 to 3 feet.
Yew, 2 to 4 feet
Siberian and Chinese Arbor-vitæ, 3 to 4 feet.
Pinus austriaca, 2 to 5 feet.
Spruce Fir, 2 to 6 feet, fine and bushy.
Berberis aquifolia, 1 to 1½ foot.
American Arbor-vitæ for hedges, 3 to 6 feet
Evergreen Privet, 2 to 3 feet, fine.
Hornbeam, 3 to 4 feet.
Cupressus Lawsoniana, 3 to 4 feet.

ORNAMENTAL TREES.

Spanish and Horse Chestnut, 6 to 8 feet
Wych Elm, 6 to 8 feet.
Double, Scarlet, White and Paul's New Thorn, 6 to 8 feet
Black Italian Poplar, 6 to 8 feet
Turkey, English and Scarlet Oak.
Hornbeam, Laburnum, Lime, Norway Maple, Lombardy, Ontario, White or Abele, Balsam, &c.
Sycamore, Sumach, Acacia, Weeping Willow and Birch, 6 to 8 feet.

Transplanted FOREST TREES for Covert and Copse Planting.

Ash, 2 to 3 feet.
Alder, 3 to 5 feet.
Birch, 3 to 5 feet.
Beech, 2 to 3 feet.
Spanish Chestnut, 1½ to 2 feet.
Horse Chestnut, 3 to 5 feet.
Spruce Fir, 2 to 3 feet.
Scotch Fir, 1 to 1½ foot, and 2½ to 3½ feet.
Hazel, 2 to 3 feet.
Hornbeam, 2½ to 3 feet
English Oak, 2½ to 3 feet.
Sycamore, 3 to 4 feet.
Plum-leaf Withy, 3 to 5 feet.

10,000 clean-grown CRAB STOCKS.

Strong transplanted QUICK, 2 to 2½ feet.

Priced CATALOGUE and samples on application.

The Nurseries are 1½ mile from Bromley Station, London, Brighton, and South Coast Railway; 2½ miles from Shalford Station, South-Eastern Railway; and 4 miles from Guildford Station, London and South-Western Railway. Goods delivered free to the above stations.

Forest Trees.

WOOD AND INGRAM offer as follows, very fine stuff:—

		Per 1000 —s.	d.
OAKS, 3-yr. Seedlings		7	6
" 3 to 4 feet		30	0
" 4 to 5 feet		35	0
ELM, English, 1-yr. Seedlings		5	0
" " 2-yr Seedlings		7	6
" Huntingdon, 8 to 10 feet	per 100	50	0
HORSE CHESTNUTS, 3-yr. Seedlings		8	0
" " 2 to 3 feet		12	0
OAK, Evergreen, 1-yr. Seedlings		10	0
" " 3 yr. Seedlings		15	0

Samples sent on application.

The Nurseries, Huntingdon.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.

WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.

WILLOW CUTTINGS for Basket Makers' purposes.

BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.

WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"THE SALIX, OR WILLOW," second edition, post free, 1s.; or of SIMPKIN, MARSHALL AND CO., London.

FOREST TREES.

Transplanted ENGLISH OAK, extra strong, from 3 to 4 and 4 to 5 feet.

Transplanted BEECH, 2 to 3 and 3 to 4 feet.

" FIRS—LARCH, 1 to 1½ foot, 2 to 2½, and 3 to 4 feet.

" " SCOTCH, 1 to 1½ foot, and 2 to 3 feet.

" " SPRUCE, very fine, 1½ to 2 and 2 to 3 feet.

" WHITETHORN or QUICK, extra strong.

" EVERGREEN PRIVET, extra strong.

The above in large or small quantities. Samples and prices on application to

FREDERICK PERKINS, Bedford Road Nurseries, Northampton.

THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

IS STILL AT

WILLIAM PAUL'S.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, HERTS, N.

PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

THE ROSE GARDEN, Second Edition, 6s. 6d.; ROSES IN POTS, Third Edition, 2s.

"The Best Catalogue."—*Vide "Horticulturist," October*, 1870.

GRATIS and POST FREE, a CATALOGUE of

DUTCH BULBS,

Fruit Trees, Dried Flowers, and General Autumn Requirements.

DICK RADCLYFFE & CO.,

SEEDSMEN, HORTICULTURAL DECORATORS, and GARDEN FURNISHERS,
129, HIGH HOLBORN, W.C.
SEED GROUNDS, ERFURT, PRUSSIA.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

Fruit Trees, &c., at Co-operative Prices.

STRONG TREES of the undermentioned, supplied in assorted half-dozen parcels, all good named varieties, at the following prices :—

APPLES—Standards, 6s.
„ Dwarfs, or Bushes, 5s.
„ Pyramidal, 7s.
„ Trained, 10s.
APRICOTS, NECTARINES, and PEACHES, Trained (very strong), 15s.
PEARS—Standards, 7s. 6d.
„ Pyramidal, 8s.

PEARS—Trained, 12s.
PLUMS—Standards, 8s.
„ Pyramidal, 9s.
„ Trained, 14s.
„ Dwarfs, 5s. 6d.
CHERRIES—Standards, 6s.
„ Dwarfs, 5s.
„ Trained, 10s.

Shrubs, Plants, and Cut Flowers, equally cheap. Prices for quantities, or by the 100, on application.

Choice CUT FLOWERS BOUGHT in any quantity.

J. POUNCE, "The Flower Mart," Villiers Street, Charing Cross, London, W.C ; and Hendon, N.W.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION ;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

To the Trade.

TO BE DISPOSED OF, 20,000 EVERGREEN PRIVET, 2 to 3 feet, bushy, at 20s. per 1000.
8000 GREEN BOX, 1½ to 2 feet, 18s. per 100.
3000 Dwarf SAVIN, at 10s. per 100.
2000 AMERICAN ARBOR-VITÆ, 2 to 2 feet, at 10s. per 100.
50 bushels JERUSALEM ARTICHOKES, at 2s. 6d. per bushel.

WILLIAM RUSHFORTH, Woodhouse Hill, near Leeds.

Ornamental Trees and Shrubs.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, beg to intimate that in consequence of a large portion of their Ornamental Grounds having been Disposed of for Railway and Building purposes, they are now prepared to SELL at reduced prices their splendid stock of ORNAMENTAL TREES and SHRUBS. These being of all ages and sizes, are particularly well suited for giving immediate effect in the Formation and Improving of Ornamental Parks, Pleasure Grounds, &c. Inspection invited.

Planting Season.

TO PLANTERS OF PUBLIC PARKS, CEMETERIES, OR PRIVATE GARDENS.

WILLIAM SKIRVING solicits inspection of his unrivalled Stock of choice EVERGREEN SHRUBS, FOREST and ORNAMENTAL TREES, which he is disposing of at very moderate prices, in order to clear the land for building purposes.

Among the Evergreens are many thousands of fine specimens of Variegated and Broad-leaved GREEN HOLLIES, and an immense stock of all other HARDY EVERGREEN FLOWERING SHRUBS and ORNAMENTAL TREES generally cultivated in Britain, many of which are of large size, well calculated for giving immediate effect.

To Gentlemen wishing to make new or improve old Pleasure Grounds this is an excellent opportunity, for such an extensive and well-grown stock of Trees and Shrubs is seldom to be met with.

Nursery and Seed Stores—Walton-on-the-Hill.
Seed Warehouse—15, Queen Square.
Liverpool, September, 1871.

MILFORD NURSERIES, near Godalming.

For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

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For RHODODENDRONS and other AMERICAN PLANTS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For STANDARD and HALF-STANDARD ROSES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For NEW JAPANESE AUCUBAS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For JAPANESE NOVELTIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For CHEAP EVERGREENS and SHRUBS for COVER PLANTING or SHRUBBERIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

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For EXTRA TRANSPLANTED or QUARTERED FOREST TREES for Planting Belts or Shrubberies, see MAURICE YOUNG'S New Descriptive CATALOGUE.

Forwarded on application enclosing stamp.
Milford Nurseries, near Godalming.

Autumn Sowing.

ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.

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This Company was originally formed by, and is under the direction of, Agriculturists—circumstances that have earned for it another title—viz.,

"THE TENANT-FARMERS' MANURE COMPANY."

Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents.

C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY.
(ESTABLISHED 1840),

Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.

116, Fenchurch Street. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.

REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

CAMELLIAS and AZALEAS.—Good plants, with and without buds, at 15s., 18s., and 30s. a dozen, fine varieties. Package gratis for cash with order.

J. H. LEY, Exotic Nursery, Croydon, S.E.

Special Cheap List of Palms, Ferns, and Stove Plants.

J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send above, with general CATALOGUE, free on application.

Moor Edge Nurseries, Tansley, near Matlock, DERBYSHIRE.

JOSEPH SMITH, JUN., begs to announce that he holds large stocks of FOREST TREES, COVERT and HEDGE PLANTS of a moderate size, suitable for general planting; also EVERGREEN and FLOWERING SHRUBS, &c., of which CATALOGUES will be forwarded free on application, and special offers given for large quantities.

SURPLUS STOCK of the following to be SOLD, cheap :—PRINCE ALBERT, LINNÆUS, and VICTORIA RHUBARB; FASTOLF RASPBERRIES; 4-yr. old ASPARAGUS; SKIMMIA JAPONICA; CLEMATIS LANUGINOSA; CUPRESSUS LAWSONIANA; PERNETTYA SPECIOSA, the berry-bearing variety; AUCUBA LIMBATA, bicolor and viridis; SALIX BABYLONICA SALOMONII, the hardy Weeping Willow. Prices, &c., on application.

ISAAC DAVIES, Nurseryman, Ormskirk.

MAGNIFICENT PLANTS of PINUS AUSTRIACA, 4 times transplanted, 4 to 5 feet (perfect specimens); smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
SCOTCH FIRS, extra fine, 3 times transplanted, 4 feet; smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, by the 1000.
SILVER FIRS, very fine plants, 3 times transplanted, 4 feet.
COMMON LAURELS, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet, by the 100, 1000, or 10,000.

CATALOGUES and Prices on application.

WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C. ; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

TURF, TURF, TURF.—Good tough Turf, at 12s. per 100, delivered free at Surbiton Station. Apply by letter only to Mr. HORRELL, 1, South Place, Finsbury, E.C.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy Thrip, Red Spider, Green and Black Fly, and Mealy Bug, and burns without the assistance of blowing, and is entirely free from paper or rags. Price 3s. 6d. per lb., carriage free. A reduction in price for large quantities.

To be had of Messrs. ROBERTS AND SONS, Tobacco Manufacturers, 112, St. John Street, Clerkenwell, E.C., of whom Copies of Testimonials may be obtained ; and of all Seedsmen and Nurserymen

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STEVENSON'S ABYSSINIAN MIXTURE,
For the Destruction of all Insects Infesting Plants.

TRADE MARK.

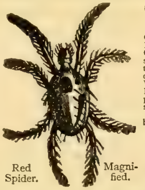
Entered at Stationers' Hall.

Surpasses all other remedies for—

1. EFFECTIVENESS. { Killing easily Mealy Bug, Brown and White Scale, Thrips, &c.
2. EASE OF APPLICATION { To be used with a Syringe, or in any other convenient way.
3. CLEANLINESS. { Leaving the foliage as though it had been polished.

Sold by all Nurserymen and Seedsmen in the United Kingdom, in bottles, 1s. 6d., 3s., 4s. 6d., and 5s. 6d. each, with full directions for use.

Sole Manufacturer, F. STEVENSON, Lark Hill, Timperley, Cheshire.



Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT CANDLE COMPANY (Limited),
Battersea, London, S.W.

JAMES PHILLIPS AND CO. beg to submit their prices as follows :—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultura Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15, 20 by 16, 20 by 18.

	16 oz. to the foot.	21 oz.
Fourth quality	15s. 0d.	19s. 6d.
Third quality	17s. 0d.	22s. 6d.
Seconds	18s. 6d.	26s. 0d.
English	20s. 0d.	27s. 0d.

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.
Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths. s. d.	3rds. s. d.	2nds. s. d.
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 by 10	13 by 10	14 by 10	15 by 10			
13 by 11	14 by 11	..	..			
14 by 12	15 by 12	15 by 11	16 by 11	15 0	17 0	18 6
18 by 12	19 by 12	16 by 12	17 by 12			
16 by 13	17 by 13	20 by 12	..	16 to 17 oz. to the foot.		
16 by 14	20 by 13	18 by 13	..			
	17 by 14	18 by 14	..			
	20 by 14					

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12s. 6d.
by 6	8½ by 6⅜	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13s. 6d.

Boxes 2s. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS. PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.

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Russia Mat Merchants.

MESSRS. G. D. MARENDAZ AND FISHER, importers of ARCHANGEL and St. PETERSBURG MATS, dealers in TANNED GARDEN NETTING, TIFFANY, LABELS; TARRED and other TWINES, LINES, &c.

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RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100s. ; Petersburg, 60s. and 80s. ; superior close Mat, 45s., 50s., and 55s. ; packing Mats, 20s., 30s., and 35s. per 100 ; and every other description of Mats at equally low prices, at

J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from 2d. to 5d. per yard, advancing ¼d.
54-inch Hessian and Scrim, 3d., 3½d., 4d., 4½d. and 5½d.
72 „ „ „ 4½d., 5½d., 6d., 6½d., and upwards.

J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.

They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.

Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from

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A remittance from unknown Correspondents will have attention.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.

WOOL NETTING, 2 yards wide and 1s. 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1s. 10d. per yard.
Three yards wide	2s. 10d. per yard.
Four yards wide	3s. 10d. per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d. to 8½d. p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾d. and 8¾d. per yard.

ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.; and of all Seedsmen in London or the Country.

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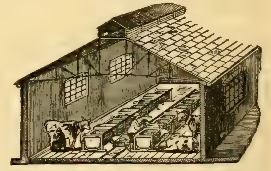
SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size. Prices from 16s. 6d. [Prices from 35s.
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.

ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

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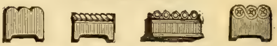

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

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Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

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ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheets of plain or more elaborate designs, with prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

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SILVER SAND, fine or coarse grain as desired. Fine 14s., Coarse 17s. per Ton. In Truck Loads 1s. per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2s. per Ton extra. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries. KENT PEAT or LOAM supplied at lowest rates in any quantities.

F. AND G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

New English Rose (Hybrid Perpetual Climbing),
PRINCESS LOUISE VICTORIA.

WM. KNIGHT, Floral Nursery, Hailsham, the raiser of this ROSE, will send it out this month (in strict rotation), in good plants, at 7*s.* 6*d.* each, three for 21*s.* Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

Coloured Drawing, post free, for 12 stamps.
Descriptive Priced CATALOGUES free on application.

Notice.

H. LANE AND SON'S Descriptive CATALOGUE of ROSES, FRUIT TREES, VINES, CONIFERS, DECIDUOUS and EVERGREEN TREES and SHRUBS, RHODODENDRONS, AZALEAS (Indian), CAMELLIAS, &c., may now be had free on application. The prices will be found moderate, combined with quality. An inspection of the growing stock is earnestly solicited.

The Nurseries, Great Berkhamsted, Herts.

New Tea-scented, Noisette and other Roses.

JOHN WATERER AND SONS are offering strong plants, in pots, at 12*s.* per dozen, comprising the following sorts:—MARECHAL NIEL, CLIMBING DEVONIENSIS, BELLE LYONNAISE, Chamois, Jeanne d'Arc, Le Mont Blanc, Madame Ducher, Madame Levet, Tour Bertrand, Lamarque a fleurs Jaunes, Reve d'Or, Isabella Sprunt.

CLEMATIS JACKMANII, | CLEMATIS RUBRA VIOLACEA, CLEMATIS STANDISHII, and others, 12*s.* per dozen, very strong stuff. Trade price on application.

American Nurseries, Bagshot, Surrey.

TEA-SCENTED ROSES, in pots.—The largest stock of Tea-scented Roses in the Kingdom. They may be had in small pots, also established in 6-inch pots, for forcing and greenhouse culture.

WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants CATALOGUES gratis on application.

HUNT'S superb SWEET WILLIAM, in 24 varieties, seed or plants, as per former Advertisement.

Crown Nursery, Reading.

Geraniums to Offer.

CHOICE GOLD and SILVER TRICOLORS, 18 new and distinct sorts, including PRINCE of WALES (Carter's) and LASS O' GOWRIE, for 30*s.*

12 NEW and CHOICE GOLD and BRONZE for 15*s*
12 NEW DOUBLES for 6*s*
12 NEW ZONALS of 1871 for 12*s* All package free

A List of Names of each Collection sent on application to
WM. POTTEN, Seedsman and Florist, Sissinghurst, Staplehurst, Kent.

Lilies of the Valley.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland, have yet to offer a few thousand extra fine and strong 3-yr. old CONVALLARIA CLUMPS Price on application. As now is the best season for sending them out, early orders are solicited.

JEAN VERSCHAFFELT'S New Descriptive CATALOGUE for 1871-72, containing descriptions of a great number of New and Rare Plants, is just issued, and can be obtained gratis on application, either to himself or to his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E C. All orders should be sent direct to

JEAN VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.

JOHN WATERER AND SONS, Bagshot, Surrey, are the EXHIBITORS of RHODODENDRONS at the ROYAL BOTANIC GARDENS, Regent's Park. Their Descriptive CATALOGUE of these Plants is now ready, and may be had on application, by letter, addressed to Bagshot.

☞ The Catalogue fully describes colours, prices, &c., of the Rhododendrons.

Novelties of the Season.

SWEET-SCENTED RHODODENDRONS and AZALEAS, raised by ISAAC DAVIES, and awarded First-Class Certificates of Merit at the Spring Flower Shows of Manchester and Liverpool. A descriptive priced LIST forwarded to any address on application to

ISAAC DAVIES, Nurseryman, Ormskirk.

Chrysanthemums, both New and Old.

H. CANNELL begs to inform his friends and Customers that he has now the finest lot of STOCK PLANTS in 60's perhaps ever seen, consisting of 300 of all the most popular varieties, and about three dozen of each kind are continually kept on hand. Every kind is planted out and bloomed every season, on purpose to keep the whole collection perfectly true. They are now in fine condition, and all admirers of this family are invited. For price of Plants, Rooted Cuttings, and Cuttings, see H. C.'s FLORAL GUIDE, which also contains a great deal of valuable information, including how to grow them to the highest perfection for decoration. Sent free for four stamps.

New Florist Flower and Florist Flower-Seed Merchant, Woolwich.

Chrysanthemums.

ADAM FORSYTH begs to offer several thousand, large flowering and POMPONS, in 48's, well set with flower-buds, suitable for either Conservatory or outdoor decoration; 6*s.* and 8*s.* per dozen.

A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

Brunswick Nursery, Stoke Newington, N.

Liliums.

STEPHEN BROWN offers the following rare and beautiful sorts:—

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
Auratum Beauty	21	0	Leichtlinii	10	6
,, picta	15	0	Tenuifolium .. .. 5*s.* to	7	6
Brownii	7	6	Tigrinum splendens ..	7	6
Lancifolium atrorubens (cruentum), true, 2*s.* 6*d.* to	5	0	Vestalis	3	6

Choice selections, from 75 superb varieties, 5*s*, 9*s.*, 12*s.*, 18*s.*, and 24*s.* per dozen.

GLADIOLI.

An extensive collection of the finest choice selections, 3*s.*, 5*s.*, 9*s.*, 12*s.*, 20*s.*, and 30*s.* per dozen.

Also superb new varieties of 1870. See CATALOGUE.

The BULB CATALOGUE, Illustrated, Cultural, and Descriptive, free for six stamps, gratis to customers.

Seed, Bulb, and Plant Establishment, Weston-super-Mare.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them on terms unusually advantageous. Where selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. The plants we have sent out in execution of such orders have, we are informed, given unmixed satisfaction. The following list, with prices annexed, will be some guide to intending purchasers:—

Dendrobium Falconeri, 21*s.* to 63*s.* each; D. Wardianum, 63*s.* to 105*s.*; D. chrysotis, 21*s.* to 63*s.*; D. McCarthiæ, 42*s.* to 84*s.*; D. heterocarpum, 5*s.* to 21*s.* D. moniliforme, 10*s.* 6*d.* to 21*s.*; D. transparens, 5*s.* to 21*s.*; D. Devonianum, 7*s.* 6*d.* to 21*s.*; D. nobile, 5*s.* to 105*s.*; Odontoglossum grande, 7*s.* 6*d* to 10*s.* 6*d.*; O. Insleayi, 7*s.* 6*d.* to 10*s.* 6*d.*; O. citrosmum, 7*s.* 6*d.* to 10*s.* 6*d*; O. luteo-purpureum, 25*s.*; O. gloriosum, 25*s*; O. Alexandræ (Bluntii), 21*s.* to 63*s.*; O Pescatorei, 21*s.* to 63*s.*; O. Rossi superbum, 21*s* to 31*s* 6*d.*; O. crocidypterum, 42*s*; O platyodon, 31*s.* 6*d*; O. ramulosum, 31*s.* 6*d.*; O. Bictonense, 15*s.*; O Uroskinneri, 10*s* 6*d.* to 15*s.*; Vanda cœrulea, 10*s.* 6*d.* to 105*s*; Pleione Wallichii, 3*s.* 6*d* each, 30*s.* per dozen; P lagenaria, 5*s.* to 10*s.* 6*d.*; Cypripedium hirsutissimum, 7*s* 6*d.* to 21*s.*; Cattleya Mossiæ, 7*s.* 6*d* to 21*s*; C maxima, 31*s.* 6*d*; C Trianæ, 15*s*; C. Warneri, 21*s*; Barkeria Skinneri, 10*s.* 6*d* to 63*s.*; B. spectabilis, 10*s* 6*d.* to 63*s*; Calanthe vestita, 3*s.* 6*d* to 21*s*; C Veitchii, 10*s* 6*d.* to 42*s.*; Cœlogyne cristatum, 10*s* 6*d* to 63*s.*; Oncidium Papilio, 7*s.* 6*d.* to 10*s.* 6*d.*; O. Krameri, 21*s*; O. Lanceanum, fine variety, 15*s.*

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

Dutch Flower Roots.

G. M. KEMP-WELCH'S CATALOGUE of the above is just published, and will be sent free by post on application. The Bulbs are of the finest quality, and moderate in price. Early orders will oblige. The Catalogue is of a convenient size for the pocket.

Seedsman and Florist, Cotham, Bristol.

CARTER'S
"SUBURBAN" COLLECTION

Of choice FLOWER ROOTS for the Decoration of the Drawing-room and Garden contains—

12 HYACINTHS, choice named
12 ,, mixed, bedding
36 NARCISSUS—Poeticus
6 ,, Double Roman
6 ,, Paper White
36 ,, var. Sion
12 ,, Incomparable
24 TULIPS, extra fine, mixed, Double
24 ,, ,, Single
36 SPANISH IRIS, extra choice, mixed
50 CROCUS—Blue
50 ,, Striped
24 ,, White
24 ,, Large Yellow
12 GLADIOLUS BRENCHLEYENSIS
4 CROWN IMPERIALS
6 LEUCOJUM ÆSTIVUM
24 Extra fine mixed ANEMONES
12 CAMPERNEL JONQUILS

Price 25*s.*, packing and carriage free. Half the above, including packing, 12*s.* 6*d.*

JAMES CARTER AND CO., Seedsmen to H M the Queen and H.R.H the Prince of Wales, 237 and 238, High Holborn, W C.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), beg to draw attention to their DUTCH BULBS, collections of which, amounting to 21*s* and upwards, they forward carriage paid to any Railway Station in England and Wales. Their Descriptive CATALOGUE, containing Cultural Notes for the Guidance of the Amateur, sent post free on application.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), supply GARDEN REQUISITES of every description.

14, Tavistock Row, Covent Garden, London, W.C.

CROYDON.
A. HENDERSON EAST SURREY SEED WAREHOUSE
ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon

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WHEELERS' BROCKWORTH PARK PEAR.

J. C. WHEELER AND SON Glo'ster.

"The handsomest and most valuable dessert Pear of recent years."

J. C. WHEELER AND SON offer fine young PYRAMIDS of this magnificent PEAR, at 10*s.* 6*d.* each, and a few DWARF-TRAINED TREES, at 15*s.* each. It obtained a First-class Certificate from the Fruit Committee of the Royal Horticultural Society, on September 20, 1870, and was exhibited at the Royal Horticultural Gardens on October 4, 1871, when it was again greatly admired. It is large, handsome, and fine flavoured, and is, without doubt, a great acquisition to our choicest and best dessert Pears. It may fairly be described (when grown against a wall, with a good aspect) as one of the handsomest, largest, and best dessert Pears ever introduced.. It ripens the end of September and beginning of October.

J. C. WHEELER & SON have already received orders for it from nearly all parts of the United Kingdom; from Germany (for the Emperor's gardens at Sans Souci, Berlin); from France; and from the United States. Orders will be executed in rotation as received, the earliest getting the best plants.

J. C. WHEELER AND SON, Nurserymen,
Gloucester, and 59, Mark Lane, London.

The Fairy Apple.

JOHN JENNINGS has fine PYRAMIDAL TREES, with bloom-buds, of the above beautiful dessert Fruit to DISPOSE OF, at 5*s.* each. The fruit is in season from December to April.

"Destined and worthy to take its place amongst the worthiest of its kind."

Nurseries, Shipston-on-Stour.

Cerasus Watererii, New Double Japanese Cherry.
ORIGINALLY INTRODUCED by MR. FORTUNE.

JOHN WATERER AND SONS are just now sending out the above new plant. The colour is white, edged with pink, very large double, and sweet scented. We recommend it as a very desirable plant. Price 10*s* 6*d* each, or 6 for 42*s.*

American Nurseries, Bagshot, Surrey.

SUTTONS'
FRESH IMPORTED
DUTCH FLOWER ROOTS,
CARRIAGE FREE.

New Varieties, specially selected for Exhibition purposes, 25 choice Bulbs for 40*s.*, 12 choice Bulbs for 20*s.*, Carriage Free.

From R. PEARSON, Esq., Jun., *Altofts.*

March 28, 1871.—"My brother, Mr. H. Pearson, took First Prize for Hyacinths at the Pontefract Show, with Bulbs supplied by you."

			£	s.	d.
100	HYACINTHS,	in 100 sorts, Carriage Free	£4	4	0
50	,,	in 50 sorts, Carriage Free	2	2	0
25	,,	in 25 sorts, Carriage Free	1	1	0
12	,,	in 12 sorts, choice	0	12	0
12	,,	in 12 sorts, good	0	9	0

Suttons' Superb Hyacinths.

SUTTONS' MIXED HYACINTHS
For Beds or Open Borders.

2s. 6d. to **4s.** per doz., **18s.** to **30s.** per 100.

For further particulars, see SUTTONS' AUTUMN CATALOGUE for 1871, price 1*s.*, gratis to customers.

THE FORWARDEST PEA KNOWN IS

SUTTONS' RINGLEADER,
Price 1s. 6d. per quart.

November is an excellent month for sowing.

SUTTON AND SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN, and H.R.H. THE PRINCE OF WALES,
READING.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

Fern and Alpine Catalogues.

A. STANSFIELD AND SON will forward their NEW CATALOGUE of FERNS, No. 9, for 1871-72, containing 40 pages, with descriptive and cultural remarks, for three penny stamps; also their HERBACEOUS and ALPINE PLANT LIST for 1872, containing more than 1000 species, for two stamps.

Vale Nurseries, Todmorden, Lancashire.

Phalænopsis grandiflora.

MR. WILLIAM BULL is glad to inform those Orchid Friends who from time to time have seen the Phalænopsis arrive at his Establishment by thousands in a dead state, and who have sympathised with him in his great losses of these plants, that at last, through Cases of improved construction, he has succeeded in importing PHALÆNOPSIS GRANDIFLORA in the most perfect condition, with scarcely a dead plant among them; indeed, Mr. W. B. can now offer this magnificent Orchid, in beautiful plants, either singly, by the dozen, or hundred; but intending purchasers are recommended to see the plants, for Mr. W. B. has no hesitation in saying it is the finest lot of Phalænopsis that has ever been imported into this country.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester.
Nurseries: Fairfield, near Manchester.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. Hooker, C.B., F.R.S.
W. Wilson Saunders, F.R.S.
Rev. M. J. Berkeley, F.L.S.
M. Decaisne
G. F. Wilson, F.R.S.
Dr. Moore, of Glasnevin
Professor Reichenbach, of Hamburgh
Rev. S. R. Hole, M.A.
E. J. Lowe, F.R.S.
James McNab, of Edinburgh.
Robert Hogg, LL.D.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, NOVEMBER 18, 1871.

SO much has been done of late years in the search for and study of variegated plants, that it might be expected that we should now pretty well understand the phenomena and causes of Variegation. Instead of this, however, we are still only at the threshold of a large subject, and new cases are every now and then observed which show us that no one explanation will answer for all the kinds of variegation, and that in all probability more than one principle is concerned in producing them. There are in the first place some plants whose normal condition is to be variegated, and in which the absence of variegation would be a deviation from their natural state, as, for example, such plants as Bertolonia margaritifera, where the leaf is sprinkled with well-defined pure white spots. There are others where, although the variegation is due to a natural sport, it is constant, as in the Golden Yew and Holly; others where, although generally present, it varies in quantity in every different plant, as in the Aucubas and Crotons. In others, again, it is manifestly a symptom of weakness of constitution, disappearing when the plant by treatment becomes strong and healthy. There is yet another kind where, like Bob Acres' valour, the variegation comes and goes, and as with him, so with us, the advice of no horticultural Sir Lucius can enable us to hold it fast when we have it. We had the opportunity lately of seeing two remarkable instances of this, both producing a nearly absolutely white variegation, which in both is temporary and periodical, but each differing from the other so essentially in their particulars that it seems impossible to refer them to the same cause; at all events, if due to the same physiological principle, there must be some important difference in the exciting cause which sets it in operation, or in the constitution of the different trees in which it appears.

The first case was that of an Abies Douglasii, which we saw at Castle Kennedy, one of the seats of the Earl of Stair. It was almost white from head to foot. In the early part of the season we were told it was absolutely so; so much so that at a distance it might be mistaken for a white sheet, or a white Hawthorn in luxuriant bloom. Mr. Fowler, the gardener at Castle Kennedy (whom, by the way, we cannot mention without paying a passing tribute of admiration to the rare ability he has displayed in all matters connected with his profession, and with much outside of it), informed us that he picked it out from a group of seedlings some years since; it is now a well-grown plant, about 8 feet high, and constantly exhibits the same phenomena, as do also a number of other plants raised from it by grafts or cuttings. When it first puts out its leaves they are perfectly white, and they continue so until the end of August, by which time a shade of green begins to spread over them; it first appears at the base of the older leaves, gradually creeps up towards the tip, doing the same successively with all the leaves until by the end of September the variegation is wholly, or almost wholly gone. In this case there is obviously at first a want of chlorophyll in the leaves, which is gradually supplied as the plant is strengthened by the summer's growth; there is, however, nothing the matter with the tree itself—it is strong and healthy as any Douglas Fir around it, and so are the young plants raised from it. It is not as if the tree was originally weak, and on acquiring strength threw off the pallor of ill health; the same thing is repeated year after year with the unvarying regularity of a normal action inherent in the plant.

The other case to which we refer was very much the converse of this. It occurs in an Oak of about 20 feet high, growing in the policy of Munches, or the stewartry of Kirkcudbright, the property of Mr. Wellwood Maxwell, the member for the stewartry—a place which, besides the most lovely scenery, contains many things most interesting to an arboriculturist, some of which we may at some other time take occasion to notice. This tree shows nothing peculiar until the end of August, when, in many places, it throws out young shoots of the purest white. We cannot say that it has the beauty of the white Douglas Fir at Castle Kennedy, the white only appearing here and there, giving the tree a speckled or piebald appearance, but the question is not of their respective beauty; it is why does the one show its periodical variegation or pallescence in the spring, and the other in the autumn? For ourselves, we take no shame to say that we do not know, but perhaps some of our readers may; and we shall be glad to receive instruction from any of those who do.

The Provincial Show of the Royal Horticultural Society is, we hear, to be held next year in Birmingham. The Lower Grounds at Aston have, on due consideration, been selected by the Council as the site of the exhibition, and from the descriptions of these grounds which have from time to time appeared in our columns, it will be evident that the locality has been well chosen. Birmingham is a most important centre, from a horticultural as well as a commercial point of view, and there is every reason to believe that if judicious arrangements are made, and properly carried out, the result will be a satisfactory one. Our local contemporary, the *Midland Counties Herald*, states that—

> "Already many influential residents of the town and neighbourhood have expressed their willingness to become members of the local committee which will be formed; and others who are interested in horticulture, and may be willing to join this committee, are invited to send in their names forthwith to the secretary *pro tem.*, Mr. Alexander Forrest, Cherry Street. It is very desirable that the local committee should consist of gentlemen representing not only the town of Birmingham, but Warwickshire and the adjoining counties, and we have no doubt this will be the case. In fact, the forthcoming visit of our National Horticultural Society should be considered in the light of a visit to the Midland Counties. So soon as the preliminaries are in a sufficiently forward state, a public meeting will be held for the purpose of appointing the committee and officers, and arranging for the creation of a fund for the purpose of offering extra prizes, &c. At Manchester, Oxford, Nottingham, and elsewhere, these country shows, under the auspices of the Royal Horticultural Society, have given a great stimulus to horticultural pursuits in those localities. Last year the show at Nottingham was the most interesting yet held by the Society, and we see no reason why the one to be held at Birmingham should not be equally satisfactory."

We understand that a most influential committee has, in fact, already been got together; and we now merely add to this announcement, that we trust neither the Council of the Society nor the Local Committee will omit to make such arrangements as may secure the complete sociality of this meeting—a point which has hitherto been too much left to mere chance, and hence has not been satisfactorily attained to. The programme should include, besides the show proper, a well-ordered congress meeting, by whatever name it may be called, a gardeners' dinner without the cold shoulder, and an assembly room where all lovers of horticulture, who may be attracted to the show, may have the opportunity of meeting their horticultural friends. So far as we can help to forward any of these arrangements we shall be pleased to do so, in the general interests of horticulture and horticulturists.

—— The following quotation from that useful little volume, "How Crops Grow" (Macmillan), may serve to some extent as an answer to the inquiry made by one of our correspondents as to the proper Depth at which to Sow Seeds:—

> "While it is the almost universal result of experience in temperate regions that agricultural seeds germinate most surely when sown at a depth not exceeding 1—3 inches, there are circumstances under which a widely different practice is admissible, or even essential. In the light and porous soil of the gardens of New Haven [U.S.], Peas may be sown 6—8 inches deep without detriment, and are thereby better secured from the ravages of the domestic pigeon. The Moqui Indians, dwelling upon the table lands of the higher Colorado, deposit the seeds of Maize 12 or 14 inches below the surface. Thus sown, the plant thrives, while, if treated according to the plan usual in the United States and Europe, it might never appear above ground. The reasons for such a procedure are the following:—
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> "The country is without rain and almost without dew. In summer the sandy soil is continuously parched by the sun at a temperature often exceeding 100° in the shade. It is only at the depth of a foot or more that the seed finds the moisture needful for its growth, moisture furnished by the melting of the winter's snow.
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> "R. Hoffmann, experimenting in a light loamy sand upon 24 kinds of agricultural and market garden seeds, found that all perished when buried 12 inches. When planted 10 inches deep, Peas, Vetches, Beans, and Maize alone came up; at 8 inches there appeared, beside the above, Wheat, Millet, Oats, Barley, and Colza; at 6 inches those already mentioned, together with winter Colza, Buckwheat, and Sugar-Beets; at 4 inches in depth the above and Mustard, white Clover, Flax, Horse-radish, Hemp, and Turnips; finally, at 3 inches Lucerne also appeared. Hoffmann states that the deep planted seeds generally sprouted most quickly, and all early differences in development disappeared before the plant blossomed. On the other hand, Grouven, in trials with Sugar-Beet seed, made most probably in a well manured and rather heavy soil, found that sowing at a depth of ⅜—1¼ inch gave the earliest and strongest plants; seeds deposited at a depth of 2½ inches required five days longer to come up than those planted at ⅜ inch. It was further shown that seeds sown shallow in a fine wet clay required four to five days longer to come up than those placed at the same depth in the ordinary soil."

—— We reprint the following passage from the recently delivered address of Mr. Hutchison to the Scottish Arboricultural Society, on the occasion of their annual meeting (see p. 1457). Though we quite believe in the periodicity of the sap-flow in trees, even in winter, we demur to the conclusion that this is directly regulated by lunar influence. In any case the subject is one for inquiry, and we commend it to the notice of our readers:—

> "Having observed in pruning trees during the winter and early spring months that at one time the surface of the wounds made upon the tree limbs seemed fresher and more moist than at others, and that this phenomenon varied during winter from time to time, there being apparently frequently less exudation of sap, or bleeding, the one week than there had been during the previous one, or even during the previous month, I am led to advance the theory that there is a periodicity in the circulation of sap in trees, both coniferous and hard wood, and perhaps in vegetation generally, during those months when we are accustomed to look upon Nature as dormant, and her ordinary functions as suspended, and that this periodicity is caused and regulated by lunar influence. For example, I observed that for about four or five days from the third day after new moon the action of the sap seems to be disturbed, and the circulation more free and abundant than it is during the other parts of the month. If this be so, and I think I am justified in asserting that it is, pruning operations performed during these few days, when the wood is greener, can be not only better done than when it is drier and less quickened, and is not only more easily performed, but more good work can be done in less time, and with equal safety to the tree."

—— Curtis gives a remarkable instance of the rapidity of the Growth of the Common Corn Thistle (Carduus arvensis). He planted a portion of a root, about 2 inches in length, in his garden in April, and allowed it to remain until the following November. It was then dug up, and found to weigh 4 lb., and had thrown out several underground shoots, one of which was 8 feet long, as well as leafy shoots 5 feet high. Although to all appearance eradicated, fragments of the root-stock were left in the ground, as was shown by the appearance in the following spring of from 40 to 60 young plants.

—— On the authority of the "Revue Horticole" we call attention to a Dwarf Peach, which its raiser, M. Aubinel, of Grenade (Haute Garonne), France, says is reproduced with certainty from seed. It is a very ornamental bush, requiring no training. The fruit is a free-stone of an orange-yellow colour, melting and sugary, with an agreeable flavour. The parent plant is eight years old, and is between 3 and 4 feet in height, with a circumference of less than an inch and a half, so that it may be planted in the borders of the kitchen garden like a Gooseberry bush (in France). M. CARRIÈRE has named this Peach the Dwarf Aubinel Peach.

—— Many of the statements which are demonstrated in the progress of science to be erroneous have, as a foundation, a substratum of fact. The popular notion that the SUNFLOWER FOLLOWS the SUN in its course has been often combated and contradicted, but, according to Mr. J. A. ALLEN, one species at least of the genus Helianthus has this peculiarity. He says:—"It is a popular belief that the Sunflower always turns its flowers towards the sun, but in reality, so numerous are the exceptions to this rule in our garden Sunflowers and in our common [American] wild species of the East, that few observing people regard it, doubtless, as otherwise than an idle whim. With many of the prairie Sunflowers, however, the facts are different; especially is this so in the case of H. rigidus. Morning after morning, at flowering time, the heads of this species may be seen bending gently towards the east; they are erect at mid-day, and at evening gracefully droop towards the west. This continues day after day for weeks, with surprising regularity and uniformity; later, however, the stems grow rigid, and remain nearly vertical. In this case at least the popular notion referred to above seems well founded."

—— We are glad to learn that a new part of the Rev. R. T. LOWE'S FLORA of MADEIRA is in the hands of the printer. It will contain the orders Ericaceæ to Labiatæ.

—— The TUSSOCK SEDGE of AMERICAN BOGS is Carex stricta, which occupies a position similar to that of C. paniculata in England. Dr. DARLINGTON says that it is the most common and the most troublesome of all the species. It is true that a pedestrian, in crossing neglected boggy meadows, finds its dense tufts quite a convenience to step on; but this does not compensate for the annoyance which it causes in cultivated land. The tussocks formed by the matted fibrous roots of this species of Carex are often very large and very durable. "I once hauled a quantity of them into the barnyard, with a hope that they might decompose and make manure; but they effectually resisted decomposition, and were tossed about the yard for years, as large and almost as indestructible as so many hatter's blocks. The best way to dispose of them is to collect them, when cut out and dried, into a heap, and burn them; taking care, afterwards, by appropriate draining, to prevent the growth of others."

—— We have received from Mr. LAMB, gr. to G. T. DAVIE, Esq., Colston Basset, Bingham, Notts, two examples of ABUTILON THOMPSONI, one from a shaded west aspect, and the other from a drier position fully exposed to the south-west. In both cases the shoots are vigorous, and the foliage beautifully marked and deep in colour, notwithstanding that they have now stood 8° of frost. "The object I have in sending them," writes our correspondent, "is to show the suitability of the plant as a decorative subject for shady nooks amongst evergreens, as well as for the flower garden." Mr. LAMB further states that his plants "were equally as effective at Christmas last as they are at the present time, though of course they succumbed to the extremely severe weather subsequently experienced."

—— For the MEETINGS of the SOCIETY for the ENCOURAGEMENT of ARTS previous to Christmas, the following among other arrangements have been made:—

November 29.—"On Tramways and their Structure, Vehicles, Haulage, and Uses." By W. BRIDGES ADAMS, Esq.

December 6.—"On Sewage as a Fertiliser of Land, and Land as a Purifier of Sewage." By J. BAILEY DENTON, Esq.

December 13.—"Observations on the Esparto Plant." By ROBERT JOHNSTON, Esq.

December 20.—"On the Study of Economic Botany, and its Claims Educationally and Commercially Considered." By JAMES COLLINS, Esq.

—— The MAXIMUM TEMPERATURES of the AIR for the week ending November 11 at the stations in England ranged from 55°.4 at Portsmouth to 47°.5 at Norwich, the mean being 49°.8, being 1°.7 above the mean of the stations in Scotland, where the extremes were 50° (at Glasgow and Perth), and 45°.5 (at Greenock). The MINIMUM TEMPERATURES at the English stations ranged from 35° at Liverpool to 24°.2 at Eccles, the mean being 29°.5, being 2°.8 above that of the stations in Scotland. MEAN TEMPERATURES.—The highest mean temperatures recorded at the stations in England were 41°.2 at Liverpool, and 40°.9 at Portsmouth, and in Scotland 39°.8 at Perth. The mean value for the several stations in England was 39°.5, and for that in Scotland 39°.3. RAINFALL.—Rain fell at every station except Portsmouth, the greatest quantity registered in England being 0.43 inch at Eccles, and in Scotland at Aberdeen 1.16 inch, the mean fall being 0.22 inch to 0.46 inch for the several stations of each country.

—— A case of some importance to owners of LAND abutting on to a PUBLIC WAY has lately been argued. The defendant in the cause had lately opened a gate from his land into the lane, and the plaintiff, as the owner of the soil, complained of this as an unlawful encroachment. The case was tried at the last Surrey Assizes before Baron BRAMWELL, and it was found that the plaintiff was the owner of the soil in the lane, and that the lane was a public highway. On this the learned Baron directed a verdict for the defendant, holding that any one whose land abuts on a highway has a right to open gates or doors into it at pleasure. Mr. J. BROWN, Q.C., moved, on the part of the plaintiff, to set aside this verdict, arguing at some length that the public were limited in their right to use the lane, and could only go up and down from end to end, and that the defendant had no greater right than any one else. The Court, however, were from the first quite clear that this view could not be sustained, and that it involved a downright absurdity. Suppose, said the Lord Chief Justice, that I dropped in the lane from a balloon, or took my horse over it in hunting, should I be a trespasser? It was manifest, and, indeed, it was admitted, that this would be so according to the contention of the plaintiff; and surely, said the Lord Chief Justice, this would be contrary to common sense. Is a gentleman a trespasser who jumps over his park wall into the road? There was no trace here of any limitation of the ordinary right of the public on a highway, and that was to go over it in any direction, and to open gates into it at pleasure. This was too clear to be disputed. The rest of the Court concurred, and the application was refused.

—— A new and somewhat NOVEL MILESTONE,—a reminder to the wayfarer, says the *Builder*—has been recently erected on the road between Shipston and Stratford-on-Avon, near the new lodge leading to Eatington Park. The memorial is formed of a double cube of hard stone, forming the base of an ornamental cross, which surmounts the whole. The sides are panelled, and on the west and east bear the arms of the Bishop of WORCESTER and SHIRLEY of Eatington. On the south is the following inscription:—

"6 MILES
To SHAKESPEARE'S town, whose name
Is known throughout the earth;
To Shipston 4, whose lesser fame
Boasts no such poet's birth."

On the northern face is:—

"Crux mea lux."
"After Darkness, LIGHT;
From light hope flows,
And peace in Death,
In CHRIST a sure repose."
"Spes, 1871."

Round the base of the cross, which rises angular-wise from the weatherings of the pedestal, are similar sentiments in Latin. The whole has been designed, and the expense borne, by Mr. E. P. SHIRLEY, of Eatington Park.

—— We learn from the *English Mechanic* that the plant called CONDURANGO, referred to at p. 970, and the extract or decoction of which was said to effect such wonderful cures in cases of cancer, has been analysed by Dr. ANTISELL, chemist to the Agricultural Bureau at Washington. The doctor finds the ratio of the wood to the bark to be as 50.28 to 49.72. The centesimal composition of the bark was as follows:—Moisture expelled at 212° Fahr., 8; ash matters or mineral salts, 12; vegetable substances, 80. The vegetable matters were separated, and found to be composed as follows:—

Fatty matters, soluble in ether and partly in strong alcohol	0.7
Yellow resin, soluble in alcohol	2.7
Gum and glucose from starch	0.5
Tannin, yellow and brown colouring matters extracted	12.6
Cellulose, lignin, &c.	63.5
	80.0

No crystalline alkaloid could be detected, and, according to the above results, the therapeutic position of the plant must be among the aromatic bitters. That it is a specific in cancer, requires proof. In this country the trials so far have been, as in the case of other so-called specifics, quite negative.

—— The wood of the OSAGE ORANGE, or Bois d'Arc (Maclura aurantiaca), is highly valued in Texas for carriage and waggon building. Changes of weather do not affect it, and wheels made of it have been in use for 10 or 15 years without needing repair, while other wheels in the same locality require to have the tires shrunk once a year. Vehicles built of this wood command higher prices by 30 per cent. than those of ordinary timber. The wood yields a beautiful orange dye, and it is proposed to attempt obtaining this from the sawdust, which is at present valueless. It is frequently kept dwarf, and used as a hedge plant, for which purpose its strong spines render it very suitable.

—— Professor BÖTTGER prepares CEMENT of DIVERSE COLOURS and great hardness, by mixing various bases with soluble glass. Soluble soda glass of 33° is to be thoroughly stirred and mixed with fine chalk, and the colouring matter well incorporated. In the course of six or eight hours a hard cement will set, which is capable of a great variety of uses. BÖTTGER recommends the following colouring matters:—(1) Well sifted sulphate of antimony gives a black mass, which, after solidifying, can be polished with agate, and then possesses a fine metallic lustre; (2) fine iron dust, which gives a grey-black cement; (3) zinc dust, which makes a grey mass, exceedingly hard, which, on polishing, exhibits a brilliant metallic lustre of zinc, so that broken or defective zinc castings can be mended and restored by a cement that might be called a cold zinc casting; it adheres firmly to metal, stone, and wood; (4) carbonate of copper, which gives a bright green cement; (5) sesqui-oxide of chromium, which gives a dark green cement; (6) Thenard's blue, which gives a blue cement; (7) litharge, which gives a yellow; (8) cinnabar, a bright red; and (9) carmine, a violet-red cement. The soluble glass, with fine chalk alone, gives a white cement of great beauty and hardness. Sulphate of antimony and iron dust, in equal proportions, stirred in with soluble glass, afford an exceedingly firm, black cement; zinc dust and iron, in equal proportions, yield a hard, dark grey cement. As soluble glass can be kept on hand in liquid form, and the chalk and colouring matters are permanent and cheap, the coloured cements can be readily prepared when wanted, and the material can be kept in stock, ready for use, at little expense. Soluble glass is fast becoming a most important article of chemical production.

—— We hear that the late CHRYSANTHEMUM SHOW at Stratford was a very successful one, Mr. DOUGLAS, gr. to F. WHITBOURNE, Esq., Loxford Hall, Ilford, exhibiting the best six specimen Pompons that have been seen for several years. Next week connoisseurs will be busy, as the flowers will be in fine order by that time, both in the Temple Gardens and at Mr. A. FORSYTH'S, Brunswick Nursery, Stoke Newington, both of which collections will be well worthy of a visit of inspection.

—— Many of the ANTHEMIDÆ, such as Chrysanthemums, Chamomiles, &c., possess in the sexual parts of the flower a NARCOTIC matter which has a great effect upon insects, and will even kill small ones. In Pyrethrum roseum and P. carneum, just within the disk, this matter is found in considerable quantity. In order to prepare the powder to advantage, only the centre of the flower must be used, which must be cut before the seed is fully formed. The Spaniards, to keep off gnats, burn the centres of the flowers of the Horse Daisy (Chrysanthemum Leucanthemum); and the powder of the Mayweed (Anthemis Cotula) has also been used for destroying insects. In some parts of Belgium this plant is fastened by the country people to branches where swarms of bees have settled (after they have been secured), to prevent them from leaving the hive. The Mohammedans and Tartars have long employed the powder of the Pyrethrum against all insects indiscriminately. To destroy flies, gnats, and bugs, they burn it on an iron plate, which they heat slowly, in order to produce more smoke.

New Garden Plants.

MASDEVALLIA IGNEA, *n. sp.*

Aff. Masdevalliæ coccineæ; floris tubo incurvo; sepalo dorsali carinato a basi triangulo attenuato subfiliformi inter sinum sepalorum lateralium inflexo; sepalis lateralibus parte libera semiovatis acutis obliquis; tepalis ligulatis acutis, supra basin inferiorem inflexo hastatis; labello a basi subcordato-ligulato antice dilatato crenulato: columnæ androclinio serrulato lobulato.

This is one of the smallest of its tribe. As far as I remember, from having seen it at Messrs. Veitch's and Van Branteghem's, the leaves are middle-sized, markedly cuneate, oblong, with three small teeth at the apex. The flower is very bright cinnabar-coloured, and may be easily recognised by the great peculiarity, observed immediately by Messrs. Van Branteghem and Day, that the upper sepal is bent down between the sinus of the lateral sepals. It is, although not the most prominent, a very worthy member of its gay society. I obtained it from Messrs. Veitch, Van Branteghem, and Day. I have particularly to thank Mr. Day for the following information concerning the plant:—"It came from New Grenada in March, 1870, and was sold at Stevens'. The colour is now redder and more purplish than it was at first—it was then of a dazzling scarlet with orange-scarlet colour, too dazzling to look at long. The leaves are 7 inches long, the upper half expanded into a blade, oval in shape, 1⅜ inch broad, tapering below into a slender chanelled footstalk; scape 11 inches long." *H. G. Rchb. fil.*

BOLBOPHYLLUM NASUTUM, *n. sp.*

Pseudobulbis approximatis subpyriformibus, fasciculis retusis vaginarum varie textis hinc maculatis; folio carnoso coriaceo ima basi cuneato altero limbo involuto oblongo lanceolato acuto; pedunculo unifloro brevi, mento obtusangulo; sepalo dorsali lanceo, sepalis lateralibus (semper?) reflexis majoribus; tepalis minimis ligulatis obtusis; labelli trifidi laciniis lateralibus a cuneata basi acutangulis, abbreviatis, lacinia media ligulata antice obtuse acuta longe producta, carinis insilientibus a laciniis lateralibus erectis versus medium labelli; columnæ androclinio marginato crenulato, setis nullis, anthera longa conica.

I had the pleasure of observing the living plant in the celebrated Saundersian collection, in 1867. The older bulbs become quite turbinate from a very circumscribed retuse base. The flowers are a third to a quarter of the size of those of Bolbophyllum Lobbii; sepals pallid sulphur-coloured; lip purple at the base, dark orange in the anterior part. Both tepals and column are whitish, with some little circumscribed purplish hue. The anther has a long conical point, whence the specific name of nasutum. The plant, a very interesting thing, was obtained by W. Wilson Saunders, Esq., at one of the Stevensian sales. *H. G. Rchb. fil.*

ONCIDIUM OCHTHODES, *n. sp.*

Affine Oncidio pyramidali, Lindl. Panicula effusa, ramulis ascendentibus rectis (nec fractiflexis); floribus magis distantibus; sepalo dorsali cuneato oblongo obtuse acuto; sepalis lateralibus ligulatis-acutis; tepalis subæqualibus bene acutis, supra basin inferiorem obscure angulatis; labello basi latissime cordato, juxta columnam utrinque bucca verrucosa, auriculis baseos obtusatis in isthmum sensim decurrentibus, portione antica reniformi-biloba angustiori; callo depresso pentadactylo, callulis geminis internis; columna curva, alis lobatis falcatis, tabula infrastigmatica prona; rostello ornithorrhyncho.

A species in the way of Oncidium pyramidale, with numerous bright yellow flowers, the lip painted with brownish bars; it would be that species, if its petals, columnar wings, and lip were not very distinct. What appears to be the true O. pyramidale flowered with W. Wilson Saunders, Esq. (N. 1876, Bowmann), yet the very narrow apex of the lip made it desirable to see the flowers once more, to judge whether that feature was a consequence of first flowering or a really distinct mark. The Oncidium ochthodes comes from Ecuador, and was kindly sent by Mr. William Bull, Chelsea. *H. G. Rchb. fil.*

PLEUROTHALLIS POLYLIRIA, *Endr., Rchb. f.*

(Macrophyllæ racemosæ.) Vaginis in caule secundario fissis laceris, caule secundario spithamaeo, folio a basi petiolari oblongo obtuso, vaginis inflorescentiarum parvulis; racemis duobus ad sex folii laminam æquantibus seu superantibus, usque supra quartam infirmam subsecundifloris; bracteis vaginatis ovaria pedicellata subæquantibus; sepalis im basi et lateralibus ad medium coalitis oblongis obtusis acutis, antice intus velutino tomentosis, lateralibus ante mentum constrictis; sepalis subrhombeis trinerviis, paulo brevioribus; labello ligulato antice retuso, utrinque medio obtusangulo; carina adjecta obtusangula utrinque; columnæ clavatæ androclinio denticulato.

A species very remarkable for the beauty of its shining broad leaf, very much like that of the Hookerian cauliflora (Icones, i. 50 !), but it has no large sheath to the inflorescence, and the flowers are totally distinct. The flowers are small, whitish green, in one-sided racemes, which in their totality are of a gay appearance, making one think of small Lilies of the Valley. A beautiful specimen at hand is kindly sent by W. Wilson Saunders, Esq., who remarks that the plant is totally cæspitose. Quite the same plant with narrower leaves and much more numerous inflorescence is at hand in dried specimens, gathered at Costa Rica by M. Endres. What an immense distance between such dry specimens and the beautiful fresh plant! *H. G. Rchb. fil.*

THE AMATEUR GARDENER.

Clearing-up for the Winter.—A large class of gardeners pay little or no attention to their gardens from November till spring returns, and awakes in them those floral tastes which, like the productive powers of Nature, have slept during the winter months. With the withering of their bedding plants all interest in their garden seems to cease, and the beds and borders present a sorry appearance during four or five months of the year. This is slovenly, and it indicates that horticulture is not loved for its own sake, but only for the gay flowers which make a dwelling-house look more attractive to the visitor or the passer-by. The genuine amateur cannot act in this way. His love of neatness, if no other motive, compels him to "clear up" his garden for the winter season. And is there not a great charm in neatness, in a garden as well as in an apartment or in personal appearance? Even if there were no growth or floral development in the winter months, the trim and clean appearance of a flower-bed or a kitchen garden would repay for the necessary labour. But a most interesting series of operations are going on at that period, such as the pushing up of early bulbs, the flowering of the saffron Crocus, the Helleborus, &c., and the peeping out of the flower-buds of the Polyanthus and the Auricula.

The first thing in "clearing up" is, of course, the removal of decaying leaves and stems. This is followed by a forking or digging over of the soil, which must be done very carefully in a garden containing herbaceous plants and spring bulbs. A careful gardener will always know where there is anything of value beneath the surface, and will not cut through a bulb of a Lily or a Hyacinth as will be often done by a clumsy performer. It is during the process of forking or digging that new bulbs should be introduced, and Roses and other trees planted, and the whole arrangement of the garden settled for the spring. Do not be stingy in purchasing bulbs for this purpose, though, as we have said on a former occasion, November is later than bulb planting should be ordinarily performed. Tulips are, perhaps, an exception, but Hyacinths and Crocuses we have found to decay if planted late, especially if a hard frost should occur before they are rooted.

Roses should be pruned at this time, an exception being made of the more tender sorts, which are apt to die down from the wound, and, therefore, the pruning should be left till the spring. In the kitchen garden, all pruning should be finished in November, and the dressing applied to such trees as are liable to be robbed of their buds by the birds. Gooseberries are often quite stripped in this way, as are some sorts of Plums and Cherries. We use a mixture of lime, soot, and cowdung, in about equal proportions, and we find it is tenacious enough to cleave to the branches till the spring, and bitter enough effectually to keep the birds away. These ingredients are mixed in water to the consistence of paint, and applied with a brush. Our Morello Cherries used to be almost barren till we adopted this plan, and now they seldom fail to bear well.

As to dressing the beds at this season a word must be said. Roses will bear any amount of manuring, but if flower-beds are composed of tolerably good soil they require but little replenishing. Rich manures promote a vigorous vegetation, which is not what we want with most flowers. A skilful amateur will collect together every portion of leaf and stem during the year, and put the refuse of the garden in a corner to rot. When this is turned into leaf-mould, nothing is better for top-dressing. Sprinkle it over the beds before forking or digging, and nothing more will be needed. If this cannot be had, some new mould from a loamy pasture will do as well. *H. B.*

PRUNING SCISSORS.

THE illustration subjoined (fig. 317) is taken from a "sécateur" exhibited at one of the meetings of the Royal Horticultural Society during the past season by M. Gustave Couvreux, of Nogent (Haute Marne), France. Similar ones, we believe, may be had of Messrs. Carter & Co., of Holborn. It has the advantage of great firmness and solidity, and as the handles are covered with wood, the instrument is much easier to use than the ordinary ones. The spring is of simple construction, and can easily be replaced when broken, but we would advise the makers of these instruments always to provide extra springs in case of accidents. We have used the implement in pruning shrubs, and were well satisfied with its performance, the fatigue to the hand being much less than with the ordinary scissors.

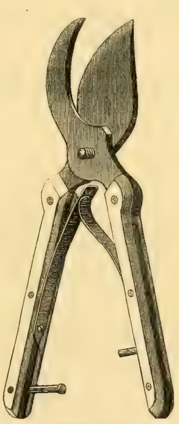

FIG. 317.—COUVREUX'S PRUNING SCISSORS.

MY EXPERIENCE WITH POTATOS.

ADDISON wrote an article in the *Spectator*, headed "Cacöethes scribendi," or the itch of writing; in the same article he says "there is no bore so great as your periodical scribbler." Perhaps the "button-hole bore" approximates; I mean the man who catches hold of your button-hole, and looking seriously in your face proves by a lengthy argument that six and four make 10, and that as long as time lasts seven will always be more than six. I do not think, seeing how interesting the Potato malady is and how essential a vegetable it is to the comfort of every family, that any one writing on the subject can be reprobated as a "periodical scribbler," or "button-hole bore!"

I will begin with what may prove a valuable suggestion. Some years ago, soon after I became Rector of Rushton, a place of nightsoil was cleaned out. It was at least 6 or 7 feet deep in nightsoil. The old man who cleaned out the pit, and had lived at the rectory 20 years or more, brought me some nice fresh-looking Potatos, Salmon Kidneys, and said "These Potatos were taken from the lowest 'spit.' They must have been there twenty years, for I remember the time when it was last cleaned out." They were not grown out at all; and having been washed were as bright as I ever saw the same kind when freshly dug. I mean to try two experiments at once. I shall put a barrel with a cover on the northern side of my fruit wall and sink some Potatos in water; and I shall dig a deep hole, and sink the Potatos under some material of a cleaner nature than nightsoil. It is plain to me that the way to preserve Potatos over the year and longer is to exclude the air, light, and heat. Perhaps Mr. Fenn may devise some better plan. Potatos will grow out when the time of year comes, unless heat specially, light, and air are excluded.

I will now assume the catechetical form. Will antiseptics, applied to the tubers before, or at planting time, prevent disease? I think not; because two years ago I dipped Potatos at planting time into a strong solution of vitriol and water (?), and I saw no difference. I think, however, Mr. Tillery's suggestion, to apply lime to them in the storehouse, is very good. Will lime, soot, or salt strewed in the trench at planting time stop or ameliorate the disease? Certainly not; I tried this plan at Rushton with the Old Ashleaf, Mona's Pride, and the Royal Ashleaf. I had not one dish of Potatos from them; they were complete "slime." By their side I planted the Rough Reds (Grammas); not one tuber was affected. I planted them next year on a chalky hill, exposed to all four winds, in a Clover lea, no Potato having been planted there for 10 years; hardly a Potato was good, and the main crop was "slime." Will Potatos fresh raised from seed prevent the malady? Nothing of the kind; I had some seedlings sent here by Mr. Taylor, of Almond's raising. They were no freer from disease than others. Will planting Potatos in single file at yard distances, without any other Potatos near, ward off the evil? Nothing of the kind; I planted some this year as above, but, though the crop was splendid, three out of four were bad, and chiefly the large Potatos. They were the worst affected of all my Potatos. After they came up they were earthed-up on all sides, like mole-hills. Mr. Brymer (Toronto) and Mr. Marriott were here when they were dug; I gave to the former from twelve to twenty each of all the sorts here to take to Canada. With regard to the malady, as it comes from above and not beneath the soil, I suggest the fumigating the haulm once or twice after it is up. I mean to try it next year: I shall put heaps of straw on the windward side of the plantations, set fire to it, and sprinkle sulphur into the heaps. If the disease arises from Fungus, as stated by some—I have never yet seen any Fungus, but I still greatly defer to "M. J. B.," our greatest mycologist—the sulphur fumes may be of some use. I shall also try a line or two with a very weak solution of vitriol. It must be weak, because the haulm is very sensitive. I will not drive all my readers into despair by saying "you may hear from me again," but I will make a clean breast of it at once. I have planted a considerable portion of my Potatos (beginning October 24) with grassy furze from a two year old rick, and some with clean wheat straw. I have no fear of frosts under the circumstances. Last January 17, I planted my field garden without either straw or furze, and there was hardly a plant missing, though the field leans to north and east in this cold open vale. My garden Potatos were planted at the same time, and had a light covering of straw. Those hyperborean frosts affected not the sets under ground. The poor people here planted in March, and their sets, being sprouted, were soon up; and when 6 inches high the frosts cut them down to the ground. My January tubers (I never cut them) were then only just peeping. I do not flat-hoe Potatos but use Parkes' fork as soon as I descry the lines; and then I immediately earth them up, which keeps them safe till severe spring frosts are over. I began this year digging the sorts I keep August 17, perfectly ripe. In 1869 and 1870 I began digging August 6 and 7 respectively. Nothing can be better than the quality of the Potatos. I am eating Gryffe Castle Seeding, a round white Regent: it is nearly as good as a kidney. It is a short-haulmed early-ripening Potato. Long-haulmed and deep-eyed Potatos, which are usually much larger in ripening than kidneys, are sure to suffer most. I asked my man, "Steevie," about cutting off the haulm. He says he tried several ranks some years ago this way, and got worse off; for it did not stop the disease a whit, and the unaffected "taters" were so waxy and close he could not eat them; but he could eat those that were left untouched. I agree with much that Mr. Rogers has written, but not with the suggestion that we should plant less. To meet possibilities and probabilities, I plant a great many more than I am likely to want, and also plant a strong lot of Student Parsnips, underground Artichokes, Savoys, and suchlike.

Finally, a word about the American Potatos. I have had them all except Early Goderich. I found them to be all good croppers and with wonderful foliage: here they were squashy and ill-flavoured, and not to be compared with our round or kidney Potatos; but still they may be very good for cottagers, who boil Potatos in one net and Cabbage in another, flavoured by a lump of bacon. I think that in poor grounds their flavour and quality might improve. At any rate, I think we should not be hasty in coming to a conclusion about newly introduced things. We are apt to puff things up and also puff them out before we have given them a fair trial. A commodity that may be very bad in one kind of sort or season may be very good in different ones. Of all the American Potatos sent here the best by far was the Early Rose (not early here). It is a kidney Potato, of good shape, of a dull pink colour, with nuclei of small eyes, like the Pleiades. I gave it to our policeman, who won a prize at our cottage allotment show last year, and took a capital sample of them this year. There is one point I admired much in all the American Potatos, round as well as kidney: their eyes were small and on a level surface. The whites were defective in colour, being dingy. One word at parting; I earth-up Potatos,—in the long run I believe people will find it best. In some soils and seasons the unearthing system may be best. Plant a Potato as deep as you will, it forms its crop close under the base of the plant; and when the crop swells, a great many will be greened unless earthed-up. Notwithstanding the above I cry, louder and louder, "O dark, dark, dark." *W. F. Radclyffe.*

INDIAN LORANTHS.

(*Concluded from p.* 1452).

"THE following list is confined to the different kinds of trees more or less infected with Loranthus longiflorus in the Botanic Gardens here:—

Salmalia malabarica
Sterculia villosa
Ægle Marmelos
Citrus decumana
Xanthochymus ovalifolius
Banisteria laurifolia
Cupania canescens
Melia composita
,, sempervirens
Chloroxylon Swietenia
Zizyphus Jujuba
Mangifera indica
Garuga pinnata
Inga dulcis
,, Hæmatoxylon
Dalbergia Sissoo

Gleditschia sinensis
Pyrus sinensis
Terminalia Catappa
,, angustifolia
Jambosa vulgaris
,, polypetala
Lagerstrœmia reginæ
Bassia butyracea
Mimusops Elengi
,, imbricaria
Tectona grandis
Ulmus virgatus
Ficus nitida
,, religiosa
,, glomerata
Antidesma Bunias

"The branches of Teak trees, when attacked by Loranthus, generally become much hypertrophied, but fortunately it seems to be one of those heavy-foliaged, deciduous trees, on which these parasites are driven to the extremities of the branches, and are thus not likely to do much damage to the trunk or heavier branches. It is also interesting to observe that while on light, airy foliaged trees, the rhizomes extending towards the base of the branch are generally much stouter and more vigorous than those extending towards the apex, whereas under the above conditions there verse is the rule, and we find the inwardly directed rhizome weak in the extreme, and soon becoming imbedded in the thickening branch, the apically-directed shoot absorbing all the vigour. I have specially examined this on Teak and Jambosa vulgaris.

"The development of the nourishing branch, in some instances, is utterly arrested (as I can see no traces of subsequent deposits) for a period of six years, forming a mere vehicle for the supply of crude sap to the parasite. It is thus functionally analogous to the woody adventitious roots of the arborescent Monocotyledons, and similarly destitute of medial foci of development. It is important also to observe, that the cambium tissues and bark differed in no respect from those on active or organising portions of the stem. Again, the branch supporting the parasite was 14 inches long, and a secondary shoot from a stout branch of which those later developed and unburdened with parasites were many times stouter. Throughout the whole length of the parasite-bearing shoot the diameter was nearly uniform, with a slight thickening towards the base, where it may be supposed to have received a modicum of elaborated sap from the branch from which it springs. I have already pointed out important structural and physiological differences between the phenomena of parasitism and grafting; but I know of none more important than that which I have now illustrated.

"Two other specimens in my possession are worthy of description from the novelty of the attachment of the parasite to its prey: both are on Nerium odorum. The first is attached on the upper surface of the petiole of a leaf, and has a main stem 5 inches in length, with two lateral ones of about 4 inches; the basal girth of the main stem being four lines. Several rhizomes have been produced, but one only has extended along the stem, forming firm attachments for the length of 9 inches: the others—three—extending along the surfaces of the leaf, have failed in effecting a secure attachment, and continued slender and contorted, giving out, in place of the disc-like processes, numerous slender rhizomes in search of fixed attaching surfaces. The lamina of the leaf, though still attached, was dry and dead, all nourishment having been arrested by the parasite. The foot-stalk had increased much in thickness: the lateral measurement being five lines, the vertical three lines, whereas in the normal condition we find them respectively one and-a-half and one line. Again, while a section of the petiole in its ordinary state exposes a minute semi-lunar band of fibro-vascular tissue, we find it supporting the Loranthus with a hard woody band, three lines broad by two in depth. In the second specimen, the attachment is on the midrib of the leaf, and 1¼ inch from the base. The Loranthus has a vigorous, though solitary, shoot, 2¼ inches high, with two lateral rhizomes; the one extending downwards to the stem, with which, however, it has failed to attach itself, owing to the frequent movements of the leaf, though midway it has formed a normal disc-union with the midrib. The other rhizome, extending towards the apex of the leaf, is unattached, slender, contorted, and ramifying, as in those previously described. In this case, also, the thickness of the petiole and midrib has been considerably increased. The root-processes pass completely through the midrib, causing a slight local hypertrophy of the tissues on the lower side, though, strangely enough, none whatever on the adjoining portions of the blade of the leaf, either above or below.

"The L. longiflorus, naturally an evergreen shrub, becomes, as I have observed, quite deciduous when growing on some of the deciduous trees in this garden. Thus specimens on Sterculia villosa, Salmalia malabarica and Lagerstrœmia reginæ, remain leafless, or nearly so, with their foster-parents, from the end of December until the latter burst again into flower and foliage in the hot season. Again, on such trees as Terminalia Catappa, which suddenly cast their leaves in February, and in a few days are again covered with expanding buds, the Loranthi (as in their ordinary evergreen supporters) lose not their foliage, and then present an odd appearance as they hang out in great tufts from the leafless and bud-expanding branches of those lofty trees.

"In the Botanic Gardens here, having had frequent occasion to transplant specimens of the common Sandal-wood (Santalum album) I was struck with the repeated failures of all the older plants, as indeed those of smaller size also, unless removed with an unproportionally large ball of soil. The cases of root parasitism in the allied genera, Thesium and Comandra, naturally occurred to me, and I determined to take an early opportunity of investigating the relations. This I have now done, and, as I suspected, found, on carefully tracing out the more slender ramificatious (no easy matter), abundant evidence of parasitic attachments to the roots of the surrounding plants. I have since exemplified it more fully by placing seedling plants of the Sandal-wood and other plants together in the same pot. Under these conditions it has formed attachments to the roots of Saccharum spontaneum, Bambusa auriculata, Arenga saccharifera, Caryota urens, and C. sobolifera, Cocos nucifera, Phœnix sylvestris, Heptapleurum venulosum, H. umbraculiferum, and Inga dulcis.

"I was led more especially to try my experiments with Palms, from having observed the Sandal-wood trees growing with unusual vigour in the vicinity of Arenga, and on examination, exposed its copious parasitic root relations with that Palm, as also with the common "Kash-grass" (Saccharum spontaneum). With the Araliaceæ, I had most demonstrative evidence; first in a vigorous old tree of Sandal-wood, growing in the vicinity of a large specimen of Heptapleurum umbraculiferum, which I had occasion to cut out. A few months after this I was surprised to find the tree nearly destitute of leaves, and altogether in a most unhealthy state, though for some time after the Ivy-wort had been removed no changes had been observed. This, however, was probably due to the strong vitality of the Ivy-wort's roots, which may have remained fresh for weeks after the stems had been cut out. The tree has since made poor and weak growths, though always yielding an abundance of flowers; and now—the fourth year—it seems to be acquiring fresh vigour, probably from having formed new root attachments. The second case was of a young tree, 15 feet in height, and growing from the midst of a bush of Heptapleurum venulosum. The latter having been cut out, the young Sandal-wood tree shortly after lost the whole of its foliage, and was for fully two years afterwards in a most unhealthy state. These illustrations, conjoined with the results of transplanting the larger and smaller sized specimens of Sandal-wood, and the copious illustrations of actual attachments, afford most complete and unquestionable evidence of the parasitic root relations of the above tree with those of environing plants.

"In the above cases, and all others that I have observed, I have been struck with the absence of any swelling or hypertrophy of the parts of the root around the parasitic attachment. This apparently indicates important differences in the physiological relations of those cases of parasitism, as compared with the like phenomena in the Loranthi; though they may be but the results of differences in the chemico-physical relations. Loranthi, we know, are utterly dependent for their existence on the supporting plant, and are thus, through the season of growth, incessantly absorbing crude or elaborated juices, thus disturbing the circulation and causing reactions which are very likely to induce a hypertrophied development in the surrounding parts. The Santalums, on the other hand, are but quasi-parasitic, and though as I have shown, they do form parasitic attachments, and suffer in transplantation from sites on which they are established, or even by the clearing out of environing vegetation, they can, nevertheless, live, grow, and even thrive in soil destitute of other vegetable roots. This leads me to remark that parasitism seems to have been a much more essential condition of their existence in former periods than it is now. I suspect this from the copious production of the parasitic tubercles and the proportionately small number which ever form attachments, and are thus compensated for the organising force expended in their formation. In the true parasites we find no such wasteful economy: reflect on the cases, by way of illustration, above noted of the Loranthus on the leaf of Nerium, in which, after one or two futile attempts to effect an attachment, the development of those adhering organs ceased, and the organising force is wholly directed to the production of lateral rhizomatic processes, so as to increase the chances of contact with suitable attaching surfaces. This is truly a remarkable morphogenetic alternation, considering the stability of the physical conditions under which it was evoked; the spontaneity, so to speak, of the change; the definite end to which it is subservient in the vital economy of the organism, verging, indeed, wondrously close on those phenomena which in the other kingdom of organic life we dignify by the name of instinct. In the quasi-parasitic Sandal-woods, there are no such economic dispositions of the vegetative forces, as we find a large proportion of their parasitic tubercles, depending, loose, and functionless from the roots, or at least in so far as related to their normal function as channels for the absorption and transmission of the juices of the surrounding plants. It is thus by no means improbable, from the evident abeyance of parasitism in existing Sandal-woods, and the truly prodigal production of parasitic organs (which, while retaining their potentiality, by no means generally exercise the function), that they have acquired a last stage in the transition from parasites to self-sustainers. From this point of view the relationship of Sandal-worts becomes less dubious, and supports the view of those systematic botanists who have correlated them with the pre-eminently parasitic Loranths. As bearing on this, also, the embryonic relations of the two orders as demonstrated by Griffith are of great significance, seeing that 'community in embryonic structure reveals community of descent . . . . and thus in two groups,' I quote from Mr. Darwin, 'however much they may at present differ from each other in structure and habit, if they pass through the same or similar embryonic stages, we may feel assured that they have both descended from the same or nearly similar parents, and are therefore in that degree closely related.' ('Origin of Species,' p. 481.)

"Several of our Indian species of Loranthi, however, are of a highly ornamental character, and are well worthy a position on trees suited to their growth in our gardens. To effect this, trees of a character liable to the attacks of these parasites, and of which we have above afforded numerous examples, should be selected, a notch cut in the bark on the north—or cooler and more shady, though airy, side of the tree, and a seed of the parasite inserted therein: care being taken that it is not crushed in the operation. In Europe the common Mistleto is also frequently transferred from one tree to another by grafting and budding processes, which might doubtless be effected with the Indian Loranthi also during the rains. The mode of operation in the case of the Mistleto is thus described by Loudon, and it is equally applicable to our indigenous Loranthi:—'Where the stock is not more than half an inch in diameter, an incision is made in the bark, into which a scion of Mistleto pared thin is inserted, having a bud and a leaf at the upper end. In grafting longer pieces, a notch should be cut out of the stock; an incision made below the notch, and a shoulder left on the scion to rest on the notch, in the manner of crown grafting. In every case there must be a joint in the lower extremity of the scion. In budding, care must be taken to have a heel of wood and a joint at the lower extremity of the bud, and over all, if available, add a coating of the viscous matter from the berries, or some protecting substitute."

BOTANY FOR BEGINNERS.—XVI.

IN the two preceding articles we explained the structure of the seedling Oak and Wheat respectively, with a view to show, amongst other things, how some of the main characteristics we meet with in adult stems and branches are quite distinguishable even in this early stage. We have also, in former notices, given illustrations of what is meant by *definite* and *indefinite* modes of growth, and what are the conditions to which botanists apply the terms *alternate*, *opposite*, *decussate*, and the like. So far, then, we hope to have cleared the ground for the comprehension of the different forms which the stem and its subdivisions assume in different cases. To enter into details on these matters would demand a book as bulky as the annual volume of the *Gardeners' Chronicle* itself; besides, it has been our object throughout to keep the general principles of plant construction before the reader, and to give him only such an amount of detail as should insure his due comprehension of the principles. These mastered, their application to particular cases is a matter of comparative facility. So far, then, as details are concerned, it may suffice to recall some of the different aspects or "habit" of shrubs, of trees, or of herbs, *e. g.*, the spreading Cedar, the tapering Poplar, the "weeping" Willow, the mop-headed Robinia, the dumb-waiter-like arrangement of the branches of Araucaria, the fat bloated-looking Echinocactus, the snaky Cereus, the twining Hops, the globular bulbs of the Hyacinth, the dense rosettes of the Sempervivum, and—but the variety is infinite. We have, however, introduced a few illustrations showing how the "habit" may vary even within the limits of a single species, and of which we shall give a few explanations further on. Let us now attempt to show that the causes bringing about all these modifications are as simple in nature as they are few in number. "'Spects I grow'd," said Topsy, and to growth, and cessation of growth, in various directions and degrees, and at different periods of time, may such diversities as we have alluded to be attributed. Let us explain. There is growth in lines, where development takes place principally in the longitudinal direction—a reed, or the long unbranched stem of a Palm, sufficiently illustrates our meaning; there is growth in planes, the masses of Duckweed (Lemna), floating on the first pond you come to, or a leaf off the nearest plant, will sufficiently exemplify that mode of growth. There is growth in spheres, perhaps the most important and general of all methods, at least at first. Suppose food and other requirements to be in equal quantities, and the facilities for getting them also equal on all sides—and this is pretty much the case in the earliest stages of life vegetable or life animal—and the growth will be spherical. Suppose, on the other hand, there is more food in one direction than in another, the great amount of growth will be in the direction of the supply. So, if one kind of food, light, and air, be in one direction, and another kind of food, water, and earthy matter be in another, there is an obvious reason why the primitively globose form should be replaced by a linear shape, better adapted to fulfil the requirements of the case.

Growth, then, is intimately dependent on food, the mode of growth on the nature of that food, and the place wherein it is to be found. Further, given the food, given also the means of getting it, no plant—no living being, be it what it may—lives entirely for itself. It lives with, in, for, amongst other beings, in harmony or in hostility with them. Erasmus Darwin sang the "Loves of the plants;" his descendant, Charles Darwin, has become the historian of their wars; and besides all this reciprocal help or antagonism of plant and plant, as the case may be, there are the varying conditions of atmosphere, of climate, of soil, and all these are calculated to modify the growth of plants. And then it must be remembered, that these modifying circumstances do not act singly, or one at a time, but in combination, and thus endless complexity and innumerable compromises are brought about. The general result of all this is to be seen in that marvellous variety of form, that wonderful adaptation of living creatures to the circumstances around them, which compels the most thoughtless to exclaim, "The hand that made them is Divine."

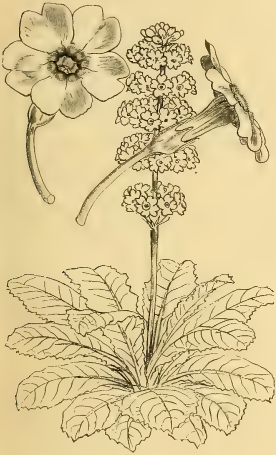
Fig. 318.—Japan Primrose.

Starting then with the sphere as the primitive form, and the line and the surface as the immediate derivatives from it, and bearing in mind the infinite variety of modifying conditions, the causes of the forms of stems, including here roots and branches, are not far to seek. Growth may be continuous and uninterrupted* — indefinite, in fact; and then we get a straight unbranched erect trunk, or a long trailing shoot. On the contrary, a check may come and then the growth is arrested. That arrest may be permanent, or temporary only; if permanent, the form of the tree or shoot is of necessity profoundly modified in consequence, and we get the series of forms known as definite. If temporary the shape is not necessarily modified, the arrest may be periodic, that is to say, there may be alternating periods of growth and of arrest of growth. It is so with our trees in winter, when their growth is arrested—in spring extension is resumed. If there should happen to be a bud on the end of the shoot, the direction of the growth will be the same as in the preceding season, and the general form will not be altered, but if there be no terminal bud, or if it be injured or removed by some accident, then the new growth in the following spring will be in another direction, and the shape of the branch will be altered in consequence. Take as another illustration the tier upon tier arrangement of branches in many Conifers, such as the Araucaria or the Norway Spruce. The "habit" here is very striking, and it is brought about by periodic alternations of growth and arrest: the main stem grows continuously, the side branches are developed at regular periods, and arrested in the intervals.

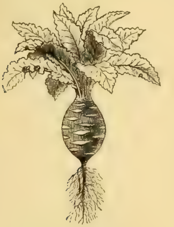
Fig. 319.—Kohl Rabi.

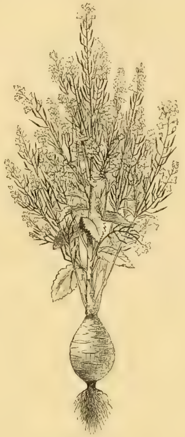
Fig. 320.—Kohl Rabi in Flower.

Another cause producing great variations in the forms of stems is to be sought for in the unequal amount of growth in some directions as contrasted with that in others. In a bush or shrub the amount of growth in all the branches is nearly equal—all the older branches are therefore of about the same size, but in a tree with a lofty unbranched trunk, a Scots Fir, for instance, the growth of the trunk is, at least for a time, much more pronounced than that of the branches. Again, the main development may at one time be in one direction, at another time in another, and so great varieties of shape are produced. Let us take a bulb, such as that of the Hyacinth or the Tulip, before referred to, or a plant of any House-leek (Sempervivum). In any of these the growth of the leaves or of the scales, which are the representatives of leaves, is in excess of that of the stem bearing them; this latter remains short and contracted, the *internodes*, as they are called, *i. e.*, the spaces between the nodes or points of emergence of the leaves from the stem, are not developed, and the result is what is commonly called a stemless plant. The Daisy and the Dandelion afford illustrations of the same thing. The term "stemless" is botanically incorrect, for the stem is that portion of the plant bearing the leaves—it may be very short, but there it is; and the proof of this assertion may be seen when the flowers are produced — up goes the stem to bear aloft the newly formed flowers, and very often leaf separates from leaf in the process; the internodes, no longer undeveloped, manifest their presence unmistakably (see figs. 318, 320). In the cases just mentioned, the growth of the leaves, for a time at least, is greater than that of the stem. In the Cactus, or in the succulent Euphorbias, the reverse is the case. The stem grows, and the leaves are undeveloped, or appear only in the guise of spines.

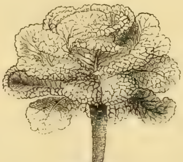
Fig. 321.—Savoy.

Look, too, at the figure of the splendid Primula japonica, introduced by Mr. Bull (see fig. 318). It shows arrest of growth in the lower part of the stem, causing the leaves to be closely packed in tufts on the surface of the soil; the arrest is not permanent, however—the flower stem rises to bear in all its majesty that mass of flowers which has secured for the plant the title of Queen of the Primroses. In the arrangement of the flowers of this plant, too, we see the principle of growth and arrest of growth manifested; a tier of flowers, then an interval, again a tier of blooms, and so on, just as in the Araucaria or the Spruce Fir above alluded to.

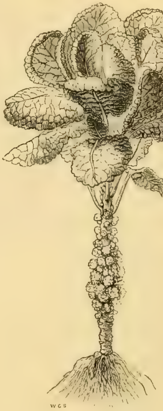

Fig. 322.—Brussels Sprout.

Another circumstance, which greatly modifies the form of the stem and branches is the direction which those branches assume—now horizonal, at other times ascending or descending more or less obliquely, and producing thereby the various forms of round-headed, fastigiate, or weeping trees, and their many modifications. We cannot enter into the explanation of all these forms, suffice it to say, in general terms, that the form assumed is that best calculated to favour, not one particular leaf or set of leaves in their struggle for light and air, but the whole mass of the foliage, and to place each leaf in such a position that it shall infringe the least upon its neighbour's space, best accommodate itself to the exigencies of the situation, and most completely serve its office of feeding the plant and building up its stem. In this struggle, and in this process of adaptation, the weakly leaves and buds die and fall off; others, badly placed, or of necessity overshadowed by those more favourably located, also fall to the ground, the buds in their axils remain undeveloped, and thus again the form of the stem and its subdivisions becomes modified.

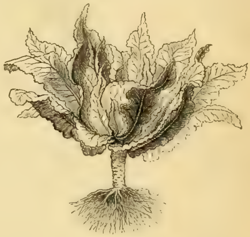
Fig. 323.—Cauliflower.

The different positions of the leaves and buds—alternate, opposite, whorled—have already been alluded to. The reader will need no further reminder as to the influence of the varying position of these organs on the form of the plant as a whole—all this has been told in previous articles.

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* It must be understood, of course, that these expressions are used in a relative sense.

It only seems requisite further to point out that the branching is not necessarily the result of the growth and extension of buds placed in particular positions, because in the case of the true root there are in the majority of cases no buds, certainly no terminal buds, and any subdivision that takes place must be the result of the forking of the growing point. But a "growing point" is in nowise different from a bud, except in the absence of investing scales, which indicate a periodic arrest of growth, as before explained, and which is not so noticeable in the case of a naked growing point as it is in that of a bud properly so called.

In immediate relation to the forms assumed by stems and roots is the necessity, in certain cases, of providing store room for water, for starch, or other products not immediately required, perhaps, but which will be wanted in the future for the supply of the tissues when growth commences, or for the use of the flower when its development begins. This necessity is provided for by those rounded succulent formations, which we call tubers, pseudobulbs, bulbs, and the like. Sometimes these are dilatations of the true stem, or of the branches, or of the buds (Potato), or of the roots themselves. Their purport is pretty much the same in all cases, their intrinsic nature, as we have just seen, is very varied, but what that is, the pupil who has followed us so far, should, in most cases, have little difficulty in deciding.

A last word as to the roots: the modifications in their form are due to pretty much the same causes as those already alluded to. A remembrance of the different offices the subdivisions of the root have to fulfil will serve to explain all the rest; the larger ones are anchors or holdfasts, and their size and direction are in accordance with their functions, and the nature of the soil they are growing in; the smaller ones—the feeding roots—active, busy fellows, are to be found everywhere where healthy food is to be obtained, their tiny dimensions enabling them to absorb the liquid food from crannies often too small to be seen by the naked eye. Here again, varying conditions of soil, and varying forms or qualities of root, are found, as might be expected, in association one with the other.

The illustrations accompanying this article, some of which have been copied from a recent part of M. Baillon's "Histoire des Plantes," will suffice to explain much that we have alluded to in this article. Thus in fig. 319 we have the Kohl Rabi with its "tap" root surmounted by a globose stem; we know it to be stem, for it bears the scars of fallen leaves. In this Turnip-like mass is a store of nourishment available for use in building up the inflorescence and flowers. At the top of this gouty-looking stem is a tuft of leaves closely crowded together, because the growth of the stem between them is for the time arrested. We say for the time, because it is evident from an inspection of the scars below that the stem has already grown between the leaves, causing their separation one from another, while should the plant produce flowers, as shown in fig. 320, the stem will again grow chiefly in length, the leaves will be spaced out, and lateral branches will be formed till a bushy pyramid of flowers is formed.

In fig. 321, representing the Savoy, we have an unbranched stem, which does not swell out, as in the Kohl Rabi, but, by way of compensation, produces a tuft of large leaves. This incidental mention of compensation bids us to remind the reader to remark the almost universal application of this principle in plants. If one portion of a plant be very large, some other is proportionately small, and so on.

In fig. 322, showing the "Brussels Sprouts" we have a case wherein the lateral buds—"sprouts"—are more numerously developed than usual, and also larger in size; their growth is usually more or less arrested —here it is allowed full play.

In fig. 323, the Cauliflower, we have a stem and tuft of leaves similar to those of the Savoy, but the inflorescence is arrested in its growth. Call you that great fleshy succulent mass an instance of arrest of growth? we fancy we hear some one say. We have only to look back to fig. 320, however, to demonstrate that it is an arrest of growth. The flower-stalks do not lengthen, and even the flowers themselves are for the most part imperfectly formed. But by compensation what is lost in one way is gained in another, and in place of the pyramid of stick-like branches we have that succulent vegetable mass so highly appreciated on our dinner-tables.

Home Correspondence.

The Price of Vegetables.—The following remarks are taken from the *Pall Mall Gazette*:—

> "Some little idea may be formed of the necessity of a reform in our greengrocery arrangements by the following passage, which occurs in the report of Mr. H. J. MORGAN, on the cultivation by means of sewage irrigation of the Lodge Farm, Barking, for the year ending August 31 last, which has just been published. 'The average price,' says Mr. MORGAN, 'which our best Potatos last year realised was from £6 to £7 per ton. This year we have obtained no more than £2 to £2 10*s*. Onions, which sold last year for £43 per acre in the ground, and realised a great deal more by marketing, have this year been sold by us at £28, the highest price I have heard of being £30 per acre. In the autumn of last year cut Cabbages (collards) fetched from 1*s*. to 1*s*. 3*d*. per dozen, while this year there has been a difficulty to obtain 3*d*. and 4*d*. per dozen, some having even been sold, I hear, as low as 6*d*. for five dozen. Scarlet Runners, which made 8*s*., 10*s*., and 11*s*. a sieve last year, only reached 3*d*. and 6*d*. and 1*s*., until lately, when they have made 2*s*. and 2*s*. 6*d*. a sieve. Bunching greens have not paid us to market, and we have hitherto fed cattle on them. I have been told by several farmers that they have ploughed in their crops, as it would pay them better to use them as manure than to market them. These differences in price have not at all arisen from difference in quality, as our produce has been, in most cases, as fine and as abundant this year as last. Strange to say,' adds Mr. Morgan, with refreshing *naïveté*, 'that in the face of all this the retail prices are as high as ever—a cut Cabbage ordinarily costing 1½*d*., and a small dish of Beans 4*d*. and 6*d*., with everything else in proportion.' It is more melancholy than strange. We have heard such things before, and at the same time we have heard that there are thousands of poor persons who, while vegetables are either used as manure or are almost given away by the grower, are well nigh starved for want of a dinner, being unable to pay the exorbitant prices demanded by the retailer."

I have no doubt that a great many of your readers, have, like myself, but too great a reason to endorse the above statement of Mr. Morgan as to the prices realised for vegetables this year as compared with last year, and also as to the retail prices charged to the consumers. Some friends of mine living at the West End, were complaining to me the other day of the very high price of Celery: "we can't get any," said they, "under 4*d*. a head." The best Celery in the market at that time was to be bought at 8*s*. or 9*s*. per dozen rolls, or at the rate of 1*d*. per head, so the consumers were paying 300 per cent. on the market price. Take another item, viz., Savoys; on Saturday, October 28, I had 90 dozen, unusually fine, as much as two horses could draw; the price realised was 52*s*., or a little over 6*d*. per dozen. On Saturday, November 4, I had over 100 dozen, which fetched 43*s*.—considerably less than 6*d*., and last Saturday 50 dozen for 30*s*. There would be some little consolation if the poorer inhabitants of London were reaping the benefit of the above ruinous prices, but you find on inquiry they hardly know what it is to have a dish of greens of any kind on their table, except on a Sunday. They should take a lesson from their neighbours over the water, for a French dinner is principally made up of vegetables, and they make 1 lb. of meat go further than we do three or four, which, at the present very high price of meat and very low price of vegetables, is an important matter in our domestic economy. I have often wondered who have been the lucky growers to obtain the nice little prices quoted in your Covent Garden list. In your last impression, for instance, Beet is put from 1*s*. to 2*s*. per dozen; now, I have been sending as fine as any that go to Covent Garden, and I can't get 1*s*. per doz. Again, Brussels Sprouts, from 2*s*. 6*d*. to 3*s*. per half sieve; the average price for the last three weeks has been 2*s*. 6*d*. to 3*s*. per bush. Cauliflowers, 2*s*. to 6*s*.; I don't believe the finest in the market have fetched over 2*s*. This certainly cannot be doing the growers or the public any good. What must the country growers, who consign large quantities of goods to our London salesmen in Covent Garden, think, when they compare the prices quoted in the *Gardeners' Chronicle* with the sums returned to them for their goods? *M. C.* [We quite concur in the opinion that in the interest of the consumer the prices of vegetables in London and its suburbs require regulation; moreover, we quite believe the poorer classes suffer from the unnecessarily high cost of vegetables, and also that the grower very often fails to realise an adequate share of the prices gained by the retailers. The prices quoted in our report, it should be remembered, are, generally speaking, not wholesale but retail prices. There is, moreover, considerable difficulty in getting fair average quotations, because the prices vary from day to day, sometimes several times in a day according to the crop, the season, the supplies received from abroad, the demand, and various other contingencies, of which the grower knows little, the consumer still less. Moreover, the "middle row" prices, or those obtained at a West End shop, are naturally enough considerably higher than those in less fashionable districts. We should be glad if "M. C." would furnish us with an accurate statement of the prices obtained by the growers on the market-days, and we propose now and then to cite "greengrocer's prices" about London, which will, we fear, amply bear out Mr. Morgan's statements. EDS.]

Seedling Willows.—I was walking a few days ago along a drive in a park in this neighbourhood, and saw upon the top of a low wall which ran along the side of the same what appeared to be undoubted "seedling Willows." I send a few gathered at random; the position in which I found them, I think, precludes the possibility of their being anything else but seedlings. *T. Smith, Newry.*

The Gender of Cones.—I have had a conversation with the "hypercritical old gentleman with the spectacles" about the gender of cones. He says in his old Latin grammar "all trees are feminine," but as fashion changes, and old men and old Latin grammars are both getting out of date, it may be possible for both male and female cones to be produced in the South, still in the North we have never seen any. He goes on to say that if a young goose with her egg be had for dinner to-day, and the old gander with his ovum be tried to-morrow, we shall ever after be able to distinguish the true gender. *Neuter Gender.* [Our correspondent seems more hypercritical than his friend even, though he shifts the scene. We thought the original objection was made on botanical grounds, but it seems that it was our reporter's "genders of nouns" which was impeached. Had our reporter written in Latin, "Neuter's" objection would have been valid; as he wrote in plain English we can see no grounds for the criticism. Neither can we subscribe to the dictum that all trees were feminine in Latin, *e. g.*, Olea, feminine; Oleaster, masculine; Malabathrum, neuter. The question was discussed in our columns in 1867, when a valued correspondent of ours proposed to write Taxodium disticha, on the ground that trees were feminine in Latin. If the Romans had known the tree Taxodium, and given it a name derived from two Greek words with the neuter termination *um*, would they not also have written the adjective also in the neuter? We venture to think they would. EDS.]

Large Onions.—I incidentally attended a very extraordinary exhibition of roots which is annually held by Mr. P. J. Perry, of Banbury, and which took place on the 8th and 9th instant. My attention was particularly called to 12 Onions, of the respectable weight of 15¾ lb. which, I am informed on the highest authority, is 2¼ lb. in weight greater than heretofore shown even in Banbury, which has of late attained a national notoriety for the growth of this bulb. I am constrained to make these remarks for the information of your readers, more especially as you have already referred to the Onions grown at Banbury, as surpassing all others in the kingdom. It is, however, but fair, and mere justice, to say that the 12 Onions in question, and which, of course, took the first prize, were grown by F. Castleman, Esq., Brook End Green Farm, Barton-le-Clay, Bedfordshire. They were of the White Spanish variety. There were on this occasion 19 entries, and all shown were remarkably fine, but the 12 that gained the first prize were really astonishing in size. *L. H., November* 14.

—— I beg to send you the result of my trials of 10 varieties of Onion, 1 rod of each. These gained the first prize at the Royal Horticultural Society's exhibition at South Kensington on September 6 last, and were also exhibited on Messrs. Suttons' stand at the harvest festival trophy at the Crystal Palace:—

	Bush		Bush.
Paris Silverskin	4	Nuneham Park	6½
James' Keeping	4½	Globe Tripoli	7
Bedfordshire Champion ..	4¾	New Red Italian Tripoli..	8½
Suttons' Improved Reading	5	New White	9¼
New Blood Red	5½	Giant Rocca of Naples ..	12

G. Farndell, Gr., Surrey County Asylum.

Peculiarities of Grapes.—May I suggest to Mr. Cramb that the West's St. Peter's may be defective as a stock for the Madresfield Court? I have a Mrs. Pince's Muscat and a Duchess of Buccleuch grafted on a St. Peter's, and as soon as they become ripe they shrivel almost to nothing, while West's St. Peter's, Burchardt's Prince, Muscat Hamburgh, and Black Lady Downe's, growing in the same house, keep in sound condition till March, and the last-named much later. As I have the Duchess and Mrs. Pince doing well on their own roots, I am not disposed to think they have any constitutional weakness because they are failures on the St. Peter's. Much has been said against Golden Hamburgh and Golden Champion. In some soils they may give disappointment, but such grand Grapes are worth the turning from the "beaten track" treatment, if necessary, to get them to perfection. I could do nothing with the Golden Hamburgh grafted on Marchioness of Hastings Vine; it was little better on its own roots, but, grafted on a Black Hamburgh Vine, it has done most satisfactorily for eight years, having carried heavy crops of fine fruit, and has always kept well from August to the end of November. It is always relished by my employers and their friends, being a companion to the Black Hamburgh. The Muscat of Alexandria, though one of the best of Grapes, soon cloys on the palate, and generally is not relished for any length of time without a change. I am glad that Mr. Cramb is successful with the Golden Champion, as it is by many, who have been successful in growing it to perfection, considered a great boon. I enclose a few Golden Hamburgh Grapes, which were ripe in July, and I think that I shall have no difficulty in keeping some which are still on the Vine till Christmas. [Capital sample.] Plants, such as Azaleas, Epacris, and some bedding plants, have stood under these Grapes, and none have been injured by damp. Patience with newcomers might be advantageous to some of us. *M. Temple, Balbirnie.*

Masdevallias.—I have one more little fact to add relating to M. tovarensis, which will perhaps be interesting, if not novel, to some of your readers. In 1870 a robust plant of M. tovarensis flowered in the rich collection of E. Salt, Esq., at Ferniehurst, bearing three finely-developed flowers on one scape, a by no means singular occurrence. These flowers withered in a week or two, as is usual, but the scape itself was not cut off, being allowed to remain on the plant, and this year is again producing three flowers from its apex. Another scape on the same plant bids fair for doing likewise. Phalænopsids often branch and flower from the latent buds down their flower-stems, if liberally treated, and the well-known Oncidium Papilio and its varieties continue to produce flower after flower for years, from the same scape, but I believe it to be far from a common occurrence with Masdevallias; but perhaps this is because we eagerly cut off the flower-stems as soon as their floral ornaments are gone, or before, when cut flowers are required. *F. W. B.*

Successful Pine Culture.—An example of Pine-apple growing came under my notice when on a visit to Mr. Thomson at his establishment last week, which I think deserves to be recorded, viz., a smooth-leaved Cayenne Pine, 13 pips deep. It was one of many dozens of magnificent fruit swelling off, and ripe, and ripening. What weight this fruit will be when ripe, I will leave any Pine grower to guess; and when I say that all this splendid lot of Pines are growing in 9-inch pots, it makes them more remarkable. In my opinion this is the most successful piece of Pine-apple culture ever accomplished. Every plant, in its entirety, is as if it was cast in a die, so perfect are the whole. At Dalkeith, in my time, Mr. Thomson removed to the fruit-room in one day from 40 to 50 Queen Pines, ripe and ripening, in 10-inch pots, and not one of them was less than 4 lb. weight, for every one of them was weighed by myself, and booked as it ripened and was cut. What occurred 14 years ago is repeated with triple force to-day at the Clovenfords Vineyard, or rather Pineyard, I should say, for the enormous quantity of Pines grown there fully justifies the name. One may feast their eyes on hundreds of the beautiful mottled-leaved Black Jamaica Pine alone—a sight not common *aujourd'hui*. *H. Knight, Floors Gardens.*

Tomato Preserve.—I thank Mr. Burns for his kind information respecting the way in which he ripens his Tomatos, though I cannot see anything novel in the practice, having practised it myself almost as long as I can remember, and with satisfactory results in ordinary seasons, when the fruit has arrived at a pretty advanced state of maturity before being pulled up. But the past season has been unusually averse to the ripening of the Tomato, thereby causing a much larger number of green ones, some of which, if they were to hang by their roots from now till doomsday would never ripen; hence the necessity, or rather I should say the prudence, of snatching them from Jack Frost to make preserve, and risking getting into trouble with the cook. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Cedar of Lebanon Seeding.—I beg leave to inform Mr. Earley that I have gathered perfect seed of this tree. In the month of November, 1869, I gathered a large number of cones from some of the grand specimens growing at Halden House, near Exeter, from which I extracted the seed, and sowed it the following March on a well-prepared bed in the open air. Not more than from 10 to 15 per cent. germinated, and nearly one-half of the number damped off a short time after appearing above ground. The remaining number were at the time I left (January of the present year) robust, healthy plants, from 6 to 9 inches in height. *T. J. Foote, Gr., Clevedon Court, Somerset.*

On the Importation of Oranges.—Allow me to mention an incident, which will not be without interest to some of your readers, perhaps in a nautical, certainly in a horticultural point of view. Captain John Spicer, of the ship Mary of London, received on board his ship at the island of Tobago, early in April last, a small chest, "contents unknown," addressed to a consignee in Scotland. Upon the ship's arrival at Greenock, May 28, the chest was opened by the customs; it was found to contain some clothes, and to be filled up with several dozens of Oranges (the large green variety), Shaddocks (Forbidden Fruit), and pieces of Sugar-cane. To his great surprise the whole were landed in perfectly sound and sweet condition, as if freshly gathered. The chest had been on board ship for fully eight weeks, stowed in the hold, which was filled with the steam of a sugar cargo, and probably 90° hot. It is not easy to account for the preservation of fruit under these conditions, but Captain Spicer thinks that a great deal is due to the chest having been nearly air-tight, the lid having been screwed closely down. Having the most perfect confidence in Captain Spicer, whom I have known for 30 years, and having just taken the narrative direct from his own lips, I need scarcely add that I do not entertain the slightest doubt of the accuracy of what he has stated to me. *G. S. Cundell, Clapham Park, November* 13.

The Certificated Grapes.—The remarks of Mr. John R. Pearson are fraught with his characteristic good sense, and though, like him, I have little sympathy with anonymous writers, yet in this age of cant and subterfuge, until "the glorious privilege of being independent" becomes more general, we must be content to allow secret writing. It is pretty well known that I have no sympathy with the committees of the Royal Horticultural Society—in fact, I have seen sufficient of committees to regard them as irresponsible bodies, for with neither persons to be kicked nor souls to be committed to the lower regions, men do things in secret conclave to which, indeed, really the majority would be ashamed to attach their names. I am free to admit there are upon these committees many persons for whose individual opinion I entertain great respect, but the public has no means of ascertaining that the awards are made by such men, and hence the whole of the awards are regarded with distrust. I object to secret judging altogether. More than 20 years ago I was one of the first to advocate both open exhibiting and open judging, and I must confess that in the case of either new fruits or new flowers the names of two or three men who are known to be practical judges would have more weight with me than that of a secret committee comprised of all the members of the Horticultural Society. The National Floricultural Society, which for many years held its meetings in the rooms of the Horticultural Society in Regent Street, was the best institution of the kind we have ever had. There the judges were selected for the special work they had to do. Was it Auriculas, Tulips, Carnations, Pelargoniums, Heaths, Azaleas, or Epacris? the best men in the country for each class were invited to judge them, and their signatures were attached to every certificate which the Society issued. If you were deceived you knew who had deceived you; with a committee the only answer you get to a complaint is, "I was not at the meeting," or "I had nothing to do with it." This is not all, the best judges in the world may be deceived. No committee nor judge can avoid this except by consecutive examination for the whole season of the blooming or fruiting of the plant. This is impossible, and therefore, as I stated in the "Gardener's Magazine of Botany," many many years ago, would throw the onus of the award upon the exhibitor of the plant or fruit. I, as a judge, would say to the exhibitor, "We are disposed to make an award to your exhibit, but the value of it must depend upon whether you are prepared to sign a declaration that the plant or fruit is constant in its habit, and that it is at all times as good as we have seen it to-day." Such a declaration would of course receive a Special Certificate, any qualification a second or none at all. In this way we should have something like a material guarantee of excellence, at present the onus falls upon the Royal Horticultural Society, which is blamed for certificating things got up for the day, and which may have no merit beyond it. This would be a plan superior to that proposed by Mr. Pearson, to send certain practical men at the exhibitor's expense to see the growing plant on a certain day. Such a system would be no guarantee to me, indeed I would rather take Mr. Pearson's simple recommendation than a "single day judgment" of the best men in the world. I have seen most of Mr. Pearson's seedlings for some years past in the growing state. Ferdinand de Lesseps is, as Mr. Pearson describes it, not only a new Grape, but a "new fruit," so new and special in flavour that if it were placed in the mouth of strangers without their seeing it, it is questionable if the majority would not fail to state positively what fruit it was. A small plant in a 9-inch pot gave me this year 12 nice bunches, but it showed four times that number. Now, I do not say to the general public, "Rush in and grow this Grape," as what a great Grape-growing friend of mine calls "the vulgar rich," who worship size and symmetry, will surely be disappointed; but to connoiseurs I say, "Grow a Vine or two, and you will be delighted to have so choice a novelty to offer to your friends." The Chilwell White, which Mr. Pearson has withdrawn from sale, I saw last year before it was certificated, and considered it good and distinct, but it cracks. Dr. Hogg I also tasted before it was quite ripe, and considered it most promising, but after it was certificated and dead ripe, it was by no means first-rate. The two black Grapes—Emperor of Morocco, and what, for the want of a more euphonious name, I call Chilwell A 1—I believe to be really first-class and distinct. A 1 in my estimation comes nearer in flavour to that finest of all Grapes, the Black Damascus, than anything in cultivation at the present time; and, if it maintains that character, it will be a certificate of excellence good enough for all. Mr. Pearson is no foister upon the public of old kinds with new names, as has been the case with many novelties of late years, viz., Josling's St. Alban's, Kempsey Alicante, Golden and Muscat Hamburgh, and some others. The best abused Grape of the present time is the Champion Muscat, sent out some years ago by Messrs. Veitch. It is a dark purple Grape, almost black, but because it cannot be induced to cast its coat, and become quite black, there is a howl against it amongst Grape growers as senseless as it is absurd. Royal Ascot, for prolificacy and constitution, is equal to the Black Hamburgh, and I can also from personal experience speak well of Mrs. Pince and Madresfield Court. I wish I could recommend the Golden Hamburgh, but the truth compels me to pass it by. *Wm. P. Ayres, Patent Hothouse Works, Newark-upon-Trent, Nov.* 13.

—— It is astonishing to find a gentleman of the experience of Mr. Pearson opening his letter with the demand to know who is "Vitis" and who is "Lynx Eye," and raising the usual dust about stabs in the dark, &c. Why, the only direct reference to him was a most complimentary pat on the back. He did what no one has done before him—returned a certificate for a new Grape when he found it was unworthy of cultivation. And in criticising the action of public bodies, truth gains immensely by keeping clear of personalities. The Fruit Committee of the Royal Horticultural Society has either certificated fruit without sufficiently testing its merits, or it has not. If it has, it has laid itself open to criticism; if it has not, why does Mr. Pearson suggest inspection, &c., before certificating in future? or why, indeed, did he return his certificate? It is singular that Mr. Pearson, in his long letter, is totally silent about the Golden Champion Grape, which has mainly provoked these strictures. He confesses to have voted for the Golden Hamburgh being certificated, though most growers have discarded it. Most of us would be glad to learn if, and might "not be surprised to know" that, he also voted for the Golden Champion. At all events, he might have favoured us with an estimate of this new Grape. So little have any personal matters entered into my thoughts, that I was not aware that Mr. Pearson was on the Fruit Committee, neither do I remember whether he is the raiser of the new Grape, Dr. Hogg, or not; hence I had not the most distant idea of "attacking him." It is to be hoped, however, that the Fruit Committee will be able to offer a better defence than this gentleman has made on their behalf, else their case is hopeless indeed. He confesses that great mistakes have been made in certificating Grapes, and likewise in withholding certificates. This is exactly what "Vitis" and myself have said. And yet no sooner have we specified examples of such mistakes, and suggested means of amending them in future, than Mr. Pearson rushes in with, "Pens off!—name!—who are you?" It matters not a single straw, either to the Fruit Committee, the public, or to this gentleman, who we are. Only, what we have said is relevant to the question. Now Mr. Pearson finds no fault with that. He condemns the committee as much as we do. True, he conjures up difficulties, many of them imaginary, in the way of raising and of testing of new Grapes. We can get along very well with our old Grapes until better new ones offer, but we have a right to demand that worthless varieties shall not be certificated as first-rate. Our fruit growers have a right to demand that means be taken to prevent its happening again. Your correspondent proposes a check upon certification,—that of personal inspection by a sub-committee of three before a certificate is granted. This is good as far as it goes, but it does not go far enough. One visit would not suffice to prove all points of quality, keeping, growth. The visits would have to be repeated, and should be spread over two seasons; they would thus become very expensive, and it would beget greater confidence, and be more becoming to the dignity of the Royal Horticultural Society, to refuse to certificate Grapes unless proved in their own garden at Chiswick. As to varieties with peculiar constitutions that might refuse to grow at Chiswick, they are not such as would be generally useful, and ought to be left to make their way—if ever they do make their way—without the aid of a certificate. To intimate, as your correspondent does, that there are some who might not like to entrust their novelties to the officers of the Society, is a serious reflection upon their integrity, which has no warranty in fact. Besides, each would be free to do as he pleased: those who valued the certificates of the Society would submit to its conditions, others, if there are any such, would not; but the great point would be, that the public would not be deceived, nor the Royal Horticultural Society brought into contempt. Under the present system, certificates for new Grapes will speedily be no better than waste paper. Permit me to ask your correspondent, in conclusion, How often the Fruit Committee saw the new Grape, Dr. Hogg, before certificating it? and wherein the Emperor of Morocco differs from its parent, the Black Morocco? Finally, I thought Ferdinand de Lesseps a curiosity in flavour, and agree with its raiser that it is not simply a new Grape, but a new fruit—in this sense, that it is larger than any of the musk-flavoured American Grapes that I have tasted. Still I would have thought more, not less of it, had the raiser now had thousands to offer, instead of not "a dozen left." Clearly, in his estimation it is not a Grape likely to sell, nor is it—unless to the curious. In this, also, I am at one with "Vitis." To Mr. Pearson, also, I am, as a Grape grower, thankful for his endeavours to raise new varieties; and no one will rejoice more than I, if many of his seedlings prove as first-rate as some of the Grapes certificated have proven worthless. Only let us have some efficient machinery to blow away the chaff from the grain, and the more grain—that is, new Grapes and other fruits superior to the old ones, the better. *Lynx Eye.*

Hoya bella.—I consider this one of the most beautiful plants for a hanging basket in conservatories that I have ever seen, when allowed to grow and hang down at will. The best treatment I have found for it is to keep it in a warm house near to the glass through the winter months, and, in fact, until the flowers begin to expand, Then remove it to the conservatory, where it should hang 7 or 8 feet high to see it to perfection. I have a plant flowering now in that position, covered with its pretty delicate waxy-looking flowers, it certainly is a beautiful sight. I expect it to remain in flower another month, and this is the second time of flowering this season. In the months of May and June (although only a young plant), it had 120 heads of bloom, which lasted two months. I have seen large plants grown, neatly tied out with sticks, but in my opinion that is not the best way to grow it. *O. Orpet.*

The Madresfield Court Grape.—A correspondent in a contemporary, reviewing the gardens at Possingworth, where this Grape is largely cultivated, both on its own roots and grafted on a variety of stocks, states that it has shown a tendency to crack, more or less, on all of them, and this under the care of an experienced, energetic, and clever gardener. I had an opportunity of seeing many large fruit-growing establishments this season, both in the North and South of England, and its character as an early or late Grape was very promising. In an early vinery, in the last week in May, I saw a graft (on a Frontignan stock), carrying a fair-sized bunch, good in berry, as black as a sloe, with a beautiful bloom on. I saw it again about a fortnight later, with not a crack or fault to be seen, and the flavour excellent. Next came the fruit shows at Kensington, and the examples shown there stamped it as a first-class companion of the good old sorts. From the above I concluded at once to multiply its number pretty freely at Waterdale; but when I saw the Possingworth report, of its being so liable to crack, both on its own roots and grafted, I deferred planting till I should hear more about it. The liability to crack in a late keeping Grape is a bad fault, and I hope those gardeners who have an opportunity of fruiting it this season, and testing its merits, will freely give their experience to the readers of the *Gardeners' Chronicle. James Smith, The Gardens, Waterdale, St. Helens.*

Coniferous Nomenclature.—I think Mr. Barron is rather hard upon me; still all lovers of Conifers must feel obliged for his remarks at p. 1257, and I thank him especially, notwithstanding his laughing at me, as I consider him one of the highest authorities on this subject I know, and he need offer me no apology for his "jocoseness;" but I don't see why he should consider my remarks at p. 1229 as odd,—they did not when I wrote them, neither do they now, appear odd to me. Here is a Picea scattered far and wide over the country under three names, lasiocarpa, Lowii, and Parsonsii, and not very long ago it was also called grandis. I received from the late Mr. Veitch, of Exeter, three plants of it, one under the first name, and two as P. grandis. All I said at p. 1229 was, that they were not P. grandis, and this I say now. I knew they were not P. grandis, because I had seen the true P. grandis growing in one of the pinetums at Elvaston Castle, but I did not know they were not lasiocarpa; I also could see they were all three the same; and, as Mr. Veitch might be correct in calling one of them lasiocarpa, I adopted that name for all three, but I only did so provisionally. I am by no means wedded to the name of lasiocarpa, and will quite as soon call my trees Parsonsii, if Dr. Hooker or any recognised authority will authoritatively sanction it. It is, though not very euphonious, a very fair name, and for the reasons given by Mr. Barron I think a proper and appropriate one. But what's in a name?—call it what we will, it will still remain a very hardy, beautiful, quick growing tree, and one well deserving every possible attention and a place in every collection: it ought indeed to be planted everywhere where any trees are planted. It is, however, I think, to be regretted that as it coned last season in the Knap Hill Nursery, a cone of it was not sent to Dr. Hooker, so that he might settle this vexed question for once and all. I observe, in the very interesting catalogue of Conifers, evergreens, Roses, &c., sent out this autumn by Mr. Anthony Waterer, he adopts the name of lasiocarpa. If this tree, which I have called lasiocarpa, is not lasiocarpa, is there such a tree in England? Mr. Barron tells us, "that no species of Picea exist at present in England to which the name of lasiocarpa can be correctly applied." What, then, is the tree raised from Jeffrey's "first batch of seeds," and which is now at Borrowash? Is it the plant named lasiocarpa by Dr. Balfour; and did Mr. Barron first see it in Edinburgh; and is it the same as that he was shown as lasiocarpa by Mr. McNab, and which he did not think specifically distinct from Picea grandis of Douglas?" [See Mr. Barron's letter, p. 1360. EDS.] What is the origin of the name lasiocarpa? Did Sir W. Hooker name a tree lasiocarpa?—and if so, was the name given from the examination of a cone and specimen of foliage?—and if so, by whom was the tree found and the cones sent home? In Gordon's "Pinetum" the author gives "Pinus lasiocarpa, Hooker," as a synonym for the "Picea amabilis, Loudon." I don't remember Mr. Loudon making any mention of this name (lasiocarpa) in the "Arboretum Britannicum," but in Dr. Lindley's "Catalogue of Coniferous Plants with their Synonyms," published in the Horticultural Society's Journal, parts 3 and 4 for 1850, at p. 210, No. 18, I find † Abies lasiocarpa, Hooker, with two notes of interrogation against it, and the sign † prefixed, signifying "not yet introduced." Must this sign be still retained? With respect to Picea magnifica, which I received as Picea amabilis, I knew it was not amabilis and I called it magnifica, instead of nobilis robusta, a name some adopted, because Mr. Barron told me he called it magnifica; but I and many others thought it looked very like nobilis, particularly those who adopted the name nobilis robusta. So, I said (p. 1229), "I suspect it will turn out to be only Picea nobilis, after all." To this "suspicion!" Mr. Barron also takes exception, but as he has sent a fine cone of it with a branch, and also a cone of P. nobilis, to Dr. Hooker, I hope the Doctor will, in the interest of us all, publish in your pages his opinion, by which I shall be proud to be guided. I must, however, put in a word for the retention of the name magnifica, if he decides it is not a nobilis, as magnifica appears to me a very appropriate name. It will some day, I feel sure, make a truly magnificent tree. As to Picea grandis, the tree which has been generally distributed in the last few years as the true P. grandis, and of which I have a specimen purchased of the late Mr. Veitch, of Chelsea, may be correctly named; but all I can say is, it has not hitherto done well with me, and it does not appear to do much better with Mr. Walrond, from what he says of it (p. 1329). As I have stated before, some years ago I saw the true P. grandis growing in one of the pinetums at Elvaston Castle, and I believe Mr. Barron has plants raised from it for sale; but whether or not the tree now generally called P. grandis is the same as that which I saw at Elvaston, Mr. Barron will know. My plant has "so tender" a look, I sometimes think it may be only a variety of Picea religiosa, and not a true P. grandis. I believe at Dropmore there is a specimen of the true grandis, but Mr. Frost calls it amabilis, as stated by Mr. Dod (p. 1328), and he also "shows a very handsome true P. amabilis under the name of P. grandis." I think, though I have no wish to speak dogmatically, that Mr. Barron is right and Mr. Frost is wrong. I should like to know whether either of those trees at Dropmore has coned. I have a nice specimen of what I call the true P. amabilis, and which was planted for me here by Mr. Barron himself, and which I purchased of him; it was this spring covered with male blossoms, but I cannot see any cones upon it. Both Mr. Walrond's and Mr. Dod's communications are interesting, and, as a reader of the *Gardeners' Chronicle* always on the look-out for Coniferæ lore, I am thankful to them; but I am rather surprised they neither of them mention that king amongst the Pines, the Araucaria imbricata. I cannot suppose they have it not. May I inquire how it does with them?—here it grows like a "Willow!" I had a rev. gentleman here the other day, a friend of the present proprietor of Dropmore, which beautiful place he knows well, and he told me my Araucarias were more robust though, of course, not so big or so long planted as those at Dropmore. My trees were mostly planted in the early spring of 1859, and on one of them I have at this present one cone, of which I am not a little proud; and as I have a male plant within a few yards of it which was this spring covered with male catkins, I hope my cone may have seeds in it. I would be obliged if you would say when the cone should be ripe. I agree with Mr. Dod in what he says about trees raised from cuttings, but though some so raised make as good trees as seedlings, yet, as a rule, I for one would greatly prefer a seedling; and as for grafted plants I agree with Mr. Walrond, they are hardly worthy a record. Though I have two grafted P. nobilis here which have made wonderful shoots this season, more than 2 feet long, still, as a rule, give me a Conifer on its own roots—a seedling first, and then a cutting if a seedling is not to be had. Has Mr. Walrond a specimen of Thujopsis dolabrata? and how big is it? I should like to make a few remarks on the Douglasii Mr. Dod speaks of, but I fear if I write any more you will think I am encroaching on your kindness. I will therefore draw this communication to an end; but, in conclusion, let me add a list of all the Silver Firs I have, and have had, growing here.

1. Picea pectinata, the common Silver Fir.
2. Picea nobilis, most truly named. I have three grafted plants and two seedlings, which I believe came from Elvaston, and were raised from seeds ripened there; both are strong growers, very robust, but hardly so glaucous in colour as the grafted plants.
3. Picea magnifica, in appearance like nobilis, but more glaucous.
4. Picea amabilis, from Elvaston, doing very well, but hardly so well furnished as a seedling plant would be.
5. Picea grandis, purchased of the late Mr. Veitch, of Chelsea; does not do well with me.
6. Picea religiosa, received from Mr. Veitch, of Exeter, but died either the second or third winter I had it.
7. Picea Webbiana, grew well here for some years, but was cut down for want of room.
8. Picea Pichta, not worth growing; cut down for want of room.
9. Picea balsamea, handsome and quick growing when young; dies here in seven or eight years.
10. Picea Nordmanniana, handsome, hardy, and quick growing; now coning.
11. Picea Pinsapo, handsome, hardy, and quick growing; now coning.
12. Picea cephalonica, handsome, hardy, and quick growing; now coning.
13. Picea bracteata, very handsome, very robust and distinct.
14. Picea Parsonsii!! called by me and many other folks hitherto lasiocarpa, very hardy, very handsome, very quick-growing, and very robust.

To this list I will add Picea Pindrow, though I have not got it, but there are several trees from 12 to 15 feet high, growing at Felton, the beautiful seat of the Hon. Alan Herbert, near here, which I believe to be P. Pindrow, and which are very handsome, and to all appearance hardier than P. Webbiana, and much greener in colour. P. lasiocarpa, true, I suppose I must mark, as Dr. Lindley did in his catalogue, not yet introduced. *C. F. P., The Grange, Kingston, near Taunton.*

Cauliflowers.—I have been commending to some of the market gardeners in my neighbourhood Veitch's Giant Autumn Cauliflower as a first-rate variety for early winter work, because of its great size and undoubted reliability of character. For market purposes, size is of immense importance in the Cauliflower, especially when combined with solidity, and whenever the seed shall be sufficiently cheapened Veitch's Cauliflower will certainly be found grown for the London market in great quantities. I am, however, by no means prepared to commend it as forcibly for private growing. Like Mr. Gilbert, I hold that in this case "three heads in a dish is better than one," whilst the quality of small compact white heads as compared with that of large ones is vastly to the credit of the former. Of course the Giant Autumn variety can be cut small, but even then it is much larger in growth and requires more space than dwarf early kinds. Last winter I was furnished with a small quantity of Cauliflower seed that had been grown in the North of Europe; name, if any, unknown. Some of it was sown in a box the last week in January and placed in a cold house, from thence, a month later, the plants were pricked out into a frame, and finally transplanted into the open ground early in April. These headed in from the middle to the end of June, having the whitest, firmest, and dwarfest Cauliflower heads I have ever seen, and when cooked ate like marrow. On July 10 I sowed again in a box in the greenhouse, removing them into the open air when just showing rough leaf, and planting out finally within a month of the time of sowing. From these I cut beautiful white, firm heads on October 20, and have obtained a constant supply since. From this experience of it I am induced to believe that it is the earliest fruiting Cauliflower that is grown. With the first batch I put out also, for testing, plants raised from seed sown at the same time, of the Early Dwarf Mammoth; but the other kind beat that in earliness by a fortnight, and greatly excelled it in every other respect. I have, therefore, no hesitation in expressing my belief that, judged by its merits, it is the very best private garden Cauliflower I have ever seen. I may add that Mr. Charles Lee, who saw it here in the summer, was quite enraptured with it, and expressed his conviction that the variety was quite distinct and new. *A. D.*

Vine Grafting.—Another very efficient mode of grafting the Vine, and which I would recommend to Grape growers, is the inarching of long pieces now, the end to be inserted in a bottle of water, suspended for the purpose. By grafting now you avoid bleeding, which in spring takes place. Old Vines, which have in too many cases bare wood, may be mended up in this way, and many varieties put on any one Vine. Men of ordinary tact will mend up lots of bare places on old Vines, and fruit, moreover, will be the reward next year. I inserted several buds, too, of old wood last spring, as Mr. Miller has described Mr. Douglas to have done, and they each carried a bunch of Grapes. The former mode, however, I find to be preferable. The time when the Vines are pruned is the best time for grafting, as nice long prunings may be selected and put on, and a small bottle of water to each will guarantee the whole. Our early Hamburgh house will get a mending this week, and any variety which may be considered desirable added. The late houses will get a mending when pruned *tantôt*. The Muscat house, for instance, will get several of Golden Champion put on, Chasselas Napoléon, &c.; and the Lady Downe's houses will have an addition in Madresfield Court and Mrs. Pince's Black, and a good few of Gros Guillaume and Gros Colman, &c. Grafting the Vine in this simple and efficient manner I consider preferable to all others, since it throws new life and vigour into old Vines. The bottle of water will be understood to be in lieu of roots and soil in a pot. *H. Knight, Floors Gardens, Oct.* 31.

On the Growth of the Verbena.—I will begin my second letter on the growth of the Verbena by saying that I placed three of my spring-struck plants in a 7-inch pot, in a compost consisting of three parts of thoroughly decomposed cow-dung, two years old, and one part of good loam and leaf-mould and sand, all well mixed together. To make this light compost firm, I used a flat-headed pestle freely, taking care not to injure the plants or the roots. Having cleared my tiles of struck cuttings out of the pit before referred to, I at once introduced my fresh potted plants there in place of them, plunging the pot to the rim in leaf-mould, giving both plants and plunging material a heavy sprinkling of soot-water. With plants so young and healthy, all making side growth up the stem, with compost so rich, and position in every way so favourable, no one will be surprised at a rapid progress being made. To all who have seen the common Vervain growing on a bare heap of cinders, and choosing that as its home, it will be no wonder to find the Verbena delighting in the rich food I have described. Stopping now was a daily operation with some plant, or some parts of a plant, till within eight weeks of the show day, when I was bound to cease altogether from this work, and attend to training only. The bulk of my plants by show day were as large as a fair-sized common beehive, and not unlike it in shape, but not so with all. I remember one called Mrs. Youell, a white one, and with the best formed flower I ever saw, the segments being so well filled up that it looked like a white Phlox, but it was a bad grower. This I trained to a flat face, but all the rest were cone-shaped. To say exactly how I trained each sort would be difficult. Suffice it to say, I so disposed the trusses of flowers over each cone as seemed to set it off best, and the trusses were both fine and plentiful. Finding I might have them in bloom a little too soon for the show, I removed them from their warm berth in the pit to the open walk by day, and took them into the greenhouse by night, doing this for a fortnight before the show. The key to my success here appears to me to be good living, bottom heat, and top air. To say I felt proud of my plants would be wrong, but that I felt pleased with them I must confess, even to a weakness, for all who saw them seemed delighted with their beauty. Should there be anything in the above remarks not sufficiently clear to the readers of the *Gardeners' Chronicle*, and I can in any way further elucidate the subject, would give me pleasure to do so. *R. T.*

Figs on the Open Walls.—The crops of these have been very late with us this season. The first crop was late to begin with, on account of the fine autumnal weather which we had last year. In fact, the year throughout was quite a Fig season, bringing many of the successional fruits to maturity before the early frosts set in. At the same time, such fine seasons as the one of 1870, have their drawbacks by nearly forcing to maturity the majority of the crops for the following season, at least if they do not ripen they are so advanced in size, that, cover the trees as you will, all the fruit exceeding the size of green Peas prematurely drop off during the winter, or more particularly in the spring when the trees start into growth. In the spring of this year such was the case. Upon the removal of their winter covering only a few fruit were to be seen peeping out from the tips of the branches, consequently our principal crop was so late that all the leaves dropped off on October 11, with 7° of frost, and left the branches studded with fine black half-ripened fruit. Our Fig walls are about 120 feet long, and about 12 feet high, and well covered with fan-trained trees. The principal and most useful sort is the Brown Turkey, and I find it so for indoor purposes: it is almost an everlasting bearer with kind treatment. The Fig trees in question are very old, and I cannot well understand how they came to be planted upon a north aspect; I presume a south aspect would have been the best of the two for Figs. But be that as it may, taking the run of seasons we have generally fine autumnal crops of large-sized fruit. The shoots of this season are pretty well studded with small fruit for another year. Our system of cultivating the out-door Fig is somewhat different to that which I adopt for the Fig under glass. Against the wall out-of-doors the trees are kept thin of wood, giving them a good thinning about the month of July, to enable the remaining shoots to get well ripened before the end of the season. When all the leaves drop off with frost the shoots are regulated and nailed to the wall, and ultimately covered up for the winter. *J. Miller, Worksop Manor.*

Foreign Correspondence.

COLLIOURE: *October* 26.—Some time since, my friend Mr. Daniel Hanbury requested me to collect seeds of the PHRAGMITES GIGANTEA, which grows at La Fontaine de Salces, between Narbonne and Perpignan, and to ascertain if this plant could be introduced into our gardens. I have just returned from Salces, whither I went in search of the reed in question, which is a plant of so much interest that I send you the following particulars concerning it.

This plant has been named Phragmites gigantea by Gay, P. isiacus by Kunth, Arundo maxima by Forskahl, and A. altissima by Bentham. Be its name what it may, the plant is a native of Egypt, and appears as an outlier in our northern latitudes. How is it that this plant should occur in this one spot only in France, or probably in Europe? Can it be a remnant of the ancient miocene or pliocene vegetation, as the Chamærops, the Myrtle, the Anagyris, and some other plants of exotic aspect are suspected to be by M. Martins, of Montpellier? The so-called Fontaine of Salces is a copious spring, almost a streamlet, which arises at the foot of a rock of a semicircular form, and whose concavity is turned to the south, and is completely sheltered from the north wind. The water of this stream is very limpid, and it is probable that it does not freeze in winter time. At the point where it issues from the rock it forms a little lake some 70—80 feet across, and of great depth. The waters of this lake are lost in the adjoining marshes. The reed grows on the borders of the lake throughout its whole circumference, forming compact tufts, and occupying a space of some 300 feet round the lake, but not extending beyond this distance, probably on account of the diminished temperature of the water. At the time of my visit the stems of this fine plant were 15—20 feet in height, and bore at their summit very elegant panicles of flowers, very like those of the Arundo Donax. These stems are annual, straight as an arrow, of the thickness of the finger, well furnished with large and beautiful leaves, of a tender green colour, not quite so thick or so stout as those of the Arundo Donax, but considerably taller. The Phragmites gigantea would indeed be worth introducing into gardens as an ornamental plant, but it is doubtful whether it would succeed out of the Mediterranean district. It is, moreover, essentially an aquatic plant, with its roots constantly under water. The surest method of propagation would be by division of the rootstocks, but it would be no easy labour for the workman to extricate them from the mud in which they grow.

Some of your readers may also be interested in knowing that I have succeeded in flowering in my garden at Collioure the curious GERRARDANTHUS MEGARHIZA, a Cucurbit, producing a large tuber 3—4 feet in diameter, and 1—2 feet thick, which lies on the surface of the soil, and is used by the Kaffirs for medicinal purposes. The plant is diœcious; my flowers are female only. The tuberous dilatation of the stem is observable soon after the seed begins to germinate. From the stock spring a number of slender stems, which ultimately twine round a support. The flowers are about the size of those of the white Bryony, and are of a deep chocolate-coloured tint, heretofore unknown in Cucurbits. The three carpels of the ovary do not meet in the centre, so that the cavity remains, truly one-celled, though at first sight it appears to be three-celled. By the character of the ovules, Gerrardanthus forms a member of that group of Cucurbits in which the seeds are straight and pendulous.

Since the beginning of October we have had a plague of caterpillars. They have eaten up every green thing, even destroying plants which, under ordinary circumstances, they leave unhurt, such as Oranges, Cottons, Opuntias, Proteads, exotic Leguminosæ, &c.

Two or three years since I planted a plant of Passiflora cœrulea in my garden, a rooted cutting. It has grown so much, and suckers so abundantly, that it would soon occupy the whole garden! It is with me a weed which I must destroy, as I do the Convolvulus, the Cynodon Dactylon, the Sorghum halepense, and the Amaranthus prostratus, which are the pests of the garden here. This Passion-flower produces hundreds of flowers; but, though I have fertilised several artificially, none have set their fruits. Probably this plant requires the pollen from another individual * in order to complete its fertilisation. *Charles Naudin, F.L.S.*

Societies.

STOKE NEWINGTON CHRYSANTHEMUM SHOW: *Nov.* 14 *and* 15.—The past season has been one of the most unfavourable for successful Chrysanthemum culture that has been experienced for many years. Such is the opinion expressed by the leading growers of this fine autumn flower, and it needed only a visit to the show held on the above dates, in the New Assembly Rooms, Church Street, Stoke Newington, to confirm it, so far as that district is concerned. The show in question was a thin one, as to numbers, and but very moderate in point of quality. We missed, too, the well-grown specimens which have heretofore usually been sent from the Brunswick Nursery, owing, no doubt, in a great measure, to the backwardness of the season. Amongst the cut flowers, a few sorts of recognised excellence were fairly well shown in most of the stands, such as Mr. Brunlees, Indian-red, tipped with gold; John Salter, cinnamon-red, and fine; Cherub, golden-amber; Lady Hardinge, rose; Lady Slade, lilac and pink; Princess of Wales, white, tipped with rose; Empress of India, white, very fine; Prince Alfred, rosy crimson; Guernsey Nugget, yellow; White Globe, good; Miss Mary Morgan, faint pink, a comparatively new variety, with broad incurved petals; Mrs. George Rundel, white; Golden Beverley, and White Formosum; but the rest were poor. Pot plants were also below the average, the best individual specimen being a very good one of Lilac Cedo Nulli, shown in a group of six by Mr. James, of the "Rochester Castle." The principal prize-takers were Mr. James, the Hon. Sec., Mr. Howe; Mr. E. Rowe, Roehampton; Mr. E. Berry, gr. to the Earl of Leven and Melville, Roehampton; Mr. H. Butcher, gr. to R. Baillie, Esq., Leyton; Mr. G. Sanderson, Delaney Street, Camden Town; Mr. C. Sanderson, Stratford Green, &c. Mr. Adam Forsyth, Brunswick Nursery, exhibited a nice collection of Palms, of a useful size for decoration, intermixed with Ferns, a few Chrysanthemums, &c., which occupied a prominent position on a raised platform, and for which a special prize was awarded.

Notices of Books.

Flora of Tropical Africa. By Daniel Oliver, F.R.S., &c. Vol. ii. 8vo, pp. 613. Reeve & Co.

In our notice of the first volume of this work (1869, pp. 1238, 1264, we alluded to its general plan as being identical with that adopted in the case of the Colonial Floras of Australia, and Hong Kong. The arrangement is very different, in some respects, from that followed in the case of the Flora of the West India Islands and of New Zealand respectively, but not so different as to preclude them all from forming a single series — a series of very great present value to systematic botanists, but hereafter destined to serve the purposes of a wider class. The volume before us contains the description in English of all the members of the vast order Leguminosæ, the Rosaceæ, the Myrtaceæ, Cucurbitaceæ, and several smaller orders. As before Professor Oliver has availed himself of the assistance of other botanists in working up these families: thus while the Editor himself monographs the Cæsalpinieæ, Mimoseæ, Rosaceæ, Saxifragaceæ, and some smaller groups, Mr. Baker has dealt with the Papilionaceæ, considerably the largest series in point of numbers; Mr. Britten has described the Crassulaceæ; Prof. Lawson the Myrtaceæ and Combretaceæ; Dr. Hooker the Melastomaceæ, Cucurbitaceæ, and Begoniaceæ; Dr. Masters the Samydaceæ, Passifloraceæ, and the nearly allied families; Mr. Hiern, the Lythraceæ, &c.

The total number of species described in this volume we may reckon at over 1300, of which the larger number are peculiar to tropical Africa, and not found elsewhere. Among the Papilionaceæ there are no less than 91 genera, nine of which are peculiar. Some of the genera of this group are also very rich in species, *e.g.*, Crotalaria, with over 100 species, three-fourths of which, or even a larger proportion, are endemic. Indigofera presents another instance of like kind; most of the Combretums and Melastomads, a very large proportion of the Cucurbits, and all the species of Begonia, are peculiar to the flora. Among the smaller groups we find a relatively large proportion of genera to species, and the latter almost all peculiar; thus, the Samydaceæ, Turneraceæ, and Passifloraceæ, though not large as to number of species, have a relatively large number of genera, most of the members of which are absolutely peculiar to tropical Africa. On the other hand, some of the genera are widely dispersed, such as Desmodium, which has few peculiar African species, Onagraceæ also, especially in the case of the genus Jussiæa, are widely dispersed.

Considering now the species common to tropical Africa and to some other regions, and excluding a considerable proportion of plants found throughout the tropics of both hemispheres, we find that a large number are plants found not only in Africa, but also more or less diffused in all countries lying to the eastward as far as India, the Malay peninsula, and North Australia. It is strange that of these comparatively few are found in the islands of the Malay Archipelago, though there are two reasons for the exemption,—1st, in the moist climate; and 2d, in the imperfect state of our knowledge of the floras of many of those islands. Next to these is a much smaller group, common to the Cape and to tropical Africa. Still smaller is the number common to tropical Africa, and to the West Indies or tropical America. There is a slight infusion of Mediterranean types, while the mountains of Abyssinia furnish a few types identical with those of temperate Europe.

This general rough estimate of the plants common to tropical Africa and to other regions of the globe, is about the same as for the first volume. We may hence take it as established that the main features of the distribution are as we have stated them, and those who make a study of the complicated problems connected with the origin and mode of dispersal of species, whether by existing means of transport, or as effected by geological changes of level long since accomplished, or influenced by variations of climate, will have in these volumes—nay, have already—a vast body of carefully sifted facts whereon to base their speculations. To systematists, also, it is a great gain to get so large a number of forms described and arranged in order. Some of the plants, too, are of great interest from a morphological point of view, and here it may be noted that many of those plants which are only found in tropical Africa have marked peculiarities of structure; thus among the Passifloreæ are some eight or ten genera almost wholly limited to tropical Africa, and presenting structural features of much interest, and very different from those found in other members of the order in India, South America, or Australia. This, again, is a subject which deserves the serious attention of those who are endeavouring to find some clue as to the mode in which the globe was stocked with plants, and at what times, in what directions, and by what means migrations have taken place—if at all.

A word as to Abyssinia. Any one looking through this volume and seeing the number of species described from that country, might naturally be led to the inference that our knowledge of the flora of that country had been largely increased in consequence of the campaign against Theodoros, but it is not so. We believe that all the materials were collected, and for the most part studied, before that memorable war, and that the expedition added nothing of moment to our knowledge of the botany of the country.

Of plants of economic importance mentioned in the present volume there is the Calabar Bean, yielding a poison made use of as an ordeal in Calabar, and as a useful remedy in ophthalmic disease in this country; the Kousso, an Abyssinian vermifuge; several of the Cassias and gum-bearing Acacias, besides numerous species useful as furnishing dyes, fibres, or other products.

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* The circumstance alluded to by M. Naudin is noteworthy, as about London Passiflora cœrulea produces fruit abundantly in the open air without artificial aid. We are not aware, however, if perfect seeds are produced out-of-doors in this country. EDS.

Many of the plants, too, are of great interest to the horticulturist. We will name only one—we have named it before, and we shall call attention to it again and again, till we have the satisfaction of seeing so glorious a plant in our stoves. We mean the Camoensia, the most splendid of Papilionaceous plants, with its large cream-coloured flowers, fringed at the edges and margined with gold. Even the Amherstia would seem to be no rival for this glorious plant.

The materials from which this book has been compiled are for the most part derived from the same sources as those made use of in the preceding volume. Dr. Welwitsch's specimens and notes have, as before, proved of the greatest value and importance; the remainder have been furnished by the collections of Barter, Mann, Kirk, Speke and Grant, and many others.

—— The fourth and concluding part of Mr. J. T. Moggridge's *Contributions to the Flora of Mentone* (Reeve) has lately been issued. It is characterised by all the good features which rendered the previous parts noteworthy, and those interested in the "critical" botany of Mediterranean plants, and specially those taking an interest in the relations of structure to function, and in the infinite modifications and adaptations of the former to varying conditions of the latter as well as in the nature and mode of operation of those conditions, will share our regret at the announcement that the present is the last part of Mr. Moggridge's useful and suggestive work. Our space will not permit us to allude to more than a very few of the interesting plants figured in this part, or to the many subjects of physiological importance connected with them. In Campanula isophylla we have a plant worthy of being introduced into British gardens, if not already in cultivation. It is allied to C. fragilis, and is remarkable as growing along with Convolvulus sabatius on a little strip of coast near the town of Noli, and nowhere else. Nectaroscordum siculum is remarkable, *inter alia*, for the varying number of parts in the central as contrasted with the outer portions of its umbel—in this respect analogous to our British Gagea lutea, specimens of which exhibit very great diversity in this respect, as observed long since by the late Professor Henslow. Aphyllanthes monspeliensis has the habit and the capsule of a Restio with the flowers of a Squill. It is a very interesting plant, from its forming a link between the Rushes and Restios and the Lilies, and is altogether a plant that one would expect to find at the Cape or in South-west Australia, but not along the Mediterranean. In spite of its interest and its beauty it is a plant rarely met with in English gardens. We saw it doing well, this summer, in Mr. Smee's garden at Carshalton.

The Apiary.

It is an old saying that "to give advice, to find fault, and spend other people's money," are three of the most easy things in life; it is a truism. Mr. A. Boyle, taking up the first, in answer to "A. H.'s" questions at p. 1363 (very properly in my opinion), advises him to give up his idea of lining a bee-hive altogether. This was done on the outside with straw by a late very practical apiarian, the "Devonshire Bee-keeper" (or Mr. Woodbury, of Exeter); but how far it has answered for sale purposes Mr. Neighbour may be able to inform "A. H.;" as also arranging these long boxes, to be thus made into perfect harbours for all the insects of a garden. I am ready to find fault, and to add, this plan of attempting to make wooden boxes non-conductors by thatching them externally has never realised the expectations even of those who had adopted a similar plan for the interior, as I have proofs in six boxes I opened this season for a cottage bee-keeper. Mr. A. Boyle has truly advised "A. H." to retain the form of the hive and put on a cover; but my belief is, that no hive made on the true principles of the bar-and-frame hive can require any protection from heat, or cold, or wet. The square gives the best form for cheap carpenter's work. I shall be happy to give any bee-master who may apply through your columns for information a sheet containing all the directions necessary for constructing a cheap and effective box-hive, requiring no sheds or covers; but I do so only on these conditions—there shall be no alteration of the sizes, or any introduction of glass windows or metal slides, &c., and that I may have the privilege of examining the hives when in the neighbourhood where they may have been made and used. This, you will admit, is "spending other people's money." *W. A. Munn.* [Major Munn has furnished us with a few copies of the drawings and directions herein referred to, which are at the service of those who make application to us, and observe the conditions. Eds.]

Garden Memoranda.

Pengerrick, the Seat of R. W. Fox, Esq., lies a mile or two west of the busy town and lively harbour of Falmouth, and although shut out from view—that is, the beauties of it—from all but the happy residents, those who have the acquaintance of the noble-hearted proprietor might well ask, who has not seen Pengerrick? The owner and family are always pleased to allow visitors the enjoyment which the sight of their place never fails to give, and people never tire of it. Although small in extent, it is one of those lovely spots which Nature seems to have dressed herself, to give to the beholder feelings something akin to those which man must have felt when he gazed on her loveliness in primeval days. There is something so captivating to the eye when from the house you look down the valley and out to sea. Expressions of delight are heard from all who behold it. When the moon in silence sails over the sea, and yet seems to bathe herself in the freshwater lakes which extend up the valley, she gives birth to feelings which long afterwards are recalled with pleasure.

Adjoining one of the principal rooms Mr. Fox has constructed a cave-like passage, which leads into what may be termed an underground grotto, with a sky-light. It is here that the filmy Ferns are seen enjoying their situations, as if they were in a state of Nature. One of the pieces of Trichomanes radicans growing here was found in a wild state in Cornwall. It has not exactly the appearance of the plants generally seen, the fronds being shorter and more closely set together, giving it the appearance of another variety. Many other Ferns are growing out of the crevices at the sides, as well as Mosses, and all are in health and beauty.

In the grotto before mentioned are more Ferns. A fine plant of Trichomanes, peeping out of a miniature cave, drooping over a little well, looks quite at home. In the centre of this place, and resting on what appeared to be an old stump of a tree, is a nice plant of Todea superba. It is in perfect health, and although no glass covers are used to protect any of this class of plants, yet their fronds sparkle with moisture, which hangs like diamonds at their tips.

In a house connected with the above interesting spot is a more varied collection of Ferns. These are planted around on the borders, underneath which are pipes, which allow the air of the house to circulate. By this arrangement, the soil about the roots being warm, a less temperature is needed above. Tender Ferns often suffer more from cold at the root than at the top. The constant evaporation which is going on keeps the air in the house just in that humid state which Ferns delight in, and they are certainly contented with their situation.

In another house, leading from a room at the opposite side, are some Tree Ferns, some of which have magnificent fronds, 10 feet long with proportionate width. This house is not heated, as the subjects in it are chiefly from New Zealand and Australia.

The front of the dwelling-house is covered with choice things, such as Passiflora cœrulea, Habrothamnus elegans, Virginian Creeper, variegated Ivy, the scarlet Begonia, &c. On looking down from the house the eye rests on the valley throughout, the blue sea in the distance giving the whole a beautiful finish. Each side is embellished with forest and other trees of choice kinds, with shrubs between.

The natural aspect of the place, together with its contiguity to the sea, from which the air is drawn up the valley, favours it with a comparatively mild climate. Hence Mr. Fox plants many things that any one situated a few miles distant would not think of doing. The severe winter of 1860-61, and those since that date, have, however, made sad havoc amongst the Palms and Tree Ferns, &c., which might previously have been seen. Of Palms, Chamærops excelsa is still there, apparently not at all hurt.

On going down the winding walks one is struck with something at every turn, and I noticed particularly a fine plant of Rhododendron Falconeri, which flowered last season, and which is from 9 to 12 feet high—the previous season R. Thomsoni flowered in profusion; fine plants of Bambusa Metake and arundinacea; a grand example of Embothrium coccineum, 15 feet high, a beautiful object when covered with its scarlet Honeysuckle-like flowers—this is in a flourishing condition; several Oleanders, growing unprotected; Dracæna indivisa (one broken off was 18 feet high by 15 feet across) and D. australis; Aralia Sieboldii (Fatsia japonica); Laurus aromatica; Mitraria coccinea; the Olive tree; Eugenia Ugni, which grows into fine bushes, 6 feet by 4 feet, and fruits well; Laurus Camphora, a fine plant, 20 feet by 16 feet; Chamærops Fortunei; the Loquat; Lapageria rosea, even, but not a large plant; Mesembryanthemums, and Echeverias of sorts, which stand out all the year round; and a variegated Yucca. There is also the Alexandria Laurel, or the Laurel of Victory, Melaleuca myrtifolia, linifolia; Acacias of sorts, as lophantha, affinis, and others, from New Zealand and Australia. Also Arundo Donax variegata, Phormium tenax, Bottle Brush, several Eucalypti, and Edwardsia microphylla. Indian Azaleas in a bed here are as healthy as any can be. A fine Araucaria, 30 feet high, stands boldly forward, a picture of health; also A. brasiliensis, looking well. Magnolias grown as standards do well, and flower well. The finest plant of Arundo conspicua I have ever seen is growing near a pond. Camellias do well here, as also do Rhododendrons, as witness a large specimen of R. ponticum, measuring 300 feet in circumference. The beautiful Woodwardia radicans (the Madeira Fern) grows to a fine size, some of the fronds being 8 feet long. I must not forget to mention the Sciadopitys verticillata, the Umbrella Pine; Gunnera scabra is also very fine, the flower stems, *i.e.*, including the flowers, which look more like fruit, being 3 feet long and 8 inches through; Grevillea sulphurea and rosmarinifolia. Veronicas of sorts do well—one, a seedling raised on the place, is a very good scarlet. Daturas, Pittosporums, and Benthamias also do well; the latter, in their season, are a picture; the berries, however, are a great attraction to birds, and they soon destroy the beauty of the tree when the fruit is ripe. Here is also the Olive tree, and a few things which we could not recognise. Mr. Fox receives seeds from all quarters, and buys anything which he thinks will grow at Pengerrick. Variegated plants are well represented, both in shrubs and trees. Mr. Fox is an ardent lover of Conifers, and has a good collection. The variegated Pteris, Lomaria magellanica, and others we see in greenhouse collections, are here enjoying themselves in the open air. Heaths in varieties are planted in groups, and are looking well.

Passing over a rustic bridge covered with variegated Ivy, the visitor comes amongst water-ponds, fountains, grottoes, and their accompaniments, Water Lilies, grasses, Ferns, &c., which luxuriate. In the month of May and beginning of June, when spring is full dressed, the place is delightful, the glow of colour from the Rhododendrons, Azaleas, Roses, giving it splendour. In the autumn the tints of the various leaves on such a choice collection of things as is seldom seen elsewhere, are most charming. Spring begins here with the Snowdrop in earnest, the Forget-me-Not, in full bloom, standing side by side with it. The size of the place will not admit of any great display of flower-gardening or spring-gardening, yet, with the indigenous plants and so many other subjects, there is never any want of interesting objects upon which to cast the eye.

Mr. Fox has 180 Coniferæ of various kinds and sizes. I noticed fine specimens of Abies Douglasii and Pinus insignis; there are also nice plants of Pinus patula, Abies Brunoniana, Pinus canariensis, variegated Thujas, Thujopsis, Yews, with other hardier and commoner things—such as flowering shrubs, and plants grown for their foliage.

The kitchen and fruit garden is small. Mr. Evans, the respected gardener, as well as his good employer, takes the greatest delight in the shrubs and Ferns, and in keeping up the characteristics of the place, so as to show forth the beauties of Nature. Although there are so many things of interest for visitors to see, yet it must be admitted that the chief thing after all is the place itself as a whole, as seen when standing in the front of the house, the beauties of which are very inadequately described in this brief sketch. *H. M.*

Obituary.

Died, on October 31, at Euston Park, near Thetford, the seat of his Grace the Duke of Grafton, Mr. John Borrie, aged 73 years, and for upwards of 25 years head gardener at the above place. He was much respected and esteemed by his employers, the present and the late Duke of Grafton, being an excellent gardener, and, what is more, he was in all respects a very worthy man; his modest and unassuming manners, and his kind and obliging disposition, gaining for him the love and respect of all who had the pleasure of knowing him. He was a native of Perthshire, N.B., and commenced his gardening career in the famous gardens of Dunkeld, the well-known seat of the Duke of Atholl. He was also for some years head gardener to Mr. Campbell, of Jura, and afterwards held a situation as gardener and land-steward at Torloisk, in the Isle of Mull. About 12 months since severe illness compelled him to retire from the duties of his situation, a pension being kindly granted him by his noble employer, which he has only lived to enjoy for one year.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, Nov. 11, 1871.

Names of Stations.	Temperature of the Air.							Fall of Rain.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg	In.
Portsmouth ..	55.4	28.8	26.6	49.3	33.7	15.6	40.9	0.00
Blackheath ..	50.0	26.4	23.6	46.2	32.8	13.4	39.2	0.03
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	49.8	30.3	19.5	45.8	33.4	12.4	39.0	0.03
Wolverhampton	49.0	27.4	21.6	41.8	33.3	11.5	38.4	0.92
Leicester ..	48.7	27.7	21.0	44.7	31.6	13.1	37.5	0.18
Norwich ..	47.5	30.0	17.5	45.3	33.1	12.2	38.6	0.03
Nottingham ..	53.3	29.4	23.9	47.4	33.7	13.7	40.0	0.14
Sheffield ..	49.5	29.0	20.5	46.0	32.6	13.4	38.7	0.38
Liverpool ..	40.3	35.0	14.3	46.4	37.2	9.2	41.2	0.34
Manchester ..	49.0	29.0	20.0	46.5	34.1	12.4	39.7	0.40
Salford	49.5	24.2	25.3	46.7	32.5	14.2	39.0	0.13
Bradford ..	48.5	33.0	15.5	46.4	36.2	10.2	40.7	0.28
Leeds	49.0	32.0	17.0	46.6	36.3	10.3	40.8	0.30
Hull	51.0	28.0	23.0	47.0	35.3	11.7	40.5	0.30
Newcastle ..	48.0	33.0	15.0	43.3	30.0	7.3	39.0	0.33
Edinburgh ..	46.7	31.0	15.7	..	..	..	37.7	0.10
Glasgow ..	50.0	30.0	20.0	..	..	..	39.6	0.59
Dundee.. ..	48.0	33.0	15.0	..	..	..	39.3	0.25
Aberdeen ..	47.2	32.5	14.7	..	..	..	39.1	1.16
Paisley	..	..	..	..	..	..	..	..
Greenock ..	45.5	34.0	11.5	..	..	..	39.7	0.63
Leith	49.5	33.8	15.7	..	..	..	39.7	0.12
Perth	50.0	32.0	18.0	..	..	..	39.8	0.40
Dublin	50.0	26.0	24.0	..	..	..	38.2	0.10

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, Nov. 15, 1871.

1871. Month and Day.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
November.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity.	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
9. Thurs. .	29 59	35.0	34 0	32.4	90	2.1
10. Friday .	29.51	37 1	35.6	33 5	87	2.2
11. Satur. .	29 51	30.1	30.1	30.1	100	2.0
12. Sunday.	29 83	31.2	30 0	26.8	83	1.7
13. Monday	30.11	29 3	29 0	27.9	96	1.8
14. Tues. .	30.10	38.6	36.8	34.5	86	2.3
15. Wednes	29.60	47.5	47.5	47.5	100	3.7

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
November.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
9. Thurs. .	45.7	31 4	14.3	37.5	— 7 2	W.	215	0.00
10. Friday .	47.0	31.0	10.0	38.0	— 6.4	W.	300	0.00
11. Satur. . .	42.7	26.4	16 3	34.4	— 9.7	W. : N.N.E.	110	0.00
12. Sunday.	41.7	25 8	15.9	33.5	— 10.3	W.	135	0.00
13. Monday	37.7	25.9	11 8	31 5	— 12.0	W : E.	90	0.00
14. Tues. . .	47.0	26.0	21.0	36.1	— 7.1	S.S.W.	260	0.21
15. Wednes	51.0	42.3	8.7	46.3	+ 3.4	W. : N.W.	300	0.04

Nov. 9.—A very fine day. Small amounts of cloud prevalent at times Hazy and foggy. Aurora at night.

— 10.—A little cloud present at times. Very fine. Brilliant Aurora at night.

— 11.—Cloudless in the morning and at night. Overcast at mid-day A little thin rain fell in the afternoon.

— 12.—Generally cloudless Very fine. Dense fog.

— 13.—Cloudy in the middle of the day. Cloudless at other times. Foggy.

— 14.—Cloudless till about 3 P.M. Overcast after 4 P.M. Rainfall from 7. P M. onwards.

— 15.—Generally cloudless, with the exception of a short period at mid-day, when the sky was overcast, and rain fell. Generally very fine.

JAMES GLAISHER.

Miscellaneous.

EARLY AUTUMN.

Along the brook the yellow golden-reeds,
With nodding plumes, stand idly swaying there;
Above the stream the summer's flying seeds,
Like tuneless insects, fill the balmy air.

A golden light upon the mountain sleeps,
Its feet are hid in valley vapours wet;
The highland Blackberry on the wooded steeps
Wears its ripe berries of enamelled jet.

The pearly clouds, becalmed within the sky,
Edged with pale gold, like summer castles stand,
Seen in a vision by some dreamer's eye,
Crowning the slopes of fairy-land.

The gentle winds scarce stir the fading leaves,
Scarce move the brown and withered clover-heads;
And undisturbed the busy spider weaves,
From bough to bough, her web of filmy threads.

Warm on the grass the brooding sunbeam lies;
The wandering airs are filled with faint perfumes;
The gazer's eye along each ridge descries
The upland Sumach's crimson-painted plumes.

Upon the topmost spray the blackbird sings,
With mellow note, his silvery-throated song;
The drowsy bee, with purple gossamer wings,
Hums his low, surly hymn the whole day long.

Idly I lie, with half-shut, dreamful eyes,
And listen to the sounds that fill the air—
The bee's low hum; the wind's melodious sigh;
The wanton blackbird twittering blithely there.

Oh, soon will come the melancholy days,
When Nature seems to wear a hidden grief,
And bleak and bare will be these pleasant ways,
Where moaning winds shall whirl the faded leaf!

Garden Pirates.—Their "name is legion," and the wise gardener will always encourage feathered auxiliaries, as the insectivorous robin, tomtit, woodpecker, swallow, wren, starling, &c., all of which birds are indefatigable destroyers of garden pests. A hedgehog, a toad, a seagull or two, and a sparrow-hawk, all domesticated, will keep the soil and ground clear of mischievous vermin. The old-fashioned, but effective, mode of trapping earwigs, consists in putting tubes of elder-wood, open at each end, pretty thickly on the walls to which your fruit trees are trained. Every 24 hours these are gently removed and shaken into a pan of hot water and re-set. I have taken great quantities this way, but a robin will catch more in one day than all your traps together. A toad will subsist entirely on woodlice and slugs, and quite clear a Cucumber-frame if put there for a day or two. The common lizard or "eft" will eat up every flying or creeping thing he can swallow; the gull will stick to the slugs, Cabbage-grubs, and earthworms; the tomtit will search every bough for aphides, ants, &c., and if you do not fire off guns, or allow birds'-nesting, you will have plenty of useful friends among the birds of the air, to whom I do not grudge a little fruit, and if you do wish to reserve it all for your own eating, make or buy a net to screen it. The wireworm is the most unassailable of plagues, and he will prefer to attack all the neat edgings of Box. Where he abounds most, be always digging and putting ammoniacal manures or wood ashes, which will end in his gradual extermination. A crop of Mustard has been known to poison his strongholds when all else had been tried in vain. Ants are very annoying; but, being dainty feeders, can be enticed into destruction. For the larger kinds, get some bones from fresh meat, and put them near the holes. When the horde is collected, sprinkle boiling water from the watering-pot over them, and persevere in this till all are done for. Treacle and bird-lime, mixed rather soft, and put about in saucers, is a quiet and less troublesome mode of procedure, and sundry wasps will perish in the miscellaneous crowd. Here is a wasp-trap; but if you are a bee proprietor do not use it, as you will cause the death of many of your friends. Mount four panes of glass of equal dimensions in tin framing (like a lantern), leave the top and bottom open, cover the latter end with thick white paper, well attached with strong waterproof glue, and the paper well oiled, and protected from damp or fire. In this make a hole about 6 inches in diameter, and then place this hole over a plate on which three pieces of brick are put; in this plate you will have put a mixture of beer, sugar, and a little rum. On the top end you will have fitted in a glass pane, removable at pleasure, to clean the trap. Now prepare some long matches of stout paper dipped in brimstone; when your trap is "all alive" with captives, ignite a match and put it under the hole; they will soon be suffocated. Each day empty out the contents for your pet toad's meals. I once saw a most ingenious insect-catcher in Africa, invented by some English artisan. There was a wirework dome like a meat-cover, just below it a roller covered with cloth, saturated in syrup, slowly revolved when the clockwork adjustment had been wound up. Into this "Sirens' cave" every flying thing tempted to settle on the sweetstuff was unconsciously drawn, and the cage was soon a museum of Diptera and Hymenoptera! There was a trap-door at which the suffocating operation was carried out (as in the first-mentioned trap). It was altogether a great success, and I heard a "sweet young lady" call it a "capital dodge." *Eos, in "English Mechanic and World of Science."*

A fruit-grower in Jersey, annoyed by depredators, obtained a human leg from a hospital, put it in a steel trap in his grapery; made inquiries for the owner; the neighbourhood flocked to see it, and—no more fruit was stolen.

Garden Operations,

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

Climbing stove plants should now be pruned and thinned out decisively and finally for the winter. Such plants as *Combretum*, *Ipomœa Learii*, &c., will already have suggested this proceeding, having become denuded of their foliage. Others, on the contrary, such as *Dipladenias*, some *Passifloras*, *Allamandas*, *Bougainvilleas*, *Thunbergias* of the evergreen type, *Stephanotis*, &c., should not only be cut back now to afford more light to the humbler subjects growing beneath them, but also as a means for inducing greater vigour next season, and to aid in assuring a season of rest. Especially is this thinning-out process essential in regard to the Stephanotis, which, however vigorous it may appear at this time, is very materially benefited by being cut back pretty close to the older wood. I must qualify this statement, however, by remarking that though severe pruning has its advantages, we must not overlook the fact that, being an evergreen plant, it must be treated as such, and consequently should not be denuded of all its foliage, as deciduous plants often are. It is, perhaps, scarcely necessary for me to observe that water must in a great measure be withheld for a time from all such subjects. During inclement weather advantage should be taken to eradicate insect pests, such as mealy bug, &c.; *Orange trees* and others of the *Citrus* family should also, under similar opportunities, have their foliage thoroughly sponged and cleaned. Prune back old plants of *Hibiscus*, especially where they clothe walls at the back or sides of stoves, &c. Attend to *Lapagerias* also in the matter of tying out shoots and sponging the leaves, &c. Here is an instance where we are loth to use the pruning knife, but rather choose to maintain the whole growth for flowering purposes. Keep a watch upon any young shoots forming at the base, and which may be through the ground before many weeks are past, to save them from any slugs which may be lurking in their vicinity, as these creatures are very partial to them. Some care will now have to be taken not to expose the more delicate New Holland plants to draughts, the more so as we must give air with moderate freedom to cool greenhouses during moderately fine weather. Where seedling or other plants of *Solanums* of the Capsicastrum type are backward in ripening their fruit, and the plants are wanted for the winter festivities, it will be advisable to place them into a little warmth to forward them, as that season will shortly arrive. Plants of *Adiantum cuneatum* never succeed better than when allowed a season of rest at this time of the year. The best way of assuring this is to lay the pots on their sides, and to let them dry off gradually. The old leaves will by these means die down, and subsequently the crown of the plant will rest for a month or two; again showing vigorously by pushing up strong fronds about February. In drying-off these, as also many similar subjects, it is not necessary or proper to place them near flues or pipes. They simply require placing upon their sides on a cool and moderately moist bottom; in this way, the process will be carried out gradually, and far more naturally than when the end is sought for in more decided artificial means. Old plants of *Plumbago capensis* should now be headed-back roughly, so as to occupy less room for storing, but do not throw any away; they will come in very useful for flowering in pots next autumn.

FORCING HOUSES.

I have frequently stated in these columns how very important I consider the practice of early pruning *Vines*. Immediately the leaves are shed, in successional houses, set about pruning. It matters not how long the Vines have to rest, as they will subsequently do so far more effectually than when they have to elaborate and prepare all the sap in the whole of the young wood. Those who force early cannot do better than have resort to the good old practice of getting assistance by means of a heap of fermenting materials placed within the structure. The steam engendered thereby, deposited as it is in warm moist sweatings upon the Vines, so very unlike other artificial moisture we are enabled to apply, acts very beneficially, and tends to increase the strength of the buds and the young shoots as they unfold. If any Vine borders have been exposed to the past slight frosts, and are still uncovered, it will be well to have them covered forthwith, and a quantity of fermenting material should be prepared to cover them with shortly. Keep the early *Peach* and *Nectarine house* shut up closely on all occasions, excepting for about three or four hours during the warmest part of the day,—this for a short time only at the start. *Cucumber houses* must now have the heating apparatus put in order for all eventualities, as without a full command of bottom-heat when wanted, added to both atmospheric heat and moisture in moderation, no very great success is possible. The plants, however vigorously they may be growing, should be so treated that all the moisture resting upon any of their parts is thoroughly dispelled daily, by means of fresh air, &c. I have lately urged the importance of covering the roofs of *Cucumber* and *Pine pits* by night, by which means the internal warmth is maintained without a tithe of the expenditure which otherwise occurs when the outer elements have full play upon the bare glass roof. As in very many establishments the supply of fallen leaves has to be depended upon to forward forcing operations, it will be necessary to use the utmost dispatch in collecting such as have fallen, many kinds being very late in falling this season.

HARDY FLOWER GARDEN.

It is very important that all who contemplate making alterations or improvements in their flower gardens should not delay doing so, as the best possible weather for such a purpose is experienced whilst I write, and has continued for some time past, and might give way to an inclement and adverse period of lengthy duration. Make all necessary preparation against frost. I am trying a mode of protecting half hardy trees to which I may be allowed to call attention. *Passiflora Newmanni* and similar plants, we all know, are frequently frozen to death when exposed, and not often improved in health when covered up for the winter. I am having small, thin haybands made, and these I twist around the main stems somewhat loosely, so that between each twist the bark is just perceptible. I opine that whilst this does not exclude the air with its hardening influence, it will so protect the stem from the action of the frost as to save those portions of the protected wood which will afford the necessary shoots next season. To *Magnolias* this proceeding would also prove beneficial, especially in those home and seaside counties where it thrives well without any protection, excepting during very severe winters. The small haybands I describe might also be usefully twisted around the collar and lower portions of the wood of standard Tea and other tender *Roses*. Finish pruning *pot Roses* without further delay. Should the grass upon lawns somewhat protected by trees again need mowing—and the grass should not be permitted to become too long during the winter, as the work of sweeping then becomes so much heavier, independent of appearance—care must be taken to mow it during "open" weather only. Neither should it be cut down so close at this period as to expose the heart too much to the winter's severity. Fallen leaves should not be permitted to lie upon lawns longer than possible, more especially in the vicinity of trees, as they cause the grass to grow weakly.

KITCHEN GARDEN.

All vacant ground should be deeply dug, ridged, or trenched before Christmas. Not only will it be better for the soils so operated upon, but it will also conduce to forward the work, which is always such as to keep the gardener fully occupied at the advent of the new year and subsequently. *Celery*, whether the first or last of the successional crop, should now be so protected that no injury from future frosts need be expected. The necessary fermenting materials, in the form of leaves, or half leaves and half stable litter, should be placed upon plantations of *Rhubarb* and *Seakale*, in all instances where this method of forcing is adopted, and when a supply is required at Christmas or before—that is, if the leaves have so far ripened upon the Seakale as to part freely from the crowns, otherwise it is better to wait a week, as the late frosts will do their work in this wise, and equal progress will subsequently be made by adhering to natural laws. *W. E.*

Notices to Correspondents.

APPLES, &c. : *C. P. Stewkley, Bucks.* We do not know either of the Apples you name. Their names savour of northern origin. You should inquire of the nurserymen who supplied them, and call their attention to the disgraceful manner in which the names were written on the labels. Beurré Bosc Pear is a very excellent dessert Pear, in use in October and November.

BOOKS : *J. T.* Kemp's "How to Lay out a Garden" (Bradbury, Evans & Co.) ; Repton's "Landscape Gardening," edited by J. C. Loudon.

ECHEVERIAS : *J. D.* These plants may be propagated by planting the leaves as cuttings. The leaves on the flowering stems are equally efficient with the ordinary leaves. They should be taken off without injury to the base, and planted rather shallow, the larger ones being made firm by a small stick. Like other succulents, they must not be kept wet. Whenever seeds can be procured, they may be more extensively propagated by this means. A warm propagating pit is the best place for either cuttings or seeds.

FUNGUS : *Lattenbury.* Cyathus vernicosus, Bird's-nest Fungus,—"Sillercup" of the Scotch. *W. G. S.*

GEORGE'S PATENT CALORIGEN : Should any of our readers have used this stove for heating a plant-house, either by gas or coal, "T. C. W." would feel greatly obliged if they would kindly state their experience of it for this purpose.

GRAPES : *D. P.* The Grapes you have sent us are in a sad state, not half-grown and unripe. Your failures are all caused through the low, damp, cold borders in which the roots are. The whole of the vessels of the plant are overcharged with moisture—the wood, fruit, &c., is unripe, and so, consequently, cannot keep.

NAMES OF FRUITS : *S. C. H. Pear:* Crassane. *H. & S. Apple:* Nelson's Codlin.—*K. J. Apples:* 1, Holland Pippin ; 3, Stamford Pippin ; 5, Old Nonpareil ; 6, Norfolk Beaufin. *Pears:* 2, Glou Morceau ; 3, Vicar of Winkfield ; 5, Flemish Bon Chrétien ; 6, Glou Morceau.

NAMES OF PLANTS : *T. Rivers.* The Edelweiss is Gnaphalium (Leontopodium) alpinum. We copy the following particulars from Robinson's "Alpine Flowers :'—"'The flowers are small, yellowish, and not ornamental ; the leaves covered with white down, like those of many mountain Composite plants, but it is at once distinguished by that to which it owes its popularity—a beautiful whorl of oblong leaves, springing, star-like, from beneath the closely set and somewhat inconspicuous flowers, and almost covered with pure white dense short down. It is a perfectly hardy perennial, growing from 4—8 inches high, and thriving in firm, sandy, or gritty and well-drained soil in thoroughly exposed parts of the rockwork, and is one of the most interesting and desirable inhabitants of the rock garden."—*C. W.* Polystichum capense.

NOTICE TO LEAVE : *V. V. Z.* You do not say what the agreement with your employer was. If there is no agreement, and you are paid weekly, you can only claim a week's notice.

PINE BORERS : *W. T., Cork.* This is the work of the small beetle called Hylurgus piniperda. No absolute remedy has yet been found, but care in removing all dead wood from the plantations is the best preventive. *A. M.*

PINUS INSIGNIS : *R. A.* The removal of dead branches, properly done, can do no harm.

PLANT NAMES : *L. H. G.* Acineta is derived from *akineta*, immovable, and refers to the jointless lip. Anguloa is commemorative of Don Francisco de Angulo. Thuna is commemorative of von Thun. Ada, Disa, and Limatodes appear to be unexplained. The specific names Brysiana, Cervantesii, Pinelii Schlieperianum, and Weltoni, are all commemorative.

PORTRAIT : *T. S., Broomfield Lodge.* We have grave doubts as to the policy of starting such a testimonial as you allude to. If the friends of the gentleman in question like to do so among themselves well and good, but the public is sick, and with good reason, of these appeals to its purse ; and, moreover, it would impose yet another tax upon the hardly-earned wages of many gardeners who would from various motives, personal interest not the least, feel compelled to subscribe.

TUBEROSES : *A Young Gardener.* We should certainly not think of "covering tuberoses over with ashes like other bulbs." Nor would we pot them yet, even if we possessed the new bulbs, but would rather wait until February, or even later. Pot them firmly in good staple fibrous sandy loam, subsequently placing them in a warm, sunny situation, there to remain for at least three weeks or a month without water, when, if they do not begin growing, give a little water and wait again. Supposing the plants to have made a fair start, and the roots to have pushed freely, water them most copiously both at the root and superficially, until a good tuft of leaves are formed ; then, by withholding water, induce the flower-spikes to push, after which a return to a very liberal regimen will be requisite. *W. E.*

COMMUNICATIONS RECEIVED J. M. T. (MSS. received).—D. T. F —W. R. McN —J. H. C (we will try your insecticide).—Sutton & Sons.—Hurst & Sons.—T. Sampson.—A F. —J. C.—E. M —P. G —Thorne.—W. J —C W.—G. P.—J J. C.—Inter alia.—J. M. H. C.—J. Barnes.—Z. S.

Markets.

COVENT GARDEN.—Nov. 17.

Business transactions have not improved during the week, and some difficulty has been experienced in maintaining our last quotations. The open weather enables the growers to keep us well supplied with all the outdoor produce, and that from under glass is also ample. Good dessert Apples are comparatively scarce. Pears are plentiful, and comprise Chaumontelle, Nelis d'Hiver, Glou Morceau, Crassane, and others.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½ sieve	2 0 to 5 0	Oranges, per 100 ..	6 0 to 10 0
Cobs, per 100 lb. ..	60 0 — 65 0	Peaches, per doz. ..	8 0 — 15 0
Filberts, per lb. ..	0 8 — 10	Pears, per dozen ..	2 0 — 4 0
Grapes, per lb. ..	1 6 — 5 0	Pine-apples, per lb.	2 6 — 6 0
Lemons, per 100 ..	7 0 — 10 0	Pomegranates, each	0 4 — 0 8
Melons, each ..	2 0 — 5 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, per doz.	6 0 to 8 0	Horse Radish, per bundle	3 0 — 5 0
Beet, per doz. ..	1 0 — 2 0	Leeks, per bunch ..	0 2 — 0 4
Broccoli, purple, per bundle	10 — 1 3	Lettuces, per score ..	1 6 — 2 0
Brussels Sprouts, p. half sieve	1 6 — 2 6	Mushrooms, p. pott.	1 0 — 2 6
Cabbages, p. doz. ..	10 — 1 3	Onions, per bunch ..	0 4 — 0 9
Capsicums, p. 100 ..	1 6 — 2 0	Parsley, p. bunch ..	0 2 — 0 4
Carrots, p. bunch ..	0 5 — 0 7	Radishes, per bunch	0 2 — ..
Cauliflowers, p. doz.	2 0 — 6 0	Salsafy, p. bun. ..	0 9 — 1 3
Celery, red, p. bun.	1 6 — 2 0	Scorzonera, p. bun.	0 9 — 1 3
— white, do. ..	1 0 — 1 6	Seakale, per punnet	2 6 — 3 6
Chilies, per 100 ..	1 6 — 2 0	Shallots, per lb. ..	0 8 — ..
Cucumbers, each ..	0 6 — 1 0	Spinach, per bushel	3 0 — 4 0
Herbs, per bunch ..	0 2 to 0 4	Tomatos, p. sieve ..	4 0 — 6 0
		Turnips, p. bunch ..	0 2 — 0 4

Potatos, Regents, 100*s.* to 130*s.* ; Flukes, 120*s.* to 140*s.* ; and Shaws, 80*s.* per ton.

POTATOS.—Southwark, Nov. 13.

During the past week the arrivals coastwise have been small, and very various in quality ; best sorts sold well, inferior samples a drag. The following are this day's quotations :—Yorkshire Flukes, 100*s.* to 140*s.*; Yorkshire Regents, 60*s.* to 120*s.* ; Dunbar and East Lothian do., 120*s.* to 140*s.* ; Perth, Forfar, and Fifeshire do., 110*s.* to 120*s.* ; do. Rocks, 95*s.* to 100*s.* ; Kent and Essex Regents, 50*s.* to 110*s.*; do. Rocks, 90*s.* to 100*s.*

AGRICULTURAL PUPIL.—A Norfolk Farmer, residing within a few miles of Norwich, is desirous of receiving a respectable young Man into his house as a Pupil References given and required.—Apply to Mr. THORNTON, 15, Langham Place, Regent Street, London, W.

Nursery Ground Foreman.

REQUIRED, for a large Provincial Nursery, the services of a responsible, energetic, married Man, whose character for ability and sobriety will bear strict investigation. An Englishman preferred.—Address, stating terms, to X. B., *Gardeners' Chronicle* Office, W.C.

WANTED, a NURSERY FOREMAN, well up in his business, principally indoors ; must have a good knowledge of the Value of Plants, and competent to take almost entire Charge.—Apply, in own handwriting, stating age, wages expected, and references (no drunkard need apply), to JOHN KELLETT, Wellington Nursery, Heaton Chapel, Stockport.

WANTED, a well qualified Second Outdoor NURSERY FOREMAN, also several EXPERT YOUNG MEN, accustomed to Spade Work and Planting. Good wages and constant employment.—Mr. B. WHITHAM, The Nurseries, Reddish, near Stockport.

WANTED, a PROPAGATOR of HARDY PLANTS.—Messrs F & A DICKSON & SONS, The "Upton" Nurseries, Chester, require in the above capacity, an active industrious Working Propagator, well experienced in Propagation of Conifers, Rhododendrons, Hollies, Ivies, Clematis, and other Hardy Ornamental Plants, by the most improved methods.—Apply, as above, stating age, situations previously held, time in each, references, and wages expected.

WANTED, a PROPAGATOR and GROWER of PLANTS.—A married Man, without family, preferred.—JAMES HUDDART, Farrington Hall Nursery, Preston.

WANTED, an industrious MAN (Outdoor), who thoroughly understands the general routine of Nursery Work.—Address, stating wages required, with references, &c., E. COLE AND SONS, The Nurseries, Withington, near Manchester.

To Nursery Foremen.

WANTED, a good SECOND MAN, who understands Grafting and Budding, and general Outdoor work.—Apply to J. C. WHEELER AND SON, Nurserymen, Gloucester.

WANTED, in a country Nursery, an experienced TRAVELLER for England, acquainted with the Wholesale and Retail Value of Stock.—Address, with full particulars of late employment and terms, A. L , *Gardeners' Chronicle* Office, W.C.

Seed Trade.

WANTED, a SHOPMAN, with a knowledge of the Nursery Business preferred, and able to take orders for same.—S. S., Hurst & Son, 6, Leadenhall Street, London, E.C.

Shopman, in a Seed Warehouse, Wanted.

WANTED, a SHOPMAN, who thoroughly understands the business, and can produce satisfactory testimonials as to ability, integrity, and good conduct. A JUNIOR ASSISTANT also WANTED.—W. E. R., 3, Westminster Chambers, Victoria Street, London, S.W.

WANTED, an INVOICE CLERK and ASSISTANT, at the Retail Counter. Must be an expeditious Penman and good Correspondent. To a young Man desiring improvement in the Trade, this is a good opening.—Apply with references, stating age and salary required, ROBERT T. VEITCH, Exeter.

To Nursery Foremen.

WANTED, a Man, as ASSISTANT in a Seed Warehouse. One who has a thorough practical knowledge of every branch of Nursery Work would be necessary. Apply, stating terms, ALEX CAMPBELL AND SONS, Churchill Nurseries, Glasnevin, Dublin.

WANT PLACES.—Letters to be Post Paid.

Gardeners and Under Gardeners.

WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Thorough practical experience in all branches ; over seven years in present situation.—Apply, for particulars, S. W , Post Office, Alton, Hants.

GARDENER (HEAD).—Age 28, married ; good practical knowledge of the profession generally. Two and a half years' good character.—H. COOK, 4, St. Mark's Villas, Tollington Park, Hornsey, N.

GARDENER (HEAD).—Age 44 ; thoroughly practical in Grapes, Fruits, and Plants If wanted, Wife good Cook, Baking and Dairy Four and three years' good character.—S. D., 160, Portland Road, Notting Hill, London, W.

GARDENER (HEAD).—Middle-aged, married, no family ; thoroughly understands every branch of the profession. Good character and testimonials.—G. G., 2, Cobden Terrace, Canterbury Road, Forest Hill, S.E

GARDENER (HEAD), in the country, where Fruit and Vegetables are in request.—Is a good Flower Gardener. Excellent reference Wife Dairy and Poultry.—LATIMER CLARK, Esq., Beechmont, Sydenham Hill, Surrey, S.E.

GARDENER (HEAD).—Age 32, married, no family ; thorough knowledge of Forcing Fruit, Flowers, and Vegetables, also Stove and Greenhouse Plants, and Flower and Kitchen Gardening Six years' character.—G. SMITH, Gardener, Westmill Road, Ware, Herts.

GARDENER (HEAD).—Understands the Culture of Pines, Vines, Cucumbers, Melons, Stove and Greenhouse Plants and Orchids, also Kitchen and Flower Gardening. No single-handed place accepted. Good character.—J. H , Post Office, Newgate Street, Hereford, Herts.

GARDENER (HEAD), to any Lady or Gentleman requiring a practical Man.—Age 33, married, one child. Satisfactory reason for leaving. Three years' excellent character from present employer.—GEORGE SMITH, Ranston Gardens, Blandford, Dorset.

GARDENER (HEAD).—Age 38, married ; is a first-class man, good scholar, experienced in all departments ; is an excellent Landscape Gardener, could act as Estate Bailiff, alone or combined with the above, for which he is well qualified Liberal salary expected. Ten years' recommendations from good families.—M. D., Mr Smith, Nurseryman, Worcester.

GARDENER (HEAD).—Age 36, married ; thoroughly practical in every department, having had great experience in Growing Stove and Greenhouse Plants, including Orchids and Ferns, the Forcing of all kinds of Fruits, and the general Management of Fruit, Flower, and Kitchen Gardens, and all the requirements of a Gentleman's Establishment. Certificated by the Society of Arts, and the Royal Horticultural Society. Nine and a half years' good character.—J. R. P., Sherwood Cottage, Spring Hill, Bromley, Kent.

GARDENER (HEAD, WORKING).—Age 30, married has a thorough practical knowledge of the profession in all its branches, including the Early and Late Forcing of Stove and Green house Plants, Fruits, and Vegetables. Good character as to ability, &c.—S. W , Post Office, Northampton

GARDENER (HEAD), where one or more are kept.—A LADY wishes to recommend as above a Man, age 40, and married, who also well understands the Management of Land and Stock. Five years' character.—H. W., Post Office, South Audley Street, Park Lane, London, W.

GARDENER (HEAD, or UNDER), in a good place.—Age 30, married, no family ; thoroughly practical. First-class character.—Address, stating wages for either, E. R. S., Post Office, Wimbourn, Dorset.

GARDENER.—Thoroughly practical in all branches of the profession, including Drawing and Laying-out of New Gardens, &c —JOHN PHILLIPS, Ketley Town, Wellington, Salop

GARDENER (SINGLE-HANDED, or where two are kept).—General knowledge of Flower, Fruit, and Kitchen Gardening Eighteen months' good character.—G L., Post Office, St. Mary's Cray, S.E.

GARDENER (UNDER), in a Nobleman's or Gentleman's Garden.—Age 21. Good character.—M. W., R. Smith, Nurseryman, Worcester

PROPAGATOR, or PROPAGATOR under the Foreman.—Age 22 ; has had experience in the Propagation of Conifers, Clematises, Rhododendrons, and Roses, &c., in a Provincial, and also in a London Nursery References.—Address, stating terms, H L , 22, Peplee Street, Bishopsfields, Chester

£3 PREMIUM (paid weekly) is offered for EMPLOYMENT UNDER a GARDENER, by a young Man ; married. State wages.—ALPHA, Mrs. Keeping's, 4, Cross Road, Twickenham.

IMPROVER, in the Houses.—Age 20. Premium given M. A , East Street, Epsom.

To Gardeners.

IMPROVER (in the Houses) in a large establishment.—A young Man ; understands Kitchen Gardening in all its branches, and has some knowledge of House-work. Can have three years' good character from present employer.—J. S , Fifehead Magdalen, Gillingham, Dorset.

MANAGER, or ASSISTANT MANAGER, of Tea, Coffee, Sugar, or Cotton Plantations.—Age 27, single, English ; has had ten years' practical experience in some of the largest Gardens in Europe. Well educated. No objection to any part of the world. Highest references.—Z., Mr. H. Slater, High Street, Uttoxeter, Staffordshire.

BAILIFF and GARDENER.—Age 29, single ; thoroughly understands the Value and Management of Land, Stock, Timber, Plantations, and all kinds of Estate Work, &c. Is a first-class practical Gardener. Highest references.—E. F., Mr. H. Slater, High Street, Uttoxeter.

FARM BAILIFF.—Age 43, single ; thoroughly understands Farming and Market Gardening.—R., J. D. Davis, Salesman, Spitalfields Market, E.

To the Seed Trade.

PACKER, &c., in a Wholesale Warehouse,—A young Man.—197, Herbert Road, Coventry Road, Birmingham.

To the Seed Trade.

TRAVELLER.—Age 37 ; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

Seed Trade.

MANAGER, HEAD SHOPMAN, or TRAVELLER.—Age 35 ; thoroughly acquainted with the Trade, also the Nursery Business. Highest references.—A. Z , Messrs. Hurst & Son, Seed Merchants, Leadenhall Street, London, E.C.

Seed Trade.

SHOPMAN, or otherwise.—Age 32 ; five years in one of the largest London Wholesale Houses.—C. C , 2, Albert Cottages, Avenue Road, Hackney Downs, N.

SHOPMAN (ASSISTANT).—A young Man, Scotch. Seven years' experience.—M. R., 19, Upper Sackville Street, Dublin.

To Publishers and Others.

CLERK.—Young Man, who is a good Writer, accurate at Figures, and has a practical knowledge of Printing.—H., 14, Great Castle Street, Regent Street, W.

GOVERNESS.—A young Lady, lately returned from France, desires a re-engagement as above. Acquirements—English, French, German, Drawing, Music The highest references offered.—K , *Gardeners' Chronicle* Office, W C.

GROOM, or GROOM and GARDENER.—A young Man, with three years' good character.—Apply, by letter, to G. R., Post office, Salisbury, Wilts

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex ; late of the firm of J. & J. Fraser, Lea Bridge Road.

TO be SOLD, on advantageous terms, the BUSINESS of a SEEDSMAN and FLORIST, situate in a most commanding position, and a first-rate opportunity for any person in want of the above.

G. W., 2, Milford Place, Vassall Road, Brixton, S.W.

To Nurserymen, Florists and Others.

TO BE DISPOSED OF, by Private Treaty, the old-established and well-known NURSERIES, situate about six miles south-west side of Manchester, so long and successfully carried on, comprising Six Greenhouses, Five Ranges of Pits, with Hot and Cold Water, with the whole of the GREENHOUSE PLANTS, &c. These Nurseries are over 20 Acres, and are well stocked with choice EVERGREENS, FOREST and FRUIT TREES, such as are rarely met with. None but Principals need apply.

For further particulars, apply to J. HOCKENHULL, Nurseries, Sa'e, near Manchester.

SALES BY AUCTION.

TO BREEDERS of SHORTHORNS.—I have been requested to hold an unreserved SALE by AUCTION of PURE BRED SHORTHORN BULLS, early next spring, at EDINBURGH. Breeders desirous of selling will please communicate with me at 15, Langham Place, London.

November, 1871. JOHN THORNTON.

SALE THIS DAY, at HALF-PAST 12 O'CLOCK PRECISELY.

Dutch Bulbs and Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 18, at half-past 12 o'Clock precisely, FIRST-CLASS FRUIT TREES, ROSES, Specimen CONIFERS, HOLLIES, RHODODENDRONS, and a variety of Deciduous TREES and SHRUBS, from Holland. Also an importation of Double and Single Hyacinths, Tulips, Crocuses, Iris, Anemones, Ranunculi, Gladioli, Liliums, and other BULBS, just arrived from well-known Dutch Farms.

On view the morning of Sale, and Catalogues had.

Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 20, at half-past 12 o'Clock precisely, 20 Cases of FIRST-CLASS HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, LILIUMS, and other BULBS, just arrived from Holland.

On view the morning of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 21, at half-past 12 o'Clock precisely, 230 Pens of FIRST-CLASS POULTRY and PIGEONS, including many promising young Birds, from the yards and lofts of well-known breeders and exhibitors.

On view the morning of Sale, and Catalogues had.

City Auction Rooms, 38, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, as above, on WEDNESDAY, November 22, at half-past 12 o'Clock precisely, a FIRST-CLASS COLLECTION of DUTCH BULBS, a superb assortment of 300 Standard and Dwarf ROSES, selected FRUIT TREES, HARDY CONIFEROUS SHRUBS, and AMERICAN PLANTS, &c.

May be viewed the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, Leytonstone, E.

Joyning's Nursery, Waltham Cross, N.

IMPORTANT UNRESERVED SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from the Executrices of the late Mr. R. Joyning to SELL by AUCTION on the Premises, Joyning's Nursery, Waltham Cross, N., on MONDAY and TUESDAY, November 27 and 28, at 11 for 12 o'Clock precisely each day, without reserve, in consequence of the lease of a portion of the Nursery having expired, a large quantity of VALUABLE NURSERY STOCK, including 5500 bushy Aucubas, 1 to 3 feet ; 5000 bushy Common Laurels, 2½ to 6 feet ; 500 Portugal Laurels, 2 to 3 feet ; 3000 Berberis aquifolia, 1 to 3 feet ; 600 Green Hollies ; 300 fine variegated Hollies, 1 to 4 feet ; 1200 bushy Rhododendrons, of sorts, 1½ to 4 feet ; 700 Phillyreas, 300 Laurustinus, 2500 fine bushy Privet, 2 to 4 feet ; 800 English Yews, 1000 Spruce Firs, Pinus, Thujas, &c. Also quantities of Ornamental Forest and Deciduous TREES and SHRUBS ; 1200 Hardy Climbing PLANTS, in pots ; 1200 choice Dwarf and Climbing ROSES, 500 fine Standard ROSES, fine FRUIT TREES, including Standard and Dwarf Apples, Pears, Plums, Dwarf and Standard Peaches, Nectarines, &c.

May be viewed one week prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

Clapham, S.

IMPORTANT SALE of NURSERY STOCK, CHOICE GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. F. Muskett, to SELL by AUCTION, without reserve, on the Premises, The Nursery, High Street, Clapham, Surrey, S.W., close to the Railway Station, London, Chatham and Dover Railway, on WEDNESDAY and THURSDAY, November 29 and 30, at 11 for 12 o'Clock precisely each day, a large quantity of surplus NURSERY STOCK, consisting of an excellent assortment of many thousands of choice Evergreen and Coniferous Shrubs, many of which are handsome specimens, comprising 2000 Chinese Arborvitæ, beautifully furnished, 4 feet to 9 feet ; 600 bushy Portugal Laurels and Box ; 1000 Lygustrum ovalifolium, 5 to 6 feet ; 2000 Common Privet ; 400 fine Arbutus, 3 to 4 feet ; 2000 Green Hollies, 2 to 5 feet ; 400 Variegated Hollies ; 200 fine Cedrus Deodara, 1 to 2 feet ; 200 Irish Yews ; Thuja aurea, Thujopsis borealis, Aucubas, Taxus erecta, Cryptomeria japonica, Ribes, Spiræas, Lilacs, and thousands of shrubs in specimen borders ; selected FRUIT TREES, 3000 strong Gooseberries and Currants, 500 established Ivies, Pyracantha, and other climbers, in pots ; Ornamental and FOREST TREES, Standard and Dwarf ROSES, together with 200 fine double Camellias, set with bloom buds ; 300 Azalea indica, by name ; 700 beautifully grown Ericas, of sorts, &c.

On view three days prior to the Sale. Catalogues had on the Premises and of the Auctioneers, Leytonstone, E.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B. ; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871

THE LANDS IMPROVEMENT COMPANY.
(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT.)
DRAINAGE, RECLAMATION, FARM BUILDINGS, LABOURERS' COTTAGES, TRAMWAYS, RAILWAYS, &c.

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The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

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UTILISATION of SEWAGE.—The Company also advances money for the purpose of Works of Sewage Irrigation.

The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

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CENTRAL ARGENTINE LAND COMPANY, LIMITED.

Chairman—JOHN HEGAN, Esq.
Agent in the Republic—E. HARRY WOODS, Esq., C.E., Buenos Ayres.
Superintendent—WILLIAM PERKINS, Esq., Rosario de Santa Fé.

The Directors offer, on advantageous terms to Settlers, either as Tenants or Purchasers, PLOTS, varying from 80 to 400 ACRES each, of the COMPANY'S LAND, situate on each side of the Central Argentine Railway, from the Port of Rosario to the City of Cordova, the entire length being 246 miles. Towns and Villages are being laid out at various points on the Line, where smaller Plots may be secured for Building purposes.

To secure the best class of Agricultural Settlers and facilitate the Emigration of Families, the Directors are prepared to treat for the Colonisation of Lands within easy reach of the Stations on the Central Argentine Railway, and adapted for immediate cultivation.

Further particulars may be obtained at the Offices of the Company:
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Where the Surveys of the Land (about 1,000,000 Acres), together with the Plans of the Colonies already established, can be inspected.

GEORGE WOOLCOTT, Secretary.
85, Palmerston Buildings, Bishopsgate Street, London, E.C.

Carter's Root Show.

JAMES CARTER AND CO. have the pleasure to announce that their ANNUAL ROOT SHOW will be held on NOVEMBER 24, on the Premises of the Pneumatic Despatch Company, 245, High Holborn, when PRIZES to the value of upwards of SIXTY POUNDS will be awarded for the best specimens of

SWEDES, TURNIPS, MANGEL, KOHL RABI, CARROTS, &c.

Including a SILVER CUP, value Ten Guineas, for the best 24 roots of

CARTER'S IMPERIAL HARDY SWEDE.

JAMES CARTER AND CO., Seedsmen to H.M. the Queen and H.R.H. the Prince of Wales, 237 and 238, High Holborn, W.C.

Smithfield Club Cattle Show,
DECEMBER 4, 5, 6, 7, and 8.
STAND No. 44.

EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, 57, Queen Street, Hull, invites attention of Visitors to his Exhibition of Specimens of his selected stocks of MANGEL WURZEL, DIXON'S IMPERIAL SWEDE, TURNIPS, KOHL RABI, &c. Orders received at the Stand.

FARM SEED LIST gratis.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

The Exhibitors and the Public will be admitted to Bingley Hall, to witness the whole of the Judging, on Saturday, November 25, at 9 o'Clock A.M., upon payment of 10*s.* each.

Admission, on Monday, November 27, to Non-subscribers, until 5 o'Clock, 5*s.* ; after that hour, 1*s.*

The Exhibition will also be open on Tuesday, Admission, 1*s.* all day ; on Wednesday and Thursday, until 5 o'Clock, 1*s.* ; after that hour, 6*d.*

For special Railway Arrangements, see the Advertisements and Bills of the several Companies.

JOHN B. LYTHALL, Secretary.
Offices of the Society, 39, New Street, Birmingham.

The Agricultural Gazette.

SATURDAY, NOVEMBER 18, 1871.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Nov. 25 { Midland Counties Cattle Show, at Bingley Hall, Birmingham.

WE were on LODGE FARM, near BARKING, the other day, when the last loads of Mangel Wurzel were being weighed from a field of 8 acres and 24 perches, the whole produce of it having been thus passed over the weighbridge. The total weight brought home had been close on 437 tons. They were a remarkably large, well formed, clean set of roots, so that certainly not a tenth of what had been thus harvested would be cleaned or cut to waste in preparing them for cattle food, and we may therefore fairly put the nett produce of the field at 50 tons per acre. It is not a remarkably good soil naturally, and for the five years during which we have known it the land has borne large crops annually, and the dung-cart has not been near it. The whole of this enormous produce has thus been due to irrigation with town sewage ; and those who know what a cost for dung and fertilisers must be incurred to grow a heavy crop of Mangel will probably learn more from a fact like this, than from a more elaborate proof, of the value of these great fertilising streams which are now running to waste from almost all large towns.

Mr. MORGAN'S "Report on the Cultivation, by Means of Sewage Irrigation, of the Lodge Farm, for the year ending August 31, 1871,"[*] containing a number of such facts as the above, has just been issued, and will be read with interest as by far the most detailed and explicit annual statement on the general subject of town sewage that appears. It describes the experience of a year, which has presented a great contrast to that of 1870 ; and the present report is, therefore, in many respects in similar contrast to that which preceded it. Last year succulent growth was slow and scanty ; this year it is abundant—last year, therefore, liquid manures were especially efficient—this year, comparatively speaking, they have not been needed. A dressing of farmyard dung has been washed into the soil by so much rain throughout the summer of 1871 that the market gardens have everywhere been unusually productive, and the great contrast to them which the sewaged grounds exhibited in 1870 has not been shown this year. Nevertheless, Mr. MORGAN reports as large a profit on Lodge Farm this year as was realised in the previous twelvemonth, and we doubt not this will be largely increased, as the farm is more and more cultivated, not merely for the purpose of exhibiting the fertilising power of sewage, but for the purpose of making the largest possible income in a case where sewage is accessible as an aid, and the farmer chooses to employ it.

The principal features of the report, we are informed, are "(1) a severe winter, followed by a very unusually long, cold, wet spring, and a short, broken summer—(2) 162 acres, 3 roods, 6 perches of land under irrigation—(3) 622,324 tons of sewage (weakened by previous admixture with excessive rainfall)—(4) very large crops—and (5) exceptionally low prices."

We must refer hereafter in greater detail to the several crops ; meanwhile, we may name some of the plots, with the produce they have yielded—9 acres 2 roods and 11 perches (plot A) yielded £500 worth of Cabbage, Mangel, Sugar-Beet, and Onions within the year ; 6 acres 1 rood and 5 perches (plot B) yielded £275 worth of grass, Potatos, and Savoys ; 6 acres 3 roods and 4 perches (plot D) yielded £280 worth of grass and Oats. On the whole, 189 acres 2 roods and 23 perches yielded £5739, or £30 per acre—having received 3800 tons of sewage per acre during the year. No doubt the value realised would have been much greater had it not been for the immense quantities of garden produce which this year competed for a sale in the markets of the metropolis. "The average price," says Mr. MORGAN, "which our best Potatos last year realised was from £6 to £7 per ton. This year we have obtained no more than £2 to £2 10*s.* Onions, which sold last year for £43 per acre in the ground, and realised a great deal more by marketing, have this year been sold by us at £28, the highest price I have heard of being £30 per acre. In the autumn of last year cut Cabbages (collards) fetched from 1*s.* to 1*s.* 3*d.* per dozen, while this year there has been a difficulty to obtain 3*d.* and 4*d.* per dozen, some having even been sold, I hear, as low as 6*d.* for five dozen. Scarlet Runners, which made 8*s.*, 10*s.*, and 11*s.* a sieve last year, only reached 3*d.* and 6*d.* and 1*s.* until lately, when they have made 2*s.* and 2*s.* 6*d.* a sieve. Bunching greens have not paid us to market, and we have hitherto fed cattle on them. I have been told by several farmers that they have ploughed in their crops, as it would pay them better to use them as manure than to market them. These differences in price have not at all arisen from difference in quality, as our produce has been in most cases as fine and as abundant this year as last. Strange to say, that in the face of all this the retail prices are as high as ever, a cut Cabbage ordinarily costing 1½*d.*, and a small dish of Beans 4*d.* and 6*d.*, with everything else in proportion." To this we add the comment of the *Pall Mall Gazette* :—"It is more melancholy than strange. There are thousands of poor persons who while vegetables are either used as manure or are almost given away by the grower, are well nigh starved for want of a dinner, being unable to pay the exorbitant price demanded by the retailer."

The report of Lodge Farm is of annually increasing interest, and the present publication will no doubt be very widely circulated.

THAT was a capital question asked the other day before the Botley and South Hants Farmers' Club—WHAT SHALL WE DO WITH OUR ROOT

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[*] Metchim & Son, 32, Clement's Lane, E.C., and 20, Parliament Street, S.W.

CROP? We have a most abundant store of cattle food in the country, and all kinds of fatting stock are in great demand accordingly, and the price at which they must be bought in will thus, in all probability, leave but little margin for a profit on the feeding process. The many difficulties of the whole subject were well represented in the paper in which Mr. SPOONER attempted to answer the above question, and in the discussion which ensued. Notwithstanding these difficulties, Mr. SPOONER did not altogether despair of realising this profit. Mutton might be depended on to sell well, and the skin as well as the carcase would be valuable. He thought the value of the skin of a good teg in the spring would be nearly a sovereign, and though they did not directly get paid for it, yet it was done indirectly. Therefore they must not think of entirely ploughing in their root crop as manure.

Mr. SPOONER proceeded to discuss the value of the crop as food and as manure, supposing it to be either used in feeding fatting stock or ploughed under, as had been proposed by those who despaired of realising any return from its consumption. The manuring value of linseed cake was £4 10*s*., of Wheat, 35*s*., of Barley 37*s*. per ton, of Turnips only 4*s*. per ton. Applying the same rule of valuation, as when applied to guano and superphosphate, to bring out the market value of these substances, it is found that the manure value of a crop of 20 tons of Turnips is not more than £4. The value of the greens for manuring purposes was now nearly double that of the bulb—in proportion to their weight. This was a good reason why this year all greens should be ploughed in as manure. Lothian farmers, with whom he had lately conversed, had told Mr. SPOONER that they sometimes sold their roots to cowkeepers, and offered £2 per acre to allow the greens to remain on the land, and the cowkeepers universally refused to part with the greens. Returning to the question of root value as food, Mr. SPOONER, comparing Turnips with linseed cake, stated that the theoretical value of a ton of Swedes was something like 16*s*. 6*d*., the great obstacle to the practical realisation of this value being the immense surplus of water which a Turnip root contains.

Experiments had been tried with five sheep, which ate on an average 23 lb. of chaff per week, or 3 lb. 4 oz. per day, and they drank 5 lb. 11 oz. of water per day, or 40 lb. per week apiece. Others consumed 18 lb. of hay, and 7 lb. of beans, and drank 43 lb. of water per week, or 6 lb. 2 oz. per day. He pointed out that this quantity of water was only equal to that contained in a daily allowance of 7 lb. of Swedes, and this would show that when Turnips were given in large quantities to sheep an immense quantity of water is taken into the system. By eating roots to excess, they take up four times the quantity of water they require, and it does them no good. It appeared, then, that by a more reasonable use of the root crop in the feeding process, a greater value per ton might be obtained from it. The following were the recommendations to which the lecturer pointed:—(1) to cut off the greens, and plough them in as manure; (2) to pit the roots as much as possible, for after they were kept some time they would lose 10 per cent. of water, and then they would be quite as valuable if, after all, they had to plough them in. They would thus get the roots more nutritious by the loss of this water, and prevent the starchy matter from being converted into woody fibre. The remainder of Mr. SPOONER'S lecture was devoted to the consideration of the policy of growing Sugar-Beet, a point somewhat beyond the strict limits of the question under consideration.

Mr. SPOONER was followed by Mr. J. BLUNDELL, whose speech was full of useful information and good advice. His answer to questions in the first place seemed to be—"Wait, wait." How did they know what the winter would be? They would not know before February 1 how their root crop might turn out. Some of their roots were grown very quickly, but how did they know whether they would withstand the frost?—and therefore he said that ploughing-in the roots in a reckless manner would expose them to a great risk. It might, however, be desirable, if they ultimately found they had too many for feeding the cattle, to plough them in, and in that case his recommendation was to get them cut up. He would take the cutter into the field; the roots could be pulled up and put into it, and then the pieces could be put in heaps and spread over the land as manure. There would be a profit off sheep, but they were exceedingly short of them. Of wether sheep there were only a few left. In another year, drawing on them as they had been doing, they would dispose of the whole of them. This was a very serious matter for the consideration of the people of this country. It was a matter of the greatest possible moment to the consumer, because every day the quantity of sheep was diminishing, and they must be dependant on beef only. They had ransacked the whole of Europe for cattle, and the importations only amounted to 9½ per cent. of the home consumption. This diminution in the supply of cattle and sheep was no doubt owing to the shortness of keep in previous years, and sheep and cattle had to be slaughtered because there was no food for them. While the relations between landlord and tenant existed as they now were, that deficiency would never be made up. A tenant would not lay out his capital in the purchase and rearing of stock while the relations with his landlord were unsatisfactory; but let the restrictions which at present encumber leases be removed, and then the tenant would bestir himself. Even in respect of Sugar-Beet, to which reference had been made, the same truth applied. He would not go into the calculations about growing it, but ask how many tenant-farmers were there who dared grow it for sale? He asked any gentleman present who did not farm his own land to look into his lease, and see whether he had any power to sell Sugar-Beet. [We do not refer at any greater length to the discussion on the growth of Sugar-Beet, to which several subsequent speakers contributed.]

The question on the card ultimately regained the attention of the meeting. Mr. C. HOLDWAY recollected 25 years ago having had a large supply of Turnips, and he was about to turn them into the ground, when a neighbour came along and called him a destroyer of food, and he gave him permission to feed 200 sheep on the Turnips for a fortnight. He, however, ploughed the crop into the land, by the side where the sheep had fed. He sowed the land with Barley, and had a sack per acre more there than on the place where the Turnips had been fed off by the sheep. His neighbour said it was all chance. But that did not satisfy him, for he felt that the sheep, having come to feed, took something away. What they left was about 4*s*. per ton as manure, whereas the Turnips would have been worth more if he had ploughed them in instead of given them away.

Mr. SPOONER, in reply, said young animals would certainly take up more of their food than old ones. A young animal would take up more of the albuminous parts and retain them in the flesh than the older one, and thus the manure of an older animal was much more valuable than that of a young one, as more of the nitrogenous parts were retained in the system. The more good food they gave an animal the more valuable the manure became. The larger the quantity of nutritious food the better would be the manure from it. The most profitable way was to give the food in that proportion which would best suit the animal.

—— A SMALL supply of English Wheat at Mark Lane on Monday was sold at the extreme prices of that day se'nnight; less firmness, however, was observable on Wednesday.——The prices of beasts recovered at the Metropolitan Market on Monday, owing to a short supply and the weather being favourable for slaughtering. It was difficult to realise late rates for choice sheep. Wednesday's trade was dull, at about Monday's rates.——The prices of Hops are fully maintained.

—— Owing to Mr. MECHI'S advanced age, the pressure on his time, and his not having a secretary, he desires to apologise for any default in replying to correspondents.

—— Mr. HENRY CHEFFINS, of Easton Manor, Dunmow, is elected Chairman of the Farmer's Club for 1872.

—— Last Friday's "London Gazette" contained a long series of Orders in Council, giving such licence as is needed to enable the Smithfield Club to hold, at the Agricultural Hall, in the parish of Islington, in the metropolis, on December 4, 5, 6, 7, and 8, 1871, their exhibition of cattle and other animals. The following are the more important regulations and exceptions enacted:—

"Cattle that have been in the metropolis for more than seven days before the opening of the show shall not be admitted thereto, and cattle brought to the metropolis for the show shall be taken direct thereto.

"No cattle shall be admitted to the show without a licence for the purpose from the Commissioner of Police of the metropolis, or of the City of London.

"Each animal before admission to the show shall be examined by the veterinary surgeons for the show, or one of them; and if on such examination any animal is found to be affected with any contagious or infectious disease, it shall not be admitted to the show.

"If any case of cattle plague occurs in the show the Council of the Smithfield Club shall cause all the animals in the show to be forthwith slaughtered, in pursuance of the condition to that effect contained in the licence.

"If any case of foot-and-mouth disease occurs in the show the following regulations shall have effect:—(1.) The animals affected with foot-and-mouth disease shall be slaughtered in the metropolis, and for that purpose shall be moved to a slaughter-house, with a pass of the pass-master of the show; (2.) The animals not so affected may be moved and dealt with as if a case of foot-and-mouth disease had not occurred in the show.

"If no case of contagious or infectious disease occurs in the show, cattle exhibited in the show may be moved (in accordance with the provisions of this order, and not otherwise), as follow:—(1.) They may be moved out of the show for slaughter in the metropolis; (2.) They may be moved out of the show, and then alive out of the metropolis.

"All cattle exhibited in the show and not moved out of the metropolis, shall be slaughtered in the metropolis on or before December 21, 1871.

"If the cattle are moved out of the metropolis otherwise than by railway, they shall be conveyed, without stopping, from the show out of the metropolis in properly constructed cattle-vans.

"Provided that if any cattle being so moved, while in the metropolis, come accidently or otherwise in contact with any cattle not having been exhibited at the show, they shall not be moved out of the metropolis, but shall be slaughtered in the metropolis."

—— The *Midland Counties Herald* thus refers to the forthcoming Cattle and Poultry Show at Birmingham:—

"The aggregate entries are considerably more numerous than for either of the two last years; the increase being most apparent in sheep, pigs, roots and pigeons. As regards cattle, we believe there is good reason to anticipate that while all breeds will be adequately represented, the Scots will be especially strong; while the miscellaneous class of pure-bred sheep will include two varieties which have never yet made their appearance in these annual competitions—namely, the Border Leicester and the Dorset horned. The root department, which, to practical men, is always an interesting feature, will be more so than usual on this occasion. The display of Potatos will be unprecedentedly large, and all the sections will be well filled; the very complete system of classification adopted by the Council having been received with general satisfaction by the leading growers of that valuable esculent. A new gallery, 220 feet long by 15 feet wide, has been erected on the Cambridge Street side of the hall; and will be devoted to the stalls of seedsmen, and to light articles: the existing galleries being reserved for the roots and pigeons. Altogether, therefore, the prospects of the 23d of these great exhibitions are very encouraging."

The following figures give the statistics of the last four years in comparison with the figures of the forthcoming show:—

	1867.	1868.	1869.	1870.	1871.
Cattle	122	173	111	151	152
Sheep	82	103	50	75	84
Pigs	81	47	45	61	73
Roots	76	170	126	234	253
Corn	45	44	38	46	45
Poultry	2111	2315	1971	2122	2089
Pigeons	565	432	482	441	546
Total ..	3082	3284	2823	3130	3242

—— The third anniversary of the BANBURY ROOT SHOW took place in Mr. PERRY'S grounds last week, and was remarkably well attended. Three hundred entries competed for the prizes. The judges were Mr. GEORGE GARNE, of Churchill Heath, Chipping Norton; and Mr. HENRY SIMMONS, of Bearwood Farm, Wokingham, Berks. Mr. W. FRENCH'S 12 Swedes of Perry's Bangholm Purple-top variety, weighed 191½ lb., and took the 1st prize. There were 61 entries in this class. The prize Yellow Globe Mangels weighed nearly 20 lb. a-piece, and the Long Reds averaged exactly 30 lb. each: and in this class a special prize was also awarded to the Banbury Local Board of Health for Mangels grown under sewage irrigation.

—— The reply from the Privy Council Office to Sir GEORGE JENKINSON'S letter, published in the *Agricultural Gazette* last week, states, among other things, that—

"Their lordships are of opinion that the provisions of the Contagious Diseases (Animals) Act, 1869, which prohibit the movement of affected animals and provide for general disinfection, and the powers conferred on the local authorities by the Order of Council of October 1, 1870, for making regulations with regard to local disinfection, and the movement of animals herded with affected animals, would, if effectually carried out, be sufficient to check the spread of foot-and-mouth disease; but their lordships are also of opinion that no action on their part, short of stopping all markets, fairs, exhibitions, and sales of animals, and putting very severe restrictions on their movement, would actually eradicate this disease, even for a time; and they believe that such stringent measures, although submitted to in order to stamp out cattle plague, would not readily be borne in the case of foot-and-mouth disease. The experience of the last two years confirms their lordships in this belief. In 1869, owing to the prevalence of foot-and-mouth disease, the Privy Council issued an Order applying thereto, throughout Great Britain, regulations somewhat similar to the pleuro-pneumonia rules in the 7th schedule of the Contagious Diseases (Animals) Act, 1869; but, owing to strong representations from many counties, they revoked this general order, and came to the conclusion that, as regards this disease, it was better to give discretion to the local authorities to act according to local circumstances and the opinion of their districts. By an Order of Council, therefore, of October 1, 1870, local authorities were given power to supplement the Act by regulating the movement of animals herded with those suffering from the disease, and thus provide, if they thought fit, against its spread; but less than half the counties in Great Britain appear to have exercised this power. . . . With regard to the opinion expressed in the resolution, that only compulsory slaughter at the ports of quarantine of foreign stock will prevent the introduction of contagious or infectious diseases into this country by the importation of such stock, it appears to be assumed that the presence of these diseases in Great Britain is due to this importation. It would be difficult in this, as in any other negative case, to prove the contrary, but especially as regards the prevalence of the foot-and-mouth disease, the facts do not seem to support this assumption. It appears that foot-and-mouth disease existed in this country three years before the prohibition on the importation of foreign animals was rescinded; and that the prevalence of the disease since that time has not, in the greater number of instances, increased with increased imports, nor decreased with a lessened import of foreign animals. Their lordships have been informed that the late outbreak is attributed to the increased freedom of movement of Dutch cattle; but it may be stated that this disease has not existed in an epidemic form in the Netherlands this year; while it existed in at least 50 counties in Great Britain when the restrictions on those cattle were removed, and that there has not been a single case of either foot-and-mouth disease or pleuro-pneumonia in the two parishes of Harwich or Dovercourt, notwithstanding that more Dutch cattle have been landed at Harwich than at any other port in this country except London, that the cow-keepers at Harwich and Dovercourt are in the habit of filling up their dairies with Dutch cows, and that there is scarcely a farmer in Dovercourt parish who has not taken these cattle into keep."

—— The following account of a meeting of the Newcastle Farmers' Club, held to receive the report of a deputation which had visited the Wolverhampton trial-grounds, looks rather as if there had been a foregone conclusion in favour of Fisken's System of Steam Cultivation :—

"Mr. John Gregory (Westoe), advised farmers to see such trials with their own eyes. It was his opinion that two 20-horse engines, 'weighing about 40 tons,' were quite impracticable for steam cultivation. He concluded by asking the deputation if there is any difficulty in a traction engine hauling all the tackle connected with the Fisken system from one field to another, or from farm to farm; and what time it would take from finishing work in one field and starting work in another, the fields being one mile apart?

"These two questions, Mr. Wallace (one of the deputation) said were of a somewhat difficult character. One farm might be situated upon an elevation, while another might lie in a deep valley; in either of which cases there would be some difficulty in getting a traction engine—Fisken's or Fowler's—at a required point. On an ordinary road, however, any engine could travel; and he could not see the slightest difficulty in getting the traction engine and tackle connected with Fisken's system removed from farm to farm along such a road. Respecting the second question, it was shown that a correct answer depended entirely upon the state of the roads, and that if the field was large much work could be got through without altering the position; while, on the other hand, if the field were small, considerable trouble would be occasioned. He contended, however, that Fisken's was a most efficacious system for fields of any size, far surpassing Fowler's in that respect. That system was also most advantageous for the purpose of removing from field to field. The engine could stand on the road, or near a well, and from this position every one of the fields in fallow—and as steam ploughing became more appreciated, farmers would lay out their fallow, and have as many fields adjoining as possible—could be ploughed, so that it would be only shifting the tackle from field to field, and not the engine and the tackle. He had no doubt that when once a farmer got Fisken's tackle on his place, he would not part with them until he got the whole ploughed, or any rotation of cropping which he might have for the time being."

—— We learn from the *North of England Farmer* that the best Scottish Dairymen have at length beaten the best men of Somersetshire in their strongest point, the quality of the hitherto unrivalled Cheddar cheese :—

"A few cheese-makers in Somersetshire—10, or 15, or 20 in number—still, it is said, surpass the best makers of Cheddar cheese in Scotland. Last year the men of Galloway, with great spirit, offered to bring the matter to a practical test by a competition, but the Somerset men declined to meet them. Failing to obtain a competition on a large scale, a few of the Galloway men this year applied to an eminent English cheese-factor who gets the produce of some of the best dairies in Somersetshire; and he selected two "thoroughly fine" specimens for exhibition at Kilmarnock. A Scotch cheese was selected for comparison with the best English one. The Scotch cheese was one of the two which had been placed 1st at the late show of the Ayrshire Agricultural Association for Lady Stuart Menteath's prize. The judges took half an hour to come to a decision, and they were not satisfied till they cut both cheeses through the middle. The quality of the two was wonderfully near. The Somerset cheese appeared to have the advantage of being a month older than the other, and it excelled a little in 'style.' Though no more than the usual width, it weighed 110 lb. The Galloway cheese might be three-fourths of that weight. It was equally fine in colour, 'texture,' and quality, and rather excelled the other in flavour. In the end, the unanimous decision was in favour of the Scotch cheese. The result is honourable to Mr. Gardiner, Baldoon, the maker of the Scotch cheese, and encouraging to his countrymen, who do not wish to rest in the second rank."

OUR LIVE STOCK.

CATTLE.

A new catalogue of the Kingscote herd, dated November, 1871, has appeared. It contains a list of 49 females and 13 bulls, most of which trace back to Mr. Bates' stock. The catalogue commences with *Ariel Duchess*, by Major Gunter's Duke of Wharfedale (19,648), and tracing back to *Ariel* by 2d Cleveland Lad (3408). This family is further represented by *Ariel Marchioness* by 3d Duke of Clarence, and daughter of *Ariel Duchess*, a very grand roan calf. The "Bickerstaffes" form a group of four, at the head of which is *Countess of Bickerstaffe* by 4th Duke of Oxford (11,387), dam *Capsicum* by General Canrobert (12,927), g.d. *Cleveland* by Mr. T. Bell's Tinsel (13,886). This last-named cow is also the common ancestress of a family represented by *Clove*, *Comfort*, and *Cordial*, all descendants of *Cinnamon*, own sister to *Capsicum*. We next find four "Wild Eyes" cows and heifers, after which we find a long array of "Georgianas," tracing from Earl Ducie's 4th Duke of Oxford, and a fine succession of sires bred by Mr. R. Bell. The "Honeys" have long been identified with Kingscote, and are at present represented by no fewer than 16 females and five young bulls. This very considerable portion of the herd is headed by *Honeymoon*, bred by Col. Kingscote, got by Caleb (15,718), dam by Viceroy (13,945), g.d. by Oregon (8371), all three sires being Kingscote bred. Next in order we find Premier (7344), bred by Mr. B. Wilson, and previously Mr. J. Stephenson's Bellerophon (3199), Alderman (2976), and Mr. Stephenson's Waterloo (2816). Two Oxfords, two Acombs, several members of Mr. T. Bell's Poppy and Peach tribes, two Seraphinas and a Surmise heifer bring the list to a conclusion. The young stock is by 3d Duke of Clarence, and the cows and heifers are in calf to this sire and the American importation, Duke of Hillhurst, bred by Mr. M. H. Cochrane, of Hillhurst, Compton, Canada. This promising young bull is unexceptionably bred, being by Mr. S. Thorne's 14th Duke of Thorndale, dam *Duchess 97th* by 3d Duke of Wharfedale (21,619).

—— The 3d Duke of Clarence's 2-year-old stock at Kingscote are a grand lot—all roans but one, which is red. Mr. Burnett informs us that the calves of the present season by this bull are better than those of preceding years, which fully bears out what he stated in our impression of May 20, as follows :—

"The calves by the 3d Duke of Clarence in 1868 and 1869 were not so well formed as those of 1870, and the calves of the present season are of still more hopeful appearance. This agrees with a case recorded by Mr. Bates of one of his best stock-getters, that his first season's calves were nothing very grand, that his second season's calves were better, and that his third and fourth seasons' stock were really grand animals."

Mr. Burnett considers that a bull is most valuable as a sire from three to six years old. Before that age the produce is as large, but lacks "smartness" and "grandeur."

—— The following are the most recent additions to the Towneley Park herd :—

July 3. *Duchess of Lancaster 2d*, a red cow calf by Baron Oxford.
Aug. 5. *Towneley Butterfly*, a roan cow calf by Baron Oxford.
Aug. 12. *Duchess of Lancaster 5th*, a red with a little white bull calf by Baron Hubback.
Aug. 24. *6th Maid of Oxford*, a red and white bull calf by Baron Oxford.
Sept. 4. *Gipsy Gwynne*, a red bull calf by Mr. Barber's Oxford Baron.
Sept. 13. *Puff*, a red and white bull calf by Baron Oxford.
Sept. 13. *Baron Oxford's Duchess*, a roan cow calf by Oxford Baron.
Oct. 7. *Cheerful*, a red with white bull calf by Baron Oxford.
Oct. 12. *Butterfly's Wing*, a red and white bull calf by Royal Butterfly 21st.

SHEEP.

Mr. Corbett informs us that he does take his types of Leicester and Lincoln heads from the shaven and trimmed countenances exhibited at our shows, and challenges us to point to a better type. The question raised by our critic three weeks since entirely concerned the presence or absence of a top-knot in these two breeds, and we cannot see how a shaven crown can be taken as evidence in deciding the "knotty" point. In describing the head of an animal we must take perfectly normal and not modified examples, which the heads of show Lincolns and Leicesters undoubtedly are. It is a common custom to shave the legs of show sheep as well as their heads; but we should certainly be surprised to learn that Leicester sheep are especially free from hair upon their legs, or that Cotswolds are distinguished by a peculiar ochrey-coloured wool, while Lincoln and Leicester wool is of a greyish tinge. And yet if the shaven countenance is to be taken as the type, why not describe other artificial differences? Why not, indeed, give this admirable system a wider application, and describe the Chinese race of men as furnished with a peculiar appendage known as a "pig-tail," or the New Zealander as distinguished from his fellow mortals by curious *tattoo* markings? We cannot bring ourselves to answer "most assuredly" yes to such questions, and, returning to sheep, we should most certainly like to see them appear with their features in a natural state. If the top-knot is to be considered old-fashioned and coarse, why shave it off? Surely, by so doing, all the sheep exhibited are reduced, in "character," to a dead level, and the judges lose one means at least of deciding their awards. We, however, cannot agree with Mr. Corbett or his authority, the "very successful breeder of Leicesters," who no doubt prefers his sheep bare on the head: other breeders do not.

—— The *Yorkshire Post* thus calculates the mutton-producing power of the existing root crop :—

"The cost of taking the field has been enormous, owing to the high price of lean stock, but the investment will be successful in a pecuniary sense. Thus, if grazing sheep have cost more than usual this year, they will sell out unquestionably at high rates, and they will not, as last year, require to be sold until they are fully fed. And we may calculate that sheep will come into the shambles after Turnip grazing this season at least 4 lb. per quarter heavier than they did after last winter. This will be an increase of 12*s.* per head upon the sale value of the sheep at 8*d.* per lb., over last year, and is a fair prospect for the farmers, who are determined to make the most of the grand Turnip crop of the year. It is also a fair prospect for the country. We have at present 29,000,000 sheep in Great Britain and Ireland, and 2,210,911 acres Turnips, and about 1,300,000 other green crops (except Clover and grass). Now, allowing the other green crops to be all pulled off the land for cattle, and one-third the Turnips, we shall still have 1,473,941, or, in round numbers, one-and-a-half million acres of Turnips to eat on with sheep, which, at an average of eight sheep per acre, will fatten 12,000,000 sheep. Now, the extra weight upon these sheep, from the extra length of time which the abundant crops will maintain them, at 16 lb. each, as assumed before, will amount to 192,000,000 lb., which, at 8*d.* per lb., has a gross value of £6,400,000. This, then, is assuredly a great gain to the country, and a fine sum for the agriculturist to look forward to realise. It must not, however, be forgotten that last year he lost a greater amount than this. He then grew 3,000,000 acres of roots, and the crop was certainly not a fourth of an average, showing, at the low value of £6 per acre, a loss of £13,500,000. That the result arrived at above, that we have winter food on Turnips available for 12,000,000 sheep, is not a far approximation from truth is confirmed by the fact that we have 29,000,000 sheep in the United Kingdom, and it has usually been considered that about half the number went to Turnips."

SOD.

When one of our best farmers was asked the secret, on the whole, of his success, he replied, Sod. It is the cheapest manure, comes from the atmosphere mostly, dispenses with making and drawing, and is among the best of fertilisers. "Give me a stiff, deep sod, such as I usually try to make, and I wish for nothing better," said our friend. The top-dressings which are used to aid in making the sod have also an influence, especially if this is manure from the barnyard; better yet if compost where soil is used, loam or clay, as needed for the land, where applied for this, makes soil; you raise your land, that is, add to it, and the sod rises with it, thus restoring the land eventually to its original level.

Sod contains the elements of vegetable growth, and will grow anything. This is its advantage; in this respect related to barnyard manure. But it will rot sooner than green manure; it is better distributed through the soil than can be done with any manure or with any instruments.

Turn down a very dense, thick sod; let it thoroughly rot; plough again (of course when dry); keep ploughing and cultivating, and harrowing more or less during the summer, and what have you got? A heap of manure spread 5 or 6 inches deep over your land; in other words a 100 or more good loads of the best of manure. None of its strength lost; a perfect distribution so as to have plant food wherever the minutest root may find its way.

Such land is fit for a garden, fit for anything, but the most fit to seed down to sod again, forming a still better turf, and much sooner. But we are forever running down our land, and then putting it in grass to bring it up again. It takes long to do this, at considerable expense, whereas the other is the ready way to large yields, two crops a season and good ones, with seldom a failure, as such land withstands drought and also the rains better if in excess.

But can such a sod be formed without too much expense or risk? There is no risk attending it. The outlay goes to increase the crop; the benefit follows right along each year. Apply plentifully of manure, and there will be plentiful crops. Plaster, ashes, salt, lime, the phosphates honestly manufactured, all will not only help to make sod, but give immediate returns. The only difficulty is, we are afraid to use enough of them, particularly the prime feeder—barnyard manure.

It is for this reason—sod reason—that our dairy regions are so improving. Having been run down by over-cropping, they are now not only restored, but they exceed the original fertility—this generally and decidedly. The secret is, when we make our sod, that we make it good, not a straggling thing of roots, seeking for subsistence and barely finding support. This will not pay. There must be healthy, vigorous root life, giving good returns. The point to get the greatest gain is, to make your sod the soonest and the thickest that you can. The more you apply the more you get, and, remember, always at a gain. The crops will be according to the application judiciously made. Why, then, are we afraid to apply the dressings? We know farms where this has been done that it does you good to look at; the treatment, liberal, made from the beginning.

The point, then, is, prepare your land in the best possible manner for seeding; have a good seed-bed, and have the ground mellow below. Get a good start. If manure is harrowed in with the grain, that is a help, whether in the fall on Wheat, or on spring grain, only see that your spring grain is put in early. This is important. The best way is to prepare the land in the fall by ploughing and applying the manure; apply during the winter fresh from the stables. In the spring you have what you want. And use plenty of seed to seed down. This will make a thick stand and a thick set of roots. Follow up yearly by plentiful surface applications, and the thing is done. Your sod is established; you have made profit out of the crops as you established it, so that it may be said you have the sod—a heavier and better coating of manure than is otherwise obtained—for nothing.

This is the way to improve land, and the best, all things considered, that we know of. Not only in grazing countries proper is this the best, but it will do where grain is made the chief product. Clover here may be used generally to the greatest advantage. We particularly fancy Clover on a stubborn clay soil to improve it. It will mellow the land by the motion of its roots and enrich it, and enrich it with just the *pabulum* that is wanted. A thick sod of Clover roots is probably the best thing that can be done to improve it, as it makes deep work as well as surface improvement. But use the means freely to do it. If not on a large scale, then on a small scale, field after field, for it is the thorough work wherein the advantage consists. Once established, the air will feed and continue it, and with comparatively cheap outlay of top-dressings. But whether continued or not, when once established, you have the benefit, ready for the plough, or to continue its heavy crops of grass. The advantage is mainly what is derived from the atmosphere. The grain gets less of that and takes more from the soil; hence the grass improves the land. Begin with Clover and continue with grass till the plough is resorted to, then repeat with Clover and grass again.

But why a thick sod? it may be asked. Because it is a protection; in a multitude of counsellors there is safety; in an aggregate there is power. A rich soil, especially a thick rich sod, will ward off the hurts of the season; it is a guard against drought and over-moisture, keeping the soil cool comparatively in summer and warm in winter. It is a concentration of the good, and you are not apt to miss a crop. Here is the live thing in the soil to do all this. Is it not so? Are not the good crops in a drought raised from just such land? And, remember, it takes but a few years, with judicious treatment, to form just such a sod, and but little trouble, comparatively, to keep it. *F. G.* (*Albany Cultivator*).

SORTS OF WHEAT.

THE subjoined drawings (figs. 324, 325) are portraits, *i. e.*, they are sketches of particular ears, which, though selected with some anxiety that they should be fairly representative of the several kinds, were yet obviously more luxuriantly grown in some instances than in others. They are republished from Warne & Co.'s "Farm Calendar," and appeared some years ago in these columns. We repeat them now at a time when the selection of seed Wheat is still to some extent an open question, and with them we repeat, in a very abridged form, the characters given of the sorts in the work referred to:—

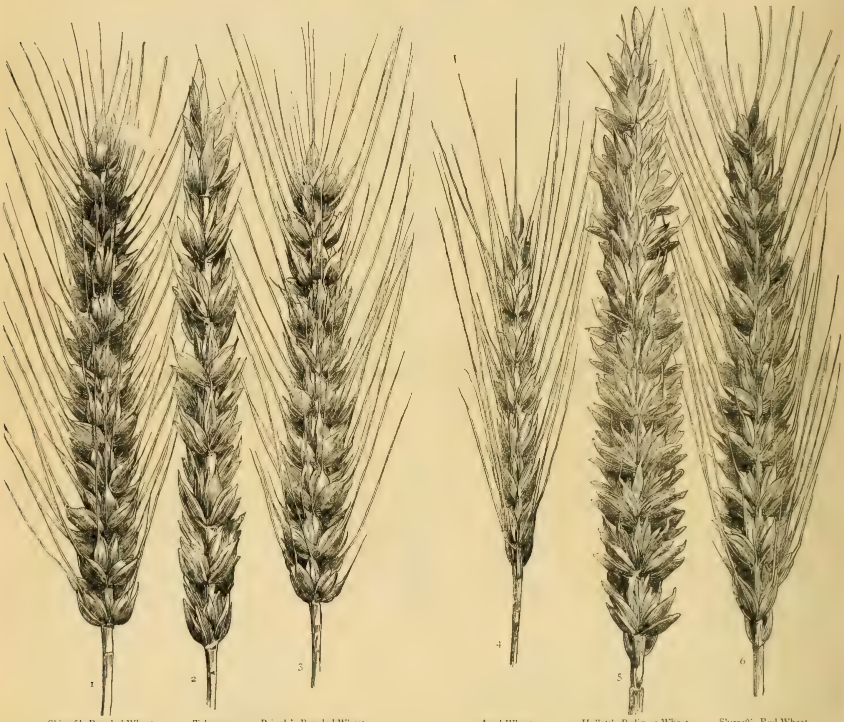
1. Shirreff, bearded white Wheat, selected and grown by Mr. Patrick Shirreff, of Haddington; grain short, small, white, translucent.

2. Talavera, capital for spring sowing; recognisable by distance between the sets of florets on the central rib of ear.

3. Pringle's White Wheat, differing from 1 chiefly in the larger size of its grains, and their shining, white, creamy tinge.

4. April Wheat, rather a shabby specimen of our latest-sowing red Wheats.

5. Hallett's Pedigree, grown from selected grains carefully cultivated, and thus possessed of an acquired robustness and size of growth.



Shirreft's Bearded Wheat. Talavera. Pringle's Bearded Wheat. April Wheat. Hallett's Pedigree Wheat. Shirreft's Red Wheat.

FIG. 324.—VARIETIES OF WHEAT.

6. Shirreft's Bearded Red, for autumn sowing, ripening early, stiff strawed.

7. Common Red Lammas, a red Wheat, of good quality and fair productiveness.

8. White Essex Wheat, good quality of grain, considerable length of straw.

9. Spalding Red Wheat, coarse, productive, strong strawed.

10. An unusually strong specimen of Chidham Wheat, one of the best white Wheats for quality.

11. Mungoswell's Wheat, another of Mr. Shirreff's sorts; like Hunter's, but earlier.

12. Hunter's Wheat, an old standard Scottish variety of white Wheat.

13. Hopetoun White Wheat, also originating with Mr. Shirreff; stiff, long straw, smooth chaffed, very handsome in the field.

14. Fenton White Wheat, originating with Mr. Hope, of Fenton Barns, Haddingtonshire; of various length in straw, presenting usually the appearance of a ragged crop, but almost always yielding better than it promises.

THE AGRICULTURAL LABOURER.

BRITISH agriculture is a great fact, that will never go out of fashion so long as there are stomachs that must be filled and daily replenished. Our agricultural power is composed of landowners, farmers, and labourers combined, just as steam-power is formed of coal, water, and machinery. Each part is connected with, and dependent on, the other for a profitable result. The three interests are governed by the law of supply and demand, which no Legislative Act can regulate or control, although the attempt has often been made and failed.* It is not at all difficult to perceive that, of the three interests, the landowner has the vantage ground in this densely populated country, for the land never had any children, while both farmers and labourers have very large families, wanting land and wanting employment. On my farm, the labourers have an average of five children each, including two who have none; and I have also five children. This question of mutual dependence is quite independent of the pecuniary arrangements between the parties, which, of course, must be like other business transactions, and governed by circumstances. Farmers and labourers must both gain a living, and the rent of land must be subservient to that end.

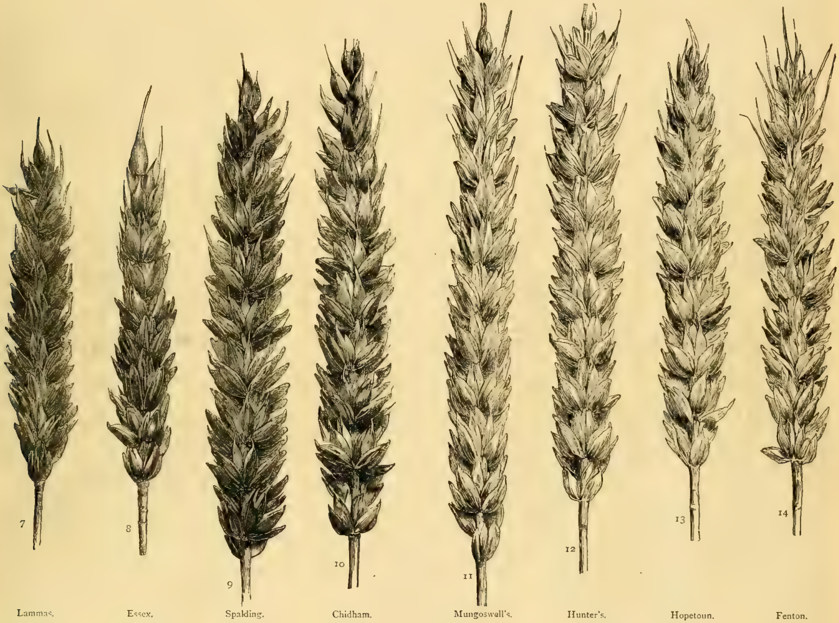


FIG. 325.—VARIETIES OF WHEAT.

It is very wrong to impute to any class, as a class, wrong doing. Of course, individual deviations from rectitude are to be found in every class of society, but I look upon landowners, tenants, and labourers as actuated by ordinary and proper feelings, each trying to do the best he can for himself, which is a sound commercial or business sentiment. Circumstances, and opinions founded on any changes in these circumstances, may and do greatly alter the conditions that govern British agriculture. Manufactures, commerce, and population, have been so increased and stimulated by the new power of steam, that agriculture must come out of its old rut, and enter on a new and more rapid route; therefore landowners, farmers, and labourers, must all change and improve and take their part in the general advance. We were 15,000,000 in 1800, we are now 32,000,000. The acres are numerically the same, but are being improved, and farming must be still further improved by less prejudices in favour of old customs on the part of the landowner, his tenants, and the labourer. There must be an improved mental and physical condition of the labourer: with the value of his labour we have nothing to do, that must follow the law of supply and demand, but there are certain things that should be done for the labourer that he has no power to do for himself. I mean education and decent house accommodation. What I mean by education is reading, writing, and ordinary arithmetic; these are the means by which he can acquire knowledge if he desires so to do, but without them his mind must remain a comparative blank. Education is the basis on which knowledge and power are founded. The Scotch, thanks to John Knox, are in this respect in advance of us, hence the employment of Scotch managers, bailiffs, stewards, gardeners, &c., almost everywhere out of Scotland.

Technical education for the agricultural labourer must depend in a great degree on the intelligence and knowledge of the landowner and his tenant, and, to speak honestly, there is plenty of improvement required in this respect. If the farm is managed on the best modern principles, with steam-power at the homestead and in the field—if the farm is in proper condition as to its drainage, water supply, roads, fences, and residential and animal accommodation—the juvenile labourer will grow up in the presence of intelligent agricultural practice, which will naturally impress itself on his mind. I have practical proof of this, for when our men and boys eat their frugal meal in the warm boiler-house, the untiring engine teaches them a lesson; so much so that many of them are now handy at turning the steam off or on, or even attending to the engine in the absence of the driver, and can lend a useful help in the manipulation of the various machinery worked by the engine.

I am strongly in favour of permitting the juveniles at an early age to take some part in agricultural practice. The little urchins (although, like monkeys, sometimes troublesome) assist their older brothers in collecting and preparing food for stock, cleaning out the hen-house, looking up the eggs, &c. The donkey and donkey-cart are their delight; they soon learn to harness, guide, and feed him, and so pass on to leading or riding the big horses, who soon become accustomed to and obedient to their juvenile commands. They are handy in helping their parents or relatives in picking Twitch, stone picking, gleaning, Pea picking. Where would they be during the absence of their parents, when not at school? Of course a certain portion of schooling is most desirable, and there is plenty of time for that during the short days and long evenings, when it is unfit for them to take part in agricultural work. I am told that in the rural districts of the United States, many of their schools are only used about half the year. In fact, I consider it most important for the agricultural labourer that he should acquire in early life the necessary technical knowledge, for there is a great deal to be learned on agricultural matters.

As regards the housing of the agricultural labourer, a great reform is needed. Many of us remember that the most strenuous efforts of both landowners and farmers were formerly directed to preventing the erection of cottages on their property or farms; so that, in cases of non-employment, illness, or old age, the charge for his maintenance should fall on somebody else, in some other town or parish. Never mind how far he had to walk to and from his work—never mind how much his morals and health were undermined by close packing and indecent propinquity—the great aim of each parish was to shuffle its labourers on to or into another parish, and wasted money in litigation for this object.

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* There are certain things beyond Parliamentary control. The law may and does very properly punish drunkenness and dishonesty, but it fails to make people honest and sober. This has been often tried and failed. Nor can any Parliamentary Act regulate or fix prices, or quantities, in trade or agriculture. In the paper which I read in February, 1861, before the London Farmers' Club, on the past, present, and future of British agriculture, I made the following quotation from history, bearing upon this subject:—

"*Legislation affecting Agriculture.*—Our senators appear to have been constantly attempting to set agriculture in order according to their own notions by Acts of Parliament. They do not appear to have succeeded very well in their objects, for most of the Acts fell into disuetude or were evaded. Some of them would sound oddly at the present day, such as:—No tenant should rent two farms. No tenant-farmer should have more than 2000 sheep. 1538. That the King was to have half the profits from all land converted from tillage into pasture until a suitable house could be built upon it. Every cottage was to have 4 acres of land, and no more than one family in each cottage. There was an Act to restrain the excessive use of malt, and justices were empowered in quarter sessions to suppress the making of malt and the number of maltsters. (What will Mr. Bruce think of this? Not very encouraging!) Farmhouses that had decayed were to be rebuilt compulsorily, and 20 to 40 acres of land attached to them."

Note.—In the 15th century agricultural labour became scarce, for the villeins, having been made free labourers, betook themselves to handicrafts and manufactures.

Although the labourer gets more money, by 2*s.* or more per week, than he did 30 years ago, he cannot, in exchange for his labour, obtain more bread, meat, cheese, or butter, than he did formerly. The fact is, that money has become cheaper since the gold findings in Australia and California—annuitants have a painful conviction of that fact. As regards tea, sugar, and coffee, the labourer has the benefit of reduced taxation, and he has to thank our manufacturers for supplying him with cheaper and better clothing. He also saves something in his rent by paying for it in a deteriorated currency, if the price has not been raised.

Near a town scarcely a cottage could be found on certain estates, because the town should bear the poor-rate. But since the wise law of uniting parishes has come into operation the opportunities for such unworthy practices have ceased, and the result is, as we see, a sudden appreciation of the necessity for improved cottage accommodation. This may be of the plainest description—so long as the space and rooms are sufficient. Of course wealthy landowners, who desire their property to be ornamental as well as useful, can indulge their desire, but cannot expect to be paid for it out of the scanty means of the labourer—£4 a year is hereabout considered the proper rent, or even £4 10*s*., with at least 20 rods of ground,—therefore it is quite clear that each cottage should not cost more in building than £60 to £80, if interest for money is expected. There are several built hereabout of brick, with tiles, at a cost of £130 to £150 a pair—the latter having two bed-rooms and an extra large bed-room in the roof. 'Tis true we have bricks and tiles close at hand. A farm labourer who is doing rough and hard work all day wants no ornament or finery in his house, and most certainly he cannot afford to pay for it. Good plain whitewashed or cheaply papered walls, wood (not bricked) floors (except in the scullery), a good oven, an underground tank with a pump in it supplied with water from the roof, his house and garden well drained, are much more important considerations than indoor or outdoor ornamentation.

The importance of draining the ground on which the cottage stands, and also of draining the garden, is paramount, and so is the matter of water supply, and too frequently these are wanting.

Of course when I speak of draining I allude to lands not naturally filtrative. The underground tank should be bricked, cemented, and arched. Twenty-four inches of rainfall annually will give 12 galls. for each square foot of the size of the house. The same plan applied to farm buildings would give an ample supply of water where required. It is really disgraceful and most unprofitable that fevers and other evils resulting from bad water should be permitted, for they cause heavy charges on agriculture in the shape of increased poor-rate. The mere drainage from the land would give an ample supply if stored.

It is quite clear that there must be a constant migration of our agricultural population, either to other climes or to other occupations. The acres have no children, and can absorb no increase of population, unless they are greatly improved, and also, above all, converted from grass land to arable. This has taken place for many years, for, four centuries ago, it was stated that pasture had then decreased but still was as 20 to 1 of arable, now it is about 1 for 1, or 22,000,000 of acres.

Fortunately steam-power has so enriched this country and so multiplied its wants, that vast numbers of our agricultural surplus labourers, male and female, find their way into our towns and factories. As the labourer becomes better educated and informed that migration will increase, for his local attachments will no longer withstand the claims of an improved condition. Our agricultural females find much employment in needlework for the clothing contractors in towns and cities. Pea picking for the London market has been a source of considerable profit to the labourer's family; fruit and seed growing also add to their means. For all this we are indebted to that mighty power, steam, which has shortened time and space between man and man, and has permitted and encouraged an enormous increase of town population.

Those who study economy should learn from the agricultural labourer. On an average his family consists of himself, wife, and three children. His wages average at most £36 per annum; his house rent (no taxes) costs £4 per year; so that five persons have to be clothed and fed for £6 8*s*. each per annum, or 2*s*. 6*d*. each per week. How is this disposed of? Bread and flour, puddings aided by vegetables, and a small portion of cheese, butter, and meat form the labourers' food, and no doubt are the most effective economical arrangement that could be made. The consumption of meat is at most 1 oz. per head per day, and that generally fat pork. In my prosperity and in my adversity I often used to say that I could live independently on £50 per annum—not as Mr. Mechi, but as John Brown or Tom Jones, in a good fustian suit, my own gardener and librarian, luxuriating in one or two daily penny papers and a pipe of mild tobacco. Surely I could do this when I see so many hard workers with large families living on less than £36 per annum. Skimmed milk is sold about here at 1*d*. per quart when once skimmed, but only a halfpenny if twice skimmed; but there are so few cows kept that it is difficult to get any. It is a great boon to a labourer's family of small children.

One great drawback is the loss of time that a labourer must occasionally suffer from want of employment, especially the odd men who are only availed of at busy periods. Here we see the necessity for, and national advantage of, allotments or large gardens. Reasonable masters, with a fair proportion of kindly feeling, looking at the labourer as something more than a mere piece of machinery, but rather as a tool to be kept bright and in good working condition, mentally and physically, have no difficulty in selecting useful labourers who are content to continue their services, which is very much to the master's comfort and advantage. Labourers with violent tempers and changeable and unsettled habits, can only be expected to be employed just when the farmer may happen to want them.

In the west, south, and east of England we know little, if anything, of the mops, or yearly hirings. It is no uncommon thing to find labourers who, although only weekly servants, have worked all their lives on one farm, to be gradually replaced by their sons. I don't quite know whether the Scotch farmer changes his men at the yearly hirings, or whether it arises from a desire of change on the part of the young educated Scotch farm labourer. Their food seems economical and nutritious—oatmeal and milk, with fish when it can be got. I don't hear much about meat.

Agriculture owes much to manufactures and to commerce. The labourer and his family are cheaply and decently clad in cotton manufacture, at a price, quality, and of patterns unknown or unobtainable by him in ancient times. The cotton famine caused much extra cost and deprivation to the labourer in his clothing. Farm implements owe to steam a cheapness and quality previously unattainable.

I have much respect and esteem for our agricultural labourers as a class. My own men have been with me, most of them, for nearly 30 years, and we have grown older together.

I am no believer in their being drunkards and sottish. The percentage of drunkards is very small. It is the poachers, and odd, unsettled, and irregular men who frequent the beer shops. Labourers who marry young, and have a large family of young children in a few years, are rather sorely pressed, and have nothing to spare for beer, while the single, or non-familied married couples, can do well on their earnings.

As in other matters, so it is in agriculture, good and intelligent masters make good and intelligent servants. We are none of us perfection. Piece-work is the great boon to both master and man in agriculture as it is in manufactures. To keep a man on day-work because you don't like to see him earn money, is a narrow-minded and unprofitable mistake; and, to say the least of it, it is most unfair to estimate fields at a measure much smaller than the actual ploughable quantity in order to diminish the labourer's earnings. I have seen too much of this done.

A little care for the labourer's welfare, or for his family in time of sickness or other misfortune, is amply repaid by kindly feeling towards the master, and a sense of gratitude. These are the ties that bind society harmoniously, and they need by no means be costly.

Labourers have a great aversion to enter the hated union house. Boards of Guardians know this, and sometimes take advantage of it, thus causing to respectable labourers great privations. Irregular or loose families, that are always ready to go into the house, generally get the most readily outdoor relief, because the guardians know that it costs very much more to keep them in the house than to allow them out of it. When a respectable labourer is past work, 3*s*. to 4*s*. and a couple of 4 lb. loaves weekly is all that he can expect, to pay rent and feed and clothe himself and his wife. I am always sorry to see the good old couples separated when they are obliged to go into the union house. But these things must be, for it will not answer to make the union house too attractive.

It is a profitable and kindly act to employ very old men, who are past severe work, to attend to the fences, roads, and other easy matters, a few hours daily, at 2*s*. 6*d*. a week, provided the guardians will permit it. An industrious, well-conducted labourer, who has laboured away most of his life on a farm, is entitled to such consideration, for he dislikes compulsory idleness. *J. J. Mechi, Tiptree, November.*

THE SHEEP OF NEW SOUTH WALES.

[We extract the following interesting report by Dr. Garran, from the Journal of the Agricultural Society of New South Wales.]

A STRANGER visiting our exhibition (1870), and ignorant of the affairs of this colony, would never have judged that the production of wool was the foundation of our commercial prosperity, and was still our most valuable export. The animals exhibited were few in number, and none of them represented the excellence to which wool-bearing sheep have attained in this colony. The reason of this great shortcoming is to be found in the stringent operations of the Scab Act. When, a few years ago, the scab re-appeared in this colony, rigorous measures were adopted to stamp it out. They succeeded, but the utmost vigilance is still required to prevent the re-introduction of the disease, as, owing to lamentable neglect in Victoria, the disease continues there almost unabated. It is necessary to maintain boundary-riders incessantly to watch the Murray frontier, and prevent the incursion of diseased sheep; and strict quarantine regulations are enforced at the seaports to prevent the disease being surreptitiously introduced by the agency of imported stock. No sheep are allowed to pass from the coast district into the interior until they have been detained a certain length of time, and dipped and dressed repeatedly. Stock brought down from the interior, and entering the coast district, would have to submit to this ordeal, and the owners of fine-woolled sheep did not care to run the risk of sending their best animals to be so detained and treated, or to run the risk of possible infection. Even apart from this reason, the frightful state of the roads would have militated against a good sheep show in Sydney. The long-continued rains had made the country roads almost impassable. Sheep driven down would have brought with them more mud than wool, and to have brought them in carts would have been very expensive, and nearly impracticable.

It was to be regretted that at a Metropolitan Agricultural and General Exhibition so little could be done to display the great staple of colonial industry, for notwithstanding the great and growing variety of articles the colony is now producing, there is nothing as yet that approaches in importance the production of sheep and wool.

The first sheep imported came from the Cape. Twenty-nine were landed in 1788, and in 1792 the Government flock numbered 105. A few, too, came in vessels from India—the Bampton brought 100 in 1793; but for a long time sheep were few in number, and of great value. Mrs. Macarthur's letters mention as something wonderful that in the year 1795 her husband had a flock of not less than a thousand sheep, and the books kept in their establishment show that in the year 1805 a fat wether was worth £5. It was from observing the improvement in the character of wool, effected by a little careful breeding in the mongrel flock he had accumulated, that Mr. Macarthur was led to speculate on the advantages that would accrue from the importation of superior rams; and when he afterwards developed that idea into practice, the beginning was made of the fine wool trade of Australia. It took some time to work out the inferior strain of the ewes, but the care bestowed on the breeding of the Camden stud flock soon established a reputation that was never again lost.

The first introduction of fine-woolled sheep to the colony was due to an accidental circumstance. Some very fine sheep of the Escurial breed (which was considered the best of the three principal descriptions of Spanish sheep) were presented by the King of Spain to the Dutch Government. Some of these passed from the Dutch Government into the possession of Colonel Gordon at the Cape of Good Hope, who was then an officer in the Dutch East India Service. Colonel Gordon shot himself, and his sheep were sold by his widow. It fortunately happened that just at that time two English ships of war—the Reliance and the Supply—had arrived at the Cape from New South Wales for supplies. Twenty-nine were put on board the two vessels bound for Sydney. Some died on the passage. On their arrival, which was in 1797, Captain Macarthur offered £15 a-head for the whole; but Captain Waterhouse refused to sell them all to one person, and distributed them, keeping a small flock for himself, which, on his subsequently leaving the colony, he sold mostly to Mr. Cox. Col. Gordon's flock, or part of it, was in this way secured to New South Wales. But though some half-dozen persons had thus equal opportunities of forming stud flocks, Captain Macarthur, whose share consisted of three rams and five ewes, was the only one with the foresight and sagacity to appreciate the importance of maintaining a pure breed. The ewes then in the colony, especially those from India, though producing only a coarse hairy wool, were very hardy and prolific, and fat wethers ruled at a very high price. The presumption is, that the other owners of Colonel Gordon's sheep thought only of quantity and of immediate gains, for 10 years afterwards, when Governor King made inquiries on the subject, the fine strain had vanished, except in the case of the one flock. In 1802, Captain Macarthur went to England. The woollen manufacture at that time was a close corporation; workmen were jealous of the introduction of new hands, and only those who had served their apprenticeship could be employed. The master manufacturers rebelled against the restrictions thus placed on their trade, and in memorials to Parliament pointed out how the commerce of the country was limited thereby. The workmen, who considered the interests of their order imperilled by free trade, replied that the allegation of the masters was false; that there was only one country in the world, namely, Spain, from where the fine wool came, and, as the quantity was limited, the manufacturers could not possibly expand the trade. Just at this juncture Captain Macarthur produced specimens of the Australian wool, thus demonstrating that there was another country, and that one of indefinite capabilities, where fine wool could be grown. The exhibition of these samples greatly facilitated his efforts for pushing the wool trade in Australia. Before returning to the colony in 1805, he purchased at Kew, at the annual sale of George the Third's stock, eight or ten rams and ewes. These also were of the Spanish breed, and had been a present from the King of Spain. But they were not quite identical in quality with the sheep from Colonel Gordon's flock, and were considered a shade inferior. It is a curious fact that an effort was made to prevent the transmission of these sheep to Sydney. The day after the sale a paragraph appeared in the *Times*, expressing regret that the colonist who had so invested his capital had not previously made himself acquainted with the laws of the country, as their exportation was illegal. But when it was found that the penalty was cutting off the right hand and branding the forehead, and that the prohibition was to be found in an old unrepealed statute of Edward the First—one of the many measures intended to protect the trade of the country—the difficulty ceased to be formidable.

The Camden stud thus founded by Captain Macarthur was kept for more than 50 years, and was not finally dispersed till 1858. The flock at its maximum numbered about 400 ewes of the first class, and 500 of the second class. A large part of the flock went over to Victoria, where, under careful management, the weight of the fleece has been considerably increased. In 1823 there were several private importations of fine-woolled Saxon sheep, and in 1825 the Australian Agricultural Company imported sheep from France and Saxony. Both breeds, however, had been derived originally from the Spanish. It is worthy of remark that catarrh was not known in the colony till after the arrival of the Saxon sheep.

Mr. Riley was one of the first to follow the lead of Captain Macarthur in bestowing attention on the breed, and at his estate in Raby began the formation of a flock gathered from various quarters. This flock passed into the hands of his neighbour, Mr. Cox, of Mulgoa, who was also devoting his attention to the matter, who had secured some imported French ewes from the Empress's flock, and who ultimately moved his stock to Mudgee. This removal may be considered the second epoch in the fine-wool trade of the colony, for it placed the sheep in the climate best adapted for the production of wool. In the coast country it is impossible to grow the finest wool. Neither at Camden, Raby, or Mulgoa, could studs flocks ever attain the excellence they have at Mudgee. It is now fully 35 years since Mr. Cox's flock was removed to the high lands, and during that time careful persistent breeding has developed the best type yet obtained of the New South Wales merino. The process of acclimatisation has modified the original type of the Spanish merino. There has been a very decided gain in the softness of the wool, and an improvement in its elasticity; but there has been a diminution of the felting quality, which can scarcely be considered a loss. The wool has also increased in length, but diminished in density, so that the weight of the fleece remains about the same. The best Mudgee sheep yield about 3 lb. of clean, spout-washed wool, which is equal to 6 lb. of greasy wool. How far a longer process of acclimatisation will still further vary these results, remains to be proved, but it is already sufficiently demonstrated that the merino is by Australian acclimatisation improved in some important particulars. Nor is there any trace of degeneracy of constitutional vigour, except so far as injury is received by deficiency of food in seasons of drought.

We have no available information as to the exact annual growth of the clip of the colony, or of its value. But for the year 1821, the second year in which the colonial wool was sold by auction, a broker's catalogue has been accidentally preserved, with the prices attached in MSS., and from this we find that 329 bales were sent home in the Shipley, and sold at Garraway's. The Camden wool realised from 2*s.* 5*d.* per lb. up to 3*s.* 10*d.* Two bales fetched 5*s.* 6*d.*, and some even went as high as 10*s.* 4*d.* Jones, Riley, and Walker's wool ranged from 1*s.* 1*d.* to 1*s.* 9*d.*; Hanibal Macarthur's, from 2*s.* 2*d.* to 2*s.* 10*d.*; John Oxley's, from 1*s.* 8*d.* to 2*s.* 2*d.*; John Wood's, from 1*s.* 9*d.* to 2*s.* 2*d.*; William How's, from 2*s.* to 2*s.* 6*d.*; Berry and Woolstoncraft's, from 1*s.* 1*d.* to 1*s.* 8½*d.*

The wool trade once established was so natural to the soil and climate that it expanded with great rapidity, and until the last two or three years, colonists have been incessantly exploring fresh country, taking up new runs, and multiflying flocks, in the full belief that it was impossible to glut the markets of Europe, or bring wool down to an unremunerative price. Against this expansive tendency a reaction has now set in. The great and rapid decline of wool has stopped for the present all extension of this industry. In the northern parts of Queensland hundreds of runs have been abandoned, and in this colony some of the remoter country, eagerly taken up during the speculative era, has not yet been stocked. Instead of the production of quantity, the attention of squatters is now directed to quality. They have been forced by a painful experience to see that, in the hurried attempt to overspread the whole available portion of the continent with sheep, the flocks have not been sufficiently culled, and a deterioration has taken place in the general average of the stock, which it will require some years to retrieve.

Capabilities of different parts of the Colony for Wool-growing.—The different degree of success attending sheep-farming in different parts of the country, has also compelled attention to the fact that the whole of Australia is not equally fitted for the production of fine wools, and we have now commenced a careful and discriminating inquiry into the special characteristics of the different parts of the colony, and are slowly ascertaining what districts are best suited for the different purposes. Roughly speaking, the colony of New South Wales may be climatically divided into four zones or belts:—First, the coast country, extending from the seaboard to the main range, and the breadth of which belt varies at intervals from 20 to 100 miles; secondly, the table-land or upland districts on the flat or undulating summit of the range; thirdly, the upper part of the western slopes; and fourthly, the level arid interior, or, as it is called, from the chief characteristic of its vegetation, the salt-bush country.

Along the eastern seaboard, and for some distance inland, the climate is too moist, and the country generally too poor and unsound for Merinos. How far the coarser-woolled sheep could thrive in these parts is still an unsettled question, and even were it determined in the affirmative, it would still remain to ascertain whether the country could not be put to better account in other ways. Where the soil is good, as on the Hunter and other northern rivers, and as in the coast districts to the south, it is devoted to dairying purposes and arable culture; and it is probable that the country is thus more profitably used than in producing large-framed, coarse-woolled sheep.

On the higher country, towards the top of the coast range, some sheep are kept, but, generally speaking, the pasture is too rank and sour, as well as too exposed, for sheep to thrive there. The land around the sources of the Hawkesbury, Hunter, Macleay, and Clarence rivers, however, must not be thus disparaged, as these rivers rise far inland, where the soil is of a different quality, and where the climate is less influenced by the sea. In the upper watersheds of these rivers there are about 1,360,000 sheep.

After surmounting the coast range, the grazing and wool-growing capabilities of the country improve, although the more upland and mountainous portions are still inferior; and, owing to the comparative wetness of the soil, the sheep depastured there are liable to fluke and foot-rot. Further westward, as the altitude of the country diminishes, the climate and pasturage for wool-growing purposes improve, and the intermediate country between the table-land and salt-bush plains is first-class. Even here, however, there are better and worse, for those portions which, like the districts of Mudgee and Queanbeyan, overlie limestone strata are found to be the best for wool-growing. Next in value to these are the southern portions of what is popularly termed Riverina, or the plains watered by the westward flowing rivers, and those portions of the salt-bush country which are nearest to the intermediate. Here the fibre gets coarser, but as the pasturage is plentiful and nutritious, the fleeces are heavy and the staple generally sound. As we go further into the salt-bush country, the fleeces become lighter, and the wool harsher: but by way of compensation for this defect, the runs there are far more fattening, as well as more healthy and sound, than in the intermediate district. The extreme south-western, western, and north-western portions of the colony are, from the heat and dryness of the climate, less favourable to the production of fine wool and heavy fleeces, but that even there, with careful management and a periodical introduction of fresh blood, a good wool and fair fleeces can be produced, was demonstrated at the Exhibition in 1869. Some of the disparagement under which wool from this district has suffered, is to be ascribed less to the climate than to the inferiority of the stock. Many of the runs there were taken up a time when there was a great rage for this country, and when, in order to fulfil the Government conditions of the lease, it was necessary that the country should be stocked to a certain point. Anything was sent that would count as a sheep, and many so sent were not worth breeding from. This inferior stock has the more readily succumbed to the deteriorating influences of the climate, but this early defect may be retrieved in course of time by patient care in culling and breeding.

(*To be Continued.*)

Home Correspondence.

Town Sewage.—I have been much surprised in reading your *Agricultural Gazette* at the diversity of opinion still existing amongst engineers and sanitary improvers on the subject of town draining. There seem four descriptions still in vogue, some old-fashioned friends recommending cesspools still, some advocating drainage and running it into rivers, polluting the water and injuring all their neighbours below them; then there is the "A B C" process of precipitation by dry earth and filtration in tanks before entering the river, selling the solid as manure; the last is by irrigation, the sewage lifted by steam power, filtered or not, and then distributed over the land by gravitation, or, if not high enough, again lifted by steam power. Having had some experience in drainage for many years—having been a member of the Chelmsford Board of Health for nearly 30 years, and for several years chairman, I have been led to take particular interest in the subject. I have read most of the publications on drainage, and have thus had opportunities of obtaining information. Now taking the several matters of drainage. First, the old cesspool, with open ditches; this was the former plan in this place, contaminating the air and subsoil: scarcely one pit was covered air-tight, or cemented in the bottom, consequently most of the sewage escaped, penetrating nearly all the wells, and contaminating the water which the inhabitants drank. This plan is given up by nearly all, excepting in some country places where there are no drains whatever or outlet for the drainage. The second plan of draining and running the contents into rivers is continuing in some towns, but the owners of property below the outlets are obtaining injunctions against the towns; and this plan must cease. The third plan is the "A B C" process. This I do not think will ever pay. It never can be too much impressed upon the minds of persons who are seeking to make a profit from the manure, that the residuum left by precipitation in tanks is of very little value, being only insoluble matters; but as for getting out of the supernatant liquor the ammonia, soluble salts, and the best part of the urine, it is absurd, and not to be accomplished. In addition, if the supernatant liquor is permitted to stand or flow into a river it will decompose in hot weather, and become offensive. The next mode is the best, and that is filtration in tanks, and then discharging the liquid parts in gutters over lands. I am surprised that this plan has not been widely extended. I know some towns are so situated, that they cannot adopt it. Take London, for instance; the system still pollutes the lower part of the river, but the amount is so immense that everybody fears to touch it. The time will come when something must be done to remedy the evil, or the navigation may be so obstructed by the deposit as seriously to injure the port of London. If you have space, will you permit me to give an account of what has been done in Chelmsford, and the experience which I have gained at the first formation of our board? A survey was made by the Board of Ordnance, at our expense, of the whole town and surrounding district, and the levels were taken accurately. A surveyor was employed, and a complete system of drainage laid down, with water-pipes, as well; the drainage was all brought to one point, and discharged into a stream at the tail-water of a mill. This soon became polluted and offensive in the stream. Actions were brought against some of the members of the board, which went against them; an order was made for the abatement of the nuisance. I should state, before I pass on to a further part of my history, that our water supply consists of about 100,000 gallons a day of artesian soft water, pumped all over the town, and about the same quantity of beautiful water from an extensive spring called Burgess Spring. This is carried by gravitation into the Board of Health yard, collected in a large covered reservoir, and pumped into the town. Those who get soft water on Monday get hard on Tuesday; those who get spring on Monday get soft on Tuesday, so two kinds of water are delivered to the inhabitants, who number about 9000. To abate the nuisance in the river it was necessary to take up some of the large discharging sewers, alter their level, and make them discharge all their contents into a water-tight tank in the Board of Health yard. Here was situated the steam-engine which pumped the water; gearing was attached to the shaft, pumps were inserted into the sewage well, and the contents of it were forced up a considerable height to two large filtering-beds or tanks. The sewage, after passing through several filters in the tanks, escaped in a nearly transparent and colourless state into the river. The solid part, which settled in the tanks, was thrown out alternately and then sold for manure. The farmers would give but little for it. This filtration plan lasted for some time, but it was found in short-water time and hot weather that even the supernatant fluid, although clean became offensive, and a fresh plan was devised; the former outlet was lengthened and iron pipes carried under the bed of the river, and the sewage, unfiltered, was delivered on to agricultural land, where splendid crops of Italian Rye-grass, Carrots, Mangel, Cabbages, and Wheat have been grown; no complaints are now made, and everything works satisfactorily. In conclusion, I think all Boards of Health now beginning should learn by the experience of others what I think are very important things to be remembered; they are the following:—Give the drains as much fall as possible; have them plenty large enough; the water mains should be also of good size, or they will be useless in case of fire, not having force enough on the hose. The water-pipes should not be laid in the same trench as the drains, as the ground on settling will crack the water mains, and another reason is that if a leak takes place at a joint it is difficult to find it as the water percolates into the moved soil. The sewerage should not be laid into streams, but distributed by gravitation on to land by open gutters and carriers, or, what is better, as the treading of cattle does not fill them up, let common red pipes, like draining-pipes, only larger, be placed in the gutters and covered over with earth, one tile to be taken up and a stopper put in each gutter when the part of the field where they are is in want of irrigation. There should be ample ventilation of the sewers, to prevent the poisonous gases produced by decomposition in the drains getting into the houses; the water mains also ought so to be laid that flushing of the sewers may be constantly done. Each house ought to have a separate water supply from a cistern, and in cottages the supply of water to the closets ought not to be through the closed pans; this causes a great waste of water. I have seen scores and scores of handles propped, up with wood, bricks, and tied up, so that the water is running to waste all day; if a tap is fixed in each closet attached to a pipe the water can be drawn in a pail and poured down the pan, if the tap is left open it floods the closet, and that the occupier will soon stop. *Oswald Copland, Chelmsford, Nov.* 9.

Landowners and Agricultural Labourers.—Mr. E. Minshall, offering a word or two of explanation on the above subject, admits that "it is possible that the increase of labourers' sons on an estate is likely to exceed the demand," that "whatever might be done to keep these lads in the country, some would go into the towns and cities to seek for employment more suited to their tastes;" and adds, "Just for the time, of course, the supply would exceed the demand, but it is probable that things would soon right themselves by the surplus workmen finding employment elsewhere." It is precisely this, "things righting themselves," that has been going on; from time to time, youths or men, finding the work unsuited to their tastes, or that they are being crowded out, seek employment elsewhere: in other words, the natural law of supply and demand takes effect. On the cottage question he admits that "by the majority of the farmers this power would be rightly used, but on the other hand there are many who make use of it to gain their own ends; and as it would be unfair to 'make fish of one and flesh of another,' to remedy the evil, it is necessary to take the cottage from all, and let it to their workmen direct" . . . his suggestions were made "with a view to improve the labourer's condition rather than of showing up the injustice of some tenant-farmers," &c. But Mr. E. Minshall should inform the public why they should expect these labourers to receive justice more strictly at his hands, as the agent, than from the tenant-farmer's. The agent had better keep his attention directed to the development of the natural and other latent resources of the estate under his surveillance, by drainage, removal of unnecessary hedges, useless and damaging timber, and to the opening up of other agricultural industries—Sugar-Beet, for instance; restraining and checking, by every means in his power, any unworthy excess of game. In a position at once honourable and responsible, let him urge upon his employer the advantages of breaking through those antiquated covenants and deep-rooted prejudices] which are a disgrace to England's agriculture, and by which the progress and enterprise of the skilful tenant, the man who brings energy and a command of capital, backed by science, to guide him in his every operation of the farm, is at present checked. The march of England's agriculture, and with it the well-being of the nation, will be advanced by such measures, and not by the pigmy crotchet of interfering in what is another man's business. There is scope enough for his energy, untiring though it be, in giving liberty and encouragement to proper (high) farming, or, in the words of Lord Leicester, "to frame a lease more in accordance with the spirit of the age, avoiding all interference with the capital of the tenant, removing all clauses that dictate as to the cropping of the soil, or as to the sale of the produce, and, as far as I can, giving him security for the capital invested." Such measures will, without fail, ensure steady employment and better wages to the increasing population. More hands, with more intelligence, will be required on the farm, more corn and meal produced. From the man, labouring for his daily wage, each and every grade in the nation at large will be benefited, and then these farming lads, whose well-being causes Mr. E. Minshall some anxiety, will find employment suited to their tastes, in the multiplicity and variety of occupations which will then arise, preventing, at least it is to be hoped obviating, his having recourse to that unjust principle he advocates, of punishing the majority for the few. It is such misconception of duty, from time to time, that has given rise in the present day to so many flighty ideas on what is termed the "land question," that even one of our greatest living statesmen has been compelled to admit it is "ticklish." *A Farmer.*

—— I do not at all doubt that your correspondent (Mr. Minshall) is desirous to improve, as far as it is possible, the condition of the agricultural labourer, but I think his letter, which appeared a few weeks since in the *Agricultural Gazette*, fails to show that his position would be at all improved, or his independence in any degree secured, by renting his cottage from the landlord or his agent, instead of his employer, the farmer,—unless it can be shown that it would be an advantage to him to have two masters to please instead of one. It must always be of the greatest importance to the farmer to secure the services of honest and efficient labourers; and this secured, it is equally his interest and his duty to do what he can to render their homes comfortable, and I fail to see with Mr. Minshall in what respect he would be likely to take any undue advantage of the circumstance of their being his tenants as well as his servants. But, if it is to be considered a *sine quâ non* for the farmer to obtain the approval of the estate agent before appointing his own labourers, this would, I fear, tend to diminish his interest in their well-being, and would, moreover, be likely to lead to misunderstanding. Probably, if all agents were like your correspondent, Mr. Minshall, this might not be the case, but it must be borne in mind that there are agents and agents, and landowners have sometimes a tendency to improvise agents of rather questionable materials, and amongst the results of this are instances of petty tyranny, of which the cottagers on many estates are too frequently the victims. As to retaining the sons of labourers upon the estate, it must be obvious that if only a moiety of these young men remained, the supply would in a few years exceed the demand. But on many estates at the present time the best and most intelligent generally betake themselves to cities or towns, where their services are better remunerated, and, generally speaking, only the least worthy remain. And doubtless this will always be the case until a very different policy is pursued with regard to them, which might go far to counteract the undesirable tendency complained of. This would simply be to give better encouragement to deserving men, to recognise merit even in agricultural labourers, and pay them in accordance with the same, and not, as at present, by a uniform rate of 10*s.* or 11*s.* per week, as the case may be, and which, by-the-by, some men may barely earn, while others may be cheap at double the amount. *G. P. C.*

The Origin of the Swede Turnip.—I have occasionally seen the question asked, Where, when, and how did the Swede Turnip originate? but as yet I have never seen a satisfactory reply; I will therefore (if you will permit) state what I have done to try and throw some light on the subject. In the year 1863 I planted a common white Turnip in the centre of four plants of the purple Asparagus Kale; the plants grew up and flowered together, and when the white Turnip had ripened its seed, some were sowed immediately to ascertain whether any of them had cross-bred with the purple Kale. It was found that they had done so, and the seed (of the white Turnip) was saved until the following spring and then sowed. There were, of course, both green and purple top in the young plants; all the former were destroyed, and from that time the experiment has been continued every year, except that last winter the frost killed all my Turnips, so that next spring I shall have to sow from the same parcel of seed as last year. I was led to try this experiment by observing a plant of the Asparagus Kale in my garden with a large fleshy bulbous root—ugly and misshapen, it is true, but still having apparently a large quantity of eatable matter in it. In my experiments I found that although the white Turnip (as female parent) readily crossed with the Kale, I never could perceive that the contrary cross had taken place, or that the pollen of the white Turnip had influenced the seed of the Kale. On looking back at what I have written, I see that I have not stated as explicitly as I ought to have done that the seed I sowed last spring was the produce of plants which had been raised in regular yearly succession from the seed of the cross raised in 1863; and, although I can't say that, so far, I have got a Turnip possessing a good fixity of character, I can say that I have got a Swede (in appearance) of good quality, and that would require a good judge to select from Swedes of ordinary growth. I am now speaking of my best specimens. There are others in the same drills, which are nothing to boast of. For two or three of the first years it was difficult to find a ripened seed. The plants flowered profusely, but showed no tendency to ripen their seed, and it was only by a careful scrutiny that I was able to find half-a-dozen seeds in the same number of flowering plants. *J. G., Clitheroe, November* 11.

The Price of Butcher's Meat.—In a letter of mine to the *Times*, which you did me the honour to transfer to your columns, a most mortifying typographical error had occurred, seriously affecting the very purport of the letter itself. The words 6*d.* and 7*d.* per lb. were printed 16*d.* and 17*d.*, completely destroying the effect of the comparison I wished to have drawn. My intention was to show to all housekeepers to whom the price of butcher's meat was an object, that the cooked slice of a roast leg of mutton cost them rather more per pound than twice the price paid to the butcher for the uncooked joint. And that equally nutritious and nearly as palatable meat was now being sold by the grocers, imported from Australia, at 6*d.* per lb., as that which, bought from the butcher at 9½*d.*, cost 19*d.* per lb. when eaten. In a journal so devoted to the "practically useful" as yours, it would be waste of time to enlarge upon the importance of this consideration in tens of thousands of families in which the daily ration of wholesome fresh meat is an object of considerable importance. *Edward Wilson, Hayes, Kent.*

The Potato Crop in the North of Ireland.—I told you at the commencement of last month, that I had ascertained by personal observation and inquiry, that the current rumours respecting the failure of the Potato crop were in many cases totally untrue, and in others much exaggerated. My information was then necessarily premature, as the bulk of the crop was in the ground; and the Potatos at that time diseased were just those which every season catch the blight early, more or less. Now that the greater portion of this year's growth has been dug up, I am in a position to form an approximate opinion of the yield, at least so far as the province of Ulster is concerned. In the majority of cases, the Skerries are sound, one large grower assuring me that on 70 perches he has not found 70 unsound Potatos. This was on a light sandy soil. On another farm, of a heavier soil, out of the produce of a ridge 7 perches long, there were not more than 3 stones diseased, and that is no excess upon last year. As a rule, the Potatos are smaller than in previous years, and this is particularly so where they were planted late. White Rocks, where planted early, have grown well, and contain about 9 stones of diseased Potatos to the 7-perch (Irish) ridge. Red Rocks, which up to this season have been considered a tolerably safe Potato against the disease, are more affected than the White Rocks, showing as many as 10 stones to the ridge. Where planted early, they are large, and very pleasant for the table; indeed, the whole of the sound portions of the crop are this year exceptionally good in that respect. In some of the low-lying districts, with damp loamy soils, one-half, and in some cases two-thirds, of the crop are lost; but this does not apply to any considerable extent of land, and will not be appreciably felt. In the county Monaghan, where the blight was supposed to have been very general, fully three-fourths of the crop has turned out sound. *G. H. P., Belfast.*

Theory and Practice of Agriculture: Seeding.—I state *in limine* that the foundation of profitable farming and gardening is proper cultivation. No kind of seeding, whether thick or thin, can compensate for imperfect cultivation; the soil must be deeply and as completely as possible comminuted, or the crops will be always hazardous, or not pay for the expense and trouble incurred in producing them; and further *pabula* must be given to each genera of plants, whether cereals or legumes. But my object now is to treat of cereal seeding only, and chiefly of Wheat. My readers, I believe, are nearly all aware that I have now for more than 60 years practised what is called thin seeding. I began with 1 peck of seed Wheat only an acre, and, as I have often explained, the crop answered admirably, being a yield of 204 pecks. Since then, which is now upwards of 60 years, I have, but with few years of intermission, grown Wheat from various quantities of seed per acre, but have never exceeded 2 pecks an acre until last year, when the time for seeding being very late, namely, November 26, I put in 2½ pecks; but still, as I have published, the crop was tolerably good, the yield being 49 bush. an acre, and it would have been more but that the crop became lodged from over-seeding, which of course caused the yield to be less. Some of my readers, who have not heard of this before, will probably be sceptical at this account; but what will they think when I tell them of three gentlemen farmers, each seeding many acres of land with much less seed per acre. One of them continued so to seed the same land for nearly 20 years in succession, and with marvellous success, and his profits, as he yearly advertised, were on an average more than £5 an acre, after allowing for every kind of expense, rent, tithe, rates, &c. Another of the trio, whose crops were from a single seed in a square foot of ground, wrote to me a fortnight back, saying he was pursuing the same plan now, and with his former success, though he is now in his 86th year; and the other, who farmed nearly 2000 acres of chiefly arable land, never exceeded 4 pecks of seed an acre, and his crops were equally good. These three gentlemen live in three different counties, and I could give the names of more who have pursued the same system. One of these (the gentleman who is 86 years old) begs of me not to mention his name, on account of the opposition that would be raised against him by the neighbouring farmers, but I think I may give the name of him who, with so large a profit, put in his ½ peck of seed only, and continued doing so for so many years: and he was a Mr. Piper, of Colne Engaine, Essex. Now, although I have long made up my mind that the man who cannot grow as good crops of Wheat from 2 pecks of seed as from more is not a good farmer, yet there is a danger in using much less than this, though there is also danger in using much more; but I will stop here, and explain each another time. *Geo. Wilkins, Vicarage, Wix, November* 6.

Societies.

HIGHLAND AND AGRICULTURAL.

Monthly Meeting.—Before proceeding to the business of the meeting, Sir JAMES GARDINER BAIRD reported the death of Mr. Russell, Pilmuir. In referring to his connection with the Society, Sir James stated that in 1856 Mr. Russell was named by the Society a member of the Council on Agricultural Education, and he held that office and acted as one of the board of examiners from that period till his death. Besides contributing various papers to the Society's Transactions, he acted as editor of that publication from 1860 to 1866. He was appointed a director of the Society in 1867, and his term of office would not have expired till January, 1872. The Society was also indebted to Mr. Russell for acting as a member of various committees. Sir James Baird then moved:—"1. That the death of Mr. Russell, Pilmuir, having been communicated to the directors of the Highland and Agricultural Society of Scotland, they resolved to record in the minutes their deep regret for his loss, and their sense of the obligations which the Society owes to him as a director and an examiner in agricultural education. 2. That the Board direct that a copy of this resolution be transmitted to Mrs. Russell, with their respectful condolence with her and her family under so painful a bereavement." — The resolution was unanimously adopted.

Trial of Potato Diggers.—At a meeting of the Inspecting Committee on Implements, held at Perth during the show, it was resolved that the implement left for them to select for special trial should be Potato diggers. The following is the report by the committee :—

The local committee of superintendence of implements in the showyard of the Highland and Agricultural Society at their last exhibition at Perth having resolved to give the exhibitors of the Potato diggers an opportunity for competitive trial, intimated this to all the exhibitors in the showyard. On Saturday, September 30, the trial came off in a field on the farm of Hilton, near Perth, kindly granted to the committee by Mr. Thomas Richmond, the tenant. The field was dry croftland, deep soil, and free from stones. The crop of Potatos was first-class, being comparatively free from disease ; but as the crop had been planted after lea there was here and there a good deal of unbroken turf intermixed with the soil, which, together with the strong crop of Potato tops, tested fully the machines exhibited, and their capabilities of working under difficulties was fairly tried. The members of committee of superintendence were Mr. Richmond of Balhaldies ; Mr. Ross, Bachilton ; Mr. Wilson, Fairmount Villas, Perth ; Mr. Gardener, Chapelbank ; and Mr. Elliot, Laighwood. The exhibitors who brought machines forward were the following :—

	Price of Machine.
J. Bisset & Sons, Marlee, Blairgowrie ..	£12 10 0
William Dewar, Killis, Dundee	12 0 0
Law, Duncan & Co., Shettleston	16 0 0
James Mollison, Ruthven, Meigle	13 0 0
James Robertson, Coupar-Angus	11 0 0
R. Stewart, Buttergask, Coupar-Angus ..	12 0 0

The committee, after careful examination and full consideration, were unanimously of opinion that the diggers exhibited did the work remarkably well. The machine exhibited by Law, Duncan & Co., appeared to be more complicated, and some time was occupied in adjusting it, the work at first being imperfect ; it made good work, however, after being taken aside and properly adjusted. Even if it had done its work equal to the others, the price, £16, in the opinion of the committee, would have told much against it. All the other machines did their work well, so much so that the committee came to the conclusion that they ought not to select any individual machine for special commendation. The machines exhibited by J. Bisset & Sons, James Mollison, and James Robertson, in particular, did their work remarkably well, and although the committee do not feel themselves justified in selecting any particular machine and giving it precedence over the others tried, they would be pleased if the directors of the Society would intimate to the exhibitors the approval by the committee of the machines exhibited ; and further, the committee consider the directors ought to call the attention of the public to Potato diggers, as there are many districts in the country where they are comparatively unknown, and to recommend them for general use on the recommendation of the committee, as the members of committee were of opinion that the work performed by the machines exhibited was in every way superior to what could have been done by either a single or double mouldboard-plough in the common way, the diggers laying the Potatos on the surface of the ground in a ready form for gathering, and taking them clean out of the soil, as very few came to the surface where a grubber was afterwards put across the land from which the Potatos had been raised. The committee, therefore, can with confidence recommend Potato diggers to the public, and to all farmers who cultivate Potatos upon anything like a large scale. The machines are easily drawn, a pair of horses working them without difficulty.

The directors agreed to award the medium silver medal to each of the exhibitors of Potato diggers who attended the trial, and to record their thanks to the committee for carrying out the trial, and for their report.

Kelso Show, 1872.—It was remitted to the Committee on General Shows to fix the premiums and adjust the regulations for the show to be held at Kelso next year.

Proposed Show in 1873.—Requisitions to the directors to hold the general show at Stirling in 1873 for the district comprising the counties of Stirling, Dumbarton, and Clackmannan, and the western division of Perthshire, were submitted. The Board resolved to recommend to the general meeting in January to comply with the requisitions, and it was remitted to the General Show Committee to suggest the classes of stock and make other necessary preliminary arrangements.

Register for Farm Servants.—At the meeting of the directors on February 1 last a special committee was appointed to consider and report on the propriety of recommending the adoption of registers throughout the country. At a meeting of this committee, held on July 12, Mr. Irvine of Drum reported that the subject of hiring markets had been before the directors in 1849 and 1860, when reports had been drawn up and published in the Society's Transactions. The queries issued in 1860 were submitted to the committee, and after careful revision it was resolved that they should be recommended to the Board to be again circulated among some of the leading farmers in each county in Scotland. The queries are as follow:—1st, How are farm-servants, male and female, including those for house or dairy work, engaged in your district ? 2d, If hiring markets exist, do they work satisfactorily, or the reverse, in the way of obtaining good servants ? 3d, Is attention paid at hiring markets to the previous character of servants, or are they generally engaged irrespective of character ? 4th, Do country tradesmen, such as millers, smiths, wrights, &c., engage servants at hiring markets, and do any other persons attend them for a like purpose ? 5th, Is it chiefly the younger class of servants who attend these markets, and are they regarded as holidays ? 6th, Is earnest-money given when a servant is engaged, and if so, is there any disadvantage from the practice ? 7th, Are hiring markets productive, directly or indirectly, of evil in your district ? 8th, Are you of opinion that hiring markets are susceptible of improvement, or that they should be abolished ? 9th, If susceptible of improvement, what means would you employ ? 10th, If they should be abolished, what means would you employ, and what substitute would you suggest ? 11th, If servants are obtained in your district without hiring markets, be pleased to specify the means, whether by a register, by certificate of character, or otherwise ? 12th, Does your system work well ? 13th, Do any registers exist in your district, and are they much used ? 14th, Be good enough to furnish any suggestions or information not embraced in the foregoing queries. The queries were approved, and ordered to be circulated.

Chemical Department.—A meeting of the committee in charge of this department was held on October 25, to report on two remits from the directors.

The first was a motion made by Sir Thomas Buchan Hepburn, "to consider how far it may be possible or desirable to prepare a short account on the present state of chemistry as applied to practical agriculture." After various explanations had been asked and given, the committee approved of the motion : but as further consideration as to the manner in which it can be carried out was deemed necessary, it was agreed to adjourn the meeting to a future day.

The second remit was a motion made by Mr. Scot Skirving, Camptoun, with reference to the sale of manures and feeding stuffs. The minute bears that the subject had been carefully considered by the committee, and that it had been resolved to recommend the directors to instruct Dr. Anderson to publish in the reports of the directors' meetings, the names of those selling manures and feeding stuffs with a guaranteed analysis differing materially from the analysis made by him in the laboratory.

The Board approved of the minute, and it was remitted to the committee to consider the discussion as to the chemical department which took place at the general meeting on June 21. Sir James Gardiner Baird was added to the committee.

Improvement of Land.—It was reported that the special committee on the improvement of land had held a meeting on October 25, when it was resolved to print and circulate among the members of the committee a statement on the subject by Mr. Elliot, Laighwood, and to hold another meeting in January.

PETERBOROUGH.

Beet-Sugar Cultivation.—Mr. J. A. CLARKE lately read a paper on this subject before the Peterborough District Chamber of Agriculture, commencing by asking his hearers to dismiss from their minds all rumours or remembrances of former failures in attempts of a similar kind. For, in the first place, nearly all the experiments made in this country a few years ago, either in sugar making or in the distillation of spirit from roots, were conducted with the sweeter varieties of the common Mangel Wurzel, which contains a very much smaller proportion of saccharine matter than the true Sugar-Beet. As to the manufacture upon the Continent, he said, it is sufficient to observe that experience, alike in France, Belgium, Holland, Prussia, Austria, and Russia, has continuously and rapidly brought the Beetroot culture and manufacture into such favour that, according to official estimates, the sugar production of Europe in the present season amounts to no less than 1,000,000 tons, this quantity of sugar being the product of probably 14,000,000 tons of roots from some 800,000 acres. And, in addition, there is a very great area of land under Beetroot for distilleries. When the crop is grown successfully in so many of the countries of Europe, under climates embracing great diversities of temperature and rainfall, and specially in Holland, Belgium, and northern France, which are visited by sunshine and drought, cloud and shower, snow and frost, about similarly to ourselves, it appears absurd to put the inquiry—"Are not the peculiar atmospheric conditions which prevail over the United Kingdom unfavourable to the growth of Sugar-Beet ?" An effectual answer, however, is furnished by the quality of the roots themselves when grown here. In March last, Dr. Voelcker said, before the Society of Arts, "During the last three seasons, viz., 1868, 1869, and 1870, many samples of Beets from different parts of England, Scotland, and Ireland, and grown on a variety of soils and under different condition, have been analyzed by me, and I have thus been placed in a position to form a good idea of the quality of Sugar-Beets grown in the United Kingdom ; and I may state at once that by far the majority of the numerous specimens examined by me were found fully equal to the average quality of some good Sugar-Beets grown in the same seasons in France, Belgium, Holland, and Germany ; and some I find as rich in sugar as the best specimens of French Beets."

Soils and Manures.—The soil most suitable for Sugar-beet is a free-working loam, the deeper the better ; a good Mangel Wurzel or Turnip soil, or land which produces good Potatos, and is calcareous, containing as much lime as you like, so as to prevent "finger-and-toe" in the roots ; and it must be capable of deep cultivation, as ploughing to a depth of 10 inches, and subsoiling 6 inches below that. I should think the very best implement to use would be a steam plough having a subsoiling tine following each plough body. Strong land is available, provided that deep tillage is practised before winter ; but as the seed, the manner of sowing, and the growth of the young plants precisely resemble the same thing in common Mangel Wurzel, of course on stiff land you are more liable to a backward and gappy plant than upon a powdery mould, which the young shoots can easily pierce through. Some light soils will produce good Beet, but a thin staple close upon rock will not do ; and peaty or "skirty" land, as well as salt marsh enclosed, say within 20 years, is injurious to the properties of the root for sugar-making. But, as I have said, loams and clay-loams admitting of deep culture are the proper soils for the purpose. Sugar-Beet is not a cleansing fallow crop, or to be forced with heavy doses of farmyard dung, like Mangels or Potatos. The artificials to be used are superphosphate of lime, bone-dust, rape-cake, and other manures not containing much ammonia. But the direct application of Peruvian guano, nitrate of soda, and other highly concentrated ammonia manures, must be avoided. Common salt, so beneficial to ordinary Mangel Wurzel, is to be eschewed like poison, for a very slight quantity of salt in the juice is found even worse than nitrogeneous matters in hindering crystallisation of the sugar. There is this peculiarity about the crop ; although not greedy of manure, and although producing a moderate weight per acre, which, with the exception of the tops, is all carted off the field, it is found to be a fine preparation for Wheat. Wherever this industry has been introduced on the Continent, it has heightened the style of cultivation, augmented the total production both of grain and meat, and at the same time added to the productive capacity of the soil. Thus, when the Emperor of the French visited the rich district of Valenciennes in 1853, the municipal authorities had inscribed upon a triumphal arch a statement of the increase of Wheat cultivation and the multiplication in the number of cattle and produce of meat and milk since the adoption of the Beetroot industry there. And all the authorities that I am acquainted with give the same testimony to the advancement of agriculture by the establishment of beet-sugar factories and distilleries, whether in France, Germany, or other parts of Europe.

Growing, say 30 acres of Sugar-Beet, averaging 20 tons per acre, and bringing back from the factory your share of the pressed pulp or beet-cake, you will have about 120 tons of this new feeding material for cows or fatting bullocks. This would enable you to have as much root food as usual, with a somewhat less acreage of Mangels. For what is the nutritive value of the beet pulp ? At Lavenham the price to growers is 12*s.* per ton, but I am informed that there are instances of farmers not wanting their share, and re-selling to neighbouring farmers at 15*s.* per ton.

Details of Cost and Cultivation.—To keep our Sugar-Beets small, and weighing from 1 lb. to 3 lb. or 4 lb. a-piece, and at the same time secure a sufficient number of them to give a paying weight per acre, we must crowd them on the land, so far as we can do so consistently with perfect "singling" and space for every root to thrive vigorously. On the Continent, a favourite plan is to drill in rows 12 inches apart, and set out the plants 12 inches asunder in the rows. If there were no gaps or failures, this would allow for 43,560 plants per acre, and at an average of 1½ lb. per root, the yield would be nearly 30 tons per acre. Undoubtedly this weight is much more than would be commonly obtained ; but the calculation shows a result which is quite possible on good land with first-class management and in a favourable season. The time for sowing is about the middle of April, or, according to season, contemporaneous with early sowing of Mangels. The manner of putting in the seed, and the quantity of seed per row, are the same as for common Mangels ; and, in the first instance, at any rate, best varieties will be bought on the Continent, and the whole of the seed be supplied by the factories. The crop is ripe when the leaves begin to turn yellow, and when a freshly cut slice of root will remain exposed to the air for some time without turning a dark brown colour, although it may present a pink hue. The time will generally be early in October. Very varying estimates of the cost of producing Sugar-Beet have been published. Mr. William Biddell—an eminent practical farmer and land agent, and looked upon in his own county of Suffolk as a very high agricultural authority, who has grown the crop for several years, and had 60 acres last year, reckons the cost at £11 5*s.* per acre, without including interest of capital. This is when applying 16 loads of farmyard manure dung, 3 cwt. of superphosphate, and 1 cwt. of guano, and delivering the crop, 15 tons, at once to the factory. Rent is put at 33*s.*, and tithe 7*s.* 6*d.* per acre. On the Lavenham land, by no means first-class for producing heavy crops, and soil of a quality commanding only 33*s.* per acre rent, Mr. Biddell puts the yield at 15 tons per acre. This, however, is not gross weight as lifted from the ground, but the nett weight after the roots have had their crowns cut off, and have been washed perfectly clean. But 24 tons per acre have been grown at Lavenham :

five of the best crops in 1869 weighed 24, 21½, 19, 15, and 14½ tons respectively.

The conclusions to be gathered from what I have now said, may be stated thus :—

1. Past figures form no guide as to the desirability of adopting the beetroot-sugar industry at the present time.

2. Sugar-Beets grow in this country fully equal to those of France, Belgium, and Germany, in the proportion of saccharine matter which they contain.

3. On suitable soils, in proper rotation, and under a liberal system of cattle feeding or manuring, there is no danger whatever of Sugar-Beets being exhaustive of fertility.

4. Owing to the nutritious and keeping properties of the present pulp or residue from the sugar factory it is easy to substitute Sugar-Beet for other crops, in such a way as to keep up or increase the ordinary supply of food for live stock.

5. Delivery to the factory by means of traction-engines may be arranged so as not to overtask the common force of horses upon a farm, so as to haul at a cheaper rate than by a grower's teams, and admit of the roots being grown within a radius extending to 7 or 8 miles from the factory.

6. The total cost of production, including £3 per acre for rent, tithe, taxes, and other common charges, can hardly exceed £11 7*s*. 6*d*. per acre, or, valuing the farm-yard manure, £13 7*s*. 6*d*. per acre.

7. The probable yield per acre may be put at 20 tons on an average of good and moderate seasons, ranging from less than 15 up to 25 or 30 tons gross weight, topped and cleaned as for cattle-feeding.

8. The price at which factories will contract with growers is 20*s*. per ton nett weight, the roots clear from earth and with their crowns cut off; or 18*s*. 6*d*. per ton for gross weight as delivered.

9. While a yield of 15 tons per acre would save the grower from loss, the expected average of 20 tons would give for profit and interest of capital £5 2*s*. 6*d*. per acre, or 38⅓ per cent. upon the outlay ; a yield of 25 tons would leave £9 15*s*. 10*d*. per acre, or 73 per cent. upon the outlay ; and the quite possible yield of 30 tons would return the very handsome profit of £14 7*s*. 6*d*. per acre, or 110 per cent. upon the outlay. This leaves an ample margin for covering a loss of say £4 or £5 per acre in an exceptionally bad season, when there might be only half a crop.

CORNWALL.

Foot-and-Mouth Disease.—At a recent meeting of the Cornwall County Chamber of Agriculture, held to consider what steps should be taken towards securing effectual legislation with reference to the contagious diseases of live stock,

Mr. W. Trethewy, who had undertaken to introduce the subject, said he had been unfortunate enough to buy a number of cattle at Bristol which turned out to have the disease. He thought it was absolutely necessary that something should be done to protect the herds of Great Britain from those diseases incident to the importation of foreign animals. It was in August last when he went to Bristol for the purpose of purchasing some stock for grazing purposes. Whilst there he observed that a great many of the animals were lame, and he called the attention of the salesmen to the fact, but he was told that it was in consequence of the animals having been driven a considerable distance before being put on board the steamer, and being unshipped the evening before. It did not for a moment occur to him that the animals were suffering from foot-and-mouth disease, as he had heard very little about it then, and he was not aware at the time that there was a single animal in the market diseased. When the 25 head of cattle arrived at Grampound Road next day, there were four or five of them very lame, and there was great difficulty in driving them to the field, about 2 miles from the station. In a few days afterwards Mr. Olver, the veterinary surgeon, pronounced them to have the foot-and-mouth disease. Irish beasts were thus being brought in continually, week after week, with little or no inspection, and they were sent all over the kingdom. The result was that the disease was to be found in every parish in the county. He concluded by moving a resolution expressing the opinion of the Chamber that nothing short of slaughter of foreign fat stock at ports, and an efficient quarantine of store stock, would be sufficient to prevent the spread of the disease.

Mr. Hosken seconded the motion.

Mr. Tremayne suggested that some addition should be made to the resolution. He believed it to be the duty of the Government to take steps in two directions. In the first place, where the disease existed they should take such steps as would prevent its spreading in the neighbourhood, and he would ask Mr. Trethewy to embody that point in the resolution. It was the duty of the Government also to place such proper restrictions upon the importation of foreign cattle as that they should not communicate the disease to cattle on the English shores. The quarantine existing at present was utterly insufficient. There was not a veterinary surgeon in the country who could tell that the germs of this disease were not existing in an animal for weeks before it showed itself. The quarantine at present consisted of a veterinary examination, which was no quarantine at all. Such examination as was shown in the case of the Bristol market, where Mr. Trethewy was unfortunate enough to buy his cattle, was an utter absurdity. A veterinary examination without a quarantine could not be safe. He would therefore ask that they should embody in the resolution a request that the Government should put into their hands a power to deal with the disease at home, as well as dealing themselves more stringently with reference to the importation of foreign cattle. He mentioned a case in the parish of Antony, where a man had been brought before the magistrates for removing manure from a farm where the disease existed and taking it to an unaffected place ; but the magistrates found that, though this would be an offence under the cattle plague regulations, the law did not apply in this particular to foot-and-mouth disease. Greater powers ought certainly to be put in the hands of local authorities.

Mr. Magor supposed he had been blamed by certain parties for going to Bristol to buy foreign stock, but he thought he was less likely to get the disease there, buying all his cattle together, than having them from several different places. He and Mr. Trethewy had gone carefully through the market, and they could not perceive anything like disease. When he got the bullocks home he told his son to fasten them up, away from the other cattle. There were no symptoms of lameness among them, and they appeared quite fresh, considering the journey they had travelled. A week afterwards he perceived one or two of the bullocks when eating did not bite the grass off nicely, and he then expressed his fear that they had got the disease. There were only five or six of them that suffered considerably. He believed they all had had it, but they were all getting on very well now except one or two that were still lame, but he believed this was from the trucks. He quite agreed that the disease did not affect store bullocks as it did fat ones, but it was quite necessary that some steps should be taken to prevent its spread. Some of the people who bought at Summercourt fair had taken the disease east and west. It had not spread from his farm to any of his neighbours, nor had any of his other stock got it. He did not think it did nearly so much injury out of the house as it did in the house.

In reply to a question from Mr. Allanson, Mr. Polwhele stated that when a farm had been isolated on account of the disease, 14 days must elapse after the veterinary surgeon had declared it to be free of disease before the farm was beyond prohibition.

Mr. Allanson said it was complained that those who had diseased cattle put them in fields too near their neighbours and as far off themselves as possible.

The Chairman then put the altered resolution to the meeting, and it was as follows :—

"That, owing to the prevalence of the foot-and-mouth disease in this county, it is advisable that more stringent powers should be vested in the hands of local authorities, to prevent the spreading of the disease in places where it already exists, and in order to prevent the introduction of contagious diseases through the importation of foreign stock, it is the opinion of this Chamber that nothing short of absolute and compulsory slaughter of foreign fat stock, &c., and efficient quarantine of store stock in separate parts of ports set aside for that purpose, will be effectual, and that this Chamber considers it is the duty of the Privy Council at once to place temporary restrictions upon the importation of stock from Ireland, as well as from foreign countries."

The resolution was carried unanimously.

PENRITH.

Steam Cultivation.—At a recent meeting of this Society Mr. Farrell said :—

(1.) *Cleaning the Land.*—Supposing a practical farmer entered on a parcel of land which had been previously overrun with weeds, it would evidently be his first thought to rid the land of these unsightly pests. I therefore consider the question of thoroughly cleansing the soil from weeds to be one which demands our first attention. It is a well known fact, to those, at least, who have had proof by eyesight, that land can be better cleansed from weeds by steam-power than by any other. Where the soil is tilled to a depth not exceeding 5 or 6 inches, the surface is always full of the seeds of weeds—it becomes dirty and foul from the very fact of its thinness, and the presence of water in it, which I intend to show arises from the want of deeper cultivation, the absence of which fosters water-loving plants, which choke up the crops intended to be produced in the field. Again, having the advantage of cultivating at nearly all seasons of the year, farmers can nip the weeds in the bud and keep them under just when they are beginning to push forth their energies. With the ordinary system of ploughing, especially in wet weather, the seeds, weeds, and roots are all deposited beneath the surface, and the weeds which are propagated from roots or layers, such as Couch-grass—that horrid pest of the farmer (Triticum repens) —water-grass, Coltsfoot, and the like, being cut in pieces by the coulter, are indefinitely multiplied, and are placed in the best position for growing, as though the farmer had been studying how to get the best brand. In time the land under this kind of management gets so wild that it takes a whole summer's fallow before it can be got into a fit state for producing another crop. Moreover, several roots seat themselves firmly beneath the track of the plough : it is, therefore, almost an impossibility to entirely eradicate them without having recourse to steam-power, or at least deeper cultivation of some kind, which is best carried out by implements driven by steam. Were steam cultivation more universal, large breadths of stubble would be thoroughly acted upon in the autumn months, that is, immediately after harvest, especially when we experience one of those glorious "second summers," which so often favour the British farmer—when the land is dry and the underground temperature high, the weeds are most easily destroyed, and farmers can give half a fallow to their lands, because one day's work then is equal to three in the spring. If only for the facile extirpation, or, better still, the total erradication of weeds, steam cultivation ought to be prized, for weeds are the pests of the farmer ; they are the drones of the field—they feed and fatten on the various constituents of the soil which should go towards the growth and development of the crops.

(2.) *Treading is avoided by Steam Cultivation.*—The next great advantage to be derived from steam cultivation, on all strong or clay lands especially, is that treading is avoided. Suppose, for convenience sake, that a pair of horses, when ploughing, step half a yard at each movement, we have eight footprints per lineal yard. In ploughing a 9-inch furrow, the horses will travel 19,360 yards in order to complete an acre. Multiply this by eight, we have a total of 154,880 footprints upon an acre, or about 32 upon each square yard, and since these nearly cover the ground the effect will be a hard subsoil or "pan" beneath the cultivated ground, which becomes worse at every successive ploughing, where the depth of furrow is taken ; and, as if to perform the consolidating process more effectually, one horse is continually treading directly upon the subsoil, while the footsteps of the other are confined to the surface soil. Whoever has held a plough on land which has never been ploughed beyond a depth of 5 or 6 inches will know how difficult it is to penetrate the hardened subsoil even an inch below the depth of the ordinary cultivation of the field. The exertions which horses make when drawing the plough over the stiff land are rendered almost double by the consolidated state of the soil, so that, anomalous though it may appear to the uninitiated, it requires much more power to cultivate land by horses than by steam. By the steam-engine there is no pressing or consolidating. The engine stands upon the headland, and draws the cultivating implement to and fro with a wire rope. The speed is also much more rapid, and consequently the soil is thrown up in the lightest possible state, so that it will receive the utmost benefit from the ameliorating influences of the atmosphere. When the pan or subsoil has been broken up the showers of rain pass off at once into the drains, and leave the various fertilising properties contained in them equally distributed throughout the soil, to be drawn off by future crops as occasion requires. On the other hand, when the subsoil is pressed year after year by heavy weights, it becomes so hard that a very long time is required before the water can get into the channels formed for its reception. This is especially the case with clay soil, which in time becomes almost like a dish, retaining the water so long that the surface soil is saturated in wet seasons, and this is one of the principal reasons why so much land is "starved," as it is locally termed. Deep cultivation is, therefore, an essential part of husbandry at the present day, because it makes the land produce better crops and provides food for an increased population.

(3.) *Temperature of the Soil.*—Under this head, Mr. Farrel brought out some interesting facts. In the course of his observations he said the more uniformity there was maintained in the temperature of the soil, the more uniform were the results. What was the best temperature for the crops was a question not easily answered, but it was certain if we could raise it from the low point which retards and lessens to the point which hastens on and increases healthy growth, then evidently some good had been done. By having all the land equally loose, we get an equal temperature, and an equal temperature promotes equal growth, and equal growth produces equal grain crops, and equal grain crops produce equal samples, and equal samples please both the miller and the maltster, and bring the greatest gain to the farmer's pocket. By raising the underground temperature, the temperature of the air is also improved and modulated, for it had been proved over and over again that thorough drainage has considerable effect on the climate. He maintained that the yellow and sickly appearance of the corn crops in the spring of the year, frequently attributed to grub, was caused by the plant coming in contact with stagnant water, aided by the lowness and inequality of the temperature. All they wanted was that the subsoil should be opened out and made free for water to pass through, taking with it air and manure, and the roots of plants would follow ; and depend upon it, for every rootlet bent down in the mellow subsoil there will be a corresponding growth above. Therefore, he said, "dig deep and find the gold."

(4.) *Cost.*—The cost of cultivating land by steam power has been variously estimated, as, indeed, it is natural that it should be, considering the kind of land, depth of cultivation, and the different sorts of apparatus in use ; but my idea is that, say 4*s*. to 5*s*. per acre will fairly represent the outlay, including interest upon money invested, depreciation and allowance for wear and tear. A really good farm horse cannot be kept for less than £34 per year, everything included. Double this sum makes £68, and a man to work them about £35, making a total of £103, besides which an allowance must be made for implements used in cultivating. Taking interest on these, and wear and tear, it takes £110 per annum to work a pair of horses, and, although few farmers feel this directly, it is the case. A very large farm—within a certain limit—can be wrought much more economically than a small one. Take, for instance, a farm of 2000 acres, which can be cultivated to the depth of 6 or 8 inches for £400—or 4*s.* per acre, inclusive of depreciation and repairs. How many horses would it take to cultivate 2000 acres? Suppose a pair to plough 1 acre a day, it would require a team of 20 to average 10 acres per day, or 240 acres per month, and they would be employed between eight and nine months before they had completed the 2000 acres. Then the harness, implements, farriers' bills, wear and tear, interest, and depreciation, of these horses, would be something serious—nearly twice the original cost of the steam ploughing tackle. The average price of coals per horse-power per day, *i.e.*, the quantity of coals we should burn in an engine to get out of it work equal to one horse per day, would only amount to about 8*d.*—a very small sum when compared with the food of a horse; for an engine, as I have said, only requires food when working, whereas horses eat night and day, and require several hours' rest out of the 24, but an engine will work the whole 24 hours if required. Then the work done by steam is not only more economical, but more efficient; not only is the cost of production decreased, but the production itself is much increased, especially in unfavourable years, when produce is at the maximum value. The expenses attending an ordinary engine for a day's work will be: Interest on outlay, 2*s.* 6*d.*; wear and tear, 4*s.*; engine-man, 3*s.*; cultivator man, 2*s.* 6*d.*; anchor man, 2*s.* 6*d.*; porter man, 2*s.* 6*d.*; boy attending engine, 1*s.* 4*d.*; man and horse fetching coals and water, 5*s.*; 6 cwt. coals at 8*d.*, 4*s.*; oil, grease, &c., 1*s.*; total, £1 8*s.* 4*d.* These are actual facts, given me by one connected with the working of an engine, although for the locality the wages are perhaps understated. Suppose the engine cultivates six acres per day, the total cost per acre is only from 4*s.* to 5*s.*

Farmers' Clubs.

WEST TEVIOTDALE.

Loss of Turnips from Frost.—Mr. AITCHISON, Winningtonrig, read a paper on the "Best Means of Storing Turnips for Sheep and Cattle during the Winter Months." He said:—

From the Government statistics for 1870 it appeared there were 498,544 acres under Turnips in Scotland, which is nearly one-ninth of the land under cultivation. It is absolutely necessary that the enterprise the farmer displays should not be at an end when the Turnip crop comes to maturity. It is not so when grain crops are ripe; they are secured from the grasp of winter as rapidly as possible. It is true grain is more liable to injury by rain or snow than Turnips. But if the experience of the past two winters does not convince farmers that Turnips are liable to suffer damage by exposure to the frosts, it would be a hopeless task to convince them in any other way. The winter of 1869 and 1870 inflicted very heavy losses on the farmers, the frost coming on early in both seasons before a supply of Turnips could be secured on every farm. It continued till some time in February with such severity that from the want of snow on the ground more than two-thirds of the root crop all over this country was in the middle of February rendered useless. The quality of the bulbs was very much injured more than a month before that, making a moderate allowance for the early destruction by frost and vermin. The total loss on Turnips in Scotland could not be less than £1,000,000 sterling. Last winter matters were little better. Farmers had a little more time in the autumn to store Turnips, and from various causes the proportion was very small. In some districts there was a thin coating of snow on the ground during the intense frost, and this saved the bulbs a little. Still the loss this year was in some counties heavier than the last, and we may say that nearly another £1,000,000 was lost in 1870-71 in consequence of the ravages of the frost. There is no doubt that farmers must suffer first from such losses, and then the nation. A remedy must be provided when we lose crop after crop raised at such expense. But when the Turnips are not available in the spring, farmers have to resort to artificial feeding to carry their cattle forward to the grass, and have to spend a large amount of money on cake to maintain their store cattle, which the Turnips would do were they all saved. Further evidence is not wanted to bring the fact home to every farmer that the Turnip crop cannot stand the winter frost unless he successfully strive to preserve it. In regard to the storing of Turnips for winter use, as a very little frost is prejudicial to them when stored up into heaps, more particularly when they get frost after they are topped and tailed and lying in the ridges, the sure way is to carry them from the field immediately. In topping them, do not cut the skin of the Turnip either on the top or tail, as a Turnip of which the skin is broken always rots first. There is a mode of storing Turnips for winter use of which I think we will all have had some experience. After they are topped and tailed, they are thrown into small pits and covered up with clay. They keep very well in these pits, but if you have to go to the field in wet weather you injure the land very much, and, at the same time they come out very dirty. They must be washed before you can give them to cattle. I do not think this mode will preserve them from frost altogether, for I have gone to these pits on a hard frost and could not get a Turnip that cattle could eat. The Turnips were all hard frozen.

Another way is carting them off the field and putting them into long rows, about 6 feet at the bottom, tapering to a top. These pits must have a great quantity of straw put on them. It is almost impossible to keep out frost by storing them in this form, and in a high situation the spring winds wither them very much; so they must lose a considerable portion of their feeding qualities. The mode that I would recommend for winter use is to cart the Turnips off the land and put them into large heaps, something like the shape of a dunghill, about 3 feet in depth, covered well with straw and some rank horse-dung, taken from the stable, and put round the sides of the heap. I thing Turnips will retain more of the feeding qualities if stored in this way than by any other of the two modes mentioned.

Next, as to the best mode of storing Turnips for both sheep and cattle for spring use. When you enter the field you must make room for your horses and plough—you must pull one row and throw it to a side. Then you take a single plough and go along the side of the growing row and lay out an ordinary furrow. Then you must have five or six labourers set at equal distances from each other; they pull two rows and set them into the furrow that is made. You next go down with the plough and turn back the furrow that was put out in coming up on to the top of the Turnips. On a level-lying field they may be covered both up and down; it answers much better when they are ploughed up. It saves time. A man with a pair of horses and six labourers will level 3 acres per day. This is a more speedy system than topping and tailing: and it has another advantage, that it can be accomplished without any serious consequences, and answers well when the Turnips are too wet for storing otherwise. When you plough the Turnips up in the spring to the sheep or cattle, you will find that the roots have lost none of their feeding qualities; they are as good as when they were put down. Some will have this objection—how are the Turnips eaten off on wet land in wet weather? Well, I think this will be easily overcome. If you have a lot of sheep of 20 or 25 score, give them a break of 8 or 9 acres, then plough up one row and leave two over all the break; when they are well eaten-up, open one row and leave one, and so on. You will find that the sheep do very well, and the land is not much injured. If the spring happens to be an early one, and the Turnips running to seed, you can give your sheep all the field, and plough the rows up as they are required. I have been of opinion when we ploughed up the crop in the spring that it was a much weightier crop than when covered up; so I made a trial in November last. I selected nine Swede Turnips, 19 inches in circumference, and covered them up the same way, putting up a mark, and when I ploughed them up in the month of April two of the Turnips measured 20½ inches, and the remaining seven fully 20 inches. I think this covering system should be commenced, if possible, before the frost sets in, and even before the Turnips arrive at full maturity.

Notices of Books.

Superphosphate and Allied Manures; *How to Make, Buy, Value, and Use.* By Alfred Sibson, F.C.S., 11, Eaton Terrace, St. John's Wood, London, S.W.

There can hardly be a more directly useful subject for the study of the farmer than the one here named; and the author of this little pamphlet is perfectly competent to give full and trustworthy information and instruction on it. Unfortunately, however, the sentences are often so vaguely worded that they do not convey their intended meaning, nor, indeed, any other, with sufficient distinctness to be understood. Take the following account, for example, of the theory of the superphosphate manufacture:—

"The theory of the process may be thus described: the natural phosphate of lime consists of three equivalents of lime to one of phosphoric acid (hence called tribasic), and in this form is insoluble in water. The sulphuric acid added, being a much stronger acid than phosphoric acid, takes away two of the three equivalents of lime, and forms sulphate of lime, leaving the phosphoric acid combined with the remaining one equivalent of lime to form 'bi-phosphate of lime,' or 'mono-phosphate [of lime,' which is soluble in water, that is to say, dissolves, or goes out of sight in water, like sugar or salt does. The soluble phosphate signifies the amount of tribasic phosphate (also called 'bone-earth,' because it is the characteristic constituent of the bones of animals) decomposed by acid; hence, in stating the analysis, we say, 'bi-phosphate of lime,' so much, 'equal to bone-earth made soluble,' so much,—this latter is the soluble phosphate because it is the percentage of the original phosphate made soluble in the process. Hence also when the soluble phosphate only is determined by analysis, it is usual to say, 'phosphate of lime made soluble'—so much per cent., which is the bone-earth above stated, and not the bi-phosphate."

Beyond the main fact of the solubility of the formed superphosphate, an ordinary reader is, we imagine, rather confounded than informed by the details of the explanation thus offered to him. The following practical instructions in making superphosphates are, however, clear enough:—

"The sulphuric acid is usually purchased as brown acid, having a specific gravity of about 1.700.

"In making on the large scale it is, of course, advisable to purchase the materials in large quantities, generally by the ship-load, in their natural state, and to grind them oneself: it is also an obvious advantage, and is the practice with most large manufacturers, to make the sulphuric acid they require from sulphur or pyrites and nitrate in acid chambers, while the mixing or dissolving process is effected by steam-power. For making on the smaller scale, however, the phosphates are obtained ready ground, and the acid as above stated, the mixing being effected in strong wooden troughs by hand.

"On mixing the phosphate with the acid, a brisk action at first ensues, owing to the liberation of carbonic acid gas, &c., but after a few minutes' stirring it subsides, and the creamy fluid gradually thickens and dries up until, in about 24 hours, if properly made, it is quite solid. The proportions in which to mix the materials are varied somewhat by different makers, but the following proportions are well adapted for making either on the large or smaller scales, and are offered for the benefit both of farmers and intending manufacturers.

"For a mineral superphosphate:—

20 cwt. of Cambridge coprolite	17 cwt. of brown acid 3 ,, water*

"For a bone superphosphate:—

6 cwt. of ½-inch bones 14 ,, Cambridge coprolite	16 cwt. of brown acid 3 ,, water 2 ,, gypsum

"For a concentrated bone-ash superphosphate:—

20 cwt. of bone-ash 16 ,, brown acid	2¾ cwt. of water

Other phosphates are, of course, equally suitable, but the above are generally most easy to obtain in small quantities.

"The water should be added to the acid before it is mixed with the phosphates: it should be carefully mixed with a portion of the acid, and well stirred, and the whole afterwards added, otherwise the water will not be uniformly distributed, and its being so is one of the chief points of success. It is less trouble to add the water to the dry materials, and afterwards the acid, but in this case the action is too violent and the product does not dry so well.

"The mixing may be effected in a trough of stout plank, about 9 feet by 4 feet by 3 feet, pitched inside; and thoroughly stirred with a wooden rake for three or four minutes, or until the mass begins to thicken, when it should be left untouched for at least 24 hours, or until it allows of being dug out. The materials lose from 7 to 10 per cent. in mixing."

In valuing manures, Mr. Sibson proposes the following prices per unit of the several ingredients:—

"At the following prices for the phosphates† and nitrogen, we may leave out of consideration the gypsum, organic matter, and alkaline salts (except in case of potash), and so simplify the calculation.

	Per unit.	Per ½ unit.	Per ¼ unit.
	s. d.	*s. d.*	*s. d.*
Soluble phosphate	4 3	2 0	1 0
Precipitated phosphate ..	3 0	1 6	0 9
Insoluble phosphate, as bone	2 3	1 0	0 6
Insoluble mineral phosphate up to 7 per cent. ..	0 9	—	—
Potash	3 0	1 6	0 9
Ammonia	15 0‡	—	—

To this he has since added, by a post-card, issued wherever his pamphlet has been sent:—

"The price per unit for ammonia is intended to apply only to manures of the kind treated of—viz., 'Superphosphates and allied manures,' in which the ammonia forms a comparatively small item, and in conjunction with phosphates at the prices given. For corn manures, or those containing much nitrogen, a higher value per unit would be adopted, but in view of the rapidly increasing price of this item, it would be inadvisable, at present, to name a general value."

Several examples are given of valuation by means of these data, and they appear to apply with accuracy to the instances of both genuine and adulterated manures which are quoted.

A few sentences at the close of the tract are all that the author says upon the "use" of these manures; but this is a point wherein the want of information is often very costly. It is very properly stated that—

"A thorough dissemination of the manure with the soil is the most important point to be attended to, and the more care bestowed on this the better return we shall be likely to get for the money expended. For this reason a dry and powdery condition is now deemed an essential quality of all good manures, and to attain this in conjunction with a good chemical composition is the chief object to be sought by all manure manufacturers."

And we conclude with the author by quoting his last sentences, which are equally trustworthy:—

"A fine condition of the soil, as obtained by careful cultivation and management to secure the benefit of the frost, &c., adds much, as well-known, to the efficiency of manures, in fact is tantamount to a further dressing of manure,—a smaller quantity thus supplemented being more effective than a larger quantity on a roughly prepared soil, where much of the manure added gets buried under clods out of the reach of the plants. By attention to these points, it is quite possible to make 3 or 4 cwt. per acre do the work of 5 or 6. Finally, it may be added that steam cultivation, when applicable, affords us invaluable assistance to this end, and, conjointly with good artificial manures, constitutes, without doubt, one of the main stays of modern agriculture."

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* A gallon of water weighs about 10 lb.

† Soluble phosphate can, of course, be had for lower prices than this in quantities, and under special circumstances.

‡ Or 1*s.* 6*d.* per tenth.

Farm Memoranda.

TATTENHALL FARM.—The following notes, revised by the late Mr. Jackson, of Tattenhall Hall, are from the pen of Mr. R. Heath :—

The dairy farm here, in the tenancy of Mr. Jackson, is an example of the factory system of cheese-making, and is on a sufficiently large scale to admit of the application of every economic advantage.

The farm contains about 330 acres, two-thirds pasture land, and the remainder under tillage. Behind the house, a fine old mansion of red brick and stone, built more than 200 years ago, rise extensive farm buildings, designed by the present tenant. The cowhouses, or shippons, will accommodate 80 cows. Here they are brought as soon as the cold weather sets in and the supply of grass begins to fail. They stand in stalls on each side of the feeding passage, down which their food is carried by a truck to the troughs, while a constant stream of fresh water is flowing along the two lines, affording the cows as much drink as they choose to take. During the first month of their indoor life, that is, until about the middle of December, the cows are fed with straw-chaff and Turnip-tops; from that time until March, Swede Turnips take the place of the green food. Then the quantity of roots is diminished, and in their place they get a mixture of hay and straw-chaff, crushed Indian Corn, and oilcake. Everything is done by machinery moved by steam, the roots chopped, and the chaff, &c., steamed with hot water and oilcake gruel.

The calves, too, go through a regular course of diet, beginning with their mother's milk and going on to oatmeal gruel, and then Linseed and gruel, until they take to pasture freely.

The cows are milked twice a-day in the shippons; the average amount produced by 80 cows during the months of May and June is 240 galls. per day, from which four cheeses of 60 lb. weight each are made.

From the shippons I went into the cheese factory. Here the heavy work is done by water-power, the situation affording an unusually good supply of spring water, three streams running through the farm, not only irrigating the pastures, but also working a corn mill. The machinery of the cheese factory is set in motion by means of a small water-wheel called "a turbine."

Every evening the milk is brought into the dairy and put into a large vat, beneath which a constant stream of cold water is kept flowing to prevent it turning sour. In the morning the new milk is added, and also that from another farm two miles distant. The whole quantity is then placed in a large tin bath, and the temperature kept to 84°, by hot and cold water-pipes. It is then coloured, and the rennet put in, coagulation occurring in about an hour. The curd is cut with an American knife containing 12 parallel steel blades of about 20 inches long. This is drawn both ways through the bath, and the curds being cut in pieces, sink to the bottom. They are then carefully turned over by the hand, and kept moving while the temperature is gradually raised to 80° or 90°. A syphon is now introduced, and the whey partially drawn off, enough being left to float the curds, which are occasionally stirred to prevent them packing too closely. When the acid is sufficiently developed, the curds are dipped into a cloth strainer and drained, and then passed through the curd-mill, salt being added at the rate of 1 lb. for every 35 lb. of curd.

After this has been done, the cheeses are carried into the press-room, and put in round wooden vats, and placed in the presses. The pressure is at first gentle, but afterwards increased for three or four days. They are then removed by a crane to the drying-room above, where they are kept for six weeks and then sold, commanding the best price in the markets.

Miscellaneous.

PAUPERISM AND THE POOR-LAW.—There is an association, co-extensive with the Poor-law districts, now rapidly spreading over London, and known as the "Society for Organising Charity and Repressing Mendicity," some of the members of which from the first commencement realized this difficulty, namely, when John Thrift and William Spendall appear before a Board of Guardians, John Thrift, who has made some provision for himself and family, is sent empty away, but William Spendall, who has never saved a farthing, is provided and cared for by the other ratepayers, and goes home rejoicing to pauperize his friends and neighbours. This society, through some of its committees, has attempted, as far as might be in the two or three years of its existence, to reverse this principle. John Thrift is to them a subject for assistance and sympathy, but William Spendall must look to the bare subsistence of the Poor-law. Is it impracticable to introduce such a policy into our present Poor-law? Here is a sort of outline for consideration, *quantum valeat*:—

1. Administer generally your relief on a more liberal scale to those who have made some attempt at provision for themselves than to those who have not, and so set a premium on thrift.
2. As a rule the annuity or allowance of a friendly society should not be directly supplemented, since it ought to be adequate; but give to non-subscribers, *ceteris paribus*, two-thirds only of what members are receiving, or the offer of the workhouse.
3. As a matter of principle and general rule, make it extensively known that those who when able make no provision for themselves will get less favour, if, indeed, any out-relief given at all. This need in no way be adopted at first as a hard-and-fast rule, but merely declared as the ulterior practice gradually to be taught to the poor, and the example of a few cases will soon be found contagious.
4. A Government recognition and insurance of all benefit societies that will pass a liberal scale drawn up by actuaries; namely, on the principle that one generation should support another—the young the old. . . . .

Side by side with a strictly administered Poor-law we should require and desire, especially in towns, a thorough co-extensive administration of localised and organised charity; not that thoughtless, easy giving, miscalled charity; not that vicarious system of paid secretaries, endowments, subscriptions, and sympathy by deputy, that is twice cursed—that curses him that takes and him that gives; no, not that, but hearty co-operation and personal service, with money spent on sound economic 5 per cent. principles, such as the improvement of the dwellings of the poor in towns has been shown to be, and with it all an associated power of repression towards vagrancy and imposture. To sum up, then, and to repeat the practical causes that have been found to reduce pauperism to a minimum, and out-door relief to the smallest in England, they are these:—1, a strict administration of out-relief; 2, personal energy, supervision, and sympathy; 3, sanitary precaution; 4, and last, but not least, a practical reversal of the present Poor-law policy, and a revolution by administration in setting a premium on thrift. *Sir Baldwyn Leighton, at the Leeds Social Science Congress.*

The Week's Work.

NOVEMBER 21.—*Stubble Land* early receives a thorough autumn fallow in the North as in the South of England—ploughing the stubble being the principal team-work during this month, a deep winter furrow with four horses being all that the land gets. When stubble land is clean and free from weeds, as it always should be, and very generally now is, many prefer laying up the ridges in a deep winter furrow, under the conviction that teasing it afterwards with the scarifier does more harm than good. For Peas and Beans, farmyard manure is not unfrequently spread upon the stubbles, and either ploughed or ribbed in. In such cases the bottom should be subsoiled, as the manure requires to be covered with a shallow furrow. Manuring at this season is to be preferred to manuring in early spring, on the twofold ground that it suits the Bean crop better, and that any injury done the land in carting manure is rectified by the winter frost. The work of ridging, subsoiling, and covering the manure is much better and more effectually done by steam ridging and subsoil ploughs than by horse-ploughs—the land being left better drained, and exposed to the weather during winter. The above, however, chiefly applies to clean land. In all cases where the staple is full of Twitch and other weeds, advantage should be taken in an early season like this of giving the stubbles a thorough cleansing autumn fallow during this and the previous month in our northern counties, where stubble Turnips and smothering crops cannot be profitably grown.

Lea-ploughing for spring corn—and this again is northern practice—follows stubble-ploughing for root crops. Skim-plough the green sod into the bottom of the open furrow, covering it thoroughly with the furrow-slice, so as effectually to rot the whole of the vegetable and animal matter it contains. The rotten organic matter thus reduced to the form of plant food will start spring corn rapidly, placing it beyond harm. On the other hand, when a green seam of grass is growing between every two furrow-slices, it not only robs the land of manure, but the tender roots of such grass furnish a plentiful supply of food for insects until the roots of the corn are available. Old lea, with much effete vegetable matter on the surface, should have a light dressing of lime 10 days or a month before ploughing, purposely to rot the green sod when skimmed into and covered in the bottom of the furrow.

Sheep in the pastures should be greatly thinned, and should have ample hovel-room at night. Fields possessing suitable shelter should be reserved for breeding ewes in stormy weather, and where shelter does not exist naturally it should be provided artificially, not only for ewes and lambs, and in-lamb ewes, but also for young store sheep intended for breeding.

Notices to Correspondents.

CHICORY FOR GRAZING: *Subscriber.* The soil should be prepared by thorough cleaning early in spring, and a good coat of rotten dung applied. Drill 4 lb. of seed per acre in March, in rows 9 inches apart. Single them out when 5 inches high to 6 inches apart. The crop will continue luxuriant under good management for six or eight years. After full growth is obtained, cut it down before flowering, and carry it to stock in the house. It may also be depastured with sheep, but the other is the more productive use of it.

HORSE SHOEING: *An Original Subscriber* asks if any of our readers will kindly say whether they know of any one who shoes horses on the "Charlier" or Goodenough system within 10 miles of Ascot Heath?

SALT: *Northumberland.* Four cwt. per acre will not kill weeds on light land. You must get the weeds up by scarifying, harrowing, gathering, and burning. Earlier in the year you might have done a great deal to it by mere sunshine.

TO LAY DOWN GRASS: *J. F. M.* says:—We have a small pasture in which the roots of Yarrow (Achillea Millefolium) have so far spread as to outstrip in growth the grass herbage. In order to rid the pasture of what we consider a weedy pest, we have commenced digging up and carting away the surface soil to the depth of 6 inches, that is, such as we can discern contains the least particle of the Yarrow root. By this means we hope to destroy it, or at least to arrest its progress for some time to come. After we have levelled the remaining soil and dug it throughout one spit deep, we intend sowing it for a permanent pasture whereon to feed our milch cows, as formerly. As we shall not have finished the preparation of the soil for sowing until the beginning of December, we are desirous of ascertaining whether you consider it would be too late in the season to sow the seed. [It is now too late to sow grass seeds. The sowing should be delayed till March. Sheep feeding is generally harder and barer, and therefore more injurious to young grass than depasturing by cattle. Read Mr. Thompson's essay on this subject in the English Agricultural Society's Journal.]

Markets.

ENGLISH WOOL.

The market during the last week has been very strong, and with a renewal of the export demand for France and America, which has already commenced, we think prices likely to advance at least another 1*d.* per lb.

MARK LANE.

MONDAY, NOV. 13.

The supply of English Wheat to this morning's market was small, and was sold at the extreme prices of this day sen'night. There was a good attendance, and rather more demand for foreign, at late rates. Barley sold slowly, at prices of last week. Beans and Peas were unchanged in value. The Oat trade was firm, and new brought rather more money. Maize was 6*d.* per qr. dearer. Flour was steady, without alteration.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk..White	54—59	Red......	54—57
— fine selected runs ....do.	57—61	Red......	56—58
— Talavera	59—63		
— Norfolk	—	Red......	—
— Foreign	50—69		
BARLEY, grind.&dist., 26s to 31s..Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan.... 35s. to 38s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —s. to —s. ....Grey	—	Foreign ..	36—44
MAIZE	—	Foreign ..	31—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, NOV. 15.

Less firmness was apparent here to-day, owing to the warmer temperature. The supplies of English Wheat were short, but those from abroad were liberal. Sales in all descriptions were effected quietly, at the rates current on Monday last. Barley was dealt in cautiously, on former terms. Malt was inactive, but not quotably lower. Of Oats there was a good show, which changed hands less freely, at previous quotations. Beans and Peas were quiet, without change in prices. Transactions in Flour were restricted, and prices occasionally favoured buyers.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	610	—	—	—
Irish ..	—	—	—	—
Foreign ..	7210	7810	15,830	840 — brls.
	7820	7810	15,830	

LIVERPOOL, Nov. 14.—The market was numerously attended by millers, and ultimately the business in Wheat reached a moderately fair total, prices being 1*d.* to 2*d.* per cental dearer on the week for American white and winter red. Flour quiet, at previous rates. Peas in fair demand. Beans unchanged. Indian Corn in moderate request from consumers, prices showing no alteration.

AVERAGES.

	Wheat.	Barley.	Oats.
Sept. 30	57s 3d	35s10d	23s10d
Oct. 7	56 3	35 8	23 8
— 14	56 5	36 2	22 6
— 21	56 6	36 10	23 2
— 28	56 7	37 7	23 5
Nov. 4	56 8	37 5	23 8
Average ..	56 7	36 7	23 4

METROPOLITAN CATTLE MARKET.

MONDAY, Nov. 13.

The number of Beasts is very much smaller than on last Monday, and consequently trade has recovered from that day's slight depression in price. The weather being favourable for slaughtering, a fair clearance is effected. Although the supply of Sheep is much smaller than last week, trade is not so brisk. It is difficult to realise late prices even for choicest qualities. Trade is less active for Calves. Our foreign supply consists of 2420 Beasts, 10,800 Sheep, 284 Calves, and 10 Pigs; from Scotland there are 30 Beasts; from Ireland, 1000; and 1380 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	6 4to6 8
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 4
		Pigs	3 4—5 0

Beasts, 4830; Sheep and Lambs, 18,030; Calves, 288; Pigs, 30.

THURSDAY, Nov. 16.

There are a few more foreign Beasts than last Thursday, but scarcely as many English; the trade is dull, yet choice qualities are so scarce they make about the same as on Monday. The supply of English Sheep is also very short, of foreign rather larger; there is very little business doing, but quotations remain unaltered. There is no alteration in the Calf trade. Our foreign supply consists of 415 Beasts, 5140 Sheep, and 139 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	6 4to6 8
Best Shorthorns ..	5 6—5 8	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 8	Ewes & 2d quality	5 0—5 8
Best Downs and Half-breds ..	6 8—7 0	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 4
		Pigs	3 4—5 0

Beasts, 1010; Sheep and Lambs, 7420; Calves, 203; Pigs, 45.

METROPOLITAN MEAT MARKET, Nov. 16.

Best Fresh Butter	18s. per dozen lb.
Second do. do.	15s. ,,

Small Pork, 4s. 4d. to 4s. 8d.; Large Pork, 3s. 4d. to 4s. 0d. per 8 lb.

HOPS.

BOROUGH MARKET, Nov. 15.

The trade during the week has not been heavy, nevertheless planters have not pressed their Hops on the market, and the stocks remaining unsold being small, prices are fully maintained. The demand has been chiefly confined to the middle qualities of Mid and Weald of Kent Hops. The Bavarian and Alsace markets have advanced 5s. to 10s. per cwt., and the Alost market has declined to an equal extent.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Nov. 16.

PrimeMeadowHay,	80s.to	92s.	Clover, old	115s.	130s.
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	42			

CUMBERLAND MARKET, Thursday, Nov. 16.

Sup. Meadow Hay	95s.to	105s.	Inferior Clover ..	90s.to	120s.
Inferior do.	70	84	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	47
Superior Clover ..	135	140			

JOSHUA BAKER.

SEED MARKET.

Red Clover has excited during the past few days considerable attention, and values have advanced 4s. to 5s. per cwt. Of American seed there is no great quantity on offer; what little has appeared in the market has been eagerly bought up. Yearling parcels of Clover have also met with a brisk inquiry. White Clover must be quoted 2s. to 3s. per cwt. dearer. Trefoils are firm. In French Italian the recent advance has been well maintained. Perennial Grasses are steady. Winter Tares are in slow request. In Mustard and Rape seed there is but little passing. Other articles show no alteration.

JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

COALS.—Nov. 15.

Ryhope Hartley, 18s. 6d.; Walls End Hetton, 21s. 6d.; Walls End Hetton Lyons, 19s. 9d.; Walls End South Hetton, 21s.; Walls End Original Hartlepool, 21s.; Walls End South Kelloe, 21s.; Walls End Tees, 21s. 3d.; Brancepeth Cannel, 18s.—Ships at market, 21; sold 20; unsold, 1; at sea, 10.

For Harrows,
APPLY TO
J. AND F. HOWARD, Bedford, or their Agents in any part of the Kingdom.
Catalogues free.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

Smokeless Stoves.—No Flues.

NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming require no attention; with one supply of fuel burn 12 hours.

The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12s. 6d. to Six guineas. PATENT FUEL, 18s. per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4s. 6d. and 9s.

AMERICAN CHARCOAL BOX IRONS.
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PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21s. and 10s. 6d. Medical Testimonials and Prospectus Free on application.
SWAN NASH, Ironmonger, 253, Oxford Street; and JOYCE'S STOVE DEPOT, 119, Newgate Street.

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For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

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STEAM JOINERY WORKS, 60, Huntly Street, Aberdeen.

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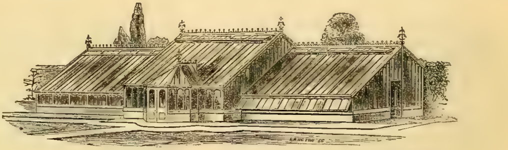
LOUGHBOROUGH.



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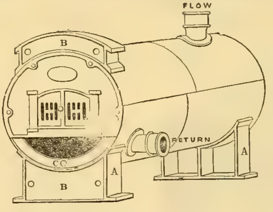

The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.
"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.
"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,
"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.
"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

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"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.
"W. PHIPPS."

"Huntroyde Park, Burnley.
"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.
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"H. LINDSAY."

"Atherstone Grapery.
"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.
"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

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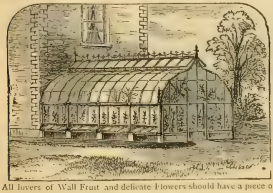

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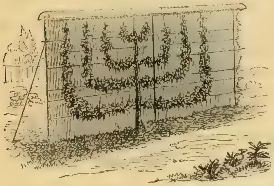

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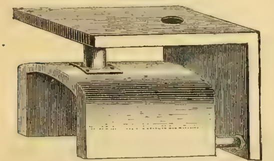

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz, the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 ,,	18 ,,	24 ,,	450	6	0	0
20 ,,	18 ,,	30 ,,	600	7	0	0
24 ,,	24 ,,	24 ,,	700	8	0	0
24 ,,	24 ,,	30 ,,	850	10	0	0
24 ,,	24 ,,	36 ,,	1,000	12	0	0
24 ,,	24 ,,	48 ,,	1,400	15	0	0
28 ,,	28 ,,	60 ,,	1,800	20	0	0
30 ,,	30 ,,	72 ,,	2,600	30	0	0
36 ,,	36 ,,	96 ,,	4,500	50	0	0
48 ,,	48 ,,	108 ,,	7,000	75	0	0
48 ,,	48 ,,	144 ,,	10,000	100	0	0

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Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

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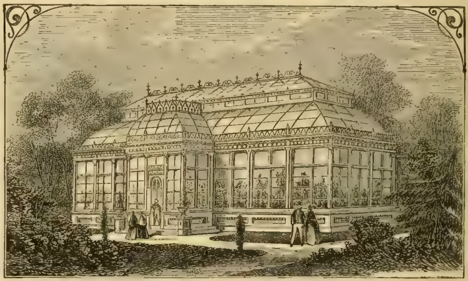

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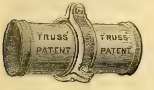

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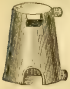

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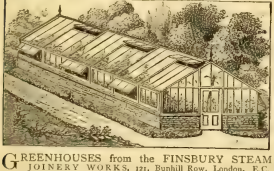

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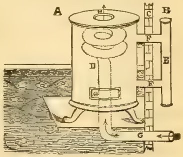

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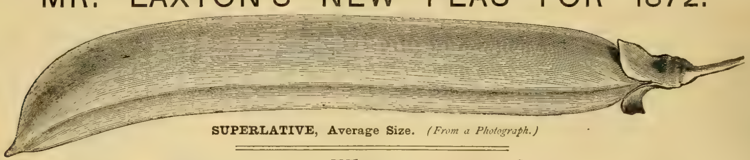

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The finest Pea yet sent out for earliness, flavour, and appearance combined. It is a first early variety, with long and well-filled deep greenish pods; ripe seed particoloured, like "Ne Plus Ultra." It has been thoroughly tested and recommended at the Royal Horticultural Society's Gardens at Chiswick on several occasions, and was the only Pea exhibited in Mr. Gilbert's first prize "Gardener's" collection of Vegetables at the Society's Exhibition at Nottingham in July last. Height 3 feet.—For further description see "Hogg's Gardeners' Year Book for 1871," page 73.

GRIFFIN.

A remarkable and distinct variety, as early as "Sangster's No. 1," of a fine colour and flavour when cooked; the ripe seed is also of a bright grass-green colour, and well calculated to supply "Green Peas all the year round." Pods medium-sized: height about 2 feet 6 inches.

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For general crop this Blue Wrinkled Marrow will be found earlier, more prolific, and to have better filled pods than those of "Champion of England," to which variety it is quite equal in flavour, and against which it should be tried. Height above 4 feet.

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The largest and finest podded variety yet raised: indispensable as an Exhibition Pea. The pods, which have been exhibited 7 inches in length, are more than twice the size of those of the parent Pea, "Laxton's Supreme," which during the last three seasons has taken nearly every first prize when shown in competition. It is also quite as early as that variety, and very prolific. As "Superlative" sometimes runs 7 or 8 feet in height, it should be slightly pinched in when the growth is about 5 feet. The colour and flavour of the Peas, when cooked, are excellent.

OMEGA.

This dwarfish late Pea was raised by fertilising "Ne Plus Ultra" with "Veitch's Perfection," and has all the valuable characteristics of the former variety. It is remarkably prolific, the pods are very fine and closely filled, and the flavour and colour of the Peas, when cooked, unequalled. Ripe seed like "Ne Plus Ultra." Height 2 feet 6 inches.

☞ These Peas can be confidently recommended by Mr. LAXTON as decided acquisitions, having been thoroughly tested by him for several years, and selected at great expense from hundreds of cross-fertilised varieties, the majority of which, although far in advance of older sorts in cultivation, have been discarded and suppressed.

They will be sent out in sealed Packets only, at £1 1s. the Collection,

And may be obtained Retail of the principal Seedsmen in London and the Provinces.

Sole Wholesale Agents for the United Kingdom,
MESSRS. HURST AND SON, SEEDSMEN, 6, LEADENHALL STREET, LONDON, E.C.,
To whom the Trade can apply for Terms.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, November 18, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 47.—1871.] SATURDAY, NOVEMBER 25. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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THE SUBSCRIPTION to the GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE is £1 3*s.* 10*d.* for Twelve Months, including postage to any part of the United Kingdom. May be had of all Booksellers.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

Birmingham Cattle and Poultry Show.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for DECEMBER 2 will contain a FULL REPORT of the SHOW.

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PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
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HORSE CHESTNUTS, 6 to 7 feet, straight.
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Pyramid APPLES, PEARS, PLUMS, and CHERRIES.
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ECHEVERIA RETUSA, a beautiful winter-flowering plant.
Price and Trade LIST on application.
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36 SPANISH IRIS, extra choice, mixed
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24 „ Large Yellow
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PRINCESS LOUISE VICTORIA.

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Coloured Drawing, post free, for 12 stamps.

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J. ROY, JUN., NURSERYMAN, Aberdeen, has a very extensive stock of Transplanted SCOTCH FIR, of various growths; as the whole has to be cleared off this season he offers as under to the Trade :—

2-yr. SEEDLINGS, 2-yr. transplanted	5*s*. per 100.
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Strong and fine do., 18 to 24 inches	10*s*. per 1000.
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	Each.—*s*.	*d*.		Each —*s*.	*d*.
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Lancifolium atrorubens (cruentum), true, 2*s*. 6*d*. to	5	0	Vestalis	3	6

Choice selections, from 75 superb varieties, 5*s*., 9*s*., 12*s*., 18*s* , and 24*s* per dozen.

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An extensive collection of the finest choice selections, 3*s*., 5*s*., 9*s*., 12*s* , 20*s* , and 30*s* per dozen.

Also superb new varieties of 1870. See CATALOGUE.

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„ Pyramidal, 7*s*.
„ Trained, 10*s*.
APRICOTS, NECTARINES, and PEACHES, Trained (very strong), 15*s*.
PEARS—Standards, 7*s*. 6*d*.
„ Pyramidal, 8*s*.
PEARS—Trained, 12*s*.
PLUMS—Standards, 8*s*.
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CHERRIES—Standards, 6*s*.
„ Dwarfs, 5*s*.
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Shrubs, Plants, and Cut Flowers, equally cheap. Prices for quantities, or by the 100, on application.

Choice CUT FLOWERS BOUGHT in any quantity.

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JOHN WATERER AND SONS, Bagshot, Surrey, are the EXHIBITORS of RHODODENDRONS at the ROYAL BOTANIC GARDENS, Regent's Park. Their Descriptive CATALOGUE of these Plants is now ready, and may be had on application, by letter, addressed to Bagshot.

☞ The Catalogue fully describes colours, prices, &c., of the Rhododendrons.

CAMELLIAS and AZALEAS.—Good plants, with and without buds, at 15*s* , 18*s*., and 30*s*. a dozen, fine varieties. Package gratis for cash with order.

J. H. LEY, Exotic Nursery, Croydon, S.E.

Special Cheap List of Palms, Ferns, and Stove Plants.

J. H. LEY, Exotic Nursery, Croydon, S.E., will be pleased to send above, with general CATALOGUE, free on application.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester
Nurseries : Fairfield, near Manchester.

Forest Trees.

WOOD AND INGRAM offer as follows, very fine stuff :—

		Per 1000.—*s*.	*d*.
OAKS, 3-yr. Seedlings		7	6
„ 3 to 4 feet		30	0
„ 4 to 5 feet		35	0
ELM, English, 1-yr. Seedlings		5	0
„ „ 2-yr. Seedlings		7	6
„ Huntingdon, 8 to 10 feet	per 100	50	0
HORSE CHESTNUTS, 3-yr. Seedlings		8	0
„ „ 2 to 3 feet		12	0
OAK, Evergreen, 1-yr. Seedlings		10	0
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Samples sent on application.

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THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

IS STILL AT

WILLIAM PAUL'S.

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PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

THE ROSE GARDEN, Second Edition, 6s. 6d. ; ROSES IN POTS, Third Edition, 2s.

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JAMES CARTER & CO.

INVITE INSPECTION OF ONE OF THE MOST

MAGNIFICENT COLLECTIONS OF SPECIMEN ROOTS

EVER EXHIBITED, including—

CARTER'S IMPERIAL HARDY SWEDE,
CARTER'S MAMMOTH PRIZE MANGEL,
CARTER'S WARDEN ORANGE GLOBE MANGEL,
CARTER'S IMPERIAL GREEN KOHL RABI,
TURNIPS, CABBAGE, &c.,

All grown by MESSRS. CARTER'S own Customers, under ordinary Field Cultivation.

Orders booked for next season's supply, at very low prices, during the Show.

SEEDSMEN to the QUEEN and the PRINCE of WALES,
237 and 238, HIGH HOLBORN, LONDON, W.C.

GLADIOLI.

KELWAY & SON

ARE THE LARGEST GROWERS IN GREAT BRITAIN, AND HAVE TAKEN

ALL THE FIRST (OPEN) PRIZES IN LONDON FOR THE PAST SEVEN YEARS.

THEY ARE NOW PREPARED TO EXECUTE ORDERS IN ANY QUANTITIES.

Bulbs all of their own growing. Catalogues on application.

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LUCOMBE, PINCE AND CO. beg to direct attention to their large stock of PODOCARPUS CHINENSIS and CEPHALOTAXUS FORTUNEI, which they can offer at low prices; also a large stock of CONIFERS and choice SHRUBS, FRUIT and FOREST TREES, VINES, and STOVE and GREEN-HOUSE PLANTS. They have also a number of splendid specimen plants suitable for producing an immediate effect in landscape gardening. Their long Camellia-house, which has been recently enlarged, is full of magnificent plants, many of them of the dimensions of trees.

Exeter Nursery, Exeter.

SURPLUS STOCK of the following to be SOLD, cheap:—PRINCE ALBERT, LINNÆUS, and VICTORIA RHUBARB; FASTOLF RASPBERRIES; 4-yr. old ASPARAGUS; SKIMMIA JAPONICA; CLEMATIS LANUGINOSA; CUPRESSUS LAWSONIANA; PERNETTYA SPECIOSA, the berry-bearing variety; AUCUBA LIMBATA, bicolor and viridis; SALIX BABYLONICA SALOMONII, the hardy Weeping Willow. Prices, &c., on application.

ISAAC DAVIES, Nurseryman, Ormskirk.

FOREST TREES.
Transplanted ENGLISH OAK, extra strong, from 3 to 4 and 4 to 5 feet.
Transplanted BEECH, 2 to 3 and 3 to 4 feet.
" FIRS—LARCH, 1 to 1½ foot, 2 to 2½, and 3 to 4 feet.
" " SCOTCH, 1 to 1½ foot, and 2 to 3 feet.
" " SPRUCE, very fine, 1½ to 2 and 2 to 3 feet.
" WHITETHORN or QUICK, extra strong.
" EVERGREEN PRIVET, extra strong.

The above in large or small quantities. Samples and prices on application to

FREDERICK PERKINS, Bedford Road Nurseries, Northampton.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
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To Planters.

J. SCOTT, Merriott, Somerset, advises Planters to send for his ORCHARDIST and its COMPANION, price 2s., before ordering their Fruit Trees. Ornamental planters, amateurs, and gardening folks generally, will find much useful information in J. S.'s GENERAL NURSERY, BULB, and SEED CATALOGUES; they are full of interesting matter suited for gardens and gardeners, gratis.

The FRUIT TREES cover many acres, and are in perfect health; 1000 sorts of Apple, and 1200 sorts of Pear are grown, and all other fruits in proportion.

The FOREST TREES and ORNAMENTAL SHRUBS occupy a large space, more especially Alder, Ash, Birch, Beech, Chestnuts, Elms, Firs (Austrian, Larch, and Spruce), Hazel, Oak, Poplars, and at least one million of healthy Thorns, in all the usual sizes

A NEW CATALOGUE, containing all the names enumerated in the "Orchardist," and many new sorts introduced since that work was printed, gratis on application.

Planting Season.

To PLANTERS of PUBLIC PARKS, CEMETERIES, or PRIVATE GARDENS.

WILLIAM SKIRVING solicits inspection of his unrivalled Stock of choice EVERGREEN SHRUBS, FOREST and ORNAMENTAL TREES, which he is disposing of at very moderate prices, in order to clear the land for building purposes.

Among the Evergreens are many thousands of fine specimens of Variegated and Broad-leaved GREEN HOLLIES, and an immense stock of all other HARDY EVERGREEN FLOWERING SHRUBS and ORNAMENTAL TREES generally cultivated in Britain, many of which are of large size, well calculated for giving immediate effect.

To Gentlemen wishing to make new or to improve old Pleasure Grounds this is an excellent opportunity; for such an extensive and well-grown stock of Trees and Shrubs has seldom if ever before been offered for Sale, either for extent or variety.

Nursery and Seed Stores—Walton-on-the-Hill.
Seed Warehouse—15, Queen Square.
Liverpool, September, 1871.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them on terms unusually advantageous. Where selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. The plants we have sent out in execution of such orders have, we are informed, given unmixed satisfaction. The following list, with prices annexed, will be some guide to intending purchasers:—

Dendrobium Falconeri, 21s. to 63s. each; D. Wardianum, 63s. to 105s.; D. chrysotis, 21s. to 63s.; D. McCarthiæ, 42s. to 84s.; D. heterocarpum, 5s. to 21s. D. moniliforme, 10s. 6d. to 21s.; D. transparens, 5s. to 21s.; D. Devonianum, 7s. 6d. to 21s.; D. nobile, 5s. to 105s.; Odontoglossum grande, 7s. 6d. to 10s. 6d.; O. Insleayi, 7s. 6d. to 10s. 6d.; O. citrosmum, 7s. 6d. to 10s. 6d.; O. luteo-purpureum, 25s.; O. gloriosum, 25s.; O. Alexandræ (Bluntii), 21s. to 63s.; O. Pescatorei, 21s. to 63s.; O. Rossi superbum, 21s. to 31s. 6d.; O. crocidypterum, 42s.; O. platyodon, 31s. 6d.; O. ramulosum, 31s. 6d.; O. Bictonense, 15s.; O. Uroskinneri, 10s 6d. to 15s.; Vanda cœrulea, 10s. 6d. to 105s.; Pleione Wallichii, 3s. 6d. each, 30s. per dozen; P. lagenaria, 5s. to 10s. 6d.; Cypripedium hirsutissimum, 7s. 6d. to 21s.; Cattleya Mossiæ, 7s. 6d. to 21s.; C. maxima, 31s. 6d.; C. Trianæ, 15s.: C. Warneri, 21s.; Barkeria Skinneri, 10s. 6d. to 63s.; B. spectabilis, 10s. 6d. to 63s.; Calanthe vestita, 3s. 6d. to 21s.; C. Veitchii, 10s. 6d. to 42s.; Cœlogyne cristatum, 10s. 6d. to 63s.; Oncidium Papilio, 7s. 6d. to 10s. 6d.; O. Krameri, 21s.; O. Lanceanum, fine variety, 15s.

W. VIRGO AND SON, Wonersh Nurseries, near Guildford, Surrey, respectfully call the attention of Noblemen, Gentlemen, Nurserymen and Others, to the undermentioned stock; the whole of which is particularly strong and healthy, and in excellent condition for removal:—

Standard, Half-Standard and Dwarf Roses, upwards of 300 varieties; Standard, Pyramid and Dwarf Apples, extra fine; ditto Pears; ditto Plums; Dwarf-trained Apples, Pears, Plums, Peaches and Nectarines Gooseberries; Black, Red and White Currants; Filberts, extra fine.

EVERGREENS.

Common Laurel, 2 to 4 feet.
Portugal Laurel, 2 to 4 feet.
Green and Variegated Box, 2 to 4 feet.
Green Holly, 2 to 3 feet.
Yew, 2 to 4 feet.
Siberian and Chinese Arbor-vitæ, 3 to 4 feet.
Pinus austriaca, 2 to 5 feet.
Spruce Fir, 2 to 6 feet, fine and bushy.
Berberis aquifolia, 1 to 1½ foot.
American Arbor-vitæ for hedges, 3 to 6 feet.
Evergreen Privet, 2 to 3 feet, fine.
Hornbeam, 3 to 4 feet.
Cupressus Lawsoniana, 3 to 4 feet.

ORNAMENTAL TREES.

Spanish and Horse Chestnut, 6 to 8 feet.
Wych Elm, 6 to 8 feet.
Double, Scarlet, White and Paul's New Thorn, 6 to 8 feet.
Black Italian Poplar, 6 to 8 feet.
Turkey, English and Scarlet Oak.
Hornbeam, Laburnum, Lime, Norway Maple, Lombardy, Ontario, White or Abele, Balsam, &c.
Sycamore, Sumach, Acacia, Weeping Willow and Birch, 6 to 8 feet.

Transplanted FOREST TREES for Covert and Copse Planting.

Ash, 2 to 3 feet.
Alder, 3 to 5 feet.
Birch, 3 to 5 feet.
Beech, 2 to 3 feet.
Spanish Chestnut, 1½ to 2 feet.
Horse Chestnut, 3 to 5 feet.
Spruce Fir, 2 to 3 feet.
Scotch Fir, 1 to 1½ foot, and 2½ to 3½ feet.
Hazel, 2 to 3 feet.
Hornbeam, 2½ to 3 feet.
English Oak, 2½ to 3 feet.
Sycamore, 3 to 4 feet.
Plum-leaf Withy, 3 to 5 feet.

10,000 clean-grown CRAB STOCKS.
Strong transplanted QUICK, 2 to 2½ feet.
Priced CATALOGUE and samples on application.

The Nurseries are 1½ mile from Bromley Station, London, Brighton, and South Coast Railway; 2½ miles from Shalford Station, South-Eastern Railway; and 4 miles from Guildford Station, London and South-Western Railway. Goods delivered free to the above stations.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS) keep a choice assortment of EVERLASTING and DRIED NATURAL FLOWERS and GRASSES, arranged in Baskets, Wreaths, Bouquets, &c.; FRENCH IMMORTELLE WREATHS and CROSSES, for Funeral Decoration.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS) keep a large stock of various articles in PLAIN, ENAMELLED, and ETRUSCAN TERRA COTTA, consisting of Vases, Garden Seats, Window-Boxes, Fern-Stands, Flower-Pots, &c.

14, Tavistock Row, Covent Garden, London, W.C.

ROBERT CORNWELL AND CO. offer SILVER, SCOTCH, and AUSTRIAN FIRS, 3 to 5 feet; ARBOR-VITÆ, 3 to 6 feet; AUCUBAS, 1½ to 4 feet; PRIVET, 3 to 4 feet; Variegated and Green BOX, 2 to 4 feet; do. Edging; IRISH YEWS, 3 to 4 feet; LAURELS, 4 to 8 feet; bushy LAURUSTINUS, 2 to 3 feet; some extra handsome ones, 4 by 4 feet; Standard ROSES, strong GOOSEBERRIES, CURRANTS, and STRAWBERRIES of sorts; ASPARAGUS, 2, 3, and 4 yr.-old; RASPBERRIES, Cromwell's Seedling, 12s. per 100; do. Prolific, 10s.; Carter's Prolific, 10s.; Red and White Antwerp, 10s.; Fastolf, 10s.; Fillbasket, 10s.; Ead's White, 10s.; Semper Fidelis, 20s. Bushy LAURELS, 4 ft., £1 per 100.

NOTE—Opposite the Red Lion, Barnet, N.

WHEELERS' BROCKWORTH PARK PEAR.

"The handsomest and most valuable dessert Pear of recent years."

J. C. WHEELER AND SON offer fine young PYRAMIDS of this magnificent PEAR, at 10s. 6d. each, and a few DWARF-TRAINED TREES, at 15s. each. It obtained a First-class Certificate from the Fruit Committee of the Royal Horticultural Society, on September 20, 1870, and was exhibited at the Royal Horticultural Gardens on October 4, 1871, when it was again greatly admired. It is large, handsome, and fine flavoured, and is, without doubt, a great acquisition to our choicest and best dessert Pears. It may fairly be described (when grown against a wall, with a good aspect) as one of the handsomest, largest, and best dessert Pears ever introduced. It ripens the end of September and beginning of October.

J. C. WHEELER & SON have already received orders for it from nearly all parts of the United Kingdom; from Germany (for the Emperor's gardens at Sans Souci, Berlin); from France; and from the United States. Orders will be executed in rotation as received, the earliest getting the best plants.

J. C. WHEELER AND SON, Nurserymen,
Gloucester, and 59, Mark Lane, London.

GEORGE DAVISON, White Cross Nurseries, Hereford, offers for cash:—

	Per dozen.—s.	d.
Abies Douglasii, 3 to 4 feet	18	0
" canadensis, 4 feet	12	0
Biota elegantissima, 9 inches	15	0
" japonica, 2 feet	9	0
Cedrus atlantica, 3 feet	9	0
" Deodara, 2 to 2½ feet	18	0
Cryptomeria Lobbii, 2 feet	9	0
Cupressus macrocarpa, 2 feet	9	0
" sempervirens, 3 to 4 feet	9	0
Juniperus virginiana, 3 feet	6	0
Picea balsamea, 2 feet	4	0
" Nordmanniana, 1 foot	16	0
" Pinsapo, 1½ foot	16	0
Pinus austriaca, 3 feet, per 100, 30s.	5	0
" laricio, 3 feet	6	0
Taxus baccata, 2½ feet	8	0
Thuja Lobbii, 1½ foot	8	0
" occidentalis, 3 to 4 ft.	5	0
Berberis japonica, 1 foot	8	0

	Per dozen.—s.	d.
Berberis Darwinii, 2 feet	6	0
" dulcis, 2 feet	4	0
" Mahonia, 2 feet	2	0
Cotoneaster microphylla	2	6
Ivy, Irish, for edgings	1	6
Laurel, common, 2 to 2½ ft., per 100	15	0
Laurel, Portugal, 1 foot, bushy, per 100, 20s.	3	0
Laurustinus, sorts, 1 to 1½ foot, per 100, 25s.	3	6
Roses, Standards, best sorts,	15	0
" Dwarfs	9	0
Selected from Catalogue.		
Hazel, seedlings .. per 1000	8	0
Scotch Firs, 2 feet .. per 100	3	6
" " " per 1000	30	0
Strong Cider Apples	18	0
Blenheim, Lord Suffield, &c., Apples	18	0

Special Offer.

ALEXIS DALLIERE, NURSERYMAN, Ghent, Belgium, begs to offer the undermentioned Plants, at the following prices, viz.:—

		£	s.	d.
AZALEA INDICA, fine plants	25 for	1	4	0
" "	per 100	4	12	0
ABIES NORDMANNIANA, 8-yr., very nice plants	25 for	0	18	0
" " "	per 100	3	0	0
ASPLENIUM FABIANUM	per doz.	0	8	0
" NIDUS AVIS	"	0	4	0
ALSOPHILA AUSTRALIS	each	0	1	0
CYPERUS ALTERNIFOLIUS, Var.	"	0	1	0
DRACÆNA AUSTRALIS, 1½ foot high	"	0	2	6
" TERMINALIS VERSICOLOR	"	0	2	0
" CONGESTA, strong	"	0	1	0
" COOPERII	"	0	2	0
" INDIVISA, 3 feet high	"	0	2	0
" LINEATA, 2 feet high	"	0	3	0
" " RUBRA, 1½ foot high, new	"	0	8	0
" RUBRA, strong	"	0	2	0
" REGINA	" 4s. to	0	12	0
" VEITCHII, 3 feet high	"	0	8	0
PHILODENDRON LINDENI	"	0	2	6
PENCENECTITIA TUBERCULATA	"	0	2	6

PALMS.

		£	s.	d.
ARECA VERSCHAFFELTII, 1½ foot high	"	0	6	6
" RUBRA, 1½ foot high	"	0	2	0
CHAMÆROPS FORTUNEI, 3 to 4 leaves, 1 to 1½ foot high	"	0	3	0
" HUMILIS, 4 leaves	"	0	3	0
CHAMÆDOREA GRACILIS, very fine ornamental plant, elegant	"	0	6	6
CORYPHA AUSTRALIS, 1 to 1½ foot high (2 to 3 leaves)	"	0	2	0
LATANIA BORBONICA, 1 to 1½ foot high (2 to 3 leaves)	" 2s. to	0	3	0
PHŒNIX DACTYLIFERA, 1½ foot high	"	0	2	0
" TENUIS, 1½ foot high	"	0	8	0
THRINAX ARGENTEA	"	0	4	0
CYCAS REVOLUTA, 2 to 5 leaves	" 4s. to	0	12	0
PANDANUS UTILIS, 1½ foot high	"	0	2	6

		£	s.	d.
				0
CORREA CARDINALIS, 30 to 40 flower buds	"	0	2	0
BRACHYSEMA LATIFOLIA, 30 to 40 flower buds	"	0	2	0
ACACIA CORDATA, very nice tuft	"	0	1	0
" GRANDIS, 2½ feet high	"	0	2	0
ECHEVERIA RETUSA, in bud	"	0	1	0
MARANTAS, in 12 sorts	per doz.	0	15	

ALEXIS DAILLIERE, Nurseryman, Ghent, Belgium.

Phalænopsis grandiflora.

MR. WILLIAM BULL is glad to inform those Orchid Friends who from time to time have seen the Phalænopsis arrive at his Establishment by thousands in a dead state, and who have sympathised with him in his great losses of these plants, that at last, through Cases of improved construction, he has succeeded in importing PHALÆNOPSIS GRANDIFLORA in the most perfect condition, with scarcely a dead plant among them; indeed, Mr. W. B. can now offer this magnificent Orchid, in beautiful plants, either singly, by the dozen, or hundred; but intending purchasers are recommended to see the plants, for Mr. W. B. has no hesitation in saying it is the finest lot of Phalænopsis that has ever been imported into this country.

Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

To the Trade.

JOHN DOBSON AND SONS supply their celebrated strains of CALCEOLARIA, CINERARIA, CYCLAMEN, PRIMULA, BALSAM, &c., to upwards of 300 of the leading Seedsmen in all parts of the World, and, after a test of many years, are acknowledged to be excelled by none.

LISTS, with liberal allowance given, sent free on application.

JOHN DOBSON AND SONS, Seed Merchants, Nurserymen, and Florists, Isleworth and Hounslow, W.

DOBSONS' CELEBRATED PRIZE SEEDS.
CALCEOLARIA, unequalled by any other strain.
CINERARIA, a splendid strain.
PRIMULA SINENSIS FIMBRIATA RUBRA and ALBA, ex. ex.
The above in 1s. 6d., 2s. 6d., 3s. 6d., and 5s. packets, sealed.
BALSAM, in eight splendid colours, 1s. and 2s.
CYCLAMEN PERSICUM, from the finest flowers, 1s. and 2s. 6d.
INTERMEDIATE STOCK, fine, 6d. and 1s.
DOBSON AND SONS, Seed Merchants, Isleworth and Hounslow, W.

MAGNIFICENT PLANTS of PINUS AUSTRIACA, 4 times transplanted, 4 to 5 feet (perfect specimens); smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
SCOTCH FIRS, extra fine, 3 times transplanted, 4 feet; smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, by the 1000.
SILVER FIRS, very fine plants, 3 times transplanted, 4 feet.
COMMON LAURELS, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet, by the 100, 1000, or 10,000.

CATALOGUES and Prices on application.

WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

LARCH, 2 to 3 feet, 2½ to 3½ feet, very fine.
SCOTCH, 1 to 1½ foot, 2 to 2½ feet, 2½ to 3 feet, very fine.
AUSTRIAN PINE, 1 to 1½ foot, 1½ to 2 feet, 2 to 2½ feet. The latter size extra transplanted.
ALDER, 4 to 5 ft. | TREE BOX, 1 to 1½, 1½ to 2, and 2½ to 3 ft.
MAHONIA AQUIFOLIA, 1½ to 2 feet.
EVERGREEN PRIVET, 2 to 3 feet.
Strong bedded MOSS ROSES for open ground or potting, for forcing.

Prices, which are low, on application to
FIELD BROTHERS, Tarvin Road Nursery, Boughton, Chester.

MILFORD NURSERIES, near Godalming.

For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For HARDY ORNAMENTAL TREES and SHRUBS, EVERGREENS, &c., see MAURICE YOUNG'S New Descriptive CATALOGUE.

For RHODODENDRONS and other AMERICAN PLANTS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For STANDARD and HALF-STANDARD ROSES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For NEW JAPANESE AUCUBAS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For JAPANESE NOVELTIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For CHEAP EVERGREENS and SHRUBS for COVER PLANTING or SHRUBBERIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For PLANTS suitable for WINTER BEDDING, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For TRANSPLANTED FOREST TREES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For EXTRA TRANSPLANTED or QUARTERED FOREST TREES for Planting Belts or Shrubberies, see MAURICE YOUNG'S New Descriptive CATALOGUE.

Forwarded on application enclosing stamp.
Milford Nurseries, near Godalming.

Late Rose Potato.

THIS valuable NEW SEEDLING WINTER POTATO is now for the first time offered to the Public. In its colour, habits of growth and general appearance, it resembles its parent, the Early Rose, but is superior to that variety in the following highly important particulars:—

1st, It is of much better quality for table use, being white fleshed and fine grained, cooking very dry and mealy. It has a peculiar, rich and delicate flavour, not surpassed by any variety yet tested.

2d, Its yield is enormous. The stock was grown at the rate of from 250 to 300 bushels per acre, common field culture. On the same soil and under the same treatment, the Early Rose yielded less than 100 bushels per acre.

3d, Its keeping quality is unsurpassed. In the same cellar, at planting time, when the Early Rose were so badly sprouted and wilted as to be unfit for table use, this Seedling had not sprouted, and were as crisp and solid as when first dug. They remained in good condition for cooking until the new crop of Early Rose came upon the table.

☞ For Sale by the London Seed Trade generally.

KINGSHOLM COS LETTUCE.

THIS MAGNIFICENT LETTUCE made its appearance three years since in a piece of White Cos. It withstood the summer heat for a long time after all other varieties (with the exception of Wheeler's Tom Thumb) had run to seed, headed-in without tying, and formed one of the most perfect models of a Cos Lettuce ever seen. At length it ran to seed; owing to the late period of the season it had started, the produce was, however, small. The whole stock was carefully preserved for next season's seeding. The crop of seed was again very limited, but the Lettuces were magnificent, many of them weighing 7 lb. each. We are now enabled to offer seed at 1s. per packet, feeling confident it will give satisfaction to every one who grows it. It was seen last summer by a gentleman connected with Covent Garden Market, who remarked it was the finest Lettuce he had ever seen, and far superior to anything brought to the London Market. We recommend those who contemplate growing Lettuces for Exhibition to give this variety a trial. Get it sown in a frame, and planted out early in the season, on deeply dug and well-manured land, and we have but little fear that such specimens will be produced as will defy competition.

Packets, 1s.; small packets, 6d. each, post free.
Trade price on application.

J. C. WHEELER AND SON,
Seed Growers, Gloucester; and 59, Mark Lane, London, E.C.

32, *Maida Vale, Edgware Road,*
St. John's Wood, London, W.

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100 HYACINTHS, in 100 sorts, Carriage Free £4 4 0
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25 ,, in 25 sorts, Carriage Free 1 1 0
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12 ,, in 12 sorts, good 0 9 0

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MR. WILLIAM BULL begs to intimate that he can supply the NEW MASDEVALLIA IGNEA, described in last week's *Gardeners' Chronicle* (p. 1482), at five guineas each; and having a large stock of the NEW MASDEVALLIA HARRYANA, figured in the November Number of the "Floral Magazine," can supply it at four guineas each.

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WANTED, 100 dozen strong plants, in 48-sized pots; also large PALMS, such as Seaforthia elegans, from 8 to 20 feet high; also handsome TREE FERNS, with 8 feet stems; also strong GREENHOUSE CREEPERS, established in large pots. Send full particulars as to size, price, &c., to

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"THE FLORAL ORNAMENTATION was by Mr. JOHN WILLS, of Old Brompton, whose taste was generally commented on in terms of eulogy."—*Vide City Press, Nov.* 11, 1871.

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A. F.'s general Collection, which is the largest in England, will be IN FLOWER throughout the months of NOVEMBER and DECEMBER, when a VISIT is respectfully solicited.

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H. CANNELL begs to inform his friends and Customers that he has now the finest lot of STOCK PLANTS in 60's perhaps ever seen, consisting of 300 of all the most popular varieties, and about three dozen of each kind are continually kept on hand. Every kind is planted out and bloomed every season, on purpose to keep the whole collection perfectly true. They are now in fine condition, and all admirers of this family are invited. For price of Plants, Rooted Cuttings, and Cuttings, see H. C.'s FLORAL GUIDE, which also contains a great deal of valuable information, including how to grow them to the highest perfection for decoration. Sent free for four stamps.

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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Professor REICHENBACH, of Hamburgh
Rev S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

Birmingham Cattle and Poultry Show.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for DECEMBER 2 will contain a FULL REPORT of the SHOW.

Copies may be obtained at Messrs. W. H. SMITH & SON'S Bookstalls, or may be ordered of any Bookseller. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, London, W.C.

The Gardeners' Chronicle

SATURDAY, NOVEMBER 25, 1871.

GENERALISATIONS and general terms are so extremely convenient, that we are all glad to make use of them when occasion demands; those of us who are oppressed with facts more especially. But just as he who deals too exclusively with facts fails to get a clear view of the wood by reason of the trees, so he who from a vantage ground surveys the wood is very apt to disregard the individual trees composing it. Is it not so with GARDENS and GARDENING? Do we not every day make use of these words, and only now and then give a thought to the multiplicity of things those words imply? It is only occasionally, so to speak, that the vast differences between gardens and gardens strike us. And yet how different one from the other are those, even, which we speak of as complete establishments. Every place has some special feature of its own. Here is a garden with its formal terrace walk, its severe geometric beds, all a-blaze with boldly contrasted colours; its clipped shrubs, its vases, and its statuary. All here is formal, but all is balanced and accurate to a hair's-breadth. It is architecture supplemented by flowers. Look from the walk or descend the steps, and see stretching away in simple lines a vast sward of greenest turf. This serves as a setting for beds which in spring are filled with flowers of the softest shades of colour, merging one into the other, as the tints on a peacock's feather do—pleasing from any aspect, beautiful in any light. In the distance, it may be, is a winding stream or a lake, and beyond are the blue hills, with dense masses of forest growth at the base, varying in tint with every change of season, ay, with every passing cloud.

It may be that we find ourselves in some sheltered spots amid these woods, and there, protected by undulating mounds and spreading trees, we find standing out in relief the bold foliage of the Palms, the Yuccas, the Dracænas, the Cannas, or the more graceful fronds of the Tree Ferns. Here we taste something of the delights of those whose privilege it is to roam amid tropical vegetation. There is the additional advantage of freedom from such disagreeables as jungle fevers, inundating rains, savage beasts, and exasperating insects.

Again we enter a spacious domain through an avenue of giant Limes, allowing glimpses here and there of an undulating park, and giving access to a pleasure ground whose every path is a line of grace, every mound a wave of beauty. Here are noble vistas between the trees, terminating in some striking architectural feature or enticing the eye to rest on some beautiful prospect. Here are mounds skilfully disposed to carry the view on from point to point till the sense of limitation is lost. Specimen trees of beautiful proportions dotted here and there to break up the scene and give it life, or disposed in groups to afford imposing masses of foliage, supply tone and colour to the picture, and, perchance, give shelter to the garden or conceal less attractive features. A few steps may bring us to a rustic arch, and passing through it we may find ourselves in a wilderness of weird, rugged, gnarled stumps, which look as if some CALIBAN or CYCLOPS had got them together and thrown them down haphazard, and Time had draped them with Ferns, and Moss, and Ivy, and wild flowers. Every chink, every cranny, is full of verdure and graceful forms. Below, with many a flashing ripple, is a brook, and in and about it grow Osmunda, and Marsh Fern, and yellow Flags, Forget-me-Nots, and Water Lilies; while above are graceful Birch trees, and Willows, and silvery Poplars, intermixed here and there with the darker hue and sterner form of some Conifer. Or we may be in a grotesque garden, where grinning satyrs, yawning dragons, mocking monkeys, or their counterfeits in quaintly-shaped roots or rocks, amuse or astonish us. Here we are very likely to find a rockery glowing with the brilliant colours of the "alpines"—the flowers are individually small, perhaps, but they are pure and brilliant as a summer's sky. They grow in hummocks, and they often have quaint, stiff, formal leaves, assorting well with their surroundings.

Again, another type of garden is before us. It is in fragments like a puzzle, but each fragment has a definite purpose, and is devised for the fulfilment of that purpose. This plant, or this group of plants requires shelter, that demands full exposure; a light dry soil pleases this one, a rich deep loam is essential to that; a dry well-drained subsoil is necessary for the one, a stiff retentive one is the chosen home of the other. And so with the houses: in this type of garden they are small, they are numerous in all aspects, they are of all shapes, all heights. The temperature and humidity maintained in them vary proportionately. Each plant, be it Orchid or Fern, Agave or bulb, Palm or succulent, is carefully studied and noted to ascertain what are its requirements, and how they can be best fulfilled.

And then there are the gardens of the florist proper; he careth not for effect, for diversity, for harmony,—his purpose is a single one, and he pursues it singly. Absolute perfection in one thing, as judged by his standard, is what he aims at. Does a truss of Roses heedlessly appear on his budded Briers? All save one are sacrificed with as little or less compunction than is felt in the consignment of a litter of kittens to the nearest horse-pond. His Dahlias are carefully staked and shaded, flower-pots culminate on the top of the sticks, or perchance even a lobster claw forms the finial to the friendly staff, and serves to entrap the unwary earwig.

And then there is that which is assuredly not the least grateful of all gardens, the "nice little place," such as Mr. GARLAND and Mrs. GARLAND, with some aid from KIT, managed for themselves,—full of Roses, and Lilies, and Larkspurs, and Wallflowers, Polyanthus, and Sweet Peas, and we know not what besides; and a little greenhouse stocked with gay plants, and with room below the stage for wintering the bedding plants—

> "Who loves a garden loves a greenhouse too."

Here also is a tiny frame, to which the visitor is taken with pride to inspect the Auriculas and so forth.

And besides these there are the kitchen gardens, and the orchards, and the cottagers' gardens, and the ferneries, and the conservatories, the Pine-pits, the vineries, the orchard-houses and Mushroom-sheds—all possessing some features in common, but all bearing the distinctive impress of those who own or of those who manage them—a mark as distinctly characteristic of the individual and his tastes and proclivities as any that could be found. And so we might pursue the subject till we wearied the reader, yet always find each garden different from its neighbour. In spite of this never-ending diversity, we believe that there are but two great classes of gardeners. The gardens under their charge assume special characteristics, according as the owner loves his garden for the garden's sake, or cherishes it for the sake of the plants that are in it. There is no sharply defined limit between the two classes, the one merges into the other, each has some of the characteristics of the other, the sympathies of either are reciprocal.

And what a world of innocent pleasure all this opens up, what an amount of knowledge, forethought, skill, must be brought to bear by him who would be a gardener, even though his object be merely one of selfish gratification or relaxation. Happy ought he to be whose lot is cast in a garden.

WE last week devoted a few remarks to the subject of the next great country meeting of the ROYAL HORTICULTURAL SOCIETY, which, as we then stated, is to be held in 1872 at Birmingham. As in the course of the ensuing month a public meeting is to be held in that town for the appointment of the local committee —which, as we stated last week, promises to be a most influential and representative one—we revert to the subject of the social arrangements in connection with the Society's visit, because we feel that the influence which these movable meetings are calculated and ought to exert is not as yet, by any means, fully appreciated. Their avowed object is the advancement of horticulture; and in no respect can it be more beneficially furthered than by a judicious use of the opportunities which they afford for social intercourse between those resident in various parts of the country engaged in the practical pursuit of horticulture; and for the expression of opinions and the interchange of thought on the many debated points in which all are more or less interested. Hitherto, from a variety of causes, this aspect of these important meetings has failed in producing the results which some of the more sanguine amongst us not unreasonably anticipated. Let us hope that at Birmingham—a town not unfamed for its practical solution of social problems—the Gordian knot may be severed; and that the intellectual and social aspects of the question, as separated from the mere exhibitional and spectacular points of view, may meet with thoughtful and satisfactory consideration.

At the forthcoming public meeting we would suggest the appointment of a sub-committee, whose special province it shall be to make suitable arrangements for the social meetings of those who will be brought together in the midland metropolis in June next; and whose duty, *inter alia*, it shall be to consider and duly weigh the many suggestions which those who are interested will be certain to make on the subject in the columns of the *Gardeners' Chronicle*, or in those of other gardening journals.

There are really so many important topics which from year to year arise—our weekly Correspondence bears abundant testimony to the fact—about which difference of opinion exists, and which our practical gardeners are particularly qualified to discuss and elucidate, that the chief difficulty will be to select such as, on the one hand, may most claim consideration on the grounds of general importance and interest, while on the other avoiding anything approaching to too great a onesidedness. At the same time the opportunities for social intercourse, and for the ventilation of individual views are so few, that it is clearly false policy, and a very wasteful one too, to neglect or misuse those which do occur. We must confess to having great expectations as to the result of the Birmingham meeting next year; and that there may be no miscarriage for want of due pre-consideration, we invite such of our readers as are interested in the matter, and who have good suggestions to make, to communicate them through our columns without delay. Experience of what the deficiencies of former meetings have been will give practical value to such suggestions as are based on them. It will be well if those most concerned will at once address themselves to the expression of what it is they would have the Birmingham committee do, in order to add to and enhance the interest of these annual gatherings, by rendering them more popular, more generally beneficial, and a greater means than they have been hitherto of social intercourse between those who, by a variety of circumstances, have but few chances of meeting together.

—— We are pleased to learn from the 42d Annual Report of the Royal Horticultural Society of Ireland that the condition of the Society in question is encouraging and satisfactory, the Council being enabled, after discharging all liabilities, to invest a further sum of £1000 in Government stock, leaving a balance in the bank to current account of £68 5*s.* 6*d.* In revising the schedule of prizes for 1872 the Council has also made considerable additions both to their number and value; and has decided to discontinue the private winter exhibition of fruits, provision being made instead for a great public fruit show, to be held in October, which it is hoped will prove both publicly interesting, and of much practical value.

—— It has been definitely resolved that an International Fruit and Flower Show shall take place in Glasgow in the 2d week of September, 1872. At a meeting of gentlemen nominated to organise and carry out the undertaking, on Wednesday, the 22d inst., held in the Religious Institution Rooms, the Lord Provost in the chair, it was unanimously resolved that subscriptions to the amount of £1000 should be collected, and that a prize schedule should be issued forthwith, in which prizes to about that amount should be offered. The following gentleman were named to draw up rules and regulations, and to get up the schedule:—Messrs. James Anderson, Meadow Bank; Lant, Ardgowan; Methven, Blythswood; Graham, Garscube; Austin, of Austin & McAslan; Smith, of Smith & Symons, and Thyne 'McCallum, of J & R. Thyne, Glasgow. A committee was appointed to look out the most suitable place for holding a show of the character decided upon. The Botanic Gardens, and the Burnbank Drill Hall were specially named as suitable places. Sir George Campbell, of Garscube, and J. C. Wakefield, Esq., of Eastwood Park, urged the propriety of proceeding with the work in hand, which they and others heartily supported, as speedily as possible. The number of days during which the show should continue was, on the motion of the Lord Provost, remitted to the consideration of a sub-committee, which was to report to a meeting to be held on that day fortnight. The secretary and treasurer of the Glasgow and West of Scotland Horticultural Society—Mr. Frank Gibb Dougall and Mr. Hoggan—officiate in their respective capacities.

—— The 14th annual issue of the Garden Oracle is announced for publication next month. Mr. Shirley Hibberd still fills the post of editor, and promises some important novelties.

—— The Botanical Society of Edinburgh numbers upwards of 600 members—honorary, foreign, corresponding, extraordinary, associate, resident, and non-resident—of nearly every civilised nationality, and scattered over nearly every part of the world. Yet it may perhaps be held as a curious proof of the healthy character of the naturalist's pursuits, that at the recent anniversary meeting the President announced that he had not a single death to record among all these members for the last 12 months.

—— In a letter referring to that of our correspondent, "M. C.," on the Price of Vegetables, in our last issue, and comparing the prices quoted in our Covent Garden Market report with those received by the producer, "A Market Gardener," hailing from Kent, states that he calculates the latter tolerably accurately by taking the lowest quotation in our list of prices and dividing it by two, "which almost invariably gives the salesman's return to the grower"!

—— The Maximum Temperatures of the Air during the week ending November 18 ranged from 55°.8 at Portsmouth to 48° at Newcastle-on-Tyne, with a mean for the English stations of 51°.4, and for the Scottish of 51°.8. The Minimum Temperatures of the Air ranged from 30°.2 at Liverpool to 22° at Hull and Edinburgh. The present cold weather set in on the 2d of the present month, but the minimum temperatures did not go below 30° till the 11th, when 26°.4 was recorded. Since that day the minimum values have been as follows:—12th, 25°.8; 13th, 25°.9; 14th, 26°; 15th, 40°; 16th, 32°.1; 17th, 31°; 18th, 25°. The Mean Temperatures ranged from 39°.8 at Liverpool to 35°.2 at Hull, with a mean for the several English stations of 36°.9, and for the Scottish of 37°, thus showing a slightly warmer temperature for the northern country. Rain fell at all stations with the exception of Edinburgh, the maximum falls being 1.67 inch at Greenock, 1.18 inch at Liverpool, and 1.10 inch at Norwich. The mean fall for the English stations was 0.54 inch, and for the Scottish 0.44 inch. (See Mr. Glaisher's Tables, p. 1523.)

—— At the Westminster County Court on Monday last a case, important to Growers and Covent Garden Salesmen—Shrubsole *v.* Skinner—was heard, in which Mr. Cottman, solicitor, appeared for the defendants, the well-known commission salesmen of Covent Garden. The facts of the case were as follows:—The plaintiff, a grower at Sittingbourne, Kent, transmitted his goods to the defendants in baskets, 13 of which were never returned, and for the value of which the present action was brought. Mr. T. R. Skinner, of the firm of Skinner & Sons, commission salesmen of Covent Garden, stated that they were the defendants in this action; that it was the universal custom of the trade to supply goods to their customers in baskets without charge; that their expenses for baskets were nearly £1000 a-year; that their losses were estimated at nearly £500 per annum; and that it was not the custom for growers to charge for baskets not returned, as they were frequently lost and mixed with others, as in the present instance. Three of the baskets sued for had been returned since the commencement of the action. The defendants' manager, his porter, and a salesman were called to support the defendants' case, whose evidence was lengthy, but which proved that the custom of the market was, that baskets were trusted to the buyers without money being left upon them. After Mr. Cottman had cross-examined the plaintiff at considerable length, the judge (F. Bayley, Esq.), considered the defendants clearly entitled to a verdict, as the baskets appeared to him to be nothing more in relative value than the paper bags or fancy boxes used by confectioners, haberdashers, or others to send their goods home in. His Honor gave judgment for the defendants, and on the application of Mr. Cottman allowed the full costs of defendants' solicitor and of five witnesses.

—— The will of Lady Paxton directs that the sheet of blotting-paper on which the First Sketch of the Exhibition Building in Hyde Park was made shall be held as one of the heirlooms, and go with the family estates.

—— Sheet-zinc for Roofing is, in many respects, very useful, but hitherto it has not been found to be durable. The *Comtes Rendus* reports that M. Artus, of the Vieille Montagne Company, has introduced a zinc white paint, with silicate of potash as a vehicle, which is said to be exceedingly durable, and to keep the metal roofing very cool.

NEW PLANTS, &c., CERTIFICATED

AT THE ROYAL BOTANIC SOCIETY'S EXHIBITIONS, 1871.

*** B. C. *stands for Botanical Certificate of Merit;*
F. C. *for Floricultural Certificate of Merit.*

Acer polymorphum palmatifidum	Veitch, April 12	B. C.
Acropera sp...	Veitch, March 22	B. C.
Adiantum asarifolium ..	Williams, June 14	B. C.
,, Capillus - Veneris crispum .. .	Williams, May 25	B. C.
Æchmea Mariæ Reginæ..	Wendland, July 12	B. C.
Agave Bessereriana candida	Veitch, May 25	B. C.
,, festiva..	Veitch, May 25	B. C.
,, horrida hystrix ..	Veitch, May 25	B. C.
,, Kerchovei macrodonta	Veitch, May 25	B. C.
,, Ortgiesiana	Williams, June 14	B. C.
,, Regelii	Veitch, May 25	B. C.
,, Roezliana	Veitch, May 25	B. C.
Alocasia Marshallii ..	Bull, July 12	B. C.
Amaryllis Brilliant ..	Veitch, March 22	F. C.
,, Chelsoni	Veitch, March 22	F. C.
,, hybrida gigantea ..	Williams, April 12	F. C.
,, maculata	Veitch, March 22	F. C.
Amorphophallus spectabilis	Bull, July 12	B. C.
Anthurium Scherzerianum Dixoni ..	Bull, May 25	B. C.
Arenga Bonnetii	Bull, May 25	B. C.
Aucuba japonica luteocarpa	Williams, March 22	B. C.
Begonia intermedia ..	Veitch, June 14	B. C.
Bignonia Roezliana ..	Bull, July 12	B. C.
Bouvardia leiantha grandiflora ..	Standish, July 12	B. C.
Caryota truncata ..	Williams, May 25	B. C.
Coleus Favourite	Bull, May 25	F. C.
,, Lady Leigh	E. & J. Perkins, July 12	F. C.
Collinsia violacea ..	Thompson, May 25	B. C.
Croton Johannis	Veitch, May 25	B. C.
Cupressus Lawsoniana albo-pendula ..	Paul & Son, June 14	B. C.
Cycas elegans	Bull, June 14	B. C.
Cyclamen persicum Snowflake	Goddard, April 12	F. C.
,, persicum giganteum.	Edmonds, March 22	F. C.
,, ,, grandiflorum	Edmonds, March 22	F. C.
Cypripedium niveum ..	Bull, May 25	B. C.
Davallia clavata.. ..	Rollisson { March 22 July 12	B. C. B. C.
Dieffenbachia Bausei ..	Veitch, June 14	B. C.
Dioscorea retusa	Veitch, May 25	B. C.
,, spectabilis	Bull, July 12	B. C.
Dracæna amabilis ..	Veitch, June 14	B. C.
,, Liervalii	Williams, May 25	B. C.
,, magnifica	Veitch, May 25	B. C.
,, Mooreana	Veitch, May 25	B. C.
,, porphyrophylla ..	Veitch, May 25	B. C.
,, Wisemannii	Veitch, June 14	B. C.
Elaphoglossum Herminieri..	Bull, May 25	B. C.
Euterpe antioquiensis ..	Rollisson, April 12	B. C.
Ficus lanceolata	A. Henderson, March 22	B. C.
Fremontia californica .	Veitch, May 25	B. C.
Goniophlebium glaucophyllum	Bull, July 12	B. C.
Hippeastrum Leopoldii ..	Veitch, March 22	F. C.
,, pyrrochroum	Bull, May 25	B. C.
Hyacinth, Princess Louise (D. R.) ..	W. Paul, March 22	F. C.
,, Princess Louise (S. W.)	Veitch, March 22	F. C.
Hydrangea japonica speciosa	E. G. Henderson, July 12	B. C.
Ixora amabilis	Parker, July 12	B. C.
Lilium auratum virginale	Bull, June 14	B. C.
Linum campanulatum ..	Atkins, June 14	B. C.
Macrozamia Frazeri ..	Bull, June 14	B. C.
Malorteia simplex ..	Bull, May 25	B. C.
,, speciosa	A. Henderson, April 12	B. C.
Miltonia Warscewiczii ..	Williams, July 12	B. C.
Paullinia thalictrifolia	Veitch, June 14	B. C.
Pelargonium Blue Bell	Nye, May 25	F. C.
,, Cæsar	Nye, May 25	F. C.
,, Conquest	Nye, May 25	F. C.
,, Rubens..	Nye, June 14	F. C.
,, The Bride	Nye, June 14	F. C.
,, (Silver Tricolor) Mrs. Rousby	Turner, May 25	F. C.
,, (Tricolor) Alice Maud Mary..	E. G. Henderson, June 14	F. C.
,, (Bicolor) Bronze Queen .. .	E. G. Henderson, June 14	F. C.
,, (Tricolor) Gem of Tricolors	Kimberley, July 12	F. C.
,, (Zonal) Craven Fox	George, June 14	F. C.
,, (Zonal) Flame.. ..	George, June 14	F. C.
,, (Zonal) Polly King ..	George, June 14	F. C.
,, (Zonal) Virgin Queen	W. Paul { May 25 June 14	F. C. F. C.
Philodendron hybridum..	Bull, July 12	B. C.
Phormium tenax albo-variegatum ..	Bull, June 14	B. C.
Phyllanthus mimosæfolia	A. Henderson, May 25	B. C.
Polypodium vulgare cornubiense (Whytei)	Ivery & Son, July 12	B. C.
Polystichum angulare proliferum Marshallii	Ivery & Son, July 12	B. C.
Polystichum angulare pulchrum Bellairsiæ ..	Ivery & Son, July 12	B. C.
Primula Boveana	Veitch, March 22	B. C.
,, japonica	Bull, May 25	B. C.
,, ,, alba	Bull, May 25	B. C.
,, ,, carminata ..	Bull, May 25	B. C.
,, ,, lilacina ..	Bull, May 25	B. C.
,, ,, splendida ..	Bull, May 25	B. C.
,, sinensis, Waltham White	W. Paul, March 22	F. C.
Pteris serrulata cristata variegata..	Bull, July 12	B. C.
Ptychosperma regale ..	Bull, June 14	B. C.
Restrepia antennifera..	Williams, June 14	B. C.
Rhopala granatensis ..	Williams, July 12	B. C.
Rose, Climbing Victor Verdier	Paul & Son, March 22	F. C.
Selaginella sp. Japan ..	Veitch, June 14	B. C.
Tacsonia Buchanani ..	Parker, June 14	B. C.
Thalictrum adiantifolium	E. G. Henderson, May 25	B. C.
Thrinax elegantissima ..	Bull, June 14	B. C.
Tillandsia argentea ..	Rollisson, April 12	B. C.
Verschaffeltia melanochætes	E. G. Henderson, July 12	B. C.
Warscewiczella velata..	Bull, June 14	B. C.

JAMES BATEMAN, F.R.S.

Mr. Bateman has now for many years been known as an ardent and enthusiastic horticulturist—not so exclusively devoted to Orchids as might be supposed from some of his utterances, though truly they have been to him, so far as plants are concerned, the master passion of his life. They were not, however, his first love, for while still a very young man he took great interest in the cultivation of tropical fruits, and amongst other things succeeded in fruiting, at Knypersley, for the first time in England, the Carambola, Averrhoa Carambola, of which a coloured plate appeared in the Transactions of the Horticultural Society. Now and then there have been symptoms of a return to his first love, as happened a year or two since, when the Wampee, Cookia punctata, was exhibited at one of the meetings of the Royal Horticultural Society; indeed, it rarely happens that a tropical fruit of any kind is shown but that Mr. Bateman is stimulated by his old zeal to communicate the knowledge he possesses as to its history and cultivation. The allusion to this circumstance at once leads us to make mention of those pleasant lectures—lecturets as Prof. Henslow would have called them—which Mr. Bateman has been in the habit of giving at the Royal Horticultural Society from time to time for some years past, and in which he contrives to convey a great deal of valuable and interesting information in a pleasant gossiping style.

Now and then autobiographical details are interspersed in the most natural way with the remarks on plants and how to grow them. Thus many who read these lines must have heard how the exhibition of a coloured plate of Renanthera coccinea to Mr. Bateman awoke the latent passion for Orchids, and how the first Orchid was purchased—a plant of Renanthera—of Fairbairn, a nurseryman at Oxford, who had formerly been in the service of Sir Joseph Banks; and how, still doting over the glories of the Renanthera, Mr. Bateman, then a gentleman-commoner of Magdalen College, Oxford, incurred the wrath of the Vice-President of the College—no less a person than Dr. Daubeny, who subsequently became Professor of Botany in the University. The wrath of the Vice-President was occasioned by the fact that the rules which those *in statu pupillari* are bound to obey had been infringed by Mr. Bateman, as the charms of Renanthera proved a stronger attraction even than the architectural beauty of Magdalen, and detained the undergraduate beyond the prescribed period. The punishment awarded for this misdemeanor was not, as might have been expected, the compulsory eulogium in the choicest Greek iambics of the syren Renanthera, but took the shape of a command to write out half the Psalms, wherein, so far as we remember, no special allusion is made to any of the Orchid family.

Botany was at a very low ebb at that time in the University. Dr. Daubeny, who afterwards did so much for that and other sciences, had not then acquired the position and influence which subsequently he exercised with so much power and discretion to advance the cause of natural science. But although Mr. Bateman's botanical proclivities met with little encouragement on the part of his *alma mater*, they were more favourably regarded by others. Encouraged by his father's support and assistance, Mr. Bateman despatched a botanical collector, the late Mr. Colley, to Demerara and Berbice. An account of this expedition — one of the first of Mr. Bateman's contributions to horticultural literature—was published in "Loudon's Gardeners' Magazine." The results, however, of this journey were not remarkable, the Orchids obtained were few in number, and of no special beauty or interest. The novelties obtained were not numerous; to one of them, one of the ugliest as it happens, Dr. Lindley affixed the names of Batemannia Colleyi, thus associating the names of employer and collector. A short time afterwards Mr. Bateman made the acquaintance of the late Mr. G. Ure Skinner, then resident in Guatemala, and the friendship then inaugurated proved of the greatest service to the two persons most concerned, and promoted in no ordinary degree the knowledge of Orchids, and their diffusion among the cultivators of Europe. Thanks to the energy of Mr. Skinner, numerous Orchids were collected and introduced to our stoves, and abundant material placed at Mr. Bateman's disposal for use in his work on the "Orchidaceæ of Mexico and Guatemala," atlas folio, 1837—41. This work, in some respects the most remarkable series of plates ever published, demands a few words of notice at our hands, inasmuch as from its costliness and size, and the limited number of impressions struck off, it is not readily accessible to the majority of horticulturists.

It consists of a series of coloured illustrations, of life size, of a great number of species of Orchids, accompanied with descriptive details and cultural hints. It is worth while recording some of Mr. Bateman's axioms on this latter point. The plants, says he, can scarcely have too much light or too little sun. Take care of the roots. Beware of noxious insects. Give the plants a rest. Attend to the condition of the air; let it have on the average a temperature of 60° in winter and of 75° in summer. Do not over-water. These directions were written before the days of cool Orchid culture, to which, however, Mr. Bateman subsequently became a convert and zealous proselyte, as witness his lecture on cool Orchids before the Royal Horticultural Society in 1864. But to return to Mr. Bateman's *mega biblion*. The illustrations are accompanied not only with suitable descriptions and hints for culture, but with little scraps of gossip, if we may so call them—literary, scientific, archæological, or ethnological gossip, as the case may be, but in any case noteworthy for its elegant piquancy of style, and for the singularly felicitous choice of classical quotations. The humorous sketches and tail pieces of George Cruickshank also lend a zest to this in many respects unique publication.

JAMES BATEMAN, F.R.S.

During the progress of this work Mr. Bateman married, and by happy good fortune Mrs. Bateman shared her husband's love of plants and zeal in their culture. But while Orchids were the chief subjects of Mr. Bateman's regards, hardy plants occupied the first place in the regards of his spouse. Hence arose those gardens at Biddulph Grange and Knypersley, which have attracted so much attention from their artistic disposition, and the vast number of beautiful and interesting plants which they contained. Were we to tell of all the noteworthy features of the gardens at Biddulph Grange, we should require several numbers of the *Gardeners' Chronicle*. Those who would know of the Chinese Garden—a realisation in the garden of the Willow-pattern plate—the Egyptian Court, the Wellingtonia Avenue, the Grove of Sikkim Rhododendrons, the Bulb Garden, the Dahlia Garden, the Rose Garden, the Pinetum, the Stumpery, the Tree Pæonies, the Orchids of course, and a host of other things,—we would refer to the lengthened notices given in these columns in 1856, and 1862, by Mr. Kemp and Mr. Anderson. Suffice it here to say, in general terms, that by skilful arrangement of artificial hill and dale a wonderful diversity of surface was obtained, and a number of distinct sections parcelled out, each devoted to a particular purpose, as may be gathered from what has been already said. If this multiplication of parts interfered with the breadth and repose one looks for in a garden of such pretensions, it had the compensating advantage of affording endless variety at all seasons. Moreover, it enabled Mr. Bateman, as a true lover of plants, to place each plant, so to speak, in the place and under the conditions most suitable to its requirements. It would not be fair to infer that the art of the landscape gardener was entirely subordinated to the solicitude of the cultivator; rather let us say that the landscape gardener, in this case, did what landscape gardeners do not always do, study the welfare of the plant as much as the effect it produces. Some of the effects, from a landscape gardener's point of view, were strikingly beautiful, many quaint and grotesque. Had these latter been carried out by a person of less natural taste than Mr. Bateman, they would have degenerated into the cockney style. In Mr. Bateman's case there was the less risk of this as, in addition to his own good taste and feeling for the appropriate, he was aided by Mr. E. W. Cooke, the eminent painter, and, we may also write, plant lover.

The partiality for the quaint, we may incidentally mention, shows itself in the "Orchidaceæ of Mexico and Guatemala," where many a "quaint conceit" will be found, both literary and illustrative.

Unfortunately, however, the ungenial climate of North Staffordshire was as unfavourable to the health of Mrs. Bateman as it was unsuitable for gardening pursuits. Quitting, then, a spot which will always hold a very high place in the annals of horticulture, Mr. Bateman came some few years since to reside principally in Kensington, in close proximity to the Royal Horticultural Society, in whose fortunes he has always taken so great an interest, and in whose cause he has spared neither time, labour, nor expense. At the time of his removal from Staffordshire he gave proof of his attachment to the Society by presenting it with a portion of his collection of Orchids, which forms one of the most attractive features in the western approach to the Society's garden. Mr. Bateman has also for many years rendered material aid to the editors of the *Gardeners' Chronicle*—an assistance they are pleased to have this opportunity of gratefully acknowledging.

ARAUCARIA IMBRICATA.—No. I.

ACCORDING to my promise I will proceed to record some practical observations concerning the Chili Pine, which I hope may prove of use to those who, like myself, are seeking for knowledge, through the aid of your valuable journal. They may also interest some readers and amateurs who may not yet have had the opportunity of making practical observations for themselves. I have had such an opportunity, and this is my reason for throwing my humble mite into the treasury of practical knowledge, as a guide to others in forming their ideas concerning the useful and ornamental properties of this remarkable tree.

As every one knows, it is an evergreen, a native of South America, and as hardy throughout the United Kingdom as a Cedar of Lebanon; and if only it were judiciously and methodically planted, it would become a general ornament in our landscapes, since when maintained in robust health it looks well in sunshine or in shade—and that every day in the year. This statement may be said to require a good bit of explanation, and this I hope to give faithfully, as far as my powers of observation will serve me. It is stated that this noble tree grows on its native mountains to the height of 150 feet or more, spreading its branched wire-like roots over the rocks amongst the decayed vegetation (what little there is), and down into every fissure and cranny it can find, in search of food and moisture. The Araucaria forests are said to grow solely on the western declivities of the Andes, at from 1500 to 2000 feet below the snow line, and to be as bare of all other vegetation as our Pine plantations when 100 years old. Sir Joseph Banks, in 1795, brought home living plants raised from seeds sown on board ship by Mr. Menzies. He planted one in his own garden, and sent the others to Kew; and from Kew the first batch was no doubt distributed, some of the plants being still to be found in this country. One, a female, is, as everybody knows, still growing in Kew Gardens, and last spring, during April and May, when it was showing its cones, I watched their progress almost daily with much interest.

The Araucaria imbricata is normally diœcious, that is, there are both male and female trees distinct. It has been stated, and it was at one time generally believed, that there was some very considerable difference in the growth and foliage of the male and female plants, and that the male did not grow more than from 40 to 50 feet high, while the female grew from 50 feet to 150 feet, or more. This must certainly be a mistake, for I could never discover any distinction whatever to enable me to guess which was male or female by their manner of growth or from any variation of foliage, until cones or catkins were actually produced. I was fortunate enough to discover, amongst the many fine trees under my charge, the first male plant which produced catkins in this country, and by introducing the pollen to the fine female tree fully covered with its noble cones, I secured the first crop of seeds, and raised the first batch of plants obtained from English grown seed. These are well known facts, which were related years ago. The growth of the seed after fertilisation was extraordinarily rapid. Hitherto the male plants have proved to be the most numerous at Bicton ; as also in Lord Poltimore's garden in Devonshire, where there are some splendid female plants covered with cones, and a large number of male plants with crops of catkins.

Previous to the catkins having been produced in this country, it was asserted that they were teasel-shaped, and in so far as regards their hooked scales and their combing properties this is true, but they run from 4 inches to 8 inches in length, and curve like a cow's horn ; indeed they are about the size and colour of the cones of the common Spruce Fir, and when ripe hang down full of pollen, which is wafted about on a fine dry breezy day, so as to fill the atmosphere with the fine sulphur-coloured vivifying dust. The female cones are produced from the ends of the previous years' shoots, and mostly stand erect, none being pendulous. They are of an immense size. I have exhibited cones that weighed from 7 lb. to 8 lb. each, with a diameter of from 6 to 7 inches, and a height of from 8 to 10 inches. There must evidently have been some mistake in describing such a vast difference in growth and height between the male and female Araucarias. I have in the course of my tours during the last few years in various countries met with many male plants having catkins on them, but have seen very few females.

The finest Araucaria outside Bicton is at Poltimore, that is to say, the handsomest tree, a model in shape, thickly furnished to the base with healthy branches, having also height, and bearing cones. That there is at Kew a large female Araucaria imbricata is well known, but in this case the bole is naked a long way up, neither is the head very handsome. I have seen many splendid Araucaria trees scattered over the country that have not as yet proved their sex. Those at Dropmore, which I have not seen for several years, cannot be surpassed by any in the United Kingdom. There is a splendid symmetrically-grown tree at Sir T. Acland's, at Killerton ; a splendid male tree at Lady Molesworth's, in Cornwall ; also one at St. Germain's, and years ago at Redleaf ; besides noble plants at Chatsworth, Elvaston, and many other places which I need not particularise, but I will rather relate more fully my own practical observations. *James Barnes, Exmouth.*

(*To be Continued.*)

THE ÆSTHETICS OF ROCKWORK.

It is, perhaps, now advisable in continuing this subject (see p. 1326), to give what are, in the writer's opinion, the various forms in which rockwork should be disposed in the broadly defined geological divisions of this country.

England is, for its size, as we all know, remarkably rich in the variety of its strata. A line drawn across it from the Isle of Thanet to the Solway Frith cuts through almost every conceivable kind of rocks, the majority of which extend at right angles to this line in bands of greater or less breadth, according to the thickness and inclination of the beds of which they are formed. Any geological map of England will show this arrangement, but this, although very useful so far as it goes, does not satisfy the requirements of the rock-gardener, for many of these bands of country should, for his purpose, be classed together, the lithological characters of rocks of many distinct ages being frequently almost identical. Thus, all the grits and sandstones which are so useful to horticultural designers, appear at very many horizons, vastly different in the time of their formation as viewed by geologists, but entirely similar from our technical standpoint. The traps, basalts, greenstones, &c., may also be grouped together, and, as will be seen presently, they offer some very useful material in rockery building for certain special purposes. All the clays, again, of whatever age they may be, we may place together aside, in company with the innumerable soft shales and more earthy marls of every formation, as our most useless material ; likewise the various gravels constitute a class of material which skilful manipulation alone renders applicable to our wants.

The granites, porphyries, and gneiss may possibly be also grouped together with advantage to us ; but this is a point which the writer wishes to reserve. All those metamorphic rocks, again, which we roughly call mica-schists form a well-marked and useful division, as well as the hard shales and slates which abound in some parts of the country, and which, although scarcely ever used for the purpose, may be made, with taste and knowledge, to greatly enhance the picturesqueness of rockwork under certain conditions. Marls of the harder kinds may, in our present artificial classification, be looked upon as a subdivision of our last and largest group, the limestones. Under this head are included more than 50 varieties of rock, all of which are characterised by some striking peculiarities of colour, form, or texture, which render them specially fitted for the formation, or adornment of rock-gardens.

Having thus briefly enumerated the groups into which the necessities of the subject lead us to subdivide our English rocks, we may enter a little more fully into their respective capabilities as regards the formation of rockeries. We have placed the sandstones first on our list. These are all of the hightest importance to us, and are very widely spread : they are known to all, and to mention the localities in which they are met with would be a waste of time ; suffice it to say, then, that although in building up crags of grit, a true line of stratification should always be observed—that is to say, the blocks should be placed in their natural position, as they would appear in their quarry, not on their edges, or in any other monstrous manner—yet the lines of false bedding, to which sandstones more than any other rocks are subject, relieve with excellent effect the monotony which might be caused by the true bedding lines.

The effects of weathering on these rocks are well worth studying, as they can, with perfect accuracy, be made to assume the most fantastic and picturesque forms, always, however, remembering that the coarser the stone the more rugged the surface, and in many cases the greater is the tendency to disintegration—a property of these coarse grits which should be taken advantage of, by placing the more friable material towards the summit of the erection, so that the decomposed grit may be washed down by the rain into the nooks and crevices tenanted by plants, —to the soil feeding of which it is, in the majority of cases, highly beneficial. Again, the colour of sandstones is so variable, passing from white to the deepest red or even black through grey and yellow in every shade, and often within a few yards, that much may be done by a judicious assorting of the shades of stone and verdure to be found in one single rockery. In this, as in all cases of this sort, taste must direct the arrangement, and we can pretend to nothing more beyond suggesting those subjects of consideration which appear to us to be almost always overlooked. As a rule, however, we may say that, where it is practicable, the more flaggy sandstones should be but sparingly used, and, when used, only as adjuncts to more massive grits in the form of interbedded ledges of rock from which hanging plants may fall in fringes. In districts where the sandstones are interstratified with rocks of other kinds, such as the coal measures, for instance, very beautiful effects may be arrived at by reproducing such alternations on a small scale ; thus the writer has seen a fine built crag composed of two beds of sandstone of different shades, separated by a coal seam, being an exact reproduction of an actual section in the neighbourhood ; the contrast of colours, together with the creeping vegetation which clothed the whole, being very striking.

In the same manner it would be no violation of natural laws to introduce a mass of intrusive trap cutting through a crag of sandstone, and in this case the earthy character of weathered trap would enable the horticulturist to grow a number of rare rock plants which in Nature are absolutely limited to trap ranges ; the warm dark colour of the intrinsic rock and the weird forms characteristic of it making a fine contrast to the lighter rocks through which it would be made to cut. Trap used in this way, as an addition to other rocks, may be made much of, but alone, its sombre hue and stern bare lines have, in the writer's opinion, rather a sad and lugubrious aspect, which garden rockwork should ever seek to avoid, but which is only too often its most striking character. Before leaving sandstones, the writer would remark that nothing can exceed old quarries in adaptability to every requirement of rock-gardens, or rather, nothing could surpass them were they planned for the purpose, as in many instances they might be, without any trouble or expense. This is mentioned in conection with sandstone, because the only case of which the writer is aware where this has been done, is that of a large sandstone quarry at Belsay, in Northumberland, which was planned by the late Sir Charles Monck. The stone wrought out was used to build the whole of Belsay Hall, and the quarry is now a lovely winding rock-garden of great beauty, reminding one of a luxuriant Italian mountain pass, rather than of an abandoned stone-quarry in the chill North. The other rocks will be considered in a future paper. *G. A. Lebour, F.G.S., F.R.G.S.*

ON THE FRUIT OF YUCCAS:

And on a New Genus between Yucca and Aloe.

The last paragraph I wrote on Yucca, in the *Gardeners' Chronicle* (p. 1217, 1870) was, "There can be no doubt that the best distinctive characters in the genus are to be found in the fruits and seeds, but there is very little in print already on the subject, and no chance of investigating it further in this country on the living plants." Now, I am glad to say that an important paper on the subject has appeared, written by Dr. Engelmann, of St. Louis, who, living in the midst of the Yucca country, has attended specially to the genus for many years, and accumulated a valuable store of material, and no doubt knows far more about it than any other authority, past or present. As this paper is not in a place* where those of your readers who are interested in the matter are likely to see it, I send you an abstract of his observations.

In the first place he separates generically from Yucca, under the name of Hesperaloe, the plant about which I told what I knew at the time, under the name of Yucca parviflora, and about which Dr. Gray afterwards sent you a note, recommending that it should be taken out of Yucca and placed in Aloe, under which genus he has described it, after studying it in the living state, in the 7th volume of the Proceedings of the American Academy, p. 390. This is a most curious and interesting plant, and as it is an inhabitant of Texas, and is now in cultivation in the Northern States, there ought to be no difficulty in procuring it for English gardens. One of the objects of my writing to you now is to direct the special attention of our introducers to it. The following, then, are Dr. Engelmann's comparative characters of the two genera, as he now considers them :—

Yucca, Linn.—Perianth cup-shaped, of six whitish petal-like lance-oval acutish leaves, withering-persistent, longer than the six club-shaped filaments ; stigmas three, more or less united. Pod oblong or cylindrical, somewhat six-sided, three-celled, the cells incompletely two-celled by a partition from the back. Seeds very numerous, flat, horizontal, in six rows, black, with the linear straight or curved embryo, diagonal, as long as the albumen. Stems woody, fibrous, very short or rising into thick columnar Palm-like or branching trunks, bearing persistent rigid linear or lance-linear mostly sharp-pointed leaves, with smooth, rough or filamentous edges, and terminated by an ample compound panicle, or, rarely, a spike of showy pendulous flowers, opening wide in the evening, and half closed in the morning.

Hesperaloe, Engel.—Perianth cylindric, of six reddish petal-like linear obtuse leaves, united at the base, withering-persistent, the outer ones cucullate at the apex. Filaments from a broad adnate base subulate-filiform, of the length of the perianth, in the bud geniculate-inflexed below the lip ; anthers oblong bifid below, ovary ovoid, three-celled, several times shorter than the filiform style ; small capitate stigma exserted. Capsule three-celled, six-valved, with six rows of thin black horizontal Yucca-like seeds, with a linear diagonal embryo as long as the albumen. Corm bearing the Yucca-like filamentose-margined leaves, and a scape with the fascicled flowers in a spike or few-branched panicle. The leaves, pollen, and seeds, are those of a Yucca, the perigone and capsule those of an Aloe, the filaments being adnate at the base, and geniculate upwards, resemble those of an Agave.

Next Dr. Engelmann divides the genus Yucca into two sections, Euyucca and Hesperoyucca, the latter devoted to Y. Whipplei of Torrey, a plant only known in England by very incomplete herbarium specimens. The following are his characters of these two sections :

Euyucca.—Filaments club-shaped, obtuse, papillose-pubescent, mostly shorter than the pistil, often spreading or recurved ; anthers oblong or sagittate ; ovary prismatic or subcylindrical, obtuse or narrowed into a sort of style ; stigmas elongated, bilobed, papillose.

Hesperoyucca.—Filaments thickened upwards, acute, smooth, mostly longer than the pistil, erect ; anthers broader than long ; ovary ovoid, the slender style tipped with a broad, short two-lobed stigma, bearing numerous filiform papillæ.

This Yucca Whipplei, which was first noticed by Torrey in the "Botany of the Mexican Boundary," is spread from Arizona to the mountains and coast ranges of Southern California. It is described as having a short caudex, a rosette of rigid but often falcate leaves, reaching a foot and a half in length by half an inch broad, margined with teeth like those of Y. aloifolia, a panicled inflorescence, flowers varying from 1¼—3 inches long, and a small dry ovoid or obovoid blunt capsule splitting into three loculicidal valves, so that till it flowers it may easily be passed over as a narrow-leaved variety of Y. aloifolia, of which there are so many forms uncultivated.

Lastly, Dr. Engelmann separates Euyucca into three groups, founded on the character of the fruit, as follows, viz. :—

1. *Sarcocarpa.*—Pendulous fruit, fleshy and indehiscent ; thick seeds, somewhat rugose, with deeply-lobed ruminated albumen.
2. *Clistocarpa.*—Fruit indehiscent, at last dry ; seeds thickish, smooth, with entire albumen.
3. *Chænocarpa.*—Fruit erect, dry, septicidally three-valved from the apex, the valves at last again divided at the tip ; seed very thin, smooth, with entire albumen.

Divisions 1 and 2 are both numerously represented by species and forms ; but, as Dr. Engelmann's paper refers only to Nevada and Utah, he does not here enumerate them in detail. Of Sarcocarpa, the only representative is a plant of which we know absolutely nothing in England, the Yucca baccata of Torrey, which extends from New Mexico and Colorado to California and Mexico proper northward, almost acaulescent, but becoming a low tree in the southern part of its range. It has very thick, rigid leaves, 1½—2 feet long by 1¼—2 inches wide, and copiously panicled flowers, varying from 1½—3 inches long. The fruits are quite fleshy, sweet and eatable, and are often called "Dates" by the colonists.

This will probably stand as a final settling-up of the general plan of classification of these plants. Cultivators and those interested in the genus in this country, please take note of the fact that, out of the five groups, only two are known yet on this side the water in cultivation, and that three, all growing in easily accessible regions, are yet to introduce. *J. G. B.*

CRAWFORD MARKETS, BOMBAY.

Among the many curious and interesting sights open to the stranger in Bombay, there is none more interesting than the Crawford Markets (fig. 327). These buildings enclose a large square, and are devoted to the sale of almost all that is necessary as food for man. Here the cooks and butlers throng, and of fish, flesh, fowl, and fruit, a good supply is offered them. The markets have all been erected within the last few years, and each has been designed for its particular trade; but the one on which most favour has been lavished, one may say, both by Nature and Art, is that which we are most interested in—the fruit and vegetable market. As we get down at the porch, we hear the busy hum of bargaining crowds, and as we enter, the picture that opens to us beggars description. We are in a large iron building, something like a metropolitan railway station. In front is a beautiful drinking fountain, and on either hand stretch the lines of stalls. To the right they are loaded with fruit and flowers; to the left, with vegetables.

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* I do not know myself yet where the paper is published, having only a separate copy of this particular paper, which is simply headed "Appendix, p. 497."

Let us turn to the right. Here are three lanes running lengthways down the building, with stalls on either side. The lanes are crowded with buyers of as varied race and appearance as the fruits that are offered. Here a Parsee butler is culling the finest for the table of some rich fire-worshipper; there a tall ebony-faced African is haggling over the price of a dozen Plantains. Here the "mild" Hindoo is buying the Plantain leaves that will serve as plates at a feast; the Kutchee Bunia, who not only eschews animal food, but will eat nothing that grows under the soil; the British Jack Tar, the tall grave Arab, the fair European lady and her sable sister are here—every one wants fruit. As we press through the motley crowd we are pressed, in a mixture of English and Hindostanee, to buy, but we don't buy much; we see what can be bought, and learn the prices:—Grapes, 6*d.* per lb.; they are a small white Grape, sweeter, but not so good looking as we get at home for 10*d.* to 1*s.* per lb. Cabul Grapes are generally plentiful, but are not to be seen now; they are a large, white, oblong berry, of delicious flavour; they come to market in little boxes, with the berries laid out separately in cotton wool, and usually sell at about 1*s.* 6*d.* a box of 100 berries. Oranges, 2*s.* a dozen; Pine-apples, 3*d.* each; Bananas and Plantains, 2*d.* to 6*d.* a dozen; Peaches and Strawberries are to be seen occasionally, but are out just now. The stalls are about 3 feet high; underneath is a small store, and above the dealer sits squat among his wares, while behind, on a strong iron railing, hang the grand bunches of Bananas, some of them half a hundredweight.

Here are the flowers. Roses, 6*d.* a hundred; they are gathered without stalks, and strung into garlands, that are worn on festive occasions: their fragrance is delightful. Bouquets of Jasmine, white and red Oleanders, Hibiscus of sorts, a pretty Poinciana, and Allamanda flowers, made up in the showy bracts of Poinsettia pulcherrima and the leaves of Croton longifolium, rival, in brilliancy of colour, at least, if not in tasteful arrangement, the products of Covent Garden; the best may be had for 3*d.*

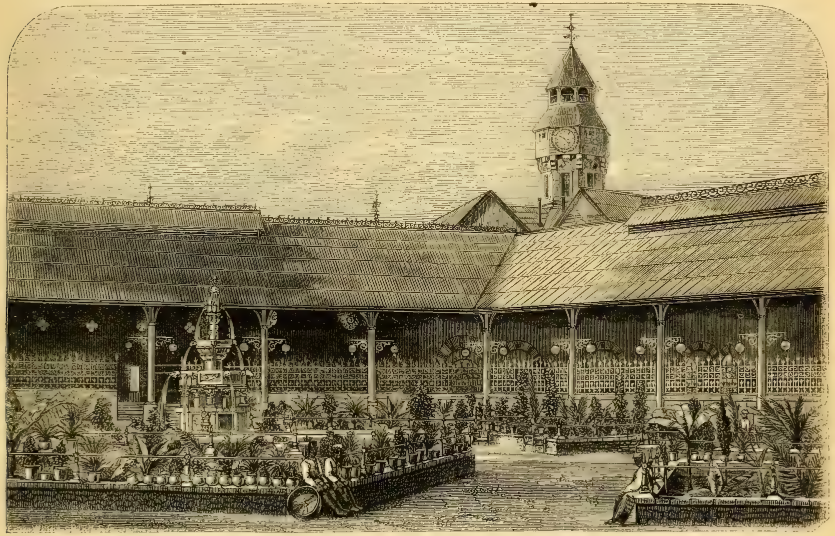

FIG. 327.—VIEW OF INTERIOR QUADRANGLE OF CRAWFORD MARKET, BOMBAY.

Vegetables are in great force; they are almost all European sorts, and a great host of Eastern ones are to be had. Of European sorts, Asparagus, Broad Beans, and Seakale, are absent; the two former can be grown, but don't pay.

Cabbage, Cauliflower, Kohl Rabi, Turnips, Carrots, Peas, Vegetable Marrows, &c., are plentiful, and sold at about the same price as in London. Here is the wonderful Radish that created such a sensation in London a few years ago: the unripe pods are selling at 1½*d.* per lb.; and the Dudia, with a striking resemblance to the "new species of Cucumber from China," that we see advertised at 3*s.* 6*d.* per seed; it is a delicious vegetable, and is offered at 3*d.* each. Cucurbitaceæ are in great variety, from the Dudia, a fit load for a man, or the Snake Gourd, 5 feet long, to the Gherkin, the size of his finger.

Cocoa-nuts are 1*d.* each, Betel-nuts, the fruit of the Areca Catechu, 6*d.* per lb. Tarwara, the albumen from the fruit of Borassus flabelliformis, is a mawkish, tasteless fruit (at least, when uncooked), but it is in great demand. Seedlings of this stupendous Palm are offered, and are said to be a delicate vegetable; these, with Dates, in the dried fruit department, are all which the Palm tribe supplies here.

The division of labour seems perfect, for here are the dealers in pot herbs and small salads; Mint, Thyme, and Parsley are plentiful, with Mustard and Cress in perfection. Then comes the herbalist; he has leaves of Calotropis gigantea, for sores, the flowers for affections of the eyes; Euphorbias, for cough mixtures; Datura leaves, for reducing swelled glands, Lemon-grass, for fevers, and many others.

On the other side are the dried fruit stalls, with the same variety and prices as in London.

Outside, but close at hand, is a long iron shed, divided by partitions, where the dealers have their stores, and above the porch is a clock tower, with the superintendent's house, the bazaar office, wholesale business rooms, &c. In reviewing the whole, it is hard to say which is most striking—the grand proportions of the building, or its minute adaptation for its intended purpose; the noble iron columns supporting the roof—high enough to afford fresh air to the thousands of buyers—or the spotless pavement they tread. The building covers 56,600 square feet, cost £41,550, and yields an income of 10 per cent. on its cost. Certainly the arrangements bear the mark of a master mind, and the name of the "Crawford" Market is a fitting tribute to its possessor, the Municipal Commissioner of Bombay. In any city a good supply of fruit and vegetables, sold in a well kept building, is a matter of great moment, but in Bombay, where a great part of the population are strict vegetarians, its importance can scarcely be conceived. The space enclosed by this and the other departments is nicely laid out and planted with Bananas, it has a large fountain in the centre, and all round are plant dealers offering flowering and foliage plants in great variety. Time forbids us looking in on the other departments just now; they and horticultural matters in Bombay will form the subjects of other letters. *G. M. Woodrow.*

Home Correspondence.

Variation of Trees.—One or two things touched on in your leader of last week are well worthy of the attention of such of your correspondents as may be qualified to enlighten us thereupon. As to the peculiar type of variegation in a seedling Abies Douglasii tree at Castle Kennedy, described in your leader as being so white that "at a distance it might be mistaken for a white sheet, or a white Hawthorn in luxuriant bloom," I have to mention that I have seen an Abies Douglasii, when on a visit to Mr. Patton, at his residence of Glenalmond, and of which he presented me with a specimen, now 4½ feet high. The tree is not so absolutely white as a sheet, but in June it might be mistaken for a Hawthorn in flower. As with Lord Stair's tree so it is with this. As the season advances the green gradually begins to show itself, running from the bottom to about half way up the leaves, which, with me, are never wholly green, the tips remaining white or pale throughout the winter, at least so much so as to make it easily distinguishable from those of the normal type. It is farther, like Lord Stair's tree, in excellent health, notwithstanding it has with me borne much bad treatment by frequent shifting. Neither does the variegation suffer much, if at all, by any soil it may be put into. It was in this particular I had most fears for its permanence, inasmuch as the Glenalmond soil was fertile in variegations. Mr. Patton had further a seedling Pinus sylvestris, of which he also presented me with a plant, which was light in summer and green in winter. This I have lost. He had also a finely variegated Spruce (Abies excelsa), and several other variegated things, of which I do not now remember the names. I entirely concur with you that this periodical type of variegation cannot be ascribed to ill-health, but I cannot assign any other legitimate cause for it, unless, perhaps, it may arise from some peculiarity in the soil on which such seedlings are raised, from containing, it may be, a superabundance of alkali; but then one would think that, being transplanted to a different kind of soil, the variegation would cease. But this Abies, growing with me in a light sandy soil, so different from that of Glenalmond, which is a light, gravelly loam, proves it is indelible, for I have had the tree about five years, and there is no change upon it. Those white spots on Mr. W. Maxwell's Oak tree are not less difficult to account for. I have had such shoots often on variegated-leaved seedling Pelargoniums, which, when less familiar with their occurrence, I tried, but in vain, to strike as separate plants, but I was soon taught to know that no life could be maintained in them after being detached from the parent plant. It occurs to me, however, that such life might be preserved by grafting or inarching; and might not this be a pretty experiment to bring out variegation on the plant made use of as the stock? Those white shoots on Mr. Maxwell's Oak by like engrafting might produce a like result; I do not mean similar to the albino form, but a more equable, and hence more elegant, diversity of colour. Altogether, this is a subject on which you do well to invite those who can enlighten us to do so. For myself, I have no pretension to do more than notice instances, and humbly to endorse your call. *I. Anderson Henry.*

Hardiness of Abutilon Thompsoni.—Many will feel interested in Mr. Lamb's communication, also noticed in your leader, of the hardihood of, and the beautiful effect produced by, Abutilon Thompsoni planted among Evergreens. I have hitherto regarded this as a plant for the intermediate house, if not for the stove. Instances, too, are recent of its variegation being imparted, by the operation of grafting, to kindred species in the normal state. I have myself been trying my hand to produce the same result, not by ingrafting but by hybridisation. In this cross A. Thompsoni was the male and A. vexillarium the female parent. I have plants of it now ranging from 9 to 18 inches high, but only one of them, as yet, has shown a tendency to take after the male parent, which it does in a decidedly lighter green foliage, with a few pale spots upon the leaves. I may observe, by the way, that the affinity of these species is not very strong, at least I infer this from the few seeds obtained from the cross (only four), and their obstinacy to vegetate. For while they were sown in December, 1869 (?), the first sprung only in November following, and the others in March, April, and June, 1871, respectively. But as some compensation, it is worthy of notice that the earliest is already showing bloom. While at one time I regarded all these variegations as due to disease or ill-health, and no doubt a large proportion of them are owing to this cause, yet many have it in their nature, and are as vigorous in health as any are in the normal green state. A remarkable illustration of this occurs in the Kale, which a lady in my neighbourhood (Miss Hope) if she did not originate contributed largely to bring into notice. I have seen these take on almost every tint and dye of the prismatic spectrum, and yet all were in the most perfect health. Is it in the sun? is it in the soil? or in what else is it? since disease can only account for a portion of these variegated things. *Ibid.*

The Effects of Snow on the Douglas Fir.—There is in the grounds here a very fine specimen of the Douglas Fir, nearly 90 feet high, and over 9 feet in circumference at 3 feet from the ground. During the time I have known it, viz., five years, it has not in any way suffered from snow, though I am informed that when younger it suffered on one or two occasions from that cause. The leading shoot has been broken once, otherwise it would have been higher than at present. I should be glad if any of your correspondents would inform me, through your columns, if they have been able to procure fertile cones from this Fir. The tree here has quantities of cones on every year, but we have been unable to procure any seeds from them that would grow. *Gardener, Hackwood Park, Basingstoke.*

Pelargonium crispum.—For general decoration we have not a more useful plant than this little gem of a Pelargonium. As plants, we find it most useful in small pots, 2-inch and 4-inch. Being very sweet-scented, it is nearly worshipped here in the boudoir and other rooms. As a backing for a bouquet, it is superior to Myrtle, and equal to the small-leaved Myrtle for a button-hole flower. *H. Knight, Floors Castle.*

Loranths *v.* Nux-vomica.—In the interesting quotations from Mr. Scott's remarks in the "Journal of the Agricultural and Horticultural Society of India." I see that it is supposed—though the supposition seems to be based only upon unsupported native testimony—that some parasitical Loranths possess the power of abstracting from their foster parents in a remarkable degree the peculiar attributes they are known to be possessed of. As, however, this subtle attribute, known to be possessed by the Nux-vomica, is suggested to belong to the leaves of a parasite grown upon it, may I ask whether any one conversant with the subject can inform us whether the leaves of Strychnos Nux-vomica themselves possess the same remarkable properties as do the seeds, the properties of which are so generally known? I cannot help thinking that this is where the native mistake is made; if not, the subject is such as to demand earnest attention in a physiological point of view. I should also like to ask whether anyone has ever attempted to inarch any of these parasites upon such trees as are known to be efficient foster parents, the Mistleto to boot. *William Earley, Valentines.* [We are not aware of any analysis of the leaves of the Nux-vomica. No doubt they would contain to a small extent strychnine. EDS.]

Artichoke Galls.—Mr. Murray (at p. 1422) explains that the insect which I have called Aphilothrix gemmæ, is better known as Cynips gemmæ (Lin.). Whether it is really so well known as this passage implies we shall see presently, but has Mr. Murray really considered how my reply would have read, if, as he proposes, the word "Cynips" had been substituted for "Aphilothrix?" It would have read,—"caused by the puncture of a female Cynipideous fly, called Cynips gemmæ (Lin.)." Let us now examine why I said "Cynipideous" fly, called "Aphilothrix gemmæ." The old Linnean genus, Cynips, used to comprise, in Linné's time, real Cynipidæ or gall-makers, inquilinous Cynipidæ or guest-flies, parasitical Hymenoptera of various other groups, Tenthredinidæ or gall-making saw-flies, Cecidomyidæ or gall-midges, one and all of which were once entitled to the generic name of "Cynips." But modern research has divided the party, and has assigned to each set of members its own place in the system, one incongruous set of members has even been placed into a different order of flies, namely, among the Diptera. The terms "Cynips" and "Cynipideous" have been restricted to designate only the first two groups I have mentioned above, and subsequently the term "Cynips" has been further restricted to the sole use of some of the members of the first group. It has, however, been found out lately that structural differences exist even among the species of the restricted genus "Cynips" to such an extent as to necessitate its further division into subgenera, one of which is called "Aphilothrix," and to this the real Cynips gemmæ or maker of the Artichoke gall belongs. According to the rules of nomenclature its name is therefore now Aphilothrix gemmæ of Linné, unless we tolerate the subsequently created name of C. fecundatrix of Hartig for it. Now my friend Mr. Murray knows these facts as well as myself, but he prefers to call the insect a "Cynips," long after it has been shown that this term has been formerly used to designate a heterogeneous mass of ill-understood insect forms of different families and even of different orders. I dissent from him on this point; it is the latest well-grounded results of science which ought to be given to an inquirer, not the views of a century ago. Mr. Murray further finds fault with almost every statement of mine concerning the natural history and injurious nature of Aphilothrix gemmæ. But, to my surprise, the only authority he quotes in support of his views is precisely the one he ought to have been careful to leave alone, if he wishes to see his ideas entertained. Mr. Murray writes:—"Linnæus, at least, who gave the insect its name, did not look upon it as a denizen of the acorn, but of the bud. He called it Cynips gemmæ, not Cynips glandis—the gall-fly of the bud, not the gall-fly of the acorn." I can but infer from this that my friend Mr. Murray is not acquainted with the worker of the Artichoke gall, nor the perfect state of the gall itself. Linné knew only the outward appearance of the gall, and has sketched it in a few happy touches of his pen. It is true he quotes Réaumur's plate 43, vol. iii., where the acorn-cell is well figured, but Linné did not know the real Cynips; his description of the insect [omitted for want of space. EDS.] refers to some parasitical Hymenoptoron. Now, if Mr. Murray knows the maker of the Artichoke gall, how is it that this glaring discrepancy between the Linnean diagnosis and the looks of the real gall-maker has escaped his experienced entomological eye? I explain Mr. Murray's silence on this head by the supposition that he has never bred Aphilothrix gemmæ, although he suggests to others its proper name. However injuriously Aphilothrix gemmæ acts, and however abundant it may be, the insect is very difficult to get hold of. I have the word of the first hymenopterist among us that he has bred it, and, after years of trial, I have bred it myself; but Mr. Murray's paper shows that he himself does not know the insect. What is the explanation of this mystery? I am not the first who explains it, and if Mr. Murray had taken the trouble of reading the literature of the subject before rushing into print, the works of Hartig, Schenck, Mayer, von Schlechtendal, &c., would have solved the riddle for him. Even without consulting foreign authors Mr. Murray could have found all he requires in a paper published by the Rev. T. A. Marshall in the "Entomologists' Monthly Magazine," vol. iv., p. 8. He might have read there that Linné's insect belongs probably to Synergus, a genus of the parasitical Cynipidæ; he might have read further, that for this reason the later name of C. fecundatrix of Hartig has been retained by Mr. Marshall; he would have ascertained that Mr. Marshall did not possess a specimen of the real Aphilothrix gemmæ; he would then probably understand why I chose to eliminate the generic name Cynips, and term the maker of the Artichoke gall Aphilothrix gemmæ, under which name it is now generally known abroad. Linné called his insect Cynips glandis, Cynips Quercus gemmæ, the gall-fly of the Oak bud, because he only knew the gall in that state when the acorn, instead of growing to a maximum length of 5 millimètres and serving as the larval cell of the real gall-maker, remains in such an abortive state as to be almost obliterated or scarcely recognisable. In that state of the gall the basal part of the foliaceous cup will be found to be harbouring one or several inquilinous insects, whose presence effectually stops the growth of the acorn, or if the acorn does at all put in an appearance, a parasitical larva is found to be feeding on the Aphilothrix larva within, in which case the acorn is scarcely ever more than 2 millimètres in length and very often distorted. I must not waste time and paper in further explanations, and must abstain from further remarks on the nomenclature of either the maker or its parasite. I feel sure Mr. Murray will forgive me, if under the circumstances I decline most respectfully to continue to discuss this subject with him. Sound theories can only be built up on the basis of well grounded biological knowledge, and we have seen that my friend moves still in the Linnean era as regards his acquaintance with the Artichoke gall and its inhabitants. *Albert Müller.*

Bees Combing Outside Trees.—I am much annoyed by bees suspending their combs on the outside of trees in every good honey season. I keep my bees in straw hives placed in a bee-house with closed front. When the hives get very full of bees, and the weather is warm, the bees very frequently build their combs, filling them with the purest honey, in the corners of the bee-house, where it is not only very difficult to take their store, but the exposure draws wasps and hornets, and often causes fighting amongst the stocks. To avoid disputes, I usually give up to the bees that which I find it dangerous to rob them of; but by having made my front movable on hinges in another house, I have deprived them of the quiet corners of which they availed themselves. *J. E. Gray, Wembley Park, near Harrow, Middlesex, Nov.* 17.

Cedar of Lebanon Seeding.—I have a few trees which were good-sized at the beginning of this century, and which perfected their seeds in the autumn of 1869. I first became conscious of this fact by finding a considerable number of self-sown Cedars coming up among my shrubs, many of which I took up, and now have growing in nursery beds. This drew my attention to the trees, from which I gathered some cones; and on telling Mr. Barron that I had found many good seeds in a cone (upwards of 80), asked his advice as to the best time to sow them. His reply was, "Try the seeds you have taken out, but for the future let the seeds remain in the cone till you are ready to sow them, for which April is the best month." I have found his advice correct. I still have a cone of that date left, which is at your service; and I have now on one of my trees some brown cones fully ripe and opening, others much younger, which are quite close and greenish, and also innumerable catkins. *J. E. Gray, Wembley Park, near Harrow, Middlesex, Nov.* 17.

—— I beg to inform Mr. Earley that about 24 years since a fine large tree of the Cedar of Lebanon had, in the course of alterations, to be cut down at Ampton, near Bury St. Edmund's. It bore a heavy crop of fine cones, some of which I had broken up and the seeds secured, and they ultimately vegetated freely, producing a batch of upwards of 1000 healthy plants—the greater portion of which, however, unfortunately perished during the severe winter of 1860, when about 3 or 4 feet in height. I have just measured one of the few survivors, and find it to be upwards of 24 feet high. *P. Grieve, Culford, November* 15.

—— There are some hundreds of Cedars here, and many of them, it is said, were planted 200 years ago [?]; all of them are now producing good seed. In November, 1869, I gathered a large quantity, and sent one cone to the Editors of the *Gardeners' Chronicle*, and many others were given to friends at the same time: but I have never heard the result. I sowed a quantity of the same seed, and have now some 150 trees. There were no cones produced last year, but this year there is a great quantity. If Mr. Earley would like to have some cones when ripe, I will send him some. A specimen of Pinus excelsa here has also produced cones from 9 to 10 inches long, containing good seed. I do not know whether this is uncommon or not. *J. Chapman, The Gardens, Kingston Lacy, Wimbourne, Dorset.*

Magnolia conspicua Fruiting.—I have enclosed for your inspection two seeds of Magnolia conspicua as picked from the tree this morning, also a seed out of the husk picked a week ago, and placed in a mean temperature of 65°, the result being the cracking of the husk and release of the seed. So that properly speaking the seed was not perfected "out-of-doors" in this country, unless you consider those sent in husk to be sufficiently ripe to be perfect. I have some 25 seeds in all. *George Palmer, Carclew, Penanarworthal, Cornwall, November* 14.

Seedsmen's Assistants.—The well-timed remarks of "An Assistant," in your impression of 11th inst., will, I trust, be taken into consideration by all who noticed them, and are in the habit of ordering seeds—that each may use his influence to lessen the long hours of arduous labour entailed on the seedsmen's assistants. In my experience I have always found that orders come in very slowly during frost, the consequence being an influx with the open weather, thus causing considerable hurry, longer hours, more fatigue, and, as a result (even with the utmost care), mistakes that at times cause much annoyance; these, however, are often traceable to the indifferent way in which the orders are made out, sometimes so as to be almost unintelligible, mixed up in the form of a letter, and in many other outlandish ways, rendering correct execution almost an impossibility. Seedsmen might, in many instances, improve their internal working arrangements, and reduce the hours of the "busy season" by making up in parcels many sorts of seeds during the month of December; but no rule could be laid down, as different businesses have different requirements, accommodation, &c. Probably all that the consumer can do is to send his order early, written distinctly, and with full instructions. If the following simple rules were followed, a mutual benefit would accrue to buyers and "assistants," the former in having his orders better attended to, and the latter in having more time for rest or relaxation than is afforded after 16 or 18 hours' daily toil, for three or four months—which is very trying, even to strong constitutions:—1. Take the first opportunity, after receiving the catalogue from which selection is to be made, to draw out and send in the order, that it may be carefully executed, and the seeds will be at hand when required. 2. If the catalogue is accompanied by a printed "order list," use it in preference, and in any case write legibly. 3. If a list is written, let the names of the various articles be written in columns, one only on a line, and mark the quantity required distinctly, opposite each. 4. Be particular to name the most convenient railway station, for where the postal address only is given packages are apt to be wrongly sent. 5. Affix signature, state on whose account the goods are to be supplied, and give full postal address to facilitate communication. Sometimes these particulars are omitted causing orders to remain entirely unattended to, while the seeedsmen are no doubt being blamed. *Industria.*

Coleus Tryoni.—A number of inquiries having been put to me of late, as to whether Coleus Tryoni is still maintaining its original character as to markings and colours, I wish to inform the inquirers and the public generally, through the *Gardeners' Chronicle*, that it is most certainly keeping true, and that the plant exhibited last August at the Horticultural Society's meeting, good as it was, is now, fairly speaking, in the shade when placed beside plants propagated from it since it came back from London. I may also say that the entire stock, 16 in number, has not yet been offered for sale, and unless disposed of before the coming spring meetings, it will most probably be then exhibited again. *John Guildford, Loddington Hall, Leicester.*

Growing Shallots from Seed.—I first grew Shallots from seed in 1868, sowing the seed the previous autumn, and transplanting in March. I had bulbs about 2 inches across, but leaving England at the end of the year, and being absent for two years, I have had no chance of experimenting, and this year my seed crop failed, owing to the bulbs rotting from mildew. As we get large Onions from autumn sowing, why not larger Shallots, if it is size that is required? *T. Frances, Emsworth, Hants,*

The Walcheren Cauliflower.—I have found the true Walcheren Cauliflower to be the very best of all varieties for the summer and autumn supply. When three sowings are made, one early in the spring, and two in the course of the summer, arranged so as to meet the consumption when greatest, I have always found this variety to be depended upon better than others to stand either wet or dry seasons. Veitch's late Autumn Giant Cauliflower I have likewise grown this season, and have had the heads very large and fine, and with the Walcheren there is really no occasion for gardeners to grow any other varieties. In the seedsmen's catalogues we find London Early Market, Asiatic large and late, Frogmore early forcing, Stadtholder, Dwarf Erfurt, Mammoth, Lenormand's, and others, which might all be discarded with advantage to the pockets of purchasers. The Continental dwarf varieties of Cauliflower are no better, if so good as an old variety named Squibb's Dwarf. *William Tillery, Welbeck.*

Indian Loranths.—I think I some time ago had something to say in the supplementary way about the above plants, and, if my memory serves me aright, I mentioned that the Peach and the Citron were both trees of which two or three of the species were very fond. I mentioned these plants because they may be found in many gardens of a size suitable for the growth of Loranths. If I did not mention it before, I may now add that Rhododendron nilagiricum (arboreum?) is a great favourite of one species. I think the greatest success will attend the introduction of the kinds from high elevations, because plenty of trees are ready to hand upon which to grow them, large "stove" trees being more rare. I do not mean that large trees are absolutely necessary. I would advise any one attempting to introduce Loranths to gather the seeding branches, and pluck off the leaves (as they might ferment and get mouldy), retaining the berries in as perfect and unbroken a state as possible, so that the glutinous matter may be preserved, and packing the branches in a rough box with sand, pounded bricks, or charcoal. Looking to the fact that a parcel may be received through the post or otherways) in a month or less from the date of packing, there ought to be little difficulty in at once setting to work at the experimental cultivation of Loranths, and parties having orchard-houses and conservatories should at once communicate with friends (if they have them) at elevations of from 5000 feet upwards in Southern India, and from 4000 feet upwards in the North, to send them a case of unbroken Mistleto seed, and upon receipt stick it about the branches of such trees as they may learn are suited to its growth. *James MacPherson.* P.S. The packing case should have air-holes in it.

Soot Water.—With pleasure I answer "S." (p. 1428), and in order to do so as briefly as is compatible with clearness, I will give my *modus operandi.* The vessel in which I made my soot-water was an old boiler, holding 50 or 60 gallons of water. There was a pump close by, and a peck of lime was at hand, and enough of soot passed through a fine sieve to fill a 4-gallon watering can (a bucket would be better). In this can I gradually and thoroughly mixed the soot with water, nearly filling the can, and then poured this mixture into the old boiler, filling that up with water from the pump, taking good care that there should be no lumps, but that the soot should be very evenly mixed in the water. Then I gently pushed all the scum off the surface with a new besom, and had the lime sifted over the whole surface of the mixture, and my soot-water was made—the lime carrying every impurity quickly to the bottom. Pond-water is better than pump, and rain-water better than either. If I did not want the soot-water for a fortnight, I should not use lime, but let the mixture clear itself, but if in a hurry, I should not hesitate to use the lime. I have seen a very clever florist fail completely in his attempt to make the soot-water, but I could never tell why, as nothing can, to my mind, be easier. Often I used to put one of my men to do it without my superintendence. I used to syringe my Pelargonium-house, especially, but everything seemed to like it, and I liked the smell, it appeared so healthy. If lime is employed, the besom should be put into use for taking off a very thin glaze, which is sure to be formed on the surface of the water, as this glaze might injure the leaves of the plants. *R. J.*

The Price of Vegetables.—I should be glad if Mr. Morgan would state what his average prices are from 4 o'clock to 7 o'clock in the morning, because during that time I think very few retailers can buy at the prices named. I think that the fault lies somewhat at their own door, because they ask such high prices early in the morning, knowing that greengrocers must buy and get home to do their rounds, and cannot wait for the prices to come down; the consequence is, they do not sell half their load, when in walks Mr. Costermonger, and he, knowing that it does not pay for them to take back, offers so low a price that, were it to be offered during the early morning, the buyer would be laughed at, and then down comes the average. Take the Pea season, for instance. I have been compelled to pay 2*s.* per bush. at 6 o'clock, and that was considerably less than the price asked, and at 10 o'clock I was offered the same article at 9*d.*—rather a serious fluctuation on the same morning! Thus it will be seen that Mr. Coster, who can wait, gets the benefit of the low prices instead of the shopkeeper, who is blamed for exorbitant charges. Still, I am willing to admit that some of the West End retailers get prices for their articles that in a poor neighbourhood would frighten every customer away. *W. R. H.*

—— In accordance with your request, at p. 1486) I send you the following list of prices obtained by me on the dates mentioned, in the Borough Market:—

1871.	Savoys.	Bunched Greens.	Best Parsnips.	Red Beet.
	Per doz.	Per doz.	Per score.	Per doz.
Nov. 14 ..	9*d.*	1*s.* 11*d.*	9½*d.*	5½*d.*
,, 16 ..	8*d.*	1*s.* 9*d.*	8¾*d.*	5½*d.*
,, 18 ..	4½*d.* to 8*d.*	1*s.* 10½*d.*	9½*d.*	No sale.
,, 21 ..	*2¾*d.* to 7*d.*	1*s.* 8*d.*	10*d.* to 1*s.*	No sale.

A Market Gardener.

Madresfield Court and Golden Champion Grapes.—Your correspondent, "Vitis," has evidently no facts to rebut my statements. What I have said on this subject has been derived exclusively from my own experience, and the evidence is direct and unquestionable; so that my opinion on the properties of these two Grapes has been given unreservedly, and without the slightest regard to the ideas of others. Since my first communication I have accidentally had some conversation with a Grape grower of considerable reputation, who assured me that his Madresfield Court was a complete failure, that every berry dropped off, and that no amount of care could save them. At the same time he suggested that a cool house culture might prove more satisfactory. To this opinion I cannot assent, as with me the damage was equal, whether grown under a high or a cool temperature. I highly esteem "Vitis'" invitation to send specimens to the Fruit Committee of the Royal Horticultural Society. This I respectfully decline, but I shall be glad to see him at Tortworth, where he can judge for himself. I shall keep this Grape hanging till the last berry passes out of existence, as a spectacle to visitors, and as a proof that what I have said is true. When "Vitis" honours me with a visit, no formal introduction will be required, as we are not, I imagine, altogether strangers. Let me now come to describe the qualities of the Golden Hamburgh, and I will point out one among many more of the inaccurate assumptions of "Vitis." He, with not a little perseverance, endeavours to convince the readers of the *Gardeners' Chronicle* that I have always held up this as the best white Grape in cultivation. What I have said many times over is, that it is the best of its class, and most distinctly I say so again. Am I not justified in speaking well of it, when for years it has produced bunches of 4 lb. weight, and the berries measuring in numerous instances 4 inches in circumference, highly coloured, and of a delicious flavour? What more does "Vitis" require? I have constantly said that this Grape keeps badly, and I also know that in some gardens it has been a failure, but I have described its qualities as developed under my care. *Alexander Cramb, Tortworth.*

Large Onions.—In reference to the remarks of your correspondents at p. 1486, allow me to state that the 12 prize Onions exhibited by Mr. Castleman, Brook End Green Farm, Barton, Beds, and weighing 15¾ lb., were not "the heaviest by 2¼ lb. that have heretofore been shown in Banbury," as stated, for Mr. Sims' 12 prize bulbs exhibited at the Banbury root show last year weighed 15½ lb. I believe I am right in saying that the 12 Onions (Banbury Improved White Spanish) shown by Mr. Castleman are the heaviest by 4 oz. that have ever been shown in Banbury; the largest bulb in the prize 12 this year weighed 24½ oz. *H. Deverill.*

Foreign Correspondence.

SOUTH AMBOY, N. J.—I noticed in your columns, at p. 1256, an extract from the Journal of the Society of Arts, on the comparative condition of working men in various countries, including America, in which it is inferred that a first-class workman is no better off in this country than in England. This may be true in some cases, but it is not so in all. To take something like a general view of the case, I will say, in the first place, that the cost of living here is about the same as in England, but clothing, &c., is much dearer. To keep a servant is to increase your expenses, and entail upon you no inconsiderable amount of trouble, for which reason those who can do without one do so. Those who do engage a servant have to pay 12 dols. and upwards a month for the greatest of Bridgets from old Ireland. You can obtain a much better servant in England for £5 a year. What an excellent opening for a lot of neat, handy, young women from the country districts of England. They would be quite a "godsend" to the American ladies.

Upon the character of the education given in the public schools here I will say nothing, but I much question there being 25,000 children in Philadelphia leading a Bohemian life; and if this were so it would be found that 24,000 out of the 25,000 children belonged to Irish parents, for the Americans, as a rule, are particular on the point of sending their children to school, and in some parts of New England they are obliged to do so, although they are frequently taken from school when young, from the fact that a boy of 14 can often earn a dollar a day.

As regards gardeners, I may say that there is always a demand here for good men, either as assistants or in the higher grades, but it is of no use for kid-glove gentlemen or one-idea men to come here as head gardeners; they are but of little use at home, and would be of none here. Let me illustrate this by stating that I once met a young Englishman here who told me he was "hard up," and would be glad if I would help him. I sent him to a very respectable place in Philadelphia, and he refused it because the remuneration was only 40 dols. a month, when, to my certain knowledge, a short time previous to his leaving England he was working for 14*s.* a week, and was probably dear at that. For the benefit of this class of men I say most decidedly stay at home, for you would only swell the class who loiter around the seed stores in New York waiting for something to turn up, and who write home to friends informing them that they made a mistake in coming here; that the streets are not paved with gold; that all the easy jobs, which they expected would be reserved for their especial benefit, had been taken; that there was not even a nigger kept to black their boots, and that they wished they had not given up the three or four dollars a-week in England, expecting to get 20 here for doing nothing. This is no fancy sketch, but matter of fact.

On the other hand, gardeners, who can earn and obtain a first-rate living in England, can do so here. If they are unknown, my advice to them is take any job which offers, for if they have no definite idea of any locality, it will give them time to make inquiries, &c. If known here good men can generally engage previous to coming out, for these in every calling are always in demand here, and, as a rule, at better wages than in England. If ambitious to hold land, it can be purchased for less than £1 an acre up to the fancy price paid in the City of London; but I would advise intending purchasers to keep their money until they get here, and not be led by the glowing accounts in newspapers, or they may find themselves, like Mark Tapley, in another Garden of Eden. *James Taplin, South Amboy, New Jersey, U. S. A.*

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* Of 90 dozen sent, 30 dozen were sold at 7*d.* per dozen, and 60 dozen for 2¾*d.* per dozen.

Societies.

LINNEAN : *Nov.* 2.—G. Bentham, Esq., President, in the chair. Dried specimens and photographs of Clathrus cancellatus and Colus hirudinosus, from D. Hanbury, Esq., were exhibited by Mr. Currey. The plants were gathered in the garden of M. Thuret, at Antibes, in October, and the photographs exhibited them in different stages of growth. The Clathrus, though not uncommon in the South of Europe, is rarely seen in England, where, however, it has been observed in the Isle of Wight, in a copse near Ryde, by Mr. Kippist, and in woods near St. Lawrence, by Dr. Bromfield ; also in Devonshire, and at Lyme Regis. The Colus was originally discovered at Toulon, by MM. Cavalier and Séchier, and was described by them ("Ann. des Sciences," 1835) as a new genus, differing from Clathrus in the contents of the volva, in the absence of any foul smell, and in the branches anastomosing at the summit only, and not from the base upwards. Colus differs from Colonnaria and Laternea in the character of the network, at the apex formed by the anastomosing branches. The following papers were read :—I. *On the Origin of Insects.* By Sir John Lubbock, Bart. The author observed that he had always regarded the metamorphosis of insects as one of the greatest difficulties of the Darwinian theory. In most cases the development of the individual reproduces to a certain extent that of the race, but the motionless imbecile pupa cannot represent a mature form. Fritz Müller considers that the wingless Blattidæ, probably, most closely represent the insect stock, and Haeckel is inclined rather to the pseudo-Neuroptera ; but the author felt great difficulty in conceiving by what natural process an insect with a suctorial mouth, like that of a gnat or a butterfly, could be developed from a powerful mandibulated type like the Orthoptera, or even from the Neuroptera. M. Brauer has recently suggested that the genus Campodea, is, of all known existing forms, that which probably most nearly resembles the parent insect stock. The grub form of larva he regards as a retrograde type, an opinion in which the author did not concur, though disposed to agree with him on the other point. M. Brauer, in forming his conclusion, relied partly on geological considerations, partly on the fact that larvæ more or less resembling Campodea are found amongst widely different groups of insects. The author went on to explain the distinction between what he called developmental and adaptive changes, observing that the larvæ of insects are by no means mere stages in the development of the perfect animal, but, on the contrary, are subject to the influence of natural selection, and undergo changes which have reference entirely to their own requirements and condition. The embryonic development of an animal in the egg gives us an epitome of its specific history ; but this is by no means the case with species in which the immature forms have a separate and indefinite existence. Hence, if an animal when young possesses one mode of life, and lives on one kind of food, and subsequently, from its own growth in size and strength, or from any change of season, alters its habits or food, however slightly, it immediately becomes subject to the action of distinct forces. Natural selection affects it in two different, and it may be very distinct manners, gradually leading to differences which may become so great as to involve an intermediate period of change and quiescence. There are, however, peculiar difficulties in those cases in which, as among the Lepidoptera, the same species is mandibulate as a larva, and suctorial as an imago. After discussing how these difficulties may possibly be overcome, the author continues :—In Campodea and the Collembola (Podura, &c.) we have a type of animal closely resembling certain larvæ which occur both in the mandibulate and suctorial series of insects, and which possesses a mouth neither distinctly mandibulate nor distinctly suctorial, but constituted on a peculiar type capable of modification in either direction by gradual changes without loss of utility. If these views are correct, he argued, the genus Campodea must be regarded as a form of remarkable interest, since it is the living representation of a primæval type from which insects have all derived their origin.——II. *On Exocœtus volitans.* By Captain Chimmo, of H.M.S. Nassau ; communicated by H. T. Stainton, Esq. The Flying Fish was stated by the author to be able to live for a period of seven to nine minutes out of water, and to possess the power of changing the direction of its flight by using its tail as a rudder.

Nov. 16.—G. Bentham, Esq., President, in the chair. E. J. Beale, Esq., and Andrew Henderson, Esq., were elected Fellows. Mr. Jansen exhibited specimens of Centaurea solstitialis, found in October last in a cornfield above Combe Marten, North Devon. The following papers were read :—I. *On the Floral Structure of Impatiens fulva, with especial reference to the imperfect self-fertilised flowers.* By A. W. Bennett, Esq. The existence of inconspicuous self-fertilised flowers, extremely different from the large and conspicuously-coloured ones, in at least three species of Impatiens—Noli-me-tangere, fulva, and parviflora—though well known to Continental and American botanists, appears to have received but little notice from most English observers. The author's own observations were made on I. fulva, growing on the banks of the Tillingbourne, an affluent of the Wey, near Shalford, in Surrey, and his attention was first attracted to the subject by the great abundance of seed vessels, notwithstanding the difficulty he experienced in finding flowers earlier in the summer, and by the remarks of a local naturalist that it is "one of those plants which bear seeds without producing any flowers." The development of the inconspicuous or "cleistogenous" flowers was described as entirely different from that of the others. The bud remains much more minute, and the calycine and corolline whorls are more regular. The buds never open, but the envelopes are pushed off from the already fertilised ovary in the form of a cap, at so early a stage that it is difficult to detect the process ; indeed hundreds of specimens were examined without finding more than three or four instances of the half-expelled cap. The stamens are very different from those of the normal flower, being equal in length, with the filaments perfectly free, and the quantity of pollen exceedingly small. There can be no doubt that in I. fulva self-impregnation takes place in the "cleistogenous" flowers at a very early period, fruitful capsules appearing almost invariably to result from them, while the conspicuous flowers are stated by all observers to be usually barren, though undoubtedly they sometimes produce seed-vessels, apparently equalling those of the "cleistogenous" flowers in the average number of seeds. The author had never found the two kinds of flowers on the same branch ; occasionally on different branches of the same plant, but much more frequently on separate plants, which would account for the fact of their absence from herbaria. In the early part of September the inconspicuous flowered plants outnumbered those with conspicuous flowers in the proportion of 20 to 1, though growing completely intermixed. Mr. Bennett's observations lead him to suppose that the two kinds of flowers are absolutely synchronous.——II. *Floræ Hongkongensis Supplementum.* By H. F. Hance, Ph.D., communicated by Dr. Hooker, which may be described, in the words of the secondary title, as a Compendious Supplement to Mr. Bentham's Description of the Plants of Hong Kong.——III. *Remarks on the Dolichos uniflorus of Lamarck.* By N. A. Dalzell, Esq., communicated by Dr. Hooker. The author believes that the characters of this plant remove it far from Dolichos, and place it in the Glycinæ, uniting it more closely with the Johnia of Wight and Arnott. In 1860 he had entered it in the Bombay Flora as a species of Johnia, and he now proposes to call it Glycine (Johnia) uniflora. The specific name is an unfortunate one, as there are always more than one flower in the axil. The plant is extensively cultivated in India under the name of Kooltee, and is used for feeding cattle.

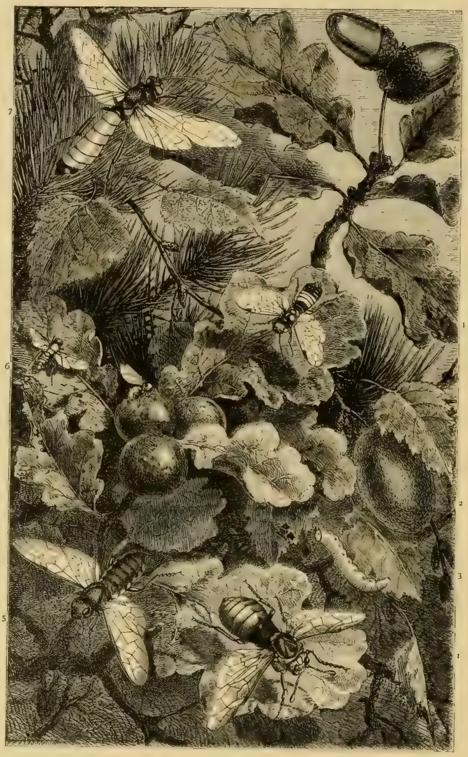


FIG. 328.—SAW-FLIES, GALL-FLIES, AND SIREX.

1, Cimbex lutea ; 2, Cimbex, cocoon , 3, Cimbex, larva ; 4, Lyda hortensis ; 5, Trichiosoma lucorum ; 6, Cynips Kollari ; 7, Sirex juvencus (male). Plants—Oak, Fir, and Hawthorn.

Notices of Books

Insects at Home, &c. By the Rev. J. J. Wood, M.A., F.L.S. 8vo, pp. 670, 700 cuts. Longmans.

If it were not for the necessity of killing and slaying, and of employing mean devices and subterfuges to entrap the prey, we should be disposed to rank the entomologist's pursuit as the most fascinating of all branches of natural history for young persons. So fascinating is it that any qualms of conscience, such as we have alluded to, are soon got over, and boys moreover are not usually very sensitive on these matters to begin with. So attractive is the mere search for, preservation, and classification of insects, at any rate of the beetles and butterflies, that it too often happens that the far greater, deeper seated, and more abiding pleasures to be derived by him who subordinates his passion for collecting to that of observing, are left wholly untasted. The loss thus entailed is great, not only as regards the gratification of the individual, but also from a scientific and a practical point of view. As an important step in the right direction, we may commend Mr. Wood's book now before us. The author has long since given evidence of the possession of an agreeable style and of correct information on the subjects on which he writes, and the present volume will, we venture to say, largely add to his reputation. The work is intended to give an account of the insects inhabiting England, together with the principal details of their structure, and the most interesting incidents in their mode of life. In glancing through Mr. Wood's necessarily somewhat bulky volume, we are at once struck with the pains that he has taken to explain and illustrate the anatomical construction of the principal groups of insects. This is an immense help to beginners—would that we had had such in our time. The account would, however, have been more complete had Mr. Wood devoted a little more space to the explanation of the differences between the mouth of the mandibulate and of the sucking insects, and of the adaptive modifications which result in so very different looking an apparatus, being constructed of similar parts. We are indebted to the publishers for permission to use the accompanying cuts. Fig. 329 refers to the dissection of the stag-beetle, and requires no further explanation than that offered by the legend. Fig. 328 shows certain of the saw-flies whose habits are not such as to recommend them to gardeners. We quote what Mr. Wood has to say of that portion of the structure of these insects from which they derive their name, and refer our readers to the original work for more detailed descriptions of the insects shown in the figure :—

"We will begin with the insects which are so well known as saw-flies, and are scientifically termed Tenthredinidæ. This word is a very old one, being used by Aristotle in his 'History of Animals' to signify some kind of bee or wasp. It is formed from a Greek word signifying to gnaw or nibble. The names andrena, pemphredon, &c., are derived from the same source. In these insects, the wings are large, with many 'complete' cells, *i.e.*, cells closed on every side by nervures, and having a large stigma or spot. The abdomen has no footstalk, and is furnished in the females with the extraordinary apparatus which has gained for the group of Hymenoptera the popular and appropriate name of saw-flies.

"At the extremity of the abdomen and on its under surface are placed two flat horny plates set side by side. These are the saws, and, like the well-known 'tenon-saw' of carpenters, have one edge toothed and the other strengthened by a flat thick plate. On examination with a tolerably powerful lens, the teeth are seen to be most elaborately constructed. Instead of being mere simple teeth, like those of a saw, each tooth is formed of a cone set in a footstalk, the cone being deeply cut into eight or ten deep grooves, having a sharp edge between each. This structure is wonderfully adapted to prevent the saw from clogging with the green wood in which it has to work, and might with advantage be copied by our tool-makers. The toothing of the saw differs in the various species of saw-fly, but the form which has been described is found in some of the insects with which our list commences.

"The strengthened backs of these saws are received into grooves or sheaths in which they slide backwards and forwards, and they are so contrived that while one saw is being thrust forward, the other is being drawn back. There is not the least difficulty in getting these beautiful instruments under the microscope. They are of course best seen in the recent specimen, but even after the insect has been long dead and dry, the saw can be detached with a little careful manipulation. The object of the saw, which is indeed a modification of the ovipositor, is to prepare a resting-place for the eggs. By alternately working the saws, a groove is rapidly cut in a twig, or a leaf rib, and an egg is then passed between the saws and deposited in the groove, where it is fixed by a small drop of liquid secreted by the insect. The number of grooves and of the eggs deposited in them varies according to the different species of saw-fly. Even if the observer should fail to see a saw-fly in the act of depositing her eggs, he can always see the grooves and the eggs in them, by carefully examining the leaves and young twigs of various trees. The common Currant is often much damaged by saw-flies, and on a single bush there will be scarcely a leaf in which the grooves cut by the saw-fly cannot be found. These grooves are made on the under side of the leaf, partly because the nervures are thicker, and partly because the eggs are sheltered from the rain.

"In process of time the eggs are hatched, and from them are produced larvæ which very much resemble those of moths. They can, however, be at once distinguished from them by the fact that they have more legs and 'pro-legs,' or false feet, than the true caterpillars, No caterpillar has more than sixteen of these members, whereas the larva of the saw-fly has from eighteen to twenty-two. One of these larvæ, that of Cimbex lutea, is shown in fig. 328, No. 3."

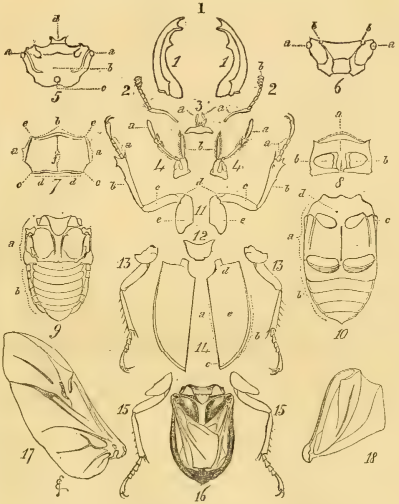


FIG. 329.—STAG-BEETLE, LUCANUS CERVUS (DISSECTION).

Parts of the Head.—1, Mandibles, or jaws ; 2, Antennæ ; 2*a*, Scape ; 2*b*, Club ; 3, Labium, or lower lip ; 3*a*, Labial palpi, or lip-feelers ; 4, Maxillæ, or lower jaws ; 4*a*, Maxillary palpi, or jaw-feelers ; 5, Head, upper surface ; 5*a*, Eyes ; 5*b*, Vertex, or crown ; 5*c*, Occiput, or back of head ; 5*d*, Clypeus, or shield ; 6, Head, under surface ; 6*a*, Eyes ; 6*b*, Insertion of antennæ.

Parts of Thorax and Abdomen.—7, Pronotum, or upper surface of thorax ; 7*a*, Lateral margin ; 7*b*, Anterior margin ; 7*c*, Posterior angles ; 7*d*, Posterior margin ; 7*e*, Anterior angles ; 8, Prosternum, or under surface of thorax ; 8*a*, Sternum ; 8*b*, Insertion of coxæ ; 9, Mesothorax and upper surface of abdomen ; 9*a*, Mesothorax alone ; 9*b*, Abdomen, upper surface alone ; 10, Metasternum and abdomen ; 10*a*, Metasternum alone ; 10*b*, Abdomen, under surface alone ; 10*c*, Parapleura, or side pieces ; 10*d*, Episterna, or breast-pieces ; 12, Scutellum.

Legs.—11, Anterior, or first pair of legs ; 11*a*, Tarsi, or feet ; 11*b*, Tibia, or shank ; 11*c*. Femur, or thigh ; 11*d*, Trochanter ; 11*e*, Coxa ; 13, Intermediate pair of legs ; 15, Posterior pair of legs.

The Wings.—14, Elytra ; 14*a*, Suture ; 14*b*, Lateral margin ; 14*c*, Apex ; 14*d*, Base ; 14*e*, Disc ; 16, Wings folded on abdomen ; 17, Left wing expanded ; 18, Right wing folded.

Florists' Flowers.

"THIS is not a CHRYSANTHEMUM year," remark the growers of this fine old florists' flower, who in a manner plead extenuating circumstances, and point to the trying nature of the past season as the cause of the poor quality of the generality of the flowers exhibited this year. The past summer, there is no doubt, was a most trying one to the horticulturist, and especially so to the Chrysanthemum grower, whose favourites are gross feeders, and which, to be done well, must not on any account be neglected in the matter of feeding in the summer time ; so that it may easily be imagined what an enormous amount of labour in watering is necessary during a hot dry summer. Growers, too, have also experienced the vexations caused by their most promising flowers not expanding so well as they do in earlier seasons, the late frosts having put a stop to the growth of the plants in unheated houses, and committed sad havoc amongst those in the open borders. Though, as we stated before, the generality of the flowers we have seen this year are inferior in quality to those of the past few years, we have seen some highly creditable ones, and amongst them the collection which has been on view at the Brunswick Nursery, Stoke Newington, during the past week. Mr. Adam Forsyth has been a most successful grower and exhibitor for the last 15 years, and annually makes a display of this kind, which has almost become recognised as one of the chief attractions in the florists' calendar. This year he has not grown any specimen plants, but his show-house bears ample testimony to the fact that his love for a good bloom remains unabated, and we hope it will continue so, for since the retirement of the Messrs. Salter, the Brunswick Nursery is the only place that we know of in the neighbourhood of London where a display of so interesting a kind is made. New flowers this year are so late that we can say nothing about them, but of the existing kinds Mr. Forsyth has good examples, and amongst these are many varieties which can nearly always be depended upon for quality, such as, of whites, Empress of India, Mrs. George Rundle, White Globe, Beverley, Alba multiflora, and Queen of the Whites. Of various shades of yellow—Golden Beverley, Aurea multiflora, Sunflower, Golden Jardin des Plantes, Golden John Salter, Raymond, Annie Salter, and Guernsey Nugget ; and of various shades of red, Ali Baba, John Salter, St. Patrick, Dr. Brock, Mr. Brunlees, Gen. Hardinge, and Dr. Sharpe. Other varieties, differing from the above in colour, and well represented here, are Lady Talfourd, Prince of Wales, Alfred Salter, George Sand, Baron Beust, Marshal Duroc, Prince Alfred, Queen of England, Gluck, Miss Mary Morgan, Mr. W. H. Morgan, and Duchess of Roxburgh. The curious but showy Japanese varieties are not quite so numerous as last year, but very fine ; and the same must also be said about the Anemone-flowered and Pompon varieties.

In the Temple Gardens, Messrs. Dale and Newton have also maintained their reputation as successful growers and exhibitors of the Chrysanthemum, though the season has been very much against them. Mr. Newton, who, we are glad to see, bids fair to eclipse the doings of his predecessor, has, of course, the largest display, the temporary structure in front of Crown Office Row being about 110 feet in length. Here a very effective bank of large-flowered and Japanese varieties are neatly set off by a row of the dwarfer Pompon varieties, which latter are the most generally grown here in open beds and borders. Had the weather kept mild and open, these beds would have been a fine feature ; but, as it is, the frost has completely spoiled them. Mr. Dale's collection is much smaller in extent than the above, but he has some handsome flowers, notably of the Japanese variety, James Salter, and of Prince of Anemones, White Globe, Lord Derby, Prince Alfred, and Golden Beverley. His beds of Pompon varieties were very promising, but King Frost has nipped them in the bud. Extensive alterations are going on in both the gardens of the Inner and Middle Temple, which we shall take an opportunity of alluding to at a future time.

Garden Memoranda.

THE STANSTEAD PARK NURSERY, FOREST HILL, S.E. — To the true florist, as well as the horticulturist proper, such establishments as Messrs. Downie, Laird & Laing are, and ever will be, of great interest, for "drop in" when one will for a "look round," there is always something fresh to be seen, something new to be learned by the practical horticulturist, whether it be in improving his acquaintance with, or gaining an introduction to, new or improved forms of flowers, which are ever appearing, or in gleaning seasonable hints on new or improved methods of culture, in which latter respect no one need go away empty from a well-ordered nursery. But it is as raisers and introducers of florists' flowers that the well-won reputation of Messrs. Downie, Laird & Laing has been gained, their productions in the way of Pansies, Hollyhocks, Bronze Zonal Pelargoniums, Phloxes, Pentstemons, &c., having for some time gained for them a position in the van of floricultural progress. There are one or two plants which this firm seem to have especially taken in hand with a view to improving them, such, for instance, as the Bronze Zonal Pelargoniums and the herbaceous Phloxes, and the immense strides which they have made in this direction must be apparent to all who saw the seedlings of the former shown by them at the last Pelargonium show of the Royal Horticultural Society, or the magnificent groups of Phloxes in pots which they exhibited at the supplementary Rose show held at the Crystal Palace in the beginning of August last. It was our good fortune about that time to visit the Stanstead Park Nursery, when we made the notes which are here strung together.

We will commence with the herbaceous Phloxes, firstly because they were then in perfection, and secondly because the time is rapidly drawing near when the Phlox will essentially be classed as a gardeners' flower and take a leading position amongst summer decorative plants. The improvement which it has undergone in habit of growth and in the form and colour of the flowers is something astonishing, the more recent introductions especially bearing but little more than a shade of a likeness to the "windmill" shaped (as that veteran florist, Mr. Glenny, has styled them) flowers of a dozen years ago. Some very fine varieties have been received from the Continent, but these are few in number compared to the splendid batches of named and unnamed varieties raised by this enterprising firm. For the mixed border, as Mr. Laing says, it would be difficult to name a genus of herbaceous plants more elegant and possessed of so many excellencies as is to be found in a collection of Phloxes, and, as we hope to show presently, they must become invaluable, nay indispensable to the gardener for conservatory decoration. They have also the undoubted merit of being perfectly hardy, easy of propagation, and requiring but little attention during the growing season ; indeed, so few are their requirements, and so simple their culture, that the whole sum and substance of their treatment may be summed up in the words, "Plant in a moderately rich, porous soil, and give them plenty of clear water when the flower-spike begins to form."

Coming now to the varieties, which we must state were all growing in pots, we have the following, all raised here, and which are to be distributed for the first time next May. Of these flowers collectively we can safely assert that a finer lot was never sent out together :—Magnificent, dark rose, dark magenta eye, extra good in habit and spike ; the segments, peculiarly enough, being slightly reflexed, gives to the spike a most pleasing air of refinement. Forest Hill, bright rosy crimson, an exceedingly good trusser and a strong grower, but a little defective in the flower, which, though good in outline, is rather thin. Dr. Masters, crimson-purple, bright crimson eye, flowers very large, and fine in shape, very good in habit, though not equal to some of the others, but producing perhaps the finest spike of all, which constitutes it one of the very best varieties for exhibition and general decorative purposes. Mrs. Whitehead, lilac, with a solid red-crimson eye, a beautifully shaped flower, produced in capital spikes ; in habit it is dwarf and compact, and will become a general favourite for pot culture. Shirley Hibberd, rosy carmine, shaded with orange, and dark centre, excellent both in spike and habit ; the flowers are large, of good substance and fine form ; a valuable acquisition amongst the dark kinds. Rosy Morn, rosy lilac, with the centre of a lighter shade, fine in spike, and growing only to the height of about 18 inches ; the dwarfest and most compact variety we have yet seen. Philippa Penglase, deep rose, shaded with lilac, and carmine centre ; flowers large and of excellent form, and producing good spikes ; a showy and distinct variety. Mr. Balfour, rosy crimson, crimson eye ; flowers very fine in size, and produced in very large and compact spikes ; and Brian Wynne, deep crimson suffused with purple, and bright crimson centre ; the flowers are large, fine in shape and substance, but the plant is rather tall in habit, and must be planted in back rows. Of those sent out this year, the best to our thinking are A. F. Barron, rosy lilac, with a crimson eye, extra fine in spike and habit ; Queen of Whites, a splendid trusser, and pure in colour ; it grows to the height of about 2 feet, and is a grand acquisition ; Mrs. Laing, soft rosy lilac, flowers perfect in shape and slightly reflexed, produced in magnificent spikes, one of the very best for pot culture ; Princess Louise, pure white, rosy crimson eye, and good both in truss and habit ; Flora MacNab, rosy pink with magenta eye, flowers very large and produced in fine spikes ; Lothair, light scarlet shaded with purplish violet, distinct and good in habit ; and Miss MacRae, pure white, with dark purplish crimson eye, and nearly perfection itself in shape, spike, and habit. Of the older varieties the following will be found a good selection, repeated trials having proved their excellence and worthiness for a place in every collection :—Caillard, fiery salmon, crimson eye, fine in habit, and very distinct. Roi des Roses, rose suffused with salmon, and crimson eye, a good trusser and free grower, a plant here, in little over an 8-inch pot, having 18 spikes—a showy object to be sure. Mons. Guiloteaux, rosy carmine, shaded with violet and crimson. M. Guldenschuch, rose-violet, with purple-scarlet centre, fine in shape, a good trusser, and very dwarf in habit, being less than 18 inches in height. William Bull, bright lilac, with lighter centre, neat in habit, and very distinct. Venus, silvery white, with bright violet-purple eye, a good trusser, but the flowers are rather small, though very distinct. Liervallii, dark rose, striped with white, the best striped variety of that colour. Madame Domage, white, slightly marked with purple, very large and extra fine, grows to the height of about 2 feet. Mons. Malet, lilac, bright centre, spike large and compact. Amabilis, rosy salmon, bright purple eye, a fine trusser, one of the best for pot culture on account of its neat dwarf habit. Mdlle. Christine Nillson, white ground, stained with rosy purple, a good trusser, and very distinct. James Veitch, grey slate, shaded with violet, stout in habit, and a good trusser. Mons. Rafarni, amaranth-red, bright scarlet centre, flowers of good shape produced on very large pyramidal-shaped spikes, and dwarf in habit. Etoile de Neuilly, white, with distinct purple eye. Souvenir de Berryer, crimson, with a purple centre ; a grand flower, and good trusser, and most worthily indeed does it carry the name of one of the ablest lawyers of the Paris bar. Hugh Low, reddish purple, deeper at the edges, a good trusser, and neat in habit. Géant des Batailles, salmon-orange, very distinct, but rather a straggling grower. M. George Henderson, rose, shaded slate, purple eye, a fine trusser, and moderately dwarf. Madame Roempler, bright red, shaded with purple, and tinged with scarlet, tall in habit, but a nice trusser. Triomphe du Parc de Neuilly, brilliant carmine, with a bright crimson centre, very distinct. M. Linden, magenta-scarlet, flowers rather small, but produced in capital trusses, very pretty and distinct ; and M. Marin Saison, red salmon-violet, very dwarf and compact. Most of the former belong to the P. decussata, or late-flowering section. Of the P. suffruticosa, or early-flowering section, which is readily distinguished from the former, by their longer and narrower leaves, and longer and more compact trusses, there were only a few in flower when we saw the collection ; but as in any collection both sections must be represented, we may mention the following as possessing reliable merit :—Mrs. Thorn, white, dark crimson eye, flowers perfect in shape, and foliage of a deep bronze tint ; Mr. M‘Bain, tinted white, bright rosy eye ; Thomas Forbes, rosy lilac, dark eye, very distinct ; Miss A. Ballantyne, white, rosy pink eye, flowers large and of good substance ; The Deacon, deep rosy purple, crimson eye, a good trusser ; and The Queen, pure white, and excellent in habit.

As we said before, these truly showy flowers will ere long become indispensable to the gardener for conservatory and show-house decoration, for which purpose they must be grown in pots ; and here let us state that we know of no other plants that give out such a delicate agreeable odour—like that of Violets—as is to be found in a house containing a collection of Phloxes in flower, the nearest approach to it being that found in a house of Verbenas. Supposing, then, that you wish to grow a collection in pots, you must propagate by cuttings, the side-shoots being the best for the purpose. The dark-flowered varieties, according to Mr. Laing's experience, are more difficult to propagate than the lighter ones, therefore these will require a little extra care. Put the cuttings in about the beginning of August, in a cool frame. Here they will strike freely, and must be potted off into 5-inch pots as soon as they are satisfactorily rooted, subsequently plunging them into a bed of ashes, old tan, or cocoa-nut refuse outside. Here they will remain until the following April, when they should be shifted into 8-inch pots, which are quite large enough for the first season, the shift in the following season being into 12-inch pots, in which size they undoubtedly do best. The soil selected for them should be light and porous, for they have a distaste to anything heavy ; and they will require plenty of water during the growing season. Liquid manure, if given at all, must be applied cautiously ; a better plan for affording a little nourishment consisting in top-dressing with sheep-dung when the spikes are forming. Such is the treatment adopted by Mr. Laing, and we know of no one who grows or shows them better.

Leaving the gorgeous Phloxes, we turned for a pleasant interval amongst some large beds of Pentstemons, a flower much in favour here, and grown in even larger quantities than the former. The past few years have witnessed a great improvement in this as well as many other garden flowers, Mr. Laing joining in the onward march by annually raising and flowering a large batch of seedlings, from which only the very best are selected for naming and future distribution. As a border plant the Pentstemon has many advantages in its favour, not the least of which are that it will grow well in almost any soil ; its cultivation is of the simplest description, and it flowers in abundance from June to October. There is a rare amount of interest, too, in a bed of well selected varieties, if it is only in the varied and most beautiful tints of colour presented, to say nothing of a bed of seedlings like the one here containing something like 20,000 plants, from which only half a dozen or so will be selected for distribution. Up to the time of our visit Mr. Laing had selected the following five, but we have no doubt this number has been considerably added to, as a great number had yet to flower :—Mrs. Moon, rich deep rose, throat pure white, broad and flat, a showy, refined flower, rendered even more attractive by having blue anthers. Minnie Denyer, dark rosy lilac, throat pure white, large, and well-defined ; a showy and attractive variety. Floribunda, white, shaded and margined with peach, the mouth broad and regular in outline, and the flowers well and evenly studded all up the spike ; this, Mr. Laing considers the truest type of what a Penstemon should be that we have yet obtained. Gustave Lambert, slatish-purple, mouth broad, and throat clear ; very fine. Madame Lemonier, tube claret-crimson, with a crimson mouth, throat heavily stained with deep claret, and the lower lips spotted with white ; a great novelty and a very decided gain. Amongst older sorts, the best yet sent out is Stanstead Rival, bright scarlet-crimson, pure white throat, slightly pencilled with light carmine ; though we can speak highly of Polly King, rosy crimson, white throat, pencilled with brilliant crimson ; Delicatissimum, pure white, tinted with bright pink ; Rev. C. P. Peach, purplish crimson, with white-carmine pencilled throat ; Regalia, rich purple, pure white throat, veined with rose ; George Sand, reddish purple, very fine ; Stanstead Surprise, dark purple, white throat ; and Mrs. Peter Cator, crimson, with white pencilled throat.

The improved varieties of Antirrhinums are as yet not so popular as they might be, or so much used for intermixing in the herbaceous or shrubbery borders as they will be when their merits are fully recognised. Grown as they are here, too, in beds, they present a gay and attractive appearance when in flower. Like the Pentstemon, their cultivation is very simple, being easily propagated by cuttings in the months of August and September, and requiring to be kept only in a cold frame during winter, their greatest enemies, damp and frost, being carefully guarded against. We have amongst these some first-class varieties, of which the following may be taken as the best :—Beda, white, lightly striped with crimson, a bold showy flower. Queen of Crimsons, a fine flower, of large size and perfect shape, fine for exhibition. George Gordon, deep glowing crimson, smooth, large and perfect in form ; the greatest acquisition for exhibition purposes yet sent out. Europa, bright yellow, mottled with dark red, dwarf and compact. Orange Boven, bright crimson-scarlet, with deep orange lips ; very showy. Striped Unique, greyish white, heavily striped with rosy crimson. Clio, yellow and buff, mottled and striped with red ; very fine. Bronze Banner, yellow ground with deep chestnut zone ; a good bedder. Pretty Polly, French-white, shaded with pure yellow, fine in form, and very distinct. Mathilde, rose, striped and mottled with dark purple. Beauty, white, mottled and striped rose. Yellow Queen, bright yellow, smooth and perfect in form.

In Gold and Bronze Pelargoniums Messrs. Downie, Laird & Laing have undoubtedly taken the lead since these showy and attractive plants came into fashion, annually exhibiting seedling forms, all more or less an advance on their predecessors, and in this matter they acted, we think, with a wise discretion, because—always, of course, excepting Mrs. Pollock, which, as a bedding Tricolor, has not been beaten—the Bronze Zonals are infinitely superior to the Golden Tricolors for bedding-out purposes ; and we venture to predict that the former will hold their own when the latter are—well, forgotten. The Bronze Zonal, too, is a very effective plant for conservatory decoration, and again beats the Tricolor for freedom of growth. They are as a rule very strong growers, making very nice specimens the first season. To do them justice they must be grown in a nice fibrous loam, and if this is too retentive in its nature the addition of a little dry tolerably fresh horse-dung will keep it sufficiently open and porous. They require water plentifully and often when growing quickly, as they seem to become dry sooner than the green-leaved ones under the same conditions as to position, temperature, &c. ; and when this is allowed to be the case too often the colour leaves them, and they soon turn to a sickly hue. There are of these, as of the Golden and Silver Tricolors, an immense number of varieties grown here, from which we made the following selection, as being in every way deserving of extended cultivation :—Herold, a fine-shaped leaf, with a small disc and a faint zone of chocolate-red. Rev. C. P. Peach, creamy yellow ground and margin, and chocolate-red zone, the leaves fine in outline ; recommended as a good bedder. Emperor of Brazil, disc medium size, surrounded by a deep maroon zone, and narrow yellow edge. Pretty Polly, golden disc and margin, with a band of chestnut-red, a free growing variety, with vandyked leaves. Black Douglas, leaves large, slightly convex, with a very broad band of dark chocolate, of a bronzy hue, and a narrow gold margin. In habit it is dwarf, bushy, and compact, and very showy as a bedding plant, its bright salmon-pink flowers contrasting most effectively with the sombre colour of the leaves. Reine Victoria, bright yellow disc, surrounded with a broad zone of brilliant chestnut, and a broad belt of deep golden-yellow ; in habit it is vigorous yet compact, the leaves being stout in texture, which enables it to stand a great amount of sun heat ; these are perhaps the two best and most distinct bedding varieties yet sent out. Crown Prince, bright yellow leaves, with a deep zone of dark chestnut, compact in habit and a vigorous grower. Brilliancy, a dwarf useful border variety, also with yellow leaves and bright red zone. Mrs. George Gordon, a capital bedding variety, with nicely shaped leaves of a bronzy-gold colour, in which is a distinct and well defined zone of chestnut ; and W. R. Morris, leaves perfect in shape and of good substance, of a bright golden colour, and a bronze zone, an excellent pot plant, but not so good as a bedder.

Double-flowered Pelargoniums have increased materially of late, and amongst them are some very excellent things, chiefly of Continental origin. At the time of our visit, Messrs. Downie, Laird & Laing had a good sized span-roofed house devoted to them, and a nice lot of well grown plants they were. Out of the three dozen or more varieties in cultivation the following appeared to be the best and most distinct, though in saying this we do not condemn the others :—E. G. Henderson, carmine, dwarf in habit, and a free bloomer. C. Glijm, bright scarlet, flowers of good form, and in habit the dwarfest of the scarlet section ; the best sent out last year. Sapeur Pompier, brilliant orange-scarlet, trusses large and of good shape, leaves of a bright green, with a distinct zone. Madame Racouchot, light rose, individual flowers large in size, and produced in very large trusses ; free flowering. Tom Pouce, cerise ; flowers also very fine in size. Merveille de Lorraine, rose, tipped with white ; first rate. Madame M. Buchner, bright salmon-rose, shaded with carmine, the trusses large, and the habit dwarf and vigorous. The greatest obstacle to the grower of these charming summer decorative plants has heretofore been their extraordinary vigour of growth, which we are pleased to see is gradually being overcome by the introduction of varieties whose habit more resembles that of our old favourite Tom Thumb, than which we have yet no better model of what a bedding Pelargonium should be.

In a large establishment like the one under notice, there are, of course, a great number of things deserving of comment, which, on this occasion, we are reluctantly compelled to pass over with the mere assertion that, in a walk over the grounds we found a very nice collection of ornamental trees and shrubs and some nice specimen Conifers ; a large quantity of Roses, including a collection of very healthy and vigorous Teas in pots ; an immense quantity of Hollyhocks and Gladiolus, not then in flower, and of which latter Mr. Laing annually sows a two-light frame, amongst which he obtains some fine flowers ; a capital lot of pyramidal Pear trees, of good shape and fine health, followed by some very well-trained Apple trees ; and the best lot of Peaches and Nectarines—four years old from the bud—that we have seen for some time. In the matter of training it would, indeed, give some trouble to find a nicer lot. In the houses the principal features were the collections of Caladiums, of which there is an almost endless variety, to a certain extent, as indistinguishable as Tricolor Pelargoniums; a very large and rich collection of young Palms, amongst which are a great many seedlings of novelties, which must be examined when a little larger; a nice lot of Vines in pots, and the usual description of stock to be found in a good nursery.

Obituary.

ON the 20th inst., JAMES WOODWARD, gardener at Garbrand House, Ewell, Surrey, age 36. Mr. Woodward was a pupil of Mr. Carson, Nonsuch Park, Cheam, and held his situation at Ewell for nine years, during which time he made himself known as a successful exhibitor.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, NOV. 18, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	FALL OF RAIN.
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	55.8	25.8	30.0	47.4	30.4	17.0	38.5	0.22
Blackheath ..	51.0	25.0	26.0	41.8	29.4	12.4	35.3	0.29
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	50.8	26.3	24.5	44.7	30.6	14.1	37.2	0.41
Wolverhampton	49.8	24.1	25.7	43.3	29.6	13.7	36.1	0.33
Leicester ..	51.2	23.0	28.2	42.9	29.7	13.2	35.9	0.43
Norwich ..	50.8	24.0	26.8	43.5	29.3	14.2	36.0	1.10
Nottingham ..	52.2	22.7	29.5	44.1	28.4	15.7	35.9	0.72
Sheffield ..	53.0	26.5	26.5	44.9	30.8	14.1	37.4	0.63
Liverpool ..	50.8	30.2	20.6	45.3	35.0	10.3	39.8	1.18
Manchester ..	51.8	24.0	27.8	43.9	29.0	14.9	36.1	0.84
Salford	50.7	24.0	26.7	44.8	29.1	15.7	36.5	0.77
Bradford ..	51.6	27.0	24.6	45.9	32.6	13.3	38.8	0.12
Leeds	53.0	29.0	24.0	44.9	32.0	12.9	38.0	0.31
Hull	50.0	22.0	28.0	42.6	28.6	14.0	35.2	0.58
Newcastle ..	48.0	29.0	19.0	41.8	32.7	9.1	36.8	0.21
Edinburgh ..	52.0	22.0	30.0	..	..	..	35.4	0.00
Glasgow ..	55.0	22.5	32.5	..	..	..	37.9	0.30
Dundee.. ..	49.0	27.0	22.0	..	..	..	36.0	0.10
Aberdeen ..	49.0	29.2	19.8	..	..	..	36.4	0.43
Paisley	..	..	..	..	..	..	..	..
Greenock ..	51.0	28.5	22.5	..	..	..	37.5	1.67
Leith	52.7	26.4	26.3	..	..	..	38.6	0.27
Perth	54.0	26.0	28.0	..	..	..	37.5	0.31
Dublin	..	..	..	..	..	..	..	..

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, NOV. 22, 1871.

1871. MONTH AND DAY.	At 9 A.M. Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
November.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
16. Thurs. .	29.86	37.4	35.2	32.1	82	2.1
17. Friday .	29.67	32.3	29.0	22.1	63	1.3
18. Satur. .	30.09	28.0	27.2	23.9	84	1.5
19. Sunday.	30.28	30.7	29.5	26.1	83	1.9
20. Monday	30.23	37.1	35.0	32.1	82	2.1
21. Tues. .	30.00	32.7	31.1	27.7	82	1.8
22. Wednes	29.90	33.5	32.3	30.0	87	2.0

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
November.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
16. Thurs. .	43.0	32.1	10.9	37.1	— 5.5	N.	240	0.04
17. Friday .	37.6	31.0	6.6	33.6	— 8.7	N.	420	0.00
18. Satur. ..	34.6	25.0	9.6	29.0	—13.0	N.W.	60	0.00
19. Sunday.	36.9	20.3	16.6	28.3	—13.5	variable	50	0.00
20. Monday	44.2	28.9	15.3	36.3	— 5.3	S.	165	0.00
21. Tues. ..	38.4	28.2	10.2	33.0	— 8.4	S.S.E.	175	0.00
22. Wednes	39.3	30.0	9.3	34.4	— 6.8	S.	100	0.04

Nov. 16.—Rain fell between 1 and 2 A.M. Nearly cloudless from 9 A.M onwards Very fine.
— 17.—A little snow fell occasionally in the morning. Very fine throughout. Small amounts of cloud prevalent
— 18.—Cloudless throughout. Hoar frost in morning and evening. Hazy and foggy.
— 19.—Generally cloudless throughout. Dense fog at times.
— 20.—A little light cloud present at times. Very fine. Lunar corona at night.
— 21.—Generally cloudless in morning; cloudy towards night. Lunar halo at night.
— 22.—Overcast throughout. Slight fog. Thin misty rain fell at night.

JAMES GLAISHER.

Miscellaneous.

EARLY OR FORCING PINKS.—To obtain fine strong plants for forcing, cuttings should be struck early in April, and when well rooted they should be planted out about 8 inches apart, and frequently watered during the summer months, so as to keep them in a growing state. Early in October they should be taken up with a good ball of earth, and potted into 6-inch pots, using rich soil consisting of three parts of good loam to one of well-rotted manure. They should then be placed on a bed in the open air, taking care not to let them suffer for want of water. After the plants have become well established, they may be placed in a little gentle heat, and brought on in succession as required. Some very fine varieties have recently been exhibited which are really great acquisitions to this class of Pinks, particularly Gibbon's Lady Blanche, a very fine pure white, a good, useful-sized flower, moderately full, and which has a good pod, so that it does not burst; it is of very free habit, and blooms very profusely, producing from 20 to 30 fine blooms on each plant. This is really a first-class variety, and will be found particularly useful for bouquets. Lee's Princess Louise is a fine bright scarlet and a large full flower. This blooms very profusely, and is of a very dwarf habit, growing only 10 inches high. I think it is a hybrid, as it has the perfume of the Carnation. Watson's Alba multiflora is a fine pure white flower, large and full without confusion; it has a good pod, not liable to burst, but the habit of the plant appears to be rather weakly. Clark's Lord Lyons is a deep, rosy purple, very fine, with large, smooth, full flowers; it is of good habit, very free, and quite distinct. The four varieties above named are of very fine quality, and will be found very superior to anything before sent out. *John Ball, Slough, in "Florist and Pomologist."*

THERE is in New York, on its way to a European museum, a solid section cut from one of the original "big trees" of California. Five men were employed 25 days in felling this huge tree; its height is 302 feet, and its largest diameter 32 feet. The specimen was cut a distance of 20 feet from the base. The stump is covered in, and is now used as a ball-room! It has been ascertained from counting the annular rings that the tree is more than 2500 years old. *New York Times.*

CINNAMON CULTURE.—The land under Cinnamon cultivation is about 15,000 acres. The best Cinnamon is thin, shining, and of a lightish yellow; it is slightly sweet, and has an aromatic flavour. It is cultivated by seeds, shoots, or layers, and old stumps are also transplanted; a quicker return is obtained by the last procedure, as shoots fit for peeling can be cut after they have been planted for eighteen months. The culture by seeds involves turning up about a foot square of ground at intervals of about 6 feet; the seeds (three or four) are then deposited, some ashes having been previously placed in the holes. The seeds germinate in about 22 days, but it is nearly seven years before shoots ready for peeling are produced. The seeds are also planted sometimes in nurseries, and the growing roots transplanted. The peeling commences about the end of April, and continues until the end of October. When a shoot has grown sufficiently large, the skilled labourer, or *chalia*, as he is called, inserts a sharp instrument, similar to a bill-hook, obliquely into it; the cut is then closely examined, to ascertain if the bark separates readily from the wood; if such be not the case, the shoot is left to be operated upon at some future time. The shoots that are cut are generally about ¾ inch in diameter, 4 feet in length; they are then stripped of all their leaves, and two incisions, running lengthwise, are made in the bark, when, in the generality of cases, a considerable portion of the latter comes off in one piece. The bark is kept for about thirty hours, and fermentation, to some extent, is thus provoked; the external covering of the bark is removed with a crooked knife. In about ten hours after this has been done the sections are put one into the other, and this is called piping; the pipes thus prepared are exposed to the influence of both air and sun for two or three days, and are then made up into bundles of about 28 lb. each, warehoused and shipped. *Food Journal.*

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THOSE gayest of all our Christmas decorative plants, *Poinsettias*, both scarlet and white, should, now that their bracts are forming, receive very liberal and attentive treatment. Not unfrequently at this season, or rather at the time the flowers are about to form, these plants receive a check, either through being left too long in a cool place, where the heat is declining, or through inattention in the matter of watering when the pots become filled with roots, &c. The least inattention in these matters of detail invariably tends to reduce the size of the showy bracts. An occasional watering with liquid manure in conjunction with frequent syringings overhead, and a little bottom-heat, into which the pots should be plunged, will be of much benefit to them. In regard to *Cape Pelargoniums*, guard well against damp and spot upon the leaves, immunity from which is chiefly assured by keeping the foliage dry, and by affording an abundance of fresh air, so long as any draughts are permitted. On the other hand, during frosty weather or at such times as fires are required, care must be taken not to have more dry artificial heat than is absolutely necessary to keep out frost. Again, *Epacris* and *Ericas* have no greater enemy than a dry fire-heat. They thrive far better in a cool frame with its attendant damp, and when freely exposed to air, than in arid temperatures such as above mentioned. *Kalosanthuses*, *Rocheas*, *Cactuses*, &c., should all be kept dry now, in such a manner as to insure a perfect rest. Place *Lachenalias*, which are now growing, at the coolest end of the house they may be in, elevating them as near to the glass, and giving them as much air, as possible. Be careful that all *Cinerarias* which have filled their pots with roots are kept constantly supplied with water, as any neglect in this wise becomes injurious to them. Give another shift to such *Herbaceous Calceolarias* as may have again filled the soil moderately with roots, as no check must by any means be permitted there now. As with a few other plants I have mentioned, these also like the cooler end of any structure, or at least to be some distance from the heating medium.

FORCING HOUSES.

Strong young stock plants of *Pines*, intended for next year's fruiting, should now have a somewhat drier air maintained around them, and, comparatively speaking, a more abundant supply of fresh air. This for two reasons: whilst it reduces the extreme excitability of the plants, and tends to rest them, it also induces a better state of maturity in the parts already formed. These remarks in no wise apply to fruiting plants, which must have all the aid possible to further the end in view. Persistently maintain a very moderate temperature in *Vineries* now in process of starting; 55° will be the safest maximum until the buds break, and this only by day with artificial heat—a temperature of 4° or 5° less being ample by night, when aided by artificial heat also. Fires must be occasionally used in all vineries in which the Grapes still hang. This, however, must be in conjunction with a free circulation of air. To *Peach* and *Nectarine houses* started about this time I would afford less artificial heat at the starting than is given to the early vineries, by some 8° or 10° at the first. Keep the houses shut up, excepting for an hour or two early in the day, and with a slightly moist atmosphere. Be it understood, however, that except when air is afforded for a short time, the internal warmth may range higher if influenced by external temperatures, but not otherwise. *Cucumbers* to thrive well must still have a bottom-heat maintained of about 76° or 80°, and a day temperature of about 70°. Should the heat run up upon mild nights to 68° or 70° by the aid of external coverings, always give a little air at the apex of the structure. Be careful at this time not to cause the soil at the roots to become too wet, as to do so at this time is to cause the plants and their future fruiting prospects much injury.

HARDY FRUIT GARDEN.

With the leaves removed from wall trees, and the shreds, &c., taken from *Peach* and *Nectarine trees*, all wall borders should be neatly cleaned and carefully forked over. The shreds removed from the trees should be looked through, and any that are whole enough and will bear the test of a good pull with the two hands should be kept for use next time. Where the trees have been greatly pest-ridden, by red spider especially, it is well to destroy any eggs which may exist in the shreds by submitting them to a properly heated ordeal; the nails may in like manner be highly heated, as it removes rust, and besides gives a fresher appearance to the work, where the trees are again nailed. Give special personal attention to all *Pot Fruit Trees*, in reference to protecting the roots properly from any degree or extent of frost we are likely to experience. Independently of the larger pots and their contents, *Strawberries* for forcing should be made pefectly secure in this way, as the loss of the young roots and rootlets around the inner sides of the pots cannot be well estimated at the fruiting time. Persist in thinning out the overcrowded branches in orchard-trees, for the uninitiated may depend upon it that only by so doing are good crops of fruit of fine quality attainable. Where Moss exists upon fruit trees, as it does, not infrequently, upon damp soils and such as are calcareous in their nature, resort should be had to wood ashes and fresh slaked lime, with which the parts infested should be dusted over. Prune *Outdoor Vines* at the first opportunity, nailing them neatly to the wall. I observe that, where Vines are grown against house walls, &c., they are almost invariably permitted to grow too thickly; indeed, so much so, that it would be an impossibility for a good crop of fruit to be carried of the quality expected. In pruning the rods, therefore, give each ample room to allow of its young shoots growing vigorously, and becoming properly developed when formed.

KITCHEN GARDEN.

Successional beds of *Asparagus* must be again formed where the demand is constant. In such cases these should be formed and planted by anticipation at this extremely dull time, as they seem to advance very slowly. Where it is contemplated to take up crowns of either *Asparagus* or *Seakale* in a month's time, more or less, to insure a supply at a definite time, it will be safer to have litter at hand ready to cover the crowns or stools over should a severe period set in. *Peas* should be sown about this time to stand the winter for the earlier spring supply. A dry quarter or border should be chosen, possessing a sunny aspect. It is advisable to sow moderately thickly to insure a crop where they are likely to be attacked by insects, birds, &c. Often where gardens are in the vicinity of farmyards sparrows attack and eat them unmercifully when they get through the ground; hence, Pea protectors formed of galvanised wire are not unfrequently used. If, however, any kind of protection is afforded them, considering the cost of the above, it would be far better to purchase Rendle's plant protectors, which protect from the cold, and, besides, can be used for so many other different purposes. Attend to the sowing successionally of small salading, and tying *Endive* up in frames to blanch, &c. Do not neglect the forced herbs which the *chef de cuisine* may require shortly, such as *Sorrel*, *Tarragon*, *Mint*, &c., the possession of the requisite supply of which often saves the grower's credit. *W. E.*

TOWN GARDENING.

Bulbs may still be potted as well as planted out in the open borders, and *Hyacinths* and *Narcissi* may be placed in glasses and put away as previously directed. These will come on in succession to those put in earlier. The beautiful *Lilium auratum* and *L. lancifolium* may now be purchased for a mere trifle, and I strongly recommend them for town culture. They should be potted at once into 32-sized pots, in three-fourths loam and one of rotten dung and a little silver sand. Place them on slates to keep out the worms, and cover with 4 inches of ashes till spring, when they should be brought into the windows or be placed in the borders, where they bloom in perfection. As flowering plants suitable for the decoration of vestibules are now scarce, such places may be enlivened with a great variety of small bushy evergreens in pots, mixed with Solanum Pseudo-Capsicum, with its beautiful coral berries, and the Acacia lophantha, with its graceful Fern-like foliage. Pot plants in frames should be turned round, have the soil stirred, and all dead leaves removed, and the lights should be kept off in fine weather. This will give them a constitution to stand against frost, with a little protection. *J. D.*

Notices to Correspondents.

ASPARAGUS: *Thorne.* Plant your bed with 1-year-old plants. There is very little, if any, distinction betwixt one Asparagus and another.

BOTANY FOR BEGINNERS: *C. E. F.* Yes.

LUDOVICA LANCIFOLIA: *M. M.* We do not know the plant you mention under this name.

NAMES OF PLANTS: *A Constant Reader.* Hartwegia comosa, Nees (Chlorophytum Sternbergianum, Steud.), from the Cape of Good Hope.—*C. W., Cornwall.* 1, Euonymus japonicus foliis argenteo-variegatis; 2, Escallonia montevidensis; 4, Elæagnus japonicus; 6, Convolvulus Cneorum; 2*a*, Adiantum setulosum; 4*a*, Selaginella pubescens. We cannot name more than six specimens at one time.—*W. E. G.* 1, Adiantum pubescens; 2, Asplenium viviparum; 3, Asplenium bulbiferum; 4, Lomaria Patersoni; 5, not recognised: send fertile specimens.—*Correspondent.* 1, Oplismenus imbecillis fol. var.; 2, Iresine Herbstii aureo-reticulata; 3, Rivina humilis; 4, Epiphyllum truncatum.—*H. K.* Pelargonium crispum.

PARASITE ON SWEET WILLIAMS: *A. D.* The parasite is Puccinia Lychnidearum, which is not uncommon on Sweet Williams. *M. J. B.*

PEARS ON SOUTH WALL: *Thorne.* These answer exceedingly well; in fact, it is the best aspect for late Pears. It is generally devoted to Peaches, &c., which do not succeed nearly so well elsewhere, whereas Pears are not so particular. Glou Morceau, Beurré Rance, and Doyenné du Comice are those we should recommend.

POINSETTIAS: *Eliza.* While growing these plants require the ordinary treatment of other stove plants as to air, syringing, watering, &c. They seldom flower till a later period than the present, unless specially forwarded. See articles on their cultivation at pp. 276, 353 (1870). The same remarks apply to the Bouvardias.

SEA-BUCKTHORN BERRIES: *H.* We never heard of these being injurious to cattle. They are eaten in some countries, although it is said in some books that they contain a narcotic poisonous principle. If so, it must be in very minute proportions; no mention of it is made in the standard books—such as Watts' "Dictionary of Chemistry."

SÉCATEUR: *L. & B.* We have no doubt that you have sold French *sécateurs*, but we do doubt whether you have sold, till recently at any rate, the particular description figured last week, and which are, we believe, to be had at present only of the firm mentioned. We have nothing whatever to do with advertisements except in the columns specially devoted to them, on which account we decline to insert your letter.

CATALOGUES RECEIVED.—Jabez Jay Chater, General Descriptive Catalogue of Nursery Stock.—John Harrison, Descriptive Catalogue of Roses and Hollyhocks.—Maurice Young, Catalogue of New and Rare Plants, Coniferæ, Hardy Ornamental Trees and Shrubs, Rhododendrons, Roses, Fruit and Forest Trees, &c.—James Dickson & Sons, Catalogue of Forest Trees, Covert and Underwood Plants, Ornamental Trees, Shrubs, and Evergreens.

ERRATUM: At p. 1487, col. 2, line 37, for "would throw the onus," read, "it would be best to throw the onus," &c.

COMMUNICATIONS RECEIVED.—A. C.—J. S., Ripley.—J. H. C.—P. F.—W. P. A.—D. T. F.—J. McL.—H.—W. L.—A. M.—J. G. B.—A. F. F. C.—W. D. F.—A. Z.—R. Heath.—J. T. B.—W. R. McN.—E. Bennet.—J. M. T.—D., Deal.—H. K.—Floors (your note shall be attended to).—Antoine (with thanks.—A. F. M.

Markets.

COVENT GARDEN.—Nov. 24.

Transactions generally have been limited during the week. Hothouse Pines and Grapes are well supplied, and some good American Newtown Pippins are in the market. Outdoor produce very plentiful and good, with the exception of dessert Apples. Pears comprise Chaumontelle, Nelis d'Hiver, Glou Morceau, Jean de Witte, Doyenné du Comice, and others. Peaches are over. In the Potato market prices are stationary, in consequence of the disappearance of the frost. The principal flowers in the market are of course Chrysanthemums, but we have a few Hyacinths, Tulips, Primulas, and Poinsettias.

FRUIT.

	s. d. s. d.		*s. d. s. d.*
Apples, per ½ sieve	2 0 to 5 0	Melons, each ..	2 0 to 5 0
Cobs, per 100 lb. ..	60 0 — 65 0	Oranges, per 100 ..	6 0 — 10 0
Filberts, per lb. ..	0 8 — 10	Pears, per dozen ..	2 0 — 4 0
Grapes, per lb. ..	1 6 — 5 0	Pine-apples, per lb.	2 6 — 6 0
Lemons, per 100 ..	7 0 — 10 0	Pomegranates, each	0 4 — 0 8

VEGETABLES.

	s. d. s. d.		*s. d. s. d.*
Artichokes, per doz.	6 0 to 8 0	Horse Radish, per bundle	3 0 to 5 0
Beet, per doz. ..	1 0 — 2 0	Leeks, per bunch ..	0 2 — 0 4
Broccoli, purple, per bundle	10 — 1 3	Lettuces, per score ..	1 6 — 2 0
Brussels Sprouts, p. half sieve	1 6 — 2 6	Mushrooms, p. pott.	1 0 — 2 6
Cabbages, p. doz. ..	10 — 1 3	Onions, per bunch ..	0 4 — 0 9
Capsicums, p. 100 ..	1 6 — 2 0	Parsley, p. bunch ..	0 2 — 0 4
Carrots, p. bunch ..	0 5 — 0 7	Radishes, per bunch	0 2 — ..
Cauliflowers, p. doz.	2 0 — 6 0	Rhubarb, p. bund. .	2 0 — 2 6
Celery, per bundle .	1 0 — 2 0	Salsafy, p. bun. ..	0 9 — 1 3
Chilies, per 100 ..	1 6 — 2 0	Scorzonera, p. bun.	0 9 — 1 3
Cucumbers, each ..	0 6 — 1 0	Seakale, per punnet	2 6 — 3 6
French Beans, new, per 100	4 0 — 6 0	Shallots, per lb. ..	0 8 — ..
Herbs, per bunch ..	0 2 — 0 4	Spinach, per bushel	3 0 — 4 0
		Tomatos, p. sieve ..	4 0 — 6 0
		Turnips, p. bunch ..	0 2 — 0 4

Potatos, Regents, 100*s.* to 130*s.*; Flukes, 120*s.* to 140*s.*; and Shaws, 80*s.* per ton.

POTATOS.—Southwark, Nov. 20.

During the past week the arrivals coastwise and by rail have been in excess of the demand, consequently prices are lower. Trade very heavy, at the following quotations:—Yorkshire Flukes, 100*s.* to 130*s.*; Yorkshire Regents, 60*s.* to 110*s.*; Dunbar and East Lothian do., 110*s.* to 140*s.*; Perth, Forfar, and Fifeshire do., 100*s.* to 110*s.*; do. Rocks, 90*s.* to 95*s.*; Kent and Essex Regents, 50*s.* to 100*s.*; do. Rocks, 80*s.* to 90*s.*; French Whites, 75*s.* to 80*s.*

Trade List, 1871-72,

Containing the SUPERB COLLECTION of HARDY ORNAMENTAL TREES Exhibited in September last at South Kensington, post free on application.

JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

ONE HUNDRED THOUSAND strong Transplanted ASH, 3 to 4 feet, 21*s.* per 1000; Fifty Thousand, 2 to 3 and 4 to 5 feet, equally low, and must be sold.

Five Thousand COMMON LAURELS, 2 to 2½ feet, very bushy, transplanted last March, £5 per 1000, delivered on Rail (Great Western).

R. AND J. TUCKER, The Nurseries, Faringdon, Berks.

To the Trade.

TO BE DISPOSED OF, 20,000 EVERGREEN PRIVET, 2 to 3 feet, bushy, at 20*s.* per 1000.
8000 GREEN BOX, 1½ to 2 feet, 18*s.* per 100.
3000 Dwarf SAVIN, at 10*s.* per 100
2000 AMERICAN ARBOR-VITÆ, 2 to 2 feet, at 10*s.* per 100.
50 bushels JERUSALEM ARTICHOKES, at 2*s.* 6*d.* per bushel.
WILLIAM RUSHFORTH, Woodhouse Hill, near Leeds.

Ornamental Trees and Shrubs.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, beg to intimate that in consequence of a large portion of their Ornamental Grounds having been Disposed of for Railway and Building purposes, they are now prepared to SELL at reduced prices their splendid stock of ORNAMENTAL TREES and SHRUBS. These being of all ages and sizes, are particularly well suited for giving immediate effect in the Formation and Improving of Ornamental Parks, Pleasure Grounds, &c. Inspection invited.

ROBERT NEAL, NURSERYMAN, Wandsworth Common, Surrey, S.W., begs to offer to Gentlemen who intend planting this season his large and varied stock of FRUIT, FOREST, and ORNAMENTAL TREES, Standard and Dwarf ROSES, RHODODENDRONS, CONIFERÆ, SHRUBS, &c., which are now in fine condition for removal. CATALOGUES may be had free on application.

The Nurseries are within a few minutes' walk of the Clapham Junction, and Wandsworth Common Railway Stations.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON & SONS, "NEWTON" Nurseries, Chester.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

Moor Edge Nurseries, Tansley, near Matlock,
DERBYSHIRE.

JOSEPH SMITH, JUN., begs to announce that he holds large stocks of FOREST TREES, COVERT and HEDGE PLANTS of a moderate size, suitable for general planting; also EVERGREEN and FLOWERING SHRUBS, &c., of which CATALOGUES will be forwarded free on application, and special offers given for large quantities.

Eltham Nursery, Kent, S.E.
TWO MILES from BLACKHEATH STATION:
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

WANTED, a MAN to Propagate and Grow a good general Collection of Plants. Must be thoroughly competent, steady, and active.—Apply, in own handwriting, with references, stating age and wages required, to R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham,

Nursery Ground Foreman.

REQUIRED, for a large Provincial Nursery, the services of a responsible, energetic, married Man, whose character for ability and sobriety will bear strict investigation. An Englishman preferred.—Address, stating terms, to X. B., *Gardeners' Chronicle* Office, W.C.

Ground Foreman.

WANTED, an intelligent, active, steady Man, as GROUND FOREMAN, for a branch Nursery, where Forest and Fruit Trees, Hardy Shrubs, and Roses are grown.—Mr. CARTER, Nurseryman, Keighley, Yorkshire.

WANTED, a PROPAGATOR and FOREMAN. He must be well up in Stove Plants, Vines, and Cucumbers, as well as growing Plants for Market. None need apply but thoroughly experienced Men, as good wages will be given.—Apply at Melbourne Nursery, Anerley Road, S.E., near the Crystal Palace.

WANTED, a PROPAGATOR of HARDY PLANTS.—Messrs. F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester, require in the above capacity, an active industrious Working Propagator, well experienced in Propagation of Conifers, Rhododendrons, Hollies, Ivies, Clematis, and other Hardy Ornamental Plants, by the most improved methods.—Apply, as above, stating age, situations previously held, time in each, references, and wages expected.

WANTED, a GARDENER (age 30 to 40), with good experience, who understands Forcing, Pines, Melons, Grapes, and Flower and Kitchen Gardening. Must give good reference. To live out. Wages 25*s.* per week.—J. W., Tredegar House, Bow Road, E.

Fern Cultivator.

MESSRS. JAMES VEITCH AND SONS wish to ENGAGE a PERSON thoroughly competent to undertake the Cultivation and Propagation of Ferns, including all the best Stove, Greenhouse, and Hardy kinds. The Greenhouse Palms would also be under his charge.—Apply by letter, stating references and wages required, to the Royal Exotic Nursery, King's Road, Chelsea, London, S.W.

To Nursery Foremen.

WANTED, a good SECOND MAN, who understands Grafting and Budding, and general Outdoor work.—Apply to J. C. WHEELER AND SON, Nurserymen, Gloucester.

WANTED, an INVOICE CLERK and ASSISTANT, at the Retail Counter. Must be an expeditious Penman and good Correspondent. To a young Man desiring improvement in the Trade, this is a good opening.—Apply with references, stating age and salary required, ROBERT T. VEITCH, Exeter.

WANTED, a SHOPMAN, having a thorough knowledge of the Garden and Farm Seed Departments. One with some experience in the Cut Flower Trade preferred.—Particulars as to age, salary expected, &c., to DRUMMOND BROTHERS, 52, George Street, Edinburgh.

WANT PLACES.—Letters to be Post Paid.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

Gardeners and Under Gardeners.

WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N.

GARDENER (HEAD).—Age 40, married, one child; has a thorough practical knowledge of the profession in all its branches. Can take charge of Park or Meadow Land, Stock, and Poultry, if required. Seven and a half years' excellent personal character.—A. B., Post Office, Sutton, Surrey.

GARDENER (HEAD).—Age 33, married, one child; has a thorough practical knowledge of Forcing all kinds of Fruits, Flowers, and Vegetables; also the Management of Flower and Kitchen Gardens. Excellent character from present and previous employers.—GEO. SMITH, Ranston Gardens, Blandford, Dorset.

GARDENER (HEAD), age 30.—H. BROWN begs to offer his services to any Nobleman or Gentleman requiring the services of an experienced Gardener. Thoroughly practical in every branch, having had 18 years' experience in first-class establishments. Unexceptionable character can be given. Five years in present situation.—Spring Grove House, Isleworth, W.

GARDENER (HEAD, WORKING).—Age 30, married, one child; understands the Management of Stove and Greenhouse Plants, Vines, Orchard-houses, and Flower and Kitchen Gardening. Five years' good character.—A. M., Post Office, Stroud, Gloucestershire.

GARDENER (age 30, married, two children).—W. HEATH, Jun., can with confidence recommend a highly respectable industrious Man as above. Wife good Needlewoman. Eight years' character.—W. HEATH, Exotic Nursery, Cheltenham.

GARDENER (UNDER, or SINGLE-HANDED).—Age 20. Three years' good character.—C. G., 62, Forest Road, Dalston, London, E.

BAILIFF and GARDENER.—Age 29, single; thoroughly understands the Value and Management of Land, Stock, Timber, Plantations, and all kinds of Estate Work, &c. Is a first-class practical Gardener. Highest references.—E. F., Mr. H. Slater, High Street, Uttoxeter.

MANAGER, or ASSISTANT MANAGER, of Tea, Coffee, Sugar, or Cotton Plantations.—Age 27, single, English; has had ten years' practical experience in some of the largest Gardens in Europe. Well educated. No objection to any part of the world. Highest references.—Z., Mr. H. Slater, High Street, Uttoxeter, Staffordshire.

To the Seed Trade.—An opportunity that rarely offers

GENERAL MANAGER or TRAVELLER, or any position of responsibility.—An Englishman, who is thoroughly conversant with the Trade, practically and scientifically.—ADSUM, *Gardeners' Chronicle* Office, W.C.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

TO HEAD GARDENERS.—The Advertiser (age 22, single), who has had several years' experience in Gardening, is in want of a situation in a large establishment, where he can receive a superior knowledge of the profession. £5 will be paid to the Head Gardener of such an establishment for the said improvement, at the expiration of the first 12 months. Good character.—T. S., Mr. Biggs, 3, Fairview Place, Upper Tulse Hill, Brixton, S.W.

To the Trade.

CLERK and SALESMAN.—Age 23; seven years' experience in the getting up and dispatching of wholesale and retail orders. Good references.—X., 1, Vigo Crescent, Houghton Road, Northampton.

To the Seed Trade.

SHOPMAN (age 21).—The Advertiser will be open for an engagement at Christmas. Seven years' reference from his present employer.—J. JONES, J. G. Roberts, Seedsman, Denbigh.

Seed Trade.

SHOPMAN, or otherwise.—Age 32; five years in one of the largest London Wholesale Houses.—C. C., 2, Albert Cottages, Avenue Road, Hackney Downs, N.

GOVERNESS.—A young Lady, lately returned from France, desires a re-engagement as above. Acquirements—English, French, German, Drawing, Music. The highest references offered.—K., *Gardeners' Chronicle* Office, W.C.

SUTTONS'

HOME-GROWN

FARM SEEDS.

SPECIMEN ROOTS ON VIEW.

BINGLEY HALL CATTLE SHOW,
OFFICE No. 72.
November 25, 27, 28, 29, 30.

SMITHFIELD CLUB CATTLE SHOW,
December 2, 4, 5, 6, 7, 8.
STAND No. 70.

SUTTONS' (IMPROVED) MAMMOTH LONG RED MANGEL,

THE HEAVIEST CROPPING LONG MANGEL EVER INTRODUCED,

And took the First Prizes at Birmingham in 1868, 1869, and 1870.

Although it attains such an enormous size, the roots are very sound and solid, and of most symmetrical form. It is an extraordinary heavy cropping variety, 64 tons per acre having been grown by our customers, Lord NORBURY and Mr. THOMAS GOULSTONE. The Twelve Prize Roots at the Royal Berkshire Root Show on Nov. 18 last, weighed 485 lb., averaging over 40 lb. each.

SUTTONS'

Berkshire Prize Yellow Globe Mangel

THE LARGEST GLOBE VARIETY YET INTRODUCED.

It is an extraordinary heavy cropper, CHARLES GOCHER, Esq., of Bolton Hall, having grown the enormous weight of 72½ tons per acre. Its beautiful shape, neat top, fine clear skin and single tap-root, recommend it as an eminently profitable variety, inasmuch as great labour is saved in drawing and storing the crop.

SUTTONS'

YELLOW INTERMEDIATE MANGEL

ONE OF THE MOST POPULAR IN CULTIVATION.

From its peculiar shape it can be allowed to stand closer in the rows than other kinds, hence it produces a very great weight per acre. It is of beautiful shape, small neck and leaves, and of superior quality. Having only one tap-root it can be pulled with half the trouble of the coarser varieties. Sixty tons per acre have been grown at the South Norwood Irrigation Farm.

SUTTONS'

IMPROVED CHAMPION SWEDE.

The merits of this Swede are now generally known, and its superiority over every other kind universally acknowledged. Among the numerous Prizes which have been awarded to this splendid Swede this season, is the Twenty Guinea Silver Cup given for the best Four Acres of Swedes in the County of Gloucester, awarded to our customer, WM. HARTLAND, Esq., Upleadon Court; and the Twenty-four Prize Roots which gained the £10 10s. Silver Cup at the Royal Berkshire Root Show, on November 18, averaged 22 lb. each.

Prices of the above, and all other

GENUINE FARM SEEDS,

May be had of Messrs. SUTTON as above, or on application to

SUTTON & SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN, and H.R.H. THE PRINCE OF WALES,
ROYAL BERKS SEED ESTABLISHMENT, READING.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

For Ploughs,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

MR. LEWIS S. WOODTHORPE, HORTICULTURAL AUCTIONEER and VALUER, Munro Nursery, Sible Hedingham, Essex. SALES conducted free of charge.

WANTED, with Immediate Possession, a small NURSERY and SEED BUSINESS, near London, or some good provincial town.—Apply, with full particulars, by letter only, to C. H. S., *Gadeners' Chronicle* Office, W.C.

SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST 12 O'CLOCK PRECISELY.

Plants and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 25, at half-past 12 o'Clock precisely, specimen CONIFERS, RHODODENDRONS, HOLLIES, FRUIT TREES, ROSES, CLIMBING PLANTS, and DECIDUOUS TREES from Holland. Also an importation of choice Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, LILIUMS, and other BULBS, just arrived from well-known Dutch Farms, in collections to suit large and small growers.

On view the morning of Sale, and Catalogues had.

Imported and Established Orchids, Seeds, and GARDENIAS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 28, at half-past 12 o'Clock precisely, an importation of SACCOLABIUMS and ANÆCTOCHILI, just arrived from India in fine condition; a collection of specimen and half-specimen ORCHIDS, in first-class condition, and many of them extremely rare; and 150 Plants of GARDENIA FORTUNIANA and INTERMEDIA, RHODODENDRON SEED, &c.

On view the morning of Sale, and Catalogues had.

Joyning's Nursery, Waltham Cross, N.

IMPORTANT UNRESERVED SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from the Executrices of the late Mr. R. Joyning to SELL by AUCTION on the Premises, Joyning's Nursery, Waltham Cross, N., on MONDAY and TUESDAY, November 27 and 28, at 11 for 12 o'Clock precisely each day, without reserve, in consequence of the lease of a portion of the Nursery having expired, a large quantity of VALUABLE NURSERY STOCK, including 5500 bushy Aucubas, 1 to 3 feet; 5000 bushy Common Laurels, 2½ to 6 feet; 500 Portugal Laurels, 2 to 3 feet; 3000 Berberis aquifolia, 1 to 3 feet; 600 Green Hollies; 300 fine variegated Hollies, 1 to 4 feet; 1200 bushy Rhododendrons, of sorts, 1½ to 4 feet; 700 Phillyreas, 300 Laurustinus, 2500 fine bushy Privet, 2 to 4 feet; 800 English Yews, 1000 Spruce Firs, Pinus, Thujas, &c. Also quantities of Ornamental Forest and Deciduous TREES and SHRUBS; 1200 Hardy Climbing PLANTS, in pots; 1200 choice Dwarf and Climbing ROSES, 500 fine Standard ROSES, fine FRUIT TREES, including Standard and Dwarf Apples, Pears, Plums, Dwarf and Standard Peaches, Nectarines, &c.

May be viewed one week prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, Essex, E.

City Auction Rooms, 38, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, as above, on TUESDAY, November 28, at half-past 12 o'Clock precisely, a FIRST-CLASS COLLECTION of DUTCH BULBS, a superb assortment of 300 Standard and Dwarf ROSES, selected FRUIT TREES, HARDY CONIFEROUS SHRUBS, and AMERICAN PLANTS, &c.

May be viewed the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, Leytonstone, E.

Clapham, S.

IMPORTANT SALE of NURSERY STOCK, CHOICE GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. F. Muskett, to SELL by AUCTION, without reserve, on the Premises, The Nursery, High Street, Clapham, Surrey, S.W., close to the Railway Station, London, Chatham and Dover Railway, on WEDNESDAY and THURSDAY, November 29 and 30, at 11 for 12 o'Clock precisely each day, a large quantity of surplus NURSERY STOCK, consisting of an excellent assortment of many thousands of choice Evergreen and Coniferous Shrubs, many of which are handsome specimens, comprising 2000 Chinese Arbor-vitæ, beautifully furnished, 4 to 9 feet; 600 bushy Portugal Laurels and Box; 1000 Lygustrum ovalifolium, 5 to 6 feet; 2000 Common Privet; 400 fine Arbutus, 3 to 4 feet; 2000 Green Hollies, 2 to 5 feet; 400 Variegated Hollies; 200 fine Cedrus Deodara, 1 to 2 feet; 200 Irish Yews; Thuja aurea, Thujopsis borealis, Aucubas, Taxus erecta, Cryptomeria japonica, Ribes, Spiræas, Lilacs, and thousands of shrubs in specimen borders; selected FRUIT TREES, 3000 strong Gooseberries and Currants, 500 established Ivies, Pyracantha, and other climbers, in pots; Ornamental and FOREST TREES, Standard and Dwarf ROSES, together with 200 fine double Camellias, set with bloom-buds; 300 Azalea indica, by name; 700 beautifully grown Ericas, of sorts, &c.

On view three days prior to the Sale. Catalogues had on the Premises and of the Auctioneers, Leytonstone, E.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had after November 1, free on application, to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871

Bealing's Grove, near Woodbridge, Suffolk.

MR. B. MOULTON is directed by the Executors of the late B. D. Colvin, Esq., to SELL by AUCTION, on FRIDAY, December 8, at 1 o'Clock, the CONSERVATORY and GREENHOUSE PLANTS, amongst which are some good specimens of the old varieties of the Azalea, from 5 to 6 feet high by 4 feet through, and about 20 other Plants, from 2 to 3 feet high and about 2 feet through, all well trained and in fine healthy condition, comprising amongst the latter Flower of the Day, Mars, Stella, Duchesse Adelaide de Nassau, Madame Ambroise Verschaffelt, Reine des Pays Bas, and other good varieties; also fine specimens of LAPAGERIA ROSEA, PALM FORTUNEI, 9 feet high; a quantity of SUB-TROPICAL PLANTS, ROSES in pots, and BEDDING PLANTS.

Catalogues may be had in a few days of Mr. POTTLE, The Gardener; and of Mr. B MOULTON, Auctioneer, Woodbridge.

Birmingham Fat Cattle Show, November 25, 27, 28, 29 and 30, 1871.

JAMES DICKSON AND SONS will be glad to meet with their Customers and Friends attending the Show, at their OFFICE STAND, No. 68, in the Gallery.

"Newton" Nurseries, and 102, Eastgate Street, Chester.

Smithfield Club Cattle Show,

DECEMBER 4, 5, 6, 7, and 8.
STAND No. 41.

EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, 57, Queen Street, Hull, invites attention of Visitors to his Exhibition of Specimens of his selected stocks of MANGEL WURZEL, DIXON'S IMPERIAL SWEDE, TURNIPS, KOHL RABI, &c. Orders received at the Stand.

FARM SEED LIST gratis.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

THE LONDON MANURE COMPANY.
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

FRENCH PEASANT FARMERS' SEED FUND.—A GENERAL MEETING of the SUBSCRIBERS will be held at the SALISBURY HOTEL, Fleet Street, on WEDNESDAY, December 6, at 3 P.M., the Right Hon. Lord VERNON in the Chair, when the Executive Committee will present their FINAL REPORT on the DISTRIBUTION of SEED CORN in FRANCE.

B. T. BRANDRETH GIBBS, } Honorary
H. M. JENKINS, } Secretaries.
W. H. DELANO,
London, November 21, 1871.

CRYSTAL PALACE. — SECOND NATIONAL CAT SHOW, under the patronage of her Grace the Duchess of Sutherland, the Hon. Lady Cust, Lady Mildred Beresford-Hope, Lady Dorothy Nevill, the Hon. Mrs. Henry Walpole, and the Royal Society for the Prevention of Cruelty to Animals. SATURDAY, December 2; MONDAY, December 4. Many arrangements which were necessarily tentative at the First Cat Show have been completed for the Second, and a still more remarkable result and opportunity for observation of the wonderful development of race under varying conditions in this country and abroad will be insured. *Judges*—The Hon. Lady Cust, Lady Mildred Beresford-Hope, Lady Dorothy Nevill, Hon. Mrs. Henry Walpole, Rev. J. Cumming Macdona, Harrison Weir, Esq., Jenner Weir, Esq. Admission on Saturday, Half-a-Crown; Monday, One Shilling; both days by Guinea Season Ticket.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1871.—The TWENTY-THIRD GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, November 25, 27, 28, 29, and 30, when PRIZES to the amount of TWO THOUSAND TWO HUNDRED POUNDS will be awarded.

The Exhibitors and the Public will be admitted to Bingley Hall, to witness the whole of the Judging, on Saturday, November 25, at 9 o'Clock A.M., upon payment of 10s. each.

Admission, on Monday, November 27, to Non-subscribers, until 5 o'Clock, 5s.; after that hour, 1s.

The Exhibition will also be open on Tuesday, Admission, 1s. all day; on Wednesday and Thursday, until 5 o'Clock, 1s.; after that hour, 6d.

For special Railway Arrangements, see the Advertisements and Bills of the several Companies.

JOHN B. LYTHALL, Secretary.
Offices of the Society, 39, New Street, Birmingham.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.

The GENERAL MEETING of MEMBERS will be held in the SOCIETY'S ROOMS, 12, Hanover Square, on THURSDAY, December 7, at 12 o'Clock.

By Order of the Council,
H. M. JENKINS, Secretary
London, November, 1871.

Birmingham Cattle and Poultry Show.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for DECEMBER 2 will contain a FULL REPORT of the SHOW.

Copies may be obtained at Messrs W. H. SMITH & SON'S Bookstalls, or may be ordered of any Bookseller. Price 5*d.*; post free, 5½*d.*

Published by W. RICHARDS, 41, Wellington Street, Covent Garden, London, W.C.

The Agricultural Gazette.

SATURDAY, NOVEMBER 25, 1871.

MEETING FOR THE ENSUING WEEK.

MONDAY, Nov. 27 to THURSDAY, Nov. 30 } Midland Counties Cattle Show, at Bingley Hall, Birmingham.

FOOT-AND-MOUTH DISEASE has a wide range of affinities. Originally developed in the system of the ox, it is capable of being transmitted, through the medium of the diseased secretions, to other animals of the same family, and even to those which are remote from them in the natural scale.

Specific diseases generally confine their attacks to the individual, or, at most, to the members of the same family. Thus, sheep-pox affects only the sheep, typhus is found in the pig, pleuro-pneumonia belongs exclusively to cattle. Cattle plague, the most virulent of animal maladies, extends to all the members of the ruminating family, but does not reach any creature outside of it; foot-and-mouth disease alone of all the specific affections of stock has a range far beyond the family among which it arose.

Next to cattle, sheep appear to be the most susceptible to the disease, which, however, in this case, principally affects the feet, commencing by the development of small vesicles on the skin of the heels and sides of the digits, immediately above the horny covering of the foot. A discharge of serous fluid at this part very soon takes place, rendering the hair moist and sticky; as the disease advances, the hoof-horn is separated from the secreting membrane, and loss of hoof is a very frequent result of the ravages of the affection. Many years ago, in the time of the old Smithfield Market, and during one of the great outbreaks of the foot-and-mouth complaint, sheep suffered so severely that it was necessary at the end of a market-day to sweep the cast-off hoofs into heaps, prior to removing them in baskets. In very few cases are vesicles developed in the mouth of the sheep, and it is not impossible that this is due to the manner of infection. Sheep would be most likely to bring their feet in contact with saliva or the manure of diseased cattle during a journey along the road, or in a railway truck, while they are less often in the way of feeding from the same pastures; no doubt, however, exists as to the fact that the disease is almost always confined to the feet, whatever the cause may be. Pigs stand next to sheep in the order of susceptibility, and these animals also suffer much from the effects of the disease in the feet, although it is not confined to those organs; numerous vesicles commonly appear on the muzzle, and in sows the udder is frequently affected. We have been recently asked if the complaint has been known to attack poultry, and we have no hesitation in giving an affirmative answer. Of late years we have not met with any cases of the malady in fowls and turkeys; but some 25 years ago, in one of the early outbreaks, the disease spread so extensively among poultry as to cause considerable loss. The feet were sometimes completely destroyed by ulceration, and the birds either pined away from the pain which they suffered, or were killed as useless. The habits of the birds are unfortunately calculated to increase the severity of the disease, by leading to the accumulation of particles of grit and dust in the cavities which are left when the vesicles burst; and nothing short of confining them to a room with a perfectly clean floor will prevent the exercise of the habit of scratching in the dirt.

It is asserted by some persons that ducks and geese have been attacked with foot-and-mouth complaint, but the evidence on this point is by no means satisfactory; in our experience they have always escaped, even when poultry have been severely attacked, and our impression is that web-footed birds are exempt. Horses are occasionally reported as affected with foot-and-mouth disease, but here again our own observations are opposed to the assumption of their liability to the affection; in hundreds of instances where horses have been in close association with diseased cattle, we have never met with a single case of communication of the disease. Horses are subject to slight abrasion of the mucous membrane of the mouth in simple febrile diseases, and it is quite possible that this circumstance may have led to an erroneous conclusion.

Communication of the disease to the human subject is just now a point which is attracting some attention. Several medical men have reported cases of eruptive disease, among children particularly, which they have traced to the use of milk from diseased cattle; but, judging from the accounts which have been given of the symptoms and progress of the disease, there is no very striking resemblance between it and the malady affecting cattle.

Two years ago the question was investigated by the Medical Department of the Privy Council, and Dr. THORNE, who is now, we believe, continuing the inquiry, found that in many instances eruptions occurred on the lips and gums of children, and even of adults, who drank diseased milk; but in a still greater number of instances the use of such milk was not followed by any ill effects.

There is no question that the fluid secreted by the mammary glands of a diseased cow is totally unfit for human consumption, but at present there is no positive evidence that human beings are liable to be attacked with foot-and-mouth disease; and we are in a position to assert positively that all the experiments which have been undertaken at various times, with a view to test the susceptibility of man to the infection, have had a negative result.

IN another page will be found the address of Mr. SCOT SKIRVING, as the retiring chairman, at the recent annual meeting of the Scottish Chamber of Agriculture. It is only to his remarks on the subject of AGRICULTURAL EDUCATION on that occasion that we desire to refer just now. Mr. SKIRVING is the energetic advocate of the widest possible education of the lad who is to be a farmer. To any one who should parody the words of BURNS, and ask,—Can Turnips be grown "by dint o' Greek?" he replies that Yes is at least as true an answer as No. Let the mind receive the best training that the schools can give—such a training is what the farmer wants in the true interests, whether of the man or the profession. Such advice is indeed against the usual style of that which professional men are in the habit of giving, for, according to Mr. SKIRVING, whether it be the agricultural or the divinity student, the usual recommendation is, not that the general powers of the mind be cultivated, and the whole nature of the man enlarged, but that, after a sufficiency of school education has been received, a successful man in the particular profession be taken as a model or a guide, and his example and instructions carefully copied and received. In particular is this true of the farmer. He belongs to the best advised class in the three kingdoms, and is lectured at on all occasions by men whose chief qualification is "a total ignorance of the subject" about which they lecture. "One of these advisers," a gentleman who remained unnamed because he was not present to reply, had even obtained the ear of the Royal Agricultural Society "some time ago," and offered a series of recommendations of this kind on the subject of agricultural education which Mr. SCOT SKIRVING regretted to say had been adopted and applauded by the Society, and to which he, therefore, then proceeded, after more than six years' interval, to offer a reply.

The reply in question, though founded somewhat on misquotation, is a very forcible assertion of a very important truth; and though, like all fighting men, Mr. SKIRVING cares only for his own side of the affray, we are certain that the "adviser" whom he disparaged is not only ready heartily to applaud his sentiments and adopt his views, but is even under the delusion, if so it be, that the views and sentiments in question had been often expressed "some time ago" by himself. It is not, however, on personal grounds at all that we wish to revive a subject which has long been out of reach of controversy. The history of the discussion which preceded the Royal Agricultural Society's present treatment of the subject in question is useful, apart altogether from Mr. SCOT SKIRVING'S condemnation of any particular adviser or lecturer about it, and we therefore reproduce to a certain extent a *resumé* of that history, which appears to us to state with fairness the points which were under discussion at the time, to which attention may be usefully redirected now.

There was never, we believe, in the whole course of this discussion any difference of opinion whatever as to what is desirable for a thorough education, in order to good and successful agriculture. Everybody was agreed that good schooling during boyhood is necessary in order to good manhood, to whatever occupation that manhood may be devoted. There was perfect agreement upon the all-importance of a good and sufficently prolonged schooling for the boy, whether as a man he is to adopt a profession or to become a tradesman or a farmer. Mr. ACLAND—now Sir THOMAS ACLAND—may be said to have led the discussion on the one side and Mr. HOLLAND on the other. There was no difference whatever between these gentlemen on the importance of the primary education which the tenant-farmer as much as any other man of business needs in order to be respectable, influential, and successful in the station which he occupies. No doubt Mr. HOLLAND, equally with Sir THOMAS ACLAND, felt that the consideration accorded to agriculturists as a body, the position they occupy in public opinion, the influence they exert, must ever be in exact proportion to the intelligence, the self-reliance, and the power which their education has given them. And, still more, both of these authorities no doubt believed that the social position, the personal influence, and even the professional success of the individual farmer depend very much upon those qualities of head and heart for which he is indebted, not to his professional, but to his general and preliminary education during boyhood and youth.

It was not, therefore, in any degree whatever upon the relative importance in a complete agricultural education of this preliminary schooling on the one side, and of the subsequent professional studies and apprenticeship on the other, that any difference arose. The discussion lay simply upon what it was fit and proper for the Agricultural Society to do. One party believed that the Agricultural Society should confine itself to helping forward agricultural education: the other party believed that it might do what it could to help forward the preliminary education of farmers' sons. This latter was Sir THOMAS ACLAND'S opinion and advice. It was founded on his belief, first, that the preliminary and general education during boyhood and youth is the only foundation on which a good agricultural or any other good position during manhood is possible; and secondly, that this preliminary schooling for the sons of farmers has hitherto been defective. It was also in some measure influenced by the impression that this preliminary and general education is the only part of the whole educational process which is capable of effective stimulant or guidance by any system of prizes or examination. Sir THOMAS ACLAND believed that more will be done towards the improvement of agricultural education by a well-directed schooling than in any other way; and he also believed that this, and only this, is capable of being tested and stimulated by examinations and by prizes. He accordingly induced the Society to vote a certain sum of money to be awarded as prizes to those sons of farmers or of members entering for this particular competition who shall have best acquitted themselves at the various local school examinations by the delegates of the Universities.

Mr. HOLLAND'S advice to the Society was, we believe, founded upon quite as enlarged a view of the whole subject as that of Sir THOMAS ACLAND. He equally with Sir THOMAS ACLAND believed in the absolute necessity of a good general education; he as much as any man urged the great importance of raising the standard of attainment as high as possible before young men set themselves to the especial studies and the especial apprenticeship by which agricultural efficiency is obtained. But he believed, first, that the general standard of intelligence and of education amongst tenant-farmers had been rapidly rising during the past two generations, and that there is now a greater and more general anxiety on their part for the good education of their sons than there ever hitherto had been. He believed, secondly, that in the new modes of cultivation which have of late years been adopted, and in the new applications of scientific knowledge to farm practice which the last 20 years have witnessed, there is within the strictly professional part of an agricultural education an immense territory, as it were, of useful knowledge, open to the sons as farmers, which their fathers did not know, to the mastery of which they ought to be guided and incited. And he believed, lastly, that guidance and incitement can be offered to young men towards their attainment of proficiency in these, the practical and professional parts of an agricultural education, by prizes and examinations, just as everybody admits that spur and rein can by prizes and examinations be brought to bear upon their attainment of proficiency in the branches of a general and preliminary education.

There is less need than ever there was to urge upon the attention of agriculturists the importance of a good general education for those who are to succeed them—there is more need than ever there was to urge upon them the great value of special and professional instruction—and it is just as possible to promote by prizes and examinations the studies and the industry necessary to professional attainment as it is to promote by prizes and examinations the attainment of a high standard of general education.

These were the three propositions out of which it was thought that the Society ought, in accordance with its Charter, to have seen its way towards instituting annual examinations and prizes for agricultural students, so that professional attainment might have been encouraged and rewarded. The Society has, we know, yielded to these considerations, and does now offer prizes to strictly agricultural students. They have at length directed their attention, which as an agricultural society they very properly might do, to the professional education of agricultural students. The education of the whole class of boys from amongst whom one and another step out to choose an agricultural career, was not their subject. That was of course a much higher subject than any that could come before the members of the Agricultural Society; but there was no reason on that account why an attempt should not be made to deal with the much humbler, but, though far inferior, yet important subject that did belong to the Agricultural Society, namely, how a well-educated boy should be made a good farmer. A clever writer in the *North British Agriculturist* at the time, with whom we entirely sympathise in the estimate he forms of the relative importance of the good education which a lad should have had for mere manhood's sake whatever be the profession he may adopt, and the special education which thereafter he requires, nevertheless imagined that the purpose of the lecture before the Agricultural Society to which Mr. SKIRVING has again referred, was to magnify the professional training as compared with the essential education on which it ought to be founded; and he exclaims to the editor:—

> "You are at present writing articles on hypothec, Game Laws, and other farmers' grievances. Why do these things exist if farmers think them unjust? Why do they constantly take land, knowing that it is too dear? Why do they give their strength, and their time, and their brains, and their capital for less remuneration than other people, and either occupy land by the year at the mercy of another, or sign leases with conditions such as those which have been quoted in the *North British Agriculturist?* Mainly, I maintain, because they are educated just as Mr. MORTON wants them to be educated."

In another place he says:—

> "The object of Mr. MORTON seems to be that the lad should plough like a ploughman, stack like a stacker, shear sheep like a shepherd, and otherwise assist. He will do nothing of the kind. He will at first enjoy the liberty he has so early acquired; he will think himself a man; and after some years of a lazy life, he may be able to manage the practical work of a farm as well, but certainly not one whit better than if, as a well-educated youth, he had gone for a year in early manhood to study farming at a farm, carrying with him a disciplined mind, and the cultivated brain of a man."

We quote these passages, notwithstanding their personal injustice, because they express, as strongly as we believe we all wish to express it, the feeling that after all it is an enlarged and liberal, and to the extent which time allows a thorough general education during boyhood and youth which, more than anything else, is needed in order to increase the power and raise the position of any profession whatever—agricultural or other. But though we all hold this no doubt as strongly as this writer does, that is no reason for putting things to improper uses. An agricultural society is a body in which men associate for a certain definite purpose. There are some good things which thus properly come under their consideration and patronage. But there are other good things, and even other better things, which do not belong to them; and the conviction that there are more important things outside of their proper objects must not hinder them from giving due attention to those purposes for which in particular they have banded themselves together. They will certainly be all the more likely to serve their generation usefully if they keep themselves or even *confine* themselves to the work which properly belongs to them. And thus it is that while they may individually believe the general education of their sons to be by far the most important purpose of their lives, yet, associated as they are in a society for agricultural improvement, they may feel bound to confine their attention there to that professional training by which after this preliminary education their sons are to be fitted for their career as farmers.

—— AT Mark Lane, on Monday, English Wheat (a short supply) sold at 1*s.* per qr. advance on the prices of the previous Monday—and this advance was maintained on Wednesday.——At the Metropolitan Cattle Market on Monday, last week's quotations for beasts were barely reached,—for sheep the tendency was downwards. On Thursday the quotations of Monday for beasts were not reached: the same may be reported for sheep.——The upward tendency still continues in the wool market.

—— The BIRMINGHAM CATTLE and POULTRY SHOW opens to-day, when the judges are engaged in making their awards. We shall give a full report next week; meanwhile we are informed that the entries in all departments for this, the twenty-third annual exhibition, are highly satisfactory, showing an increase throughout, and necessitating the erection of an additional gallery, upwards of 200 feet in length, to accommodate the various exhibits. In the cattle classes, which contain 152 entries, the Scots and Scotch crosses are particularly strong, and the Devons, too, well maintain their position. The seekers after novelties will be rewarded in the sheep section, as Border Leicesters and Dorset Horned sheep will be represented in the hall for the first time on this occasion. The exhibition of pigs is very extensive, several classes mustering nearly 20 entries in each. The roots and corn are fully up to the mark: and the 200 dishes of Potatos make quite a show in themselves. The poultry department, as usual, is enormous, containing 2660 entries; some individual classes containing more pens than are to be found in the whole of many county and local shows?

—— We had the pleasure, on Saturday last, of inspecting the wonderful collection of Mangel Wurzel, Swedish and other Turnips, Kohl Rabi, Cabbages, Potatos, &c., which has this year been gathered in Messrs. SUTTON'S warehouses, Reading, to compete for the liberal series of prizes which they annually offer. The exhibitors are exclusively customers of this firm, and the roots exhibited are thus only of sorts and from seed supplied by Messrs. SUTTON. The exhibition has not, therefore, the public interest which would belong to a perfectly open show. There is, however, no doubt, considerable public serviceableness in these ANNUAL EXHIBITIONS by COMPETING SEEDSMEN. It answers their purpose to adopt this plan of collecting the best specimens in the country, grown from seed which they have respectively supplied; and the Reading firm in particular, having such a widely spread connection, are thus enabled to gather an extraordinary collection, which, as representing very excellent varieties of all our farm crops, well deserve the study and attention of the crowds of spectators who are thus attracted. The Mammoth Long Red Mangel especially was a very remarkable class. Among 35 entries of 12 roots each, Mr. J. CAVE, of Piriesfield Farm, Rickmansworth, took the 1st prize with a collection averaging more than 40 lb. apiece. The same exhibitor took the 2d prize for Long Yellow Mangels, the 1st prize for Yellow Globe Mangels, the 2d prize for Yellow Intermediate Mangels, the 1st prize for Red Globe Mangels, the 1st prize for Green Kohl Rabi, the 1st prize for Purple Kohl Rabi, the 1st prize for Sugar-Beet, the 2d prize for Red Carrots, and the 1st prize for Reading Onions. He may therefore be pronounced to have achieved an unprecedented success. Going through the several classes we found the Long Red Mangel of astonishing size and excellence—the Long Yellows very good; the Red Globe Mangels not so good. The Swedes, "Sutton's Champion," included 57 entries of 24 each, and they were certainly a very remarkable collection. The 1st prize was taken by Mr. ALLSOP, of Hindlip Court, Worcestershire. The 24 roots in this case weighed 520 lb. The White Globe and other Turnips appeared to us rather whimsically judged—the prizes going to roots of even below a medium size, on the plea of superior quality, which would, we suspect, be insufficient to justify a preference of a field of roots, however it might affect our choice of a specimen half-dozen. The Kohl Rabi, both green and purple, were very fine, especially the former. The 1st prize went to Mr. CAVE, the 2d to the Bedford Sewage Farm, from which also some fine Drumhead Cabbages were exhibited. Mr. S. ROBINSON, of Melbourne, Derby, took the 1st prize for Cabbages. There was a very fine collection of Onions, Carrots, and Potatos; and altogether the display was of very extraordinary merit.

—— The STATISTICS of the GAME QUESTION in ABERDEENSHIRE have been collected by a committee of proprietors and tenant-farmers, and an immense mass of facts has been collected. Of the 196 proprietors in the county to whom inquiries were addressed, 102 have replied. Of the 6064 tenant-farmers who were applied to, 4578 have replied. The total rental of the county is £583,000 for 573,544 acres, and of this 372,085 acres, of the value of £215,814, are represented by the replies. The nature of the answers that have been received is represented by a classification under nine different heads, and to some of these we may direct attention. Thus 1165 farms out of 4578 have their game let, on 3816 the tenants say they are injured by game, and 2267 of them have estimated their loss at (in all) £19,906 per annum, the individual estimates varying from a few shillings to £125 per annum. In addition to these 1549 tenants who complain make no estimate. Of all who now complain only 846 have ever made direct complaint to their landowners, and only 41 have made direct claims, amounting in all to £683. These claims have been disposed of as follows:—One by legal proceedings, ten by compromise, eight were admitted and paid, and twenty-two remain unsettled. The ninth question asked for the number of tenants who say that the absolute and unrestricted right to kill, either by their own hands or by others employed by them, hares and rabbits on the lands they occupy, would enable them sufficiently to protect their interests. The answers show that 3106 would thus be satisfied, while 750 say such right would be insufficient, and 134 declare it to be unnecessary. Probably some explanation of these figures is afforded by the fact that, among the 3816 tenants who suffer from game, there are as many as 291 who are injured by deer, and no fewer than 1892 who suffer by rooks, wood-pigeons, and other vermin. Of 102 proprietors who have answered the questions of the committee, 69 reserve the right to hunt and kill game, and on the estates of 12 the tenants are bound to protect game and inform against poachers. On two estates the game is reserved to proprietor and tenant equally, and on 16 there is no special covenant or condition regarding game; 37 proprietors declare that they preserve game, 60 say that they do not preserve, 19 admit that they have received complaints, and 80 say that no complaints have reached them.

—— At the recent quarterly meeting of the Morayshire Farmers' Club, the question—"Whether is it better to Board the Unmarried with the Married Servant, or keep them in the Bothy or Kitchen?" was discussed, and the remarks of the different speakers gave so vivid and direct a picture of the ARRANGEMENTS for FARM LABOURERS in the NORTH of SCOTLAND that we extract a few of them:—

Mr. CRUICKSHANK, Meft, said he would keep the unmarried servants rather in the kitchen than in the bothy.—Mr. RUXTON, Inchbroom, had generally had four married servants in houses, and he had a bothy. He was not sure that it would be desirable to have a cottage for every male servant on the farm; he would merely say that he was obliged to use the bothy. On his farm in the county of Banff he had about an equal number of servants, and he had tried the unmarried men in the bothy and in the farm kitchen. He continued them in the bothy for ten years; and for the last six or eight years he had them in the kitchen. Both the bothy and the kitchen suited very well. He never had the least difficulty, and he really could not say decidedly which was the best.—Mr. WALKER, Leuchars, said that he had always had about an equal number of married and unmarried servants. The system in Fifeshire was to have a bothy for the unmarried servants, alongside one of the farm houses. The unmarried men got their 6½ bolls of meal yearly, and a pint of sweet milk daily. The wife in the house next to the bothy kept boiling water for them twice a day, and the unmarried men made their own supper. The bothy was cleaned out by the wife of the married servant, and everything kept in order. With regard to keeping young men in the farm kitchen, they found in Fife that that would never do. It prohibited the mistress and her family from getting into the kitchen at night. With regard to boarding young men with married men, that was out of the question altogether, there was no room for lodgers. If a bothy were kept, they could have it clean, and the men comfortable; and that was by far the best way that young men could be kept.—Mr. HAY, Trochelhill, said he had no experience whatever of the bothy system. It seemed to him that it was a system that was passing away, and ought to do so. Nearly the whole of his servants had always been in the farm kitchen, except one or two of the principal, who were in houses. What he should like was to increase the house accommodation, to have more married servants, and, if possible to have the young men boarding with them.—Mr. KAY, Forres, thought the most objectionable plan of accommodating unmarried servants was to board them in the houses of the married servants. There were very few instances indeed in which the farm cottages contained more accommodation than was absolutely necessary for the servant himself and his family. If the family were young, they required the most of the attention and care the mother could give them, without her having to attend to a boarder, while if the family were grown up, they could receive no beneficial influence from a boarder. The boarding of unmarried servants in the farm kitchen was also very objectionable. The best place for an unmarried servant was a well kept bothy, where the men were kept comfortable, their sleeping apartment kept clean, the furnishings and dishes for their food properly cared for, and everything done for them that could be done. They would never be so happy and well pleased as in that position.—Mr. FERGUSON, East Grange, said he was very sorry that the accommodation for married servants on his farm was limited. He would like more houses, and though he did get more of them, he certainly would not approve of young men being boarded with the families of married men. He did not think there was sufficient accommodation in cottages for boarders. His unmarried men were in a bothy, with the exception of one or two in the house. With increased care in keeping the bothies clean, they would be exceedingly comfortable for the servants. The first desideratum was to get a good bothy. He thought it should go abroad that there are some places in the county of Elgin used as bothies that are not fit for human beings to be in. There were one or two proprietors he could point to who were now building bothies upon an improved system, giving every facility and accommodation to men in the shape of good cooking apparatus, lavatories, &c., and he thought that should make the servants comfortable. As to living in the farm kitchen, that could not be approved of. It disturbed all their domestic arrangements in a way that is not at all desirable.—Mr. TOD, Ardivot, thought the result of this discussion would be simply to point out the great deficiency of accommodation both for married and unmarried servants that existed in Morayshire.—Major CULBARD said there could be no doubt it was a disagreeable thing to have farm servants in a kitchen. It must be a discomfort; and what was a discomfort to the farmer, must be a discomfort to the servant who had a family, and who wished to have all the privacy that his house could afford. He thought their friends the farmers ought to provide better bothy accommodation for unmarried servants. There seemed to be no endeavour to make young men comfortable, by giving them cooking arrangements, and such other things as would make their bothies fit places for people to live in. He had been in some of these bothies, and he was sure he had seen better dog-kennels.

OUR LIVE STOCK.

CATTLE.

Few persons will have forgotten the price given by Mr. Cochrane for two Duchesses in 1870, or the still more extraordinary transaction in which Lord Dunmore purchased the two heifer calves of these animals for the same sum as was given for their dams—2500 gs. These calves arrived, in company with other six cows and heifers, at Liverpool last Tuesday week, on board the Sarmatian. They were all, thanks to the care of Mr. Simon Beattie, in excellent condition, although the passage had been rather rough. The young Duchesses are very promising, and bid fair to equal, if not surpass, their dams, as Shorthorns. The Oxford cows are fine animals with highly creditable calves, and the two Red Roses are large, massive cows, full of symmetry, of excellent quality, and accompanied by two capital calves, much alike. The following is a list of the animals :—

Duchess 106th, white, calved November 30, 1870 ; sire 8th Duke of York, dam *Duchess 103d* by 4th Duke of Thorndale (17,750).

Duchess 107th, roan, calved December 16, 1870 ; sire 8th Duke of York, dam *Duchess 101st* by 4th Duke of Thorndale (17,750).

11th Lady of Oxford, roan, calved May 1, 1868 ; sire Baron of Oxford (23,371), dam *7th Lady of Oxford* by 6th Duke of Thorndale (23,794).

Oxford Duchess, red and white, calved July 2, 1871 ; sire 6th Duke of Geneva, dam *11th Lady of Oxford* by Baron of Oxford (23,371).

8th Maid of Oxford, roan, calved October 18, 1867 ; sire 2d Duke of Geneva (23,752), dam *2d Maid of Oxford* by Grand Duke of Oxford (16,184).

Marchioness of Oxford, roan, calved January 21, 1871 ; sire 4th Duke of Geneva, dam *8th Maid of Oxford* by 2d Duke of Geneva (23,752).

Red Rose (late *Easterday 2d*), red and little white, calved April 12, 1867 ; sire Airdrie, dam *Easterday* by Pilot.

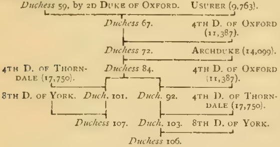
Red Rose 2d (late *Grace 2d*), red, calved October 13, 1866 ; sire Duke Frederick, dam *Grace* by Airdrie.

Red Rose 3d, red and little white, calved February 15, 1871 ; sire Joe Johnson, dam *Red Rose* by Airdrie.

Red Rose 4th, red and little white, calved July 3, 1871 ; sire 11th Duke of Thorndale, dam *Red Rose 2d* by Duke Frederick.

It should be stated that the *11th Lady of Oxford* and her heifer calf were imported with Colonel Kingscote's Duke of Hillhurst last April.

The pedigree of the two imported Duchesses, for which such "fabulous" prices have been given, is a matter of some interest, as showing the sires held in highest estimation by persons who value unsullied lineage. The following diagram illustrates their breeding :—



8th Duke of York was sold at Mr. Bell's recent sale for 1065 gs., the highest price ever paid for a Shorthorn at a public sale. He is by 4th Duke of Thorndale, and from *Duchess 86th* by Grand Duke of Wetherby (17,997), out of *Duchess 67th* by Usurer. 4th Duke of Thorndale, bred by Mr. Samuel Thorne, of Thorndale, New York, was by Duke of Glo'ster (11,382), great-grand-sire of 8th Duke of York, and from *Duchess 64th* by 4th Duke of York. 4th Duke of Oxford, bred by the late Earl Ducie, was by Grand Duke (10,284), and out of *Oxford 6th* by 2d Duke of Northumberland. Grand Duke was a son of 2d Cleveland Lad and *Duchess 55th*. Archduke was by Duke of Cambridge (12,742), a Duchess bull, and out of *Duchess 69th* by 4th Duke of York (10,167), g.d. *Duchess 59th*, who appears in the pedigree of the two Duchesses just imported as 6th and 7th dam. Usurer, bred by Mr. Hall, was by Lord Warden (7167), from Earl Spencer's *Gold* by Orontes (4623). It is needless to pursue the pedigrees further. Were we to do so we should find the same system of breeding from near affinities carried back to the days of Belvedere and Comet. The above notes show sufficiently clear how systematically the best Duchesses have been in-bred, and their continued popularity is a strong argument in favour of the system.

—— We are glad to notice signs of revival in the live stock trade between France and England. Mons. Ste. Marie, of Paris, has purchased a Wild Eyes bull calf by 8th Duke of Geneva, out of *Lady Worcester 2d*, from Mr. Harward, of Winterfold : a roan Oxford bull calf, by 8th Duke of Geneva, out of *5th Maid of Oxford* ; Royal Duke, a Booth yearling, from Mr. Aylmer, of West Dereham, and 3d Duke of Wellington, a Waterloo bull, bred by Lord Penrhyn, from Mr. T. Morris, of Maisemore Court, Gloucester.

—— Mr. Cheney, of Gaddesby, has imported some Shorthorns from Messrs. Walcott & Campbell's herd, New York Mills, U.S. The animals came across in the New York, and were landed at Southampton, not, however, without a serious loss in the death of *9th Maid of Oxford*, who "dropped" on the voyage ; and, although landed safely, died a few days afterwards in the quarantine shed at Southampton. The following is a list of the animals imported :—

10th Lady of Oxford, red, calved March 23, 1867, by 10th Duke of Thorndale, dam *7th Lady of Oxford* by 6th Duke of Thorndale.

13th Lady of Oxford, roan, calved January 21, 1871, by Baron of Oxford, dam *7th Lady of Oxford* by 6th Duke of Thorndale.

9th Maid of Oxford, red and white, calved December 6, 1869, by 10th Duke of Thorndale, dam *3d Maid of Oxford* by Grand Duke of Oxford.

5th Lord Oxford, red, calved January 2, 1870, by 4th Duke of Geneva, dam *2d Countess of Oxford* by 2d Duke of Geneva.

1st Duke of Oneida, red, calved January 2, 1870, by 10th Duke of Thorndale, dam *12th Duchess of Thorndale* by 6th Duke of Thorndale.

—— The following particulars respecting the Booth Shorthorns are extracted from Carr's "History of the Killerby, Studley, and Warlaby Herds" (p. 118) :—

"The late Mr. Booth succeeded in imparting to his cattle a length of quarter such as no other herd can boast, a marvellous fulness and depth of thigh, and of the twist, or junction of the inside of the thighs, and a perfectly parallel and almost perpendicular position of the hind-legs. It was, however, to the ample and symmetrical development of the fore-quarters that Mr. Booth's especial attention was directed. He increased the obliquity or backward inclination of the shoulder blades, thereby preserving the level line of the back, and promoting the free and graceful carriage of the animal ; and under the conviction that ample scope for the vigorous action of the heart and lungs was an essential condition to the formation of good blood, and therefore of good beef, it was his aim to improve the form and enlarge the capacity of the chest. With this view he endeavoured to augment the prominence or circularity of the fore-rib, and the width of the sternum or floor of the chest, between and behind the fore-legs. It is to the success of Mr. Booth's efforts in this direction, and the extension of surface which this improved formation of the chest affords for the accretion of flesh, that we are indebted for those valuable and almost peculiar characteristics of the Warlaby cattle—the perpendicular fore-flank, which drops even with the arm, the roundness of the barrel-shaped crops, and the width and massiveness of the projecting bosom. To this conformation also may probably be due the very remarkable immunity from pleuro-pneumonia and other chest affections which the Warlaby and its kindred herds have hitherto enjoyed. It may here be remarked that this development of the fore-quarters was mainly effected by the use of the male descendants of *Isabella* by Pilot. The necks of the Booth Shorthorns are worthy of note. Whilst displaying at their junction with the head much of that fineness and cleanness which characterise the dairy cow, they are remarkable for the bulky, yet symmetrical, development into which they gradually swell as they approach and blend with the shoulders and breast, completely hiding, even in the unforced animal, the shoulder points."

SHEEP.

M. Dutertre, of the Agricultural College, Grignon, has been purchasing sheep from some of our best breeders. He has secured 16 Shropshire ewes and one ram from Mr. Randell, of Chadbury, Evesham, and ewes of the same breed from Mr. R. H. Masfen, of Pendeford ; 10 Leicester ewes and one ram from Mr. W. Torr, of Aylesby, and some Norfolk long-woolled sheep (Cotswold) from Mr. Hugh Aylmer, of West Dereham.

TOWN SEWAGE.

Irrigation *versus* "A B C."

In view of the approaching experiment at Crossness with 500,000 galls. of London sewage, on the Native Guano Company's precipitation process, it would have been highly satisfactory could a similar one, on the principle of the disposal of sewage by irrigation, have been brought about ; but as that, either with irrigation or the other sewage schemes at present before the public, is unlikely to occur, as regards irrigation *v.* precipitation per the "A B C" process, I shall esteem it a favour to be allowed to make comparison of them, as to which is most applicable as "the model works for a town."

In setting up for both schemes, after fixing on the site is the purchase of it, and which, as regards precipitation, requires an extent of ground, in addition to the space for the engines and tanks, of half an acre for every 100,000 galls. of sewage treated, and which is not likely to be had at other than building land price. With all dry patent sewage-manure manufacturers, as well as for irrigation, the first business is to have their raw material laid on at or near the surface. Unless favoured by gravitation, the power to do so must be in duplicate ; otherwise the expense of receiving-tanks or reservoirs, for two days' supply at least, must be bargained for. The "A B C" Company provide only one engine for the experiment, a fact which, as well as their additional standing-ground, must be borne in mind in applying their costs.

For the medium of transmission a length of pipe is common to both, more especially for the precipitation process, to get it well away from the town to be less objectionable as a nuisance, and for land of less value as standing ground ; and the carriage of sewage, as an element of irrigation, in a through water-main, can well be put against the carriage attaching to the "A B C" stuff to its destination.

The one process is to be worked night and day, and so may the other ; but night sewage, which is small in volume, and almost clear water, is not worth the expense of dealing with it by night work.

So far the motive power for both, which, had it been by gravitation, irrigation would have had the whole of the "£7000," the stated cost of the Crossness experiment appliances, to act on ; as it is, there is only the price of a "15-horse power engine," as being common to both, to deduct, leaving, say, £6300 for the permanent work of the land for irrigation.

The subject for comparison is that of land in a farm, or farms, in the ordinary course of husbandry in the country, to which improved agriculture has proved that not only does it pay to drain the soil, but also that if a modicum of such drained water was brought over the land again as matter of irrigation, or if such an element as sewage were transmitted and laid on for that purpose, so much more would it be for the best cultural results.

£7000, the sum (less the price of a "15-horse power engine") for plant which the "A B C" Company expend to the point of the production of a dry manure, would be sufficient to provide for the permanent way—or the mains, chambers, sub-mains, and connections between fields, at £3 an acre ; and £3 an acre for extra underground drains for the additional rainfall (call it) in sewage, in the main distribution of sewage over 1000 acres. The cost of conducting water on the surface must be less than for doing so underground, and the main underground drainage of individual fields, to a depth of 4 to 5 feet, is accomplished for less than £3 an acre.

Again, the figures (which are considerably under-estimated) for labour all through the process of precipitation, are sufficient in amount for the arterials, or the smallest feeders, in the application of sewage, either on the ridge-and-furrow or the so-called catch-water system, to 1000 acres land, in the formation of elevated rows, such as for Potatos or Turnips, sufficient for the flow of water along, as well as for the passage of sewage in them. In a matter of cost the question might arise whether to charge the furrowing up of the surface in the interest of dryness to the crop, or to the preparation for an element of irrigation to it.

As to the creditor side of the comparison, or as to yield, dry seasons are as favourable for dry sewage manure manufacturers as they are for sewage, or ordinary water, irrigated farms ; and dry sewage manure merchants during the dry season (or four or five months) of the year, may be said to be able to realise maximum results, according to their mode of production, while during the wet season, or the other seven months of the year, that they are not. Taking the maximum yield of the "A B C" process from the 500,000 galls. in the best season to be 3 tons a day of dry bagable manure, including precipitate, such would amount to a large quantity in the total for the five favourable months—450 tons ; and from October to April following, with steam-power to aid in the drying of that of the short day of winter, when the sewage is in double or triple volume of water, that it is one ton a day, or for the remaining seven months of the year 210 tons (a most excessive estimate as compared with the yield from the Leamington sewage of much the same volume, and of as good, if not of better quality).

In the estimate of cost of appliances and labour for this Crossness experiment, given in the *Standard* of September 2 last, no mention is made of steam-drying, only that some wonderful transformation is to be performed on the precipitated mess, on being passed through a hot-air chamber : but as this has been tried at Leamington and found wanting, with complaints against it as a nuisance, it may be put aside with no alternative but erections with perforated iron floors, arranged for receiving steam underneath, and the escape of the vapour, however foul and noxious, from the drying mess to the air.

The steam-drying surface accommodation at Leamington was about 3500 square feet, but at the intrinsic value of the manure (although anything now that is only guano in name will sell) 17*s.* 6*d.* a ton, steam-drying is out of the question. It should be mentioned, that previous to steam-drying on perforated floors, the sludge requires to be of the consistency of nearly solid mud, and that, weather permitting, no better plan can be adopted to get it to that state than by exposure to the air in thin scatterings, and that, along with the maximum nuisance, the best result is obtained from steam-drying in hot midsummer weather. Farms of the ordinary description throughout the country provided with an element of irrigation, either as a fertiliser auxiliary, or moisture, with portions of them under such crops as Italian Rye-grass, roots, cereals for straw as fodder and litter, and having accommodation and stock to consume them, either for milk, meat, labour, or keep, it must be the farmers' own fault if they have not maximum results under the most exhaustive rotation of cropping. Grass for summer and roots for winter food—no two better crops for sewage—and, with a supply of it to cereals till they are able to cover the ground, and do for themselves ; an estimate of the yield from all such much under £35 an acre would not be the truth. Say £30 an acre.

Barking sewage farm, under Mr. Morton's management, averaged £44 15*s.* per acre; in 1870 it grossed £42 an acre; and Mr. Hope's farm, for the first nine months of its existence, and when not in full bearing, realised nearly £30 an acre. Allowing that the tenant gets £3 an acre out of the £30 for profit, and the balance charged over, preparation (permanent and temporary) of land, £7; labour, £5; seed and repairs, £2; rent and taxes, £4; there remain about £9 to £10 an acre to pay for sewage, equal to 10*s.* per head of the population per annuum, or the sewage of 15 to 20 persons to an acre, or 200,000 gallons per acre.

The farmers of East Lothian, Scotland, expend £20 an acre on auxiliary manures alone, besides paying over £3 an acre for their land.

Thus the comparison to the point of precipitation and a dry manure is as under:—

"A B C" process.	Summer make	450 tons
	Winter make	210 ,,
		660

—at £3 10*s.* (not at 17*s.* 6*d.*, the intrinsic value), and without deducting the cost of manufacture, which at Leamington was "£150 a month."

Against irrigation	£2310
1000 acres, at £9	9000
Deficiency by "A B C" process ..	£6690

If the Native Guano Company are to set up as purifiers of water as well as manure merchants, sufficient mention is not made of the process of filtration, and of the expenses attending it, which are large and frequent. The filtering space at Leamington, for a fair-weather sewage of 550,000 galls., and a foul-weather flow of nearly three times that quantity, extended to nearly 2000 square yards, of which there were directly concerned with the clarifying nearly 480 square yards of subsidence canal, and close on 600 square yards of filtering surface. The filtering arrangement was composed of a winding canal fitted with wooden bearers, covered with wire netting, with layers of charcoal, gravel, sand, and charcoal again, and canvas cloth between each and over all. This filter on being cleansed, as might be for a particular visitation, for two days at most after the water which passed through it was apparently improved, but in less than a week, if the cleansing was not attended to, to remove the deposit, over the whole great black filthy matter would bubble to the surface, bloating and floating about on it in unsightly masses. To have taken the full benefit of the filter, the whole 2000 square yards should have been in duplicate, and cleansed and aërated not less than every three days—otherwise, the effluent after precipitation might as well have been discharged directly into the river. The cleansings from the top of the filter make the best testimonial manure, being richest in ammonia, and freest of sand; and the Metropolitan Board of Works should see to this, notwithstanding the high manurial value ascribed to the general mess by the Company, but contradicted by chemistry, and not allow the cleansings from filtration after precipitation to be used as a fair sample of their guano on the 7 acres of proposed experimental ground; and attend also to several other facts for a fair trial of the concern for what it is worth.

It would be a poor concern indeed not to be able to cleanse a part of the sewage of London to a purity to suit an ebbing and flowing river, such as the Thames as far down as Crossness; but for sewage being so clarified by precipitation alone as to be continually admissible into a stream running always one way, is simply futile.

Whether filtration be tacked on to the process or not, it will be much the same thing, to set aside a sum for the periodical cleansing of the river, opposite and for some distance below the works, which being an outlay in the one case, in a strict matter of accounting should be reckoned with in the other.

But how is it to be credited to irrigation? Our country, like some of those more mountainous, does not abound in natural gathering grounds to lay up winter's water supply for summer use; but the rain falls, and then by the means of much draining, both surface and underground, it is hastened on in rapid course to the river, and lost to us in the sea. Such rapid discharge of winter's water may suit the land, but not so the fish and crops in summer. Commissions of inquiry are appointed on behalf of the fish-producing interest to discover prohibitions and cures for the fouling of streams; and it must rejoice the heart of every true sportsman to see, not only that the water is of a purity for the fish, but also that during the dry seasons it is in store for them to "get up,"—a most material provision besides the sweetening of the stream. The natural convergence, or the river, by the storage of water in winter for summer use over the land, whether by subterranean or surface channels, is sure to get its share.

The sum for the purchase of land, construction, maintenance, and cleansing of a filter (in duplicate at least) for the flow of half a million gallons of sewage previously treated by the "A B C" process, would materially assist in a storage system for 1000 acres. It would be a matter, if it were sufficient to provide gathering ground or reservoir accommodation, conveniently placed, to command the root and grass crop divisions of such an extent, at the rate of 30*s.* to 40*s.* per acre, including appliances, either for the gravitation of the water on to fields below, or for connections to transmit it to fields above, the power to do so being the portable steam engine, which all true agriculturists must long to see attached to homesteads, either singly or in combination, to perform the works of the farm, pumping its water of irrigation amongst the rest of them. Thus far to compare precipitation with irrigation, or with the experimenting on a set quantity of sewage, either at Crossness, Bolton, Leeds, or anywhere else, to afford data for the treatment of the whole sewage of a town, is any other than mere trifling. If the works at Crossness are on the scale for a quantity representing the maximum or storm-water flow of a town, and not a portion of it only, let it be understood 500,000 galls. of storm sewage represent 150,000 to 200,000 galls. of fair-weather flow, and a sewer-contributing population of 5000 to 7000 souls. But £7000 of outfit and £1500 to £2000 working expenses, look like £1 a head to begin with, and 5*s.* a head to carry on. The whole filter farm concern for the town of Warwick, with 11,000 inhabitants, cost £1 a head, with a current expense of 5*d.* a head, or about ½*d.* per 1000 galls.

In flat-lying towns, or in towns indifferently sewered, it is oftener in storm that their sewage accumulations are cleared—the solid matters brought down then are more in quantity than in the ordinary weather flow (see the analyses in the Royal Rivers Pollution Commissioners' report, March, 1870, of London sewage for suspended matters immediately after a storm), and storms occur more frequently in winter when there is less drying power, and notwithstanding the shortcomings of any works the sewage must then be committed to the river, pure and simple.

The "A B C" process may do as an adjunct to irrigation, and on construction to allow the sewage to be passed on to the land in three degrees of purity:—1st, as a fertiliser in place of the usual fold or other solid manure; 2d, as an auxiliary in place of the usual top-dressings of guano and the like; and 3d, as a moistener in place of rain.

With their process so adapted to irrigation, and under such a company of directors, the field is their own, and opposition from all quarters ceases. Failing their doing so, farmers in proximity to a through main will be found entering into combination for the interception of much of the solids of sewage, at certain times, at fixed depots, to suit it to their crops through all their stages. *J. M., Drainage and Sewage Engineer.*

THE SHEEP OF NEW SOUTH WALES.

(*Concluded from p.* 1499.)

Number of Sheep in the Colony.—New South Wales is at present only the fragment of its former self—the three prosperous colonies of Victoria, South Australia, and Queensland, having been carved out of its once ample domain. The last of these subductions was in 1861, when its northern territory was constituted into the separate colony of Queensland. Taking that year as a starting point, the official returns give the following as the number of sheep in the several years, though there is good reason for believing that during the earlier years the number was underrated:—

1861	6,119,163	1866	11,644,593
1862	6,550,896	1867	15,066,377
1863	7,169,926	1868	16,000,000
1864	9,089,463	1869	16,848,217
1865	9,650,106	1870	16,218,825

An observable increase is specially noticeable in the years 1866 and 1867. During these two years the seasons were good, and the cotton famine helped to make the price of wool high. Fencing was carried on to a great extent, especially on the large runs of Riverina, and the sheep being turned out unshepherded on these enclosed runs, the country was able to carry more to the acre. Many squatters from Victoria, crowded out by the growth of population and the extension of agriculture, migrated with their flocks into the south-western part of this colony; and many owners of cattle sold them to make way for sheep. In the two following years the seasons were unfavourable. During the last year the numbers show an actual decrease of 629,392, and this is to be explained partly by the losses sustained during the severe drought which took place during the latter part of 1868 and the beginning of 1869, and partly by the very large consumption of sheep by the meat-preserving companies. The low price of wool having greatly diminished the profits of sheep-farming, the culling of flocks has proceeded much more vigorously than before. There is no disposition to increase numbers, to take up new runs, or to overstock old runs. The tendency is all the other way, and the inferior stock has been sent remorselessly to the pots. The operation is a wholesome one, and though the diminished number of sheep appears at first sight to indicate a retrograde movement, it is not so in reality. The inspectors of sheep estimated that the losses from drought were a million, but this must be an under-estimate, considering that we have to account for the annual increase on a total of 15,000,000 sheep.

Stud Sheep.—Sheep from the best German, French, and Amercan flocks have from time to time been introduced into the colony, and interbred with the Australian Merino, and some remarkably fine sheep have been thereby produced; but the conviction is now growing that Australia has little or nothing to gain by encouraging further importations of this kind, for not only is there natural deterioration due to the climate, which requires to be made good by the perpetual infusion of fresh blood, but, on the contrary, there is an improvement. Nothing that is important surpasses or even equals in its specialities the best specimens of the Australian Merino. By this last term is understood the produce of the imported Merino, carefully bred in the most favourable districts of Australia, and guarded from any injurious intermixture with imported blood. The full and special effect of the climate has been thereby obtained at its maximum, so far as the time that has elapsed has allowed. To intermix this special Australian strain with importations is only to undo the good effect of the Australian climate, *i. e.*, better result is to be obtained by careful culling and by close adherence to the best Australian breed. Under this conviction the importations from Europe have of late considerably fallen off. New South Wales, however, has drawn very largely on the stud flocks of Victoria, and would have done so still more but for the unfortunate prevalence of scab in that colony. The quarantine regulations prohibit sheep from crossing the Murray to the northwards; so that, instead of a short journey from Victoria to the runs of Riverina, sheep have to be sent down to Melbourne, round by sea to Sydney, to perform quarantine and undergo ablutions in our coast districts, and then make a land journey up the country.

Previous to 1864 no record was kept of the importations of stud sheep. Since that time about 3500 have been introduced from Victoria, about one-half of which were ewes, and 500 from Tasmania, New Zealand, America, England, France, and Germany. Now that the importance of developing the Australian Merino is distinctly recognised, the formation of stud flocks is becoming more a matter of concern, and for those who have the requisite qualifications the employment is likely to be one of considerable profit, as for many years there must be a large demand for stud sheep before Australian flocks generally are brought up to their proper standard, and full justice is done to the virtues of the climate.

The finest stud sheep in this colony are to be obtained at Mudgee—a district where Art and Nature have combined to produce a favourable result, and where the Messrs. Cox and Mr. N. P. Bayley have especially distinguished themselves. The climate is temperate, the soil moderately fertile, the grasses nutritious without being too rich, and some of the settlers there have had the good sense and the good fortune to pay unremitting attention to quality, and to follow out perseveringly sound rules of breeding. Over how large a portion of the colony what may be called "Mudgee results" are obtainable is at present undetermined, but there seems good reason to believe that equal skill and attention might produce equal results in the greater part of the belt on the west of the tableland. Breeders favourably situated are now being stirred up to emulate the fame of Mudgee, and from this generous competition the best results may be anticipated.

Repeated attempts have been made of late years to try and combine the two requisites of large carcase and fine wool in the same animal, and for this purpose Merino ewes have been crossed with Leicester and Southdown rams; but the result has been uniformly a failure. The stock of the second generation has been comparatively worthless, and the effect of the cross has simply been to spoil the Merino breed without any adequately compensating advantages. The practice is now nearly abandoned, and breeding for wool and breeding for carcase are regarded as separate undertakings. If in this colony the demand for the meat-preserving establishments should make it pay to produce large-framed sheep, then it would be better exclusively to cultivate the large breeds in those parts of the colony where the climate and pasture are suitable for them. But at present it seems very doubtful whether (except perhaps for the supply of lambs) there will be any need to bestow special attention on large sheep, as the Merinos will probably make up in number what they lack in size. There is still a very large proportion of the colony unstocked or only half-stocked, and the annual increase from the full number of sheep which the colony can maintain will yield an immense annual cast for slaughter.

Improvement in Flocks.—Nothing has done so much to stimulate improvement as the apparently disastrous fall in the price of wool. With a high and rising market, wool-growers were greedy of quantity. The effect of the glut has been to show that coarse and inferior wool can be produced in quantity in other parts of the world, and at least as cheaply as in Australia; and that low-class wool is the first to feel the falling price, and feels it the heaviest. A very general effort, therefore, is now being made at the production of superior wool, and though no amount of energy can undo in one season the errors of faulty breeding, or the neglect of a series of years, still such earnest attention is now being given to the careful selection of stud rams, to the classification of ewes, and to the culling of flocks, that every year may be expected to show perceptible improvement.

The fencing of runs is also indirectly tending to the improvement of the stock; and abundant experience has shown that when sheep are turned loose to graze in paddocks of moderate size, they not only get fatter, but throw finer fleeces than when they are driven by shepherds and constantly rounded up by dogs. Now that the country is pretty well freed from the native dog, it is no longer necessary to shepherd the flocks by day or yard them at night.

Getting up the Clip.—During the prevalence of the gold mania, when rural labour was scarce and dear, and when very few stations had been much improved, most of the wool was shorn in the grease; but repeated intimations from the London brokers that the get-up of the wool was all-important as regarded price gradually led the more enterprising settlers to fit up apparatus for washing the wool on the sheep's back; and the use of hot water has also become pretty general. During the past few years very considerable sums have been expended in tanks, spouts, pumps, and other machinery and appliances. In some instances the hot-water process has been carried to an extreme,—and money has been spent which has not only not been returned but which has even injured the sale of the wool. Dry seasons have sometimes left stations short of water, and so neutralised all mechanical appliances; and on some thinly grassed and dusty runs it has been found difficult to keep the wool clean, though the washing process may have been satisfactory. Experience will show what are the profitable limits to the attempt to clean the wool on the sheep; but the satisfactory point is, that wool-growers generally are keenly alive to the importance of the question, and that as a rule there is now no want of enterprise to carry out what may seem to be the wisest policy.

Combing or Clothing.—There has been much discussion as to whether the wool-growers of this colony should aim at a combing or a clothing wool, and the former has undoubtedly been the ideal towards which the squatters have striven. But the conviction seems now growing, that it is impossible for this colony to compete successfully with Victoria and Tasmania for the production of a superior combing wool. At the same time, although unable to take the highest prize, New South Wales has a fair proportion of territory within which a good combing wool is producible; but there is always a large proportion of country, and especially that known as the salt-bush plains, within which it is certainly difficult to produce this description. It is fighting against Nature; and the opinion, though by no means received, is gaining ground that it would be more profitable to strive after a good clothing than to achieve only an inferior combing wool; on this point further investigations are needed. The climate of each district requires to be separately studied in order to determine what description of wool is best adapted to it, and hitherto sufficient attention has not been given to this matter. Squatters have been too content to get good rams and to grow wool, and on no very definite plan, and the consequence has been a good deal of produce of a rather mongrel type, and not exactly either one thing or the other. Increasing attention, however, is now being bestowed to these points, and we are progressing towards a state in which our producers will seek to co-operate more intelligently with the forces of Nature, and in which the produce will be of a more definite character and of superior quality.

Coarse-woolled Sheep.—Of these there are not very many in the colony, and they are principally confined to the coast districts, where they are kept for breeding lambs for the Sydney market. They consist chiefly of Leicesters and Southdowns, with a few Cotswolds and Cheviots; the latter, however, being principally in the New England district. The Leicester appears to be the favourite breed for fattening lambs, the ewes being excellent mothers; but a good many lambs are bred from Southdowns. For lamb-breeding purposes the coarse-woolled sheep would pay better than the Merinos in the coast districts, more especially if they are allowed to run at large in paddocks, but they do not thrive if knocked about by shepherds and by dogs. A flock of full-grown, pure-bred Leicesters will shear from 5 to 7 lb. of washed wool per head, which will sell at from 10*d.* to 1*s.* a lb., and lambs from three to four months old will cut from 3 to 4 lb. of washed wool. The wethers of this breed, when three years old, have been found to kill at from 160 lb. to 200 lb. each. The principal breeders of Leicesters are Messrs. Reynolds, Doyle, Christian, and Green, in the northern districts; and Messrs. Massy and Gibson in the southern. Of Southdowns the principal owners are His Excellency the Governor, and Messrs. Dangar, Loder, and Dight, in the northern districts. It is estimated that there are not more than 60,000 coarse-woolled sheep in the colony, the number being made up as follows:—

Pure Leicesters and Cotswolds	5,000
Well-bred do. do.	10,000
Middling and inferior do.	25,000
Pure Southdowns	2,500
Well-bred do.	5,000
Middling and inferior do.	12,500
Total	60,000

The supply of fat lambs in Sydney is not superabundant, and there is plenty of room for better provision. For manuring land easily and cheaply by keeping sheep to eat off green crops, the coarse-woolled stock is better adapted than the Merino, and among the small farmers in the coast districts there will probably be a small but steady increase in the number of large-bodied sheep.

Value of Annual Produce from Sheep.—According to the Customs' returns in the "Statistical Register" the value of our wool export in 1869 was £3,164,442. But these figures are not to be depended on for minute accuracy. No completely separate account is kept of the relative amount of washed and greasy wool exported, although the returns of the border traffic show that about one-half of the wool from Riverina that crossed the Murray for shipment at Melbourne was greasy. The weights of the wool, as stated in the Customs' entries, are often loosely calculated, nor is there any check upon the valuations. Three different custom-houses, too, were concerned in the export of our wool, as a portion goes down the Murray to South Australia, and nearly two-fifths finds its way through Victoria, for shipment at Melbourne. A small portion, too, from the runs on the northern frontier passes through Queensland to Brisbane. On the other hand, a very large quantity of Queensland wool is brought down coastwise for shipment at Sydney.

The customs' valuation, however, may be roughly checked by another process. According to the sworn returns of owners, the number of sheep in 1869 was about 16,000,000. The weight of the fleece all round may be considered as averaging about 2½ lb. per sheep, and the average price of the wool in Sydney may be reckoned at 1*s.* 2*d.* per lb. The gross weight of the year's clip would, on this calculation, be about 40,000,000 lb.

THE GARDEN OF THE FARM.—IX.

THE FURNISHING OF THE GARDEN.—VEGETABLES.

I PURPOSE enumerating the best varieties of these, and offering a few observations upon the culture of a few that are seldom well cultivated in farm gardens. What are called permanent vegetables should be grown by themselves as near to the farmyard side or end of the garden as may be. There they will be near to the manure, as most of them are large or coarse, or need powerful stimulants to bring them to perfection or keep them there; this arrangement will facilitate their cleanly and handy cultivation. First among these permanent crops is Asparagus, which, however, is frequently exceedingly well done in farm gardens. The Giant is generally asked for, but it is doubtful if there is more than one variety. Liberal culture converts it all into giants, fat, sweet, and juicy; starve it and the best degenerates into small, tough, flavourless stuff.

Asparagus is commonly grown on beds, from 3 to 5 feet wide, and 2 feet alleys or vacant spaces between. On yard beds two rows are planted, 1 foot from the side; on 5 feet beds, three rows. The plants are generally planted in April, 1 foot or 18 inches, or even 2 feet, apart. Some prefer growing them in rows 3 feet asunder, with the plants 2 feet from each other. The point of most moment is that the soil should be rich, light, and deep. A tilth a yard deep, liberally enriched with some of the best and sweetest muck from the farmyard, is what Asparagus luxuriates in. During summer keep the surface clean, and give two or three sprinklings of salt, just enough to whiten the ground in showery weather. Should dry weather set in, soak the fast-growing plants with sewage or liquid manure. Every autumn remove the surface soil an inch or two deep, and replace with a dressing of good manure. Cut no grass till the third year after planting, and then cut all, big or little, till the end of May, and none after, and the beds will continue in first-rate condition for many years.

Rhubarb.—Myatt's Victoria for the general crop, and Royal Albert for early cuttings. The former is very large, and of excellent quality. The roots should not be planted nearer than a yard apart, and the richer and deeper the soil the better it will grow. By covering the early sort with a pot or two, and surrounding it with some warm dung from the yard in January, Rhubarb may be cut all through the spring months. Another mode of getting an early supply is to take up a few roots and place them in a warm stable, cow-house, or cellar.

Seakale is one of the most useful of winter and spring vegetables. Its young stalks must be blanched before it is eatable. In that state it is brittle as the best Celery, and sweet as the choicest vegetable. It is easily raised from seed, or roots can be bought cheaply. A convenient mode of growing it is in double rows a foot apart and 15 inches between the plants, and 30 inches or 3 feet between these double rows; then cover the ground with boxes or pots at regular intervals from October to March, and place some warm dung round the same. In about a month the Seakale can be gathered. Or another way is to take up the roots and grow them in any warm place in the dark. Light is fatal to the tenderness of the Kale. After March, the last cuttings are gathered outside by simply excluding the light by a covering of pots or 6 inches of litter or earth. During the summer keep clean and give a light sprinkling or two of salt and a coat of manure to develope a full crop of large crowns for the next year. The flower-stems of Seakale as well as Rhubarb should be cut out as soon as they show themselves. I have been thus precise about Seakale, because it is so seldom seen in farm gardens. It is, nevertheless, one of the very best and most wholesome of vegetables, and its value is further enhanced by its coming in at a time when green sauces are scarce.

Globe Artichokes are another useful vegetable, almost wholly neglected by all but the aristocracy. They resemble downy Thistles in leaf and flower, and the part eaten in England is the half-grown flower pod. On the Continent they blanch the young stems as we do Celery, and delight in the stewed Chards. The base of the shell-like petals of the flower and its sweet bottom are stewed and eaten with white sauce or melted butter. A dozen plants will suffice, 3 feet apart, and protect their crowns with a 6-inch covering of litter in winter. Horse-radish should be grown against these rougher vegetables. If you want to match your joints of roast beef with Radish like your walking-sticks, give a rich soil, and plant the crowns 1 foot or more asunder.

The *Jerusalem Artichoke* is another vegetable seldom grown, but worthy of a few yards of soil in the vicinity of these rough crops. It is a tuber something like a very irregular Potato full of eyes, and the top runs up like a huge stalk of a Sunflower to a height of 6 to 10 feet on rich land. The tubers cluster pretty closely round the stems, and are eaten boiled like Potatos, and converted into soup which is highly prized. They should be planted early in the spring, and may be taken up in November, or left in the ground till wanted; 18 inches apart from set to set, and 4 feet asunder in the rows, is close enough. The tops in a semi-ripe state have been recommended for stock.

Before dismissing permanent crops, it will be well to enumerate the different herbs that ought to find a place in the garden of the farm. Few things are more useful, hardly any are more generally neglected, than pot, savoury, bitter or sweet herbs. Even Rue, so highly prized for poultry, is often not to be found in a whole village or parish. The only sure way to preserve a good stock of herbs is to be always renewing them. This is accomplished by inlayering, root division, cuttings, or seeds. Each herb should have a patch of earth or a bed, or part of a row, wholly to itself, and be correctly named. If intermixed, the stronger will soon overrun and destroy the weaker,—the battle for life among herbs being assuredly with the strongest. The large old plants of several, like Pennyroyal, are apt to perish in the winter. Young plants of most sorts bear the cold best. The following should find a place in the garden of the farm if the kitchen department is to attain a perfect savour:—Mint, Peppermint, Golden Thyme, Lemon Thyme, Burnet, Lavender, Fennel, Hyssop, Winter Savory, Winter Marjoram, Pennyroyal, Rosemary, Tarragon, Sage, Balm, Pot Marigold, Sweet Basil, Summer Savory, Bush Marjoram, Borage (the latter five to be sown every year, being annuals). Amongst bitter or medical herbs,—Chamomile, Horehound, Tansy, Rue, Sorel, Wormwood, should be grown; these, with plenty of Parsley, in the hands of a wise farmer's wife, will not only ensure the best flavoured food, but mitigate or cure most of the ills that the flesh of villagers is heir to. What wit is to conversation, herbs are to successful cooking; they stimulate jaded appetites into average briskness and avidity with their racy odours and piquant flavouring. They should be grown near to the kitchen, to tempt a liberal use of them.

Potatos.—For the earliest crop no sorts are better than the best varieties of Ashtop, which are Veitch's Improved Early and Rivers' Royal. Mona's Pride is a better bearer, but not so early. Berkshire Kidney, Fluke, and Milky White, are splendid later kidneys. Rounds: Daintree's Seedling, and Early Coldstream, for the earliest; Dalmahoy, Flourball, Red-skinned do., Fortyfold, Regent, and Paterson's Victoria, for later and general crops.

Peas.—To maintain a succession from May to November, sow the first crop in November, and successional crops every three weeks from February 1 to the last of July. It is good practice to sow again as soon as the preceding crop is an inch or two high. Earliest variety: Sutton's Ringleader, or Carter's First Crop; Laxton's Supreme, and Maclean's Advancer are not so early, but Peas of finer flavour.

Dwarf Early Peas, about a foot high, suitable for the smallest gardens: Tom Thumb, earliest; and Maclean's Little Gem, a true marrow of high quality. Second or general crop, to be sown from February to June 1: Auvergne, Champion of England, Nonpareil, Wrinkled Marrow, Veitch's Perfection, and Maclean's Best of All. Dwarf: Bishop's Longpod, 1½ foot high. For later crops, to be sown from April to July (the last, however, to be sown at the end of July, to be early varieties): Ne Plus Ultra, one of the grandest Peas in cultivation; British Queen, Blue Scimetar, Victoria.

Broad Beans.—Earliest, to be planted in October or November: Early Mazagan and Early Longpod. For planting from February to June: Broad Windsor, Green Windsor, Johnson's Wonderful, and Royal Dwarf Cluster.

French or Kidney Beans.—From April to July 1: Speckled China, Dark Dun, and Negro Long-podded.

Runner Beans.—May 1: The Scarlet Runner is the best.

Onions.—Sow Tripoli in August, and James' Keeping, Brown Globe, Nuneham Park (an improved white Spanish), and Deptford, for general crop, in March. The two-bladed or silver-skinned are the best for pickling or drawing for green Onions; for these purposes sow thickly on poor soil.

Parsnips.—Hollow-crowned.

Parsley.—Carter's Champion Moss Curled; sow in February, May, and September.

Turnips.—Early Red American Stone, Early Snowball, White Stone, and Yellow Malta or Orange Jelly.

Spinach.—Every three weeks from March to September, round Spinach. October 1: Prickly or Flanders, to come in through the winter and early spring.

Savoy.—Dwarf Green Curled; for size, the Drumhead.

Radishes.—Every fortnight from July to September, French Breakfast, long scarlet, short-top, and red and white turnip. The last sowing in September: China Rose and Black Spanish, to stand the winter.

Cauliflower.—Sow every fortnight from March to June, and for winter, in September, Early London, Walcheren, large Asiatic.

Carrot.—Early Shorthorn, James' Intermediate Scarlet, Red Surrey.

Cabbage.—March to June, and August for winter and spring. Battersea, Enfield Market, Wheelers' Imperial, London Colewort.

Brussels Sprouts.—Sow the new imported seed in March. This is a splendid vegetable for winter and spring use.

Borecole, Scotch Kale.—Sow in February and May. The Dwarf Green for eating, and Melville's Superb Variegated for garnishing, and also for use.

Broccoli.—Make four sowings from March to June; the following in March and April: Early Purple and White Sprouting. The following should be sown in May and June for early autumn and winter use:—Early White Cape, Grange's Cauliflower, Snow's Superb White, and the Walcheren.

Beet.—Dell's Crimson. This is invaluable for salad, or sliced thin and served with vinegar or white sauce to cold meat. It should be washed clean, not scraped, and boiled whole for four hours. Peel, slice, and serve cold.

Lettuces.—Sow every three weeks from February to September, the last sowings, to stand through the winter, being of the black-seeded Brown Cos and the hardy Hammersmith Cabbage Lettuce. For summer use, Victoria and All the Year Round Cabbage Lettuce; and for size, the Drumhead, Cos, white-seeded Brown Cos, and Paris White Cos.

Endive.—One or two sowings may be made of the green curled from June to October. It makes a nice variety in salad, and must be tied up or blanched with an overlying slate or tile before use. It is only eatable in a pure white state.

Celery.—Cole's Superb, Crystal White, and Ivery's Nonsuch, pink.

Cucumbers.—For frame, Bluegown for length, and Telegraph for quantity and quality; for out-of-doors, Stockwood, Long Ridge and Short Prickly, the latter for pickling only.

Vegetable Marrow (for ridges).—Custard and Short-jointed Long White.

Leeks.—Musselburgh or Giant.

Melons (for hot frames).—Queen Emma and Scarlet Gem.

Small Salading, such as Mustard and Cress, Corn Salad, American Cress, for cutting green to bread and butter, mixing with Salad, &c., every 10 or 14 days from March to September. The common white Mustard and extra curled Cress are the best for these purposes. The tall or dwarf-growing Nasturtiums are likewise often grown for the flowers for use in a similar manner, and the partially ripened seeds are an excellent substitute for, some prefer them to, capers for sauce with boiled mutton. They do best on a bit of rich soil, or trained up a wall, and they are beautiful as useful.

And now, having furnished the garden with good and substantial eatables, from Giant Asparagus, through sweet, savoury salads and sauces, I must now conclude with a few hints upon successful cropping, that is, the art of getting the most and best out of everything, from the smallest area, in the least time. Fortunately horticulturists are not bound by courses laid down by the wisdom or folly of our ancestors. And it is a singular fact, revealing a marvellous faith in our cultural capabilities, that those self-same landlords, who are so fearful of their farms being exhausted by over-cropping, never manifest the least anxiety about the same awful catastrophe of perpetual barrenness overtaking their gardens. On the contrary, only two rules prevail in regard to the latter: Get as much out of them, and put as little in, as possible. Keep on for evermore, the more crops in one year the better; but sow no manure—that is all needed for the land; as if in truth the garden were not land, but an inexhaustible mine of growing force. Farmers, as a rule, have been but too apt scholars in the same school, and hence to a gerat extent the low estate of many of their gardens. But many horticulturists, by impressing all waste into the service of production, have almost acquired the art of producing much from little or nothing. But such exceptional talent must always continue rare. If you seek to reap bountifully and continuously from your gardens, you must sow them liberally with manure. This done, the ground may be always at it. The only rest for the earth horticulturists believe in, is a change of crop. As for fallows in gardens, they are but a waste of time and growing force. They should seldom last more than a day, or part of one. Feed the earth well, and one crop may tread upon the heels of another for evermore, without overtaking exhaustion.

True, in old works on horticulture you may find four, six, and even eight course rotations. But these belong to the olden time, and can only be indulged in, if at all now, in ducal residences with 10-acre gardens—one half of them under root crops.

We shall give one, however, for example. The chief law of modern rotation in gardens is, that no two crops of the same thing should succeed each other on the same spot, in the same or the next year. And even this cannot always be adhered to in small gardens.

The following hints should be acted upon, as far as possible, and may easily be carried out strictly where separate or single cropping is practised. No two so-called exhausting crops should succeed each other, hence Peas and Onions should be succeeded by Spinach, Celery, Lettuce.

Permanent crops should be succeeded by annuals—thus Strawberries by Broccoli, Cauliflowers, &c.; winter crops by summer, thus Savoys, Brussels Sprouts, &c., by Peas, French Beans. Crops of the same natural orders should not follow each other, as Onions, Leeks; Cauliflowers, Broccoli; nor Cabbage, Seakale. The following is an eight years' course of cropping:—1st year, Peas, Beans; 2d, Carrots, Parsnips, Beet; 3d, Onions, Cauliflowers, Turnips; 4th, Savoys, Broccoli, Winter Greens; 5th, Potatos; 6th, Cabbage, Broccoli; 7th, Celery; 8th Peas, Beans. Very few with small gardens get beyond the three-course system:—1st year: Cabbage, Broccoli, Cauliflower; 2d, Celery, with Peas, Potatos, Lettuces between; 3d, Onions, Carrots, Parsnips, Beet; 4th, begin again. In this course the Strawberry crops are generally included, and used for winter Broccoli, Greens, Cabbage, to be followed by Peas, Beans, Celery, Onions, and Potatos.

But by far the greater number of kitchen gardens are cropped on what is called the simultaneous system. Such crops as Peas and Beans are all grown at wide distances among other crops. Potatos, Cauliflowers, French Beans, Celery, Broccoli, Brussels Sprouts, &c., are planted between, and thus the ground is always full. Peas, for instance, are sown 10 or 12 feet apart in February; in March, four or five rows of early Potatos are planted between the Peas; in June or July, Broccoli is planted between the Potatos; and when the two first crops are cleared off, the whole ground is covered with winter stuff. Celery ridges are made early, the top cropped with a row of Peas, the Celery planted in May or June. The Peas are gathered before the earth is needed for blanching the Celery, and the lower ground on which they grew may be further utilised later in the autumn by a row of Coleworts.

By this system of cropping the earth is ever in harness. The crops are all more or less catch crops, racing against time, and occupying every available inch of space. With good feeding, the ground hoists no signal of distress, makes no sign of exhaustion; on the contrary, it improves under express cropping. Each crop prepares, I must not say enriches, the earth for another; and as they are being hurried forward to perfection, the stronger, that is the older, serve to shelter and nurture the younger and more tender into more rapid and vigorous growth. Partial shade to young vegetables is mostly a good thing from May to September, during which period the pressure of simultaneous cropping developes its full force. *D. T. Fish.*

Home Correspondence.

An Erratum Corrected.—In your excellent epitome of my address on the agricultural labourer (p. 1467), there is one mistake which I must at once correct. I am made to say, "If the labourer got 2*s*. a-day all the year round, winter and summer, he ought to be well contented." What I did say is thus correctly reported in *Bell's Messenger*:—"Correspondents of the newspapers are constantly asking us how the labourer can live on 2*s*. a-day. Now, in the first place, I contend that he does not live on 2*s*. a-day; in the next place, I maintain that if he get 2*s*. a-day in the winter, he ought to be well contented; for this reason, among others, that agriculture is the primitive industry, and depends more on unskilled labour than any other craft. It costs a great deal of time and money to make a skilled artisan." The only other inaccuracy that I need mention is this—I am supposed to argue that the agricultural labourer "lives nearer his work than the artisan." I meant it just the other way, and that being nearer his work was one advantage the poor artisan enjoyed over the rural labourer. *Clare Sewell Read, Honingham Thorpe, Norwich, Nov.* 16.

Hop Cultivation.—Much has been written and spoken on the subject of Hop cultivation and management—a crop that I have been interested in for upwards of 30 years, having sojourned in the heart of the Hop district of Kent, and observed with interest the character of the various soils and different grounds that have had the reputation of producing good crops, both in quality and quantity, under the most skilful management. The crops on some of these, I observed, were this year very much blighted. Where 18 cwt. per acre was not uncommon in previous years, the produce this year has not been 3 cwt. The same remedies are applied by practical men, in some cases with good results, that are condemned by experienced Hop growers in their immediate neighbourhood. The plants in many gardens have been washed with soft soap and water three times over this year, and where done early the result has been most satisfactory in the majority of cases; but some of the most successful growers—one of them a gentleman who has grounds the produce from which this season was 20 cwt. per acre—repudiate washing, and consider it quite unnecessary. The remedy of the above-noted gentleman has heretofore been successful, and the experience of 50 years lends weight to it. He carefully examines the physical characters of the soil and subsoil, especially the texture, depth, drainage, and the farming necessary for a crop, using farmyard manure, and avoiding as much as possible the application of artificial manures, or excessive stimulants that tend to weaken the constitution of the plant, and render it more susceptible to blight and mould Fungus. I find that the most successful Hop growers during a series of years are those farmers who have gone thoroughly into the drainage of the land, have made this their "first principle," who feed the largest number of cattle, and go deeply into artificial food, linseed cake, &c., for fattening stock. The various difficulties that were scarcely known 20 years ago appear to strike the most experienced men of to-day. It is difficult to find any Hop gardens which are not subject to blight, even considering the most favoured aspects as to wind or sudden change of temperature, cold or hot and wet or dry seasons; during the last season we have had examples that have scarcely ever been experienced before. There are few exceptions to the fact, that the best growth of Hops are produced on lands whereon during the last half century farmyard manure the produce of fatting stock has been the main application, combined with strict attention to cultivation of the soil. On lands that have not had farmyard manure applied—where the bine has been forced early by the application of artificial manures, nitrate of soda, ammoniacal salts, sulphate of ammonia, and even guano, or any other active stimulant, which are very soluble and powerful, causing in damp and warm weather very vigorous growth—the result has been remarkable; a sudden check was observable during the last and the present year; the plant become weak and much blighted. As far as my experience goes, Hops cannot be successfully grown to produce quantity and quality for a series of years, on our heavy lands, without farmyard manure. Many Hop growers who cannot apply T. Y. manure give a ton of rags to the acre, others 2 cwt. of blood manure, 8 to 10 cwt. of shoddy, 1 to 5 cwt. of guano, as a dressing. From 5 to 10 cwt. of rape cake and shoddy, 3 cwt. of rape cake and 3 of blood manure, are applications that have been satisfactory in many of the Hop gardens in Kent. Up to this time the falling-off in the plant has been marked in the same grounds and the same variety of Hop. Experience has brought to light that when artificial manures have been exclusively applied, the constitution of the plant is weakened and rendered more liable to disease. *R. A. C., St. John's Wood.*

Reclamation of Waste Lands.—My recent communication to you on the reclamation of the waste lands of North Lancashire, appears to have excited some attention in the district, and is viewed with diverse feelings by the local press, though all agree as to the necessity for the work being speedily set about. Coleridge's "Ancient Mariner's" lament of "Water, water everywhere, yet not a drop to drink!" appears to have had an analogy in Furness, though with a slight difference. The mariner was unable to utilise the vast expanse of water, and render it subservient to his needs. The inhabitants of North Lancashire, owing to its increase of population, lack food-producing land to feed that population, and though they have the necessary land at their very doors, the idea of utilising seems never to have suggested itself. The *Ulverston Advertiser*, the oldest newspaper in the district, acknowledges the need of such reclamation, but is afraid that a long time would elapse before the sands could be brought into food-producing cultivation, and instances the shores of the Solway. The scheme which I propounded and the case of the Solway widely differ, inasmuch as the land attempted to be utilised in the latter case is regularly washed by the tide. Under such circumstances, vegetation is impossible. The surplus sands of North Lancashire can be embanked, and a rotation of crops could be commenced at once. It is well-known that what is called "sandy land" produces both the heaviest and soundest crops of Potatos, and those grown on such land usually bring a halfpenny or a penny more per stone in the local markets than those from heavy lands. The lament of the *Barrow Daily Times* is in a poetic strain, inasmuch as the occasion which gave rise to numberless poems and pictures on the dangers of "crossing the sands" will be at an end. Had the editor of that journal experienced, as I have done, the discomforts and dangers of these sands, he would be thankful that steam has superseded horse locomotion. Fancy yourself mounted on the top of the Ulverston and Lancaster coach on a cold, wet, wintry morning, with the prospect of 20 miles of sands to be traversed, intersected by numerous channels, at each of which a man leaves the coach and wades through, in order that the coach may avoid the quicksand beds. Fancy the coach in the middle of one of those channels, and you find it sinking slowly under you. There is no alternative; you must jump into the water as far clear of the coach as you can, to avoid the engulphing place; and then, if you are charitable, you must assist the driver to get out his horses, fasten ropes to the coach, and drag it out. By the time you have got your team again in harness, the tide is upon you, and you have to gallop for dear life. That is a fortunate sequence to such an episode, and the many who have found graves on those sands bear witness that not always was there so fortunate an ending. These sands may have afforded food for the painter and poet, but I think few will regret the change if they be made to afford life food for the million. Another reason why these sands should be reclaimed, and an important one, may be given. On each bank of the Duddon, and extending to the extreme ridges of the shores, valuable deposits of iron ore have been found, and there is strong reason to believe that these deposits extend underneath the whole of its bed. Assuming this to be correct—and the idea is strongly favoured by mining engineers—the cost of the work of embankment would speedily be cleared by the ore raised. Although I do not favour the idea expressed in some quarters that a few more years will see the exhaustion of the iron ore mines of Furness, yet I think it is imperative that the ironmasters of Furness should strain every nerve to prevent such a calamity to the district, by using every exertion to discover new "finds." A falling off in the supplies of ore simply means district bankruptcy, and when we look at the immense amount of capital invested in the ironworks of North Lancashire, such a deplorable result must be avoided if human skill and enterprise can accomplish it. Again, let me instance the borough town of Barrow-in-Furness, with its rapidly increasing population. An excellent system of sewerage has been adopted, and the outfall is on the sands, close to the town. During every tide the action of the sewers is stopped, and as the town increases this will be more and more felt. An embankment from Barrow to Concle would reclaim 200 or 300 acres of land, and at very slight cost the sewage might be placed upon it. Coming eastward, to Ulverston, we have a town with a population of some 8000 inhabitants, and every prospect of increase. Recently an excellent system of town sewerage has been carried out, the outfall again being on the sands, but with this difference from that of Barrow: the outfall at Ulverston is one and a half miles from the town, and is carried there in underground pipes, so that the back-water from the effect of the tide is not experienced. But, as in the case of Barrow, the sewage is wasted. From Hammerside Hill to Conishead Bank stretches a long waste of beach and sand. Owing to the deficient embankment the tide is fast making inroads on the neighbouring property, and much grain, &c., is yearly spoiled by the high tides washing over the land. A sea wall from the two points named would enclose from, say, 400 to 500 acres, on to which the sewage of the town—the outfall being already there—could be easily poured. It may be objected that the river running from the town, and known as the "banking," might interfere with this project. This could be diverted and discharged at Conishead Point. The matter is well worthy the attention of the local boards of Ulverston and Barrow. As to the rivers Kent and Leven, there are many thousands of acres which might, the necessary outlay for embankments being provided, be utilised and made productive. No doubt there are many other places in the kingdom where land from the sea might be reclaimed, and sooner or later the matter must force itself upon the serious attention of the Government. *J. R. R.*

Beetroot Cultivation.—Two or three articles have appeared lately in your columns advocating the cultivation of Beetroot, and referring to the successful results on the Continent. None of your correspondents, however, seem to have adverted to one all-important question, viz., whether or no beetroot-sugar is on the Continent protected by discriminating duties against the competition of colonial sugar? Of course, no such protecting duty could be expected in our own country. *P. P. C.*

Landlords and Tenants.—In your paper of last week I notice that at the South Hants Farmers' Club meeting, a discussion arose as tò whether it would be more profitable to plough in the present root crop for manure than to buy stock to consume it. One speaker hinted that there were not sheep enough in the neighbourhood to eat up the crop, and "while the relations between landlord and tenant existed as they now were, that deficiency would never be made up. A tenant would not lay out his capital in the purchase and rearing of stock while the relations with his landlord were unsatisfactory." Hampshire is not alone in her complaint about bad relations between landlord and tenant. The bulk of the land in every county in England is held subject to the landlord's six months' notice to quit. It is therefore at the tenant's peril if he improves his farm. It speaks well for many landlords that they do not take advantage of their tenants' improvements to raise their rents in consequence of them; and it speaks well for many tenants that they improve their farms, in spite of the six months' notice hanging over most of their heads. But the land of our country cannot be properly tilled, nor the quantity of food raised from it that our increasing population demands, so long as the tenant's property in improvements is liable to be seized by the landlord. It is useless for Mr. Mechi or Mr. Smith to point out how we may increase our home growth of corn and meat, so long as a landlord can turn us out or pounce upon us periodically for a large rent as soon as we make the land grow more crops. Without security for our outlay it is simply impossible for us to cultivate the soil as we ought, and as we wish to do. Parliaments of the future may give security to English farmers, the same as Irish farmers now have. Parliaments of the past have done worse than nothing to promote English agriculture; if nothing else had been done, the police-helping gamekeepers' Act is alone sufficient to show this. All well-wishers of their country would rejoice to help us to raise such crops as would make us less dependent on foreigners for our daily bread. Parliament hitherto has not helped us a bit, and I do not think it ever will, until more farmers and fewer landowners are sent there. This is a question for tenant-farmers: combination will help farmers as well as engineers. Farmers can return more of their own class to Parliament. The labourers are as much interested as their employers in a more permanent hold of the than by those who raise its produce. If only 100 farmers, or men honest to the cultivators of the soil, were in the House of Commons, I think that such things as the six months' notice, the destruction of tenants' crops by landlords' game, or the employment of rate-paid policemen as gamekeepers, would not exist a year. With security of tenure, we dare lay out our money in steam cultivating machinery, in manures, labour, feed, and implements. The whole nation would then benefit. As it is, the whole nation suffers. *H. H. O.*

Societies.

SCOTTISH CHAMBER OF AGRICULTURE.

General Meeting.—At the annual general meeting of the members of the Scottish Chamber of Agriculture, held last week, there was a large attendance; and Mr. Scot Skirving, the retiring President, occupied the chair at the commencement of the meeting.

The CHAIRMAN delivered the customary closing address. He said—

I fear I cannot escape, as my predecessor did, the formality of formally addressing you, and at the same time I am not so fortunate as to be able to refer to any marked progress we have made during the year that has passed as regards those measures affecting agriculture in which this Chamber has always taken so deep an interest. I do not think, however, that I am mistaken when I express the belief that the views of the Chamber regarding those measures are making such steady progress in the country that they must at no distant date command the attention of the Legislature, and that the special grievances against which we protest will be

The Game Laws and Hypothec.—It is not my intention on the present occasion to make more than a few observations upon those semi-political questions which have from time to time engaged our attention. The chief of these are the Game Laws and hypothec. With regard to the latter I have indeed no right to offer an opinion, as it is only within the last few years that I became convinced, partly by the able advocacy of one or two members of this Chamber, and perhaps still more by the weakness of the defence, that the law was not only unnecessary, but was often unjust. I saw from the opponents of hypothec that it frequently was the means of placing upon a farm capital which really belonged neither to the owner nor the occupier of the land; whilst from the other side I learned that there were hundreds of small farms all over Scotland which were (as the advocates of the law boasted) occupied by the same families for generations, through the agency of hypothec, who were yet too poor to pay a single half-year's rent in advance, should they be called upon by a change of circumstances to do so. It struck me that it was a very questionable benefit, a very doubtful kindness which resulted in families existing for generations. giving labour, and thought, and skill, with what capital they had, with no other result than that they should live from hand to mouth, and struggle on for ever, father and son and grandson barely keeping their lips above the bitter waters of poverty. Hypothec is, therefore, not a law of which I feel inclined to be conservative. Gentlemen, during the year that has passed I have not said a single word in reference to game or Game Laws. A supporter from the first moment that I read it of Mr. Loch's Bill, I knew at the same time that considerable difference of opinion existed in the Chamber as regard matters of detail, though of detail only; and, therefore, I considered it was not the part of the President to take any active share in your discussions. We are constantly twitted by our opponents with our want of unanimity in the matter; but it is my firm belief that, as regards not only this Chamber, but the whole of Scotland, the great bulk of the agricultural body—in fact, an overwhelming majority of their number—are at one in this, that they think a fair and just settlement of the question would be that while landlords retained the exclusive right to all winged game, they should share with the occupier the right to kill hares and rabbits. This privilege they think should be fixed and settled by law, and it is only as to the precise mode of doing so that there is some difference of opinion. On the other hand, I am equally convinced that it is only a small minority who wish to see the Game Laws abolished, or who imagine that, if they were abolished, their abolition would in any way redress the evils complained of. It is not by the Game Laws that deer are at present protected, and a trespass law could protect hares and rabbits quite as well as a Game Law. Few or no farmers object to a full, fair herd of game to be used for fair sporting purposes; it is the battue and market systems (these comparatively recent innovations) that cause all that bitterness of feeling which has so unfortunately set class against class. Masses of hares, which destroy ten times the amount of food which they actually consume, are on some estates preserved all the year round for a single day's slaughter, when they are driven with the other game in the coverts of Turnip fields, where they are frequently confined by netting, to be shot down wholesale by what may be called volley firing, gathered up, counted, boasted of in the local newspaper, and then sold in a very matter-of-fact fashion to the poulterer, who sometimes comes out with an advertisement that he has received 600 or 800 head of game, killed by a nobleman! The latest improvement I have heard of in battues was that a cart and horse was driven right across the Turnip fields, following the line of shooters. This bottling up of game for a whole season for the coarse gratification of a single day reminds me of nothing so much as the poor sailor who sometimes hoards his daily allowance of rum that when he has got a bottle full he may have one glorious debauch. Goldsmith wrote:—

> "Yes, let the rich deride, the proud disdain
> The humble pleasures of the lowly train;"

but is there no danger that these well-known lines may be reversed, and that such battues may make them be read—

> "Yes, let the low deride, the poor disdain
> The paltry pleasures of the lordly train"?

From a sportsman's point of view, I hold that the battue system destroys the sport of shooting, and very often puts an end to fox-hunting as well; but that is only a small part of the evil. It was objected to me, when you did me the honour to elect me President, that I was a Tory; but I trust you will pardon me if I make one passing observation on this game difficulty from a purely Conservative point of view. It is, then, I would say, a very bitter thing for an earnest Conservative to see his party shot out from all share in the guidance of the country, and even its best members driven from the representation of almost every county in Scotland, chiefly because a small minority of the landed gentry, whose social position makes them conspicuous, prefer the killing of a hecatomb of hares to all that once made England so powerful and so glorious. These gentlemen seem to have deliberately made their choice, and to find a parallel to it we must go back to the day when Esau sold his birthright.

I think that the Chamber should anxiously watch the present tendency to tax the animals and even the implements of the farm. The shepherds' dogs were first taxed, then the gun that scared a wood-pigeon, and then the cart that took a poor man and his family to church; and I have no doubt, if a firm resistance is not given, we shall very soon have every farm-horse taxed, while the whole steam horse-power of Manchester will go free.

There is another matter to which I think the Chamber might with propriety direct attention. I allude to many of the conditions inserted in leases, which are utterly out of keeping with the present position and circumstances of the agriculture of Scotland. I need not allude to them in detail, as they are only too well known. Most of them originated in distant times, and were the creation of circumstances which have long since passed away, while others owe their more recent origin to mistaken ideas and to misdirected legal ingenuity. A great portion of the text of too many leases is a mere anachronism, alike injurious to the interest of landlord and tenant, and forms at the same time a serious hindrance to the free and proper and progressive cultivation of the soil. How absurd, for example, to bind a man to farm now in accordance with the ideas of a century past. Is there any other science than agriculture (except, perhaps, theology) in which it is attempted to force upon 1871 the principles and the practice of 1771? What would people think if doctors were bound before receiving their diplomas to do certain things and not to do certain other things in accordance with the teaching and knowledge of a hundred years ago? It is my conviction that in hundreds of cases these leases are only signed under the compulsion of irresistible circumstances, and that the tenant has a sense both of shame and indignation when he does sign them. Why, then, are they signed? Because, in the first place, the limited extent of land in this country makes it a virtual monopoly, and there are so many persons anxious to farm that in the struggle for existence they must either accept the conditions or give up all hope of farming in this country.

Education for Farmers' Sons.—Agriculture differs from other professions in this, that the number of those who wish to practise it will always be swelled by new comers, who having succeeded or failed in some other profession, wish to invest their gains or hope to repair their losses in a business which most people think they understand and all believe to be much more remunerative than it really is. But I would ask, are the number of applicants for farms not unduly swelled from the ranks of the farmers themselves? I here venture to allude to what I think a too common mode in which the sons of farmers are reared and educated. Is it not very frequently the case that farmers, who know only too well how little margin of profit there is in farming at present rents allow the early years of one or more of their sons to slip away without attempting to give them such an education as would enable them, when the proper age arrives, to seek admission into some other trade, business, or profession, and thus at the period of opening manhood hundreds of youths find it too late to think of anything else; they know how to farm, and they know nothing more, and hence, if they fail to find a farm they have the prospect of years of idleness before them. It is exceedingly difficult to suggest any general rules for the education of farmers' sons from the great diversity of their prospects and situations in life. It has been remarked that when one talks of landed proprietors every rank of life is included, from a duke to a 40*s.* freeholder; and in like manner the word farmer may include many conditions of life, from the man who may have his sons educated at Eton and Oxford if he chooses, to his poorer brethren, who can sometimes barely afford to send theirs for a few years to the parish school. Farmers, however, have had no lack of advice as to how they ought to educate their sons; indeed, if advice would do us any good we should be perfect, as we are decidedly the best advised persons in the world. Everybody, indeed, lectures or advises farmers, the chief qualification of most of the lecturers being a total ignorance of the subject they lecture about. I was much struck some time ago with the advice of one of these advisers on the subject of education. I shall not name the gentleman, as he is not here to reply to me, but I notice his advice because not only was it given in quite an *ex cathedra* style, but his sentiments were, I regret to say, adopted and applauded at a meeting of the Royal Agricultural Society of England. He said that no boy could turn out a good farmer if he did not devote himself to the practice of the farm from the age of 14 or 15. He seemed to admit that he must go to school previous to that period, but from that age he ought to devote his whole time to learn the practical details of agriculture. He should try to get some successful farmer to take him as a pupil, and teach him to plough, and sow, and stack, and so on. Now, if the lad proposed to be a peasant farmer, who was to till his land with his own hand, the advice was good enough; but, on the contrary, the youth was supposed to receive some £5000 to stock a farm with, which, supposing he was one of an average large family, would imply that his father possessed a considerable amount of capital. There can be no doubt that, whatever were the professions for which that lad's brothers were destined, they would receive a very different and much more extended education, and would consequently, when men, have a vast advantage over him. Why, I ask, should that son be placed all the days of his life in an inferior position to the rest of his family simply because he had been destined to become a farmer? The idea that a man will succeed better in any profession if he be schooled and instructed in it alone appears to me quite erroneous. I was filled with astonishment on reading the same advice as that which I have quoted addressed by a distinguished and strong-brained clergyman to the students of the Free Church. They were to study only divinity, and then take some successful preacher as a model. This advice was illustrated by an anecdote. A traveller on a Bristol coach asked the coachman a great many questions as to the places they passed. What mountain was that? what was the name of that river? To all which Jehu replied, "Don't know." At length the gentleman, getting cross, said sharply, "Is there anything you do know?" "Yes," said the coachman; "I know how to drive the coach." But even that man might come to regret that he could do nothing but handle the reins or whip when the railway whistle first screamed in his ear shrill notice that his occupation was in danger, and in like manner I think that the young farmer should possess as many weapons as possible with which to fight the battle of life. I would deprecate all attempts to get up agricultural colleges, as we sometimes hear talk of, where a sort of technical education is proposed to be given. I would simply say, let each man get for his sons the best education which his means and his opportunities afford, and don't let it be the worse because the boy is to farm. If it should be said that at nearly all existing institutions a boy's time is occupied in learning Latin and Greek, or the higher mathematics, I would say so much the better. Don't be disturbed by any sneers as to Greek or Latin. Don't be moved by the thought that before he is 30 the man may have forgotten nearly all the classics that the boy was taught. The Professor of Humanity in the University here, in his opening address last week, painted to his students in glowing terms the inexpressible delights of those who could so master the classic authors as to make them the easy companions of their lives. But this pleasure, which falls to the lot of a mere fraction of those who study classics, forms no part of the reason I would give for having them taught. When a boy learns gymnastics and climbs up a pole, there is no intention of making him an acrobat—the design is to strengthen the muscles of his limbs; and so with the classics or mathematics. I would teach them to the many as the best means of exercising and strengthening the mental muscles, and I do not believe that modern languages, though *per se* much more useful and necessary, are able to educate the mind as the more difficult studies do. In fact, a man may, and indeed often does, speak several European languages with perfect fluency, and yet has no more education than a second-rate *valet de place.* If any one should be inclined to alter a line of Burns, and ask me contemptuously if "Turnips could be grown by dint o' Greek?" I should say that "Yes" would at least be quite as good a reply as "No," because a brain properly trained and tutored and developed is placed upon a vantage ground, and can quickly adapt itself to altering circumstances, and can easily gather fruit in any new field of knowledge. The youth who has learned nothing but how to farm, can look to nothing but farming for a livelihood, and is therefore often driven into taking land at a higher rent than he thinks it is prudent to undertake to pay; but his only alternative is idleness, or at best a forced emigration. On the other hand, as one of the least advantages of education, I may express the belief that were the agricultural community as a body as well educated as the members of most professions are, questions which have been agitated in this Chamber would receive a very speedy solution.

Conclusion.—In now quitting the office to which a year ago you did me the honour to elect me, let me again remind you that a farewell address is one of the implied conditions of accepting the Presidentship of the Chamber. Upon no other ground would I have presumed to address you in the manner I have done, knowing and feeling as I do that there are many members of this Chamber from whom it would become me to take counsel and to whom it would be presumption in me to offer it, whilst of the youths who have been the subject of the latter portion of my discourse I would say—

"May they better reck the *rede*
Than ever did th' adviser!"

DEVONSHIRE.

The Steam Plough.—At the late quarterly meeting of the Devonshire Chamber of Agriculture, a paper was read on the "Progress of Agriculture resulting from the Steam-Engine," by Mr. JOHN DAW.

He expressed his astonishment at agriculture's unvarying progress during the last 50 years, and its increased rapidity during the last 20 years. Fifty years since there was nothing but wooden ploughs and harrows—no drills—few Turnips—Swedes a rarity—no Mangels—no artificial foods—no artificial manures, except lime, and that frequently brought from long distances, and Wheat crops in good land considered excellent if the produce were 20 bush. an acre. Small fields, enormous hedgerows, land undrained, pastures poor, small farmers often worse off than labourers, and rents badly paid. As to the hedges, a land-surveyor of the period had shown that in the rich and highly cultivated parish of Broadclyst, if extended in line, they would reach from that village to London, upwards of 160 miles. All that had been altered since, and after tracing the progress of the successive changes, and the effect of free-trade policy in developing both agriculture and manufactures, the lecturer set down steam as the remote cause of it all, and then proceeded to his immediate subject—the effect of the steam-plough especially on the food-producing art, its probable effects on landlords, tenants, and the public.

The following points were taken up *seriatim*:—Its effect would be to lessen expense of cultivation—to decrease by nearly one-half the number of horses necessary for agricultural purposes, and the consequent unproductive consumption of food by them—it would tend to the consolidation and enlargement of farms as well as fields, and to make it more apparent that farms were food factories, as there were woollen, cotton, and iron factories—it would tend to increase production—render necessary much increased capital—necessitate increased security to tenants—and increase manual labour.

1. It will lessen the cost of production. To enter fully into the details of the cost of steam cultivation would take a longer time than is allowed to me, but the question of expense is a matter already settled by experience. The steam-cultivator is used by the largest and best farmers, and it would not be so used, and when once used never abandoned, if it was not the most economical system of cultivation. Doubtless our county is placed at a disadvantage with respect to coals. We have to pay 50 per cent. more than in coal districts, but this is not of primary importance. Coal is only one, and a small item in steam cultivation.

2. As to the decrease of horses, that is self-apparent. The great bulk of horse labour is in ploughing, and nearly all ploughing ought to be done in the autumn. To ensure a good seed-bed on average soils (even for Mangels or Turnips), land ought to be ploughed in the autumn, so that by the operation of the winter's frost a good seed-bed may be formed. A steam-cultivator can be used when horses cannot, and a 12-horse power traction-engine (or better two, one at each headland) will easily plough 500 or 600 acres of land in the estimated 60 to 80 days of autumnal fine weather. True there may be a scarcity of horses to draw all the crops to the homestead, but the simple remedy is to stack the crops in the fields where they are grown, as is now done in the great agricultural counties.

3. The steam-cultivator will tend to enlarge farms as well as fields, and herein is a fruitful subject for consideration. Many of our arable fields are too small for the most economic and beneficial cultivation, and for steam cultivation it will be even more necessary to square them. I believe there is no county in England in which the fields are so small and so ill-shaped, and none where there is so much hedgerow timber. The trees must be felled and the roots destroyed before steam cultivation can be exercised to the greatest advantage. And, as a consequence, it may be incidentally mentioned, that the more we do away with our small enclosures the more we shall increase the number of partridges to eat up the wireworm and grub, and the more will be decreased the hares and rabbits, which eat up our crops, and which in large numbers are, whether viewed in a light social or political, a serious nuisance. It will tend to increase production. It has been proved by experience that the use of the steam-plough increases the productive quality of the soil. It enables the land to be ploughed deeper and the subsoil brought to the surface, and exposed to the vivifying influence of the sun, the manuring deposit of the rain, and the disintegrating influence of the frost. It prevents the land being trodden by men and horses, and, when well ploughed and pulverised, leaves the field a perfect seed-bed. By bringing the subsoil to the surface, &c., it brings into active use the mineral manures latent in the soil, and it is asserted by all having experience that the production is at least increased 20 per cent. The three principal requisites for plant growth are ammonia, phosphoric acid, and potash. The two latter abound in clay lands, but the clays are difficult to be penetrated by the roots. The soil has never been stirred. Some clay lands are so stiff as to render it at least doubtful whether the bringing the clay to the surface would not, by covering the vegetable mould, render the surface too stiff for convenient cultivation; but there is no occasion to plough deep. The steam-cultivator will keep the top soil on the top, but will break up the undisturbed subsoil as deep as may be desired. The present 12-horse power engine can be made to break it up 12 or 14 inches, and there are engines now being built which are expected to cultivate 2 feet deep, and some think 3 feet. It is not the lack of food constituents, but how to get at and render them available, that is the problem to be solved. We cannot but admit our short-sightedness, when, having such a store of all that is requisite for the growth of our crops, we leave them unavailable for want of steam cultivation. It has been always remarked that the temper of the community depends in some measure on the price of food. In periods of abundance, order has usually prevailed; discontent has usually followed close upon a rise in prices. Riots have always occurred during dearths. The squaring and enlarging our fields and the destruction of our hedge-row timber will be objected to by many as being destructive of the picturesque beauty of our country; but with educated minds there is no beauty in a thing out of place. Devonshire is studded with parks and pleasure grounds, and they will be more appreciated and viewed with greater advantage in contrast with large square fields and their golden corn and their luxuriant green crops. That the land of England, without infringing on its pleasure ground, can produce vastly more than is at present obtained from it, is undoubted, though the produce may have been doubled in the last half century. Lord Derby has no doubt this produce can be doubled, and Mr. Mechi thinks it can be trebled. To have large farms, it is necessary there should be large landowners. It is disputed, but still I think it is a fact, at least in this county, that large estates are continually being increased in size. The old body of yeomen are decreasing, and their estates added to those of large landowners and let to tenant-farmers. It appears clear that the position of the yeoman is benefited by his selling his small estate, which yields him as rent three per cent. only, and with the proceeds renting a much larger farm, which brings a tenant's profit, instead of merely a three per cent. income on his capital. Whether large landowners are wise in extending their boundaries on the terms they have frequently to do, merely for the pleasure of being larger landowners, is a question for their consideration; but the tenants are benefited. It is notorious that large landowners let their estates at much lower rents than small landowners, and are much more ready to invest money for those permanent improvements which are daily becoming more necessary, than are the smaller proprietors. With steam cultivation and large farms, increased capital will become necessary. It is well known that the farmer with ample capital makes more profit than he could do if deficient of capital, and I believe it will be found that only the best farmers have sufficient capital. There is too great an inclination to increase the acreages of farms without having the increased capital necessary

for it. When farming was only the obtaining as much as could be got out of the earth by the simple scratching of the ground and sowing the seed, leases were not of much consequence ; but the great and increasing outlay necessary in farming in the highest degree of perfection now known necessitates security to tenants. It can no more be expected that tenants without leases will cultivate deeply, manure highly, and invest largely in feeding stuffs and manures, than that large manufacturers would build enormous factories on lands of which they were yearly tenants and liable to be ejected on six months' notice. Leases are more necessary in Devon than in those counties where there is a law of tenant-right. True it is that under great landowners good tenants are never ejected, and farms are allowed to continue in the same families for generations ; but in the present state of agriculture this is not sufficient. The landowner may, for the purpose of consolidating his property, sell some estates, and death or other circumstances may occur which would deprive the tenant or his family of the farm. Leases are the only security for the repayment even of his outlay for permanent improvements. Increased manual labour : If we may judge from the past, every great improvement in agriculture must bring increased manual labour. Whilst farming was primitive pastoral, few hands were necessary, but labour increases with production of crops and quantity of stock kept. It may be illustrated by reference to a fruit and vegetable garden near a city, where at least for every acre and half or two acres there is a hand employed. Some districts in Devonshire are specially adapted for large farms, and others for small ones ; but probably there is no district which should contain exclusively large farms or small farms. In Devonshire there is great diversity of soil, of flat and open country, of hill and dale—the flat and open country fitted for large farms, and the steep and abrupt valleys, especially near our rivers, fitted for small farms. Viewed in another aspect, there ought to be a few small farms by which a struggling, persevering man might rise above the condition of a farm labourer, as very many farmers in Devon have already risen, most of them from first beginning as renters of dairies. These small farmers have risen because of their perseverance, toil, saving and intelligence. Each has done the work of two labourers, and lived at the expense of one. Moreover, there are some articles of produce which are particularly suited for small farms, such as milk, butter, eggs, and poultry, and, in my opinion, they can be produced cheaper and better upon small farms than upon large ones. If it be found expedient to keep numerous small farms—and during the transition from small farms to large farms, the steam cultivator can be obtained by hiring, as is at present done with respect to the steam threshing-machine—of course there will be practical difficulties in steam cultivation in Devonshire, and more so than in other open counties. There is a 10-horse power engine and roundabout system suited for moderate-sized farms ; and there is the direct system, with two larger engines and its economy of labour, and time, and money. For a farm of 300 or 400 acres, the former may be more advisable ; for larger farms the direct system. The general rule was—never use a man if you can use a horse, for the latter costs no more to keep, and is eight times stronger. The new rule will be—Never use a horse when you can use a steam-engine.

Farmers' Clubs.

WISBEACH.

Freedom of Cultivation.—Mr. A. S. RUSTON thus spoke, the other day, at Wisbeach :—

Perhaps there is no document extant which is regarded with so much real conservative veneration, and whose text has been so literally adhered to, as the old skeleton lease, which has been so scrupulously preserved and so jealously cared for in nearly every lawyer's office, and has been handed down as a kind of heirloom from generation to generation. Its formulæ and its covenants have been repeated with the most verbatim exactness decade after decade. It is a curious old document, heavy with age, and reverenced for its antiquity. Its style of composition drives one's thoughts back to the times of agricultural infancy, and its verbosity is a painfully wearying infliction. It contemplates no agricultural progression, its covenants of to-day are to be the settled, unalterable obligations of the future, as they have been the sure and binding terms of the past. There is an utter absence of the conception that science and practical agriculture can ever successfully combine in largely augmenting the capabilities of production, but there seems the implied idea that agriculture has reached its zenith, and that the cultivation of the soil must be held in with bit and bridle, lest unrestrained liberty should result in exhaustion, and landlord and tenant sink in one common ruin. Now we want to look at this subject for a few minutes, just to see how far these restrictions are wise, and how far they may be advantageously relaxed. It is not our intention to discuss the merits and demerits of leases, or the advantages or disadvantages of yearly tenancies, with sufficient and satisfactory tenant-rights. Both these systems of hiring have their advocates and their opponents, and both have in them that which is good and that which is evil ; but in which the good, and in which the evil, most largely preponderates, I must leave to every man's individual judgment to decide.

My object is rather to plead for greater liberty in cultivation, whether the hiring be for a term of years, or only from year to year. We want to break the spell and charm of these old stereotyped covenants and conditions. They have long enough, as relics of antiquity, held in captivity minds otherwise strong and enterprising, and have placed hindrances innumerable in the way of agricultural progress and advancement. Let us blot from our minds all memories of the past, and starting *de novo*, and taking an intelligent and thoughtful view of the present and the probabilities of the future, seek to shape our farm agreements according thereunto. We shall then be confering a boon alike upon owners and occupiers, and upon the country at large. For increase of production without a corresponding exhaustion of the soil must be a national blessing. With a population daily increasing, it appears of the utmost importance that every possible effort should be made to increase production in order to meet the enlarged requirements of the community. The acreage under cultivation cannot be largely increased, and the yield per acre, in many instances, cannot be very considerably altered. It has been said that the man who makes two blades of grass grow where only one grew before is to be looked upon as a public benefactor. And so he is. And we may, regarding this as the enunciation of a principle, claim a rich mead of praise for the man who, by the judicious application of capital, and the skilful management of his farm, if not double, can largely increase its produce. We don't wish to say hard things of those who place impediments in the way of the successful accomplishment of so desirable a result. We rather wish to invite their attention to the evils consequent upon the restrictions imposed, and to ask their co-operation in seeking their modification or removal. There is, doubtless, a growing conviction of the necessity of relaxing to some extent the stringency of existing covenants, and of giving more freedom and scope to enterprise and intelligent occupiers ; hence, we now and then see a breach of covenant amongst the better class of tenants disregarded, and allowed to pass without remonstrance, or in a familiar phrase, "winked at." We would, however, prefer seeing the obnoxious covenants removed than their breach unheeded. It is neither wise in principle nor sound in morals to make laws and not enforce obedience to them. It tends to encourage conduct which, in the abstract, we are bound to condemn, and which, if manifested in all the business relations of life, would effectually destroy all confidence, and would consequently be an unmitigated evil.

The last quarter of a century has been fruitful of such mighty changes, and such rapid agricultural development (very unlike the slow development of the jelly-fish to the monkey, and the monkey to the man), that all the relations between landlord and tenant require revision, and claim serious and immediate attention. Steam cultivation, the enormous consumption of artificial food, and the almost incredible quantities of artificial manures supplied every year to the soil, necessitate fresh rotations of crops, and altogether altered modes of industry, and call for new forms of agreement as between owners and occupiers of land. This seems to us so self-evident a fact as to be patent to every one, and to require no argument to enforce it. As we have already intimated, the yield per acre of the cereal crops grown upon a farm which is highly and adequately cultivated cannot be very considerably increased. Already the state of cultivation is such, that any effort to produce larger crops will, in favourable seasons, be fraught with evil, and result in loss. The increase will be in the bulk of straw, but with this there will be a corresponding decrease in the yield of grain. We need only remind you of the harvest of 1869 in proof of the correctness of this assertion. One of the greatest fears experienced by the modern farmer who cultivates his land highly, is that the first thunder shower in June will prostrate his luxuriant crops, and seriously reduce their money value. And all this because he uses too much cake, and is too generous in his application of his manures. What then must be done? What is the remedy for this state of things? Is his style of cultivation to be lowered that he may with greater prospect of profit to himself manage his farm in harmony with those stringent and unalterable covenants under which he occupies? Or shall these covenants be relaxed, and the privilege of taking additional and varying crops be conceded, encouraging a more free and extended, instead of a diminished and restricted, use of all those fertilisers which enrich the soil, and when applied with judgment, under right and favourable circumstances, benefit alike the owner, the occupier, and the consumer? We say, encourage high farming, give greater freedom of cultivation, and let the land everywhere teem with plenty. Make more meat ; meat is dear, animals must pay for feeding now, are all utterances with which our ears are quite familiar. But the practical question is, how can more meat be made? and if made, what will be the result? To make more meat implies the use of more oilcake and other feeding agents, and the extensive use of these implies greatly enriched manure, and this manure, to be a source of profit to the farmer, implies an increased acreage of money-paying cropping, which implies the removal of restrictions and increased liberty of cultivation.

Surely it has not come to this, that agriculture must quietly fold her arms—do as Lord Russell said a few years ago it was our privilege as a nation to do, "rest, and be thankful." Shall the rolling tide of agricultural progress be stayed and dammed back because antiquated covenants and deep-rooted prejudices render its onward flow unprofitable? Which shall yield? Shall progress? or shall the restraints to progress? Shall intelligence or prejudice triumph? These are questions thoughtful men are presenting, and are shrewdly observing what are the signs of the times, that they may try to puzzle out what the answer shall be. There was a time when the idea of additional cropping was the occasion of the gravest apprehensions ; and the possible, yea the probable, exhaustion of the soils was a bugbear which terrified many. But these fears are gradually subsiding, and we should rejoice to pronounce their funeral oration ; but they are not dead, only dying ; every now and then we detect signs of life. But science is making rapid strides, and day by day disclosing the futility and groundlessness of such fears, and in companionship with practice (an alliance at one time deemed incompatible) is teaching us how possible it is to increase production, and yet to retain the fertility of the soil. I need only refer to the experiments which are being made year after year by Mr. Lawes, of Rothamsted, as an evidence of the truthfulness of this. Probably some of you may have seen these, and others may have read or heard of these ; but be this as it may, they clearly indicate what may be done, and show the decided advantage of high cultivation, conducted under the guidance of practical and scientific knowledge, and how surely it results in profit to the occupier, without loss to the owner. Many land agents and many landowners are intelligently and thoughtfully weighing these matters, and are preparing to encourage and facilitate agricultural progress. We commend the subject to the attention of all. To say there are no difficulties in the way of a liberal extension of privileges is to assert what is not true, and to say that these difficulties are insurmountable is, we conceive, not the less untrue. Were all tenants good farmers, and fed their lands bountifully, and cultivated them wisely and well, the great hindrance to increased liberty would be removed. But so long as estates are encumbered with slovenly and grasping tenants, who, regardless of consequences, are ever seeking to take from, and ever unwilling to add to the soil, allowing their cupidity and avarice to control all their operations, vainly imagining that such a system is to their advantage, and deluding themselves with the notion that in proportion as they impoverish the soil they enrich themselves—we say that as long as this states of things continues so long will there be an argument to be employed in opposing concessions so urgently needed. But the argument, however skilfully it may be used, is not a sound one. It cannot be wise to punish the good and discourage all progress, and set aside all advancement, and crush all spirit of enterprise, on the ground that some are unworthy. We entertain far too high an opinion of the intelligence and ability of those who occupy a position between the owner and the occupier, a position so honourable and responsible, as to suppose that they connot devise some way of encouraging good tenants and high cultivation, and of repressing and restraining the evil practices of bad ones. It is not for us to assert dogmatically how and in what way this shall be accomplished. Suffice it to say we believe in its practicability, and are deeply impressed with its necessity. To put the matter briefly, our position is this. It is of the utmost national importance that the land should be made to produce all that the discoveries of modern science and the most skilful practical cultivation can possibly make it yield, and that everything that prevents the realisation of this should be at once and for ever removed ; that by liberal management greatly increased produce may be secured without any corresponding exhaustion of the soil ; that increased production consequent upon high cultivation implies better rents to the owner, larger profits to the occupier, cheaper food to the consumer, and increased wealth to the nation ; that the main obstacle to the enjoyment of this universal good is the system on which lands are let, and the restrictions which are imposed. We therefore, in conclusion, plead for a full and intelligent re-consideration of the terms on which land is let, and their adaptation to the exigencies of the times. The speaker concluded by moving "That it is desirable that all lands should be made to yield a maximum amount of produce, having regard to the continued fertility of the soil, and that whatever hinders the realisation of this must be regarded as a national evil, and is opposed alike to the interests of both owner and occupier, and requires to be at once removed."

Notices of Books.

Report on the Cultivation, by means of Sewage Irrigation, of the Lodge Farm, Barking, *for the year ending August* 31, 1871. Metchim & Son, 32, Clement's Lane, E.C.

We recur to Mr. Morgan's report of his proceedings and their results on the sewage irrigated farm near Barking, to which we referred last week, in order that we may present some extracts to our readers :—

"*The principal crops which need notice* are—The

Wheat, which although looking very well up to a late period, and judged at 4½ to 5 qr. per acre, became partially laid upon plot H, where we have had the same 5 acres bearing Wheat five years in succession. This Wheat, on being threshed, only rendered 30 bush. per acre, with a good yield of straw, and was sold in Mark Lane at 58*s.* per qr. It is not expected that the Wheat in the remaining part of plot H, which followed grass, or that on L, will reach 5 qr. per acre, nor that the small bit of Talavera on P will do so, for this last was also laid in places, and many of the ears are deficient.—The crops generally all over the country have fallen short of expectation, but both the crops on L and that from H, which still remains to be threshed, are good enough in quality to command the best prices.—The yield of Oats on L was upwards of 9 qr. an acre, of good sample, with straw in abundance.—Our Mangel cannot be excelled. It is generally expected that that which was sown early on E will come out quite 50 tons an acre.* That which was sown on May 9 on plot C will make 30 to 35 tons an acre, and that on plot I, sown (after the removal of the Cabbage) from May 20 to June 2, will be about 25 tons an acre. The crop of early Cabbages on plot I was our best paying crop, and brought £37 an acre between the removal of the Wheat last year and the sowing of the Mangel this year.—All the Cabbage crops have been good, with the exception of some of the red Cabbages, which came to nothing, owing to the seed not being 'true,' and of the small bit of Drumheads, which all clubbed, and were pulled for cattle.—The Parsnips, grown in soil not specially favourable to this crop, are apparently as good as those which last year were sold for £50 an acre on the ground.—A bed of James' scarlet Carrots, having been attacked by the slug when just coming through the ground, had to be resown, and, when taken up, proved to be a very good sample both in size and colour.—The Potatos on plots I and P received no direct dressings of Sewage. The land is good, and had been irrigated for previous crops. These plots, together with plot O, which was lately broken up pasture to which no sewage had been ever applied, yielded very good crops of Potatos, but the consolidation of the soil of plots B and F, from the rainfall and the dressings of sewage, necessary to their fertilisation, prevented a full development of the crop.—Upon plot K, good land, we have a small bed of Bovinia Potatos, which have also suffered from the 'setting together' of the land.—The Scarlet Runners, so far as the unequal quality of the seed has allowed, are excellent specimens of their kind, and are of great size, but so many of the seed failed to germinate that at one time a question arose of ploughing up the whole crop. As the Runners, however, spread they have partially filled the gaps, although, of course, the yield has been much reduced.—The Sugar-Beet seed was kindly supplied by Mr. Duncan's order, and it was intended to make four experiments therewith, viz. :—Two beds under irrigation, but unequally treated. One bed dressed with superphosphate of lime only, on land in which crops had been growing with sewage ever since the farm was taken, and one bed also dressed with superphosphate, and in which transplanted Beet were to be put out. The quantity of rain which fell, the evidence of abundant vigour, and a great tendency of the plants to 'run' or 'bolt,' prevented sewage from being applied after the starting dressings to the two first beds, and the extraordinary manner in which the transplanted Beet 'bolted,' has somewhat interfered with our purpose. We have, however, an excellent crop both on the sewaged and unsewaged beds. I think the unsewaged crop is, if anything, the better, because the plants have not 'run' so much, neither are the roots, as a rule, so large, which is, I am informed, an advantage for sugar-making purposes. Those, however, upon either bed which bordered upon the main sewage carrier have grown nearly as large as our Mangel. It will be instructive to learn the percentage of sugar they give, and whether more sugar an acre is not produced by growing a number of large roots than by growing the same number of small ones, although each of the former proves to have a smaller percentage of sugar than the latter. The tendency of Mangel and Sugar-Beet to 'bolt' has been very generally evinced. The experiment will be a fair one, for all the lands were well ploughed, deeply subsoiled, and hand and horse hoeing was concluded by the moulding up of the plants.†—Judging from last year's experience, we hoped that the Onion crop would have been the most profitable on the farm; but the result does not justify our expectations. Our crops were very good, but they were later than they would have been had the dung-cart been used. We had the option of either bunching them early when others were sending better to market, or of keeping them for the warm weather to fill and ripen, and so market them later when all the others had exhausted their stocks. We selected the latter course, but instead of there being any appearance of a decrease in the general supply, more and more were forced upon the market; and though our Onions improved by the delay, the price did not; whilst the labour, owing to the wet weather which set in, was much increased.—The Strawberries, also, were not as fine as we have sometimes grown them, and they were moreover late, the first bloom having been destroyed by frosts. The general abundance of this fruit likewise reduced the prices.—Amongst the other crops grown on a small scale, in all cases with successful results, were broad Windsor Beans, Vegetable Marrows, Cucumbers, Kohl Rabi, Rocca Onions, and Red Salad Beet. The Rocca Onions were planted out this spring, without any previous preparation of the land with dung, and have done well under sewage treatment alone. The Windsor Beans were excellent, and so were the Marrows and Kohl Rabi. The red Beet is still in the ground, and looks to be an improvement on former years. The Cucumbers have also shown that they will prosper under sewage treatment."

We add Mr. Morgan's general comparison of 1869-70 with 1870-71, giving the answers to most of the questions which the reader will be disposed to ask :—

General Comparison between the Years 1869-70 *and* 1870-71.

	1869-70.	1870-71.
	A. R. P.	A. R. P.
Acreage under sewage.. ..	112 3 23	162 3 6
Acreage not under sewage ..	71 1 0	26 3 17
Acreage of pasture	13 0 0	7 0 0
Acres of crops	391 0 0	444 0 35
Total tons of sewage	500,871	622,324
Average tons per Acre ..	4,460	3,808
Tons of sewage per acre to grass	5,000	5,600
Average tons of grass per acre cut from old and newly sown plots	20¼	23
Gross receipts and general valuation	£10,147 15 7	£10,190 5 9
Less previous valuation ..	4,529 12 3	4,068 9 4
	£5,618 3 4	£6,121 16 5
Payments	4,998 19 3	4,797 4 11
Profit	£619 4 1*	£1,324 11 6

Profitable and Ornamental Poultry. By Hugh Piper. Groombridge & Sons.

This is a practical guide to the choice, breeding, rearing, and management of all descriptions of fowls, turkeys, Guinea fowls, ducks, and geese, for profit and exhibition. So says the author on his title-page—and the book justifies his description. It is a very instructive little volume, beautifully illustrated and printed, and full of information. How far the statements here collected are the result of the authors' own experience, does not appear; but at any rate he acknowledges perpetually his indebtedness to his predecessors, and the result is, as we have said, an extremely well packed and serviceable little volume. We extract a page on the old problem, how to preserve eggs, which seems never to lose its interest :—

"An egg exposed to the air is continually losing a portion of its moisture, the place of which is filled by the entrance of air, and the egg consequently becomes stale, and after a time putrid. M. Réaumer made many experiments in preserving eggs, and found that, by coating them with varnish, it was impossible to distinguish those which had been kept for a year from those newly laid; but varnish, though not expensive, is not always to be had in country places, and it also remained on the eggs placed under a hen and impeded the hatching, while in boiling them, the varnish, not being soluble in hot water, prevented them from being properly cooked. He tried other substances, and found that fat or grease, such as suet, lard, dripping, butter, and oil, were well adapted for the purpose, the best of these being a mixture of mutton and beef suet thoroughly melted together over a slow fire, and strained through a linen cloth into an earthen pan. It is only requisite, he says, to take a piece of the fat or butter about the size of a pea on the end of the finger, and rub it all over the shell, by passing and repassing the finger so that no part be left untouched; the transpiration of matter from the egg being as effectually stopped by the thinnest layer of fat or grease as by a thick coating, so that no part of the shell be left ungreased; or the tip of the finger may be dipped into oil and passed over the shell in the same manner. If it is desired that the eggs should look clean, they may be afterwards wiped with a towel, for sufficient grease or oil enters the pores of the shell to prevent all transpiration, without its being necessary that any should be left to fill up the spaces between the pores. They can be boiled as usual without rubbing off the fat, as it will melt in the hot water, and when taken out of the water the little grease that is left upon the egg is easily wiped off with a napkin.

"Eggs preserved in this manner can also be used for hatching, as the fat easily melts away by the heat of the hen; and by this means the eggs of foreign fowls might be carried to a distance, hatched, and naturalised, in this and other countries. The French also find that a mixture of melted beeswax and olive-oil is an excellent preservative.

"Eggs may also be preserved for cooking by packing them in sawdust, in an earthen vessel, and covering the top with melted mutton suet or fat, as fruit is sometimes preserved. They are also said to keep well in salt, in a barrel arranged in layers of salt and eggs alternately. If the salt should become damp, it would penetrate through the pores of the shell and pickle them to a certain extent. M. Gagne says that eggs may be preserved in a mixture made of 1 bush. of quick-lime, 2 lb. of salt, and 8 oz. of cream of tartar, with sufficient water to make it into a paste of a consistency to receive the eggs, which, it is said, may be kept in it fresh for two years; but eggs become tasteless when preserved with lime. It may be as well to mention here that eggs are comparatively wasted when used in making a rice pudding, as they render it too hard and dry, and the pudding without them, if properly made, will be just of the right consistency.

"'Another way to preserve eggs,' says Mr. Dickson, 'is to have them cooked in boiling water the same day they are laid. On taking them out of the water they are marked with red ink, to record their date, and put away in a cool place, where they will keep, it is said, for several months. When they are wanted for use, they are again put into hot water to warm them. The curdy part which is usually seen in new-laid eggs is so abundant, and the taste is said to be so well preserved, that the nicest people may be made to believe that they are new laid. At the end of three or four months, however, the membrane lining the shell becomes much thickened, and the eggs lose their flavour. Eggs so preserved have the advantage of not suffering from being carried about.'

"'It ought not to be overlooked,' says Mr. Dickson, 'with respect to the preservation of eggs, that they not only spoil by the transpiration of their moisture and the putrid fermentation of their contents, in consequence of air penetrating through the pores of the shell; but also by being moved about, and jostled when carried to a distance by sea or land. Any sort of rough motion, indeed, ruptures the membranes which keep the white, the yolk, and the germ of the chick in their proper places, and upon these becoming mixed, putrefaction soon follows.'

"If the eggs are to be kept for setting, place a box, divided by partitions into divisions for the eggs of the different breeds, in a dry corner of your kitchen, but not too near to the fire; fill the divisions with bran previously well dried in an oven; place the eggs in it upright, with the larger ends uppermost, as soon as they are laid, and cover them with the bran. Mark each egg in pencil with the date when laid, and description of breed or cross. They should be kept in a cool place or a warm place according to the season. Air-tight jars, closed with air-tight stoppers, may be used if the eggs are intended to be kept for a very long time."

Farm Memoranda.

Wester Ross: *Nov.* 14.—During the last two summers our horses had so large an amount of extra work to accomplish in connection with building houses and improving land, that they very much required the harvest season as a recruiting time, so, for this reason mainly, our reaper was not used in cutting any of this or the previous year's crops. Besides, there is not great difficulty in securing, in this quarter, a sufficiency of hands, at moderate wages, to cut and secure the crops in good time; and, when these are close and sufficiently rank, there is no great loss by cutting them with the scythe. Never was there a season more suitable for scythe cutting than this, for a few nights before we began, by a heavy gale, accompanied with rain, the crops were all admirably laid in one direction, and in the same direction the wind continued to blow nearly all the harvest. In these favourable circumstances we began cutting, on August 24, with eight scythes, 150 acres of Wheat, Oats, and Barley, and in 12 working days the whole was in stook, each scytheman having cut a little over 1½ acre per day. In six additional working days the whole crop was safe in the stackyard, the stacks, not of a large size, numbering 80. The last of the crop was brought to the stackyard on September 15, the harvest thus extending over three weeks and two days, including sabbaths and wet weather,—the whole outlay for cutting, gathering, binding, leading, and thatching, being £32, or something over 4*s.* 3*d.* per acre. It must be remembered, however, that all the half-year servants were engaged in harvest work, and that a large proportion of the more costly part of the work was performed by them, and their wages are not included in the above amount. The wages of the different kinds of hands are as follows: —scytheman, 3*s.*; binders, 2*s.* 6*d.*; gatherers and rakers, 1*s.* 9*d.* per day, without rations. The cost per acre is so small that it could not have been materially lessened by the substitution of the reaper, particularly as the crops this year were not laid so suitably for the reaper as for the scythe. In thin and light crops, however, the work of the scythe is not once to be compared with the orderly and regular laying by the reaper.

This is one of the most profitable seasons the farmers in the North have had for many years. The cereal crops are abundant, and the grain, generally, of good quality. Wheat, although not yielding quite so largely as it did for a few previous years, threshes fairly, while the grain is of fine quality, weighing in some instances 65 lb. per bush., and the price is very satisfactory.

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* We referred to this crop last week.

† "The following are two analyses of Sugar-Beet from land which has for about five years grown heavy crops by means of sewage irrigation—the land from which the first was taken having been treated with 2 cwt. per acre of superphosphate of lime only, and the other with 528 tons of sewage only :—

No. 1.—*Dressed with* 2 *cwt. of Superphosphate of Lime per acre.*

Weight of Roots.	Average Weight.	Percentage of Sugar in Roots.
lb. oz. lb. oz.	lb. oz.	
1 13 to 3 6	2 9	7.83
2 1 ,, 4 11	3 2	6.93
6 11 ,, 9 11	8 10	4.09

No. 2.—*Dressed with* 528 *tons of Sewage per acre.*

Weight of Roots.	Average Weight.	Percentage of Sugar in Roots.
lb. oz. lb. oz.	lb. oz.	
1 0 to 3 10	2 10	8.03
4 8 ,, 5 7	4 15	7.13
9 2 ,, 10 13	9 15	3.06

"The above analyses have been kindly made for us by Mr. Duncan from roots sent to him from the Lodge Farm. Mr. Duncan has just commenced operations at Lavenham, where the roots are fully 2 per cent. less rich in sugar this year than usual, owing to the unfavourable season.

"As the same complaint comes from Continental growers, the results which we have obtained must be regarded as very satisfactory, since a command of sewage can be made to assure, in all seasons, a very much larger crop of Beet than can be otherwise obtained, the amount of sugar in the root being, at the same time, of a full average percentage. I am informed that the large sized roots, giving, as they invariably do, a low percentage of sugar, will not pay the sugar maker, but are suitable for distilling purposes.

"There appears to be no difference in the weight generally between the experiments, and, after making a very full allowance for the adhering mould, our present year's crops will, it is expected, considerably exceed 30 tons an acre."

* The profit for year 1869-70 was reduced by loss of dairy stock amounting to £612 17*s.* 4*d.*

The colour of Barley is not so fair as we would like, but it also weighs well, and fetches from 34*s.* to 35*s.* per qr. Oats yield better than they have done for several years. Our Turnip crop was, perhaps, never better—Swedes, particularly, being unusually fine. Potatos are an abundant crop, of excellent quality, and generally free from disease. They are now finding their way in large quantities to the South, and the money is flowing into the farmers' pockets in a delightful stream. There is no agricultural commodity a good crop of which is more beneficial to the small holder of land than Potatos. He rarely grows Wheat, and consequently does not participate in the high price now and then got for it; but Potatos grow on poor land nearly as well as, and often healthier, than in richer soil, and consequently he has his full share of profit therefrom; and it was high time that such a season should visit him, as the series of dry years we had, adverse as they were to the growth of Oats, pressed heavily on him, his principal cereal crop being Oats. Foot-and-mouth disease has been pretty general, and still largely prevails, but sheep and cattle, on the whole, are doing well, favoured as they are with a fine season and abundant keep.

The Week's Work.

NOVEMBER 25.—*Draining Operations* should be prosecuted with vigour on arable farms, so as to get the work finished in time for the land being ploughed. There is still much land undrained, and large areas that have been only half drained—a drain between every two being necessary to remove heavy showers, and thus avoid flood-water. Again, some of the drains in the earliest drained land are beginning to give way, and the wider the drains are placed asunder, and the less perfectly the land is drained, the sooner the drains give way and require to be renewed by redrainage. It must ever be borne in mind that the artificial drainage of land is rarely a permanent work. Moreover, the action of a drain during its existence is not always uniform; much, of course, depends upon the nature of the land and the way in which the work of drainage has been executed, together with the quality and durability of the draining pipes or materials used in draining. A bad pipe near the bottom of the field, by giving way, will destroy the drainage above it, hence the care with which pipes should be selected and put into the drain—all broken or improperly burnt ones being thrown aside. It follows, also, that drained land at this season should be carefully examined, to see that the drains are all acting uniformly. Where they discharge their contents into main drains, as they always should do, it is not easy to determine whether they are discharging equal quantities of water; but when a drain "bursts," *i.e.*, becomes choked, and ceases to act, the rising of the water and the wetness of the land around can easily be seen. In bad cases, the drainage should be repaired immediately, and this is perhaps the best rule generally. But in young Wheats and seeds it may, in exceptional cases, be advisable to mark the wet spots, and defer the opening of drains until after the next harvest; or a temporary repair may be made by opening a cut between the drain that has burst and the one nearest to it, so as to turn the water of two drains into the latter. This, however, is an imperfect mode, and should not be trusted beyond the end of the ensuing harvest. In some cases the failure is so easily seen that a cut can be dug down to the broken pipe, or series of pipes, where the ground has been washed away under (a very common mishap), and the repair effected at once. When drains begin to give way in this manner, the best plan is to open a series of cross main drains, before the Wheat is sown or seeds, so as to relieve the others, and expedite repairs between the mains thus opened, where the parallel drains give way.

Steam Culture, under favourable circumstances, should be finished by this time, and the exceptions should be proceeded with as fast as the facts of the case will permit, such as drainage and the like. This is, perhaps, the best time for breaking up by steam poor wet pasture lands that have been badly drained; also waste land that has never previously been subject to the plough, in order to get it exposed to the winter frost and rain. Where the bottom is of a suspicious character, it is better to plough shallow and subsoil deep, so as to well ventilate the bottom. If this is thoroughly done, the alternate freezing and washing, with oxidising of the air, will have a powerful effect in preparing the land for manure and the growth of crops. It often happens that inattention to the proper depth of ploughing and subsoiling is more than a season lost in the reclaiming of wet, clayey land, or land of any kind that has a bad bottom. Dry, calcareous, gravelly, and sandy soils form an exceptional class that may be cultivated by steam as successfully just now as at the close of harvest, so far as the mere work of ploughing is concerned, as they do not "squeeze" and "paste" like tenacious clays that have by this time absorbed their maximum of water; clayey soils of the latter class should be ploughed by steam when in a comparatively dry state, when, instead of "pasting," the furrow slice is left behind the implement broken into a thousand fragments.

Anthills cut and spread. Frost and cold rains both kill the ants, but when spread abroad in fine open weather they are apt to find a lodging for the winter. Dig out at the same time and remove Tussack-grass, Docks, Thistles, and other weeds in the pastures. If the land is to be top-dressed immediately, it is better to cart off anthills, Tussack-grass, &c., to a compost hill, and mix with lime or liquid manure, so as to destroy animal and vegetable life.

Fat Stock Exhibitions are now one of the chief attractions of the season. From the facilities which railways afford for travelling, the farmers of different counties enjoy the opportunity of seeing the fattening properties of different breeds, and of learning much that cannot be taught at home; and it is questionable if our Christmas meetings are so generally attended as they should be for educational purposes. No doubt the fattening process is too much in the extreme for many, but from an educational point of view the objection falls to the ground, for the fat ox, sheep, or pig can be sent to the shambles at any stage of the process.

Notices to Correspondents.

BOVINIA POTATOS: *H. M.* informs us that from 10 lb. of sets of the above Potato, Mr. Gill, Lodge Farm, Carthorpe, Bedale, has harvested 4 cwt. of fine sound Potatos, many of them nearly 12 inches in length, whilst the Victoria and Regent Potatos planted on each side of them were nearly all diseased.

COPROLITES: *Hussar* says—I have an estate in Cambridgeshire on which coprolites exist in great quantities and are being dug. I am anxious to learn all about them—their history, component parts, and the process of manufacturing them from the raw material into artificial manure. Is there a work on the subject, or how can I get the information I require? [We will procure the information for you.]

POULTRY AND FOOT-AND-MOUTH DISEASE: *A Subscriber from the Beginning* wishes to learn if, when the foot-and-mouth disease has prevailed amongst cattle, it has been known to extend to poultry—for instance, turkeys. [Poultry are certainly liable to foot-and-mouth disease. See the article on the subject at p. 1525.]

ROYAL AGRICULTURAL SOCIETY: *F. H.* Send your name and address to the secretary, 12, Hanover Square, W. £1 is the annual subscription.

Markets.

ENGLISH WOOL.

The upward tendency in wool still continues, and the stocks in the hands both of manufacturers and dealers are becoming much reduced, and those best able to judge consider that unless some unforseen events should arise to check consumption a further advance of 1*d.* to 2*d.* between this and next clip is inevitable.

MARK LANE.

MONDAY, Nov. 20.

The supply of English Wheat to this morning's market was small, and was sold at an advance of 1*s.* per qr. upon the prices of this day se'nnight. The attendance was good, and a fair amount of business was transacted in Russian, at a similar improvement; other descriptions were unchanged in value. Malting Barley sold slowly at late rates; grinding Barley and Beans and Peas were unaltered in value. Oats were 1*s.* per qr. dearer. Flour remains as last quoted. Maize brought rather more money.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk . . White	54—59	Red	54—57
— fine selected runs . . . . do.	57—61	Red	56—58
— Talavera	59—63		
— Norfolk	—	Red	—
— Foreign	51—69		
BARLEY, grind. & dist., 26*s* to 31*s*. . Chev.	38—40	Malting . .	33—38
— Foreign . . grinding and distilling	28—31	Malting . .	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire . . Potato	25—27	Feed	—
— Irish . . . . Potato	24—26	Feed	20—22
— Foreign . . . . . . Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign . .	—
RYE-MEAL, Foreign			
BEANS, Mazagan . . . . 35*s.* to 38*s*. . . Tick	49—50	Harrow . .	49—50
— Pigeon . . . . 51*s.* to 59*s*. . . Winds	—	Longpod .	—
— Foreign . . . . Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent . . Boilers	40—42	Suffolk . .	42—45
— Maple, —*s.* to —*s.* . . . . Grey	—	Foreign . .	36—44
MAIZE	—	Foreign . .	32—35
FLOUR, best marks, delivered . . per sack	44—50		
— 2d ditto . . . . ditto	40—42	Country . .	40—42
— Foreign . . . . per barrel	24—28	Per sack . .	38—60

WEDNESDAY, Nov. 22.

A firmer feeling pervaded the Corn Exchange to-day. The supplies of English Wheat were short, but those from abroad were large. Transactions were not numerous, but the improved rates current on Monday were well maintained. Barley sold quietly on former terms. Malt was taken off cautiously, at previous quotations. Large supplies of Oats were on the stands; the demand was fairly animated, and for all descriptions full prices were realised. Beans and Peas were steady, both in value and demand. Flour was quiet, but firm.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch . .	—	—	—	—
Irish . .	—	—	—	—
Foreign . .	23,930	1400	32,260	1460 1700 brls.
	23,930	1400	32,260	

LIVERPOOL, Nov. 21.—Red winter and finer qualities of white American Wheat were readily sold, at prices rather higher than Friday's, but for other descriptions the demand was quiet. Flour was steady but slow. Beans and Peas unchanged. Indian Corn met a free sale, at a decline of fully 3*d.* per qr. on the market price.

AVERAGES.

	Wheat.	Barley.	Oats.
Oct. 14	56*s* 5*d*	36*s* 2*d*	22*s* 6*d*
— 21	56 6	36 10	23 2
— 28	56 7	37 7	23 5
Nov. 4	56 8	37 5	23 8
— 11	56 5	37 4	23 5
— 18	55 11	36 9	23 0
Average . .	56 5	37 0	23 2

METROPOLITAN CATTLE MARKET.

MONDAY, Nov. 20.

We have a larger number of foreign Beasts on offer than last Monday, of English there is no increase. There is great difficulty in effecting a clearance, and last week's quotations are barely reached. There are a few more Sheep, and the weight of mutton is considerably increased; our top quotation is only realised for choicest descriptions—the tendency is decidedly downwards for all kinds. The trade for Calves remains unaltered. Our foreign supply consists of 2600 Beasts, 10,600 Sheep, and 180 Calves; from Scotland there are 57 Beasts; from Ireland, 1100; and 1293 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. . .	5 8to5 10	Best Long-wools	6 4to6 8
		Do. Shorn . .	. . — . .
Best Shorthorns . .	5 6—5 8	Ewes & 2d quality	5 0—5 8
2d quality Beasts	4 0—4 8	Do. Shorn . .	. . — . .
Best Downs and Half-breds . .	6 8—7 0	Lambs	. . — . .
		Calves	4 0—6 4
Do. Shorn . .	. . — . .	Pigs	3 4—5 0

Beasts, 5050; Sheep and Lambs, 19,900; Calves, 184; Pigs, 150.

THURSDAY, Nov. 23.

The number of Beasts is smaller than last Thursday, but the demand has equally decreased; on the average Monday's quotations are not reached, although some of the choicest qualities have made about the same. There is very little business doing in the Sheep market. The supply is about the same as last week; the demand is, however, smaller, and a clearance cannot be effected, notwithstanding prices are rather lower. There is no alteration in the Calf trade. Our foreign supply consists of 340 Beasts, 5830 Sheep, and 108 Calves, and 15 Pigs.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. . .	5 6to5 10	Best Long-wools	6 4to6 6
		Do. Shorn . .	. . — . .
Best Shorthorns . .	5 4—5 8	Ewes & 2d quality	4 8—5 6
2d quality Beasts	3 10—4 8	Do Shorn . .	. . — . .
Best Downs and Half-breds . .	6 8—6 10	Lambs	. . — . .
		Calves	4 0—6 4
Do. Shorn . .	. . — . .	Pigs	3 4—5 0

Beasts, 830; Sheep and Lambs, 7890; Calves, 143; Pigs, 50.

METROPOLITAN MEAT MARKET, Nov. 23.

Best Fresh Butter	18*s.* per dozen lb.
Second do. do.	16*s.* „

Small Pork, 4*s.* 4*d.* to 5*s.* 0*d.*; Large Pork, 3*s.* 4*d.* to 4*s.* 0*d.* per 8 lb.

HOPS.

BOROUGH MARKET, Nov. 22.

Messrs. Pattenden & Smith report that the demand for all descriptions is of a retail nature, and the best sorts are gradually disappearing from the market. The supply altogether is exceedingly limited. Continental stocks are very small, and prices rule high in consequence.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Nov. 23.

Prime Meadow Hay,	80*s.* to	90*s.*	Clover, old	115*s.*	130*s.*
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. . .	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	42			

CUMBERLAND MARKET, Thursday, Nov. 23.

Sup. Meadow Hay	92*s.* to	100*s.*	Inferior Clover . .	80*s.* to	115*s.*
Inferior do.	65	84	Prime 2d cut do. . .	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	46
Superior Clover . .	130	140			

JOSHUA BAKER.

WHITECHAPEL, Thursday, Nov. 23.

Fine Meadow Hay	84*s.* to	92*s.*	Prime old Clover . .	130*s.* to	140*s.*
Inferior do.	63	78	Inferior do. do. . .	—	—
Prime New Hay . .	—	—	Prime 2d cut do. . .	110	120
Inferior	—	—	New Clover	—	—
Straw	34	38	Inferior do.	—	—

SEED MARKET.

We have to report increased activity in the seed trade. During the past week the demand for red Clover seed has been very brisk, and large quantities of seeds have changed hands, at enhanced currencies. New American red has been sold at 60*s.* per cwt.; in yearling parcels there has also been a good business doing. The crop in the south and west of Germany is described as being very deficient; in Silesia, however, the yield is said to be fair. For anything good in old English Clovers long prices are asked. White Clover and Alsike are exceedingly firm; the same may be said of Trefoil seed. French Italian has continued its upward movement, and must be noted 2*s.* per cwt. dearer on the week. Perennial Grasses are steady, at the high rates recently touched. Fine Lucerne seed is scarce and dear. For Mustard and Rape the trade is quiet. Feeding Linseed is in good request. Hemp and Canary are without alteration. The frosty weather has improved the trade for boiling Peas and Haricot Beans.

JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

COALS.—Nov. 22.

Ryhope Hartley, 18*s.* 6*d.*; Walls End Hetton, 21*s.* 6*d.*; Walls End Hetton Lyons, 19*s.* 9*d.*; Walls End Hartlepool, 21*s.* 3*d.*; Walls End Kelloe, 20*s.* 9*d.*; Walls End East Hartlepool, 21*s.* 3*d.*; Brancepeth Cannel, 18*s.*—Ships at market, 9; sold, 9; at sea, 10.

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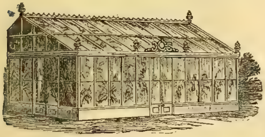

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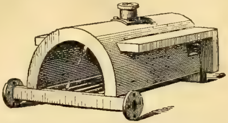

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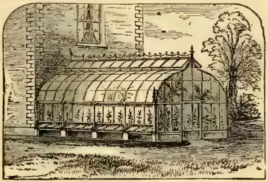

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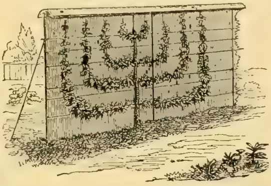

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CHARLES BEARD, Patentee, Horticultural Engineer, Victoria Works, Bury St. Edmund's.

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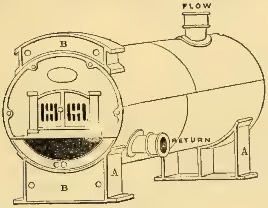
"TRENTHAM" IMPROVED CORNISH BOILER.



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"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

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"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

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"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

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"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

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"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

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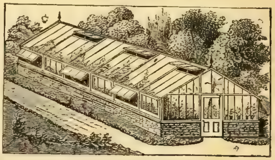

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W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
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6 ft. ,, ,, 2 in. thick, unglazed	5*s.* ,,
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Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* ,,
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Estimates given for Conservatories or Greenhouses to any Design.

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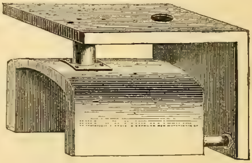

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 ,,	18 ,,	24 ,,	450	6 0 0
20 ,,	18 ,,	30 ,,	600	7 0 0
24 ,,	24 ,,	24 ,,	700	8 0 0
24 ,,	24 ,,	30 ,,	850	10 0 0
24 ,,	24 ,,	36 ,,	1,000	12 0 0
24 ,,	24 ,,	48 ,,	1,400	15 0 0
28 ,,	28 ,,	60 ,,	1,800	20 0 0
30 ,,	30 ,,	72 ,,	2,600	30 0 0
36 ,,	36 ,,	96 ,,	4,500	50 0 0
48 ,,	48 ,,	108 ,,	7,000	75 0 0
48 ,,	48 ,,	144 ,,	10,000	100 0 0

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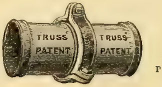

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The above can be had, of all sizes, wholesale of
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Retail of the principal Seedsmen. Prices on application.

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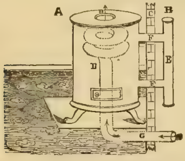
PRICES: —

COAL CALORIGEN, £6 6s. | GAS CALORIGEN, £3 3s.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

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HESSIANS and SCRIMS for COVERING.
44 Scrim, from 2d to 5d per yard, advancing ¼d
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72 " " " 4½d., 5½d, 6d, 6½d, and upwards.

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WOOL NETTING, 2 yards wide and 1s. 6d. per yard.

"FRIGI DOMO" CANVAS."

Two yards wide	1s. 10d. per yard.
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SCRIM CANVAS, 72 inches wide, 70 yards long, 5½d. to 8½d. p yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾d. and 8¾d. per yard.

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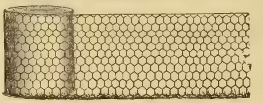

Prices per Lineal Yard, 24 inches high.

Mesh.	Mostly used for	Light.	Medium.	Strong.
in.		s. d.	s. d.	s. d.
2	Poultry	0 3¾	0 4½	0 5¾
1⅝	Rabbits, Hares, &c	0 4¼	0 5¼	0 6¼
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All guaranteed, and carriage paid to any railway station.

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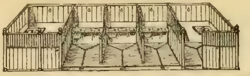

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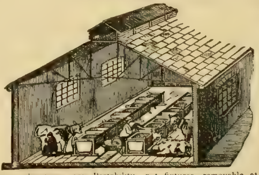

Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

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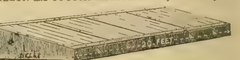

These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

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12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

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10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
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Glass for Garden Purposes.

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PROPAGATING GLASSES.

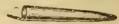
	Each.—s. d.		Each.—s. d.
2 inches in diameter ..	0 3½	12 inches in diameter ..	1 9
3 " " ..	0 4½	13 " " ..	2 0
4 " " ..	0 5½	14 " " ..	2 6
5 " " ..	0 6½	15 " " ..	3 0
6 " " ..	0 8	16 " " ..	3 6
7 " " ..	0 10	17 " " ..	4 0
8 " " ..	1 0	18 " " ..	5 0
9 " " ..	1 2	19 " " ..	6 0
10 " " ..	1 4	20 " " ..	7 0
11 " " ..	1 6		

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter ..	0s. 6d.	9 inches in diameter ..	1s. 8d.
5 " " ..	0 8	10 " " ..	2 0
6 " " ..	0 10	11 " " ..	2 6
7 " " ..	1 1	12 " " ..	3 0
8 " " ..	1 4		

Either flat or conical tops.

CUCUMBER GLASSES.



24 inches long	2s 0d	16 inches long	1s. 4d.
22 "	1 10	14 "	1 2
20 "	1 8	12 "	2 6
18 "	1 6		

WASP TRAPS, 3s. 6d. per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—s. d.		Each.—s. d.
12 inches	6 6	20 inches	10 6
14 "	7 6	22 "	11 6
16 "	8 6	24 "	12 6
18 "	9 6		

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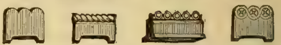

THE above and many other PATTERNS are made in materials of great durability. The plainer sorts are especially

suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

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N.B. Orders promptly executed by Rail or to Wharves.
A liberal discount to the Trade.

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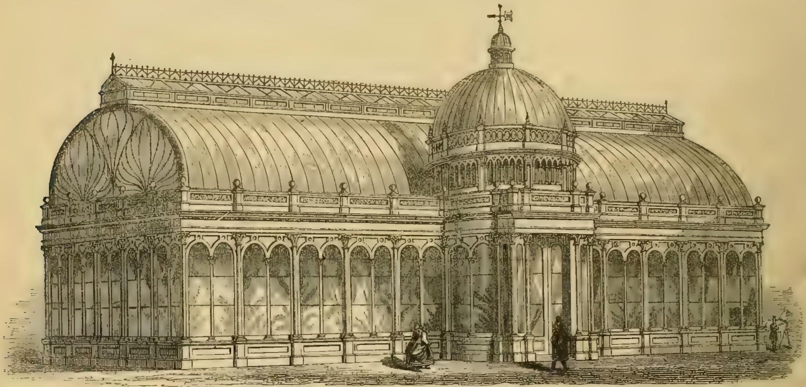

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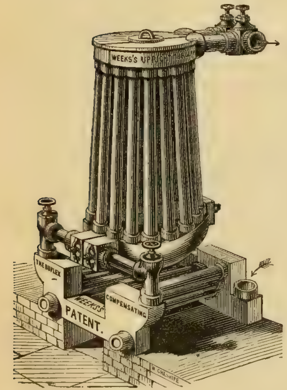

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NOTICE.—FLOWER SHOW, FRUIT and FLORAL COMMITTEE MEETING, on WEDNESDAY NEXT, December 6, at 11 o'Clock. GENERAL MEETING at 3. Band of the Royal Horse Guards from 2. Admission 2s. 6d.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, W.

The next EXAMINATION for GARDENERS in FRUIT and VEGETABLE CULTURE and FLORICULTURE will be held in the Council Room, at South Kensington, on TUESDAY, December 12, commencing at 10 o'Clock A.M. Intending Candidates should send in their names at once to JAMES RICHARDS, Assistant Secretary.
South Kensington, W.

HORTICULTURISTS, HORTICULTURAL BUILDERS, and others willing to co-operate in the Formation of a COMPANY having for its object the cultivation on an extensive scale of PRUITS, FLOWERS, &c., for the London and other Markets, are invited to communicate with J. WATTS, Esq., Messrs. Macpherson & Co., 13, Old Jewry Chambers, London, E.C.

To the Trade.

DOWNIE, LAIRD, AND LAING'S NEW LIST of CHOICE FLOWER SEEDS, just harvested this season, is now ready, and will be forwarded, post free, on application.
Nurseries, Forest Hill, S.E. ; and Edinburgh.

To the Seed Trade.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to announce that his LIST of NOVELTIES for the present Season, including some first-class Seeds, is now ready, and will be sent free on application.

THE PINE-APPLE NURSERY COMPANY,
32, Maida Vale, Edgware Road, W.
JOHN BESTER, Manager of the Nursery and Seed Department.
The Company guarantee to their Customers Punctuality, Liberality, and Genuine Articles. The favour of a visit is earnestly solicited.

EVERY GARDEN REQUISITE
KEPT in STOCK at
CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
In Collections to suit Large and Small Gardens.
10s. 6d. | 21s. | 42s. | 63s. | 84s.
No charge for packing. Carriage free.
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
EVIDENCE OF QUALITY:—
From Miss J. Smith, *Enniskillen, April* 19, 1871.
"The Hyacinths supplied by you are the admiration of the country."
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

CARTER'S PRIZE DUTCH FLOWER ROOTS.
In Collections for the Conservatory or Drawing Room
10s. 6d. | 21s. | 42s. | 63s. | 84s.
Packing and carriage free.
JAMES CARTER AND CO., 237 and 238, High Holborn, London.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application.—Mr. WEBB, Calcot, Reading.

SUTTONS' MAMMOTH LONG RED MANGEL has again been Awarded the First Prize at Birmingham, with Roots weighing 45 lb. each. See Specimens, STAND 70, at the SMITHFIELD CLUB SHOW.

SUTTONS' CHAMPION SWEDE, the best in cultivation. See Specimens on STAND 70, at the SMITHFIELD CLUB SHOW.

SUTTONS' BERKSHIRE PRIZE YELLOW GLOBE MANGEL, the best in cultivation. See Specimens, 44 lb. each, on STAND 70, at the SMITHFIELD CLUB SHOW.

SUTTONS' SELECTED FARM SEEDS.—Orders received at STAND 70, at very moderate prices.

Turnip and Mangel Wurzel Seeds—1871 Crop.

JOHN SHARPE will on application furnish his LIST, with prices, of the principal SEEDS he is growing this year.
Bardney Manor, Lincoln.—July 6.

To the Seed Trade.

FOR SALE, in large quantities, the following PEAS:
Ne Plus Ultra
Champion of England
Hair's Dwarf Mammoth
Laxton's Early Prolific
All new seed and true stock. For price apply to
B. R. CANT, St. John's Street Nursery, Colchester.

MR. LAXTON'S NEW PEAS for 1872.—For particulars of Mr. Laxton's latest and remarkable Novelties in Garden Peas, which will be sent out by us this season in trial packets, see page 1544 of this week's *Gardeners' Chronicle.*
HURST AND SON, 6, Leadenhall Street, London, E.C.

ASPARAGUS, large roots, for forcing or planting.
ROBERT H. POYNTER, Taunton, Somerset.

Connover's Colossal Asparagus.

THE PINE-APPLE NURSERY COMPANY have 1-yr. old PLANTS of this large and superb variety to offer, at 25s. per 100.
JOHN BESTER, Manager, Pine-apple Place, Maida Vale, W.

FIFTY TONS REDSKINNED FLOURBALL POTATOS, at £6; EARLY ROSE, £12.
ALFRED COCKERILL, Market Gardener, Northampton.

Seed Potatos.

G. AND J. BROMLEY have to offer a large quantity of ROYAL ASHLEAF, ERIN'S QUEEN, MONA'S PRIDE, GLOUCESTERSHIRE KIDNEY, GIANT KING, COLDSTREAM, &c., in fine condition. Prices on application.
Newton-le-Willows, near Bedale, Yorkshire.

Novelties of the Season.

SWEET-SCENTED RHODODENDRONS and AZALEAS, raised by ISAAC DAVIES, and awarded First-Class Certificates of Merit at the Spring Flower Shows of Manchester and Liverpool. A descriptive priced LIST forwarded to any address on application to ISAAC DAVIES, Nurseryman, Ormskirk.

Trade List, 1871-72,

Containing the SUPERB COLLECTION of HARDY ORNAMENTAL TREES Exhibited in September last at South Kensington, post free on application.

JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Carpet Bedding.

F. E. MADDEN AND SONS, Ballinasloe, offer 18,000 SEMPERVIVUM TINCTORUM (House Leek), at 12s. 6d. per 100 The Trade supplied.

MAURICE YOUNG'S NEW TRADE LIST of CONIFERÆ, HARDY EVERGREEN TREES and SHRUBS, ROSES, RHODODENDRONS, JAPANESE PLANTS, NEW AUCUBAS, &c., is now ready, and will be forwarded or application.
Milford Nurseries, near Godalming, Surrey.

PARIS, 1867. | SUTTONS' GRASS SEEDS for ALL SOILS. The PREMIER PRIX SILVER MEDAL for GARDEN SEEDS, GRASSES, and GRASS SEEDS, was Awarded to
SUTTON AND SONS, Seedsmen, by Special Appointment, to H.M. the Queen, and H.R.H. the Prince of Wales, Reading, Berks.

TURF, TURF, TURF.—Good tough Turf, at 12s. per 100, delivered free at Surbiton Station. Apply by letter only to Mr. HORRELL, 1, South Place, Finsbury, E.C.

"MORTOLEUM."
REGISTERED.

To Amateurs.

ANY AMATEUR having a nice Plant of VANDA CATHCARTII to spare, and willing to take out the value in CAMELLIAS, will be kind enough to write, stating size and value of the Plant, to A. VAN GEERT, Nurseryman, Ghent, Belgium.

CHOICE CUT FLOWERS, &c., WANTED.—Parties having the above, can meet with a ready SALE by applying at
THE FLOWER MART, Villiers Street, Charing Cross, W.C.

WANTED, MANETTI STOCKS, strong and good.
State quantity to offer, with lowest price, to
W. W., *Gardeners' Chronicle* Office, London, W.C

WANTED, 800 CROWN BOB GOOSEBERRIES, 2 or 3-yr. Address, with lowest cash price, to
WINDEBANK AND KINGSBURY, Bevois Mount Nursery, Southampton.

WANTED, 500 or 1000 CROWN BOB GOOSEBERRY TREES, 3-yr. old. State lowest price for cash, free to Wisbeach Station, to
W F., 4, Great Northern Railway Potato Warehouse, King's Cross.

WANTED, HAWTHORNDEN APPLES, Standards.—Apply, stating height, and price per 100, to
THOMAS METHVEN AND SONS, Leith Walk Nurseries, Edinburgh.

WANTED to PURCHASE, a quantity of good healthy Standard CHERRY TREES, 6 feet stems—Eltons, Biggareaus, Blackhearts, Napoleon, and Waterloo. State price p. 100.
EDWARD THOMAS, Harold Nursery, Sittingbourne, Kent.

WANTED, 500 BEECH, PURPLE, best variety, 2, 3, to 4 feet; 100 RIBES SANGUINEA FL.-PL., required free-grown, and good rooted. Quote prices.
GEORGE JACKMAN AND SON, Woking Nursery, Surrey.

Extra Large Common Weeping Willows.

WANTED, a few extra size SPECIMEN TREES of the above, for immediate effect. Send particulars to
JAMES VEITCH AND SONS, Royal Exotic Nurseries, King's Road, Chelsea, S.W.

New Roses of 1871.

JOHN CRANSTON offers a selection of TWELVE NEW ROSES of the present year. Fine plants ready. Descriptive LIST on application.
Nurseries, King's Acre, near Hereford

To the Trade.—Dwarf Roses.

HUSSEY AND SON beg to offer the above, all leading HYBRID PERPETUAL kinds, selection left to themselves, good strong plants, at 30s. per 100
Mile End Nursery, Norwich.

AMATEUR ROSE GROWERS should at once get my CATALOGUE. It contains all the good sorts, and the plants are the finest that can be produced.
B. R. CANT, St. John's Street Nursery, Colchester.

To the Trade Only.

ROSES, ROSES, ROSES.—Standards, 3 to 5 feet stems, fine heads, and consisting of all the most popular sorts, 75s. per 100; Half Standards, 2 to 3 feet stems, 60s. per 100.
J. PERKINS, SEN., 52, Market Square, Northampton.

Show Roses.

A PRICED LIST of the best Hybrid Perpetual Show ROSES; also a PRICED LIST of choice Variegated GERANIUMS, post free, on application to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Planting Season.—Roses, Fruit Trees, &c.

W. KNIGHT intimates to intending Planters that his NEW CATALOGUE of HARDY TREES and PLANTS is now ready for distribution, containing faithful descriptions of his stock, which is unsurpassed in the Trade. Catalogues free.
Floral Nurseries, Hailsham, Sussex.

CHOICE ROSES.—The finest stock of Tea, Noisette, China, and other Roses to select from, all strong and healthy, in pots. Descriptive Priced LIST on application to
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

CHEAP VINES (1-yr. old Canes from Eyes), ROSES, FERNS, and other Plants.
Priced LIST forwarded on application.
KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Vines—Vines.

JOSEPH MEREDITH has this season a splendid stock of all the best and newest kinds of well-ripened and short-jointed CANES. Descriptive CATALOGUES free.
The Vineyard, Garston, near Liverpool.

Standard and Half Standard Trained Apricots,

Of all the leading kinds. The Trade supplied.

JOHN AND CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

To Gardeners.

FOR SALE, several thousand LANCASTER LAD GOOSEBERRY TREES, 2-yr. old; also some hundreds of NAPLES' BLACK CURRANT TREES. For price apply to
W. MANN, Mogden, Isleworth, Middlesex.

Chrysanthemums.

ADAM FORSYTH begs to inform his Friends that his great COLLECTION can be SEEN IN FLOWER any day except Sundays.
Brunswick Nursery, Stoke Newington, London, N

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Foot's Cray Nursery, Sidcup Hill, Kent.

To the Seed Trade.

GODETIA WHITNEYI—LEPTOSIPHON ROSEUS.

W. THOMPSON, SEEDSMAN, Ipswich, begs to offer a select stock of Seed of the above fine ANNUALS, introduced by him last season. Price per oz. on application.

To the Trade.

BETA CHILENSIS (True), the variety grown so extensively in all the London Parks and Public Gardens.—The Undersigned have a small quantity to offer. Price per ounce on application.
BUTLER, McCULLOCH AND CO., Covent Garden Market, W.C.

Planting Season.

THE PRICED LIST of SEEDLING and TRANSPLANTED FOREST TREES, SHRUBS, ALPINES and FERNS of WM. URQUHART AND SONS, Dundee, may now be had on application.

WHITETHORN QUICK, 1-yr., fine. For sample and price apply to
B. R. CANT, St. John's Street Nursery, Colchester.

Scarlet Dogwood.

L. T. DAVIS has the above to offer in quantity, of various sizes, at very moderate prices, delivered carriage free at Belfast.
Ogle's Grove Nursery, Hillsborough, Co. Down.

QUICKS for SALE, 3, 4, and 5-yr. transplanted, 15s., 17s. 6d., and 20s. per 1000, well rooted; also strong PRIVETS, 4-yr. transplanted, 15s. per 1000, for cash, at Lichfield.
JOHNSON AND WILLIAMSON, Market Gardeners, Lichfield.

FOR SALE, 1500 YARDS of BOX-WOOD, very healthy, 1 foot high. No reasonable offer will be refused.
L. CLOUGH, Victoria Gardens, Stockton Road, Sunderland.

STRONG Transplanted LARCH, and all other TREES.—For samples and prices, which are low, apply to
WILLIAM JACKSON AND CO., Nurseries, Bedale, Yorkshire.

LARCH for SALE.—One Hundred Thousand strong transplanted Larch, 2 to 3 feet.
S. BALE, Westacott Nursery, Barnstaple.

LARCH for SALE.—A large quantity of fine transplanted Larch, from 1½ foot to 3½ feet; also some WELLINGTONIA GIGANTEA, ABIES DOUGLASII, Common SPRUCE, and ABIES MENZIESII, from 6 to 8 feet
H. CARRIER, Dodington, Sittingbourne, Kent.

FOR SALE, a splendid PAIR of CAMELLIAS, to name, in tubs, 6 feet high, and as much through, in vigorous health, and well set with bud Also FIVE large AZALEAS, 2½ to 3 feet high and through, in good condition, and well set.
GEORGE SELLEY, Kirkdale Nursery, Upper Sydenham, S.F.

Liliums.

STEPHEN BROWN offers the following rare and beautiful sorts :—

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
Auratum Beauty	21	0	Leichtlinii	10	6
" picta	15	0	Tenuifolium .. .. 5*s.* to	7	6
Brownii	7	6	Tigrinum splendens ..	7	6
Lancifolium atrorubens (cruentum), true, 2*s.* 6*d.* to	5	0	Vestalis	3	6

Choice selections, from 75 superb varieties, 5*s.*, 9*s.*, 12*s.*, 18*s.*, and 24*s.* per dozen.

GLADIOLI.

An extensive collection of the finest choice selections, 3*s.*, 5*s.*, 9*s.*, 12*s.*, 20*s.*, and 30*s.* per dozen.

Also superb new varieties of 1870. See CATALOGUE.

The BULB CATALOGUE, Illustrated, Cultural, and Descriptive, free for six stamps, gratis to customers.

Seed, Bulb, and Plant Establishment, Weston-super-Mare.

Ornamental Trees and Shrubs.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, beg to intimate that in consequence of a large portion of their Ornamental Grounds having been Disposed of for Railway and Building purposes, they are now prepared to SELL at reduced prices their splendid stock of ORNAMENTAL TREES and SHRUBS. These being of all ages and sizes, are particularly well suited for giving immediate effect in the Formation and Improving of Ornamental Parks, Pleasure Grounds, &c. Inspection invited.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.
WILLOW CUTTINGS for Basket Makers' purposes.
BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.
WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"THE SALIX, OR WILLOW," second edition, post free, 1*s.*; or of SIMPKIN, MARSHALL AND CO., London.

To Planters.

J. SCOTT, Merriott, Somerset, advises Planters to send for his ORCHARDIST and its COMPANION, price 2*s.*, before ordering their Fruit Trees. Ornamental planters, amateurs, and gardening folks generally, will find much useful information in J. S.'s GENERAL NURSERY, BULB, and SEED CATALOGUES; they are full of interesting matter suited for gardens and gardeners, gratis.

The FRUIT TREES cover many acres, and are in perfect health; 1000 sorts of Apple, and 1200 sorts of Pear are grown, and all other fruits in proportion.

The FOREST TREES and ORNAMENTAL SHRUBS occupy a large space, more especially Alder, Ash, Birch, Beech, Chestnuts, Elms, Firs (Austrian, Larch, and Spruce), Hazel, Oak, Poplars, and at least one million of healthy Thorns, in all the usual sizes.

A NEW CATALOGUE, containing all the names enumerated in the "Orchardist," and many new sorts introduced since that work was printed, gratis on application.

To the Trade.

EWING AND CO., The Royal Norfolk Nurseries, Norwich, will be happy to furnish prices to the Trade of the following :—

Common LAUREL, 2 to 3 feet.
Japan PRIVET, transplanted.
PURPLE BEECH, worked.
" " the best dark variety, 6 to 8 feet
Variegated MAHALEB, fine stands.
ELM, Chichester, straight and fine, 6 to 10 feet.
" Herefordshire, straight and fine, 6 to 8 feet.
LABURNUM, common, 8 to 10 feet.
LIMES, red twigged, fine, 8 to 10 feet.
" cut-leaved, fine stands, with good heads.
MAHONIA AQUIFOLIUM, transplanted.
SEAKALE and ASPARAGUS ROOTS.
Dwarf ROSES, on Manetti, of the most popular kinds.
Specimen Common YEWS, 3, 4, and 5 feet.

Planting Season.

DICKSONS AND CO., NURSERYMEN and SEEDSMEN, 1, Waterloo Place, Edinburgh, have this season a very large and healthy Stock of Native and Tyrolese LARCH, True Native Highland PINE, Strong OAK, BIRCH, SPRUCE, SILVER FIR, POPLARS, WILLOWS, AUSTRIAN PINE, SYCAMORE, BEECH, THORN QUICKS, PINASTER, LIMES, and all kinds of Seedling and Transplanted FOREST TREES, RHODODENDRONS, EVERGREEN PRIVET, BLACKTHORN, &c., for Game Coverts. Extra large ORNAMENTAL TREES and SHRUBS, which would give immediate effect for new Grounds and Parks. A large Collection of the finest ROSES, FRUIT TREES, GREENHOUSE and STOVE PLANTS, &c.

The Trees having been grown in a very exposed situation, are remarkably well rooted, and their wood is thoroughly ripened, so that they may be planted with safety in any part of the country.

Priced CATALOGUES on application. Special Prices for large quantities.

MILFORD NURSERIES, near Godalming.

For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For HARDY ORNAMENTAL TREES and SHRUBS, EVERGREENS, &c., see MAURICE YOUNG'S New Descriptive CATALOGUE.

For RHODODENDRONS and other AMERICAN PLANTS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For STANDARD and HALF-STANDARD ROSES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For NEW JAPANESE AUCUBAS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For JAPANESE NOVELTIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For CHEAP EVERGREENS and SHRUBS for COVER PLANTING or SHRUBBERIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For PLANTS suitable for WINTER BEDDING, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For TRANSPLANTED FOREST TREES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For EXTRA TRANSPLANTED or QUARTERED FOREST TREES for Planting Belts or Shrubberies, see MAURICE YOUNG'S New Descriptive CATALOGUE.

Forwarded on application enclosing stamp.

Milford Nurseries, near Godalming.

Planting Season.

To PLANTERS of PUBLIC PARKS, CEMETERIES, or PRIVATE GARDENS.

WILLIAM SKIRVING solicits inspection of his unrivalled Stock of choice EVERGREEN SHRUBS, FOREST and ORNAMENTAL TREES, which he is disposing of at very moderate prices, in order to clear the land for building purposes.

Among the Evergreens are many thousands of fine specimens of Variegated and Broad-leaved GREEN HOLLIES, and an immense stock of all other HARDY EVERGREEN FLOWERING SHRUBS and ORNAMENTAL TREES generally cultivated in Britain, many of which are of large size, well calculated for giving immediate effect.

To Gentlemen wishing to make new or to improve old Pleasure Grounds this is an excellent opportunity; for such an extensive and well-grown stock of Trees and Shrubs has seldom if ever before been offered for Sale, either for extent or variety.

Nursery and Seed Stores—Walton-on-the-Hill.
Seed Warehouse—15, Queen Square.
Liverpool, September, 1871.

ROBERT NEAL, NURSERYMAN, Wandsworth Common, Surrey, S.W., begs to offer to Gentlemen who intend planting this season his large and varied stock of FRUIT, FOREST, and ORNAMENTAL TREES, Standard and Dwarf ROSES, RHODODENDRONS, CONIFERÆ, SHRUBS, &c., which are now in fine condition for removal. CATALOGUES may be had free on application.

The Nurseries are within a few minutes' walk of the Clapham Junction, and Wandsworth Common Railway Stations.

Forest Trees.

WOOD AND INGRAM offer as follows, very fine stuff :—

		Per 1000.—*s.*	*d.*
OAKS, 3-yr. Seedlings		7	6
" 3 to 4 feet		30	0
" 4 to 5 feet		35	0
ELM, English, 1-yr. Seedlings		5	0
" " 2-yr. Seedlings		7	6
" Huntingdon, 8 to 10 feet	per 100	50	0
HORSE CHESTNUTS, 3-yr. Seedlings		8	0
" " 2 to 3 feet		12	0
OAK, Evergreen, 1-yr. Seedlings		10	0
" " 3-yr. Seedlings		15	0

Samples sent on application.

The Nurseries, Huntingdon.

GEORGE DAVISON, White Cross Nurseries, Hereford, offers for cash :—

	Per dozen.—*s.*	*d.*		Per dozen.—*s.*	*d.*
Abies Douglasii, 3 to 4 feet .	18	0	Berberis Darwinii, 2 feet ..	6	0
" canadensis, 4 feet ..	12	0	" dulcis, 2 feet ..	4	0
Biota elegantissima, 9 inches	15	0	" Mahonia, 2 feet ..	2	0
" japonica, 2 feet	9	0	Cotoneaster microphylla ..	2	6
Cedrus atlantica, 3 feet ..	9	0	Ivy, Irish, for edgings ..	1	6
" Deodara, 2 to 2½ feet	18	0	Laurel, common, 2 to 2½ ft, per 100	15	0
Cryptomeria Lobbii, 2 feet ..	9	0	Laurel, Portugal, 1 foot, bushy, per 100, 20*s.*	3	0
Cupressus macrocarpa, 2 feet	9	0	Laurustinus, sorts, 1 to 1½ foot, per 100, 25*s.*	3	6
" sempervirens, 3 to 4 feet	9	0	Roses, Standards, best sorts,	15	0
Juniperus virginiana, 3 feet .	6	0	" Dwarfs	9	0
Picea balsamea, 2 feet ..	4	0	Selected from Catalogue.		
" Nordmanniana, 1 foot .	16	0	Hazel, seedlings .. per 1000	8	0
" Pinsapo, 1½ foot ..	16	0	Scotch Firs, 2 feet .. per 100	3	6
Pinus austriaca, 3 feet, per 100, 30*s.*	5	0	" " " per 1000	30	0
" laricio, 3 feet	6	0	Strong Cider Apples	18	0
Taxus baccata, 2½ feet ..	8	0	Blenheim, Lord Suffield, &c., Apples	18	0
Thuja Lobbii, 1½ foot ..	8	0			
" occidentalis, 3 to 4 ft.	5	0			
Berberis japonica, 1 foot ..	8	0			

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, has much pleasure in offering the following at very moderate prices :—

50 choice varieties of IRIS GERMANICA, 12*s.*
12 choice varieties of TREE PÆONIES, 18*s.*
100 ARAUCARIA IMBRICATA, 25*s.*
50 LILIUM TIGRINUM FORTUNEI, 25*s.*
12 " SUPERBUM, 12*s.*
100 choice hardy RHODODENDRONS, 63*s.*
50 GHENT AZALEAS, 40*s.*
50 sorts of hardy CONIFERS, 35*s.*
25 stout plants of ABIES NORDMANNIANA, 30*s.*
100 stout PINUS DENSIFLORA, 75*s.*
100 PINUS EXCELSA, 2-yr., 20*s.*
100 ABIES ORIENTALIS, 15*s.*
100 " SMITHII, 21*s.*
100 PICEA NOBILIS, 30*s.*
25 RETINOSPORA PISIFERA AUREA, fine, 25*s.*
25 fine plants of THUJA VERVAENEANA, 40*s.*
25 fine plants of TOM POUCE (ELLWANGERIANA), 25*s.*
25 fine plants of ERICOIDES, 15*s.*
50 WIDDRINGTONIA ERICOIDES, 25*s.*
25 SKIMMIA JAPONICA, 10*s.*
100 strong SPIRÆA JAPONICA, 30*s.*
100 roots of ASCLEPIAS TUBEROSA, 25*s.*
12 fine varieties of CLEMATIS, 9*s.*
25 fine plants of YUCCA ALOIFOLIA, 15*s.*
100 strong roots of mixed CANNAS, 21*s.*
25 varieties of TEA ROSES, in small pots, 12*s.*
25 plants of BUXUS LATIFOLIA AUREA, 15*s.*
25 plants of ILEX, of sorts, 21*s.*
100 INDIAN AZALEAS, of sorts, young plants, with and without flower buds, 63*s.*
12 YELLOW RHODODENDRONS, of sorts, 18*s.*
12 RHODODENDRON MADDENII, 12*s.*
50 Greenhouse FERNS, of sorts, 25*s.*
12 LAPAGERIA ROSEA, strong, 24*s.*
12 ILLICIUM RELIGIOSUM, 12*s.*
100 fine double CAMELLIAS, without buds, own choice, strong plants, £6.
2 fine stems of BALANTIUM ANTARCTICUM, £8.
100 CHAMÆROPS FORTUNEI, 42*s.* to 63*s.*
100 " HUMILIS, 20*s.*
100 CORYPHA AUSTRALIS, 63*s.*
6 DRACÆNA AUSTRALIS, fine strong plants, 18*s.*
6 " VEITCHII (SANGUINEA), fine strong plants, 30*s.*
100 GLOXINIA, in fine mixtures, 21*s.*
100 PANDANUS HUMILIS, small, 42*s.*
100 " " larger, 63*s.* to 105*s.*
100 ACHIMENES, in sorts, 21*s.*
12 ANTHURIUM SCHERZERIANUM, flowering plants, 60*s.*
25 CALADIUMS, in varieties, 25*s.*
20 sorts of TROPICAL ORCHIDS, 60*s.*
15 sorts of PALMS, 30*s.*

Special Offer.

ALEXIS DALLIERE, NURSERYMAN, Ghent, Belgium, begs to offer the undermentioned Plants, at the following prices, viz. :—

		£	*s.*	*d.*
AZALEA INDICA, fine plants	25 for	1	4	0
" "	per 100	4	12	0
ABIES NORDMANNIANA, 8-yr., very nice plants ..	25 for	0	18	0
" " " ..	per 100	3	0	0
ASPLENIUM FABIANUM	per doz.	0	8	0
" NIDUS AVIS	"	0	4	0
ALSOPHILA AUSTRALIS	each	0	1	0
CYPERUS ALTERNIFOLIUS, Var.	"	0	1	0
DRACÆNA AUSTRALIS, 1½ foot high	"	0	2	6
" TERMINALIS VERSICOLOR	"	0	2	0
" CONGESTA, strong	"	0	1	0
" COOPERII	"	0	2	0
" INDIVISA, 3 feet high	"	0	2	0
" LINEATA, 2 feet high	"	0	3	0
" " RUBRA, 1½ foot high, new ..	"	0	8	0
" RUBRA, strong	"	0	2	0
" REGINA	" 4*s.* to	0	12	0
" VEITCHII, 3 feet high	"	0	8	0
PHILODENDRON LINDENI	"	0	2	6
PENCENECTITIA TUBERCULATA	"	0	2	6

PALMS.

		£	*s.*	*d.*
ARECA VERSCHAFFELTII, 1½ foot high	"	0	6	6
" RUBRA, 1½ foot high	"	0	2	0
CHAMÆROPS FORTUNEI, 3 to 4 leaves, 1 to 1½ foot high	"	0	3	0
" HUMILIS, 4 leaves	"	0	3	0
CHAMÆDOREA GRACILIS, very fine ornamental plant, elegant	"	0	6	6
CORYPHA AUSTRALIS, 1 to 1½ foot high (2 to 3 leaves)	"	0	2	0
LATANIA BORBONICA, 1 to 1½ foot high (2 to 3 leaves)	" 2*s.* to	0	3	0
PHŒNIX DACTYLIFERA, 1½ foot high	"	0	2	0
" TENUIS, 1½ foot high	"	0	8	0
THRINAX ARGENTEA	"	0	4	0
CYCAS REVOLUTA, 2 to 5 leaves	" 4*s.* to	0	12	0
PANDANUS UTILIS, 1½ foot high	"	0	2	6

		£	*s.*	*d.*
CORREA CARDINALIS, 30 to 40 flower buds ..	"	0	2	0
BRACHYSEMA LATIFOLIA, 30 to 40 flower buds	"	0	2	0
ACACIA CORDATA, very nice tuft	"	0	1	0
" GRANDIS, 2½ feet high	"	0	2	0
ECHEVERIA RETUSA, in bud	"	0	1	0
MARANTAS, in 12 sorts	per doz.	0	15	0

ALEXIS DAILLIERE, Nurseryman, Ghent, Belgium.

Seed Potatos.

H. AND F. SHARPE'S Wholesale LIST of SEED POTATOS is now ready, and may be had, post free, on application. It comprises all the best early and late varieties, also all the American sorts worthy of cultivation. The quality is excellent, and the prices very moderate.

Seed Growing Establishment, Wisbech.

Late Rose Potato.

THIS valuable NEW SEEDLING WINTER POTATO is now for the first time offered to the Public. In its colour, habits of growth and general appearance, it resembles its parent, the Early Rose, but is superior to that variety in the following highly important particulars :—

1st, It is of much better quality for table use, being white fleshed and fine grained, cooking very dry and mealy It has a peculiar, rich and delicate flavour, not surpassed by any variety yet tested.

2d, Its yield is enormous. The stock was grown at the rate of from 250 to 300 bushels per acre, common field culture. On the same soil and under the same treatment, the Early Rose yielded less than 100 bushels per acre

3d, Its keeping quality is unsurpassed. In the same cellar, at planting time, when the Early Rose were so badly sprouted and wilted as to be unfit for table use, this Seedling had not sprouted, and were as crisp and solid as when first dug. They remained in good condition for cooking until the new crop of Early Rose came upon the table.

☞ For Sale by the London Seed Trade generally.

PATERSON'S PRIZE SEEDLING POTATOS.

Paterson's Bovinia or Cattle Feeder, Paterson's Improved Victoria or Queen Potato, Paterson's Albert or Prince Potato, Paterson's Alexandria, Early Perfection, Garden Early, Red, White, and Blue Kidneys, New Seedling Flukes, Princess Lorne, British Queen, Nil Desperandum, Paterson's Blue, &c.

Mrs. P. will shortly publish a Treatise on "Paterson's Prize System of Potato Raising and their Culture," with Culture of Roots, Calendar of Farming Operations, Calendar of Horticulture, Domestic Economy, Page of Humour, &c., to be entitled PATERSON'S NATIONAL BENEFIT.

Mrs. P. will charge 1*s.* 6*d.* for one class of the Treatise, and another class, with a higher finish, at 2*s.* 6*d.* per Copy, and most humbly solicits Subscribers for one or more Copies, also Advertisements for insertion. Quarter page, 5*s.*; half page, 10*s.*; whole page, 15*s.*

POTATO PRICE LISTS, &c., to be had on application to
Mrs. PATERSON, 38, Union Street, Dundee.

KINGSHOLM COS LETTUCE.

THIS MAGNIFICENT LETTUCE made its appearance three years since in a piece of White Cos. It withstood the summer heat for a long time after all other varieties (with the exception of Wheeler's Tom Thumb) had run to seed, headed-in without tying, and formed one of the most perfect models of a Cos Lettuce ever seen. At length it ran to seed; owing to the late period of the season it had started, the produce was, however, small. The whole stock was carefully preserved for next season's seeding. The crop of seed was again very limited, but the Lettuces were magnificent, many of them weighing 7 lb. each. We are now enabled to offer seed at 1*s.* per packet, feeling confident it will give satisfaction to every one who grows it. It was seen last summer by a gentleman connected with Covent Garden Market, who remarked it was the finest Lettuce he had ever seen, and far superior to anything brought to the London Market. We recommend those who contemplate growing Lettuces for Exhibition to give this variety a trial. Get it sown in a frame, and planted out early in the season, on deeply dug and well-manured land, and we have but little fear that such specimens will be produced as will defy competition.

Packets, 1*s.*; small packets, 6*d.* each, post free.
Trade price on application.

J. C. WHEELER AND SON,
SEED GROWERS,
Gloucester; and 59, Mark Lane, London, E.C.

TO THE TRADE.

DARLINGTONIA CALIFORNICA.

THE CALIFORNIAN PITCHER PLANT.

MR. R. NEUMANN,

Begs to offer fresh imported Seeds of this rare and most beautiful Plant at **18s.** per 100, or **150s.** per 1000 Seeds, delivered Post Free to London for cash from unknown Correspondents. Early orders are requested, because the stock is small.

R. N.'s CONIFERÆ SEED LIST will be ready in January, and sent free to any address on application.

ROBERT NEUMANN, IMPORTER and EXPORTER of SEEDS,
THE NURSERIES, ERFURT, GERMANY.

RICHARD SMITH,

NURSERYMAN AND SEED MERCHANT,
WORCESTER.

ROSES—Standard, Dwarf and Climbing.
FRUIT TREES of every description.
CREEPERS, for Trellises and Walls.
FOREST, SCREEN, and TIMBER TREES.
SHRUBS for GAME COVERTS.
QUICK and other STOCK for HEDGES.

CONIFEROUS TREES and SHRUBS.
EVERGREEN ,, ,,
FLOWERING ,, ,,
ORNAMENTAL ,, ,,
AVENUE ,, ,,
GARDEN and FARM SEEDS of all kinds.

DESCRIPTIVE PRICED CATALOGUES to be had on application.

32, *Maida Vale, Edgware Road, W.*

THE PINE-APPLE NURSERY

(one of the Oldest Nurseries extant)

IS NOW CONDUCTED BY A COMPANY, WHO ARE PREPARED TO

WARRANT GENUINE

EVERY ARTICLE SUPPLIED TO THEIR CUSTOMERS. THEIR STOCK AND RESOURCES ARE ALMOST

INEXHAUSTIBLE;

AND

THEIR MOTTO IS "LIBERALITY."

Please write for their NEW CATALOGUE, and also for their SEED CATALOGUE, to be published January 1, 1872, which will contain a large fund of useful information.

ADDRESS, JOHN BESTER (MANAGER),
PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of 60 YEARS, and NOW OCCUPYING an AREA of 180 ACRES, Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), beg to draw attention to their DUTCH BULBS, collections of which, amounting to 21s. and upwards, they forward carriage paid to any Railway Station in England and Wales. Their Descriptive CATALOGUE, containing Cultural Notes for the Guidance of the Amateur, sent post free on application.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS), supply GARDEN REQUISITES of every description.
14, Tavistock Row, Covent Garden, London, W.C.

CROYDON. A. HENDERSON EAST·SURREY·SEED·WAREHOUSE ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon.

WHEELERS' BROCKWORTH PARK PEAR.

"The handsomest and most valuable dessert Pear of recent years."

J. C. WHEELER AND SON Glo'ster.

J. C. WHEELER AND SON offer MAIDEN PLANTS of this magnificent PEAR, at *7s. 6d.* each, and a few DWARF-TRAINED TREES, at *15s.* each. It obtained a First-class Certificate from the Fruit Committee of the Royal Horticultural Society, on September 20, 1870, and was exhibited at the Royal Horticultural Gardens on October 4, 1871, when it was again greatly admired. It is large, handsome, and fine flavoured, and is, without doubt, a great acquisition to our choicest and best dessert Pears. It may fairly be described (when grown against a wall, with a good aspect) as one of the handsomest, largest, and best desser Pears ever introduced. It ripens the end of September and beginning of October.

J. C. WHEELER & SON have already received orders for it from nearly all parts of the United Kingdom; from Germany (for the Emperor's gardens at Sans Souci, Berlin); from France; and from the United States. Orders will be executed in rotation as received, the earliest getting the best plants.

The demand has been so great, that the Pyramids are now all Sold.

J. C. WHEELER AND SON, Nurserymen,
Gloucester, and 59, Mark Lane, London.

FINE strong Dwarf-trained APPLE, PEAR, and PLUM TREES for Walls and Espaliers, *2s. 6d.* each, *24s.* per dozen; fine strong Pyramid APPLES, *10s.*; PEARS, PLUMS, and CHERRIES, *15s.* per dozen; fine Standard ditto, *18s.*; choicest Dwarf ROSES, my selection, *9s.* per dozen, £3 per 100; Lancashire Show GOOSEBERRIES, strong, *3s.* per dozen, *20s.* per 100; CURRANTS, *2s 6d.* per dozen.

R. THORNHILL, Bowdon Nurseries, Bowdon, Cheshire.

Fruit Trees, &c., at Co-operative Prices.

STRONG TREES of the undermentioned, supplied in assorted half-dozen parcels, all good named varieties, at the following prices:—

APPLES—Standards, *6s.*
,, Dwarfs, or Bushes, *5s.*
,, Pyramidal, *7s.*
,, Trained, *10s.*
APRICOTS, NECTARINES, and PEACHES, Trained (very strong), *15s.*
PEARS—Standards, *7s. 6d.*
,, Pyramidal, *8s.*
PEARS—Trained, *12s.*
PLUMS—Standards, *8s.*
,, Pyramidal, *9s.*
,, Trained, *14s.*
,, Dwarfs, *5s. 6d.*
CHERRIES—Standards, *6s.*
,, Dwarfs, *5s.*
,, Trained, *10s.*

Shrubs, Plants, and Cut Flowers, equally cheap. Prices for quantities, or by the 100, on application.

Choice CUT FLOWERS BOUGHT in any quantity.

J. POUNCE, "The Flower Mart," Villiers Street, Charing Cross, London, W.C.; and Hendon, N.W.

1871.—Planting Season.—1871.

THOMAS KENNEDY AND CO. offer the following Transplanted TREES, &c., which are healthy, well grown, well rooted, and in excellent condition for removal. Prices on application.

100,000 ASH, Common, from 1 to 1½, 1½ to 2, 2 to 3, and 3 to 5 feet.
100,000 ASH, Mountain, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000 ALDER, Common, 1½ to 2, 2 to 2½, and 3 to 5 feet.
150,000 BEECH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
200,000 BIRCH, 1 to 1½, 1½ to 2, 2 to 2½, and 3 to 4 feet.
30,000 BLACKTHORN or SLOE, 1½ to 2, 2 to 2½, and 2½ to 3 ft
100,000 HAZEL, Common, 1 to 1½, 1½ to 2, and 2 to 3 feet.
50,000 HORNBEAM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
LIMES.—An immense stock of fine handsome Trees, 2 to 3 3 to 4, 5 to 6, and 8 to 10 feet.
200,000 LARCH FIR, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
1,000,000 SCOTCH FIR, grown from true native saved seed, the plants twice and three times transplanted, 9 to 12 inches, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
500,000 SPRUCE FIR, Norway, all three times transplanted, 9 to 12, 12 to 15, 15 to 18 inches, and 1½ to 2 feet.
50,000 SILVER FIR, 6 to 9, and 9 to 12 inches.
100,000 PINUS AUSTRIACA, 9 to 15, and 15 to 18 inches.
100,000 PINUS LARICIO, true Corsican, 6 to 9, 9 to 12, and 12 to 15 inches.
150,000 OAK, English, 1 to 1½, 1½ to 2, 2 to 2½, 2½ to 3, 3 to 4, and 4 to 5 feet.
200,000 PRIVET, Evergreen, 1½ to 2, 2 to 2½, and 3 feet.
50,000 SYCAMORE or PLANE, 1½ to 2, and 2 to 3 feet.
1,000,000 THORNS or QUICKS, of all sizes.
50,000 WILLOWS, Huntingdon, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000 WHIN or GORSE, 1½ to 2 feet.

Besides the above, they have an extensive general stock of FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., which they are selling at moderate prices.

Railway Station Nurseries, &c., Dumfries.—November, 1871.

W. VIRGO AND SON, Wonersh Nurseries, near Guildford, Surrey, respectfully call the attention of Noblemen, Gentlemen, Nurserymen and Others, to the undermentioned stock; the whole of which is particularly strong and healthy, and in excellent condition for removal:—

Standard, Half-Standard and Dwarf Roses, upwards of 300 varieties; Standard, Pyramid and Dwarf Apples, extra fine; ditto Pears; ditto Plums; Dwarf-trained Apples, Pears, Plums, Peaches and Nectarines Gooseberries; Black, Red and White Currants; Filberts, extra fine.

EVERGREENS.

Common Laurel, 2 to 4 feet.
Portugal Laurel, 2 to 4 feet.
Green and Variegated Box, 2 to 4 feet.
Green Holly, 2 to 3 feet.
Yew, 2 to 4 feet.
Siberian and Chinese Arbor-vitæ, 3 to 4 feet.
Pinus austriaca, 2 to 5 feet.
Spruce Fir, 2 to 6 feet, fine and bushy.
Berberis aquifolia, 1 to 1½ foot.
American Arbor-vitæ for hedges, 3 to 6 feet.
Evergreen Privet, 2 to 3 feet, fine.
Hornbeam, 3 to 4 feet.
Cupressus Lawsoniana, 3 to 4 feet.

ORNAMENTAL TREES.

Spanish and Horse Chestnut, 6 to 8 feet.
Wych Elm, 6 to 8 feet.
Double, Scarlet, White and Paul's New Thorn, 6 to 8 feet.
Black Italian Poplar, 6 to 8 feet.
Turkey, English and Scarlet Oak.
Hornbeam, Laburnum, Lime, Norway Maple, Lombardy, Ontario, White or Abele, Balsam, &c.
Sycamore, Sumach, Acacia, Weeping Willow and Birch, 6 to 8 feet.

Transplanted FOREST TREES for Covert and Copse Planting.

Ash, 2 to 3 feet.
Alder, 3 to 5 feet.
Birch, 3 to 5 feet.
Beech, 2 to 3 feet.
Spanish Chestnut, 1½ to 2 feet.
Horse Chestnut, 3 to 5 feet.
Spruce Fir, 2 to 3 feet.
Scotch Fir, 1 to 1½ foot, and 2½ to 3½ feet.
Hazel, 2 to 3 feet.
Hornbeam, 2½ to 3 feet.
English Oak, 2½ to 3 feet.
Sycamore, 3 to 4 feet.
Plum-leaf Withy, 3 to 5 feet.

10,000 clean-grown CRAB STOCKS.

Strong transplanted QUICK, 2 to 2½ feet.

Priced CATALOGUE and samples on application.

The Nurseries are 1½ mile from Bromley Station, London, Brighton, and South Coast Railway; 2½ miles from Shalford Station, South-Eastern Railway; and 4 miles from Guildford Station, London and South-Western Railway. Goods delivered free to the above stations.

MAGNIFICENT PLANTS of PINUS AUSTRIACA, 4 times transplanted, 4 to 5 feet (perfect specimens); smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
SCOTCH FIRS, extra fine, 3 times transplanted, 4 feet; smaller plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, by the 1000.
SILVER FIRS, very fine plants, 3 times transplanted, 4 feet.
COMMON LAURELS, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet, by the 100, 1000, or 10,000.

CATALOGUES and Prices on application.

WM. WOOD AND SON, The Nurseries, Maresfield, near Uckfield, Sussex.

JEAN VERSCHAFFELT'S New Descriptive CATALOGUE for 1871–72, containing descriptions of a great number of New and Rare Plants, is just issued, and can be obtained gratis on application, either to himself or to his Agents, Messrs. R. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, London, E.C. All orders should be sent direct to

JEAN VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON & SONS, "NEWTON" Nurseries, Chester.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES
IS STILL AT
WILLIAM PAUL'S.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, HERTS, N.

PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

THE ROSE GARDEN, Second Edition, 6s. 6d.; ROSES IN POTS, Third Edition, 2s.

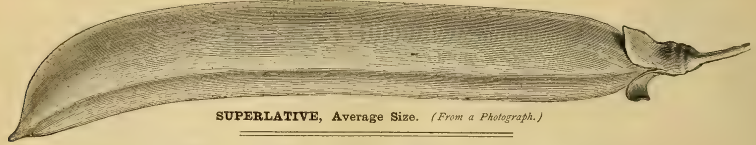
CUCUMBER ARMITAGE'S SATISFACTION,
1s. per packet.

HAMMOND'S IMPERIAL WHITE BROCCOLI,
1s. per packet.

THE TRADE CAN NOW BE SUPPLIED.

WM. ARMITAGE & SON, SEED MERCHANTS, HUDDERSFIELD.
BUSINESS ESTABLISHED 1842.

MR. LAXTON'S NEW PEAS FOR 1872.



SUPERLATIVE, Average Size. *(From a Photograph.)*

MESSRS. HURST & SON,
HAVING BEEN ENTRUSTED WITH THE DISTRIBUTION OF
THE FOLLOWING DISTINCT NOVELTIES IN GARDEN PEAS,
THE LATEST PRODUCTIONS OF MR. LAXTON, WILL, THIS SEASON, BE PREPARED TO SUPPLY A LIMITED QUANTITY OF EACH, IN SMALL PACKETS, FOR TRIAL ONLY.

WILLIAM THE FIRST.

The finest Pea yet sent out for earliness, flavour, and appearance combined. It is a first early variety, with long and well-filled deep greenish pods; ripe seed particoloured, like "Ne Plus Ultra." It has been thoroughly tested and recommended at the Royal Horticultural Society's Gardens at Chiswick on several occasions, and was the only Pea exhibited in Mr. Gilbert's first prize "Gardener's" collection of Vegetables at the Society's Exhibition at Nottingham in July last. Height 3 feet.—For further description see "Hogg's Gardeners' Year Book for 1871," page 73.

GRIFFIN.

A remarkable and distinct variety, as early as "Sangster's No. 1," of a fine colour and flavour when cooked; the ripe seed is also of a bright grass-green colour, and well calculated to supply "Green Peas all the year round." Pods medium-sized: height about 2 feet 6 inches.

POPULAR.

For general crop this Blue Wrinkled Marrow will be found earlier, more prolific, and to have better filled pods than those of "Champion of England," to which variety it is quite equal in flavour, and against which it should be tried. Height above 4 feet.

SUPERLATIVE.

The largest and finest podded variety yet raised: indispensable as an Exhibition Pea. The pods, which have been exhibited 7 inches in length, are more than twice the size of those of the parent Pea, "Laxton's Supreme," which during the last three seasons has taken nearly every first prize when shown in competition. It is also quite as early as that variety, and very prolific. As "Superlative" sometimes runs 7 or 8 feet in height, it should be slightly pinched in when the growth is about 5 feet. The colour and flavour of the Peas, when cooked, are excellent.

OMEGA.

This dwarfish late Pea was raised by fertilising "Ne Plus Ultra" with "Veitch's Perfection," and has all the valuable characteristics of the former variety. It is remarkably prolific, the pods are very fine and closely filled, and the flavour and colour of the Peas, when cooked, unequalled. Ripe seed like "Ne Plus Ultra." Height 2 feet 6 inches.

☞ These Peas can be confidently recommended by Mr. LAXTON as decided acquisitions, having been thoroughly tested by him for several years, and selected at great expense from hundreds of cross-fertilised varieties, the majority of which, although far in advance of older sorts in cultivation, have been discarded and suppressed.

They will be sent out in sealed Packets only, at £1 1s. the Collection,
And may be obtained Retail of the principal Seedsmen in London and the Provinces.

Sole Wholesale Agents for the United Kingdom,
MESSRS. HURST AND SON, SEEDSMEN, 6, LEADENHALL STREET, LONDON, E.C.,
To whom the Trade can apply for Terms.

SUTTON & SONS

BEG TO CALL ATTENTION TO THE SPLENDID

NEW WRINKLED PEA,

BEST OF ALL (McLean).

The best Wrinkled Marrow Pea ever introduced. It is a Main Crop variety. Height 3 feet. **5s.** per quart.

ALSO TO THE

FINEST CUCUMBER.

MARQUIS OF LORNE.

White-spined, a superb Exhibition variety.
3s. 6d. per packet. Trade Prices on application.

SUTTON AND SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN and H.R.H. THE PRINCE OF WALES,
READING, BERKS.

STAND No. 66. SMITHFIELD CLUB SHOW. STAND No. 66.

JAMES CARTER & CO.

Invite an inspection of one of the most magnificent Collections of

SPECIMEN ROOTS

Ever exhibited, including

Carter's Imperial Hardy Swede,
Carter's Mammoth Prize Mangel,
Carter's Warden Orange Globe Mangel,
Carter's Imperial Green Kohl Rabi,
Turnips, Cabbage, &c.,

All grown by Messrs. CARTER'S own Customers under ordinary Field Cultivation.

CARTER'S MAMMOTH PRIZE MANGEL.

The best Long Red Mangel in cultivation.

CARTER'S MAMMOTH PRIZE MANGEL.

The best Long Red Mangel in cultivation.

rders booked during the Show for next season's supply at very low prices.

All Seeds and Bulbs Carriage Free.

CARTER'S

"SUBURBAN" COLLECTION

Of CHOICE BULBS contains the most showy and popular varieties for the Decoration of the Drawing-room and Garden.

12 HYACINTHS, choice named
12 ,, mixed bedding
36 NARCISSUS—Poeticus
6 ,, Double Roman
6 ,, Paper White
36 ,, Van Sion
12 ,, Incomparable
24 TULIPS, extra fine mixed, Double
24 ,, ditto, Single
36 IRIS, ex. choice mixed, Spanish
50 CROCUS—Blue
50 ,, Striped
24 ,, White
24 ,, Large Yellow
12 GLADIOLUS BRENCHLEYENSIS
4 CROWN IMPERIALS
6 LEUCOJUM ÆSTIVUM
24 ANEMONES, extra fine, mixed
12 CAMPERNEL JONQUILS

Price **25s.** *Packing and Carriage Free.*
HALF the ABOVE, *including Packing,* **12s. 6d.**

Five per cent. discount for Cash.

JAMES CARTER AND CO.,
SEEDSMEN TO H.M. THE QUEEN, AND H.R.H. THE PRINCE OF WALES,
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New English Rose (Hybrid Perpetual Climbing),
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WM. KNIGHT, Floral Nursery, Hailsham, the raiser of this ROSE, will send it out this month (in strict rotation), in good plants, at 7s. 6d. each, three for 21s. Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.
Coloured Drawing, post free, for 12 stamps.
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Notice.

H. LANE AND SON'S Descriptive CATALOGUE of ROSES, FRUIT TREES, VINES, CONIFERS, DECIDUOUS and EVERGREEN TREES and SHRUBS, RHODODENDRONS, AZALEAS (Indian), CAMELLIAS, &c., may now be had free on application. The prices will be found moderate, combined with quality. An inspection of the growing stock is earnestly solicited.
The Nurseries, Great Berkhamsted, Herts.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Prof. REICHENBACH, Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.
JAMES BATEMAN, F.R.S.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for DECEMBER 9 will contain a FULL and ILLUSTRATED REPORT of the SMITHFIELD CLUB CATTLE SHOW.
Copies may be obtained on Friday morning, December 8, at STAND No. 88, Galleries, Agricultural Hall.

The Gardeners' Chronicle

SATURDAY, DECEMBER 2, 1871.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Dec. 6	Royal Horticultural (Fruit and Floral Committees), at S. Kensington ..	11 A.M.
	Ditto (Scientific Committee).. ..	1 P.M.
	Ditto (General Meeting)	3 P.M.

IN another paragraph we have noted the days on which the next year's Meetings and Shows of the two principal London Societies, are announced to take place. The PRIZE SCHEDULES of the ROYAL HORTICULTURAL SOCIETY, which are in course of distribution, now lie before us, and we proceed to note some of the provisions made for the meetings at Kensington.

In the first place, we are glad to observe that the principle adopted some two or three years since, of offering encouragement to a variety of subjects which develope their beauties in succession throughout the year, and of not limiting the prizes to such as can be squeezed into the summer shows, has been adhered to. It is only by iteration that the invitation to grow other than the routine "show" plants, can be made to exert its proper influence on the contents of our gardens. The results are most unfortunate when radical changes in matters of this sort are too frequently made and unmade, since no one knows what to be about; and a single season is, in many instances, not sufficient to enable the grower to get up a set of unfamiliar plants, or even a specimen example.

Next, we note with approval the fact, that a show something more like the grand displays of former days, is to be attempted once in the course of the season, namely, on the first meeting in June—this to be a three-days' show. This will consequently be the Society's special *fête;* and it is to be hoped that the foreign horticulturists who come to take part in international contests, as well as those who may come only to see what English gardening is like, may find in it something of a more attractive character than was presented to them at the meetings of the past summer, when no special effort was made. This great show will also, we trust, be on a scale sufficient to satisfy the longings of those country horticulturists who complain that the London shows no longer offer them the same kind of attractions or inducements to visit them which they were wont to find in days gone by—a truism probably, but not wholly arising, as some would have it, from the inferiority of modern shows, either as regards display or culture, but partly, at least, attributable to the unsatisfied craving which is ever crying out for something beyond, and which, in fact, has already, step by step, led to the swallowing up of the space of our exhibitions by those elephantine specimens which, whatever may be said in their disparagement, we cannot entirely dispense with, now that we have once had them.

For the behoof of our foreign friends, there are various competition prizes offered among new plants, which form the class of exhibits most freely brought from the "other side of the water." Thus, there are classes for—

6 new plants, in or out of flower, introduced by the exhibitor, and not in commerce. Open. ..	Gold Medal. Silver Medal.
2 new plants, shown for the first time in flower. Open	Gold Medal. Silver Medal.
1 new plant in flower, introduced by the exhibitor, and not in commerce. Open	Gold Medal. Silver Medal.
1 new plant, not in flower, introduced by the exhibitor, and not in commerce. Open. ..	Gold Medal. Silver Medal.
12 new plants, in or out of flower, sent out in 1870 and 1871. Open.	Large Gold Medal. Large Silver Medal.

Besides these, foreigners are specially invited to compete with Agaves and Cacti; they can, moreover, enter into competition with English growers in any of the classes of the schedules; and are further invited to contribute specimens or collections of plants or fruits not specified therein, as well as to make permanent exhibitions of such plants—Cycads, Pandanads, Palms, Arads, Ferns, for example—as may be suitable for that purpose.

Comparing the schedules with those of last year, we find that especial care has been taken to invite a set of new growers, in the shape of persons who have not taken the Society's prizes in the respective subjects on previous occasions. Small groups of stove and greenhouse plants, of Heaths, of Orchids, of Ferns, of Hyacinths, &c., are introduced with this object. The prizes for Azaleas in April have been considerably amplified, and should bring a better display than has usually been seen at the early shows; while at the great show in June (which, as already stated, is to last three days) the prizes are generally augmented for all the more important classes. Roses remain much as before, except that at the second meeting in May a grand prize of £20, with three other proportionate prizes, is offered for a group of 50 plants in 8-inch pots; and another of £12 for 12 specimen plants. The fruit schedule is extended at the great June show, by the multiplication of classes, but probably more might still be made of this element. An International Fruit Show, for which special shedules will be framed, is, however, announced for November. Dinner-table arrangement is revived—two classes, with first prizes of £30 and £10 respectively, being provided at the second meeting in May, the smaller one to be tested partly by economy of cost in the proposed arrangement. Delphiniums, Phloxes, Pentstemons, Lobelias, Hardy Perennials, &c.—all good subjects if well handled—are retained; and we really hope the growers will let us see something like good examples of them, equal in quality to the perennials which have been shown from Tooting, and the Phloxes from Stanstead Park.

The Florists have encouragement offered for Auriculas, Pansies, Ranunculuses, Roses, Pelargoniums, Fuchsias, Pinks, Carnations, Picotees, Phloxes, Gladioli, Verbenas, Hollyhocks, Dahlias, and Chrysanthemums; and Tulips would have been added but for the fact that the meetings do not fall conveniently for them; so that the wants of this class of the horticultural body are fairly met. Of absolute novelty there is but little. Poinsettias form a class in November, Roman Hyacinths in December, and Rhododendrons, in baskets or pots, in May; all being subjects eminently suitable for exhibition.

The meetings of the Floral and Fruit Committees remain as before, certificates being offered on these occasions for deserving novelties.

Such, in the abstract, is the London programme of the Royal Horticultural Society; and it is only fair to the Council of the Society to add, that while its schedules are comprehensive and liberal, and such as should command the hearty co-operation and goodwill of the British section of exhibitors, it is understood that the arrangements in progress for setting out the exhibitions will show something at least of the improvement in this direction which has so long been desired. The details of the Provincial Show, and of the international department of the London Shows, remain to be adjusted.

—— We extract the following remarks on the London Parks and their surroundings from the admirable letters of M. Taine, translated in the *Daily News*. It will be seen how greatly the opinion of a cultivated Frenchman differs from that of some of our home detractors:—

"Enormous, enormous!—this is the word which always recurs. Moreover, all is rich and well ordered; consequently, they must think us neglected and poor. Paris is mediocre compared with these squares, these crescents, these circles and rows of monumental buildings of massive stone, with porticoes, with sculptured fronts, these spacious streets; there are 60 of them as vast as the Rue de la Paix. Assuredly Napoleon III. demolished and rebuilt Paris only because he had lived in London. In the Strand, in Piccadilly, in Regent Street, in the neighbourhood of London Bridge, in twenty places, there is a bustling crowd, a surging traffic, an amount of obstruction which our busiest and most frequented boulevard cannot parallel. Everything is on a large scale here; the clubs are palaces, the hotels are monuments; the river is an arm of the sea, the cabs go twice as fast; the boatmen and the omnibus conductors condense a sentence into a word; words and gestures are economised, actions and time are turned to the utmost possible account; the human being produces and expends twice as much as among us.

"From London Bridge to Hampton Court are eight miles, that is, nearly three leagues of buildings. After the streets and quarters erected together, as one piece, by wholesale, like a hive after a model, come the countless pleasure retreats—cottages surrounded with verdure and trees, in all styles, Gothic, Grecian, Byzantine, Italian of the Middle Age, or the Revival, with every mixture and every shade of style, generally in lines or clusters of 5, 10, 20 of the same sort, apparently the handiwork of the same builder, like so many specimens of the same vase or the same bronze. They deal in houses as we deal in Parisian articles. What a multitude of well-to-do, comfortable, and rich existences! One divines accumulated gains, a wealthy and spending middle class quite different from ours, so pinched, so straitened. The most humble, in brown brick, are pretty by dint of tidiness; the window-panes sparkle like mirrors; there is nearly always a green and flowery patch; the front is covered with Ivy, Honeysuckle, and Nasturtium.

"The entire circumference of Hyde Park is covered with houses of this sort, but finer, and these in the midst of London retain a country look; each stands detached in its square of turf and shrubs, has two storeys in the most perfect order and condition, a portico, a bell for the tradespeople, a bell for the visitors, a basement for the kitchen and the servants, with a flight of steps for the service; very few mouldings and ornaments; no outside sun shutters; large clear windows, which let in plenty of light; flowers on the sills and at the portico; stables in a mews apart, in order that their odours and sight may be kept at a distance; all the external surface covered with white, shining, and varnished stucco; not a speck of mud or dust; the trees, the turf, the flowers, the servants prepared as if for an exhibition of prize products. How well one can picture the inhabitant after seeing his shell! In the first place, it is the Teuton who loves Nature, and who needs a reminder of the country; next, it is the Englishman who wishes to be by himself in his staircase as in his room, who could not endure the promiscuous existence of our huge Parisian cages, and who, even in London, plans his house as a small castle, independent and enclosed. Besides, he is simple, and does not wish external display; on the other hand, he is exacting in the matter of condition and comfort, and separates his life from that of his inferiors. The number of such houses at the West End is astonishing! The rent is nearly £500; from five to seven servants are kept; the master expends from £1200 to £2400 a year. There are ten of these fortunes and these lives in England to every one in France.

"The impression is the same when visiting the parks; the taste, the area are quite different from what is the case among us. St. James's Park is a genuine piece of country, and of English country; huge old trees, real meadows, a large pond peopled with ducks and waterfowl; cows and sheep, in an enclosed space, feed on the grass, which is always fresh. There are even sheep in the narrow green border that surrounds Westminster Abbey; these people love the country in their hearts. It is sufficient to read their literature from Chaucer to Shakespeare, from Thompson to Wordsworth and Shelley, to find proofs of this. What a contrast to the Tuileries, the Champs Elysée, the Luxembourg. As a rule, the French garden, that of Louis XIV., is a room or gallery in the open air, wherein to walk or converse in company; in the English garden, such as they have invented and propagated, one is better alone; the eyes and the mind converse with natural things. We have arranged a park on this model in the Bois de Boulogne; but we have committed the blunder of placing therein a group of rocks and waterfalls; the artifice is discovered at a glance, and offends; English eyes would have felt it.

"Regent's Park is larger than the Jardin des Plantes and the Luxembourg put together. I have often remarked that our life seems to them cooped up, confined; they need air and space more than we do; Englishmen whom I knew in Paris left their windows open all night; thus arises their longing for motion, their horse and foot races in the country. Stendhal justly said that a young English girl walks a greater distance in a week than a young Roman girl in a year; the Northern man, of athletic temperament, has a need of free respiration and of exercise. This park is in a retired neighbourhood; one hears no longer the rolling of carriages, and one forgets London; it is a solitude. The sun shines, but the air is always charged with damp clouds, floating watering-pots, which dissolve in rain every quarter of an hour. The vast watery meadows have a charming softness, and the green branches drip with monotonous sound upon the still water of the ponds. I enter a hothouse where there are splendid Orchids, some having the rich velvet of the Iris, others a flesh colour of that inexpressible, delicious, mingled tint transfused with light, like palpitating living flesh, a woman's breast; the hand desires, yet dreads to press it; alongside, Palm trees raise their stems in a tepid atmosphere. A strange thing to us is that there are no keepers; admission is free, and no damage is done. I can understand that they must ridicule our establishments and public festivals, with their accompaniments of municipal guards. It is the same at the railway stations; every one is free to move about, to stand on the side of the line, to come and meet his friends at the carriage door. They are surprised and annoyed to see us caged in our waiting-rooms, enclosed, led like sheep, and always under the eye or the hand of an official."

—— Both the Royal Horticultural and the Royal Botanic Societies have now fixed and announced the days for their shows and meetings in 1872. Those of the Royal Horticultural Society take place on:—January 17, February 14, March 6 and 20, April 3 and 17, May 1 and 15—16, June 5—7 and 19, July 3 and 17, August 7 and 21, September 4 and 18, October 2, November 6, December 4. It will be seen that there is a two-days' show in May, and a three-days' show in June, the latter being the grand show of the season. The Royal Botanic Society announces spring shows on March 13, April 10, and May 8, and summer shows on May 22—23, June 19—20, and July 10—11, all the latter therefore being two-day meetings. It will also be seen that the June show is fixed for the same day as the meeting at Kensington, a blunder which will necessarily lead to a conflict of interests, and which, as the Royal Horticultural days are in regular sequence (first and third Wednesdays), and had been, moreover, publicly announced, should not have taken place.

—— By way of supplementing the remarks of Mr. Newton, in another column, on the Ornamental Water in the Victoria Park, it may be worth while to show how much is made of it in addition to its pictorial effect. Two yacht clubs, we are informed, belong to it, one called the Victoria the other the Prince of Wales, each employing the lake for sailing matches, the prizes consisting of cups, &c. Each club is governed by a commodore, vice-commodore, secretary, treasurer, and committee. The yachts are divided into three classes, viz., third-class cutters, which are 4 feet 6 inches long; first-class schooners, 4 feet 6 inches long, all measurements being made at the water line. Each club is limited to a certain number of members, owning fleets of 70 vessels. The lake is also much used for bathing purposes by the class of visitors who frequent this park; and to show how much this privilege is appreciated, we may mention that on the first Sunday morning in August in the year 1868 the number of persons who entered the gates leading to the water was 18,642; it was further calculated that 12,000 bathed that morning between 4 and 8 o'clock. About 80 acres of this park, too, consists of open grass space, to which as many as 82 cricket clubs are attached, for the purpose of practising and playing matches.

—— The Maximum Temperatures of the Air for the week ending November 25 ranged from 51° at Greenock to 40° at Hull, with a mean for the English stations of 43°.4, and for the Scottish of 48°.7. The Minimum Temperatures ranged from 34°.5 at Greenock to 19° at Leicester, the mean for the several English stations being 23°.7, and for the Scottish 28°.5. The highest Mean Temperature, 41°.2, was recorded at Greenock, and the lowest, 32°.3, at Hull; the mean for the English stations being 34°.6, and for the Scottish 37°.8. Thus the air during the past week has been warmer in the northern country than in the southern, both by day and by night. The cold weather that set in at the beginning of the month continued during the past week. On the 19th the mean daily temperature was 30°.1, being 11°.7 below the average, and on each of the other days generally less than 35°, all being in defect of the average, though to a less extent. Rain fell at all stations, but much less in quantity in England than in Scotland; the greatest fall in the southern country being 0.72 inch at Portsmouth; 2.30 inches fell at Greenock, and 2.15 inches at Dundee; all the other stations in Scotland, with the exception of Aberdeen, recording a fall of more than 1 inch. The mean fall for the English stations was 0.19 inch, and for the Scottish 1.69 inch. (See Mr. Glaisher's Tables, p. 1555.)

—— It might not unreasonably be supposed that we had Peas enough of all grades of earliness, and all degrees of excellence; but those who, like Mr. Laxton (one of our best and most careful hybridisers), are ever on the look-out for new and improved varieties, are not disposed to stand still; neither is the public at all more willing to stick to the old love, if we may judge from the prices asked for the new. Messrs. Hurst are the agents for Mr. Laxton, and it is certain that many of that gentleman's varieties, such as William the First, are of excellent quality; others, such as Superlative, are better adapted for the exhibition table. Whether they are worth the price asked, is for the consumer to consider.

—— We have before us the programme of a great Exhibition of flowers, fruit, vegetables, and horticultural subjects generally, to be held at Berlin in June next, in celebration of the 50th anniversary of the establishment of the Society for the Promotion of Horticulture in Prussia. The exhibition will be held from June 21 to June 30. Prizes to the extent of 2000 thalers (£300) are offered by the Society, in addition to special prizes offered by individuals for groups, Palms, Ferns, Roses, coniferous plants, and cut flowers, the details of which will be hereafter published. The schedule is divided into three classes—1, for miscellaneous stove and greenhouse plants, including 46 classes; 2, for plants representing special orders or genera, *e.g.*, Orchids, Arads, Lilies, Pelargoniums, &c., 62 classes; 3, fruit and vegetables, 9 classes.

—— From an advertisement in another column it will be seen that the valuable collection of BOTANICAL and HORTICULTURAL BOOKS of the late Mr. BAXTER is to be sold by auction at the Clarendon Hotel saleroom, Oxford, on Wednesday next, December 6.

—— At a meeting of the ROYAL BOTANIC SOCIETY, held last Saturday, the following Directors of Foreign and Colonial Botanic Gardens were elected Corresponding Members:—Dr. J. Anderson, M. J. Decaisne, Mr. C. Moore, Dr. F. von Mueller, Dr. R. Schomburgk, and Mr. G. H. K. Thwaites, F.R.S. Among the donations reported was a fine plant of the Australian Chestnut, lately received from Queensland.

—— *Harper's Weekly* offers the following suggestion to those whose FRUIT and other TREES have been destroyed by the late FIRE in CHICAGO:—

"In many instances the vitality of the roots has not been impaired. By cutting off the trees close to the surface of the ground before winter, and covering the wounds with a heavy coat of grafting-wax, the life will be preserved until next spring, when they will, in a majority of cases, send up strong shoots and grow rapidly. Some varieties of trees will not sprout, but fruit trees, Grape Vines, berry bushes, and valuable shrubbery will sprout again if cut close to the ground before cold weather comes. The burned and heated portions of the wood should be removed until a live surface is laid bare, when a warm coating of grafting-wax should be applied. This should be covered with brown paper or cloth, and several inches of fine earth should overlay the whole. A suitable grafting-wax may be made of equal parts of resin or pitch and tallow, or one part of linseed oil and two of coarse resin. In the spring the soil should be removed, leaving only about an inch over the stump."

—— In a communication to our contemporary, the *Builder*, a correspondent thus writes upon the important question, HOW TO HEAT A SMALL CONSERVATORY FREE OF COST:—

"A few years ago a friend of mine bought a house, one of a row; it contained two sitting-rooms on the ground-floor,—one to the front, the other to the back. In summer the back room was unfit for habitation, owing to the heat caused by a close range in the wall which separated it from the kitchen of the adjoining house. This suggested to me an idea which has been carried out successfully. In planning a new villa, I placed the kitchen fireplace in the west gable; the space behind the range was left open, and against this was built a conservatory, 14 feet by 8 feet. The open space behind the range is furnished with a wooden door, over which, in the thickness of the wall, is formed an air-flue, having a damper. By shutting the door and opening the damper, the heat from the range is carried off, and *vice versâ*. This contrivance may not suit those who wish to maintain a high state of temperature in the conservatory during the winter, but a heat sufficient to protect plants from frost, and to cause some varieties to flower during that season, can be maintained free of cost."

—— The BULBIFEROUS CHARACTER of the STEMS of certain of the LILIES, *e. g.*, tigrinum and bulbiferum, is a well-known feature. It would seem, however, as if there was a strong tendency in this genus to develope these axillary separable buds, for the same phenomenon may sometimes be observed near the base of the stems of L. auratum and other species not usually bulbiferous; and we have lately seen in Mr. WILSON'S collection examples of the longiflorum section in which the stems were bulbiferous at every axil from base to apex, quite as much so indeed as in the Tiger Lily, though the plants in question are usually non-bulbiferous. Possibly all Lilies might be forced to produce axillary bulblets, and if so the propagation of rare species might be much expedited.

—— Referring to the wonderful increase in the TASTE for FLOWERS which has taken place IN AMERICA during the past 20 years, in the columns of that excellent Transatlantic monthly, the "American Agriculturist," Mr. PETER HENDERSON states that statistical investigations taken in the rough, extending in a radius of ten miles from the centre of New York Island, proved that the number of florists' establishments was above 500, and the capital used in stock and structures upwards of 6,000,000 dols. If the number of establishments, writes Mr. HENDERSON, is nearly correct, and there is no reason to doubt it, it is certain that the value is not overestimated, as there are at least half a dozen establishments where the capital used in stock and buildings must be nearly 100,000 dols. each; and this, too, in New York and its suburbs, where the taste is lower than it is in either Boston or Philadelphia.

—— Most works on Eastern travel tell us of the great UTILITY of the STEMS of the CLIMBING PALMS and Bamboos for the manufacture of baskets, hats, mats, and hosts of other equally common and useful articles. The most striking uses, however, of the slender stems of the Calami are for twisting into ropes and cables (such cables being used on many of the Indian coasting vessels), and in the manufacture of those fearfully dangerous-looking, net-like suspension bridges which are thrown across rivers in India, and about the construction of which Dr. Hooker in his "Himalayan Journal" tells us that "two parallel canes on the same horizontal plane were stretched across the stream, from these others hung in loops, and along the loops were laid one or two Bamboo stems for flooring; cross pieces below this flooring hung from the two upper canes, which they thus served to keep apart. The traveller grasps one of the canes in either hand, and walks along the loose Bamboos laid on the swinging loops." The stems of these Calami, of which many species grow in the eastern forests, are seldom more than an inch or two thick, usually they are much less, indeed quite slender, and they mostly grow to an enormous length, climbing and scrambling amongst the surrounding trees, in the branches of which they support and attach themselves by the hooked spines of their leaf-stalks. The stems are of a tolerably uniform thickness throughout their entire length, and to what an enormous length they grow may be judged from a stem lately received from Ceylon, and now exhibited in the No. 2 Museum at Kew. This stem, which is probably that of Calamus rudentum, measures 369 feet long, so that if it had grown perfectly upright, it would have been nearly as high as the dome of St. Paul's Cathedral. They are imported into this country as rattans in bundles, each bundle containing about 100 canes, and each cane averaging from 12 to 16 feet in length. The number of canes annually imported into this country amounts to about 7,500,000. These are used chiefly for splitting and making bottoms of chairs, bodies of gigs, dog-carts, &c., and at one time were largely used by schoolmasters, as many an old boy will remember; for "crinolines," for ribs of umbrellas, and, when split very fine, for stiffening for silk bonnets. Rattans are also largely imported for walking-sticks; these, however, are thicker than those just mentioned, and are probably the produce of another species of Calamus; they have, moreover, a small portion of the root remaining, to form the handle. The valuable walking-sticks known as Malacca canes are also the stems of a Calamus, probably C. Scipionum.

—— We hear that Parliament is to be applied to next session for the incorporation of a company to form a short RAILWAY from the ring line, or Metropolitan and District Railways, near the South Kensington Station, to the EXHIBITION BUILDINGS at ALBERT HALL. Application is also to be made for power to form a subway from the South Kensington Station to the Albert Hall.

PORTRAITS OF GARDEN PLANTS.

ACTINIOPTERIS RADIATA, *Flore des Serres*, t. 1852.

M. Van Houtte here gives a nice figure of this very elegant dwarf stove Fern, which in its general aspect simulates that of a miniature Palm. The small erect slender fronds grow up in a neat tuft, and the laminæ, which are fan-shaped, and 1—2 inches across, are cut down into narrow segments, much in the way of the leaves of the Fan Palms. It is a native of India and Ceylon. It was figured in the "Florist and Pomologist," in the volume for 1869, and in our own columns the following year.

ALLOPLECTUS VITTATUS, *Illust. Hort.* ser. 3, t. 13.

A stout-growing Gesneraceous plant, requiring stove temperature. It has erect fleshy stems, bearing large short-stalked broadly-ovate leaves, 6—9 inches long, of a deep velvety green, having a broad greyish-green band down the centre, branching off along the course of the principal veins. The flowers are terminal and fasciculate, surrounded by vivid red foliaceous bracts, and having a large crimson calyx, and a pale yellow corolla. It was collected by Mr. Wallis at Moyobamba, in Eastern Peru, and is in the hands of M. Linden.

ALONSOA MATTHEWSII, *Refug. Bot.* t. 158.

A pretty little soft-wooded greenhouse shrub of the Scrophulariaceous order, with slender quadrangular stems, lanceolate toothed leaves about an inch long, and lax terminal racemes of scarlet flowers, of which, as in the more familiar species, the upper lobe is much the largest. It was obtained by W. Wilson Saunders, Esq., from seeds sent from Peru, and is said to produce its brilliant flowers in abundance.

ARALIA JAPONICA AUREO-RETICULATA, *Illust. Hort.* ser. 3, t. 22.

A variety of the well-known evergreen and nearly hardy shrub, often called A. Sieboldii in gardens, and referred by botanists to the genus Fatsia. It differs in having the greater part of the leaf-surface of a pale yellowish green, reticulately marked with yellow, the midribs being pale, almost white. It is a Japanese plant, and was imported by M. von Siebold.

BEGONIA MAGNIFICA, *Rev. Hort.* 1870, 271, with tab.

An ornamental stove perennial, of suffrutescent habit, with ovate unequal-sided finely toothed leaves, and terminal cymose panicles of drooping rosy carmine flowers, which have the four parts convergent, 1½ inch long, oblong-ovate, slightly bifid, the two inner ones being deeper coloured. Introduced by M. Linden from New Grenada.

BIGNONIA PURPUREA, *Bot. Mag.* t. 5800.

This magnificent stove climber has long been cultivated at Kew. It is closely allied to B. speciosa, differing in the narrower tube of the corolla. The stem is slender; the leaves bifoliolate, sometimes ending in a tendril, with the leaflets obovate-lanceolate; and the flowers are large, funnel-shaped, with nearly equal rounded lobes, mauve-coloured, with a large white throat. Nothing is known of its history further than that it is considered to be the Bignonia purpurea of Loddiges' catalogue.

CERATOSTEMA SPECIOSUM, *Illust. Hort.* ser. 3, t. 9.

This Vacciniaceous shrub forms a splendid ornament for the greenhouse, being an evergreen, with the stem growing erect from a tubercular base. The leaves are leathery in texture, ovate-lanceolate, with a short twisted petiole; and the flowers, which grow in short, axillary, secund, drooping spikes, are cylindraceo-costate, about 1¾ inch long, bright orange-red, with a short and slightly spreading yellow limb. It was collected in Ecuador by Mr. Wallis, and is one of M. Linden's novelties.

CISSUS LINDENI, *Illust. Hort.* ser. 3, t. 2.

A smooth, shrubby, cool stove climber, of the Vine family, with terete tendriled branches, and ovate-cordate bright green leaves, which are freely mottled with white between the veins. M. Linden has imported it from the Sierra Nevada of Santa Martha, in the temperate regions of the United States of Colombia.

CLEMATIS STANS, *Gartenflora*, t. 657.

A dwarf-growing half-shrubby plant, with erect stems, ternate leaves, having ovate toothed leaflets, and small terminal panicles of whitish flowers, tomentose on the outside. It is a native of Japan.

COTYLEDON ATROPURPUREA, *Refug. Bot.* t. 198.

The Echeveria atropurpurea of gardens, a well-marked showy plant, with short, stout, glabrous stems, and obovate-spathulate dark-purple leaves, covered with a glaucous bloom, and aggregated into a dense rosette at the top of the stem. The flower-stem is erect, bears much smaller leaves, and terminates in a long raceme of bright red pentagonal flowers, white towards the base. It is supposed to be a native of Mexico, and is allied to C. canaliculata.

COTYLEDON GLAUCA, *Refug. Bot.* t. 61.

A very pretty dwarf greenhouse succulent, forming a dense rosette of obovate-cuneate mucronate farinosely glaucous leaves, and slender pinkish flower-stems bearing a secund raceme of 12 — 20 scarlet flowers tipped with yellow. It is better known in gardens under the name of Echeveria glauca, and is closely allied to C. (Echeveria) secunda, from which it differs in little besides its glaucous covering. A native of Mexico. Both it and C. secunda are much used in the modern system of planting flower gardens; and are remarkably neat and pretty subjects, totally distinct in aspect from some of the other plants referred to the same genus.

COTYLEDON SALZMANNI, *Bot. Mag.* t. 5801.

A charmingly beautiful rock plant, of the Crassulaceous order, of annual duration, and forming literally a mass of brilliant golden star-shaped flowers, relieved by the red tips of the spreading corolla lobes. It has a stout ascending leafy stem, fleshy, terete, green leaves, covered with short red streaks; and golden-yellow flowers, spotted with red, which form a broad compoundly corymbose head, and are between funnel and salver-shaped. It was gathered by Mr. G. Maw, at Tangiers, and in aspect is as dissimilar as possible from the Echeverias which are now sometimes referred to Cotyledon, and bears much more resemblance to a Sedum.

CYPRIPEDIUM CANDIDUM, *Bot. Mag.* t. 5855.

A pretty hardy perennial Orchid, with leafy stems, the leaves broadly-lanceolate, plaited, the flowers small, with green sepals and petals marked with purple lines, and an inflated oblong white lip streaked with purple round the mouth. A rather rare native of bogs, from the Central and New York States of North America, to Kentucky and Wisconsin, extending thence into Canada to the northward, and to the Platte Plains and Rocky Mountains to the westward. It is closely allied to C. pubescens and parviflora. "Like all the boreal Cypripediums, this is easily cultivated in a bog soil, with a cool bottom, plenty of shade, and a copious littering of dead leaves."

DENDROBIUM SCHRŒDERI, *Floral Mag.* t. 502.

A handsome stove epiphyte, with the general aspect of D. densiflorum. It has clavate stems, oblong-acute leaves, and dense pendent racemes of flowers, in which the sepals and petals are pure white, and the lip bright yellow, with a strong orange tint along the upper margin. It is cultivated in the collection of the Messrs. Veitch.

DROSOPHYLLUM LUSITANICUM, *Bot. Mag.* t. 5796.

A very remarkable sub-shrubby species of Sun-dew, with a thick woody stem, 2—3 inches high, at the top of which are seated the elongate linear attenuated leaves, which are circinate and revolute in vernation. The whole plant is covered with stalked purple capitate glands. The large yellow flowers form a corymb at the top of a leafy stem, which grows a foot high. It is found in Spain, Portugal, and Mauritania, growing on sandy shores and dry rocks by the sea as well as inland. It has been flowered at Kew.

HEMEROCALLIS DUMORTIERI, *Refug. Bot.* t. 213.

A very pretty and little known hardy herbaceous perennial of the Liliaceous order, a native of Japan and Western Siberia. It has long narrow tapering leaves, 1—1½ foot long, and the scape is erect, and bears 2—4 large orange-yellow flowers, the perianth being 2 inches long, with a very short tube. It is closely allied to H. minor of Miller (H. graminea of Andrews), but is a stronger plant, with leaves twice as broad, and shorter-tubed flowers. It is sometimes called H. rutilans and H. Sieboldii in gardens.

HOMALONEMA RUBESCENS, *Gartenflora*, t. 634.

A stout-growing stove perennial, belonging to the Araceæ. Its stem grows 1—2 feet high, and bears sagittate-cordate dark green leaves, having the under surface purplish, and the petiole of a deep red. The peduncle is also red, and is terminated by a sub-cylindrical convolute spathe, which is reddish-purple without, and whitish within. It is a native of India.

JUSTICIA LINDENI, *Rev. Hort.* 1870, 250, with tab.

An ornamental sub-shrubby stove plant, of the Acanthaceous family, having smooth stems, glabrous, oval-acuminate leaves, and terminal heads of showy orange-yellow flowers. It was imported from Mexico, to the Jardin du Muséum, Paris.

VICTORIA PARK.

AT a time when paragraphs are going "the round of the papers" as to the ill-effects of encroaching upon the boundary lines of this park, it may not be uninteresting to direct attention to one or two of its chief features of internal beauty, viz., the lake, and what is not inaptly termed the Pagoda island. My object in placing before your readers the annexed illustration (fig. 330) is not only to furnish one of the best views to be found in this park, but to show how happily the materials employed have been associated and blended together, so as to make a beautiful picture, even on a small scale. In this case the water does not occupy more than about 6 acres, which are ornamented with three islands, the outlines of which are of a strikingly marked character, and which are applicable to any part of a country park, where water can be brought within view of the mansion. This park contains a fine collection of trees and shrubs, which, being young, are just in the best possible condition for transplanting for effect, a chance which should not be lost, inasmuch as if left much longer without removal they will be so thick as to injure one another. The islands are rich in Willows, of which, along with other things, many fine varieties were bought at the late Messrs. Loddiges' sale, and the fine Salix babylonica, or Weeping Willow, as shown in the illustration, explains how much real beauty can be exhibited by a tree when it happens to be placed in a situation suitable to its character. Amid the vegetation of these islands, the numerous water-fowl that ornament the lake find shelter, and a suitable home. The Chinese pagoda in the background is that which was shown in the great International Exhibition of 1851. It was presented to this park, in which it forms a feature of much interest. That considerate and kind lady, Baroness Burdett Coutts, presented this park with a magnificent drinking-fountain, by Derbyshire, the cost of which was about £9000. This is about the chief building of interest which the park contains.

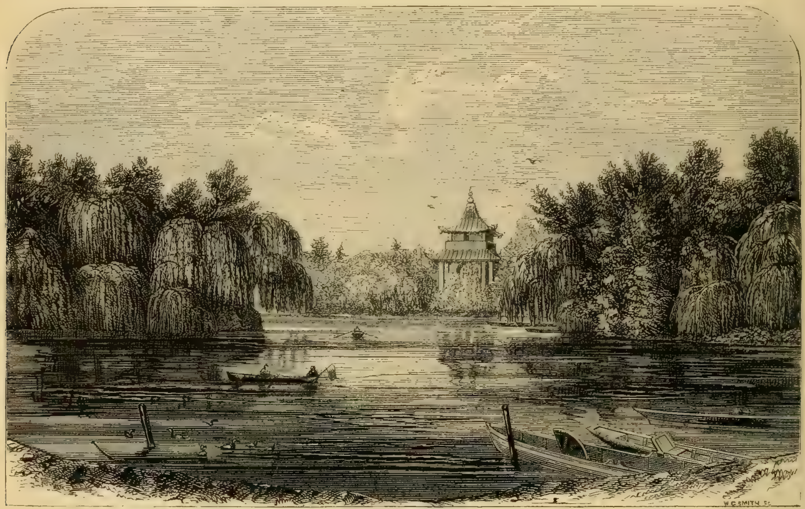

FIG. 330.—VIEW OF LAKE AND PAGODA ISLAND, VICTORIA PARK, LONDON.

Subtropical gardening has been tried here as well as in the other parks, and with considerable success. Unlike that in Hyde Park, it is less guarded from the public by means of iron protectors, a singular fact when the respective positions of the two parks are taken into consideration.

As a bit of boundary line, what a fine appearance the subject of the annexed woodcut would make, viewed from the windows of a mansion. At Hatton, near Hounslow, I at one time created a somewhat similar scene on a rather unpromising site. It consisted of water and rockwork, associated with planting and diversity of form in the groundwork, the whole space occupied in the matter being about half an acre. Trees and shrubs of a fastigiate character occupied the foreground and middle distance. These consisted of Irish Yews, Cupressus, Junipers, and Cedars; next in effect came vases of flowers, archways, and pillars, portions of ruins obtained from the Old Temple Church. As to the rockwork put up it was as much a matter of necessity as of choice, inasmuch as it surrounded a reservoir of water for the supply of the houses and other wants of the establishment, including ornamental water and fountains in other parts of the grounds; and as all the water had to be pumped from a well by means of a steam-engine, it also blocked out the objectionable appearance of the chimney shaft. Architectural effect was given to the scene by a clock tower, and the whole was bounded by a background of Elms and other large trees. I so contrived the outline of the water in the scene, that in passing round it a series of panoramic views occurred at short distances apart, each being so varied as to be distinct in character—a desideratum obtained by throwing up the material taken from the site of the water into banks and mounds of various shapes and sizes. These banks and mounds were margined with rockwork, made of concrete, and planted with a very complete collection of wild plants found in the district, all being carefully named and systematically arranged. A screen or boundary line of a very different character may be found at Fulham Palace. In this there is no water; the foreground is, however, richly ornamented with Rhododendrons, behind which is a thick mass of shrubs and low-growing trees, planted in front of the wall of the kitchen garden, which it is desirable to hide from view from the ornamental grounds. The entrance from the latter to the fruit and vegetable department is through an ancient Gothic archway, which is so charmingly overhung with Ivy as to form quite an enchanting feature in the scenery, which is strictly in the gardenesque style.

Beyond the kitchen garden, itself one of the oldest in England, is a belt of stately trees, which serves as a boundary line to the domain, and at the same time effectually shuts out the town of Fulham, whose antique church top is constantly brought into view of the Palace.

The situation being close to the banks of the Thames, is flat and comparatively uninteresting, were it not for the planting, which has not only been skilfully done at first, but by age has ripened into full development, showing to advantage the mature character of most of the materials employed in it. Vistas have of late years been cut through the boundary line, so as to bring in occasional peeps at the waters of the Thames, thus giving life and interest to a scene which previously was the reverse of animated. Thus, in addition to the pretty piece of ornamental scenery represented in the accompanying woodcut, two other examples have been adduced of the way in which our home surroundings may be improved, and they are of such a kind as hundreds might possess, but few do, simply because they lack the energy to make the attempt. If as much attention were paid to the improvement of features of a permanent character about a place as is bestowed on infusing colour into our flower-gardens, we should soon have backgrounds and boundary lines worthy of the often prettily designed mansions and villa residences which they enclose. *Joseph Newton, Oxford Terrace, Hyde Park.*

THE FORTHCOMING MEETING OF THE ROYAL HORTICULTURAL SOCIETY AT BIRMINGHAM.

As you invite suggestions in regard to the social and intellectual catering for this annual *réunion* of the craft, I am anxious to contribute something, however little, to the development of these most important features of the provincial shows. Fortunately for you and the object we have in view, though rather trying to us who may be expected to offer suggestions, you have in your two leaders pretty well exhausted the subject, and have hardly left us wind enough to bag our sails. A dinner, an assembly room, a congress, and a special committee or committees to arrange each or all—little more can be needful to develope the social and intellectual features of these gatherings to the fullest extent. And yet one thing more, and that the chief, is necessary to command success, and that hitherto has been conspicuous by its absence. I mean the thorough identification of the Council of the Royal Horticultural Society with each and all of these social and intellectual aspects of the meeting. For the future there must not only be no cold shoulder, but no condescending patronage manifested in regard to these features of the programme. The latter is most offensive, and has been most keenly felt by the most honourable working members of the craft. Two equally straightforward courses are open to the Council: the one is to ignore the social and intellectual side of the meetings wholly, the other is to adopt them as part—and one of the most important parts—of the official programme. Practical men could appreciate either course. We have our views about which of the two would tend most powerfully to the advancement of horticulture, but either way we could not justly blame the governing body of the Royal Horticultural Society. Its officers are bound to guard its honour and consider its prosperity first of all; and if it is thought that social fellowship and intellectual communion with practical horticulturists mars the one or hinders the other, the Council are bound to abstain from both, and we are equally bound to honour them for their abstention.

What we can neither understand nor appreciate are the compromises between these two courses that have been from time to time adopted at these meetings—the Council now adopting, now ignoring, and again entrapped or dragged into a recognition of those important social and intellectual features of the provincial meetings. The dignity of the Society and the interests and self-respect of practical horticulturists alike demand that this policy of compromise should cease.

Thanks to your vigilance and zeal in the good cause, which has never faltered, the subject has been mooted early. The Society has ample time to consider it and announce its final decision. I trust it may heartily embrace these social and intellectual features, and permanently engraft them upon its provincial shows. But if not, I do think this should be the last time of asking. We owe much to the Royal Horticultural Society, but more still to our self-respect; and it is hardly consistent with the latter that we should go begging year after year of the Council to help us dine, or hold congresses or social *réunions*. Assuredly we are strong enough to do these things for ourselves; and if the Society chooses to stand aloof, why let it stand out in the cold, and in peace.

Hitherto the Society has concentrated, and seemingly exhausted, its energies on the show. It is of the first importance that the show should be successful. It must be made such as to draw company and pay. We are not so unreasonable as to wish the Royal Horticultural Society to visit the provinces at a pecuniary loss. It can do little or nothing for the advancement of horticulture without the sinews of war—vulgar money. The shows, also, give a powerful stimulus to the advancement of horticulture. They are object lessons for counties and districts, where new scholars may be counted by the thousand. They raise provincial horticulture at one bound to the highest level, and whet the appetite for novelties to the keenest edge. The Society has done good work by going into the provinces, but it has left equally good, and better almost, wholly undone. It has cared more for the exhibition than the exhibitors, the products than the producers; and while smiling its sweetest official blandishments on the works of our hands, it has given the workers the cold shoulder, or worse. Such a course is as unwise as it is ungenerous. It is likewise most suicidal; for practical men, gainsay it who will, are the backbone of horticulture. Raise, refine, strengthen them, and you raise refine, strengthen horticulture. Indeed, the shortest cut by far to the advancement of horticulture is to instruct, raise, better its practitioners. Grand opportunities are afforded for this at these annual gatherings; and the Society that permits such to run to waste misses a royal way of being true to its charter. Promote social intercourse, stimulate intellectual activity among horticulturists, and the result will soon be seen and felt in the exhibition. More will add to their riches, and all will have more pleasure in bringing their best. In many cases now, money is the only power that draws forth superior excellence; sympathy with the objects, identity of interest with the Society, and a hearty desire to promote its prosperity, would prove far stronger motives. The Society has it in its power to call forth all these by simply taking the same interest in the human branch of horticultural progress as it now does in the cultural. Nay, we do not yet ask it to do so much as that, neither to test nor reward our merit, but to identify itself with us in our social *réunions*, and share and help in and sympathise with our intellectual exertions. The attempt to divorce us from our works, to reward the latter while ignoring the former, is vain, and would only prove mischievous if possible. We are united for better or worse, and those who would reward our best doings had better begin or end, we care not greatly which, by giving the workers their just due, for the men upon the whole are better and more precious than their best doings.

Perhaps it may be well to add a sentence or two upon the Congress. First, as to time. The evening would probably be best. Most visitors have so much to see, and so little time to see it in, that all the day and every day is crowded with engagements. I merely throw out the suggestion, however, and am well aware that there may be strong objections urged on the other side. Again, as to the manner. There have been great complaints about haste and appearances of impatience. Doubtless this has been caused at times by an excess of papers, when 10 or 12 readers have raced against time for a hearing at a single sitting. But at other times, and without this excuse, presidents have looked bored, and practicals felt discouraged by an almost indescribable feeling that the whole thing was felt to be a bore. I blame no one, but only advert to an impression that was largely prevalent at some of those congresses. Then as to matter. It always seemed to me that the utmost freedom ought to be allowed at these meetings. There are social and pecuniary questions of the utmost moment to horticulture that have been carefully excluded from discussion. I believe horticulturists are the only class in the country who continue to meet, and remain dumb on their own peculiar grievances and prospects. I would be glad to learn who could be compromised or injured in any way by the thorough discussion of such a question as this at the Birmingham meeting—The *status* and rewards of horticulturists, and how both may be raised, in the interests of employers and employed, and to the further advancement of horticulture?

In addition to the dinner, assembly room, and congress or congresses, I would suggest a *soirée* and *conversazione* if possible. Also, if practicable, that ladies might be invited to the dinner, as suggested by Mr. Pearson, at Nottingham. Finally, might I, without presumption, propose that the Rev. Reynolds Hole, who I trust has been added to the Council of the Royal, be elected chairman of the committee for promoting the social friendship and intellectual fellowship of horticulturists at the Birmingham meeting of the Royal Horticultural Society? *D. T. Fish.*

THE MYSTICAL PLANTS OF BRITAIN.

> "The plant of truth is not rooted in the earth."
> *Oracle of Zoroaster.*

THE superstitions which, in olden time, connected themselves with certain trees and plants have been pretty fully dwelt upon of late,* but, as we think, without exhausting the subject, or deriving from it all the materials for thought which it is capable of affording. The tendency of modern opinion is to suppose that wisdom dwells with the present age, and that the early races of mankind were as much inferior in power of mind as they certainly were in the means of testing their views of Nature, by subjecting them to the verifying process of experimental research. Those who have studied the Chaldean philosophy, in so far as it has made its way down to us through the opinions of Pythagoras, or have seen how remarkably some of the choicest results of modern scientific thought were anticipated in other schools of Grecian lore—those who have looked into the charming poem of Lucretius, "On the Nature of Things," will not entertain these disparaging ideas of the capacities of our forefathers.

In this article we mean to explore but one branch of this wide subject, in the connection of the early fire worship with the mystical properties ascribed to plants and trees. In order to comprehend these views of the Aryan nations, we turn first to the Rig-Veda, which is unquestionably the most ancient documentary evidence on the subject, reaching back probably to the times made familiar to us by the history of the Judges in Israel. In this work we find, especially in one passage not devoid of sublimity, the distinct recognition of the unknown God—as in fact "the ineffable One;" but to these early philosophers everything that was unknown was mystical, and the whole world was pervaded by subordinate deities. These were formed into shape by drawing largely on the resources of a fertile imagination. They were struck with the sudden manifestation of the electric force in lightning, as showing something peculiarly divine; and this they extended to fire, and to all the varied and subtle operations which we are accustomed to class under the heads of electricity and magnetism; and, penetrating still further into the unseen world, they associated also in the same category the vital principle in animals and in man. Thus the Parsees,† in a controversy which arose between them and the missionaries at Bombay, claimed the well-known lines, beginning—

> "Vital spark of heavenly flame,"

as exactly expressing their opinions on this point; thence also (as we have been informed) the custom of placing frankincense on the forehead of a corpse which is about to undergo the process of incremation, as it is supposed that the vital spark escapes from that part of the body.

An intensely poetic appreciation of Nature appears everywhere. The clouds were the cows of heaven, from whose udders the fertility of the earth was replenished. They beheld in the sun a god, whose chariot was drawn by the horses of the dawn. The first rays shooting up from the horizon, before the emergence of the orb itself, were the horns of the hind or gazelle of the morning. Probably the imaginary hammer of the Scandinavian Thor, which always returned again to his hand after it had been launched against any object, was an illustration of the same accurate observation of the phenomena of a thunderstorm, as is well described by the Roman poet Lucan—

> "Dat stragem late, sparsosque recolligit ignes."

These last illustrations do not belong (it is true) to the Rig-Veda, nor do we think that the Aryan nations can be segregated from the rest of mankind to the extent which is prevalent. The nations generally have found inworking powers, especially maleficient powers, at work in the storm and the tempest, and deities watching over the productions of the earth, and, as we shall see, requiring to be appeased ‡:—

> "The demons that are found
> In fire, earth, air, or underground."

The connection of all this apparatus of deities with mystical notions about trees is well illustrated by the story of one of the deities of the Sanscrit-speaking race, which, whilst in the shape of a falcon rescuing the soma, or heavenly ambrosia, from the evil demon, lost, in the contest, a feather, which, falling to earth, and taking root, became the origin of a tree with feathered leaves, whilst a claw which came to earth in the same encounter became a thorn-bearing tree, the Mimosa Catechu. Bishop Heber was amazed and surprised to find that the same superstitions attached themselves to the Mimosa in India and to the Rowan tree in Scotland—superstitions connected with the promotion of fertility in animals. He inquires, "What nation has in this case been the imitator, or from what common centre are these common notions derived?" The answer probably leads us back to the very earliest period of the history of the sons of Adam as the first opening out of this well of tradition. The superstitions connected with the Ash, as mentioned by White in his "Natural History of Selborne," are probably from a different source, though scarcely less ancient. The Scandinavian tradition was, that the gods formed out of an Ash tree the first man, who was thence called Aske. This was probably the first progenitor of the Teutonic race, well shown by Knobel in his "Volkertafel" to have been (almost certainly) Ashkenaz of Genesis x.,* so that the fabled Ash, Iggdrasil, with its roots directed towards heaven, towards Tartarus, and towards the region of frost, and overshadowing gods and men, looks like an enunciation beforehand of the preponderance of the German races. "Rhetoric turned into logic" has produced worse things than the Ash Iggdrasil. Then the passing of crippled children through the cleft Ash was simply an introduction into a new and, it was presumed, better life. As with the Brahmins, the twice-born of India, as with the masonically initiated Druids—for whom an analogous birth was provided,—so with these unfortunates, the reversion to the original stock was to be healing and cure.

These things are not specially to our purpose, and therefore we turn to the Oak and the Mistleto, and enter upon the domain of Celtic superstition. More particularly (omitting the kindred Picts, Scots, and Irish) we look to the Welsh, the Cymri (descendants of Gomer), as representing our early British ancestry.

There can be no doubt that these have preserved the traditions of the past to a much greater extent than the more thoroughly English part of our population. Indeed we need scarcely class among things of the past some of the superstitions, especially about fairies, which still haunt the Principality. The physicians of Myddvai (whose lore was reputed to be derived from this source) are the subjects of a volume published at Llandovery in 1861; but we leave, for the present, these gentlemen to settle accounts with the regular practitioners, and pass on.

We ourselves have met among the kindred Bretons with an illustration of the still powerful belief in the fairies. When driving along near the celebrated Cymric Menhirs of Karnac, we alighted to gather the Dodder (Cuscuta europæa) which, with its weird-looking, thread-like branches, covered abundantly the Gorse bushes of the neighbourhood. On returning to our vehicle the Breton driver most earnestly remonstrated, begging that we would throw away the perilous fruit of our botanical research. "*La reine des Fées vous blessera!*" he exclaimed; and if we understood him aright believed that, if this were not done, we should all be dead before we reached our destination. He did not pay much regard to our dissent from his creed, so we thought it most prudent, all things considered, to throw the weed away, lest the nervousness of our driver should really bring us to grief.

There is no doubt that the Druids looked upon the Oak as a divine tree, and most intimately associated with, even identified it with, the god whom they worshipped. The feelings of religious horror with which the Gauls regarded a grove of ancient Oaks dedicated to the gloomy rites of Celtic superstition, are well described by Lucan, who exhibits for admiration the courage of Cæsar, in himself giving the first stroke of the axe, in order to break through the dread which swayed his legions and threatened to hinder his designs. Thus, in Taliessin's poems we find the following—

> "A greater tree than the Taronowy there has not been to afford us a sanctuary round the proud celestial circle."

The name of the Oak in Welsh is similar to its appellation in Greek, and has connection with the title of the Druids themselves.† "*Derwdd*, a Druid, is compounded of *gwydd*, a wise man, and *derw*, the Oak. The strict connection, both in Hellenic and Roman mythology, between the Oak and Jupiter as the god of the thunder and lightning, was drawn even closer among these Celtic nations, as the Gallic Jove was represented to the eye by an open stem and two lateral branches in the shape of the Greek π in its elementary form. *Derw*, an Oak, takes also the form *dâr*, plural *deri*, but *y daran*, a servile form of *taran*, means a thunderbolt, and *daron* and *daronwy* are synonymous with *taranon;* and *Taranwr*, the thunderer, is the same as *Taranis*, whom, according to the Romans, the British worshipped. *Dar* must therefore have once signified equally an Oak and the thunder; and the thunder and the prophetic Oaks of Dodona had a like connection at the time when oracles were supposed to be delivered from their branches; and the *fulgura* and *fulmina*, the phenomena of lightning, were supposed to be the most trustworthy phenomena whence a knowledge of the future might be obtained. Whether this *dar* represents the electric fluid or not, we have ample proofs that the tree was mythically confounded with that of which it was only a symbol." Thus, Taliessin :—

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* Fraser's Magazine: November and December, 1870.

† Descendants of the banished fire-worshippers of Persia.

‡ In India, till recently, by human sacrifice.

* The Jews still retain the word Ashkenazim for the German section of their community.

† Archdeacon Williams' "[illegible]," p. [illegible]

> "The swift moving derw,
> From his presence would shrink both heaven and earth."

It may lessen our surprise at such a confusion when we remember that our own select word electricity, in somewhat similar manner, identifies the whole range of these phenomena with the *electron*, or amber in which they were first noticed.

The Welsh word *Trydan*, "pervading fire," is in so far more philosophical, in that it is an attempt to give a definition in the very word itself.*

After all, we ask ourselves, whence came this strange idolatry of the Oak tree—from its height and grandeur as pre-eminent amongst the trees of the English forests? from the character of its boughs reminding of the course of the lightning, or from its being more frequently struck than other trees? We cannot say; and though our Oak trees have been struck we do not know that they really attract the lightning, as it is commonly supposed, or are more subject than other trees to this visitation. It is a fair subject of inquiry as to the fact.

The worship of trees lingered much longer amongst the Continental nations than in our island. Keysler tells us of a sacred Oak (Quercus Jovis) cut down by St. Boniface, and tells the story of another Oak whose great age was owing to similar causes, and of so great a size that when it became hollow by age a mounted horseman could ride round within it, which feat was performed by Albert I., of Prussia, and by his son also. This Oak continued long an object of superstitious veneration. It grew between Wolavia and Oppen, and was 27 ells in circumference. Another (alike recorded by Hartknoch†) was horrid with the blood of sacrifices‡. Another, near Labiau, in Prussia, was so much worshipped by the people that the clergy thought it best to dedicate it to a saint (Jodocus), by which means it became a source of gain (at least of lucre) to the Church.

The dreadful deeds of *Frithsplottum* and *On ellenum* became as much the objects of solicitude to Popes, councils, and clergy, as the interpretation of the words to critics in a later age. Penitence of from one to ten years seems to have been decreed by Gregory III. Our author satisfies himself that the first was a kind of Dryolatry, or revival of the old worship. The second more clearly refers to the Alder, "which trees were held in such veneration, and according to Arnkiel still remained so in his day, that in many places it was not thought right by the stupid people to strike them with the axe, before they had, on bended knees and with precedent prayers to the goddess of the Alder (as they vainly imagined), sought the wood as suppliants with promise of its return. This M. Torgillus Arnkiel reports that he has often seen and heard, in his work 'De Religione ethnica Cimbrorum.'" *H.*

(*To be Continued.*)

AMARANTHUS SALICIFOLIUS.

ONE of the most prominent features of the past exhibition season was undoubtedly the magnificent plant exhibited under the above name by Messrs. Veitch. We append a note concerning it from a practical gardener of high standing, and we can quite endorse all that he says as to the merits of the plant, removed, as we were told, from the open border for the purposes of the exhibition. One regret we may express, and that is, as to its name. It may be an Amaranthus; at present we have no means of telling what it is. Perhaps, like Iresine Lindeni of gardens, which is certainly not an Iresine, this may not be an Amaranthus. But then what to call it? that's the question. We object on principle to the custom of affixing scientific names to plants that are not known to scientific men, and which names in eight out of every ten cases are ultimately found to be inappropriate. Suppose, for want of a better name, the present plant had been called "Veitch's Amaranth," would it not have sold as well as it will now under an assumed name? The English word Amaranth is a general one, and has not the precise signification that Amaranthus has, and hence would not introduce the element of uncertainty, probably of error, which the present name does.

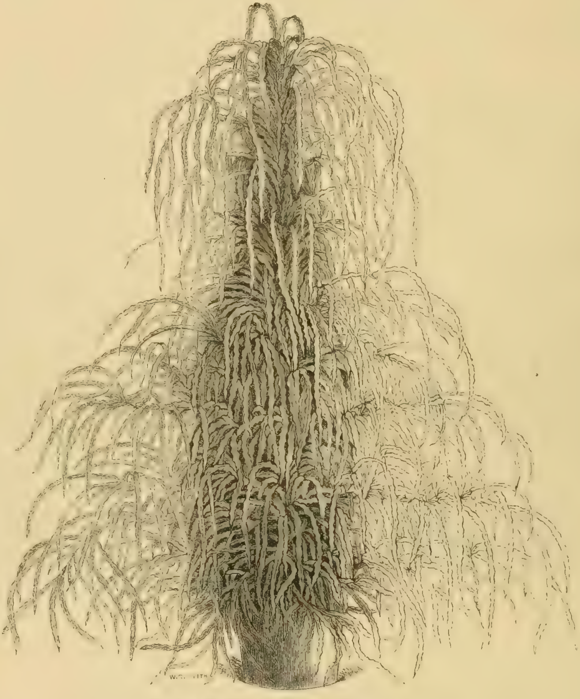

FIG. 331.—AMARANTHUS SALICIFOLIUS (HORT. VEITCH).

The plant is an annual or biennial (?), of pyramidal form, 2—3 feet high. The leaves are from 5—7 inches long by ¼ inch in width. The colour in the young state is a bronzy green, which changes, as the plant gains age and vigour, into a bright orange-red colour. It was, we are informed, introduced from the Philippine Islands by the late Mr. J. G. Veitch.

"Permit me," writes our correspondent, "to add my testimony to the beauty and grace of this charming plant. I happened to drop in at South Kensington when it made its *début*, and it so fascinated me that I had eyes for little else at that gathering of good things. My first impression was—Well, Celosias must have progressed marvellously since I left off growing them on account of their inveterate tendency to hark back to tufted Cockscombs. With this stock, there is nothing to equal them. As I approached these plants, 'These never can be Celosias!' rose to my lips, before I had the pleasure of reading Amaranthus salicifolius. No cut or coloured plate, no, nor mere description, can do justice to the full merits of this plant. Whatever place it may take in the flower and sub-tropical garden—and that will be very high, if it proves sufficiently hardy for outdoor work—no plant can equal it for conservatory, table, room, or vase furnishing. It is no exaggeration to add that I believe those long drooping branches, so rich in colour and graceful in form, will mark a new era in the furnishing of tall stands, epergnes, &c., with cut flowers. I trust it may be offered at such prices that every garden in 1872 may be lightened up with the brilliance and dressed with the grace of this charming novelty."

Home Correspondence.

The Price of Vegetables.—I take it that your correspondent, "W. R. H." is a greengrocer, and therefore able to state (if he attends the Borough Market) whether the prices quoted by "A Market Gardener" in your last journal are a fair example of those which the retailers pay for the vegetables we send. Prices of course vary each market day, but we have scarcely exceeded, and have sometimes fallen short of the prices quoted, within the hours named by "W. R. H.;" and I will add that the reason why such prices exist is to be found in the lack of buyers, and not in the fact, as he asserts, of salesmen overstanding the market. An injudicious salesman may occasionally sacrifice his goods to a desire to maintain prices, but to suppose that every salesman in the market would continually refuse the offers of the retail dealers, and eventually throw down his loads to be carted away to cows at a fodder price, is absurd. Having now responded to "W. R. H.," I hope he will in return tell me in what way he can justify the difference between the prices paid to the growers and those charged to the consumers? When the market prices were fairly remunerative to the producer the retail prices were as nearly as possible the same as they are at present. When the prices to the producer are positively ruinous, those to the public remain unaltered. If "W. R. H.' could by any possibility fairly explain this state of things, all inducement to high cultivation would vanish; but if, as I am confident, no such satisfactory explanation can be given, then such alteration in existing arrangements must inevitably be made as shall enable the people to profit by that which is now, in a prolific season, either sent from the neighbourhood of the metropolis to the markets of the manufacturing districts, or ploughed into the ground, or used for food for cattle. *Henry J. Morgan, Lodge Farm, Barking, Nov.* 28.

—— Reading the complaints of your correspondents, in regard to the inadequate returns received by the cultivators of garden produce, in comparison with the prices paid by consumers, I am tempted to send you an extract from Alphonse Karr's book, "Promenades hors de mon Jardin," on the subject of middle-men. Mons. Karr says, "It is a condition at once odd and illogical: the intervening person between the cultivator and consumer is a sort of parasite, whose business it is to buy at a very cheap rate of the grower, and to sell at a very dear one to the other. If the interested parties were to make an advance one to the other, to hold out the hand, and come to an understanding, both of them would make a good thing of it, in dividing the profit which is made out of them under the pretence of bringing them together." The difficulty of carrying out Mons. Karr's suggestion may be an insuperable one, but as the tendency of the state of things described by your correspondents is to restrict production by making the cultivation of vegetables unprofitable, and so to inflict the hardship of high prices on the general consumer, any plan by which the evils complained of could be remedied would be welcomed by a large class of growers for the great markets of the country, and would confer a great boon on that class of consumers whose greatest deprivation, beyond the absolute staff of life, would be the loss or curtailment of their cheap supply of greens. *W. Ingram, Belvoir.*

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* *Try* signifies aptness to pass through or over. Richard's Dict.

† In Rerum Pruss. Diss., vi., m. 4 and 6; also Diss. xiv., m 13.

‡ "Undique in trunco hærente."

Rochea falcata.—Though I have known this plant for many years, I have never been so struck with its beauty and utility as a flowering plant till this winter, having generally seen it among collections of succulents where it never had a chance of flowering. I had two plants planted out this summer among other succulents; they grew well, and when about 8 inches high each threw up a flower-truss. I took the plants up in October and potted them, put them in an intermediate house, and they have now been in bloom for a fortnight, and promise to last another month or more. The corymbs are something like those of the Sedum Fabaria, but broader and more rounded, and I cannot describe the colour better than by saying it is a combination of deep orange, scarlet, and pink. The plants are only about a foot high, the trusses 10 inches across, and most conspicuous objects. The Rochea is a characteristic-looking plant when bedded out, and when taken up before the frost destroys the flower-buds and potted, it comes in for winter decoration, and in my opinion ought to rank high as a conservatory plant, and be grown in batches. *J. Simpson, Wortley.*

Leptosiphon roseus. — It may interest your readers to hear that, so far, this beautiful little annual has passed through the recent severe frosts here in the open ground entirely uninjured. I have it growing from seed sown in June, the plants still putting forth a few blooms when the sun shines; and I have it also in the form of small seedling plants (looking just now like small Portulacas) that have come up where my earliest summer stock of it seeded. Whether it will pass as unscathed through the entire winter remains to be seen. I have just lifted some of these small ones, and pricked them into pots to stand the winter in a cold frame, so that I may be pretty sure of a display of it in the spring. It is a charming carpet plant, and would produce a lovely effect if mixed with Aubrietia Campbellii. *Alex. Dean, Bedfont.*

Pruning Scissors.—The most useful of all instruments in a fruit garden is undoubtedly a good *sécateur*, or pruner, but, as in everything else, there are both silly and clever ones. The one you notice at p. 1483 is one of the clever-looking ones, but as the drawing fails to show if the blade is rivetted on to the handle [it is], or if it and the handle is all one piece, I am dubious as to its being really a clever acting instrument. There is no question that for a *sécateur* to be an efficient one the blade most be a piece of itself, thin and blade-like, as in a knife, and rivetted on to the handle, which should be strong, thick, and powerful for the work. I have had practical experience with a good number of these fruit-tree pruners, and every one has failed to please me except one. This is made by a working smith at Versailles. Prévost's *sécateur* is considered by most gardeners, in Seine-et-Oise at least, with M. Hardy and his assistants, and all the fruit-growers in that department, the *sécateur;* and for my part I have no hesitation in saying that it is the best and most efficient pruner ever made. Of course, in those days nothing good came out of Versailles, and it was not patronised by the Paris centre of horticultural skill as it might have been. The price of this *sécateur* is 7 francs—rather dear, but it will last for years, since a blade can be put in when necessary, as I have had done with one or two of mine. M. Albert Truffaut, of the Rue des Chantier Nursery, Versailles, is sending me a pair or two, as I have forgotten M. Prévost's address. These *sécateurs* are made in two sizes; the smaller size will cut an inch Hazel stick in two—on the slant, of course—quite easily. *H. K., Floors Gardens.*

Old Garden Favourites. — In the "Botanical Magazine," plate 1622, there is a figure of a most singular variety of the Carnation, D. Çaryophyllus, in which some of the flower-buds, by a most curious malformation, assume the appearance of a green Wheat-ear. This singular flower seems to have been well known to the past generation of gardeners, among whom it went by the name of the "Wheat-ear Carnation." Where is it gone to? It was so curious that it ought never to have been lost, and very possibly it still exists in some of those dear old-fashioned gardens whose owners have stood bravely out against the bedding mania, and have zealously propagated and zealously preserved these choice gems of floral antiquity. Who now grows the real old white Clove Carnation? I don't mean the poor thing commonly sold for it, but the precise counterpart in grass and flower of the old crimson. I have often heard it talked of, but it has never gladdened my eyes. Does any one grow that fine old plant Malva campanulata, which, alas! I have lost, and know not how to recover? Where, too, is its congener, Malva purpurata (Bot. Mag. 3814)? Can any one tell me how to get Rosa microphylla (Bot. Mag. 3490) or Rosa Brunonii (Bot. Mag, 4030), and Primula amœna (Bot. Mag. 3252)?—and are Scilla villosa (Bot. Mag. 3211) and Fritillaria leucantha (Bot. Mag. 3083) now in cultivation? I have now before me in a pot, in full bloom, a clump of that beautiful autumnal Crocus, C. longiflorus. Can any one tell me where to get the white variety? *H. Harpur-Crewe, The Rectory, Drayton-Beauchamp, Tring, Nov.* 28.

Golden Champion Grape.—What I am about to state is my own practical experience of this Grape, and nothing could be more favourable. I planted it here in the spring of 1869, cropped it for the first time last year, and this year the bunches and berries astonished every one that saw them, and the flavour was exquisite. My employers were delighted with it, every berry was faultless. In a place not six miles from here I saw three very fine bunches of it this year, in the month of August, from a Vine on its own roots; not a single spot to be seen, in fact they were all that could be desired. I am aware that it has failed with other growers, but so have Black Humburghs, when they are red; White Muscats, when they are green and shrivelled; Lady Downe's, when the bunches are decimated with the spot it is subject to. The Golden Champion, as far as known to me, is the only one of the new Grapes that has been taking first prizes this year single-handed, and I believe that next year it will do so to a much greater extent. *J. Louza, Gr. to Sir H. S. Stewart, Bart., Zouch, Stirlingshire, Nov.* 7.

Hardiness of Dracæna indivisa.—It may be worth mentioning, perhaps, that this plant will stand with ease many degrees of frost. In two large vases at one of our private entrances had been plunged a pair of very fine plants, with fully 100 leaves on each, that have stood from 4° to 12° of frost for several nights since October. They were only taken in yesterday during a fall of snow, and are none the worse for their cool ordeal. The aspect, where they have been standing, is east, and only in very early morning, during the summer time, do they get any sun. I have an idea they would have stood many more degrees of frost with impunity. If this catches the eye of some of our French friends, who were sufferers last winter about Paris, one of them may be able to say what degree of frost this handsome decorative Dracæna will stand. M. Rivière, in a late number of the "Journal de la Société d'Horticulture de France," speaks of a Vanda teres flowering more profusely than ordinary after being exposed to frost some time last winter. M. Chantin, of the Rue de Châtillon, and many others, could a tale unfold, I have no doubt, regarding many indoor plants. Anon they may be induced to give their experience. You may also allow me to say that some Echeveria secunda glauca are also yet in their summer quarters, and up till now are apparently as hardy as Sempervivum californicum; at all events, it is a much hardier thing than I had previously believed it to be. *H. Knight, Floors Gardens.*

Ferdinand de Lesseps Grape.—Tastes vary in fruits as in other matters; one person delights in the rich aroma of a perfumed Pear, another in the simple sweetness of a flavourless fruit. The merits of Grapes, in the opinions of some connoisseurs, consist very much in their posession of that flavour which distinguishes the Muscat of Alexandria: while the juicy sweetness of the Hamburgh commends itself to the taste of others. A writer in the *Gardeners' Chronicle*, who has recently commented on certain matters connected with the cultivation of the Vine, employing the *nom de plume* of "Vitis," speaks in disparaging terms of a Grape raised at Chilwell, and called by Mr. Pearson Ferdinand de Lesseps. This opinion illustrates my remark that "tastes vary." Although "Vitis" ventures so far as to predict that this Grape will be consigned to the limbo of obscurity, many persons who have had the opportunity of tasting it have given it a good position in their vineries, so that obscurity will not be its fate just yet. Like the first of Scrooge's Christmas laughs in Dickens' "Christmas Carol," I regard Ferdinand de Lesseps as the first of a line of illustrious fruits and precious wines which will flow from the auspicious union of the Vines of Europe and America. The Grape has yet the dwarfed proportions of an undeveloped but pure stock, its merits consist in its intrinsic excellencies of flavour, and not in the meretricious advantages of size or colour. Like one of its parents, the Muscadine, it is comparatively small in size and bunch, but it has gifts beyond—being marvellous in quality. *W. Ingram, Belvoir.*

Hot-Water Circulation.—Your respected correspondent, Mr. Fish, thinks that I ought to have shown which takes the initiative in circulation, the hot or the cold. I hope to do so (and in a manner which shall not leave my reasoning open to such an objection as that contained in the last sentence of his letter) in those papers which you kindly approve of my sending for insertion in the *Gardeners' Chronicle.* I do not enter into the matter here, not wishing to intrude needlessly on your space; for the same reason I leave unanswered other remarks, not sufficiently understanding them. I apologise for having mistaken the purport of Mr. Fish's remark upon the "driving power of caloric," and now understand that he classes gravitation with it as a motive power of at least equal potency? But does he carry out this definition fully when he goes on to assign to gravitation as "its proper function" nothing more than "returning back the cold," while to caloric he assigns "the sending forth of the hot water?" I believe he does not, and I am confident that I shall not be alone in the belief that this is not a proper estimate of the function of gravitation. I have no other object in the task I have set myself than to elicit the truth, and when my papers have been published I shall be glad to have any point sifted or any error exposed by my respected friend, Mr. Fish, or others. I think that my criticism of Mr. Fish's statements would be more fairly described as a criticism of leading statements and defined conclusions rather than of "detached sentences" and of mere words. *J. M. Taylor, Seer Green Vicarage, Beaconsfield.*

The Cockspur Thorn.—Planters in search of the singular and the habitually beautiful combined should plant the Cockspur Thorn, Cratægus coccinea Crus-Galli, an old North American species introduced nearly two centuries ago. Its peculiarity is that spines, spurs, or thorns are formed along its branches, many of them 3 inches in length, which makes them very conspicuous. It has large leaves and flowers, and belongs to the scarlet-fruited section, the berries being moderately large, and of a dark red colour. *William Earley.*

Supposed Influence of the Moon on the Flow of Sap.—That there are constant changes in the current of the sap in plants no one can deny, but that there is a periodicity in it which is regulated by the influence of the moon I am not disposed to admit. It may at once be granted that Mr. Hutchison is correct in his observation, and that he actually observed that during certain days following the third day after new moon the sap was apparently more abundant. But are there any grounds for connecting the apparent increase of sap with the phase of the moon? I certainly think not. Mr. Hutchison has omitted all mention of the state of the weather and of the temperature. This is most unfortunate, because if a record of the temperature during the period of observation could be obtained, then the lunar theory would probably be shown to be untenable. During the winter months, when there is no flow of sap from the roots to the leaves to supply the water necessary for transpiration, the fluid in the stem always contains air-bubbles. The effects of the temperature on this mixture of air and sap are peculiar. If the temperature rises, the stem of the tree is heated, the air in the capillary tubes expands, and compresses the fluid or sap contained in the stem. As the fluid cannot move downwards it must move upwards and towards any cut surface, which will at once appear wet. In fact this is merely the process of bleeding so often seen in many trees—a phenomenon which ceases as soon as the leaves form, and the rapid ascending flow of sap is re-established. If Mr. Hutchison and others will again carefully observe the supposed lunar action, but in addition make records of the temperature of the air, he will probably be led to abandon his new theory. As the temperature of the trunks of trees does not correspond exactly with that of the surrounding air, it would be advisable to bore a couple of holes in the stem of the tree in a slanting (downward) direction. In each of these holes must be inserted a test-tube of very thin glass, into which mercury is to be poured, and the bulbs of a registering maximum and minimum thermometer placed in the mercury. It will then most probably be found that the disturbed state of the sap corresponds with the rise of the temperature of the stem—a fact well known to vegetable physiologists—and not with the changes of the moon. *W. R. McNab.*

Nephrolepis tuberosa.—As a basket Fern this is, in my estimation, the best for either a conservatory, stove, or greenhouse. It seems to adapt itself to either of these structures better than any other exotic Fern that I am acquainted with. In a shaded position in the stove, if well attended to in watering, it will make fronds from 3 to 4 feet long, with numerous tuberous rootlets hanging about in all directions. In such a condition it is wonderfully effective; in the conservatory it looks equally as well, but does not produce such long fronds; and when grown in the greenhouse it has a more upright habit of growth, but it is very handsome. I need scarcely add that when grown in a greenhouse frost must be kept out, although it has stood a few degrees without any visible signs of injury. When about to put plants into baskets they ought to be potted in 4 or 6-inch pots, and be grown in the stove for a time, to get them well established, and the pots filled with roots. Then line the baskets with wet Moss, put in some leaf-mould, turfy peat, and charcoal, and turn the plant into this without breaking the ball, filling up all round the ball with the above compost, and covering the whole with Moss, the green side up; run some small wire over the Moss, to make it firm, give a good watering all over, and the operation will be finished. *J. T. Burns, Tollesby Hall, Middlesborough-on-Tees.*

Artichoke Galls.—Pray give me three lines to assure Mr. Albert Müller that his criticism upon my remarks on this subject proceeds upon a mistaken assumption. In using the expression "better known as Cynips gemmæ," in relation to his having styled the insect in question Aphilothrix gemmæ, I by no means intended to say that the former was the better name, or should be generally adopted. It was only as if I had said, "which our readers will know better unde the name of Cynips gemmæ." I do indeed think it the better name for the pages of the *Gardeners' Chronicle*, for many of its readers would recognise it by the former who would not by the latter. At the same time I equally admit that where scientific entomologists are addressed, Aphilothrix is the proper name for the genus. The propriety of making such a distinction between one's hearers or readers is a vexed question, on which Mr. Müller and I would take opposite sides, but which, I agree with him, is not matter for discussion here. I do not, however, regret having used the expression (even although I should be in the wrong on this point), as it has drawn from Mr. Müller the very clear statement (in last *Gardeners' Chronicle*) regarding the nomenclature and what is known of the insect. I infer from his silence on it that he is not able to throw any additional light on the point which I suggested for his consideration, viz., whether the insect always selects flower-buds for the nidus of its eggs, or if the leaf-bud attacked undergoes metamorphosis into a half-developed acorn. There would appear, therefore, still to be something for entomologists to observe regarding this creature. I would like to observe further, that I find Mr. Müller's statement as to the scarcity of acorns this year confirmed by one of my correspondents. As I have already said, this is certainly not universal, but its occurrence in more than one quarter is curious and interesting. *Andrew Murray.*

The Brussels Sprout.—This excellent vegetable is only excelled by the Cauliflower as a general favourite for the dinner-table, and a few hints about its successful cultivation may be of interest to some gardeners. Having the advantage of a glass-covered wall, with a border inside, I have, for the last few years, sown the seed of the Brussels Sprout in the beginning of February, and had the plants strong enough to plant out early in April. By this early planting, and in well manured ground, the plants in the course of the summer and autumn get to a great size, and produce enormous quantities of sprouts at cutting time. As every gardener has not the means of growing ths young Sprout plants so early, a box or two of seed, sown and put into a cold frame or late Peach-house or vinery, and pushed on till the plants are ready for pricking or planting-out in the spring, would answer the same purpose; or a bed might be sown in the autumn, along with the Cabbage and Kale plants, and they would be ready to plant at the same time, if they stood the winter. When the Brussels Sprout seed is sown at the usual time of sowing the Broccoli and Kale in the spring, the plants are seldom ready for planting-out before May or June, and they never grow so tall and fine as the early planted ones. I find the seed of the Brussels Sprout imported from the Continent the best to be depended upon, and have discarded all the varieties in the nurserymen's catalogues, said to be new and good. The Roseberry variety of Sprout is an excellent dwarf late hardy kind, for it stood uninjured with me last winter, when there was such a destruction amongst the Brassica tribe; and it will be the same the ensuing winter should the frost be severe, for all vegetables at the present time are in a very succulent state, although checked a little by the late frost. *William Tillery.*

The Thames Bank Peach—This Peach is not so generally known as it should be. As a late Peach it is decidedly one of the best we have, being a strong, robust grower, of good constitution, and a free setter. Dr. Hogg, in the "Gardeners' Year Book" for 1864, describes it as follows:—"A yellow-fleshed, or Apricot Peach, raised by Mr. Rust, gr. to L. Sullivan, Esq., Broom House, Fulham. It is about the size of Late Admirable, and rather more oblong in shape; the skin is deep orange-yellow, marked on the side next the sun with several broken streaks of crimson. The flesh is tender, melting, and juicy, and for a yellow-fleshed Peach is highly flavoured. This is certainly the best of yellow-fleshed Peaches we know, and is highly ornamental as a feature in the dessert." I can fully indorse this description of it, having seen it in different situations doing well. No doubt there are others quite as good, but this one I can speak of with confidence. *G. Warren, Gr., Balcombe Place, Sussex.*

Figs—The treatment of this fruit seems to me to be little understood by gardeners in general. I believe that the knife should rarely be used. Such is the case in the Fig orchards in the South of England—Broadwater, to wit. You would do good service to Midland and Northern country gardeners who have Figs on walls (matted up during winter) if you would favour them with the practical experience of others. I believe that the branches of Fig trees should be controlled, not by knife, but by bending them down in various shapes, so as to check growth and promote fruiting. I see them cut just as they cut Gooseberries, Apple trees, Peaches, &c.: the result is very little fruit. *S. W.*

Golden Variegated Cress.—Those who may desire to see a little liveliness in their flower beds during the winter months should get a packet of seed of this pretty Cress, and sow it in the open air next May; they will then have plenty of it for winter decoration. It is one of the very hardiest of ornamental foliaged biennials, and is not so disfigured by rain and frost as the Golden Feather too frequently is. The golden variegation is very marked and distinct, and the plant may be thoroughly relied upon. Gardeners who don't turn up their noses at the use of Beet for summer bedding, won't object to use this Cress for winter purposes. *A. D.*

Variegation, Transitory and Habitual.—Permit me to add two examples which I have met with. Just below the kitchen-garden at Digswell grows a robust young Horse Chestnut tree, which, though greatly shaded, assumes on many parts a slight variegation about midsummer, which it loses before the leaves change to a ripened hue. Not 20 yards from the above grows a large Spanish Chestnut tree, one of two twin branches of which has been broken off by the wind some 40 feet above the ground. From near this wound about a dozen branchlets have grown, which form a somewhat thick mass when in leaf, the leaves being of usual size, with the peculiarity that every one has, for the last 12 years, been of a pure and beautiful white, with no solitary exception; yet no sign of variegation exists on any other part of the tree. *William Earley.*

Foreign Correspondence.

To the Aspinwallians the BANANA TRADE is their all. The Banana is their only export; and the arrival of the American steamer is an event of great importance. Not a steamer leaves without taking from 5000 to 8000 bunches, and during the year something like 150,000 bunches of Bananas are exported to New York. It gives the name to the steamer; for to more than half the people it is only known by the name of "Banana boat," and the day of its arrival is called "Banana day." And when it does come it is a day of rejoicing; for the carrying of the Bananas gives employment to more than half the *poco tempo* people. The Bananas are grown on the "farms" some seven or eight miles from the town. These farms are merely bush lands, partially cleared. The word "farm" to an English ear would give no idea of what an Aspinwallian means by it: there is no order—no fences or subdivisions—all is rude and rough.

On these farms many of the large trees remain standing. After the small bush is cut down, fire is run over the land, and the suckers are planted irregularly all through 6 feet or 7 feet apart. The Plantain is not exported, but is only used for home consumption. The Indians manufacture a kind of spirit from the Plantain. When the Plantain is fully ripe, the Indian gathers it, peels off the skin, and throws the fruit into a dish, where it remains for some days. After fermenting, he draws off the liquor and puts it in his horn-made bottles for future use. The liquor (or, as the Indian terms it, rum) is said to be very strong, and very intoxicating. When drunk to excess the effects remain for two or three days. In Jamaica the Banana seldom comes to maturity in less than twelve or fourteen months; but in Aspinwall six or eight months are sufficient. In Jamaica, when a sucker is planted, it only comes up single, and bears but one bunch of fruit; but in Aspinwall a sucker comes up with several shoots, and these bear in succession one after another. As a general rule, the Banana plantations are kept in good order—persons constantly going through them and carefully clearing away all dead leaves, &c.

In Aspinwall the Banana trade is principally confined to four merchants, and these export almost all the fruit sent to New York. These merchants contract with the growers to take their whole crop, at so much per bunch, large or small, deliverable at the side of the railroad. About a year since the contract price was 3*s.* per bunch. In the contract the merchant agrees to take all, and the grower agrees to sell to him, alone, all his crop. As soon as the Banana boat comes in sight, notice is sent to the farm to prepare. Then all is bustle, diligence, and activity. The merchant goes to the steamer, and ascertains how much room he can obtain, for it is very seldom the steamer has sufficient space to meet all the wants of the Banana exporter.

As soon as this is ascertained, he sends his agents to the farms, informing those with whom he has contracts that he requires one, two, or three thousand bunches.

It is of great importance that the Bananas should come to the steamer uninjured, and to insure this, great care is taken in cutting and handling the bunches. It is of equal, if not greater importance, that the fruit should be quite fresh when shipped. Consequently the gathering, carrying, and shipping the bunches is crowded into as small a space of time as possible. When cut the fruit is carefully caught in the hands, and at once carried to the place where the horses can take it. There it is gently laid down, so as neither to bruise nor break the fruit. For much of the value of the bunch depends on its presenting a handsome appearance, without any of the "hands or fingers" being broken off. If a bunch has one or two of its "hands" broken off, it is at once rejected by the shippers.

The fruit is cut with as long a stalk as possible for the convenience of carrying, and it is always cut green, before it ever begins to turn ripe, or even half ripe; the Bananas would be of no good otherwise; they would rot long before New York was reached.

Having gathered all the bunches which are fit, and brought them to one spot, the grower brings up his horse to load. Two men stand, one on each side of the horse (on which is fastened a large piece of canvas), and the bunches of Bananas are handed to them, and held by them on each side of the animal. Five, seven, or nine bunches—always an uneven number, the odd bunch going on the back of the horse, according to size, compose the load. The ends of the canvas are then brought up and the bunches carefully collected to keep them from being bruised. The bight of a rope (which rope is so arranged as, when taut, to firmly hold the load) is next brought over the canvas, and one end of it passed through and carried back under the horse's belly over the side and tied to the remaining end. A "screw stick" is passed through the end, and the whole screwed up as tight as the horse will bear. Experience seems to have proved this mode of fastening the Bananas to be more secure than any other way; for the loads thus fixed are carried over and through tracts which seem scarcely possible for foot passengers—and scarcely does a line so fastened break loose. One man then takes charge of the beast, and leads him out to the railway track, when the line is very carefully untied and the Bananas gently laid on the ground. For the purpose of readily counting, each contractor places his Bananas in long rows of three tiers. A watchman is left in charge, and the man and horse go back for another load. If the "farm" is near, two or three trips may be made for each steamer. Early in the day, the merchant or his agent comes to the spot, and as soon as the last load from the contractor is put down, proceeds to count the whole number, which from the Bananas being arranged in a mass of three tiers is easily accomplished, and either pays for them at once or gives an order on his store. The Bananas being contracted for are taken as they come, large or small, as long as they are not bruised or broken, at one fixed price, somewhere about 3*s.* or 4*s.* per bunch. Meanwhile, a number of independent growers have also been sending their Bananas to the railway company's track, which for a few hours resembles a bustling market. These bunches are sold according to size and value — a large bunch bringing 8*s.* to 9*s.*, while the small ones are not worth more than 1*s.* 6*d.* to 2*s.* As each bunch is purchased, it is laid in the rows, of three tiers deep. As soon as all his purchases are made, the merchant, leaving a faithful watchman, gets into his "hand car" (a small railway carriage, propelled by two men by means of a crank), and proceeds to the depot, where he engages as many trucks as he has occasion for, which are instantly sent off to the Banana market. Everything is carried on with the utmost despatch, and as soon as the trucks arrive on the spot an animated scene commences. The long stem and end of the fruit which had been left on are now cut off, and the bunch is carried carefully and arranged in the truck. As soon as the loading is completed, the locomotive takes the cars to the dock, when, if the steamer is ready, the work of loading at once commences. Should the steamer not be ready, the doors of the truck are opened for the sake of admitting air, and a watchman placed at each end to prevent plunder; for the theft of the Bananas at the dock is something fearful, the petty officers and seamen of the steamer being at all times ready to purchase, and giving high prices, 3 dols. to 4 dols., for a bunch or so, to take to New York with them.

On board the steamer, large bins or bunks are constructed, into which the Bananas are carefully packed, being placed upright with their stems down. As far as possible, while being loaded, the Bananas are separated into two sorts, the choice and the common, and placed into separate bins. The choice kinds are not any distinctive fruit, but merely large ones—those having from 10 to 12 hands; but care is taken not to ship any fruit which is not green, or unripe. If a bunch seems turned (beginning to ripen), it is thrown away as useless. Even with all the care that is taken in handling the fruit, or rejecting all that are bruised, or that begin to turn yellow, a large proportion of the fruit is spoilt before it reaches New York. Yet the profits on this branch of commerce are so great that if only half of the whole quantity shipped reach New York in good condition, a large profit is made.

The retail prices of a single Banana in New York is 1*s.*, and £5 to £6 is known to have been paid for a single bunch. *Trinidad Correspondent.*

Societies.

EDINBURGH BOTANICAL: *November* 9.—The first meeting of the 36th session of this Society was held at 5, St. Andrew Square, Edinburgh, on the above date. Alexander Buchan, M.A., President, occupied the chair, and delivered an inaugural address, of which the following is an abstract:—

I purpose in this address to make some remarks on climate and weather relative to the geographical distribution of plants, having recently completed certain inquiries regarding prevailing winds and rainfall which are so intimately connected with the subject. In 1847, De Candolle made some researches into the causes which limit vegetative species towards the North in Europe and similar regions, and arrived at the conclusion that every species having its limit in Central or Northern Europe advances as far as it finds a certain fixed amount of heat, calculated from that day of the year when a certain mean temperature commences, to the day when that mean terminates. This law he applied with great ingenuity in explanation of the northern limit of Alyssum calycinum, Euonymus europæus and Dianthus carthusianorum.

It is evident that this law can be best tested by applying it to the limits of Wheat, Barley, the Vine, and other cultivated species, since, owing to the care taken of them by man in their cultivation, it may be considered that it is climatic conditions alone which set the limits to their destination. According to Boussingault, Wheat requires 8248° Fah., from the time it begins to grow in spring for the proper ripening of the crop; and, moreover, this heat must be so distributed as to secure a mean temperature of 58° during the period when the seed is ripening. This statement referred to the continent of Europe, to which his researches were confined. But we have found in Scotland that a mean temperature of 56° with the average amount of rain and sunshine is sufficient to ripen Wheat properly. Not only so, but the crops of 1864 ripened well with a temperature as low as 54°.4. In this year, however, the sunshine was much above the average, and the mean temperature of the day was high. Now, whatever be the cause, whether the longer day in Scotland, or the clear sky, or both combined, which brings about the above results, it is clear that in considering the influence of temperature on the ripening of plants, it is not merely mean temperature, but the manner in which this vital element is partitioned during the 24 hours, which must be taken into account.

Now, what most influences the mode in which temperature is distributed during the day is the amount of cloud and moisture in the atmosphere, to a knowledge of which the rainfall through the months of the year may be regarded as furnishing the best available key. Indeed, so great is the direct and indirect influence of moisture on plants, that we shall not be far wrong in supposing it to be co-ordinate with that of temperature.

De Candolle's researches applied to a region where the climates are determined rather by variations of temperature than of moisture. Not the least valuable of the results he arrived at in applying the law to other regions is this, viz.:—"On the borders of the Mediterranean Sea, the limits appear to be so often determined by the humidity, or by causes still unknown, that the operations of temperature always eluded my calculation." In the climates of this region the rainfall plays a conspicuous part, and hence, as was to have been expected, assumed a climatic limit to species, which did not include the rainfall, and turned out to be inapplicable to the facts of distribution.

Again, perennial species, especially trees and shrubs, are in many cases arrested, or limited, by the absolutely lowest temperature that occurs. The great frost of Christmas, 1860, brought us very valuable information bearing on that point. Those low temperatures depend to a great extent, no doubt, on the latitude, but they more particularly are determined by the state of the sky, and by local situation.

If the climate is characterised by a dry calm atmosphere, the loss of heat by radiation during the nights of winter is great, and the temperature falls correspondingly low, and owing to the greater density, and consequently weight of cold air, it flows down the slopes of a country which is being cooled down, much in the same way as water, and settles in the low-lying situations. It is well known that it is in such situations where the destructive effects of frosts are the greatest on vegetative forms.

Now, what we wish to draw forcible attention to, is this:—Of the two conditions, heat and moisture, we have in the distribution of rain a body of facts which will lead to a knowledge of the laws which regulate the distribution of temperature. It is not merely the daily and annual fluctuations of the temperature of a climate which may be inferred from a knowledge of its humidity; it is not merely the greater immediate results which accrue to plants, arising from a change in the humidity than rises from a change of temperature; but what especially concerns the question is this vital distinction between the two, viz., as regards temperature, climates merge into each other by comparatively nice gradations, whereas, on the contrary, the most diverse climates as respects moisture or dryness are frequently placed sharply side by side.

I have been long impressed with the importance of a knowledge of the rainfall viewed in these aspects; and have recently constructed 13 maps, showing for each of the months, and for the year, the rainfall over the greater part of the land of the northern hemisphere. The result of the whole discussion, in its relation to climate, is very striking. Everywhere the rainfall is dependent on the prevailing winds, and on the configuration of the earth's surface; and since the prevailing winds depend on the distribution of land and water over the globe with respect to the heat of the sun, it follows that the present climates of the earth are determined by the relative distribution of land and water, and that with different distribution we should have different climates.

Perhaps nowhere on the globe does there exist such diversity of climate as in America, west of the Rocky Mountains; and there is also very great diversity in India, the region of the Caucasus, and Spain and Portugal. The United States of America, both the prairie and Alleghany regions, British America, the Mediterranean regions, Sweden and Norway, and the south and east of Asia, have peculiar and well-marked climates. Not only so, but even in Russia there are great differences arising from the different way in which the rainfall is partitioned through the month, especially from May to August.

Now, it is in those regions which present climates the most diverse from each other, and many of them sharply defined, that the geographical distribution of plants may be best studied, because those climates afford the conditions best suited for tracing the influence of climate in this distribution, and in the changes it effects or does not effect, on the habits and different organs of the plants themselves. But to develope this part of the subject so as to arrive at some really scientific knowledge of the laws regulating the distribution of plants, it is absolutely necessary that the confusion in our present catalogue of plants be rectified, and that the areas of the distribution of species be stated with a precision much greater than hitherto has been thought necessary. To effect those salutary changes, we must invite the aid of local natural history societies, and botanists will require to give their assistance in supplying us with exhaustive monographs of separate genera, or other naturally allied forms.

On the motion of Professor Balfour, a cordial vote of thanks was given to Mr. Buchan for his address.

The following communications were read:—

I. *On the Zones of Coniferæ, from the Mediterranean to the crest of the Maritime Alps.*—By M. Moggridge, Esq. The following Table shows the lowest and highest elevations in feet at which the different species are found:—

	Lowest.	Highest.
Pinus Pinea	0	1046
P. maritima	0	4143
P. halepensis	0	2760
Cupressus sempervirens	0	2300
Juniperus phœnicea	0	4000
Pinus sylvestris	1977	5100
Abies excelsa	1800	3100
A. pectinata	1900	3600
Taxus baccata	2650	2650
Larix europæa	3500	5500
Pinus Cembra	4500	5150
Juniperus communis	0	6300

The starting points from the coast embraced the line from Monaco to Ventimiglia.

II. *Note on the Therapeutics of Physalis Alkekengi.*—By E. Drummond, Esq.

III. *Notes on the York and Lancaster Rose* (Rosa versicolor).—By Mr. William Gorrie. Parkinson, in his "Garden of Pleasant Flowers" (1656), thus describes Rosa versicolor:—This Rose, in the form and order of its growing, is nearest to the Damask Rose, both for stem, branche, leaf, and flower, the difference consisting in this, that the flower hath the one-half of it sometimes of a pale whitish colour, and the other half of a paler damaske colour than the ordinary; this happeneth so many times, and sometimes also the flower hath divers stripes and markes in it, as one leaf white or striped with white, and the other half blush or striped with blush; sometimes, also, all striped or spotted over, and other times little or no stripes or marks at all, as Nature listeth to play with varieties in this as in other flowers." The same author states that the Damask Rose "is of the most excellent, sweet, pleasant scent, far surpassing all other Roses or flowers, being neither heady nor too strong, nor stuffing or unpleasant sweet, as many other flowers." The specimen of shoot with leaves shows this to be a variety of the Rosa damascena of Miller, and as its flowers agree with the description, there can be no doubt but that it is the true York and Lancaster Rose, which name is now generally applied to the Gloria Mundi Rose of the florists, which is of comparatively recent introduction, and a variety of the Rosa gallica, or French Rose.

IV. *Note on the Growth of Wellingtonia gigantea.*—By Mr. M'Nab. Mr. M'Nab exhibited a section of Wellingtonia gigantea, 4 feet 7 inches in circumference, grown at Linton Park, Maidstone, and presented to the Museum at the Botanic Garden by Mr. Robson. The tree was planted in January, 1868, when 38 inches high. The site was a sheltered one, where most other Conifers grew remarkably well. The tree was all right till the hot summer of 1868, when it showed symptoms of decline, caused by the excessive drought at the time. A good watering was given to it, but it never recovered. The tree died and was taken down the following year. It was then 26 feet high, and 5 feet 9 inches in circumference at the base. Its leader was twice cut off by squirrels, some 8 or 10 inches each time, it quickly formed a new leader, and soon became as uniform as before. It scarcely made any growth during 1868. The section shows ten distinct growing seasons, that is, between planting and cutting down, the annual growths averaging 1 to 1½ inch each. Mr. Robson states that there are many other trees of Wellingtonia at Linton Park, but none of them are yet showing symptoms of premature decay. He would not, however, recommend the Wellingtonia to be planted as a memorial tree, as he is far from satisfied of its constitutional vigour, unless the tree alters very much when older; the timber, in the meantime, does not seem to be of much value. He has quite as much hope of Thuja Lobbii (T. gigantea), which grows even faster than the Wellingtonia, the only fault or hindrance to its becoming a handsome tree is the tendency it has to load itself with seed, whether abortive or otherwise, which ultimately must check its growth.

Mr. Robson also sent a section of the stem of Cryptomeria japonica. The tree was broken down with the wind in 1867, when 40 feet high. The section is 2 feet 4 inches in circumference.

Notices of Books.

Manuel de l'Amateur des Jardins. Par MM. Decaisne et Naudin. Vol. iv., 8vo, pp. 657, with 225 woodcuts. (Williams & Norgate.)

The concluding volume of this important work hardly equals our expectations; in fact, we were disappointed, in glancing through it, to find that it would compare unfavourably with more than one English work of the same description. The woodcuts, it is true, as in the former volumes, are faultless, and far superior to those ordinarily met with in our works of the same class; but the selection of the subjects for illustration is certainly open to criticism, the utility of elegant representations of such familiar vegetables as the Carrot, Parsnip, Turnip, Radish, Cabbage, &c., is, to say the least, extremely limited, even to the merest tyro. If, on the contrary, these almost superfluous figures had been devoted to some of the less-known herbs, such as are employed in salads, soups, &c., the book would undoubtedly have gained in interest and value. Curiously enough not one of these is figured, and, what is still more remarkable, especially in a French work, some of those considered indispensable by the cook are not mentioned. The most important of those omitted are the Mints, Lemon Thyme, Coriander, Dill, Anise, and Caraway. The medicinal herbs, Chamomile, Rue, Tansy, Liquorice, &c., are wholly ignored. Another feature of this work which strikes us as being rather out of date, is the chapter on garden implements. As a rule, the tools figured in horticultural works are of the most impracticable form, but the operation of digging with an implement resembling a baker's peel must be a painful task, and one requiring considerable dexterity: and no other description of spade or fork is alluded to. Amongst vegetables there is no novelty, but there is brevity, which is of more importance. No reference is made to the Cherry and Currant varieties of the Tomato. In recompense for some of these shortcomings, the scientific matter is usually of the most complete description, and the cultural directions ample; while the selections, with descriptions and figures, of some of the more desirable sorts of Apples and Pears grown in France may be consulted with confidence, coming as they do from the pen of an accomplished pomologist. Taken as a whole, it forms a handy and reliable little volume, and its extraordinary low price places it within the reach of every young gardener who may be desirous of improvement in his profession and in the French language.

—— We learn that, with the number for January next, the FLORAL MAGAZINE will commence a new series, enlarged to quarto size, and affording a limited space for select articles, reviews, and correspondence on subjects connected with floriculture.

—— Amongst NEW PUBLICATIONS, we have before us the first number of Mr. Robinson's new venture, *The Garden*, an illustrated weekly journal, devoted to Horticulture. It is well got up, both as to matter and manner, and is a pleasant evidence of the increasing taste for horticultural pursuits.—Of others, to which we may again refer at greater length, we have a *Catalogue of the Plants under Cultivation in the Government Botanic Gardens, Adelaide, South Australia*, by Dr. Schomburgk, Director. — *The Royal Institution*, its Founder, and first Professors, by Dr. Bence Jones (Longmans).—*Ganot's Elementary Treatise on Physics*, translated by Dr. Atkinson; fifth edition (Longmans). —*Poems and Songs*, by the late John Palmer, nurseryman, Anan (printed for private circulation).—*The Farm, Garden, &c.* (Horace Cox).—*The Belgravia Annual*, by Miss Braddon.—*Cassell's Illustrated Almanac for* 1872. —*The Field Quarterly Magazine and Review* (Horace Cox).—*Genesis and Geology*: A Plea for the Doctrine of Evolution; being a Sermon preached by the Rev. George Henslow, M.A., F.L.S., F.G.S. (Hardwicke).—*Australian Cooked Meats*: Economic, Nutritious, Wholesome, and Palatable; with Practical Recipes for use in the Mansion, the Cottage, or Public Institution. By An Old Militia Surgeon. (Hardwicke.) —*Slaves of the Lamp*; being the extra Christmas Number of "All the Year Round."

Florists' Flowers.

PERHAPS none of our Florists' Flowers are so much damaged by being moved from place to place as the FUCHSIA. This fact is sufficient to account for their so seldom making their appearance at the meetings of the Floral Committee and other shows, in consequence of which some persons may be apt to think that none of the new varieties are of any importance. I am, however, glad to say that such is not the case, for in almost every class there are some fine additions; and it is only by having them in one's possession, and continually having an eye upon them, and upon the best older varieties, that their true merits can be determined on. As the season of 1870 was so excessively hot and dry, I was not able last year to make any correct report, so that I have now the productions of two years to write upon. As usual, Mr. Banks' productions carry off the palm. His dark single kinds, which are unapproached for their glossy colours, large size, and perfect shape, include several of unusual merit:—

FUCHSIAS WITH SCARLET TUBE AND SEPALS, AND DARK COROLLA.

Pride of Woolwich (Banks).—A very beautiful bright dark blue corolla, of the most perfect shape; tube and sepals bright glossy coral-red, the latter well reflexed; stamens long and elegant. A nice bushy vigorous-growing Fuchsia, very free blooming, and considered by all admirers of this family to be one of the choicest.

Beauty of Kent (Banks).—This is also one of the prettiest imaginable flowers, and very similar to the above, but the sepals reflex quite round, forming four perfect rings. It is a very free bloomer, of nice pyramidal habit, with good foliage.

Splendour (Banks).—The corolla of this variety is of an intensely dark purple, nearly a black, and very long and spreading; tube and sepals dark scarlet, the latter well reflexed. A strong grower, and a very noble kind.

J. F. M'Elroy (Banks).—This is a most beautiful variety, possessing the longest blue corolla (occasionally striped with red) of any Fuchsia yet sent out; finely reflexed tube and sepals of a bright carmine-red. Very free, a good grower, and branching in habit.

The Right Hon. J. Bright (Banks).—This is a splendid Fuchsia, of the light lavender or bright mauve-coloured class, of fine strong bushy habit; tube and sepals very stout in substance, bright coral-scarlet, the latter completely reflexed, and the corolla of the most perfect cup form. The best in this class for exhibition purposes.

Crown Prince of Prussia (E. G. Henderson).—This is certainly a most beautiful Fuchsia, with dark tube and sepals, the latter very broad and thick, of an intense scarlet, and finely reflexed, and the corolla violet-blue; of a fine bushy pyramidal habit.

Will Sell (Banks).—Unquestionably one of the prettiest Fuchsias ever sent out; it is in the style of Killiecrankie and Glow-worm, both of which are well known to every admirer of the Fuchsia, on account of their peculiarly attractive satiny magenta-coloured corolla; tube and sepals coral-scarlet, the latter most beautifully reflexed, quite round, forming four perfect circles. A very free bloomer, and of a good free pyramidal habit, with small neat foliage.

Perfection (Banks).—The flowers of this variety are rather small, somewhat resembling the hardy varieties, but larger; the colour of the tube and sepals and their perfect shape render this perhaps the nearest approach to perfection of any Fuchsia we possess; unfortunately it is but a moderate grower, and so very free-blooming that it becomes rather difficult to grow.

Gazelle (E. G. Henderson).—This is one of the best habited of the dark Fuchsias for exhibition; scarlet tube and sepals, the latter immensely large, and boldly reflexed, while the blue corolla is exceedingly fine and graceful.

King of the Stripes (Banks).—This is a very distinct Fuchsia, producing fine bold flowers, having each petal distinctly striped with red on a violet-blue ground. It is very free blooming, and possesses a fine vigorous pyramidal habit.

Nabob (E. G. Henderson), *and Vesta* (Banks).—Both good new Fuchsias, and an advance on older kinds, but scarcely wanted, as they so nearly approach some of those already described.

Sedan (Hock & Co.).—Strange to say, since obtaining that beautiful Fuchsia, Madame Cornelissen, we have had nothing from the Continent to approach it in excellence, but out of a quantity of new kinds imported this season the above promises to be a very attractive and distinct variety, although it is nearly a self-coloured flower, and is very similar to a good old kind called the Duke of Wellington, which used to be extensively grown about 20 years ago. The colour of this variety is very bright, and the corolla is remarkably attractive. It has short, thick-set, finely reflexed flowers, blooms very freely, and possesses a beautiful habit, so that it will undoubtedly become a favourite, especially for market and pot work.

Fuchsias with White Tube and Sepals, and Red Corollas.

Arabella Improved (Lye).—Good varieties with light sepals and tube are always scarcer than the dark kinds. This, however, is really first-class, although perhaps rather coarse. It very much resembles Arabella, from which it is a seedling, in conjunction with Annie. Tube very large; sepals broad, of thick leathery substance, and well recurved. It is a quick grower, with a vigorous and graceful habit, and very free, and is certainly one of the best light Fuchsias ever sent out for exhibition purposes.

Leah (Weston).—This very much resembles a good old variety called Annie, but has more purple in the corolla; tube and sepals pure white, the latter well reflexed, very free blooming, with large flowers. It is a strong upright grower, and a good decorative Fuchsia.

Striata perfecta (B. S. Williams).—This is a Continental variety; its corolla is perfectly distinct; in fact, we have never had any of the light tube varieties with a striped corolla before. It is a strong-growing kind, of weeping habit, a free bloomer. Tube and sepals waxy white, the latter broad and well recurved; corolla bright carmine-scarlet, each petal distinctly striped, particularly on the inside. I had this exceedingly handsome all through the autumn.

Fuchsia with White Corolla and Scarlet Tube and Sepals.

Mrs. Bland (Bland).—This class of Fuchsias have, from their very first introduction by Mr. Storey, about 19 years ago, generally assumed a long slender habit of growth, with foliage quite distinct from that of other classes, but this variety possesses a beautiful dwarf vigorous habit, and its foliage is broad and bold, and undistinguishable from that of the dark kinds. The corolla is very long and barrel-shaped, the sepals rather narrow but well reflexed. It is a very free bloomer, and the best in its class.

Double Fuchsias with White Corollas.

Avalanche (G. Smith).—This is the most noble Fuchsia in its class yet sent out. The tube and sepals are of a light carmine and pink, the latter short though of good substance and well recurved; the corolla is pure white, exceedingly large, and very closely set with petals. The plant is of free growth, although the wood is thin and wiry, and it is a most profuse bloomer for a double variety.

Princess of Wales (Bland).—Also a variety with double corolla, possessing splendid broad tube and sepals of a fine glossy coral-scarlet colour, the latter reflexed in the boldest form, almost equal to any of the dark varieties. It is of good free bushy growth, blooming most profusely.

Little Alice.—This is another of the same class, and of neat miniature growth, and a very valuable kind for small pots. It is of exceedingly dwarf growth, very free, with small foliage, and producing an abundance of pretty little perfect blooms, for which reason it is well adapted for market purposes.

Double Fuchsias with Dark Corollas.

Champion of the World (Bland).—This is by far the largest Fuchsia that we yet possess. The foot-stalk is of unusual length and strength, so that the flowers stand out boldly. The tube is short; the sepals are very broad and of great substance, well reflexed, and of a most beautiful coral-red. The corolla is of immense size, and as it expands forms two-thirds of a perfect ball, its colour being of the most intense bright dark purple. The plant is of free growth, tall, and blooming abundantly, so that for conservatory decoration it is one of the most valuable Fuchsias yet sent out.

Harvest Home (E. G. Henderson).—This is a very distinct double, on account of its peculiar and intensely dark corolla, beautifully flaked with red rose. The tube and sepals are dark red, the latter finely reflexed, the stamens long and showy. It is free blooming, and of fine graceful habit.

Albert Memorial (Bland).—A double dark Fuchsia, very attractive on account of its general free growth and free blooming qualities. It has a scarlet tube and sepals, the latter well reflexed, and a very broad large leathery corolla. One of the finest double Fuchsias for exhibition.

Purple Prince (G. Smith).—This is also a very good Fuchsia, with large blooms. The tube and sepals are waxy carmine-scarlet, the latter well reflexed; the corolla is much spread out, the outer petals arranged similarly to those of the single dark varieties, the centre being filled up with smaller ones of a light bright violet. The habit is strong and the foliage large. It is a free bloomer, and a fine exhibition Fuchsia. *H. Cannell, F.R.H.S.*

Garden Memoranda.

Loxford Hall, Ilford, the Residence of Francis Whitbourne, Esq.—The editorial note at p. 1482, on the Chrysanthemums grown by Mr. Douglas, the gardener at this place, started me across country to see, and I must admit, to greatly admire, the very superior display which he has. The plants are tastefully arranged in a very commodious span-roofed orchard-house, which in itself is fully in keeping with the many glass structures around it, which Mr. Whitbourne, as a great lover and patron of gardening, has erected, and to which I hope to refer further on. Amongst the varieties grown for the size and beauty of their individual blooms I made a note of Princess of Teck, a beautifully incurved pure white flower; Her Majesty, a fine globular silvery bloom; and Mrs. Heale, a star amongst the pure whites, both in size and form, the shape of the flower being exquisite—indeed too much cannot be said in favour of this variety as brought out here. Empress of India is perhaps too well known to require any comment, but the blooms which I saw here exceeded in size anything that I had seen before. The finely incurved John Salter is a fitting representative of that worthy name, the orange shading upon its cinnamon-red broadly incurved florets being very striking. Faust, a variety of an intermediate habit, had very finely shaped flowers, in colour a dull bronze-purple, strikingly tinted with gold at the points of the slightly incurved florets. Mrs. Sharpe is another finely incurved bloom, deep rose in colour. Miss Hope, similar in build, is equally meritorious, but not of so dark a tint. Jardin des Plantes is a most lovely variety, of which blooms of cricket-ball size and build were prominent. Yellow Perfection comes second to it, and is superior to Plutus when both are seen at their best, as they are here. Nor should Golden Queen of England be forgotten, for when I say that some of its flowers measured 7 inches, by rule, enough will have been said to show the very superior manner in which these blooms are brought up. Venus is a finely incurved flower of a peculiar tint of peach. Lady Hardinge, delicate rose, is well-known. Progne, with its amaranth colour and violet-like scent—even if somewhat straggling in habit—is worthy of cultivation. Prince of Wales is a dark violet and beautifully incurved variety, the blooms here being very large. Duchess of Wellington is a very chaste rosy flower; and Lord Stanley is a large, finely incurved flower, of an amber-orange tint.

Turning to specimen plants suitable for exhibition—of which there were some very meritorious specimens of standards and dwarfs, averaging about 3 feet in diameter, more and less—I noticed that Bob possessed a remarkably bright colour, quite a shining scarlet in fact, similar to Julie Lagravière. Aurea multiflora is good of its colour for this work. Dr. Sharp is a decided acquisition to specimen growers on account of its good habit and darkish crimson, or red and crimson-coloured flowers. Amongst the Pompon section staged in another house I noticed Golden Aurore, the best white; Mdlle. Marthe, dwarf and free; the varieties of Cedo Nulli, four in number; and, what is grown very successfully here, the dark rosy violet Hélène. Of large-flowered Anemones, were Miss Margaret, white centre, which should not be confounded with Fair Margaret (rose-coloured peach); King of Anemones, crimson-purple; and Empress, lilac, and a large bloom. Amongst Pompon Anemones, Madame Montels, Miss Nightingale, Madame Chalonge, Sidonie, Perle, Marie Stuart, and Mr. Wyness, were conspicuous; whilst Queen of Anemones and Jean Hachette, respectively crimson and white, deserve a place in every collection.

Turning now to the quaint Japanese forms, we possess in Red Dragon an indispensable variety, the petals being sufficiently numerous to compensate for their narrowness and length to form a very pleasing bloom, whilst the spots, or mottlings of golden tint, give it a most novel and pleasing character. Other conspicuous kinds are—Meteor, with its yellow and orange twisted florets; Grandiflora, another yellow, and very properly named; Jane Salter, broad florets, possessing a white ground, striped with light lilac; Prince Satsuma, another telling yellow; Bronze Dragon, &c. James Salter is a fine large mauve, or lilac, and is perhaps the earliest bloomer in this section, whilst Dr. Masters is a most useful late variety, of a reddish tint tipped with gold. Yet one other form amongst the many—the best Chrysanthemum of all as a free grower and free bloomer combined, with purity of colour and form—I refer to Mrs. G. Rundle, of which the largest specimen I ever saw was at Loxford Hall. It measures, upon a 4-inch single stem be it understood, 6 feet across the head, or 18 feet in circumference. We have all heard of the man who built an article within his workshop which he was unable to get out at the door. This has absolutely occurred in this instance, for this single specimen has to remain in solitude within the structure wherein it was trained, because it could not be got out at the door.

As November days are but short we hurried through the other houses. In two Cucumber-houses Mr. Douglas' new seedling, "Tender and True," flourished, with good examples of its long, neatly-shaped fruits. Seed it will not, however, hence it will not be propagated so freely as could be desired. In three neat and useful Pine-houses are a remarkably robust stock of Pines, in the various successional stages—the Queens, Charlotte Rothschilds, Cayennes, &c., which will doubtless tell their own tale anon. Very fine examples of Lapageria rosea exist in the greenhouse, whilst fortunately for the owner, considering the mistake that has been made, the true white variety is in bloom, and growing strongly, in another house. Among perpetual and other Carnations, &c., Ascot Yellow is a strong grower and free; Madame Adèle Calmito and Mons. Jacotot are two good Italian varieties. A good flower, too, is Prince of Orange. Turner's Bride has a fine bloom, and Queen of Whites is a true perpetual. Le Grenadier is a very useful scarlet, and one extensively grown for market under a variety of synonymes. There is also the old Bride, which has fringed petals by way of contrast to Turner's Bride, possessing smooth petals. In this house I noticed a new variety of Thrift, with wider leaves than ordinary garden varieties, and the flowers are of a rosy pink colour.

In the late vineries were some excellent examples of late kinds of Grapes: Mrs. Pince, for instance, with bunches from 3 to 4 lb. in weight; Lady Downe's the same; whilst the red-foliaged Barbarossa had a heavy crop—some of the bunches, I estimate, would weigh 6 lb.; and of Black Hamburghs there was a bunch amongst many that I think will likewise bring the scales down to the same weight, or more. Here were also examples of the Golden Champion grown along with Hamburghs, still firm, fresh, and of most delicious flavour. The bunches never had been large, but the berries were both large and good as I have described, whilst their hanging capacity, in contrast with the Hamburghs, was all that could be desired. As I must now consider myself encroaching upon your space, I will briefly add that collections of Masdevallias, Odontoglots, and of miscellaneous Orchids are grown here, amongst which I noticed a remarkably healthy specimen of Phalænopsis grandiflora, a nice plant of Cattleya Warneri, various Vandas, &c. These were associated, more or less, with a valuable collection of stove plants, including Palms, conspicuous amongst which were Chamædorea graminifolia, and C. elegans, each fine table plants; Areca lutescens, A. aurea, &c. Two species of Nepenthes, viz., N. Rafflesiana, and N. phyllamphora, served to show how infinitely superior is Sir Stamford Raffles' variety to the Chinese one which took possession of the technical specific name. The lesser Pitcher-plant has, however, one great merit, it will exist where the Singapore plant would not live at all, *i.e.*, in a temperature of about 55°. Amongst the stove plants Ixora coccinea bore fine heads of bloom, suggesting that the ancient Eastern heathens, who offered them annually to their deities, must have possessed a very refined taste. There were good examples of Anthurium Lindeni and A. Scherzerianum, illustrative of a genus possessing very distinct and divergent characteristics; also of golden Ferns, and the new variety of Blechnum or Lomaria, which Mr. Douglas has marked out as distinct. It is a quaint Fern certainly, for whilst the fronds and the characteristic broad pinnæ of B. corcovadense are mainly conspicuous, narrow fertile fronds occasionally push, precisely like those upon Lomaria gibba. Nor should I pass by without notice a nice specimen of Lomaria gibba var. Bellii. One other incident which proved of interest to myself, and might perhaps to some readers, I may record. There is amongst the Coniferæ upon the lawn here an exceedingly beautiful specimen of Cupressus Lawsoniana of moderate size. I have generally planted this variety in conspicuous places in shrubberies only, it is, however, worthy of a position, as a single specimen, in even the most prominent situations. These hurried remarks prove how thoroughly I appreciated your hint regarding the merit of the Chrysanthemum display at Loxford Hall, nor can I close without expressing my hearty thanks to Mr. and Mrs. Whitbourne, who considerately and unrestrainedly permit those who are interested in gardening to inspect the meritorious productions of their able gardener, Mr. Douglas. *Opus.*

Obituary.

We have to record with regret the death of Mr. Robert James, of the "Rochester Castle," Stoke Newington. Mr. James may be said to have been the founder of the Stoke Newington Chrysanthemum shows, which really gave the first impulse to the cultivation of that useful autumn flower. He was an enthusiastic florist, and an ardent supporter of horticulture, to which he devoted a large portion of his time. In private life his moral character was exemplified by the strictest integrity, kindness, and benevolence; his left hand, it may truly be said, never knew what his right hand did. He died rather suddenly, after three days' illness, on Tuesday, the 28th ult., universally respected and regretted.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, Nov. 25, 1871.

Names of Stations.	Temperature of the Air. Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	Fall of Rain.
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	46.6	25 4	21.2	44.1	30.5	13.6	37.0	0.72
Blackheath ..	44.2	20.3	23 9	39.6	29.0	10.6	34.3	0 10
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	45 4	21 8	23.6	41.3	28.2	13 1	34 4	0 27
Wolverhampton	43.2	24.6	18.6	40.1	30.3	9.8	34 9	0.25
Leicester ..	42 2	19 0	23.2	39 2	28.5	10.7	33.5	0.14
Norwich ..	42 2	26 5	15 7	39.1	28.3	10 8	33.4	0.02
Nottingham ..	42.2	20.5	21.7	38 4	28.2	10.2	33.0	0.06
Sheffield ..	43 0	22 7	20.3	40.0	30.2	9.8	34 8	0.10
Liverpool ..	46.1	31.3	14.8	41.6	32.7	8.9	36.8	0.38
Manchester ..	43.2	24 0	19.2	40.9	30.7	10 2	35.5	0.13
Salford	44 0	24 7	19 3	41.3	30.4	10.9	35.5	0 17
Bradford ..	..	..	..	..	..	..	..	..
Leeds	44.0	23.0	21.0	39.9	29.9	10.0	34.6	0.04
Hull	40.0	21.0	19.0	37 6	27.7	9 9	32.3	0.14
Newcastle ..	42.0	27.0	15.0	38.8	30.8	8.0	34.5	0.09
Edinburgh ..	49.0	25.0	24.0	..	..	..	36 2	1.90
Glasgow ..	50.0	27.6	22.4	..	..	..	38.5	1.91
Dundee.. ..	46.0	27.0	19.0	..	..	..	35 7	2.15
Aberdeen ..	46 2	30 4	15.8	..	..	..	37.7	0.26
Paisley	..	..	..	..	..	..	..	..
Greenock ..	51.0	34.5	16.5	..	..	..	41.2	2.30
Leith	50.0	28.2	21.8	..	..	..	38.4	1.38
Perth	49.0	27.0	22.0	..	..	..	36.8	1.90
Dublin	56.8	28.0	28.8	..	..	..	43.3	0.33

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, Nov. 29, 1871.

1871. Month and Day.	At 9 A.M. Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
November.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
23. Thurs. .	30.01	35.0	35 0	35 0	100	2.4
24. Friday .	29.84	37.4	37.3	37.2	99	2.6
25. Satur. .	29.78	34.9	34.3	33.3	94	2.2
26. Sunday.	29.79	38.9	38.4	37.7	96	2.7
27. Monday	29 86	36.4	35.7	34.6	94	2.4
28. Tues. .	29.80	36.1	35.0	33.3	90	2.2
29. Wednes	29.70	33.9	33.2	31.9	92	2.1

1871. Month and Day.	Temperature of the Air.					Wind.		Rain.
November.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
23. Thurs. .	38.7	31.8	6.9	34.2	—6 9	variable	35	0.00
24. Friday .	41 9	31.2	10.7	36.5	—4.5	S.E.	55	0.00
25. Satur. ..	36.9	33.0	3 9	35.1	—5.8	N.E.	55	0.06
26. Sunday.	42.9	36.2	6.7	39.3	—1.6	N.E. : E.N E.	125	0.01
27. Monday	41.7	35.0	6.7	38.1	—3.0	E.N.E.	180	0.01
28. Tues. ..	39 8	34.3	5.5	36 8	—4.5	ENE : N.E.	230	0.00
29. Wednes	40.0	30.0	10.0	34.8	—6.8	N. by E.	235	0.00

Nov. 23.—Generally overcast. Very foggy.
— 24.—Overcast till noon, and again at night. Variable in the after noon Generally fine.
— 25.—Overcast throughout. Frozen rain fell about 9 A.M., and thin misty rain till 3 P.M. Very dull and foggy.
— 26.—Overcast. A little misty rain fell occasionally.
— 27.—Generally cloudy. A little rain fell at intervals.
— 28.—Cloudy till night; then variable and very fine.
— 29.—Fine, with small amounts of cloud at mid-day; cloudy at other times. A little thin rain fell occasionally. Slight fog.

JAMES GLAISHER.

Garden Operations,

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

Every gardener who takes a pride in his place will now be doing his best to make the plant-houses under his charge as gay and cheerful-looking as possible, whether these be stoves, greenhouses, or conservatories proper, all of which may be made more or less pleasing and attractive, according to the tact displayed in the arrangement of the subjects at command. Much may be done in creating variety even with a slender stock of plants, if the style of grouping is occasionally altered; but, in any case, every plant now in flower should occupy a front position. The best of the available specimen foliaged plants should be used for intersecting the former, and for occupying the most prominent and telling positions in the rear or above as the case may be, and it is with these that agreeable changes may be made by occasionally and judiciously transposing them. Fire-heat must be applied occasionally to all plant structures, even during moderately temperate weather, to dispel damp, and so save not only the blooms but also the more tender foliage from injury. These moderate fires should always, however, be lighted at such times that, by creating a little extra dry heat, the air may be made more buoyant during the time that it can be given with moderate freedom. Give now as much room as possible to *Pelargoniums* intended for early flowering. Stop the young shoots, and by keeping the air around them free and dry assist them to break well. Particularly bear in mind that a more limited regimen will tend to aid them more during this process than would a more liberal one. Tie out such as require it, and make preparations for potting them as soon as they have formed a sufficiency of young shoots. Place as many *Dutch Bulbs* in the forcing-pit as are likely to be wanted for successional display, as well as any of the many other desirable plants to hand, such as *Azaleas*, both Ghent and Indian, *Roses*, *Heliotropes*, *Mignonette*, *Pinks*, *Lilies of the Valley*, *Solomon's Seal* (Polygonatum), &c. Persist in drying off *Fuchsias*, so that they may be denuded of their foliage as quickly as possible, when, as before intimated, they may be stored away in any dark corner where immunity from frost is assured. Persist, also, in ripening off and resting all hard-wooded and other stove plants which should enjoy a season of rest, by keeping them somewhat short of water, and by maintaining them at the cool end of the house. Make the necessary selection, and mark off such of the stock of *Chrysanthemums* as it is intended to grow next season. Those who wish to grow large specimens during the ensuing year should put in cuttings now.

FORCING HOUSES.

Attend well to such *Vines* as are now in the act of breaking into growth. Keep up the heat in any fermenting materials placed in the house to soften the buds, and so induce them to break more freely, by adding more material where necessary, and by occasionally turning the main body over, and damping it, if it becomes too dry. As the operation of forcing advances, the atmospheric moisture must be increased and the wood be damped over with the syringe. Care must also be taken to maintain a gentle warmth in all outside borders attached to such houses; proceed, however, with great moderation, as nothing is gained by excessive forcing in the early stages. The temperature should not be allowed to rise above 60° by day, even on the most favourable occasions, whilst for a time 55° will be a suitable mean; this by day, of course with a relative decrease of from 8° to 12° by night. Do not omit to keep a slight warmth in the heating medium attached to all *Vineries* containing crops of late Grapes, and more particularly if these consist of Hamburghs, or other thin-skinned varieties. Keep the temperature around such *Pines* as are pushing up their blooms, or are already swelling, moderately brisk, to aid them onwards. If any have at this date to resort to dung-linings to maintain sufficient heat around Pine-pits, great care must be taken to prevent steam from entering, and to have an uninterrupted supply of fresh fermenting materials in readiness to renovate the heat as soon as it is found to be on the wane. In *Mushroom-houses* an abundance of moisture must be afforded when the young "buttons" begin to form and subsequently, especially where arid flue-heat only is afforded. The necessary successional beds should also be made, and a further supply of *Asparagus* and *Seakale* should be put in for a like purpose.

HARDY FLOWER GARDEN.

Those who have delayed mulching such somewhat tender subjects as Pampas-grass (*Gynerium argenteum*), *Tritomas*, *Fuchsia* "stools" which stand out-of-doors during the winter, should do so no longer. In this department almost constant work will be found in sweeping, cleaning, rolling, &c., for the next week or two, as it is only by incessant application that the sward and gravel walks are brought through the ordeal with perfect order, neatness, and freedom from injury. This will be found a good time to re-label such outdoor plants as have their existing labels more or less injured, and the names more or less obliterated by the action of the weather. Be particular also at this season not to let fallen and decaying leaves collect and lie amongst beds, borders, or patches of tender annuals; for, even if they do not cause any to rot off, they do, to say the least, cause the plants to become drawn and unhealthy. Those who have not filled their flower-beds with annuals, bulbs, &c., should now have them manured with decayed leaves, and dug deeply, leaving the soil fully exposed to the action of the winter's air and frost. By thus manuring them at this season, the properties of the manure are absorbed by the soil, and so become divested of their original strength, which would only tend to grow leaves at the expense of a dwarf, freely-blooming habit.

KITCHEN GARDEN.

Cauliflowers, *Lettuces*, &c., grown under hand-lights or plant-protectors, should have as much air as possible at all times excepting during frosty weather, at which time, if the frost proves at all severe, a covering of some kind of waste litter would be beneficial. Watch the *Peas* and *Broad Beans* already sown, for doubtless the mice or birds will molest them greatly; where there are no Pea "rizzles" it will be well to soot and lime the surface of such Peas as are already through the ground, as a deterrent of both birds and mice. Have a few ordinary wooden hurdles neatly thatched with straw in readiness to place over beds of *Parsley*, *Endive*, &c., at the advent of snow, with its general accompaniment—frost. *Coleworts* and young *Cabbage plants* might, during a mild period, be earthed-up more permanently, in preparation for the severe frosts of winter. Take up and store away safely from frost a limited supply of *Jerusalem Artichokes*, *Horse-radish*, *Parsnips*, &c., to be in readiness, should a sharp period perchance visit us. Place also a good thickness of litter over the stools of *Seakale*, from which the supply of roots is got for forcing, and so prepare for all eventualities. *W. E.*

Notices to Correspondents.

Early Grapes and Peaches: *F.R.H.S.* Judging by the data which you furnish, and presuming that your Vines have already been pruned and prepared for forcing, our advice is, that you should start them early in the second week of December. Simply keep the house closed for the first week or ten days, and maintain only a temperature ranging from 42° at night to 46° by day, with occasional syringings. This will prepare the Vines for a gradual rise in the temperature, towards the end of the month, up to 50° by night and 55° by day. In this way they will be induced to break freely by the time the increased light of the lengthening days is felt, when forcing may be advanced rapidly. You do not say by what time you want your earlier Peaches ripe, but we would suggest that, as your earliest house is situated so unfavourably as regards the sun, you should start it about two months earlier, in the same manner as described for Vines.

Fungus on Grapes: *J. S.* Your Grapes are attacked by a mould or Penicillium, which lifts up the colourless cuticle, when the juice oozes out by capillary attraction, and causes the pretty dotted appearance. We have seen similar cases before. *M. J. B.*

Gardener's Luncheons. *Subscriber.* It would be better to have a definite understanding when the engagement is made. There is no established rule on the subject that we know of. If a proper sense of duty on the part of the employed, and a befitting confidence on the part of the employer exist, no harm to the master's interests, but often the reverse, may ensue from a good understanding between housekeeper, cook, and gardener. The harm is when such things are done "on the sly," or in contravention of direct orders. As a rule, we think it better that the gardener should keep out of the house.

Market Gardening: *J. M. & Sons, Aberdeen.* "Cuthill on Market Gardening" will perhaps meet your requirements.

Names of Plants: *J. M.* Polystichum aculeatum.

Orchid Leaves Spotted: *A. C.* It is the common case of Orchid spot, which so frequently attacks species of Phalænopsis. The cause is unknown, as is also the remedy. It is not the mere result of cultivation, as it occurs in specimens in their native country. It appears to be contagious. *M. J. B.*

Pear, Williams' Bon Chrétien d'Hiver: *W. D. F.* The merits of this Pear were stated by Mr. Scott at p. 203.

Primulas: *Fisher, Holmes & Co.* An excellent strain of crimson Chinese Primroses, the same as that grown in various quarters.

Sobralia Elizabethæ: *Orchidophilist, Dublin.* We have reason to believe that this Orchid, described by Schomburgk as having been found by him on the banks of the Orinoco, and as having flowers of "splendid configuration and exquisite scent," has not been introduced into our nurseries; at all events, we do not see it advertised in any of the trade catalogues before us.

Veitch Memorial Prizes: *G. L.* We are informed that the trust deed, which has been for some time past in the lawyer's hands, now only requires the signatures of the trustees and the other contracting parties. When this is completed, the trustees will, of course, meet, and decide on what shall be done.

Errata: At p. 1516, col. *c*, first line of third paragraph from bottom, for "1 and 2" read "2 and 3." At p. 1518, col. *b*, line 41 from bottom, read "Hymenopteron;" line 24 from bottom, read "Mayr" for "Mayer;" line 7 from bottom strike out "Cynips glandis."

Communications Received:—G. W.—J. T. B.—J. E.—G. P.—W. G. S.—R. C.—H. M.—J. M.—D. C.—J. M. H., Madras.—A. F.—G. B., Sydney.—D. H.—R. D.—J. Barnes.

Markets.

COVENT GARDEN.—Dec. 1.

A moderate rate of business prevails, and the markets generally have a tendency to quietness, the supply being about equal to the demand, and there being no novelties to induce inquiries amongst us. Portugal Grapes prove generally very inferior on breaking the bulk. Hothouse

Grapes are sufficient for the trade. Good samples of American Newtown Pippins have made 60*s.* per barrel. In the Potato market prices have a slightly downward tendency.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½ sieve	2 0 to 5 0	Melons, each ..	2 0 to 5 0
Cobs, per 100 lb. ..	60 0 — 65 0	Oranges, per 100 ..	6 0 — 10 0
Filberts, per lb. ..	0 8 — 10	Pears, per dozen ..	2 0 — 4 0
Grapes, per lb. ..	1 6 — 5 0	Pine-apples, per lb.	2 6 — 6 0
Lemons, per 100 ..	7 0 — 10 0	Pomegranates, each	0 4 — 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Asparagus, per 100	12 0 to 16 0	Horse Radish, per bundle	3 0 to 5 0
Beet, per doz. ..	1 0 — 2 0	Leeks, per bunch ..	0 2 — 0 4
Broccoli, purple, per bundle	10 — 1 3	Lettuces, per score ..	1 6 — 2 0
Brussels Sprouts, p. half sieve	1 6 — 2 6	Mushrooms, p. pott.	1 0 — 2 6
Cabbages, p. doz. ..	10 — 1 3	Onions, per bunch ..	0 4 — 0 9
Capsicums, p. 100 ..	1 6 — 2 0	Parsley, p. bunch ..	0 2 — 0 4
Carrots, p. bunch ..	0 5 — 0 7	Radishes, per bunch	0 2 — ..
Cauliflowers, p. doz.	2 0 — 6 0	Rhubarb, p. bund. .	2 0 — 2 6
Celery, per bundle .	1 0 — 2 0	Salsafy, p. bun. ..	0 9 — 1 3
Chilies, per 100 ..	1 6 — 2 0	Scorzonera, p. bun.	0 9 — 1 3
Cucumbers, each ..	0 6 — 1 0	Seakale, per punnet	2 6 — 3 6
French Beans, new, per 100	4 0 — 6 0	Shallots, per lb. ..	0 8 — ..
Herbs, per bunch ..	0 2 — 0 4	Spinach, per bushel	3 0 — 4 0
		Tomatos, p. sieve ..	4 0 — 6 0
		Turnips, p. bunch ..	0 2 — 0 4

Potatos, Regents, 100*s.* to 130*s.*; Flukes, 120*s.* to 140*s.*

BOROUGH MARKET.

WHOLESALE PRICES.

1871.	Savoys.	Greens.	Parsnips.	Red Beet.
	Per doz. s. d. s. d.	Per doz. bun. s. d. s. d.	Per score. s. d. s. d.	Per doz. s. d. s. d.
Nov. 25 ..	.. to 0 10	.. to 2 0	0 10 to 1 0	....
— 28 ..	0 4½ — 0 9	1 6 — 1 9	0 5 — 0 10	0 4 to 0 8
— 30 ..	0 9 — 0 10	.. — 1 6	0 6 — 1 0	.. — 0 6

POTATOS.—Southwark, Nov. 27.

During the past week the arrivals coastwise and by rail have been more than equal to the demand. Trade dull, quality very various, as well as prices. The following quotations have been barely maintained:—Yorkshire Flukes, per ton, 100*s.* to 138*s.*; Yorkshire Regents, 60*s.* to 110*s.*; Dunbar and East Lothian do., 110*s.* to 140*s.*; Perth, Forfar, and Fifeshire do., 90*s.* to 110*s.*; do. Rocks, 90*s.* to 95*s.*; Kent and Essex Regents, 50*s.* to 100*s.*; do. Rocks, 80*s.* to 90*s.*; French Whites, 75*s.* to 80*s.*

MR. JAMES FRASER, Horticultural and Agricultural Valuer and Auctioneer, Mayland's Farm, Romford, Essex; late of the firm of J. & J. Fraser, Lea Bridge Road.

SUTTONS'

CHOICE SEED POTATOS.

A Collection of 36 of the best kinds will be found on Messrs. SUTTONS' STAND, No. 70, at the SMITHFIELD CLUB CATTLE SHOW. Lowest prices, and Illustrated descriptive List, may be had on application.

Royal Berkshire Seed Establishment, Reading.

Smithfield Club Cattle Show,

DECEMBER 4, 5, 6, 7, and 8.

STAND No. 44.

EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, 57, Queen Street, Hull, invites attention of Visitors to his Exhibition of Specimens of his selected stocks of MANGEL WURZEL, DIXON'S IMPERIAL SWEDE, TURNIPS, KOHL RABI, &c. Orders received at the Stand.

FARM SEED LIST gratis.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),

CORN, SEED, MANURE, and OILCAKE MERCHANTS.

Address, 26, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and prices post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Agricultural and Garden Seeds.

H. AND F. SHARPE'S Trade CATALOGUE of HOME-GROWN SEEDS is now ready. It contains all the very best varieties, cultivated under their own superintendence. The quality is very fine, and the prices low.

Seed Growing Establishment, Wisbech.

EDWARD TAYLOR, NURSERYMAN, Malton, Yorkshire, offers as under:—

GIANT ASPARAGUS ROOTS, 1-yr., 7*s.* 6*d.* per 1000.
" " " 2-yr., 12*s.* 6*d.* per 1000.
" " " 3-yr., 15*s.* per 1000
PAMPAS GRASS, strong, in pots, 20*s.* per 100.
TRITOMA UVARIA, strong, 15*s.* per 100.
TRITONIA AUREA, fine bulbs, 8*s* per 100
Double Roman, Groot Voorst, and Grand Monarque NARCISSUS, fine imported roots, 12*s.* 6*d.* per 100.
GOOSEBERRIES, 100 varieties, 9*s.* per 100, 80*s.* per 1000.
DAFFODILS, 1*s.* 6*d.* per 100.
TULIPS—La Candeur, 12*s* 6*d.*; mixed Parrot, 3*s.*; Double Yellow, 4*s.*; Tournesol, 7*s.* 6*d*; Mariage de Ma Fille, 12*s.* 6*d.* per 100.
LILIUM LANCIFOLIUM ALBUM, ROSEUM, and RUBRUM, 6*s.* per dozen.

Priced LISTS on application.

LARCH, 2 to 3 feet, 2½ to 3½ feet, very fine.
SCOTCH, 1 to 1½ foot, 2 to 2½ feet, 2½ to 3 feet, very fine.
AUSTRIAN PINE, 1 to 1½ foot, 1½ to 2 feet, 2 to 2½ feet. The latter size extra transplanted.
ALDER, 4 to 5 ft. | TREE BOX, 1 to 1½, 1½ to 2, and 2½ to 3 ft.
MAHONIA AQUIFOLIA, 1½ to 2 feet.
EVERGREEN PRIVET, 2 to 3 feet.
Strong bedded MOSS ROSES for open ground or potting, for forcing.

Prices, which are low, on application to

FIELD BROTHERS, Tarvin Road Nursery, Boughton, Chester.

Transplanted Scotch Fir.

J. ROY, JUN., NURSERYMAN, Aberdeen, has a very extensive stock of Transplanted SCOTCH FIR, of various growths; as the whole has to be cleared off this season he offers as under to the Trade:—

2-yr. SEEDLINGS, 2-yr. transplanted	5*s.* per 100.
3-yr. SEEDLINGS, 2-yr. transplanted	7*s.* 6*d.* per 1000.
Strong and fine do., 18 to 24 inches	10*s.* per 1000.
2-yr Seedling Native SCOTCH FIR	1*s.* per 1000.

Of RHODODENDRONS he has a very extensive stock, and to clear out he now offers his stock, which consists of upwards of 100,000 of PONTICUMS and HYBRIDS and other excellent kinds, from 9 inches to 2 feet high, at 8*s.* to 30*s.* per 100.

LIMES.—His stock of these is upwards of 100,000, from 3 feet to 9 feet. Prices will be forwarded on application: they are all clean-grown and fine straight stems.

LILIUM SPECIOSUM RUBRUM, fine strong flowering bulbs, 18*s* per dozen, £5 per 100.

LILIUM AURATUM.—Orders now booked for the new importations from Japan

Mr. WILLIAM BULL'S Establishment for New and Rare Plants King's Road, Chelsea, London, S.W.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived, and have every appearance of being above the average quality, for which they have been noted so many years.

CATALOGUES of the above, also FRUIT TREES and general NURSERY STOCK, post free on application.

Highgate Nurseries, London, N.

Pelargoniums for the Million.

JAMES HOLDER'S unrivalled COLLECTION of FRENCH, FANCY, and SHOW VARIETIES, are now ready, in strong Plants. CATALOGUES gratis on application.

HUNT'S superb SWEET WILLIAM, in 24 varieties, seed or plants, as per former Advertisement.

Crown Nursery, Reading.

Geraniums to Offer.

CHOICE GOLD and SILVER TRICOLORS, 18 new and distinct sorts, including PRINCE of WALES (Carter's) and LASS O' GOWRIE, for 30*s.*
12 NEW and CHOICE GOLD and BRONZE for 15*s.*
12 NEW DOUBLES for 6*s.*
12 NEW ZONALS of 1871 for 12*s.* All package free.

A List of Names of each Collection sent on application to

WM. POTTEN, Seedsman and Florist, Sissinghurst, Staplehurst, Kent.

JOHN WATERER AND SONS, Bagshot, Surrey, are the EXHIBITORS of RHODODENDRONS at the ROYAL BOTANIC GARDENS, Regent's Park. Their Descriptive CATALOGUE of these Plants is now ready, and may be had on application, by letter, addressed to Bagshot

☞ The Catalogue fully describes colours, prices, &c., of the Rhododendrons.

Lilies of the Valley.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN and FLORISTS, Haarlem, Holland, have yet to offer a few thousand extra fine and strong 3-yr. old CONVALLARIA CLUMPS. Price on application. As now is the best season for sending them out, early orders are solicited.

Cerasus Watererii, New Double Japanese Cherry.

ORIGINALLY INTRODUCED by MR. FORTUNE.

JOHN WATERER AND SONS are just now sending out the above new plant. The colour is white, edged with pink, very large double, and sweet scented. They recommend it as a very desirable plant. Price 10*s.* 6*d.* each, or 6 for 42*s*

American Nurseries, Bagshot, Surrey.

The Fairy Apple.

JOHN JENNINGS has fine PYRAMIDAL TREES, with bloom-buds, of the above beautiful dessert Fruit to DISPOSE OF, at 5*s.* each. The fruit is in season from December to April.

"Destined and worthy to take its place amongst the worthiest of its kind." Nurseries, Shipston-on-Stour.

Fruit the First Year—Best Sorts.

STRONG PYRAMIDAL APPLES, PEARS, PLUMS, and CHERRIES, 1*s.* each; Dwarf-trained PLUMS and CHERRIES, 2*s.* 6*d* each; very fine RED and BLACK CURRANTS, 2*s.* 6*d* per dozen

W. HOOPER, New Wandsworth, S.W.

Planting Season.

JOSEPH HOBSON begs to offer to Gentlemen and the Public strong OAKS, SYCAMORE, BIRCH, BEECH, POPLAR, LARCHES, SPRUCE, SCOTCH, SILVER FIRS, PINES, from 2 to 6 feet, all well-rooted, and clean grown; choice FRUIT TREES and QUICKWOOD, extra strong.

Church Hill Nurseries, Easingwold, Yorkshire.

LUCOMBE, PINCE AND CO. beg to direct attention to their large stock of PODOCARPUS CHINENSIS and CEPHALOTAXUS FORTUNEI, which they can offer at low prices; also a large stock of CONIFERS and choice SHRUBS, FRUIT and FOREST TREES, VINES, and STOVE and GREENHOUSE PLANTS. They have also a number of splendid specimen plants suitable for producing an immediate effect in landscape gardening Their long Camellia-house, which has been recently enlarged, is full of magnificent plants, many of them of the dimensions of trees.

Exeter Nursery, Exeter.

To the Trade.

TREE BOX, 2 to 2½ feet, fine bushy well-rooted stuff (fit for potting), 20*s* per 100.
MAHONIA AQUIFOLIA, 2 feet, fine, 12*s.* 6*d.* per 100.
ARABIS LUCIDA, fol var. (true), good plants, in pots, 20*s.* per 100.
DOUBLE WHITE PRIMROSES, 12*s.* 6*d.* per 100

The above can be put on Midland or Great Western Rails.

JOHN MORSE, Nurseryman, Dursley, Gloucestershire.

Eltham Nursery, Kent, S.E.

TWO MILES from BLACKHEATH STATION;
ONE MILE from ELTHAM, LOOP-LINE.

THIRTY ACRES of healthy, well-grown NURSERY STOCK, of every description, comprising Specimen CONIFERS and EVERGREENS of all sizes, Standard ROSES, FRUIT TREES, &c. Gentlemen who intend planting this season are invited to come and select for themselves.

JAMES W. TODMAN, Eltham Nursery, Kent, S.E.

SURPLUS STOCK of the following to be SOLD, cheap:—PRINCE ALBERT, LINNÆUS, and VICTORIA RHUBARB; FASTOLF RASPBERRIES; 4-yr. old ASPARAGUS; SKIMMIA JAPONICA; CLEMATIS LANUGINOSA; CUPRESSUS LAWSONIANA; PERNETTYA SPECIOSA, the berry-bearing variety; AUCUBA LIMBATA, bicolor and viridis; SALIX BABYLONICA SALOMONII, the hardy Weeping Willow. Prices, &c., on application.

ISAAC DAVIES, Nurseryman, Ormskirk.

SURPLUS STOCK.

Many thousands of fine COMMON LAURELS, 3 to 4 feet.
HORSE CHESTNUTS, 6 to 7 feet, straight.
PRIVET, upright and ovalifolium, 3 to 4 feet.
Pyramid APPLES, PEARS, PLUMS, and CHERRIES.
SPRUCE FIRS, for Christmas Trees, from 2 to 8 feet.

Price and Trade LIST on application

B. MALLER, The Nurseries, Lewisham, Kent.

HYEMALIS HEATHS, fine.

ECHEVERIA RETUSA, a beautiful winter-flowering plant.

Price and Trade LIST on application.

B. MALLER, The Nurseries, Burnt Ash Lane, Lee, Kent.

Surplus Stock.

SPRUCE FIRS, bushy, and feathered to bottom, suitable for Christmas Trees.
SCARLET CHESTNUTS and LABURNUMS.
Large THUJA AUREA and ARBOR-VITÆ.
Large bushy AUCUBAS and common LAURELS.
Large TREE BOX and LAURUSTINUS.
Irish IVY, in pots, to 10 feet.
RED and BLACK CURANTS, RHUBARB, &c.

THOMAS EVES, late ENGLAND CLARKE, Gravesend Nurseries.

WANTED, a PROPAGATOR and GROWER of Hard-wooded, Stove, Greenhouse Plants, Roses, and Pot Vines; also the Charge of Vineries. To a thorough experienced Man liberal wages will be given.—MANAGER, Melbourne Nursery, Anerley Road, Anerley, S.

WANTED, a FRUIT-TREE FOREMAN.—A good Budder and Grafter, with a fair knowledge of the Culture of Fruit Trees.—N. B., *Gardeners' Chronicle* Office, W.C.

WANTED, an UNDER FOREMAN for the out-door department of a large Provincial Nursery.—X. Y., *Gardeners' Chronicle* Office, W.C.

WANTED, before Christmas, a single Man, as good GARDENER. Vines, Forcing, Flowers, &c.—Rev. R. SALWEY, Ash Rectory, Wrotham, Kent.

WANTED, a MAN and his WIFE, without family. Man must be a good GARDENER, and thoroughly understand Vines and House-work; strictly honest, obliging, and a good worker. Wife required to be clean and a good Laundress, and willing to do family washing. Wages for both, 25*s* a week and a house; no perquisites whatever.—ALFRED J. NEW, Esq., Easthorpe House, Ruddington, Notts.

WANTED, a good SHOPMAN, for Seed and Nursery Trade. A Person of good character, sober, honest, and experienced.—Y. Z., *Gardeners' Chronicle* Office, W.C.

Seed Trade.

WANTED, a JUNIOR SHOPMAN.—Apply, by letter, to B. C. D., Mr. Harris, Newsagent, Blackfriars Road, London, S.E.

Seed Trade.

WANTED, a thoroughly experienced ASSISTANT.—Apply, stating age, terms, references, &c., to JAMES DICKSON AND SONS, 102, Eastgate Street, Chester.

WANTED, an ASSISTANT, to serve in Seed Shop, Travel for Orders, and assist at Books. One having a practical knowledge of Nursery Business preferred. Character must be unexceptionable.—Address, in own handwriting, B. B. & Co., Messrs. Waite, Burnell, & Co., Southwark Street, London, S.E.

WANTED, an ASSISTANT SHOPMAN.—WILLIAM WOOD & SON are requiring the services of a young Man, in the above capacity, age about 18. This would be a good opportunity to any young Man wishing to learn the Nursery Business during the summer and autumn months.—W. WOOD AND SON, Nurseries, Maresfield, Uckfield, Sussex.

WANTED, as COWMAN, a steady, industrious Man.—J. PARSONS, Hayes, Kent.

WANT PLACES.—Letters to be Post Paid.

Gardeners and Under Gardeners.

WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Has had extensive experience in Early and Late Forcing, the Cultivation of Stove and Greenhouse Plants, Flower and Kitchen Gardening, and the Management of Land and Stock.—J. T., Pine-apple Nursery, Edgware Road, W.

GARDENER (HEAD).—Age 28, married, no incumbrance; thoroughly practical. Two and a-half years' good character from last place.—H. COOK, 4, St. Mark's Villas, Tollington Park, Hornsey, N.

GARDENER (HEAD), or GARDENER and BAILIFF.—Age 31, married, one child (age 8; three and a half years' first-class character from present employer, and testimonials for the previous 10 years. Wife could take charge of Dairy and Poultry.—GARDENER, Hawkley Hurst, Petersfield, Hants.

GARDENER (HEAD, WORKING).—Age 46, single; thorough practical knowledge of the profession in every branch. Good character, with references.—J. C., 1, Lower Hamilton Terrace, Hamilton Road, Lower Norwood.

GARDENER (HEAD, WORKING).—Age 31, married, one child; has a thorough knowledge of Forcing all kinds of Fruit, Flowers, and Vegetables. Can take charge of Park and Stock if required. Three years' excellent character from last situation.—W. H., 51, Cirencester Street, Harrow Road, Paddington, N.W.

GARDENER (HEAD, WORKING).—Age 42, married, no incumbrance; steady, energetic, and practical. Well up in Grape, Melon, and Cucumber Culture; also Orchard-house Fruits, Stove, Greenhouse, and Conservatory Plants. Has a knowledge of Meadow Land and Stock. If required, Wife could attend to Poultry. Sixteen years' good reference.—A. B., Mr. Cattell's Nurseries, Westerham, Kent.

GARDENER (UNDER), in a Nobleman's or Gentleman's Establishment.—Age 21; wishes to improve himself in the profession. Willing to pay a small Premium. Good character.—J. MARTIN, The Gardens, Osterley Park, Southall, W.

GARDENER (UNDER), where four or more are kept.—A respectable young Man, who has been used to Pruning, Nailing, Propagating, and Kitchen Gardening. Six years' experience. Fifteen months' character from present situation.—J. M., Post Office, Wadhurst, Sussex.

GROUND FOREMAN.—An energetic, industrious Man, of excellent character (married), with a thorough knowledge of the business. Can be highly recommended.—WM. WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

FOREMAN, in a Nobleman's or Gentleman's Establishment.—Nine years' experience in first-class places. Good references as to character and ability.—H. JONES, Burton Closes, Bakewell, Derbyshire.

PROPAGATOR, or PROPAGATOR under the Foreman.—Age 22; has had experience in the Propagation of Conifers, Clematises, Rhododendrons, and Roses, &c., in a Provincial, and also in a London Nursery. References.—Address, stating terms, H. L., 22, Peploe Street, Bishopsfields, Chester.

MANAGER, or ASSISTANT MANAGER, of Tea, Coffee, Sugar, or Cotton Plantations.—Age 27, single, English; has had ten years' practical experience in some of the largest Gardens in Europe. Well educated. No objection to any part of the world. Highest references.—Z., Mr. H. Slater, High Street, Uttoxeter, Staffordshire.

To the Seed Trade.

TRAVELLER.—Age 37; highest references.—J. P., *Gardeners' Chronicle* Office, W.C.

To Gardeners.

IMPROVER, in a good Establishment, where he could learn Gardening thoroughly.—A respectable Youth, age 18. Willing to give a small Premium.—M. DARKER, Ecton, near Northampton.

To Horticulturists, Gardeners, &c.

WANTED to APPRENTICE a YOUTH in his 15th year, where he would have an opportunity of learning all branches of the profession.—M. F., 6, Water Gate, Woolwich, E.

To Nurserymen and Seed Farmers.

WANTED, to Re-place a YOUTH on a Seed Farm, or in a Wholesale House. Two years' experience of Growing and Selling. Has been well educated.—Inquiries to be addressed to FLORA, 148, High Street, Colchester.

Seed Trade.

SHOPMAN (ASSISTANT), or in the Warehouse (London).—Age 24: experienced in Wholesale and Retail Trade.—A. B., Mr. Jackson, Tobacconist, 452, Holloway Road, N.

SUTTONS'

HOME-GROWN

FARM SEEDS.

SPECIMEN ROOTS ON VIEW.

Smithfield Club Cattle Show,

DECEMBER 2, 4, 5, 6, 7, 8.

Stand No. 70.

SUTTONS' (IMPROVED) MAMMOTH LONG RED MANGEL,

THE HEAVIEST CROPPING LONG MANGEL EVER INTRODUCED,

And took the First Prizes at Birmingham in 1868, 1869, 1870, and 1871.

Although it attains such an enormous size, the roots are very sound and solid, and of most symmetrical form. It is an extraordinary heavy cropping variety, 64 tons per acre having been grown by our customers, Lord NORBURY and Mr. THOMAS GOULSTONE. The Twelve Prize Roots at the Royal Berkshire Root Show on Nov. 18 last, weighed 485 lb., averaging over 40 lb. each, while those which took the First Prize at Birmingham this year (for the fourth time), weighed 45 lb. each.

SUTTONS' Berkshire Prize Yellow Globe Mangel

THE LARGEST GLOBE VARIETY YET INTRODUCED.

It is an extraordinary heavy cropper, CHARLES GOCHER, Esq., of Bolton Hall, having grown the enormous weight of 72½ tons per acre. Its beautiful shape, neat top, fine clear skin and single tap-root, recommend it as an eminently profitable variety, inasmuch as great labour is saved in drawing and storing the crop.

SUTTONS' YELLOW INTERMEDIATE MANGEL

ONE OF THE MOST POPULAR IN CULTIVATION.

From its peculiar shape it can be allowed to stand closer in the rows than other kinds, hence it produces a very great weight per acre. It is of beautiful shape, small neck and leaves, and of superior quality. Having only one tap-root it can be pulled with half the trouble of the coarser varieties. Sixty tons per acre have been grown at the South Norwood Irrigation Farm.

SUTTONS' IMPROVED CHAMPION SWEDE.

The merits of this Swede are now generally known, and its superiority over every other kind universally acknowledged. Among the numerous Prizes which have been awarded to this splendid Swede this season, is the Twenty Guinea Silver Cup given for the best Four Acres of Swedes in the County of Gloucester, awarded to our customer, WM. HARTLAND, Esq., Upleadon Court; and the Twenty-four Prize Roots which gained the £10 10s. Silver Cup at the Royal Berkshire Root Show, on November 18, averaged 22 lb. each.

Prices of the above, and all other

GENUINE FARM SEEDS,

May be had of Messrs. SUTTON as above, or on application to

SUTTON & SONS,

SEEDSMEN BY SPECIAL APPOINTMENT TO THE QUEEN and H.R.H. THE PRINCE OF WALES,

ROYAL BERKS SEED ESTABLISHMENT, READING.

TO BE LET, a compact FARM, of about Eighty Acres of excellent Land, well adapted for a Nursery or Market Gardening purposes. Applications to be made, with references, to N G., *Gardeners' Chronicle* Office, W.C.

TO BE DISPOSED OF, an Old-established NURSERY BUSINESS, in the principal town of the West of England, where a successful Trade has been carried on for the past 35 years, consisting of good general Stock, Four large Greenhouses, Frames, and remainder of Lease (10 years). The ground is all walled in, and contains about 1¾ Acres, with Six-roomed House, pleasantly situated, facing South. For particulars, address NURSERYMAN, Messrs. Hurst & Son, 6, Leadenhall Street, E.C.

SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.

Plants from English and Dutch Nurseries, and

BULBS from HOLLAND.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 2, at half-past 12 o'Clock precisely, Standard and Dwarf ROSES, HOLLIES, RHODODENDRONS, Standard and Trained FRUIT TREES, specimen CONIFERS, and DECIDUOUS TREES and SHRUBS from Holland. CARNATIONS, PICOTEES, and PINKS, RASPBERRY CANES, Standard ROSES, and other Plants, from English nurseries; and an importation of HYACINTHS, TULIPS, LILIUMS, CROCUSES, IRIS, NARCISSUS, ANEMONES, RANUNCULI, and other BULBS, just arrived from Holland.

On view the morning of Sale, and Catalogues had.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 4, at half-past 12 o'Clock precisely, several hundred Lots of choice HYACINTHS, TULIPS, CROCUSES, LILIUMS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, and other BULBS, just arrived from Holland, and lotted to suit the Trade and private buyers.

On view the morning of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, December 5, at half-past 12 o'Clock precisely, first-class Silver-spangled HAMBURGHS, from Miss Browne, of Chard; Silver Grey DORKINGS, and GAME BANTAMS, from Mr. Salter, of Oxford; POUTERS and CARRIERS, from Mr. Cooper, of Farnborough; Yellow BARBS and POUTERS, from Mr. Dowling, of Cork; and a variety of other POULTRY and PIGEONS from well-known Breeders and Exhibitors.

On view the morning of Sale, and Catalogues had.

Plants from Ghent, and Bulbs and Plants from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W C., on WEDNESDAY, December 6, at half-past 12 o'clock precisely, CAMELLIAS, INDIAN AZALEAS, PALMS, YUCCAS, DRACÆNAS, ERICAS, PIMELEAS, ORANGE TREES, &c., from Ghent; Trained and Standard FRUIT TREES, from Holland; and a variety of other Hardy TREES and SHRUBS. Also an importation of choice HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, LILIUM, ANEMONES, RANUNCULI, GLADIOLI, and other BULBS, from well-known Farms in Holland.

On view the morning of Sale, and Catalogues had.

To Nurserymen and Others.

EXTENSIVE SALE of NURSERY STOCK, at CUPAR-FIFE, N.B., on MONDAY, DECEMBER 4, and TWO FOLLOWING DAYS.

TO BE EXPOSED to ROUP, on the above dates, in suitable Lots, the whole of the valuable STOCK in William Taylor's Nurseries, at the West Port of Cupar, extending over Eight Acres, consisting of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, rare CONIFERÆ, &c., and about Six Tons of EARLY POTATOS, of sorts. This stock is particularly worthy of the attention of Foresters, Gardeners, and the Trade.

The Sale will take place each day at 10 o'Clock forenoon, commencing on MONDAY with the Ladyinch Nursery, containing the larger lots of Transplanted Forest Trees.

Catalogues may be had free on application to W. TAYLOR, 14, Crossgate, Cupar-Fife, N.B.; or from Mr. WELCH, Auctioneer, Cupar.—Cupar, October 2, 1871

Library of Botanical, Horticultural, and General

LITERATURE: the EXTENSIVE COLLECTION of the LATE Mr. BAXTER, formerly CURATOR of the UNIVERSITY BOTANICAL GARDENS, OXFORD.

MR. JOHN FISHER is instructed to SELL this valuable COLLECTION of BOOKS, at the Clarendon Hotel Sale Room, Oxford, on WEDNESDAY, December 6, commencing at 11 o'Clock.

Catalogues to be had at the Offices of the Auctioneer, 8, High Street, Oxford.

A Compact and Desirable Copyhold Estate,

At DALLINGTON, SUSSEX, and rich FREEHOLD MARSH LAND, in the PARISH of WINCHELSEA, SUSSEX.

MR. JAMES COLEMAN VIDLER has received instructions from the Trustees of the late Thomas Milles, Esq., to SELL by PUBLIC AUCTION, at the Swan Hotel, Hastings, Sussex, on SATURDAY, December 9, at 2 for 3 o'Clock P.M., punctually, the following valuable Properties, in Two Lots.

LOT 1.—A very compact COPYHOLD FARM, known as Hodgkin's Farm, Dallington; comprising about 93a. 0r. 29p. of capital Arable, Pasture, Hop, and Wood Land, with Farm House and convenient Out-buildings, in the occupation of Mr. T. Pilbeam, at the very low rent of £75 per annum. The quit rent amounts to £1 5*s.* 3*d.*, and land tax to £3 16*s.* 6*d.* per annum. This property is subject to a Heriot, a fine at death and alienation.

LOT 2.—Four pieces of very rich FREEHOLD MARSH LAND, known as the CAMBER LAND (adjoining the Royal William Inn), situate in the parish of Winchelsea, and only a short distance from the Market Town of Rye, containing about 60 acres of most superior Grazing Land, in the occupation of Jesse Piper, Esq., at the very moderate rent of £170 per annum. The above Property is subject to a land tax of £8 2*s.* 4*d.* per annum.

Descriptive Plans, Conditions of Sale, and other particulars, may be obtained of ARTHUR WHITEHEAD, Esq., Solicitor, Wimborne, Dorsetshire; EDWIN NATHANIEL DAWES, Esq., Solicitor, Rye; or of the Actioneer, at his Offices, 16, Havelock Road, Hastings, and Mint House, Rye, Sussex.

City Auction Rooms, 38, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, as above, on TUESDAY, December 12, at half-past 12 o'Clock precisely, about 350 choice DOUBLE CAMELLIAS and AZALEA INDICA, compact plants, 1 to 3 feet, beautifully furnished with bloom buds; 300 handsome Standard and Dwarf ROSES, of the best varieties; selected FRUIT TREES; choice Hardy CONIFERÆ and EVERGREEN SHRUBS, and AMERICAN PLANTS, with a Collection of DUTCH BULBS, &c.

On view the morning of Sale. Catalogues may be had at the Rooms, as above; and of the Auctioneers, Leytonstone, E.

Bagshot, Surrey.

UNRESERVED SALE of VALUABLE NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Jos. Hodges, Esq., to SELL by AUCTION, without reserve, on the Premises, Pennyhill Park, Bagshot, Surrey, on WEDNESDAY, December 13, at 11 for 12 o'Clock precisely, a large quantity of remarkably fine PORTUGAL LAURELS, 4 to 6 feet, handsome Chinese ARBOR-VITÆ, including many fine specimens, fine Variegated HOLLIES, 350 best named RHODODENDRONS, AZALEA PONTICA, and others; specimen ANDROMEDA FLORIBUNDA, 3 to 4 feet, beautifully furnished with flower buds; Standard RHODODENDRONS, CUPRESSUS LAWSONIANA, RETINOSPORA ERICOIDES, and others; GREEN HOLLIES, LYGUSTRUM, LAURELS, &c.; fine Standard and Dwarf ROSES, by name, selected FRUIT TREES, fine PAMPAS GRASS, &c.

May be viewed one day prior to the Sale. Catalogues may be had of M. WATERER, Esq., Belle Vue House, Bagshot; Mr. GODDARD, on the Premises; and of the Auctioneers and Valuers, Leytonstone, E.

THE LANDS IMPROVEMENT COMPANY.

(INCORPORATED BY SPECIAL ACTS OF PARLIAMENT.)

DRAINAGE, RECLAMATION, FARM BUILDINGS, LABOURERS' COTTAGES, TRAMWAYS, RAILWAYS, &c.

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The Company advances money, unlimited in amount, for all purposes of Agricultural Improvement, including the Erection of Cottages and Farm Buildings, to the Owners of settled and other Estates, and to the Clergy in respect of their Glebe Lands.

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The whole outlay and expenses are liquidated by a rent-charge upon the land, redeeming principle and interest, over 25 years.

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For Forms and further information, apply to GRANVILLE R. RYDER, Esq., Managing Director, No, 1, Great George Street, Storey's Gate, Westminster, S.W.

FRENCH PEASANT FARMERS' SEED FUND.—A GENERAL MEETING of the SUBSCRIBERS will be held at the SALISBURY HOTEL, Fleet Street, on WEDNESDAY, December 6, at 3 P.M., the Right Hon. Lord VERNON in the Chair, when the Executive Committee will present their FINAL REPORT on the DISTRIBUTION of SEED CORN in FRANCE.

B T. BRANDRETH GIBBS, }
H. M. JENKINS, } Honorary Secretaries.
W. H. DELANO, }

London, November 21, 1871.

CENTRAL CHAMBER of AGRICULTURE.—MEETINGS will be held at the SALISBURY HOTEL, as follows:—TUESDAY, December 5, at 3 o'Clock, LOCAL TAXATION COMMITTEE.

WEDNESDAY, December 6, at 1 o'Clock, GENERAL BUSINESS COMMITTEE.

Same day, at 2 o'Clock, MEETING of the COUNCIL, consisting of the Deputed Members from Provincial Chambers and of the Elected Members of Council.

Same day, at 3 o'Clock, or after the business of the Council is concluded, a SPECIAL GENERAL MEETING of the Subscription Members of the Central Chamber, to receive and approve the Alterations in the Laws and Constitution, as recommended by the Council.

After which, the ordinary ANNUAL MEETING of the Subscription Members of the Central Chamber.

JOHN ALGERNON CLARKE, Secretary.

The Salisbury Hotel, Fleet Street, E.C.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AGRICULTURAL EDUCATION.

The Examination of Candidates for the Society's Prizes will take place in the WEEK COMMENCING TUESDAY, APRIL 16, 1872. The age of Candidates for the Society's Prizes must not be above 21 years on March 1; but Candidates, irrespective of age, may Compete for the Society's Certificates.

Copies of the Form required to be sent in by March 1 may be had on application to

H. M. JENKINS, Secretary.

12, Hanover Square, London, W.

NOTICE.—The GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE for DECEMBER 9 will contain a FULL and ILLUSTRATED REPORT of the SMITHFIELD CLUB CATTLE SHOW.

Copies may be obtained on Friday morning, December 8, at STAND No. 88, Galleries, Agricultural Hall.

The Agricultural Gazette.

SATURDAY, DECEMBER 2, 1871.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	Dec. 4	London Farmers' Club (Mr. J. K. Fowler, on Breeding), at the Salisbury Hotel—6 P.M. Institute of Surveyors (Mr. J. Clutton, on Disafforesting), at 12, Great George Street, Westminster—8 P.M.
MONDAY, to FRIDAY,	Dec 4 Dec. 8	Smithfield Club Show, at the Agricultural Hall, Islington
TUESDAY,	Dec. 5	General Meeting of the Smithfield Club, at the Agricultural Hall—1 P.M.
WEDNESDAY,	Dec. 6	Royal Agricultural Soc. of England (Council Meeting), at Hanover Square—Noon Central Chamber of Agriculture (General Meeting), at the Salisbury Hotel—3 P.M.
THURSDAY,	Dec. 7	Royal Agricultural Soc. of England (General Meeting) at Hanover Square—Noon.

NEXT WEEK will be full of agricultural interest. Many important subjects will engage the attention of the countrymen who are now arranging for a week in town. On Monday, at 6 P.M., in the Club room at Salisbury Square, Mr. J. K. FOWLER, of Aylesbury, will speak before the London Farmers' Club on the Principles of Live Stock Breeding, illustrating them by facts within his own experience. At 8 P.M. on the same day Mr. CLUTTON will read a paper before the Institution of Surveyors in Great George Street, on the Cost of Bringing Forest Land into Cultivation. On Wednesday evening, at 8 P.M., before the Society of Arts, Mr. BAILEY DENTON will read a paper on Land for Utilising and for Cleansing Town Sewage. The Central Chamber of Agriculture holds its annual meeting on Wednesday at 3 P.M., in Salisbury Square. The Royal Agricultural Society of England assembles, at a general meeting of members, on Thursday, at noon, in Hanover Square. But we have omitted all mention of the Smithfield Club, which more than any other gives its character to the week. On Monday morning their annual show of fat stock opens at the Agricultural Hall, Islington, and remains open during the week.

Including the best illustrations of our best breeds of stock, in the condition in which they fulfil the purpose of all that the farmer does to or for them, the show has for several generations of men held one of the highest positions in the agricultural exhibitions of the year. Once almost the only occasion of anything like a national agricultural meeting, it now, of course, takes a second rank after other shows where all the departments of agriculture are represented.

But here, too, there is much more than the bare fat stock display—machine makers, seedsmen, manure manufacturers, vie in the efforts which they make to attract the attention and supply the wants of the crowds who are drawn together chiefly by the cattle, sheep, and pigs; and the result is one of the completest agricultural shows of the year. We hope to give next week a full report of it in all its departments.

WE read in MACAULAY'S history that "the golden age is a *mirage*, which, if we trace it backward, recedes before us into the regions of fabulous antiquity. Yet many in spite of evidence will still imagine to themselves the England of the STUARTS as a more pleasant country than the England in which we live." The brilliant historian gives a summary of the comparative advantages enjoyed by society now and in past times; contrasting the lumbering coach with the express train, and the luxury of modern civilisation with the plain simple life of the past. But when he attempts to make out a list of advantages enjoyed by the labouring classes he is obliged to rely on his inimitable power of word-painting, rather than on unvarnished facts. We read that the inclosure of wild land, common by law or fact, has diminished the physical comforts of a portion of the poorer classes. "Squatters and trespassers were tolerated to an extent now unknown." The peasant who dwelt on the common "could, at little or no charge, procure occasionally some palatable addition to his hard fare, and provide himself with fuel for the winter. He kept a flock of geese on what is now an orchard rich with blossoms. He snared wild fowl on the fen, which has since been drained and divided into corn fields and Turnip fields. He cut turf among the Furze bushes on the moor, which is now a meadow bright with Clover and renowned for cheese."

The progress of agriculture and the increase of population necessarily deprived him of his privileges, but he enjoys a long list of advantages, for "a large proportion of the blessings which civilisation and philosophy bring with them is common to all ranks." The historian proceeds to notice that the rustic and his cart can, in one hour, reach his market-place, which, 160 years ago, was a day's journey from him. "The street, which is now a secure, convenient, and brilliantly lighted walk, was, 160 years ago, so dark, that he might after sunset have broken his neck, or been knocked down and plundered of his small earnings." But now, every bricklayer who falls from his scaffold, every sweeper of a crossing who is run over may have his bones set and his wounds healed for a trifle, with more skill than a great lord could have purchased with all his wealth 160 years ago. These are great advantages, no doubt, to people who have occasion to go to market in a cart, and to bricklayers who break their legs; but, remembering our million and a half of paupers and the misery of the poor in our great cities, we hope that some future historian will be able to claim certain more substantial advantages among the "blessings of civilisation and philosophy." Manners have, no doubt, greatly improved since the 17th century; we are less rude and rough now-a-days; our ancestors were less humane than their posterity, harsher in their families, severer to schoolboys, less kind to servants, rougher with their wives, and more cruel to their malefactors. Public opinion is in many respects far more enlightened than it was, in proof of which we may quote the same author:—

> "The practice of setting children prematurely to work, a practice which the State, the legitimate protector of those who cannot protect themselves, has in our time wisely and humanely interdicted, prevailed in the 17th century to an extent which, when compared with the extent of the manufacturing system, seems almost incredible. At Norwich, the chief seat of the clothing trade, a little creature of six years old was thought fit for labour. Several writers of that time, and among them some who were convinced as eminently benevolent, mention with exultation the fact, that in that single city boys and girls of very tender age created wealth exceeding what was necessary for their own subsistence by £12,000 a-year."

As "the State" now means public opinion, and Government has become the executive power for carrying into effect the will of the public, it is evident that the knowledge which guides public opinion must always be the measure of social progress. The "golden age" will approach in proportion as the public becomes more intelligent, enlightened, and virtuous, and when morals have improved in the same degree as manners.

It is unfortunate that at present the most active-minded of the working classes are more interested in watching the mere machinery of Government than in gaining knowledge of the means by which Government might aid society to improve the conditions of our social life. They suffer from political restlessness; they do not seem to recognise that we already have a Government from which the public can obtain any measures it thinks proper. They do not understand that our welfare does not depend on the improvement of the mechanism of government. There never was, and never will be, a perfect, patent, ruling machine; on the contrary, in good hands, a great deal may be done with an old machine, and in bad hands the best machine is useless. Questions relating to labour, food supply, shelter, sun, air to breathe and water to cleanse, or abounding pauperism, noisome crowded alleys, with circumstances of existence noxious and even murderous,—all such questions relating to the moral and material progress of society are more urgent than any others that can occupy public attention, and they depend for solution not on mere mechanism of Government, but on the enlightenment of public opinion. We have few political grievances now-a-days; we no longer suffer from the injustice of Government, the ascendancy of the nobles, or the oppression of any class of the people. The country has its griefs and grievances, but they arise from social, not from political causes, and their root is ignorance. The reform that is needed is such reform as shall better the condition of the millions, mending their manners and mending their meals. It must be confessed that in this age of progress the poor have fared badly. The concentration of capital has produced extremes of poverty and wealth. Let the cost of producing food be materially reduced by methods that have been often indicated, and a new channel will be opened for surplus labour. "Every step in advance made by agriculture serves to alleviate the sufferings and troubles of mankind." Agriculture would itself require a large increase of its labouring forces, other industries would be invigorated, and there would be an end of emigration and of an increasing poor-rate for many years to come. "Improvements in agriculture constitute the only solid foundation for further progress in all other branches of knowledge," but "observation and reflection are the fundamental conditions of all progress in natural science; and agriculture presents in this respect ample room for discoveries."*

These are quotations from one whose works, beyond all others that have been written, reveal the special knowledge which is needed in order to understand the food question. They show the necessity for the co-operation of public opinion in the work of agricultural improvement. Farmers cannot prevent the continual increase in the cost of production, which is injurious alike to themselves and to the country. Legislation can alone deal with the modern evil of "town waste," and the voice of the public can alone issue those commands to the executive without which it never ventures to act. The problem the public should set itself (not deputing the matter either to chemists or manure companies, for it is altogether too big for them to handle it effectually) is, to arrest the impoverishment and accomplish the enrichment of the soil. It would be easy to pile up authorities to prove that no subject can be more important. Much as the circumstances of the world have changed in these days of steam and progress, there are old rules which are as correct as ever they were, as, for instance, this of SWIFT'S:—"The first cause of a kingdom's thriving is the fruitfulness of the soil, to produce the necessaries and conveniences of life;" and likewise this other sentence of ADAM SMITH'S:—

> "Whatever increases the fertility of land, in producing food, increases not only the value of the land upon which the improvement is bestowed, but contributes likewise to increase that of many other lands by creating a new demand for this produce. That abundance of food, of which, in consequence of the improvement of land, many people have the disposal beyond what they themselves can consume, is the great cause for the demand both for the precious metals and the precious stones, as well as for every other conveniency and ornament of dress, lodging, household furniture and equipage. Food not only constitutes the greater part of the riches of the world, but it is the abundance of food which gives the principal part of their value to many other sorts of riches."

The subject of the food supply, which has so often been brought under the notice of our readers, exceeds all other social subjects in importance, and is perhaps the one on which the public is least informed. Consequently we have "Land Leagues," meetings in Trafalgar Square, and impracticable schemes for increasing supplies by colonising the waste lands. These may be harmless, but the discontents, the misapprehensions and the hatred, bred of ignorance and want, are not harmless.

—— A MODERATE supply of English Wheat at Mark Lane on Monday sold at the prices of that day se'nnight. Wednesday's trade was inactive, and prices were in some instances lower.——Trade was active in beasts on Monday, at the Metropolitan Cattle Market, at an advance on the quotations of the previous Monday. In sheep, only choicest qualities made last week's prices. On Thursday trade in beasts was not brisk, but choice qualities were not affected. Sheep had to give way.

—— The report of an OUTBREAK of SMALL POX among SHEEP, in the East Riding of Yorkshire, naturally excited some alarm; but we are glad to be able to state that there was no foundation for the rumour. It appears that scab is prevalent in some flocks in one locality, and this circumstance seems to have given rise to a report which has happily been proved to be false.

—— The EXTENSION of the MEAT IMPORTATION is thus alluded to by the *Pall Mall Gazette*:—

"The meat trade may, for satistical purposes, be roughly divided into four distinct categories. The first comprises live stock alone; the second, salted, fresh, and preserved meat; the third, animal produce—butter, lard, and cheese; and the fourth consists of vegetable food obviously intended for the fattening of cattle. To these it would probably be possible to add a fifth list, comprising game, eggs, fish, &c.; but we have thought it on the whole desirable to omit them from this article.

"The increase which has taken place during the last four years (we have purposely extended the period embraced in the latest returns of the Board of Trade) is thus shown:—

1.—*Live Stock.*

	Ten Months ending October 31.			
	1868.	1869.	1870.	1871.
Oxen, Bulls, and Cows ..	99,695	170,415	140,431	182,868
Calves	20,948	26,370	28,064	36,549
Sheep	286,143	615,160	557,088	792,332
Lambs	17,708	18,367	18,675	
Swine and Hogs ..	28,975	55,538	82,809	80,574
Total head ..	453,019	885,850	827,067	1,092,323

2.—*Dead Meat.*

	Ten Months ending October 31.			
	1868.	1869.	1870.	1871.
	Cwt.	Cwt.	Cwt.	Cwt.
Beef, salted ..	197,793	184,658	137,376	217,631
Beef, fresh or slightly salted	3,048	8,050	7,106	14,113
Bacon	495,694	597,382	443,664	804,173
Hams		37,967	23,532	43,767
Meat unenumerated:—				
Salted ..	33,445	30,020	22,644	23,799
Otherwise preserved ..		19,758	40,418	193,895
Pork, salted ..	108,654	130,379	160,842	234,712
Pork, fresh, or slightly salted	3,751	12,868	19,044	27,435
Total cwt. ..	843,285	1,021,632	860,626	1,559,525

3.—*Animal Produce.*

	Ten Months ending October 31.			
	1868.	1869.	1870.	1871.
	Cwt.	Cwt.	Cwt.	Cwt.
Butter	830,142	970,221	909,731	1,105,511
Cheese	684,556	742,325	788,935	1,064,977
Lard	193,726	213,301	107,151	398,504
Total cwt. ..	1,708,424	1,925,847	1,865,817	2,568,992

4.—*Food for Cattle.*

	Ten Months ending October 31.			
	1868.	1869	1870.	1871.
	Tons.	Tons.	Tons.	Tons.
Oilseed cakes ..	114,152	124,793	117,226	136,311

"From these Tables it will be seen that, with the exception of last year, when the war created an unusual demand for meat abroad, there has been a progressive increase in the meat trade in the United Kingdom far exceeding, as we believe, the conceptions of most people. Since 1868 our trade in live stock has increased by more than 140 per cent.; in dead meat by more than 80 per cent.; in animal produce by more than 50 per cent.; and in oilseed cakes by more than 20 per cent.; while the population of the United Kingdom is not certainly more than 3 per cent. larger than it was at the commencement of the period. The supply of meat from abroad is, in other words, rapidly overtaking the demand at home, and its price is consequently less and less dependent on our home produce. Whatever consequences may result from this circumstance to the landed interest, it is hardly possible to doubt that the vast body of our fellow-countrymen must be deriving benefit from this branch of our import trade. There are already indications that the price of meat in this country is beginning to decline; and if our trade continue to expand at its present rate, it may at least be safely predicted that it cannot go on rising."

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* "Modern Agriculture," Liebig

—— In an able discourse before the Cirencester Chamber of Agriculture last week, in which the Rev. J. CONSTABLE, Principal of the Royal Agricultural College, advocated the introduction of the METRIC SYSTEM of WEIGHTS and MEASURES into Great Britain, he thus referred to the confusion prevalent, especially among agriculturists, in the matter of weights and measures:—

"There are in this country alone no fewer than 20 different ideas of a bushel. We go to Saltash, perhaps, after learning in our tables that there are 8 bush. in a qr., and discover that in that part of the world there are 5 qr. A load of Wheat means in one part of the country 5 qr.; in another, 5 bush.; in another, 3 bush. If I buy Wheat at Swansea, I must order by the stack of 3 bush.; if at Barnard Castle, by the boll of 2 bush., and must not, when I compare quantity and price, confuse this boll with the two other bolls—one of 140, the other of 280 lb. If I buy at Beccles, I must order by the coomb of 240 lb.; if at Preston, by the windle of 220 lb.; if at Wrexham, by the hobbet of 168 lb. But even if I do happen to know what a hobbet of Wheat means at Wrexham, that knowledge, good for Flint, is not good for Carnarvonshire. A hobbet of Wheat at Pwlheli contains 84 lb. more than a hobbet at Wrexham; and a hobbet of Oats is something altogether different, and a hobbet of Barley is something altogether different again. There are no less than 10 conflicting systems in national use:—1, Decimal grains, for the scientific Troy weight, of 5 Geo. IV. 2, Troy. 3, Troy, with decimal divisions, called bullion, 16 Vict. 4, Bankers' weights, to weigh 10, 20, and sovereigns. 5, Apothecaries. 6, Diamond weights and pearl weights, including carats. 7, Avoirdupois weights. 8, Weights for hay and straw. 9, Wool weights, using as factors, 2, 3, 7, 13, and their multiples. 10, Coal weight, under 1 William, 8 Victoria, 1, .5, .2, .1, .05, .025. Practically everything in the way of weight and measure goes its own gait. A gallon is not a gallon. It is a wine gallon, or one of three different sorts—an ale gallon, or a corn gallon, or a gallon of oil—and the gallon of oil means 7½ lb. of train oil, and 8 of some other oils. If you buy a pipe of wine, how much do you get? Ninety-three galls. of Marsala, 92 of Madeira, 117 of Bucellas, 103 of Port, 100 of Teneriffe. What is a stone? Fourteen pounds of a living man, 8 of a slaughtered bullock, 16 of cheese, 5 of glass, 32 of hemp. It is 14 lb. as sold by the growers, 15 as sold by the woolstaplers to each other. And as regards acres, there are seven measures to define an acre. Again, a man may live by selling coals at a less cost per ton than he paid for them at the pit-mouth. A ton of coals varies at the pit mouth from 22 to 28 cwt., of 120 lb. each. Of cheese, 32 cloves (each 8 lb.), make a wey in Essex—42 in Suffolk. We walk by four sorts of miles, English, Scotch, Irish, and geographical. Our very sailors don't mean the same thing when they talk of fathoms: on a man-of-war it means 6 feet, on a merchantman 4½ feet, and a fisherman means 5 feet. Not to weary you with any more details, I will simply read the names of the different measures found to exist in this country by Dr. YOUNG, in 1820, when he prepared a report on the subject for the use of Parliament.—The awn, bag, bale, basket, bat, bay, beatment, billet, bind, bing, boll, bolt, bolting, bottle, bout, box, bucket, bunch, bundle, burden, cabot, cade, canter, caroteel, carriage, cart, cartload, case, cast, cheef, chest, clue, cord, corf, cran, cranock, cut, cyvar, cyvelin, daugh, dish, drop, dupper, erw, faggot, fall, fan, flask, fodder, fotmal, frazil, garb, gaun, glean, gunny, gwaithgwr, hank, head, heap, hide, hobed, hoop, hutch, hyle, incast, ingrain, jar, jug, keel, kemple, kenning, kibin, kishon, kiver, knot, lay, leap, lispound, llath, llathen, gyvelin, llestraid, lug, maen, maise, mark, mast, math, measure, meer, meiliard, merk, mount, mug, oxland, pack, packet, paladr, pared, peccaid, peget, piece, pig, ploughland, pocket, poke, pot, pwys, quintal, reel, rees, rhaw, ridge, role, rope, roul, sack, saume, sester, sieve, skain, skin, skron, sleek, spindle, square, stacca, staff, stank, stick, stimpart, stook, stoeed, sum, takle, talshide, tankard, teal, thrave, thread, threave, timber, topston, truss, tub, tunnell, vergée, vragina, waggon-load, wain, warp, web, weight, and windle; in all, 154.

—— The ANNUAL ROOT SHOW of Messrs. CARTER & Co. was held on Friday, the 24th ult., on the premises of the Pneumatic Despatch Company, High Holborn. Notwithstanding that this show has been instituted only a comparatively few years, it numbered this season upwards of 200 entries. The roots were all grown by Messrs. CARTER'S customers, under ordinary farm cultivation. The most striking feature of the show was a collection of enormous specimens of their Mammoth Long Red Mangel, weighing individually upwards of 50 lb. The 1st prize of 10 gs. or a silver cup, for 24 roots of their Imperial Swede brought a great number of competitors. Twenty-four roots in this class weighed over 4 cwt. There was also a very handsome collection of Carter's Prize Intermediate Mangel, a variety which produces a great weight per acre, its form admitting of its being left closer in the rows than other kinds. The other most noticeable sorts were Imperial Green Globe, Pomeranian White Globe, Devonshire Grey Stone, and new Purple-top Mammoth Turnips; the Imperial Green Kohl Rabi, White and Yellow Belgian Carrots, Ox Cabbages, &c.; all evincing great care in the selection and cultivation of the various kinds. The following are some of the awards:—

For the best 24 roots of Carter's Imperial Hardy Swede.—1st, E. Lythall, Esq., Radford Hall, Leamington, a Silver Cup, value 10 gs; 2d, Mr. D. Tully, Bowes House, Fence Houses, £5 5*s.*; 3d, S. London, Esq, High Chimneys, Hurst, £3 3*s.*; 4th, R. W. Glendenning, Esq., Bromdykes, Chirnside, £2 2*s.*

For 16 roots of Pomeranian or other White Globe Turnip.—1st, J. Gosling, Esq., Sonning, near Twyford; 2d, Mr. J. Cave, Surfleet.

For 6 roots of Mammoth or other Long Red Mangel.—1st, Mr. R. Beecher, bailiff to J. Beamish, Esq., Kilmalooda; 2d, Dr. J. Buck, Leicester.

For 6 roots of Elvetham or other Long Yellow Mangel.—1st, J. Fleming, Esq., Groundslow, Stone; 2d, Mr. D. M'Vicar, Grimsthorpe.

For 6 roots of Warden or other Yellow Mangel.—1st, Mr. D. M'Vicar; 2d, Mr. R. Beecher.

For 6 roots of Red Globe Mangel.—1st, W. Brooks, Esq., Weybridge; 2d, S. London, Esq.

For 6 roots of Intermediate Prize Mangel.—1st, Mr. D. M'Vicar; 2d, J. Haws, Esq, Romford.

For 12 roots of Mammoth or other Purple Kohl Rabi.—J. Fleming, Esq.

For the finest Ox Cabbage.—S. Robinson, Esq., Melbourne, Derby.

—— Mr. MECHI writes thus of the proceedings of a clever Scottish farmer in Essex, who had been "driven out" of his farm in Scotland by a still cleverer Scottish farmer as we must pronounce him to be, seeing that he had to pay the higher rent from which his predecessor ran away:—

"Scotch farmers are being driven out of Scotland by an enormous increase in their rents at the termination of their 19 years' leases, especially those who, as good and profitable farmers, improved their land at the commencement of their leases by draining, liming, and other means. There being no tenant-right in Scotland, the landowners get the benefit of these improvements at the termination of the leases; and, where the demand for a new rent is excessive, the tenant seeks for cheaper and unimproved farms—often in England. This is good for England, as I purpose to show by the following recent instance in our county of Essex. A Scotch farmer, whose lease was approaching termination, and who was paying £1600 a year rent for 400 acres of land, purchased in Essex a farm of 350 acres, with a good residence, &c., upon it, for £20 an acre. This was a good, honest, but very stiff tile earth or collapsing clay, undrained, which went begging in vain for a tenant at 15*s.* or 16*s.* per acre. Unfortunately, there still exists in Essex a belief among farmers that it is of no use to drain these plastic or collapsing clays, although the hard chalky clays are frequently drained. Our Scotch farmer, having no such mistaken prejudice, drained all the land 18 feet apart and 3 feet deep, put the fields into proper shape, broke up the wretched pastures, using the steam-plough, thus reducing his number of horses to nine instead of 17, and now grows 150 acres of Wheat, 40 acres of winter Beans, fine crops of winter Tares, Clover, and Mangel. The farm being close to water carriage, all the crops and straw (except what is required for the farm horses and a few bullocks) are sold off the farm, and the barges that convey them to London bring back London manure. What a change in the scene! Poverty superseded by plenty, employment for labour and capital greatly increased, food for the people multiplied, capital remunerated, and the manufacturer of farm machinery benefited. The land is all deeply steam-ploughed by a 10-horse engine, on the roundabout system, the iron harrows having teeth 12 inches long. No cultivator is used. This soil was in the first instance so adhesive and tenacious that three horses or more were required to plough it, and in its original undrained state it was scarred with deep furrows and water furrows to carry off the water from the surface. Now, by deep steam cultivation, the land is all levelled and the water passes down readily to the subterranean drains. Is there not a sufficient evidence of the necessity for improvement when land so near the great food-requiring metropolis is to be had for £20 per acre? I have seen such land so sold within the last 12 months, and there is plenty to be had at prices ranging from £20 to £30 per acre. This would not be so if we had manufacturers in Essex.

"This Scotch farmer wisely adopted the crops suited to our Essex soil and climate, such as Beans, Wheat, Mangel, Clover, and Tares, and avoided the usual error made by Scotch farmers in attempting to grow Turnips here on the Scotch plan, or spring Wheat."

OUR LIVE STOCK.

CATTLE.

A VERY neat catalogue of the Dunmore herd, just published, already contains the names and pedigrees of the recent importations from America. The high-bred assemblage of Shorthorns collected together by Lord Dunmore, comprise members of a large number of famous families. The herd may even be criticised as heterogeneous, when compared with the tenacious adherence of most of our eminent breeders to, at most, a few names. This is, however, a fault (?) to be looked for in a young herd, and as time goes on we shall probably find certain tribes asserting themselves more emphatically, to the exclusion of others. This diversity constitutes our principal difficulty in reviewing the Dunmore catalogue, in which we find a list of 88 animals, and representing 33 families. Among these, *Duchesses* 106*th* and 107*th* occupy the first place. Next follow four Oxfords—11*th Lady of Oxford*, and her calf by 6TH DUKE OF GENEVA, imported last April; and 8*th Maid of Oxford*, and her calf by 4TH DUKE OF GENEVA, imported during the present month. The four "Red Roses," also just landed from America, come next, after which we have a collection of eight Kirklevingtons, known also as Siddingtons, and at Dunmore as Marchionesses. Lord Dunmore's three Kirklevington cows have been prolific since he obtained them at Didmarton and Siddington, having produced five heifer and two bull calves. There is one Waterloo cow, one Cherry Princess of the Cherry Duchess tribe, and *Lady Thorndale Bates* of the Lady Barrington tribe; after which a considerable array of Wild Eyes cows and heifers concludes the Bates portion of the catalogue. Knightleys appear in considerable force, representing *Cathleen* by CANDYTUFT, *Flourish* by LITTLE JOHN, and *Annette* by LITTLE JOHN; *Sweetheart* 5*th* represents Milcote, and *Baroness Oxford* and her daughter *Cygnet* the Southcott "Californias;" *Red Bonnet*, by Mr. Peacock's GAME BOY, bred by Earl de Grey, is the ancestress of the Revelry family, now boasting among them a *Revelry* 9*th* (late *Ruby*). Mason and Colling blood is also present, the former represented by *Lady Thorndale*, a direct descendant of *Portia* by CATO, and the latter by representatives of *Countess* by CUPID, and later of *Violet* by HENWOOD, and stock in turn possessed by the late Earl Ducie and Mr. Bowly, of Siddington. Musicals, of Siddington notoriety; Cleopatras with a cross of Booth, through the famous DUKE OF BUCKINGHAM (14,428); animals from Didmarton, from Nunwick, from Kingscote, and from other famous herds, conclude a long list of well bred cattle. 2D DUKE OF COLLINGHAM, bred by Captain Gunter, and purchased at the Didmarton second sale, still heads the list of bulls, and the remaining young bulls are from cows now in the herd

—— The *Mark Lane Express* thus comments on the prevalence of white cattle among the prize-takers at Birmingham:—"If not quite fashionable, the white Shorthorns were altogether in the ascendant, as, where there was any competition, all the first-prize oxen and steers were of this colour. Thus beyond Mr. Stratton's ox, the best of the next class, who came from Scotland with a high character, and goes on to London, was a white; but though a really good steer, he had not much to beat, and the same may be said of Lord Exeter's white, a 1st prize at Oakham."—The prejudice against white Shorthorns is surely dying out, as it deserves to do. It is true that some two years since a butcher, described as "a man of education and thought," repeated again and again, as the invariable result of his experience, that a white animal has not nearly as much blood in it as one of another colour—little more than half as much. Such a statement is an admirable example of the rash generalisations and irresponsible theories too often hazarded by practical men. Whether whiteness is a real disparagement to an animal may of course be open to discussion, but while we have vigorous well-grown sires, or excellent milking cows of this "objectionable" hue, we can hardly believe that they are deficient in quantity of blood. Neither is the fact insignificant that not only our native wild cattle are nearly white, but that escaped cattle tend to the same colour. On the Ladrone Islands in the Pacific Ocean, immense herds of cattle, which were wild in the year 1741, are described as milk-white, except their ears, which are generally black ("Anson's Voyage"). The Falkland Islands, situated far south, offer a more interesting case. Cattle have run wild there, during 80 or 90 years, and in the southern districts the animals are mostly white, with their feet, or heads, or only their ears black (Darwin). Now, it is evident that, when animals are unrestrained, a kind of natural selection is constantly taking place; the weakest go to the wall, the strongest bulls become the sires, and if any particular colour was correlated with constitutional weakness, it is hardly probable that it would at length predominate over other tints. We should not have any difficulty in naming famous bulls and cows among our most noted herds of a white colour; and the results of sales show that the opinion of breeders is not averse to white.

—— The 14th number of Thornton's Circular contains the prize lists of our principal shows, so far at least as Shorthorns are concerned; the results of all the chief public sales from July 5; an account of cattle exported; births and deaths among Shorthorns, and lists of bulls for service and animals for sale. The present number derives an additional and sad interest from obituary notices of the eminent agriculturists and Shorthorn breeders, whose loss during the last few months we have had to deplore. We refer to the late Mr. J. C. Adkins, Mr. T. W. Bramston, Mr. John Clayden, Mr. Richard Eastwood, Sir John Rolt, and Mr. Richard Stratton. It is seldom that death has, in a single year, made such sad changes among us, and we may ask—Where is the agriculturist, of any note, who among these esteemed and lamented men has not lost a friend?

SHEEP.

IN the notice of the late Mr. J. C. Adkins' agricultural career (Thornton's Circular) the following passage occurs, relating to the origin of the Milcote Down sheep:—

"It is, however, as a breeder that his (Mr. Adkins) name is widely known; sheep were the stock upon which he mostly depended, and he quietly succeeded in producing another variety of Downs. Cotswolds were originally kept, but there was difficulty in running them thickly; they produced fat at the expense of lean, and this, with the preference of dark for white faces in the market, prevented a good sale. The Cotswolds were crossed with Downs, the best sheep of each kind being procured. Pure-bred Cotswold sires were used on the darker faced ewes, and pure Down tups on those with the Cotswold character, but even with judicious selection and vigorous weeding he failed to secure uniformity. Nothing daunted, he pursued another system. The purchased rams were set aside, and cross or home-bred ones used; these were reared on two principles. From the best Cotswold flocks a few of the finest ewes were occasionally selected, and mated with first-class Hampshire Down rams. A robust Cotswold or Down tup was paired with Hampshire or Wiltshire Down ewes, and from these alliances were reared cross-bred rams, of which the best alone were reserved for service. Carefully pursuing that system, with that fine judgment and care with which Mr. Adkins was so liberally endowed, the Milcote flock steadily became uniform; a large fall of lambs was regularly secured; the ewes were admirable nurses, and when the tegs were about a year old they went fat from Mangel and hay, weighing from 20 to 25 lb. per quarter. The weight of wool was scarcely sacrificed, and the acreable yield decidedly increased. So compact, hardy, and thriving was the flock, and withal so uniform was its character, that an active demand has risen in the neighbourhood for rams. The type of the Milcote Down is somewhat as follows:—A dark mottled face, rather large broad head, tapering to a fine muzzle, a short stout neck, a swelling bosom, well clad with wool, the carcase long, cylindrical, and well ribbed up, with strong good loin, supported on rather short, brown-mottled legs, the wool partaking of the Down character, and averaging from the whole flock between 8 and 9 lb."

THE LEICESTER SHEEP.

YOUR review of Mr. Bell's history of the improved Shorthorns (August 26, 1871, p. 1112), relating to Leicester sheep, is not likely to add to the credit of his volume. As you ask the opinion of Leicester sheep breeders upon the following anecdote, I beg to offer a few observations:—

"Mr. Bates often mentioned a fact which showed Mr. Waistell's discernment. Mr. Bakewell, he said, had concealed from the world how he had produced that wonderful improvement in his flock, but if the truth were known, he was sure that it would prove that he had done it by the use of a black tup. Seventeen years after Mr. Bates heard Mr. Waistell state this, he named it to a gentlemen who had visited Mr. Bakewell in his early career as a breeder, and he said that, 'While staying with Mr. Bakewell I observed that there was one part of his premises he did not show me, and I got up very early one morning and went and examined these premises, and I there found a black tup, a most extraordinary animal; but as it was a liberty I had taken I did not mention it to any one,' which confirmed what Mr. Waistell had said. Mr. Bates further stated that he had learnt from good authority that Mr. Bakewell bought this black tup at Ashbourne market, in Derbyshire, and that the fact was well known by those who saw him buy the same black tup, and that he also had good authority for saying that of late years black lambs occasionally came from Leicester ewes, though none were ever seen in Mr. Bakewell's days, which is a strong proof that animals breed back even to remote ancestry."

As you justly observe, Mr. Bakewell's inquisitive friend would have found a mare's nest in his search, for any one at all cognisant of Mr. Bakewell's character and habits will give him credit for being too good a general to be taken by surprise by any man, he had his staff so well regulated.

The history of the black ram is simply and easily told. The facts are these:—Mr. Bates, with Mr. John Clifford Elches, then of Barton Park, near Burton-on-Trent, afterwards of Hurley Thorne, near Stone, and another friend, came to Dishley, from the meeting of the Royal Agricultural Society at Derby, and spent a day and a night with me; and any one knowing the inquisitive mind of Mr. Bates, will readily imagine the theme of conversation on such an occasion: the three subjects discussed were Leicester sheep, Shorthorns, and manures. Mr. Bates was very anxious to copy some memoranda of mine on artificial manures, and when I came downstairs early in the morning, I found him hard at work at the subject. Whether the black ram had disturbed his rest, I cannot say; but now for its history.

The first that was heard of the black ram was related by Mr. Bakewell himself, and was not found out by any Pry. Messrs. J. P. and Thomas Stone, the former of Quorden, and the latter of Barrow-on-Sour, sent ewes to Dishley to the ram, and Mr. John Stone sat up for a week with his favourite sheep, and at length she produced a black lamb, whereupon the brothers went to Dishley to complain to Mr. Bakewell that the shepherd had turned their ewes to "lane tup." Mr. Bakewell good-humouredly tapped Mr. John Stone on the shoulder, and said: "Young man, let this be a lesson to you through life; I can account to you for this black lamb. In my early improvements of my flock, I went to Ashbourne Fair, and the best ram I found there was a black one, which I bought, and used him, and that is how your black lamb came."

Now, with reference to what is stated by Mr. Bell or Mr. Bates, that he or they could add information as to Mr. Bakewell having been seen buying the sheep—it appears a fabrication; but I can easily imagine it from two such fertile minds. Now, Mr. Elches was a native of Ashbourne, and his father was an extensive butcher, and I knew them intimately, and believe I should have heard all about the black ram.

The fact is, there was a black lamb at Dishley about 1820, and at the June show of that year there was much conversation about it, and Mr. J. B. Stone related the anecdote. The lamb was killed for the show, and Mr. Turner, of Cadbury, near Tiverton, found fault with my father for killing it; that was the only black lamb that occurred in our flocks for nearly 50 years, and that fact was related to Mr. Bates and Mr. Elches at Dishley. Mr. Bates appears to be silent upon what passed about the Bolingbroke or Duchess blood in Shorthorns.

What must we say about the statements of Mr. Dixon's prize essay, "Rise and Progress of the Leicester Breed of Sheep," No. 8, 2d Series, Part II., 1868, of the Journal of the Royal Agricultural Society, which has only just come under my notice? He states that Leicestershire had good sheep before Bakewell's day. In searching some antiquated records of 200 years ago, he speaks of the famous Rothley plain as a rabbit warren and a sheep walk. Who ever heard of good sheep in the present sense of the word on a rabbit warren? He might as well have included Churley Forest, which extends from near Ashby de la Zouch to Leicester. Now, the forest sheep were very small, with grey faces and legs, and fine wool.

Mr. Dixon limits the palm to Bakewell as the great improver of the Leicester; but not only are the Leicester sheep, Longhorns, and the heavy horse, indebted to Bakewell, but every other breed, for he set men to think about improving their breeds. Mr. Dixon states that there are pictures extant of the great breeder in his drab Quaker-cut coat, jack-boots, and periwig. On this subject, however, I am bound to take issue with Mr. Dixon, and say there never was a likeness of Bakewell taken from life, or painted from memory within 50 years of his death; what has been painted since I cannot tell. It was a constant object with my father to try to get a portrait of the great man. I have heard him talk to Mr. Walton, who was a pupil of, and many years with, Bakewell, who was afterwards represented in the portraits of the Woburn and Holcombe sheep shearings, and with Mr. Vickers, of Loughborough, the surgeon, who was a constant guest at Bakewell's table; and also with Mr. Weaver, the artist, who he frequently asked and tried to persuade to paint Bakewell from memory. Now Weaver was a pupil of Mr. Boultby, who painted stock for Bakewell, so that had there been any portrait of Bakewell Weaver must have known it. Mr. Dixon then says, "dine who might with him, he would not break through his rule of having a small round table to himself in the corner near the window." This is partially true, although not a round table, but a sort of desk or rostrum, from which he held all conversation with his guests. Had Mr. Dixon been well informed upon this subject, he would have known that there is an anecdote told of Bakewell, at the time the Duke of Bedford and Sir John Sinclair were dining with him. Mr. Vickers, who was there, as the clock was nearly ten, asked permission to have his horse ordered, at which the Duke remonstrated with Mr. Vickers, hoping he would not break up the company, but he replied, "I know Mr. Bakewell's rules, my lord." Bakewell was appealed to, and replied, "If my servants do not go to bed at night, I cannot expect them to do their duty to me in the morning;" and no matter who was there, bed candlesticks were always brought in a little before ten o'clock, and no servant was expected to attend after that hour. Mr. Dixon then comments upon the black cart horse of the "old K sort," which was nearly as much Bakewell's delight as Longhorns and Longwools. "When Bakewell received a notice to show one of his horses in London to George III., his Majesty looked more at the man than at the horse." Does Mr. Dixon wish to convey that the King was surprised at Bakewell's eccentric appearance, or was it that his Majesty was looking with interest on the man who had conferred such lasting benefits upon the kingdom and mankind? I should think the latter, for it must not be forgotten that twice in his pecuniary difficulties Mr. Bakewell received assistance from the State. Such was the opinion of the Government of the benefits Bakewell had rendered to his country.

It may not be out of place here to mention an occurrence that took place at the "Warwick show," at which Mr. Bakewell was generally asked to preside. After his failure, some one asked Mr. Fowler, of Rowbright, to take the chair, and after dinner taunted Bakewell that Fowler's bull "Garrick" was the best bull in England. The old gentleman said, "Perhaps so." After the taunt had been repeated, Bakewell replied, "It takes a great deal to constitute the best bull in England," and observed, "we have always in our discussions held that that bull, horse, or ram that got the best stock was the best animal. Now, I say Mr. Fowler's bull 'Garrick' is not the best bull in England, but that Dishley 'Twopenny' is the best bull in all England, for he got 'Garrick.'" Mr. Dixon further states the memoirs of this old Leicestershire worthy have never been published, but that his sayings, such as "Money wears out three lives," "Consume half the corn you grow with beasts, or lay out half its price in cake;" "Rise with the lark and to bed with the lamb"—are still preserved in a MS. book at Dishley. I assert there never was such a book in Bakewell's days; if there had, it must have come to my knowledge, for Mrs. Honeybourne gave to my father everything of antiquity Bakewell left—principally samples of wool, specimens of sheeps' heads and bones! a large Flemish horse shoe, sea weeds, and the like. Had there been such a book, she would have been pleased to have given it to my father, to whom she felt she was under considerable obligations.

Mr. Dixon's informants seem to have very little knowledge of where Mr. Bakewell sought for crosses for his flock, for he never mentions one word about the "Derbyshire limestone sheep," or the "Teeswater," both of which, it is generally understood, were brought to Dishley; neither does he quote the "Romney Marsh" sheep as springing from Mr. Bakewell's flock, as there is no doubt they did, and their history traceable, which, however, would scarcely be required by any man who knew the true type of a "Leicester."

There is one more statement of Mr. Dixon's that I cannot pass over. Mr. Bakewell's flock, he says, went after its founder's death into the hands of Mr. Smith, of Dishley, and passed from him to Mr. Honeybourne (Bakewell's nephew). The fact is, my father succeeded Mr. Honeybourne, and felt that the flock had so much deteriorated in Mr. Honeybourne's hands that he did not buy a single lot, perhaps from the practice of "in-and-in" breeding, a fallacy long admitted.

I cannot close this letter without asking permission, as an admirer of Shorthorns, to thank Mr. Sanday for his valuable paper read at Newark upon the deterioration of that breed, in the main points of which I perfectly agree with him. *B. Smith*, 37, *Caledonian Road*, *London*, *N.*, *late of Dishley.*

THE AGRICULTURAL LABOURER.

A FEW days since, Earl Nelson gave his annua audit dinner to his tenants at Whiteparish, Hants. His lordship spoke upon the position of the agricultural labourer, with especial reference to two questions of the day very nearly concerning their common interest, and their relations to each other. First, the demand pretty prominently put forth that if the rights of property were to be held sacred, the duties of property were as sacred and must be duly performed; secondly, the growing endeavour of the lower classes to rise in the social scale and to improve their condition physically and morally. He was going to be very plain-spoken in stating what he considered to be the present relation between the tenant-farmer and his labourer. Might one not hear many a farmer say something as follows?—"We don't very much like this education movement, but we can't help it now. We would sooner people would not migrate, for we are in danger of having too small a supply of labour. The men must be looked sharply after, or they would chisel us out of a good deal at day-work; some are not above cheating even when we give them piece-work to help out their wages. When they get more wages we have no security they will not squander them in drink. They are pretty sure to come upon the poor-rates when ill, and when past work; we are so burdened by these rates that we can't give a good man higher wages, and yet they are getting so independent that the only way to get any power over them is to get hold of their cottages. But we are kind to them; we visit them when ill, draw their fuel, put them into a clothing club, and they ought to be contented." Now, he did not think this was a satisfactory state of things; it was ruling by making men feel their dependence; it was good for nothing unless the screw was put on now and then; and he thought this feeling of dependence had a direct tendency to destroy provident habits and increase pauperism. They ought to go right-about-face altogether and try a different system. He believed he could clearly show that the rate of wages was everywhere very much according to the labour given, except that three good, provident, sober labourers at 15*s.* would be everywhere cheaper than four inferior, improvident, and drunken ones at 11*s.* It was manifest that their own Wiltshire labourer, though he had not got the benefit of good food or of continuous hard work to keep up to its full efficiency his working power, could and did do more at piece-work than he did at daily wages; therefore he could give more if he chose, and if they could gain his good-will they would get all the labourer could give, which was more than any supervision or any dread from a feeling of dependence could gain for them. First, there should be a hearty zeal for the real education of the people. A sham or half education brought all the evils and none of the good. Let them not wait for Parliament to compel them, but of their own free will refuse to employ a child until he had passed in the third standard, and oblige the children to go to school in the winter months till they had passed to the fourth or fifth. Secondly, their present system was altogether tending to drive out of our people all that spirit of independence and self-respect which used to keep them off the poor-rate. It was no good to tell them not to drink and to save their money if they had nothing to save it for, and if their chance in old age or sickness was to share outdoor relief on the same terms as the profligate, the thief, and the drunkard, who had done nothing for his independence, and had been a burden on the rates all his life. Thirdly, a wholesome migration, by helping those who had saved something for the purpose, might be encouraged in overcrowded parishes, and everything that would give those that remained a greater interest in the land they were required to till would tend to attach them to it, and encourage provident habits.

He would suggest the following practical points for their consideration :—1st. That with a general consent of all the tenant-farmers of the neighbourhood, 1*s.* per week should be added at once to the general wage rate of all who belonged to a duly registered provident society. This, whenever generally adopted, would benefit the tenant-farmer wherever he might be, as tending directly to reduce the poor-rate for sick pay or permanent relief.

2d. He should advise half-an-acre of ground being given at a fair rent as garden ground to every cottager on the farm, and that the tenant-farmer should plough it up for his labourer. That would enable any man to keep a pig without fear of the temptation to steal for its support, and would not take away from the work which the farmer might fairly require from a well-paid man. In the largest farm it would amount to little more than the ploughing up of five acres gratis, and would improve the position of the permanent labourer so much as to make the casual labourer anxious to fill any vacancy.

3d. He would give to every cottager at least a quarter of a year's notice, and secure to him full payment from his successor for any crops left in the ground at the time of his leaving his cottage.

4th. In the matter of neighbourly favours to the labourers there were various little things enumerated by his lordship which would be a great help to their endeavours for the good of the people.

With regard to the duties of the landlord, he would say that his first duties were to live on his property and among his people, to take a lead in supporting their church and school and provident and other societies, and where, unfortunately, non-resident, that he should visit his property from time to time, and give larger subscriptions for the support of those things, to make up for his enforced absence. These were truisms which were happily now pretty generally accepted. But more than this was required of him. He must not allow his personal gratifications to hinder him from a careful performance of all parochial and county duties ; he should not allow a large herd of game for his own amusement to interfere with the proper development and improvement of the land ; he should be forward in encouraging such improvements, and must not be afraid, if required, to give long leases, at least to those whom he had found by experience to have the means and capacity for improving the land ; he should be ready above all things to have sufficient cottages on his farms, and in good repair ; and he should be willing to share in the payment of the poor-rate, as giving him, as well as his tenants, a direct interest in keeping them down. To complete the special work for improving she condition of the agricultural labourer, he might do two things to encourage provident habits among them—start a system of small cow-lands to be let to labourers of good character who had saved £10 to £20, and build or set apart a few houses on the property to be had rent-free by such labourerers or their widows who had worked long on the estate, and had secured for themselves sick or old age allowance from their provident society. He believed by the plans he had ventured to put before them they would obtain for themselves a contented and attached peasantry, who would be willing at all times to give an honest day's labour for an honest day's pay.

THE LAND QUESTION.

THIS great and grave question is at the present moment occupying a foremost place in many people's minds, and it will doubtless have some day to be met. It behoves all who are interested in the coming struggle to gird on their armour, bearing in mind that to be forewarned is to be forearmed. A small section of persons, with Professors Stuart Mill and Fawcett at their head, has for some time been busy promulgating the opinion that there is no private property in land, but that it belongs to the people, or rather to the State, for the public good, and that it is necessary for the good of the country, and even its safety, that we should adopt the French system of *morcellement ;* in other words, that the land should be cut into slices, and that we should have small farms and a peasant proprietary. To this doctrine I demur. However this system may be adapted to France, it has been to a considerable extent tried in England and failed. The only way in which in this country a man can subsist on a bit of land is, as Mr. C. S. Read has so well expressed it, by doing the work of two labourers, and living at the expense of one. If we examine into the effect of the small farm system in Ireland, we can find nothing for congratulation. The landlords are dissatisfied, and would gladly change it. The tenants are dissatisfied with the landlords, the laws, and everything else, while at the same time the land is exceedingly fertile, and lower rented than in England.

If I look at the map of the parish in which I dwell, I find that at the time of the enclosure of the open and common lands there was a considerable number of small proprietors. These small properties have gradually become merged into the larger ones, until there is hardly one left. Why has this been so? Simply because the owners could not, or it did not answer their purpose to retain these small estates ; and when a man has anything to dispose of, whether it be land or aught else, he does not generally seek a customer in a man more needy than himself, but, acting on the rules of common sense, he offers it to some one who can pay for it. It is the old story here, as it is all the world over : money begets money. Land as a rule pays less interest than any other form of security, and provided things are allowed to go on peaceably and quietly, which I trust they may, the ownership of land in this country will become a luxury in which only the wealthy can indulge. A millionnaire may obtain enough to satisfy his wants at 2 or 2½ per cent., and be willing to make a sacrifice of income for the *locus standi* which large landed possessions give. Not so John Green. He finds that he may toil on his few acres all his life and be in income no better, and in anxiety much greater, than a labourer. He wisely parts with his little freehold, and with the proceeds he can go into business on a larger scale, or, if he prefers it, he can invest in some other of the many kinds of security in the market, whereby his income may be doubled or trebled. This is no fancy sketch, it is what has been going on daily for the last century. And so long as it answers the purpose of the poor man to sell, and the rich man to buy, I cannot see what anybody else has to do with it, provided it be not detrimental to the public good. I maintain that it is not. It is my belief that land in large parcels is beneficial rather than otherwise to the commonwealth. The large estates in this country are generally the best managed. It is on these where improvements of a permanent character have been most extensively carried out. In fact, I can conceive no position in our social system where the elements of human happiness exist in so large a degree as they do on a large, well-ordered estate, when its wealthy owner fully recognises the privileges and duties of his exalted position. It is there that we generally find the most prosperous tenantry and the most thriving and contented peasantry. On such estates good schools have for years existed, when in the parishes owned by needy small proprietors there have been no schools at all, or none worthy of the name. The labourers and other retainers have had better homes with larger gardens or allotments at easier rents, the sanitary condition of the people has been better attended to, employment has been more regular all the year round, and, in fact, the beneficial influence of the great house has been felt as widely as its sway extended.

If we turn for a moment to the poorer open parishes we find that little progress has been made as regards the permanent improvement of the soil. Needy landlords and needy tenants often co-exist. Here, however, the village tradesman or other small capitalist has had no difficulty in getting hold of a bit of land where small savings could be invested in running up a few breeding hutches for paupers. These have been built on the principle of giving the smallest possible accommodation for the largest possible amount of rent, in other words to get as high a rate of interest for the outlay as possible. Into these places the labourers have from time to time congregated until their numbers were utterly disproportioned to the requirements of the cultivators of the soil, and hence it has been here that labour has received its worst remuneration, and the poor-rate has been the heaviest. There are several parishes of this kind in this county, and I have no doubt in every county in England.

A word now on the agricultural labourer. His condition has in my time considerably improved, and will continue to improve. A good deal of nonsensical twaddle has been written and talked during the last year or two, about rooting the labourer to the soil. I say we have no right to try to do so. The old Poor-law did it with a vengeance. Where the poor man was born there he must either live or starve. If he left the parish to which he belonged, and where he could obtain no work, and went to another where employment was to be had, he was hunted out by the parish officers as an unclean or pestilent thing, and sent back whence he came. Happily for him a better state of things now exists. His shackles have been cut, and he is free to go where he pleases to sell his labour in the best market. This is as it should be. He has as much right, and in fact it his duty, to improve his position as well as the rest of the community : provided always, as the lawyers say, he does so in a quiet, unobtrusive way ; but strikes I regard as unmitigated curses. There has never yet been a conflict between labour and capital but has been productive of mischievous and disastrous results. From the parish in which I dwell there have, during the last year or two, as many as a hundred souls emigrated to Halifax in Yorkshire, where the children get employed at considerable wages. Now, if these people had all remained with us we should have done with them : as it is, we have somehow managed to do without them ; and if they have gone there to earn a larger loaf, with perhaps a slice of beef or mutton to boot, it is an arrangement whereby all the parties are gainers, inasmuch as these people go where they become our customers instead of being a clog upon our industry by having to receive money for services with which we can dispense, or having to be supported out of the rate. Few persons have been inconvenienced more than I have at times owing to shortness of hands, but this is not an unmitigated evil. If we have less people, we have less wages to pay ; and I prefer it to having, as was the case in my youthful days, a dozen men and boys presenting themselves the first thing in the morning asking for work, which meant wages, when there was none to give.

Shortness of hands, too, has the effect of leading to stricter supervision on the part of the master ; and as necessity is the mother of invention, it makes him set his wits to work so to manage the forces at his disposal as to make the most of them. Too great an abundance of cheap, or rather underpaid, labour often leads to laxity of discipline. Now that labour is allowed to flow freely, the labourer may be safely left to take care of himself, and practically he is doing it. The result will, ultimately, be a nearer approximation of the wages as paid in town and country.

It would be better if three well-paid men would do three men's work, than that five underpaid men should do it. Unfortunately, I find in practice that when hands are scarce and wages higher, it leads to the belief on the part of the men that their services cannot be dispensed with, and is apt to make them both idle and impertinent.

It appears, however, that the friends of the working man are not satisfied with the intention of splitting up the land for his benefit, but the whole of the middle class, in the shape of tradesmen as well as farmers, is to be wiped out as with a sponge, and all his wants are to be supplied from huge co-operative stores. Now, let me ask who and what are the middle classes of this country ? In our rural districts those belonging thereto have either themselves or their forefathers risen from the ranks to the positions they occupy by dint of superior intelligence, industry, thrift, frugality, and self-denial ; and if any one of them ceases to practise these virtues, he very soon drops into the ranks again. If we go to the metropolis, or any of our large seats of manufacture or commerce, and inquire into the antecedents of the prosperous tradesmen or the merchant princes there, we shall generally find that either they or their fathers before them have begun life with barely a shilling. The same avenues to success are still open to the working-man ; in fact, they are multiplied, owing to our greater wealth ; and, so long as he is content by fair and proper means to better his condition, and raise himself in the social scale, I for one wish him "god-speed ;" but I have no patience with any set of men, whether philosophers or fools, who wish violently to break up the existing order of things, and build up a new social fabric on the ruins.

A word now about that long-suffering and much-abused animal the British farmer, the only person in the world who is popularly supposed to know nothing about his own business. Through evil report and good report he has somehow managed to hold his own. I have no fears for him yet, provided he is fairly dealt by. Give him long leases, or some well-devised scheme of tenant-right, and do not unduly eat him up with game, and he will compete, as he has competed, successfully with the whole world. I am satisfied that the only way in which the broad acres of England can be cultivated to the greatest advantage is by the manufacturers of bread and beef taking a lesson from their brethren, the manufacturers in other departments of industry ; and by a liberal application of capital, and a judicious use of machinery, securing the largest result at the least cost. This is impossible on a small scale. No bank will pay a better interest for the investment of our savings than the bank on which we exist, provided that the bank in which we place our deposit should give us good security. It is easy to talk of the slowness of farmers, and their want of enterprize ; but where on earth can any set of men be found ready to invest such large sums as they do in another person's property, with nothing better than a six months' notice, which hangs like the sword of Damocles suspended by a hair over their heads, and may any moment fall, through some slight hitch in conduct, some trifling breach of duty, or some unfortunate word spoken at a public meeting, as was lately the case with a tenant-farmer, who, for a speech made at Leamington, has been banished from the home where he and his forefathers had for generations dwelt. The connection between landlord and tenant is of too serious and important a character to be thus lightly broken. The cultivation of the soil is above all other interests paramount, inasmuch as it is impossible for the world to go on without it. If all the gold and silver and precious stones in the world, with all the subterranean treasures of the globe we inhabit were piled together in one huge heap, man could not subsist on it for a single week. It is that which is grown on the surface of the earth which sustains, not only the human race, but all animated Nature. Hence it is of vast consequence to every man, woman, and child in the world whether that surface be well or ill-cultivated. And in the common interest those who are engaged in this department of industry should have every encouragement and security offered to them. Even as things go, all writers on agriculture, whether English or foreign, concur in saying that the farming of this country is the best in the known world ; and this is, in my opinion, sufficient proof that there is not much wrong in our system of land management, either as regards ownership or occupancy, and ought to be held as conclusive evidence against those who desire to effect radical changes. I look upon the English farmers as the braces which bind together the upper and lower strata of our agricultural system ; and so long as the braces are kept sound the fabric will never fall. *F. W. Bignell, Loughton, Stony Stratford*

Home Correspondence.

The Education of the Agricultural Labourer.—There can be very little doubt—if we take the tone of the last discussion at the London Farmers' Club as a guide, that the average farmer is opposed to the education of the labourer. There were no observations received with a more general murmur of assent than that of the chairman, Mr. Spearing, when he said, "It seems to me that the agricultural labourer is getting over-educated," "if he becomes much more educated we shall not be able to depend on his labour at all." When Mr. Clare Sewell Read objected to "the prohibition of boys working under 10 years of age," and "to the compulsory attendance of children up to 12 years of age in secular schools;" and when he said, "the man who is taught book-learning is not necessarily a better labourer"—"that our fathers were badly educated" in the ordinary sense, but were "better men than ourselves!"—that "whatever may be the result of improved education the farmers will derive less benefit than any other class"—that "the elementary education will not work well in the rural districts"—all this was highly approved; and if the audience had consisted of hundreds of farmers instead of dozens, it would have been enthusiastically applauded. What is the reason of this feeling, so universal amongst farmers and shared by not a few old-fashioned squires? Does it not arise from the quality of the education hitherto imparted at considerable personal sacrifices by the rural clergy? How seldom is it that in a village school anything is taught, anything is read, having reference to the animals, the plants, the tools, or the occupations in which the children are to be interested when they go to work. I do not know one good text-book that gives an account of the live stock of the farm, written by a practical man, in the style that would interest children—I mean the style of which Canon Kingsley is such a master, and of which Mr. Knatchbull Hugessen has lately published an excellent example in fairy tales. Books of natural history there are in plenty, and pictures of all sorts of things to adorn school walls, that have nothing to do with practical rural life. Now farmers are practical men, they find the little labourer able to read more or less imperfectly, but not the least improved in intelligence as regards farm work. Why should not the cattle, according to their breeds,—Shorthorn, Hereford, Devon—and all the qualities, peculiarities of feeding and digestion of the milk cow, form the subject of one thoroughly interesting handbook, written in a plain, clear, exact, yet amusing style, expressly for children? Why should not another be devoted to the sheep with its varieties, as suited to rich pastures, downs, and mountains? Why should not the modern implements of the farm and operations be made a subject of familiar reading? The child of ten hears of broadcast sowing in his Bible lessons, but not of the drill, and its appropriate manures, until he goes to work. A series of really practical handbooks for the use of rural schools do not exist at present. Those which have been published are quite above the comprehension of children, and are usually too theoretical and too dry. This would be a proper subject for the education committee of the Council of the Royal Agricultural Society. Their last educational effort has not been crowned with very brilliant success—four competitors and one prizeman sweeping all the prizes, at an expense to the Society of nearly £100. But I know it would be a waste of time to press anything so practical and plainly useful on a committee which is so entirely ruled by its chairman, and whose chairman considers his own style of didactic dulness the perfection of agricultural instruction. How many of the prize essays of the Royal Agricultural Society, which he admires so much, have ever been found worth separate publication? *S. Sidney, Nov.* 22.

Middle Class Schools.—The British public are yet in much perplexity relative to the final appropriation of the many charity school funds throughout the kingdom. It is manifest that every charity school fund for the especial purpose of educating poor children is superseded by the late Elementary Schools Act, which amply provides for their education from funds derivable from rateable property. This act of legislation has therefore set at liberty the funds of these schools for other purposes. To what purpose then can they be most beneficially and equitably applied? My reply is, in establishing middle-class schools wherever practicable. It would not be equitable or just to the country generally if they were applied to reduce the amounts paid in rates by the favoured parishes who possess one of those charity schools. All laws should be equal to all classes of the community; no particular parishes should derive exclusive benefits. These charity school funds then should be thrown open, and, as far as possible, be appropriated for universal service. This in a great measure may be effected by establishing schools of a higher order, *i. e.*, middle-class schools, in every convenient locality or district, to be open to all classes under proper and salutary regulations,—such schools to be under the superintendence of competent local authorities, and to be managed and taught by masters capable of teaching the higher branches of knowledge usually taught in our higher order of "grammar schools." These schools should be easily accessible, and by an amalgamation of the funds of several parochial charity schools may comprise a whole district; or, if more desirable, neighbouring parishes may form a more local school for these parishes only, and irrespective of every such parish being possessed of a charity school. In this way these funds may be made universally applicable for the general good, the local authorities to provide the school-rooms, elect the masters and teachers, and otherwise manage the affairs. The funds for building purposes to be borrowed of the Government Commissioners, as under the Elementary Schools Act, and to be charged upon the charity estates for the longest term permitted. Unquestionably these schools would ultimately be a great boon to the middle classes, and which they are fully entitled to, as some compensation for the unjust imposition upon them of the maintenance of the elementary schools from rateable property. It is quite superfluous to stipulate that these schools shall be unsectarian, no other can in these liberal and enlightened times for a moment be tolerated; but to banish from them the book of books, "the Bible," is still more untenable. It must be the School Book, and be read without denominational teaching. The difficulties attending the establishment of these schools is not great, and should be promptly commenced as the various masters of the charity schools are superseded. *O. F.*

Milk as a Necessary Article of Food to the Children of Agricultural Labourers.—Mr. Mechi, in his article on the "Agricultural Labourer," in your last week's impression, says, "Skimmed milk is sold about here at 1*d.* per quart, when once skimmed, but only a halfpenny if twice skimmed; but there are so few cows kept that it is difficult to get any. It is a great boon to a labourer's family of small children." Here, I think, Mr. Mechi only half states the case; it is not a great boon, but an absolute and urgent necessity. Living and practising for many years as a country doctor in an agricultural neighbourhood, I have had constant opportunities of seeing and lamenting the great scarcity of milk among the labouring population, many of whom are not able to obtain any. Fortunately and happily the poor and hard-working mother is most often able to supply her offspring with a fount of natural breast-milk that the high-bred and wealthy parent would give much, but in vain, to possess; and so for the first twelvemonths, or perhaps more, the children are plump and well-conditioned. If, however, the mother should fail in her supply of milk, the child falls off, and sooner or later finds its way to the surgery, with all the appearance and history of wasting and pining. The first question, What are you feeding it on? reveals all. The mother is weakly, has no natural supply for it; the child is fed with sop, bread, water, sugar, tea, sometimes a little broth. Milk often not one drop; it cannot be procured. Thin and wasting as it is, we are told the little thing is never satisfied, and takes a great quantity, &c. To the injunction generally given to represent the child's condition to the employer, and ask for a supply of good new milk for it,—"Please, sir, they only keeps one cow for the use of the house." It is not to be procured, and often does the poor little sickly thing have its belly rubbed with cod-liver oil instead of having it filled with good milk. From the time the labourers' child leaves the breast its previously rapid growth generally becomes arrested, and its development for the next few years is really very slow. True, after a time, the natural changes in dentition and the whole digestive system fit it for digesting all and any kind of food; while the constant exposure to the atmospheric air causes a great demand for it in quantity; and so, out of much bread and Potatos, oatmeal and bacon, the growing boy appears to extract enough nutriment to make him grow up a tough and enduring man. (I speak now more of the boy than the girl, for girls much sooner get away from home to good food and comfortable homes as under nurses, &c.) But although he regains much lost ground as he grows up (and it is wonderful against what disadvantages Nature will fight in the great struggle for life) he seldom attains to the A 1 class among the types of his race. The agricultural labourers, as a class, are not nearly so fine a race as they should and would be if their progressive development were never checked. The registrars' report shows a sad amount of mortality among the children of the labouring class, and a comparison of it with the death-rate existing in the better classes would reveal a startling amount of something wrong. Not all, of course, but a very large proportion of the fault lies at the door of mal-nutrition. But does this state of things cast any reflection or reproach upon us as employers of the labouring population? I think so. How fully is every intelligent farmer amongst us aware of the disastrous effect of checking the growth of any of his young stock by a want of that continuous supply of foods suited to its respective periods of age! Have we a flock of lambing ewes? How sedulously do we care that there shall be a cow to calve just about the right time, to provide against the possible wants of the little strangers! Have we a sucking colt? How carefully do we look to its dam and her food, and if she appear not to be giving to him sufficiently, how we ransack the farm for a bit of rich Clover, a few green vetches, or, in winter, a mash of bran, Linseed, maltcombs, or other milk-giver. The same with our valuable Shorthorn calves; we would not have their early growth checked for pounds: before they cease sucking how we entice them and coax them with little niceties. The same, indeed, with all our valuable stock—all we breed or rear; while the young of man, the best and most useful and valuable and highest class of animal of all, born in the image of the Great Creator, grows or stunts, flourishes or pines as may be, without any special provision being made to ensure his progressive sustentation at this most important period of his life. I am far from saying that this state of things is universal; on the contrary, there are large numbers of benevolent farmers, and their wives, who conscientiously care for the families of their labourers, but coincident testimony from many parts of England at least show that this is a widely prevailing evil. There ought be no selling milk twice skimmed at ½*d.* per quart to genuine agricultural labourers. The order of things, viz., milk sold and beer given, ought rather to be reversed, viz., milk given and beer bought; the one is a necessary of life, the other is not. Let the poor have a claim to that which is necessary to their existence. The shrewd Scotch farmer knows and appreciates the importance of rearing human as well as other stock well; and the conviction that children can no more be reared without milk than lambs has led, in Scotland, to the practice of giving the labourer the keep of a cow for his family. Such a system would not probably answer, or indeed be required, in this country; but I quite think, and do not hesitate to state my conviction, that it is the bounden duty of every farmer employing labourers with families, and occupying for his own profit the land which alone can produce the food which their children imperatively require, and the place of which the other can supply, to provide them with a sufficient quantity of it. The land when tilled was intended to support the tiller and his family, and of the necessaries of life produced by the soil all should partake alike. So important a matter is this, that I think it ought to be made the subject of legal obligation. Employers of labour are already bound by some legal consideration for the welfare of their *employés*, why not by others? especially when so important. I have said that in many instances this matter is well cared for by the employer, and I believe would be much more generally so were its importance well impressed on the public mind; but, in justification of my suggestion to make the supply of milk to the labourer's family an obligation on the employer, I will repeat one of the saddest sayings ever said to me in my surgery some years ago. It will tell its own tale:—"Sir, it breaks my heart to have to give all that milk to the pigs, while my own child is starving for want of it." *M. W. Procter, Shifnal.*

Farm Accounts.—For the last six years I have lived as an agricultural pupil on farms in Sussex, Suffolk, Hants, and Surrey, now in Berkshire, during which time I have not, I believe, wasted the opportunities that were afforded me to make myself proficient in all matters relating to the culture of land, the management and breeding of stock. But on one point I am not satisfied, that is as to the slovenly and unmeaning manner in which farm accounts are kept. Having served an apprenticeship in my father's office, carrying on a large mercantile business, you may imagine I have a very different idea of what accounts should be, and must say such as have been placed before me do not show the result in a clear and concise manner. As I now purpose starting on my own account on a farm of 340 acres, mostly arable, can you recommend to me a good farmers' account-book, whereby I may be able to ascertain the cost of my several crops, and expenses incidental to the stock. In fact, I wish to know how, and for what, moneys are expended. If you can find space for this in your well-read journal, you will oblige, and I may also obtain the opinion of some of your readers. *An Agricultural Pupil.* [Apply to Mr. Jemmett, Murrell Hill, Binfield, Berks].

Societies.

BIRMINGHAM CATTLE SHOW.

Bingley Hall.—The 23d exhibition of the Midland Counties Agricultural Society has come and gone, and the usual crowds have enjoyed the sight of a fair average show of live stock, a very remarkable display of farm crop produce, and poultry classes equal to any ever before seen.

The Hereford classes of cattle are not of that special merit which at Birmingham, so near their home, they ought to be. Several shabby-looking specimens are mixed in most of the classes, with those large symmetrical masses of beef by which the breed is best represented. The Shorthorns, too, are not as a whole so good as might be expected in a breed which is everywhere in this country close by its home, and which has long been at once the widest spread and best result of the breeder's art. Beside the best specimens, in most of the classes the animals exhibited in general look hardly "ripe" enough for a Christmas exhibition. The Devons stand best for general merit; the several classes of this breed are almost universally made up of well-bred, well-fed animals, and there is a considerable number of unusual size. The Scottish classes are pretty well filled, the prize for the best animal in the yard going to a black Polled heifer from Aberdeenshire; and the West Highland, or Kyloe class, being of, we think, more than ordinary excellence.

In the sheep classes the late Lord Berners' flock takes its last sweep of the Leicester prizes. Lord Walsingham's name has at length disappeared from the Southdown classes, and the prizes, which used all to go to Merton, are now distributed chiefly between Lord Sondes and the Prince of Wales. The Shropshires, though outnumbering all the others, are not so large a class as usual. The Oxfordshire are fairly represented, the Cotswold are inadequately shown, the Lincoln breed still worse.

The pig classes are first-rate. Several disqualifications, owing to veterinary dissatisfaction with the terms of the entry, are posted—pigs stated to have been of one litter being pronounced by Professor Gamgee to be of different ages. The Berkshire breed is magnificently shown; the white breeds are in hardly such great perfection.

The poultry classes are very fine indeed. A multitude of the best bred Dorkings in the country, very large and perfect classes of Brahma Pootras, a breed of rapidly increasing popularity; smaller classes of Cochin Chinas, and very large collections of Hamburghs and game fowl, together with smaller classes of French and Spanish breeds, make up the bulk of the show.

The galleries are filled with a very extraordinary collection of roots and seeds, and the yard is surrounded on the floor with a fair representation of the agricultural implement manufacture.

THE CATTLE

first engage the attention. The *Herefords*, include 30 entries. The older oxen are a good class. Mr. Betteridge's 1st prize ox, which takes also the prize for the best Hereford in the yard, is a very deep-framed, heavy-fleshed animal, thickly covered over the loin and behind the shoulder. Mr. Heath's, standing No. 1, is wonderfully well ribbed up, and particularly good over loin and flank: altogether a beast of first-rate quality. The 3d prize goes to Mr. Bettridge again, for a rather flat-sided beast. Mr. Pike's ox, taking the 1st prize in a rather short class of younger oxen, is also rather flat-ribbed, particularly good, however, over loin and flank, and undoubtedly the best in rather a short class. Her Majesty the Queen shows a good stocky little beast in the class of steers. Mr. Baldwin's steer, commended, is not quite so ripe, and the other entries are very inferior. In the cow classes we have, from the Queen's herd, one of the old-fashioned monstrous, almost lobed Hereford backs which used to be more commonly seen. The 1st prize goes to Mr. Betteridge, for a very evenly and thickly fleshed animal, very heavy forwards. In the two classes of Hereford heifers Her Majesty takes the 1st prize, with a very thick, wonderfully well made-up 3-year-old, extraordinarily fine over the loin, whose sister took the 1st prize in her class at both Birmingham and Smithfield last year.

The *Shorthorns* number 40 entries, viz., 9 older oxen, 7 younger oxen, 4 steers, 7 cows, and 13 heifers. In the first class stands Mr. Stratton's white ox. He is an uncommonly well-fed specimen of a well-bred Shorthorn ox, with plenty of bone and constitution; good over back and loin, deep and heavy fleshed both in fore and hind quarters, perhaps a little light in flank. This beast was pitted against the 1st prize cattle in all the other classes for the prize which is given to the best animal in the yard. After easily disposing of the pretensions of Herefords and Devons, he yielded the palm to Mr. Bruce's black polled heifer. They will come together again at Smithfield next week, when we shall see whether there is anything in the idea which has found expression, that the Shorthorn, Hereford and Devon judges would more easily unite, when there is any room for doubt, in an award in favour of an altogether outside breed, than consent, any two of them, in decorating an animal of any of the three principal rival breeds at the expense of its rivals. It is a less disagreeable task for the three to confess they are all beaten than for any two of them to confess that they are beaten by the third. The white ox is certainly a very handsome animal, losing nothing when in the ring for lack of active step and good carriage: nevertheless the smaller black heifer is preferred. The prize ox girths 9 feet 6 inches, and is 5 feet 8 inches long, weighing 21¼ cwt. live weight. Several oxen in this class were hardly ripe for exhibition. The younger class of oxen is not so good a class. Mr. Bruce's 1st prize ox is a good thick beast, standing beside another Scotch animal, much larger, higher, gaunt, and lanky, exhibited by Messrs. Martin. In a class exclusively for tenant-farmers only one beast appears, and Mr. E. Wortley, of Ridlington, near Uppingham, worthily takes the prize with it. The cow class contains seven entries, none of remarkable merit. Sir W. C. Trevelyan, Bart., takes the 1st prize with a heavy, well-covered 6-year-old, which had had one calf only. The heifers are a much prettier class, the prizes going to Mr. Tidy, of Tamworth; Mr. Crawshay, of Newnham; and Mr. Ibbs, of Grinshill.

The *Devons* exhibited are the evenest and best filled classes in the yard. The 1st prize older ox, exhibited by Mr. Lee Senior, is a very heavy and thickly-covered beast. He receives also the prize for the best ox in any of the classes, bred and fed by the exhibitor, the white Shorthorn ox losing it by the death of its breeder, the late Mr. R. Stratton. There is a very good show of younger oxen, also of the Devon breed, Mr. Taylor, of Glynley, taking the 1st prize, and Mr. Smith, of Exeter, the 2d. The younger steers are a small class, the Queen taking the 1st prize with a pretty little beast, and Mr. Farthing being commended. Short classes of cows and heifers show Mr. Smith, Mr. Lee Senior, and the Prince of Wales as prize-men. His Royal Highness shows the 2d prize animal in the younger class, hardly ripe, disfigured by a drooping rump, and not so good as a commended ox beside him from the same herd.

A few *Longhorns* still compete annually for the Society's prizes—there are no *Welsh* cattle shown—the *Scotch* classes are rather short. The Polled cow classes, though very short in numbers, contain one or two remarkably fine animals, and among them Mr. Bruce's heifer, which takes the prize as the best animal in the yard.

The following is the award of the judges in the cattle classes:—

JUDGES.—Mr. G. W. Baker, 48, Cambridge Terrace, Clapham Road, London; Mr. John Thompson, Badminton, Chippenham; Mr. S. P. Newbery, 4, Baignton Villa, Plympton, Devon.

REFEREE FOR THE AGES OF STOCK.—Professor Gamgee, 1, Great Winchester Street Buildings, London, E C.

VETERINARY SURGEON.—Mr. E. Stanley, 35, Islington, Birmingham.

HEREFORDS.

Class 1. Oxen or Steers, exceeding 3 years and 3 months old.—1st, £15 (and extra prize of £20 as best Hereford), Mr. Henry Bettridge, East Hanney, Wantage, Berks; 2d, £10, Mr. W. Heath, Ludham Hall, Norwich; 3d, £5, Mr. H. Bettridge, Wantage, Berks.

Class 2. Steers, not exceeding 3 years and 3 months old.—1st, £15, Mr. A. Pike, Mitton, near Tewkesbury; 2d, £10, Mr. H. Bettridge, East Hanney; 3d, £5, Mr. W. Groves, Brompton, Salop.

Class 3. Steers, not exceeding 2 years and 6 months old.—£10 (given by G. B. Lloyd, Esq., Mayor of Birmingham) and Silver Medal as breeder, Her Majesty the Queen. Commended: Mr. J. Baldwin, Luddington, Stratford-on-Avon; Mr. J. Crane, Benthall, Shrewsbury.

Class 4. Cows.—1st, £15, Mr. H. Bettridge, East Hanney; 2d, £10, Mr. W. Groves, Brompton, Salop; 3d, £5, Mr. A. Pike, Mitton, near Tewkesbury. Commended: Mr. G. Pitt, Chadnor, Leominster.

Class 5. Heifers.—1st, £15, and Silver Medal as breeder, Her Majesty the Queen; 2d, £10, Mr. R. Shirley, Baucott, Salop; 3d, withheld.

Class 6. Heifers, not exceeding 2 years and 6 months old.—£10 (given by Joshua H. Dawes, Esq.), and Silver Medal as breeder, Mr. J. Crane, Benthall, Shrewsbury. Highly Commended: Mr. J. Codling, Whaplode, Spalding.

SHORTHORNS.

Class 7. Oxen or Steers, exceeding 3 years and 3 months old.—1st, £15 (extra prize of £20 as best Shorthorn, and Gold Medal as best Ox or Steer in the Hall), Mr. J. Stratton, Alton, Wilts: breeder, the late Mr. R. Stratton. 2d, £10, Mr. W. Farthing, Stowey Court, Bridgewater, Somerset; 3d, £5, Mr. R. Nelson, Barton Hill House, York. Highly Commended: Mr. T. Elliott, Hindhope, near Jedburgh; W. McCombie, Esq., M.P., Tillyfour. Commended: the class.

Class 8. Steers, not exceeding 3 years and 3 months old.—1st, £15, and Silver Medal as breeder, Mr. R. Bruce, Newton-of-Struthers, Forres; 2d, £10, T. Walker, Esq., Berkswell Hall, Coventry; 3d, £5, Colonel Loyd-Lindsay, M.P., Lockinge Park, Wantage. Commended: F. J. S. Foljambe, Esq., M.P., Osberton Hall, Worksop.

Class 9. Steers, not exceeding 4 years old, bred and fed by the exhibitor, a tenant-farmer.—£15 (given by G. F. Muntz, Esq.), and Silver Medal as breeder, Mr. E. Wortley, Ridlington, near Uppingham.

Class 10. Steers, not exceeding 2 years and 6 months old.—£10 (given by G. B. Lloyd, Esq., Mayor of Birmingham), and Silver Medal as breeder, the Marquis of Exeter, Burghley Park. Commended: the Earl of Aylesford, Packington Hall, Coventry.

Class 11. Cows.—1st, £15, and Silver Medal as breeder, Sir W. C. Trevelyan, Bart., Wallington, Northumberland; 2d, £10, Mr. T. Willis, Manor House, Carperby, Bedale; 3d, £5, Mr. W. Faulkner, Rothersthorpe, Northampton. Highly Commended: Mr. J. W. Kirkham, Cadeby Hall, near Grimsby. Commended: the class.

Class 12. Heifers.—1st, £15, and Silver Medal as breeder, Mr. W. Tidy, Middleton, Tamworth; 2d, £10, H. Crawshay, Esq., Oaklands Park, Newnham; 3d, £5, Mr. R. Ibbs, Woodstile, Grinshill, Salop. Highly Commended: Mr. W. How, Tottington, Thetford, Norfolk.

DEVONS.

Class 13. Oxen or Steers, exceeding 3 years and 3 months old—1st, £15 (and extra prize of £20 as best Devon), Mr. T. L. Senior, Broughton House, near Aylesbury; 2d, £10 and President's prize of £21, as best Ox or Steer bred and fed by the exhibitor), Mr. W. Smith, Hoopern, Exeter; 3d, £5, Mr. T. Bond Park, Huntworth, Bridgewater. Highly Commended: Her Majesty the Queen. Commended: the class.

Class 14. Steers, not exceeding 3 years and 3 months old.—1st, £15, and Silver Medal as breeder, Mr. W. Taylor, Glynley, Eastbourne, Sussex; 2d, £10, Mr. W. Smith, Hoopern, Exeter; 3d, £5, Mr. T. L. Senior, Broughton House, near Aylesbury. Highly Commended: Mr. W. Farthing, Stowey Court. Commended: the class.

Class 15. Steers, not exceeding 2 years and 6 months old.—£10, and Silver Medal as breeder, Her Majesty the Queen. Commended: Mr. W. Farthing.

Class 16. Cows.—1st, £15, Mr. W. Smith, Hoopern, Exeter; 2d, £10, Mr. T. L. Senior, Broughton House, near Aylesbury; 3d, £5, Mr. H. Hitchcock, George Nympton, South Molton.

Class 17. Heifers.—1st, £15, and Silver Medal as breeder, Mr. J. T. Senior, Broughton Pastures, near Aylesbury; 2d, £10, H. R. H. the Prince of Wales, Sandringham; 3d, £5, C. McNiven, Esq., Perrysfield, Oxted, Godstone, Surrey. Commended: H. R. H. the Prince of Wales.

Class 18. Heifers, not exceeding 2 years and 6 months old.—£10 (given by William Lort, Esq.), and Silver Medal as breeder, Mr. W. Taylor, Glynley, Sussex.

LONGHORNS.

Class 19. Oxen or Steers, of any age.—1st, £10, and Silver Medal to the breeder, Mr. J. J. Burbery, The Crofts, Stratford-on-Avon: breeder, Mr. J. H. Burbery, The Chase, Kenilworth; 2d, £5, Sir J. H. Crewe, Bart., Calke Abbey, Derbyshire.

Class 20. Cows or Heifers.—1st, £10, and Silver Medal as breeder, Mr. J. H. Burbery, Kenilworth; 2d, £5, W. T. Cox, Esq., Spondon Hall, Derby.

SCOTCH BREEDS.

Class 21. Polled Oxen or Steers, of any age.—1st, £15, and Silver Medal as breeder, Mr. J. Stephen, Conglass, Inverurie; 2d, £10, Messrs. J. & W. Martin, Aberdeen.

Class 22. West Highland Oxen or Steers.—1st, £15, Mr. T. L. Senior, Broughton House; 2d, £10, Sir G. M. Grant, Bart., Ballindalloch, N.B.; 3d, £5, C. Morrison, Esq., Basildon Park, near Reading, Berks. Highly Commended: Sir W. C. Trevelyan, Bart. Commended: C. Morrison, Esq.

Class 23. Scotch Cows or Heifers.—1st, £15 (extra prize of £20 as best Scot, Gold Medal as best Cow or Heifer, and Hotel and Innkeepers' Prize as best Animal in the Cattle Classes), Mr. James Bruce, Burnside, Fochabers, N.B.: breeder, Mr. Alexander Paterson, Mulben, Elgin; 2d, £5 (extra prize of £10 10s. given by C. Ratcliff, Esq., as best Scot bred and fed by the exhibitor), W. McCombie, Esq., M.P., Tillyfour, Aberdeen.

WELSH BREEDS.

Class 24. Welsh Oxen or Steers.—No entry.

FOR OTHER PURE BREEDS AND CROSS-BRED ANIMALS.

Class 25. Fat Oxen or Steers, of any age.—1st, £15, Mr. A. Pike, Mitton, near Tewkesbury; 2d, £10, J. J. Coleman, Esq., M.P., Carrow House, Norwich; 3d, £5, Mr. J. Stephen, Conglass, Aberdeen. Highly Commended: Messrs. J. & W. Martin, Aberdeen. Commended: General the Hon. Arthur Upton, Lord's Plain Farm, Westmoreland (2); F. Wright, Esq., Osmaston Manor, Derby; F. Cartwright, Esq., Kirkstead Abbey, Horncastle; Mr. J. Thompson, Ballieknow, Kelso.

Class 26. Fat Cows or Heifers.—1st, £15, Messrs. J. & W. Martin, Aberdeen; 2d, £10, Mr. J. Reid, Greystone, Alford, Aberdeenshire; 3d, £5, Lord Fitzhardinge, Berkeley Castle, Gloucestershire. Commended: S. Carter, Esq., Quarry Hill, Battle, Sussex.

EXTRA CLASSES.

Class 27. Oxen or Steers (for animals not qualified to compete in any of the preceding classes).—No entry.

Class 28. Cows or Heifers, not qualified to compete in any of the preceding classes.—£5, Mr. R. Moss, Whisby, Lincoln. Highly Commended: Mr. R. H. Harris, Earnhill, near Forres; Captain R. E. Oliver, Sholebrook Lodge, Towcester.

THE SHEEP CLASSES

are generally satisfactory. A small class of *Leicesters*, to which three pens are contributed from the flock of the late Lord Berners, heads the list. These three pens take the 1st, 2d, and 3d prizes respectively, and are of the uniform fine quality and comparatively small size characteristic of the flock. The other pens, contributed by Mr. Herrick, of Beaumanor Park, Leicestershire, and Mr. Brown, of Holme-on-Spalding Moor, Yorkshire, are heavier, perhaps not necessarily in the scales, but in a frame capable of taking a greater weight with heavier fleece.

The *Lincolns* are represented by only three pens, Mr. Byron, of Sleaford, taking 1st and 2d prizes. A very liberal prize list has failed to attract the number that might have been expected.

We come next to the *Cotswolds*, to our mind by far the grandest breed in the island, and, as usual, imperfectly represented as regards numbers. Mr. Swanwick, of the Royal Agricultural College, is, however, persistently setting a good example to his brother breeders, and we hope his example will be followed. There is no reason whatever why the breed should not be abundantly represented at our fat stock shows. The objection to feeding breeding animals for show which interferes with an exhibition in July does not apply now. Mr. Hall, of Deddington, Oxford, takes the 1st prize with a very fine pen, not very large, but otherwise thoroughly characteristic of the breed in wool and form, handling, moreover, much firmer than the Lincoln sheep alongside of them. Messrs. Wheeler & Son, of Shipston, large exhibitors in other classes, are successful here; the 3d prize goes to the Agricultural College farm.

The *Southdown* breed is shown in two classes: Lord Walsingham's name and flock no longer appear. H.R.H. the Prince of Wales takes the 1st prize, and the 2d goes to Lord Sondes. The prize sheep are long, deep, and wide, and handle well. Colonel Kingscote shows a commended pen of rather smaller sheep, with finer wool and quality.

The *Shropshires* were not so large a show as usual. They are a much more even class than they used to be, with, however, still some difference in the character of the wool and head. Mr. Allsopp, of Hindlip Hall, Worcester, shows a sheep with a long and heavy fleece, of much coarser, looser wool than that, for example, of the sheep shown by Mr. Yates, of Shifnal, close by. The prizes go generally to the latter class of sheep, and Lord Chesham's sheep, which take the head prize, may be taken to represent the best type of the breed. The two styles are again contrasted in the class of single sheep. Mr. Allsopp's entries here compete with Lord Wenlock's, but the judges in this case have given the prize to Mr. Allsopp.

In another set of pens close by, *Ryelands*, *Dorsets* and *Hampshire Downs*, all very good of their kind, compete with one another. They are capital representatives of the several breeds: the prizes are given to the Downs.

A small class of *Oxford Downs* represents that short, stocky, heavy-fleeced, thick, upstanding breed—Messrs. Stilgoe, of Adderley, taking all the prizes. The *Cross-bred* sheep are a middling lot, beginning with the produce of such an ill-assorted couple as a Cheviot and a Hampshire Down. Others, however, are better, as Cheviot and Leicester, Oxford Down and Long-woolled, &c.

The classes for single fat ewes are interesting specimens of the several breeds, and there is here, in a class all to itself, a single specimen of that useful sheep, the Border Leicester, a much heavier and larger sheep than any that is known as Leicesters in the Midlands.

The following is the list of the awards in the sheep classes :—

Judges.—Mr. John Wood, Harewood Hill, Darlington ; Mr. H. Overman, Weasenham, Brandon, Norfolk ; Mr. C. R. Keeling, Yew Tree Farm, Penkridge.

Leicesters.

Class 29. Fat Wethers, not exceeding 23 months old.—1st, £15 (extra prize of £10, given by the Linen and Woollen Drapers of Birmingham, and Silver Medal as breeder), the Executors of the late Lord Berners ; 2d, £10, do. ; 3d, £5, do. Highly Commended : W. P. Herrick, Esq., Beaumanor Park, Leicestershire.

Lincolns.

Class 30. Fat Wethers, not exceeding 23 months old.—1st, £15 (extra prize of £10, given by the Linen and Woollen Drapers of Birmingham), and Silver Medal, as breeder, Mr. J. Byron, Kirkby Green, Sleaford : 2d, £10, do. ; 3d, £5, Mr. T. Gunnell, Milton, Cambridge.

Cotswolds.

Class 31. Fat Wethers, not exceeding 23 months old. 1st, £15 (extra prize of £10, given by the Linen and Woollen Drapers of Birmingham, and Silver Medal as breeder, Mr. R. Hall, Great Barford, Deddington ; 2d, £10, Messrs. J. Wheeler & Sons, Long Compton, Shipston-on-Stour ; 3d, £5, Mr. R. Swanwick, R.A. College Farm, Cirencester. Highly Commended : T. Jowitt, Esq., The Old Weir, near Hereford.

Southdowns.

Class 32. Fat Wethers, not exceeding 23 months old.—1st, £15 extra prize of £10 10s., given by W. Bromley Davenport, Esq., M.P.), and Silver Medal as breeder, H R.H. the Prince of Wales ; 2d, £10, Lord Sondes, Elmham Hall, Thetford ; 3d, £5, do Highly Commended : H. S. Waller, Esq., Farmington, Gloucestershire. Commended : J. J. Coleman, Esq., M.P., Carrow House, Norwich.

Class 33. Fat Wether, exceeding 23 and not exceeding 35 months old —Silver Cup, value £5, given by Messrs. Maplebeck & Lowe, and Silver Medal as breeder, H.R.H. the Prince of Wales Commended : H. S. Waller, Esq., Farmington, Northleach.

Shropshires.

Class 34. Fat Wethers, not exceeding 23 months old.—1st, £15 (extra prize of £10 10s., given by C. N. Newdegate, Esq , M P.), and Silver Medal as breeder, Lord Chesham, Latimer, Chesham, Bucks ; 2d, £10, Mrs. Beach, The Hattons, Brewood, Staffordshire ; 3d, £5, Mr. T. Nock, Sutton Maddock, Shifnal. Highly Commended : Lord Chesham, Mrs. Beach. Commended : Mr. H. Matthews, Montford, Salop.

Class 35. Fat Wether, exceeding 23, but not exceeding 35 months old.—Silver Cup, value £5, given by Messrs. Maplebeck & Lowe, and Silver Medal as breeder, H. Allsopp, Esq., Hindlip Hall, near Worcester. Highly Commended : H. Allsopp, Esq.

Oxfordshires.

Class 36. Fat Wethers, not exceeding 23 months old —1st, £15 (extra prize of £10 given by the Linen and Woollen Drapers of Birmingham), and Silver Medal as breeder, Mr. N. Stilgoe, Adderbury Manor Farm, Oxon ; 2d, £10, do. ; 3d, £5, Mr. Z. W. Stilgoe, Adderbury Grounds. Highly Commended : Mr. N. Stilgoe.

Sheep not Qualified to Compete in any other Class.

Class 37. Fat Wethers, not exceeding 23 months old.—1st, £15, and Silver Medal as breeder, A. Morrison, Esq., Fonthill House, Tisbury , 2d, £5, do Highly Commended : Mr. H. Farthing, Nether Stowey, Bridgewater. Commended : Mr. J. B. Downing, Holme Lacy, Hereford.

Cross-Breds.

Class 38. Fat Wethers, not exceeding 23 months old.—1st, £15, and Silver Medal as breeder, Mr. N. Stilgoe, Adderbury Manor Farm ; 2d, £5, Mr W. F Holtom, The Manor House, Evesham. Highly Commended : Mr. Z W. Stilgoe, Mr. W. F. Holtom. Commended : J. J. Coleman, Esq., M.P., Norwich.

Ewes.

Class 39 Fat Leicester Ewe, having bred one or more Lambs. —Silver Medal, value £2 2s , Mr E. Tindall, Knapton Hall, Rillington. Highly Commended : Mr. E. Tindall. Commended : W. P. Herrick, Esq , Beaumanor Park, Leicestershire.

Class 40. Fat Lincoln Ewe, having bred one or more Lambs. —Silver Medal, value £2 2s., Mr. J. Byron, Kirkby Green, Sleaford.

Class 41. Fat Cotswold Ewe, having bred one or more Lambs. —Silver Medal, value £2 2s., the Executors of the late Mr. J. Godwin, Troy Farm, Somerton, Deddington. Highly Commended : H. S Waller, Esq., Farmington, Northleach.

Class 42. Fat Southdown Ewe, having bred one or more Lambs.—Silver Medal, value £2 2s , H.R.H. the Prince of Wales. Highly Commended : Lord Sondes. Commended : F. J. S Foljambe, Esq., Osberton Hall, Worksop.

Class 43. Fat Shropshire Ewe, having bred one or more Lambs. —Silver Medal, value £2 2s., Lord Willoughby de Broke, Compton Verney, Warwick Highly Commended : Mr. G. A. May, Elford Park, Tamworth

Class 44. Fat Oxfordshire Ewe, having bred one or more Lambs -Silver Medal, value £2 2s , Mr. Z. W. Stilgoe, Oxon.

Class 45. Fat Ewe, of any other pure breed, having bred one or more Lambs —Silver Medal, value £2 2s., Mr. R. H. Harris, Earnhill, Forres, N.B.

THE PIG CLASSES

are, as usual in Bingley Hall, of unrivalled excellence. The 1st class, of fat pigs under 10 months old, begins with Lord Aylesford's pen of three black Berkshires, which is followed by Mr. Cartwright's three white pigs, of equal merit, and then by Berkshires —the 1st and 2d prizes going respectively to Lord Ailesbury and the Rev. H. Baily. Then follows a class under 15 months, and fully one-third bigger than the other. Here, too, white and black are intermingled. The pen shown by Mr. Biggs, of Leighton Buzzard (Berkshire), takes the 1st prize, and an extra prize as the best fat pigs in the yard. There is a large class of single pigs over 15 months, the 1st prize going to one of extraordinary length and weight, shown by Mr. Eden, of Salford. In the classes of breeding pigs there is a most interesting and admirable illustration of the Berkshire breed ; from 269 to 287 in the catalogue we have a succession of pens of five pigs, each of really extraordinary beauty, which they owe not only to good breeding and feeding but to the mere art of getting up for show—the pigs shown by Mr. Smith, of Henley-in-Arden, in particular, showing the polished skin shining through the hair. The judges had a difficult task in these classes. The next class, of other large breeds, is of much more various quality—whites of all sizes and character competing with one another. The white pigs of a small breed, though poorly represented, are a much more even and respectable display.

The following is the prize list of the pigs :—

Judges.—Mr. C. Randell, Chadbury, Evesham ; Mr. A. F. M. Druce, Eynsham, Oxon ; Mr. H. Tait, Shaw Farm, Windsor.

Class 46. Three Fat Pigs of one litter, not exceeding 10 months old.—1st. £10, and Silver Medal as breeder, the Marquis of Ailesbury, Home Farm, Savernake Forest ; 2d, £5, Rev. H G. Baily, Swindon ; 3d, £3, Mr. J. H. Clark, Lowood, Maidenhead.

Class 47 Three Fat Pigs of one litter, not exceeding 15 months old.—1st, £10, Silver Cup, value £5 5s., and Silver Medal as breeder, Mr J. Biggs, Cublington, Leighton Buzzard ; 2d, £5, the Earl of Aylesford ; 3d, £3, Mr. J. H. Clark, Lowood, Maidenhead. Highly Commended, Messrs. R. E. Duckering & Son, Northorpe, Lincolnshire. Commended : Mr. P. Eden, Cross Lane, Salford ; R. A. Davis, Esq , M.D., Burntwood Asylum, Lichfield.

Class 48. Fat Pigs, exceeding 15 months old.—1st, £6, and Silver Medal as breeder, Mr. P. Eden, Cross Lane, Salford ; *2d*, £4, Mr. S. Deacon, Jun., Polebrooke Hall, Oundle ; 3d, £2d Messrs. R. E. Duckering & Son. Highly Commended : Mr. P. Eden (2). Commended : C. R. N. Beswicke-Royds, Esq., Pyke House, Littleborough.

Breeding Pigs—Berkshire.

Class 49. Five Pigs of one litter, exceeding 3 and not exceeding 6 months old.—1st, £10, Silver Cup, value £5 5s., and Siver Medal as breeder, Mr. J. Smith, Henley-in-Arden ; 2d, £5, do ; 3d, do., ; Extra prize (Silver Medal , Mr. R. Fowler, Broughton Farm, near Aylesbury ; and Mr. T. Radcliffe, Cheswell Grange, near Newport, Salop.

Pigs of Other Large Breeds.

Class 50. Five Pigs of one litter, exceeding 3 and not exceeding 6 months old. —1st, £10, and Silver Medal as breeder, C. R. N. Beswicke-Royds, Esq., Littleborough ; 2d, £5, Messrs. J. Wheeler & Sons, Long Compton, Shipston-on-Stour ; 3d, £3, Mr. M. Walker, Stockley Park, Burton-on-Trent.

Pigs of a Small Breed.

Class 51. Five pigs of one litter, exceeding 3 and not exceeding 6 months old.—1st, £10, Silver Cup, value £5 5s., and Silver Medal as breeders, Messrs. J. Wheeler & Sons, Shipston-on-Stour ; 2d, £5, Mr. M. Walker, Stockley Park, Burton-on-Trent ; 3d, £3, Mr. P. Eden ; extra do. (Silver Medal , Mr. P. Eden.

THE ROOT SHOW.

The yard is surrounded by a gallery, in which is displayed, in capital light, and well arranged, a very interesting collection of roots of all kinds, and seeds and tubers, of which the prize list is given below. There is, first, a class competing for a silver cup or other article of plate, of the value of five guineas, offered by Messrs. Proctor & Ryland, of Birmingham, as a prize for the best collection of the three following varieties, namely, Long Mangel Wurzel, Globe Mangel Wurzel, and Swedes—six roots of each to be shown for this prize alone. Thirteen entries compete for this prize. Mr. Moore, of Long Itchington, Warwickshire, takes the 1st prize with roots of extraordinary size. Then come other prizes, offered by Messrs. Sutton & Sons, of Reading, and Messrs. Carter & Co., of Holborn, for somewhat similar collections, which are well competed for. The Kohl Rabi and Mangel Wurzel are of extraordinary size. There are classes of Kohl Rabi, Mangels of various sorts, Swedes and common Turnips, Carrots, Bovinia Potatos, and Cabbages. We must refer to the prize list below for the enumeration of the most successful exhibitors. It is a very extraordinary collection, and the awards, except, perhaps, in the case of the common Turnips, appear to us to have been fairly given—sufficient, but not excessive, regard being paid to quality as apart from weight, which after all determines for the most part the merit of a root crop. The Kohl Rabi and the Cabbage are the most extraordinary display this year. We can only add that there is a very full and well-classified exhibition of Potatos, and an extremely interesting set of samples of Wheat, Barley, Oats, and Beans and Peas. The following list of weights is taken from the *Times* :—

"No such magnificent display of roots has ever been collected before, the 115 specimens of roots and Cabbage being of wonderful weight and quality throughout. The 5-guinea cup of Messrs. Proctor & Ryland for the best Long Mangel, Globe Mangel, and Swedes, six roots of each, is won by Mr. John Moore, the weight of the 18 specimens being 484 lb. The 5-guinea cup of Messrs. Sutton & Sons, for the best Long Red Mangel, Globe, and Intermediate Mangel, Purple-top Swedes, Kohl Rabi, and Turnips, six roots of each, is won by Sir William Heathcote, the 30 specimens weighing 569 lb. The 5-guinea cup of Messrs. James Carter & Co., for a similar collection of roots, is won by Messrs. G. & J. Perry, the 36 specimens weighing 583 lb. Colonel North, M.P., is 1st and 2d for Kohl Rabi, averaging 12 lb. to. 13 lb. per root. Mr. G. Baylis is first for long red Mangel Wurzel, averaging no less than 43 lb. per root. Sir F. Smythe is 1st for Globe Mangels, averaging 25 lb. per root; but quality, not weight alone, carries the honour, as Mr. G. Baylis' 2d prize Globes, averaging more, namely, 31½ lb. per root. Mr. A. K. Algie is 1st for Swedes, averaging 20 lb. per root. Lord Willoughby de Broke's 1st prize Bovinia Potatos average over 2 lb. apiece. Mr. Samuel Robinson's 1st prize Drumhead Cabbages weigh 64 lb., 63½ lb., and 53½ lb. apiece ; and his 2d prize Cabbages weigh 60½ lb., 57¾ lb., and 49 lb. apiece. Of 139 lots of Potatos we can notice only the classifications adopted—namely, Ashleaf Kidney, Royal Ashleaf Kidney, Gloucestershire Kidney, King of Potatos, Milky White, Flukes, Dalmahoy, White Regent, Red Regent, Victoria, Redskinned Fourball, and classes for variety of early kidney, second earlies, white late or winter varieties, red or blue late varieties, early kidney, &c., and second early, &c. Some white Silesian Sugar-Beets are exhibited, but they are not of particularly good quality."

The following is the prize list under these heads :—

CORN.

Judges.—Mr. E. Davenport, Quadrant, Birmingham ; Mr. Joseph Guest, Ashted, Birmingham.

Wheat.

Class 1. Talavera Wheat.—1st, £2, Mr. F. Lythall, The Spittall Farm, Banbury ; 2d, £1, Mr. S. Robinson, Shaw House, Melbourne, Derbyshire.

Class 2. White Wheat of any other variety.—1st, £2, Colonel Loyd-Lindsay, M.P., Wantage, Berks (Chidham) ; 2d, £1, Mr. H. Frampton, Watership Farm, Newbury, Berks (Victoria).

Class 3. Red Wheat.—1st, £2, Colonel Loyd-Lindsay, M.P. (Nursery) ; 2d, £1, Mr. F. Lythall (Nursery). Commended : Mr. H. Frampton (Nursery).

Barley.

Class 4.—1st, £2, Mr. S. Druce, Eynsham, Oxford (Hallett's Pedigree) ; 2d, £1, Mr. J. H. Clark, Lowood, Castle Hill, Maidenhead (Golden Melon).

Oats.

Class 5. White Oats.—1st, £2, Mr. F. Lythall, Banbury, (Canadian) ; 2d, £1, Mr. J. H. Clark, Maidenhead (Canadian).

Class 6. Black Oats.—1st, £2, Mr. F. Lythall (Polands) ; 2d, £1, Mr. H. Frampton, Newbury, Berks (Tartarian).

BEANS.

Class 1. 1st, £2, Mr. F. Lythall (French Eyes) ; 2d, £1, Mr. J. H. Clark (White Eyes).

PEAS.

Class 8. White Peas.—1st, £2, Mr. G. Dunkley, Kingsthorpe, Northampton (Princess Royal) ; 2d, £1, Mr. Z. W. Stilgoe, Oxon (earliest in cultivation). Commended : Mr. Z. W. Stilgoe (second early).

Class 9. Blue or Grey Peas.—1st, £2, Mr. F. Lythall (Blue) ; 2d, £1, Mr. G. Dunkley, Northampton (Maple).

Silver Cup to the winner of the greatest number of Prizes for Corn : Mr. F. Lythall, Banbury.

ROOTS.

Judges.—Mr J. H. Burbery, The Chase, Kenilworth ; Mr. R. H. Masfen, Pendeford, Wolverhampton ; Mr. T. B. Wright, Quarry House, Great Barr ; Mr. H. Thornley, Marston Hall, Elmdon.

Class 1. A Silver Cup, or other article of Plate, value 5 gs., offered by Messrs. Proctor & Ryland, of Birmingham, for the best Collection of Long Mangel Wurzel, Globe Mangel Wurzel, and Swedes—6 Roots of each to be shown.—J. Moore, Esq., Long Itchington, Warwickshire. Highly Commended : Sir F. Smythe, Bart., Acton Burnell, near Shrewsbury ; Colonel North, M.P., Wroxton Abbey, Banbury. Commended : the Marquis of Ailesbury, Burwood Farm, Marlborough, Wilts.

Class 2. A Silver Cup, value 5 gs., offered by Messrs. Sutton & Sons, Reading, for the best Collection of 6 Long Red Mangels, 6 Globe or Intermediate Mangels, 6 Purple-top Swedes, 6 Green Kohl Rabi, and 6 Turnips (Green, White, or Yellow).—Sir W. Heathcote, Bart., Hursley Park, Winchester. Highly Commended : the Marquis of Ailesbury, Colonel North, M.P. Commended : Colonel North, M.P.

Class 3. A Silver Cup, value 5 gs., offered by Messrs. James Carter & Co., London, for the best collection of 6 Purple-top Swedes, 6 Green Kohl Rabi, 6 Long Red Mangels, 6 Yellow Globe Mangels, 6 Yellow Intermediate Mangels, 6 White-fleshed Turnips.—Messrs. G. & J. Perry, Acton Pigott, Condover, Salop. Highly Commended : Col. North, M.P. ; the Marquis of Ailesbury, Home Farm, Savernake Forest.

Class 4. Kohl Rabi.—1st prize, £2, Col. North, M.P. ; 2d, £1, do. Highly Commended : Col. Loyd-Lindsay, M.P. Commended : Sir F. Smythe, Bart.

Class 5. Long Mangel Wurzel.—1st £2, with 2 gs. added by Messrs. Proctor & Ryland.—Mr. G. Baylis, Gayton Farm, near Ross ; 2d, £1, Sir F. Smythe, Bart. Highly Commended : Mr. J. Birch, Sefton, near Liverpool ; J. Moore, Esq., Long Itchington, Warwickshire. Commended : Mr. W. Dickinson, New Park, Hants ; Mr. S. Robinson, Shaw House, Melbourne, Derbyshire.

Class 6. Globe and Intermediate varieties of Mangel Wurzel. —1st £2, with 2 gs. added by Messrs. Proctor & Ryland, Sir F. Smythe, Bart. ; 2d, £1, Mr. G. Baylis, Gayton Farm. Highly Commended : Mr. W. B. Boxall, Strathfieldsaye, Winchfield.

Class 7. Swedes of any variety.—1st prize, £2, with 2 gs. added by Messrs. Proctor & Ryland, Mr. A. K. Algie, Togher House, County Mayo ; 2d, £1, do. Commended : the class.

Class 8. Common Turnips (white flesh).—1st, £2, J. Simpson, Esq., Cloona Castle, County Mayo ; 2d, £1, Mr. G. A. May, Elford Park, Tamworth. Highly Commended : the Duke of Portland, Clipstone Park Farm, Mansfield. Commended : the Duke of Portland ; T. L. M. Cartwright, Esq., Melville House, Lady Bank, Fife ; Sir F. Smythe, Bart.

Class 9. Common Turnips (yellow flesh).—1st, £2, Mr. H. D. Adamson, Balquharn, Alford, Aberdeen ; 2d, £1, W. McCombie, Esq., M.P. Highly Commended : Mr. J. Stephen, Conglass, Aberdeen. Commended : Mr. J. Stephen, W. McCombie, Esq., M.P.

Class 10. Carrots of any variety.—1st, £2, F. J. S. Foljambe, Esq., M.P., Osberton Hall ; 2d, £1, the Duke of Portland.

Class 11. Bovinia, or Cattle-feeding Potatos.—1st, £2, with Plate, value £8, added by Mrs. Paterson, Lord Willoughby de Broke, Compton Verney, near Warwick ; 2d, £1, Mr. W. W. Pearce, Measham, Atherstone.

Class 12. Ox Cabbage.—1st, £2, Mr. S. Robinson, Shaw House ; 2d, £1, do.

POTATOS.

Class 13 —Ashleaf Kidney.—1st, £1, Mr. J. Choyce, Pinwall Grange, near Atherstone ; 2d, 10s., Mr. F. Lythall.

Class 14. Royal Ashleaf Kidney.—1st, £1, Mr. G. Dunkley, Kingsthorpe, Northampton ; 2d, 10s., Mr. D. Payne, Stoke Golding, Hinckley.

Class 15. Gloucestershire Kidney.—1st, £1, Mr. S. Evans, Arbury, Nuneaton, Warwickshire ; 2d, 10s., Mr. Z. W. Stilgoe.

Class 16. King of Potatos.—1st, £1, Mr. J. H. Clark, Lowood ; 2d, 10s., Mr. F. Lythall.

Class 17. Milky White.—1st, £1, Messrs. G. & J. Perry, Acton Pigott, Salop ; 2d, 10s., Sir F. Smythe, Bart.

Class 18. Flukes.—1st, £1, General the Hon. Arthur Upton, Lord's Plain Farm, Milnthorpe ; 2d, 10s., Messrs. G. & J. Perry.

Class 19. Dalmahoys.—1st, £1, Mr. J. Choyce ; 2d, 10s., Mr. A. Tustain, Great Barford, Oxon.

Class 20. White Regents.—£1, Mr. F. Lythall.

Class 21. Red Regents.—1st, £1, Mr. F. Lythall ; 2d, 10s , Mr. J. Choyce.

Class 22. Victoria.—1st, £1, Mr. G. Mangles, Givendale, Yorkshire ; 2d, 10s., do.

Class 23. Red-skinned Flourball.—1st, £1, the Duke of Portland ; 2d, 10s , Mr. F. Lythall. Commended : the class.

Class 24. Twelve Early Kidney.—1st, £1, Mr. G. Dunkley, Kingsthorpe (Early Conqueror) ; 2d, 10s., Mr. D. Payne, Stoke Golding, Hinckley (Imperial Ashleaf). Highly Commended : Sir F. Smythe, Bart. (Early Rose). Commended : Mr. G. Mangles, Givendale, Ripon (Mona's Pride Ashtop) ; Mr. N. Stilgoe (White Blossoms).

Class 25. Second Early Varieties.—1st, £1, Mr. G. Dunkley (Giant Kings) ; 2d, 10s., Mr. F. Lythall (Bresee's Peerless). Commended : Lord Willoughby de Broke (Bresee's Prolific) ; Sir F. Smythe, Bart (Lapstone Kidney) ; Mr. C J. Perry, The

Cedars, Castle Bromwich (Early Emperor); the Duke of Portland (Lapstone); Mr. George Dunkley (Johnson's Seedling).

Class 26. White Late or Winter Varieties.—1st, £1, Mr. F. Lythall (Bresee's Prolific); 2d, 10*s.*, Mr. D. Payne, Stoke Golding, Hinckley (Bresee's Prolific).

Class 27. Red or Blue Late Varieties.—1st, £1, Mr. J. Choyce, Pinwall Grange, Atherstone (Red Flukes); 2d, 10*s.*, Mr. W. W. Pearce, Measham, Atherstone (Albert's Blue). Highly Commended: Mr. C. J. Perry (Red Flukes); Messrs. Felton & Sons, 96, High Street, Birmingham (President Lincoln).

Class 28. Early Kidney, Second Early, and Late or Winter (collection of six dishes).—1st, £3, Mr. D. Payne; 2d, £2, Mr. J. Choyce. Commended: Mr. F. Lythall.

Class 29. Second Early (two dishes).—1st, £1 5*s.*, Mr. G. Mangles; 2d, 15*s.*, Mr. F. Lythall.

In addition to the articles attracted by the prize lists of the Society, there is a large collection unclassified but equally interesting, of which, not the judges, but the spectators, take account. Seedsmen are here with their wares, manure-makers exhibiting with roots which owe their size perhaps even more to their feeding than to their breeding; agricultural machine-makers, represented by all the leading firms, also help to fill the building. As, however, we hope next week to give a full report of the larger show under these heads which will be held in the Agricultural Hall, we postpone till then our remarks on the implements exhibited.

POULTRY.

Of this class we are unable to find room for a particular report. The following note is taken from the *Times*:—

"Dorkings, Cochins, Brahmas, game, and especially the favourite game Bantams, are exhibited in the highest state of perfection, with few inferior birds; and it is remarked that most of the varieties, including the Houdan, Crèvecœur, and other French breeds, surpass their demonstration of last year. It is still evident that, among fanciers in general, to win at Birmingham is considered a carrying off of the blue riband, and many a champion bird of other shows is here obliged to be content with honourable mention only. Mr. J. R. Fowler's 1st prize Aylesbury drake and duck weigh 17 lb. 12 oz., and his 2d prize Aylesbury drake and duck, 16 lb. 12 oz. Mr. Thomas Slatter's 1st prize Rouen drake and duck weigh 19 lb. 5 oz.; and Mr. J. Scotson's 2d prize Rouen drake and duck weigh 19 lb. 1 oz. Mr. J. R. Fowler's 1st prize white gander and goose weigh 56 lb. 9 oz.; and the Rev. G. Hostler's 2d prize white gander and goose weigh the same. Mr. J. R. Fowler's 1st prize white gander and goose, hatched in 1871, and only seven months old, weigh 48 lb. 6 oz. The same exhibitor's 1st prize grey gander and goose, hatched in 1871, and only seven months old, weigh 47 lb. Mr. Frederick Lythall's 1st prize American turkey cock weighs 36 lb. 4 oz.; and his 2d prize Cambridge turkey cock 33 lb. 8 oz. The same exhibitor's 1st prize turkey cock, hatched in 1871, and only six months old, weighs 28 lb. Mr. E. Leech's 1st prize turkey hens weigh 38 lb. 12 oz. the pair, and his 1st prize turkey hens, hatched in 1871, weigh 28 lb. 10 oz. the pair. The pigeons present a very great increase of numbers over last year, and while improvement in quality is observable in many classes, the black carriers, pouter cocks, dragons, and birds of every other variety are especially excellent."

Notices of Books.

Handbook of Farm Labour. By John Chalmers Morton. New Edition. Cassell & Co.

A discussion of the amount of wages per acre ordinarily paid on arable land in this country, which has been recently carried on between two such unequal champions as the *Pall Mall Gazette* and Mr. C. S. Read, M.P., induces us to name this little book as containing information on this class of subjects. The *Pall Mall Gazette*, commenting with singular ignorance on an estimate by Mr. Read of the wages paid in farming, had put the labour of arable land at about 18*s.* an acre, and to the writer of the paragraph Mr. Read replied—

"In the first place, I did not say that 'the cost of labour averages 35*s.* per acre.' I was talking of arable land, and I stated 'the amount is now frequently 35*s.*' Were I asked to strike an average, I should put it at about 30*s.* an acre on arable land.

"Now, allow me to have a word upon your statement. You say, 'Upon a farm of 800 acres it would be difficult to find employment for more than 20 hands, men and boys; and if we allow 14*s.* a week to all the labourers, irrespective of age, we have an actual expenditure of £728, or nearly 18*s.* per acre.'

"This farm contains 420 acres, 40 of which are in permanent pasture. November is not an over busy month of the agricultural year, but I have now at work 18 men, five boys, and four women, besides the bailiff, groom, and gardener. At present, I have no 'difficulty in finding them employment.'

"Indeed, to prepare the food and attend to the comfort of 80 or 90 cattle, and about 100 pigs—to say nothing of sheep and horses—needs so many hands that I employ as many labourers in summer as in winter. You have allotted 18*s.* per acre for the labour of arable land. Are you aware that upon every acre of corn we grow the simple act of harvesting the crop costs us about 12*s.* This is all done in one month, which, according to your calculation, would leave 6*s.* an acre for the other 11 months of the year. Fancy 6*s.* for the manual labour employed in ploughing, harrowing, drilling, hoeing, weeding, threshing, dressing, and delivering the grain! Upon 800 acres of arable land you would grow at least 400 acres of corn, and you would be lucky with your '20 men and boys' if you secured your crop by Michaelmas. In Norfolk we like to have the harvest ended in August, but then we should employ 40 hands instead of 20.

"P.S. My labour account for the last fortnight amounts to £31 3*s.* 10*d.*; of this about 10 guineas is paid for task-work, the rest for day labour; but it does not include the standing wages of the carters, shepherd, &c."

To this we add the following Table, giving the ascertained particulars of wages on 14 different farms, extracted from the Handbook named above:—

Number.		Extent in Acres.				Horses Worked.	Hand Labour.			Annual Labour Bill.	Wages per Acre of Arable, Deducting 5s. for Pasture.		Acres to each Pair of Horses.		
		Arable.			Pasture.										
		Fallow Crops.	Grain.	Clover.			Men.	Women.	Boys and Girls.				Arable Land.	Ploughed Land.	Fallow Crops.
										£	*s.*	*d.*			
Light Soils 1	1	210	350	350	15	20	28	..	22	1383	30	0	90	56	20
	2	235	515	150	120	29	30	12	15	1560	34	0	62	52	16
	3	110	420	130	100	20	33	3	13	1260	37	0	66	53	11
Medium Soils 2	1	70	160	30	..	7	12	8	4	700	54	0	74	64	20
	2	430		120	..	21	26	20	15	1200 ?	40	0	62	30	16 ?
	3	78	175	57	110	8	8	10	..	500 ?	32	0	78	63	19
	4	50	125	25	100	7	14	4	5	450 ?	40	0	57	30	14
	5	91	224	85	40	11	16	4	8	700	34	6	72	54	16
	6	566	946	492	430	56	95	40	20	3200 ?	32	0	71	53	10
	7	60	174	174	280	12	25	12	8	750 ?	34	0	68	40	10
Heavy Soils 3	1	20	80	12	70	3	7	..	4	250 ?	42	0	74*	16	14
	2	120	350	120	225	28	31	14	17	1170	38	0	42	33	9
	3	120	280	120	200	20	34	7	12	1200 ?	44	0	52*	40	12
	4	300			300	..	22	8	10	800	46	0	..*	..	..

"The reader may be left to extract for himself what information the Table can convey. It will, however, be right to say, that our first instance of a medium-soil farm must be considered as altogether exceptional; a very unusual proportion of the land was in laborious fallow crop, and not only was the quantity of hand labour unusually large, but the quantity of horse labour was unusully small. Taking those cases, of which the full particulars are given—viz., 13 out of the 14 farms described—we have the following gross results:—On 7824 acres of arable land, and 1690 of pasture, 242 horses are employed, and work is given to 359 men, 134 women, and 143 boys and girls, costing, on the whole, not less than £14,323. This, if we deduct £423 for the pastures, is equal to about 33*s.* per acre of arable land. The horse labour of these farms amounts, on the average, to one pair for every 65 acres of arable land, or for every 49 acres of actually ploughed land.

"It will be observed that more than the average wages are paid for manual labour on those farms where steam-power is employed as an auxiliary force. The interests of the labourer will be considered more fully in a subsequent chapter, and the possibility of his suffering by the employment of a cheaper force and more powerful machinery will be discussed. Meanwhile it is a fact, that on those farms of which the details are known, where steam-power is employed for cultivation, the wages paid for manual labour exceed the average. And if it be alleged that this is a consequence of the stiffer nature of the soil in those cases, the rejoinder is, that this intractability of soil has hitherto resulted in such land being kept in pasture, or, when cultivated, being devoted only to such crops as grain, Vetches, Clovers, which involve the least manual labour in their cultivation, whereas, where steam-power is available for cultivation, our clays, retaining their superior fertility, are made available for all kinds of fallow, labour-giving crops, such as Mangel Wurzel, Kohl Rabi, Cabbages, and other winter food for sheep and cattle.

"And there is, thus, extra labour needed not only in their cultivation, but also in tendance of the live stock needed for the consumption of their produce."

Farm Memoranda.

HAMPSHIRE.—The close of the autumnal seed-time appears to be a fitting time to review and report upon agricultural operations. There can be no doubt that the past Wheat season has been better than in some previous years, having been favoured with copious rains during the month of October. The land has worked closer and heavier than during the dry seed-time of last year. We may, therefore, expect a better and more regular plant of Wheat for the coming season. All kinds of autumn seeding has been finished in capital style. Whether we speak of Rye, winter Barley, winter Beans, or Vetches, they are all equally well planted; and, although not forward, are very regular and promising both on the hill and vale farms. Looking at the favourable seed-time and price of Wheat in our markets, it is fair to infer that at least an average area of land has been sown with this crop, and it is probable that more than the average extent on strong soils has been seeded to Wheat. The yield of Wheat by the further test of threshing is found to be quite as deficient as reported at harvest, and the weight and quality very light and various.

Barley proves about an average in quantity, but the samples are very thin, yet the best are found to work well and kindly in the hands of the maltster.

Oats are, as first reported, a very large and yielding crop, of good quality. Beans a good average, and Peas an abundant produce.

Hay is very various in quality, the best having receded considerably in price, being about 30*s.* per ton lower than last year. The great abundance of grass in the meadows, with fine open weather for grazing, has, with a great root crop, tended to maintain a high price for sheep and cattle, the value of both being higher than at any time during the past 40 years, and a remarkable feature in the trade has been the uniformity of value, and absence of the usual fluctuations in price during the whole season.

On all sides the question is asked, What is to be done with the root crop? The natural reply is, Abide the spring season, and then decide. It is also asked, what is the cause of the high prices for sheep and cattle, and how can they pay for fatting? There is no doubt a great diminution of stock, occasioned by the scarcity of food in former years; and the vale farmers are beginning to think that they ought to breed as well as feed their stock, the same as the hill flock-masters. The price of meat to the consumer is unusually high, and may be especially so for prime meat at Christmas. The importation of preserved meat from Australia is attracting attention, but can be compared only to a drop in the ocean, when it is considered that the total importations of live and dead meat amount to only 8¾ per cent. of the consumption. If, therefore, the trade of the country continues satisfactory, the prices of meat must rule high until the flocks and herds can be replenished by favourable breeding seasons.

We cannot avoid alluding to the progress the Royal Agricultural Benevolent Institution has made in this county within the past few years, and it must be gratifying to all well-wishers to know that Hampshire is now placed in the foremost rank of counties in its support of the institution, through the exertions of the local secretaries and the numerous subscribers; and it is worthy of special remark that 400 subscribers have lately testified their approbation of the zealous and disinterested exertions displayed by Mr. Alderman Naish, of Winchester, as hon. local secretary of the institution, by presenting him with a handsome testimonial and a purse of 235 sovereigns; and let us hope that the attention of landowners and agriculturists generally will be called to the subject, and induce yet greater numbers to subscribe, and thus enable the institution to assist those who, through the vicissitudes of the farming business, may have fallen into adversity. *Joseph Blundell, Southampton, November* 20.

The Week's Work.

DECEMBER 2.—*Horse Ploughing* prosecute in open weather. Stubbles should have been finished before this, but in wet weather it is better to turn into lea fields until the stubbles dry than to poach the land. In late wet seasons in the North, stubbles liable to poach are not unfrequently left until spring for Beans, the Beans being sown in the stubbles and thinly covered by "ribbing," *i.e.*, stetches made by the common plough, each with one furrow. It is, however, only the heavier clay soils that are thus left to spring, and the practice is becoming less frequent as the land is thoroughly drained.

Clay, Chalk, Marl, and Compost apply to grass lands requiring them, in order that the coming frost and rains of winter may disintegrate and wash them in before the growth of spring commences. Some marly clays are sufficiently friable to be broken fine in the spreading for working in immediately by a chain-harrow; others require frost to break them down. Composts generally may be thus applied and harrowed into grass land. But when from 200 to 400 cartloads per acre of clay are applied, to change the texture of poor, sandy, gravelly and peaty soils, seed-harrows or the common harrow may answer better than the chain-harrow or bush-harrow—frequent harrowings being sometimes necessary to effect the disintegration and washing in. Chalk is also found so broken, when dug from pits or drifted strata under clays, as to be easily applied and harrowed into clayey and peaty soils. On farms ploughed by steam, the carting of such applications forms profitable employment for the teams.

Claying Fen Land is extensively practised at this season. Sometimes the clay is carted, but over a large area of the Fen country the work is done by manual labour at from 30*s.* per acre and upwards. The clay or clayey marl is sometimes found only 2 or 3 feet below the surface of the peaty soil, but in other cases much deeper. It is not, however, so deep as it formerly was, owing to the general waste of the vegetable matter forming the soil, and the consequent subsidence of the staple below the original surface level. Narrow trenches are opened down to the clay, which is next dug up, and spread across between the trenches with the spade, or spade and harrow, when the trenches are wide asunder, at the rate of from 50 to 200 cubic yards per acre and upwards. The trenches are then filled with the peat earth dug out above the clay. The work is heavy when the clay lies at a considerable depth, but remunerating; and, although much land is annually clayed, yet the practice is limited compared with what it should be, and would be, could steam-power and machinery be successfully brought to bear upon it, either by digging or warping. Trials both ways have been made; the former (digging by steam) proved a failure, but the latter is a successful practice, which merits greater patronage than it at present receives.

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* On the farms marked thus* much of the cultivation is done by the steam-plough.

Water Meadows.—Attend to the alternate floodings; in a season like this the process requires close watching. Where there is a limited supply of water, provision should, if possible, be made for turning it on to a dry field, as the respective flooded ones are gone over, so as to use the whole supply at command. In this way a very small supply of water judiciously applied may enrich a much larger area of land than is generally imagined, and 1 cwt. of guano or artificial grass manure sprinkled over the meadow by a broadcast manure distributor, will greatly reduce the quantity needed to insure a heavy crop of hay.

Obituary.

WE regret to announce the death of Prof. SPOONER, of the Royal Veterinary College, on Friday of last week. Student in the time of Prof. Coleman, he gave a course of lectures privately soon after he got his diploma. He afterwards entered the College as demonstrator, and at length became deputy professor under Prof. Sewell, on whose death, about 20 years ago, he became Principal of the College. He was a member of the Cattle Plague Commission in 1865, and may be said to have long been the chief authority in horse matters in this country. He died at the age of 66, on Friday, the 24th ult., after an illness of two days.

Notices to Correspondents.

BOOKS: *The Shepherd* can obtain a "Farmer's Diary" by applying to Mr. Jemmett, Murrell Hill Farm, Binfield, Berks.

MR. PERRY'S ONIONS.—"Abingdoniensis" should have given his name. At present, his letter is a mere advertisement without authenticity.

RYE-STRAW: *The Earl of Essex* asks for information, through the *Agricultural Gazette*, as to the value per ton of Rye-straw, which is chiefly used by collarmakers. Will any reader give us his experience?

SMOKING HAMS: *A Correspondent* inquires if any reader will kindly give information where Cambrian Essence, or a good substitute, for giving a smoke flavour to hams, bacon, &c., is to be procured.

TURNIP SEEDS.—Messrs. Sutton & Sons, of Reading, have sent us specimens of their Champion Purple-top Swede, and their "New All the Year Round Turnip," which they were putting out for seed at the time the frost set in, as "a fair sample of the roots put out for general sale, larger being used for stock purposes." This is in reply to an article or two a short time since in our paper as to seed-growing, one writer having gone so far as to assert that a good deal of the seeds were saved from "stems like walking-sticks, and having no bulbs."

Markets.

MARK LANE.

MONDAY, Nov. 27.

The supply of English Wheat to this morning's market was moderate, and sold at the prices of this day se'nnight. There was a good attendance, but very little demand for foreign Wheat, in which scarcely any business was transacted, prices remaining nominally as on Monday last. Barley, Beans, and Peas were unaltered in value. The Oat trade was slow, and rather easier. There was no change in Maize. Flour sold slowly, at late rates.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk..White	54—59	Red......	54—57
— fine selected runs ....do.	57 —61	Red......	56—58
— Talavera	59—63		
— Norfolk	—	Red......	—
— Foreign	51—69		
BARLEY, grind.&dist.,26s to 31s..Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan....35s. to 38s...Tick	49—50	Harrow ..	49—50
— Pigeon ....51s. to 59s...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian.	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —s. to —s. ....Grey	—	Foreign ..	36—44
MAIZE	—	Foreign ..	32—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

WEDNESDAY, Nov. 29

A quiet feeling pervaded the Corn Exchange to-day. The supplies of English Wheat were fair, and those from abroad were large. Trade was inactive, and in some instances lower. Fine Barley commanded previous rates, but other qualities were easier to purchase. Malt sold slowly, on former terms. The market was well supplied with Oats; the demand was limited, but prices were without material change. Beans and Peas were dealt in cautiously, at about late prices. Flour experienced a slow sale, at Monday's quotations.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	570	170	—	—
Irish ..	—	—	—	—
Foreign ..	21,380	5640	24,790	1300 2700 brls.
	21,950	5810	24,790	

LIVERPOOL, Nov. 28.—There was again a poor attendance of actual buyers at this morning's market, and the Wheat trade was without animation, sellers, in order to make progress with sales, having to allow some reduction on last Tuesday's prices. Flour quiet, but nominally unchanged. Beans quiet, at 33s. 6d. to 33s. 9d. Indian Corn in moderate request, at a decline of about 3d. per qr.; American mixed, 33s.

AVERAGES.

	Wheat.	Barley.	Oats.
Oct. 21	56s 6d	36s 10d	23s 2d
— 28	56 7	37 7	23 5
Nov. 4	56 8	37 5	23 8
— 11	56 5	37 4	23 5
— 18	55 11	36 9	23 0
— 25	55 10	36 8	23 8
Average ..	56 4	37 1	23 4

METROPOLITAN CATTLE MARKET.

MONDAY, Nov. 27.

We have a shorter supply both of English and foreign Beasts; trade is active, at an advance on last Monday's quotations. The supply of Sheep is larger; some of the choicest qualities are making about the same as last week, although our top figure is an extreme one. Heavy fat sheep are decidedly lower. There is no alteration in the Calf trade. Our foreign supply consists of 1720 Beasts, 14,380 Sheep, and 230 Calves; from Scotland there are 65 Beasts; from Ireland, 900; and 1205 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	6 4to6 8
Best Shorthorns..	5 6—5 10	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 10	Ewes & 2d quality	4 8—5 6
Best Downs and Half-breds ..	6 8—7 0	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 4
		Pigs	3 4—4 8

Beasts, 3890; Sheep and Lambs, 22,380; Calves, 236; Pigs, 90.

THURSDAY, Nov. 30.

We have a fair supply of English Beasts to-day as to numbers, but the average quality is not very good; with foreign we are but scantily supplied. Trade is not very brisk, yet choicest qualities, being scarce, are not cheaper. There are a few more Sheep, both English and foreign, and trade is exceedingly dull; prices are rather lower, and a clearance cannot be made. Choice Calves are still scarce and dear. Our foreign supply consists of 315 Beasts, 6240 Sheep, and 158 Calves.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	6 4to6 6
Best Shorthorns ..	5 6—5 10	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 10	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 8—6 10	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 4
		Pigs	3 4—4 8

Beasts, 1000; Sheep and Lambs, 8140; Calves, 230; Pigs, 15.

METROPOLITAN MEAT MARKET, *Nov.* 30.

Best Fresh Butter	18s. per dozen lb.
Second do. do.	16s. ,,

Small Pork, 4s. 4d. to 4s. 8d.; Large Pork, 3s. 4d. to 3s. 10d. per 8 lb.

ENGLISH WOOL.

There has been a steady business doing, limited, however, somewhat by the poor assortment on offer and high prices asked. Those, however, who are running short of stocks will eventually be compelled not only to pay the prices now asked, but even higher ones, as it is becoming quite a difficult matter to see how present stocks can possibly keep machinery running till next clip day. The firm tone of the English market is further sustained by the advance of 1d. to 2d. per lb. realised in the colonial sales now being held in London.

HOPS.

BOROUGH MARKET, Nov. 29.

The tone of the market is firm; the demand is of the same retail character as during the past two or three weeks. The Alost market has fallen, and now stands at as low a point as at the commencement of the season. Only very few of the recent importations are Hops of fine flavour or quality, the bulk being Belgians, foreign Hops of inferior quality, or yearlings. Choice Bavarian and French Hops command a rise of 5s. to 10s. per cwt.

HAY.—Per Load of 36 *Trusses.*

SMITHFIELD, Thursday, Nov. 30.

PrimeMeadowHay,	80s. to	90s.	Clover, old ..	..115s.	130s.
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	42			

CUMBERLAND MARKET, Thursday, Nov. 30.

Sup. Meadow Hay	92s. to	100s.	Inferior Clover ..	80s. to	110s.
Inferior do.	70	84	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	40	46
Superior Clover ..	130	140			

JOSHUA BAKER.

Autumn Sowing.
ODAMS'S NITRO-PHOSPHATE for WHEAT, WINTER BEANS, &c.
ODAMS'S DISSOLVED BONES.
ODAMS'S SUPERPHOSPHATE of LIME.
ODAMS'S NITRO-BIPHOSPHATE (or Prepared) GUANO.

MANUFACTURED BY THE

PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited),
Consisting of TENANT FARMERS occupying upwards of EIGHTY THOUSAND ACRES of LAND.
Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.
Chairman—Robert Leeds, Castleacre, Norfolk.
Managing Director—James Odams.

This Company was originally formed by, and is under the direction of, Agriculturists—circumstances that have earned for it another title—viz.,

"THE TENANT-FARMERS' MANURE COMPANY."

Several Hundred Thousand Tons of the Manures have been supplied to the Agricultural Public, and the increasing demand that exists for them is the best proof of the appreciation in which they are held. Particulars will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY.
(ESTABLISHED 1840),
Have now ready for delivery, in fine dry condition—
PURE DISSOLVED BONES.
CONCENTRATED AMMONIACAL MANURE, for Top-Dressing
PURSER'S BONE TURNIP MANURE.
SUPERPHOSPHATE of LIME.
NITROPHOSPHATE
MANGEL, HOP, and POTATO MANURES. Also
PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
116, Fenchurch Street. EDWARD PURSER, Secretary.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.
REES AND CO. (Limited), 58, Old Broad Street, London, E.C.

DECORTICATED COTTON CAKES, of best quality, always held in stock by
ONE AND ALL
THE AGRICULTURAL and HORTICULTURAL (CO-OPERATIVE) ASSOCIATION (Limited).
Analyses and Prices on application.
EDWARD OWEN GREENING,
Managing Director.
35, King Street, Westminster, S.W.
STAND No. 54, at the Cattle Show, Agricultural Hall.

The Cheapest and Best Insecticide.
POOLEY'S TOBACCO POWDER.
Of all Nurserymen and Seedsmen.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy Thrip, Red Spider, Green and Black Fly, and Mealy Bug, and burns without the assistance of blowing, and is entirely free from paper or rags. Price 3s. 6d. per lb., carriage free. A reduction in price for large quantities.
To be had of Messrs. ROBERTS AND SONS, Tobacco Manufacturers, 112, St. John Street, Clerkenwell, E.C., of whom Copies of Testimonials may be obtained; and of all Seedsmen and Nurserymen.

STEVENSON'S ABYSSINIAN MIXTURE,
For the Destruction of all Insects Infesting Plants.
TRADE MARK.

Entered at Stationers' Hall.
Surpasses all other remedies for—
1. EFFECTIVENESS. Killing easily Mealy Bug, Brown and White Scale, Thrips, &c.
2. EASE OF APPLICATION. To be used with a Syringe, or in any other convenient way.
3. CLEANLINESS. Leaving the foliage as though it had been polished.
Sold by all Nurserymen and Seedsmen in the United Kingdom, in bottles, 1s. 6d., 3s., 4s. 6d., and 5s. 6d. each, with full directions for use.
Sole Manufacturer, F. STEVENSON, Lark Hill, Timperley, Cheshire.

Red Spider. Magnified.

GISHURST COMPOUND.
Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.
Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size. Prices from 16s. 6d. [Prices from 35s.
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.
They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.
Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

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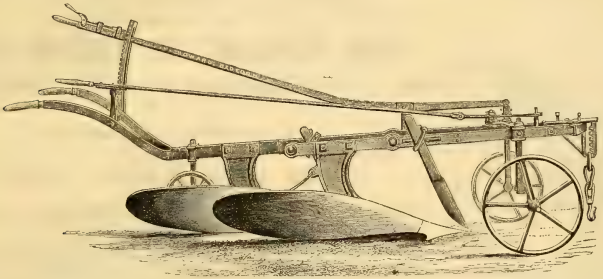

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THEY ARE MADE ALMOST ENTIRELY OF WROUGHT IRON AND STEEL,

Are the Lightest in Draught, and Greatest in Demand.

Full particulars can be had on application to

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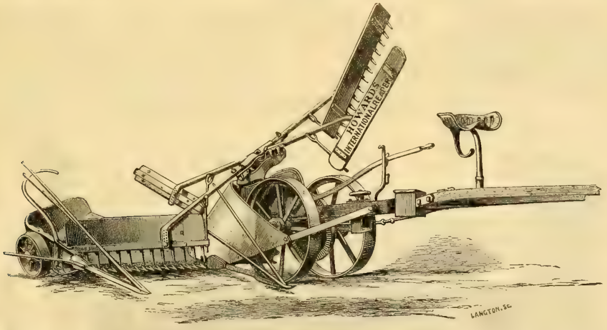

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For Double Ploughs,
APPLY TO
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FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
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Which are at Work in

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The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz. :—
First Prize for Horizontal Fixed Engine of 10 H.P. ; First Prize for Steam Engine, with Boiler combined.

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PORTABLE ENGINES, from 4 to 25-Horse Power.

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PORTABLE STEAM ENGINES (ordinary and expansion).
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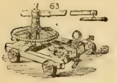
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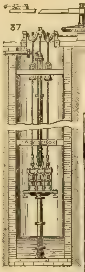
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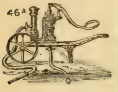
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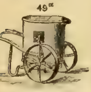
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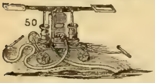
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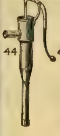
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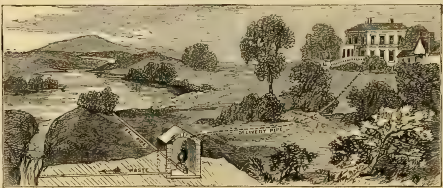

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This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

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H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 106, Mare Street, Hackney, E. Good substantial-made GREENHOUSES, Glazed, ready for fixing, 42 feet long by 13 wide, price £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. A handsome CONSERVATORY in stock, 36 feet long, 18 feet wide, £110.

Estimates given for any branch in the above line in Wood or Iron.

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JAMES GARVIE AND SONS, HORTICULTURAL BUILDERS, beg respectfully to intimate that they have now special facilities for the Manufacture and Erection of HORTICULTURAL BUILDINGS of every description, all the departments of the work being executed by experienced workmen in their own employment and under their personal superintendence.

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SASHES, HOT-BED FRAMES, and every requisite of the kind for the Garden.

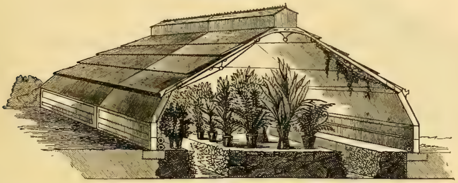
HOT-WATER APPARATUS of the most efficient description fitted up in New and Old Houses.

Old Houses Repaired, Painted, and Fitted up with Improved Ventilating Apparatus. Designs and Estimates on application.

STEAM JOINERY WORKS, 60, Huntly Street, Aberdeen.

A GOOD Second-hand CONICAL BOILER for SALE, Cheap. Has just been replaced by a larger one. Apply by letter, B., 62, Dorset Street, London, E.C.

BY ROYAL LETTERS PATENT.



THE MOST PERFECT HORTICULTURAL STRUCTURE IS THE

IMPERISHABLE HOTHOUSE,

Perfectly portable, formed of Glass, Iron and Concrete. No Masonry, no Brickwork, no Putty, and little Paint.

Manufactured under the Patent of Mr. W. P. AYRES by the IMPERISHABLE HOTHOUSE COMPANY,

NEWARK-ON-TRENT, NOTTINGHAMSHIRE.

The Company are now in a position to execute orders to any extent, for Plant and Forcing Houses of all descriptions, Railway Stations, Market Halls, Workshops, and Glass Roofs of all kinds.

A BOOK of DESIGNS, with explanatory particulars, will be forwarded in exchange for six stamps, and Special Designs and Estimates will be supplied when required. HEATING by HOT WATER upon the most approved principles. Noblemen or Gentlemen waited upon in any part of the country.

MANAGER—WM. P. AYRES,
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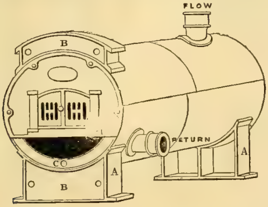
STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

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"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used.

"H. LINDSAY."

"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.

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From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

BICKLEY'S PATENT HORIZONTAL SASH-BARS require neither Paint nor Putty; an orchard-house or greenhouse, &c., may be easily, cheaply, and quickly made with them by an amateur. Four hundred feet can be firmly glazed or unglazed in one hour. Drawings, &c., for 1 stamp, of the Inventor and Patentee,

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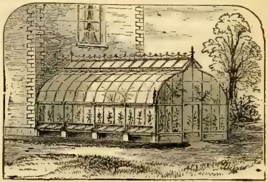
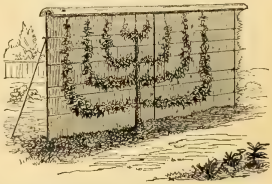
Proceedings in Chancery will be taken against any person infringing this patent.

BEARD'S PATENT NON-CONDUCTING and VENTILATING METALLIC GLASS HOUSES will prove cheaper than wood.



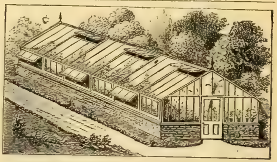
All lovers of Wall Fruit and delicate Flowers should have a piece of

BEARD'S PATENT IRON-FRAMED GLASS or SLATE WALLS.



Full particulars of the above may be had for a stamped envelope, also Illustrated CATALOGUE, price 1s., of

CHARLES BEARD, Patentee, Horticultural Engineer, Victoria Works, Bury St. Edmund's.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C. W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

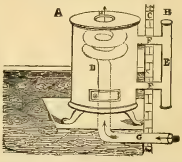
3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
" " glazed, 16-oz. good sheet glass	6s. "
6 ft. " " 2 in. thick, unglazed	5s. "
" " glazed, 16 oz. good sheet glass ..	11s. "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. "
Portable box containing two ditto, 6 ft. by 8 ft.	55s. "

Estimates given for Conservatories or Greenhouses to any Design.

GEORGE'S PATENT CALORIGEN,
For WARMING and VENTILATING.

PRICES:—

COAL CALORIGEN, £6 6s. | GAS CALORIGEN, £3 3s.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

J. F. FARWIG AND CO.,
36, Queen Street, Cheapside, London, E.C.

Indestructible Terra-Cotta Plant Markers.

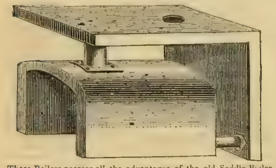
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

Save your Plants from the Frost.

MARRATT'S SELF-REGISTERING THERMOMETER, for Marking how Cold it has been, and telling the Present Temperature. No Gardener should be without it. Price 1s., or safe by post, 1s. 4d.

MARRATT, Optician, 63, King William Street, London Bridge, E.C.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 ,,	18 ,,	24 ,,	450	6	0	0
20 ,,	18 ,,	30 ,,	600	7	0	0
24 ,,	24 ,,	24 ,,	700	8	0	0
24 ,,	24 ,,	30 ,,	850	10	0	0
24 ,,	24 ,,	36 ,,	1,000	12	0	0
24 ,,	24 ,,	48 ,,	1,400	15	0	0
28 ,,	28 ,,	60 ,,	1,800	20	0	0
30 ,,	30 ,,	72 ,,	2,600	30	0	0
36 ,,	36 ,,	96 ,,	4,500	50	0	0
48 ,,	48 ,,	108 ,,	7,000	75	0	0
48 ,,	48 ,,	144 ,,	10,000	100	0	0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES & SONS.

Price Lists of HOT-WATER PIPES and Connections, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

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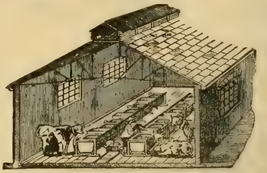

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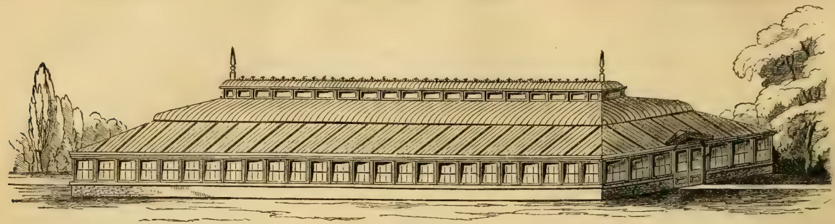

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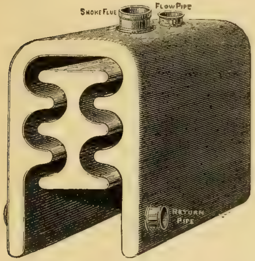

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co, of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, December 2, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 49.—1871.] SATURDAY, DECEMBER 9. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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„ Deodara, 2 to 2½ feet	18	0
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Cupressus macrocarpa, 2 feet	9	0
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„ Pinsapo, 1½ foot	16	0
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„ laricio, 3 feet	6	0
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„ occidentalis, 3 to 4 ft.	5	0
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Per dozen.—	s.	d.
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„ Mahonia, 2 feet	2	0
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For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For HARDY ORNAMENTAL TREES and SHRUBS, EVERGREENS, &c., see MAURICE YOUNG'S New Descriptive CATALOGUE.

For RHODODENDRONS and other AMERICAN PLANTS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For STANDARD and HALF-STANDARD ROSES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For NEW JAPANESE AUCUBAS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For JAPANESE NOVELTIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For CHEAP EVERGREENS and SHRUBS for COVER PLANTING or SHRUBBERIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For PLANTS suitable for WINTER BEDDING, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For TRANSPLANTED FOREST TREES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For EXTRA TRANSPLANTED or QUARTERED FOREST TREES for Planting Belts or Shrubberies, see MAURICE YOUNG'S New Descriptive CATALOGUE.

Forwarded on application enclosing stamp.

Milford Nurseries, near Godalming.

To the Trade.

EWING AND CO., The Royal Norfolk Nurseries, Norwich, will be happy to furnish prices to the Trade of the following:—

Common LAUREL, 2 to 3 feet.
Japan PRIVET, transplanted.
PURPLE BEECH, worked.
„ „ the best dark variety, 6 to 8 feet
Variegated MAHALEB, fine stands.
ELM, Chichester, straight and fine, 6 to 10 feet.
„ Herefordshire, straight and fine, 6 to 8 feet.
LABURNUM, common, 8 to 10 feet.
LIMES, red twigged, fine, 8 to 10 feet
„ cut-leaved, fine stands, with good heads.
MAHONIA AQUIFOLIUM, transplanted.
SEAKALE and ASPARAGUS ROOTS.
Dwarf ROSES, on Manetti, of the most popular kinds
Specimen Common YEWS, 3, 4, and 5 feet.

To Nurserymen.

ENFIELD BURIAL BOARD.—TENDERS are required for Providing and Planting the TREES and SHRUBS, and the necessary WORKS required in LAYING-OUT the CEMETERY at Enfield.

Plans and Specifications can be seen at the Office of the Board, Enfield Town, and Tenders to be sent to me before December 28, 1871, endorsed, "Tenders for Planting Cemetery." By order of the Board,

Enfield, December 7, 1871. JOHN PURDEY, Clerk.

TO BE SOLD, to clear the ground, 10,770 healthy useful young TREES, fit for immediate transplanting into ornamental grounds, and consisting of—

500 SYCAMORES, 12 feet high.
1,300 LABURNUMS, 10 to 12 feet.
200 SPANISH CHESTNUTS, 8 feet.
500 HORSE CHESTNUTS, 9 to 12 feet.
1,700 „ „ 3 to 5 feet.
50 ACACIA, 10 to 12 feet.
20 PINK THORNS, 7 to 8 feet.
1,500 ASH, 10 to 12 feet
2,000 OAK, 3 to 4 feet.
3,000 OAK SEEDLINGS, 1½ to 3 feet

10,770

They will be delivered at a Station on Brighton and South-Coast Railway, 40 miles from London, and are equally available, from their ntral place, either for London or the South-Coast.

For particulars, apply to Mr. S. J. CROSS, Warnham, near Horsham, Sussex.

THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

IS STILL AT

WILLIAM PAUL'S.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, HERTS, N.

PRICED DESCRIPTIVE CATALOGUE FREE BY POST.

THE ROSE GARDEN, Second Edition, 6s. 6d.; ROSES IN POTS, Third Edition, 2s.

RICHARD SMITH,

NURSERYMAN AND SEED MERCHANT,

WORCESTER.

ROSES—Standard, Dwarf and Climbing.
FRUIT TREES of every description.
CREEPERS, for Trellises and Walls.
FOREST, SCREEN, and TIMBER TREES.
SHRUBS for GAME COVERTS.
QUICK and other STOCK for HEDGES.

CONIFEROUS TREES and SHRUBS.
EVERGREEN „ „
FLOWERING „ „
ORNAMENTAL „ „
AVENUE „ „
GARDEN and FARM SEEDS of all kinds.

DESCRIPTIVE PRICED CATALOGUES to be had on application.

32, Maida Vale, Edgware Road, W.

THE PINE-APPLE NURSERY

(one of the Oldest Nurseries extant)

IS NOW CONDUCTED BY A COMPANY, WHO ARE PREPARED TO

WARRANT GENUINE

EVERY ARTICLE SUPPLIED TO THEIR CUSTOMERS. THEIR STOCK AND RESOURCES ARE ALMOST

INEXHAUSTIBLE;

AND

THEIR MOTTO IS "LIBERALITY."

Please write for their NEW CATALOGUE, and also for their SEED CATALOGUE, to be published January 1, 1872, which will contain a large fund of useful information.

ADDRESS, JOHN BESTER (MANAGER),
PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

GEORGE JACKMAN & SON,

THE "WOKING" NURSERIES, SURREY,

ESTABLISHED UPWARDS of **60** YEARS, and NOW OCCUPYING an AREA of **180** ACRES,

Respectfully call the attention of all who are interested in Planting to the resources of this Establishment.

Their DESCRIPTIVE PRICED NURSERY CATALOGUE of frequently TRANSPLANTED STOCK, can be had Free by Post on application, with Plan (Home portion) of Nursery.

Standard Fruit Trees.

For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

Miscellaneous Fruits.

Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

Standard and Dwarf Roses,

Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

Climbing and Trailing Shrubs

(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

American Plants,

Including the Andromeda, Azalea, Erica, Kalmia, and Menziesia; also Rhododendrons of the best scarlets, whites, and other choice varieties, &c.

Hardy and Rare Coniferæ

(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

Ornamental Deciduous Trees

(For Park and General Planting)—including Trees with either remarkable growth or foliage, such as weeping, cut-leaved, or purple, variegated, &c.

Evergreen Trees and Shrubs

(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

Forest Trees (for Covert and Coppice Planting)—All carefully transplanted, free grown, and good rooted.

N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

WOKING NURSERY, SURREY.

Joyning's Nursery, Waltham Cross, N.

December 5, 1871.

J. AND M. WOOD, Nieces and Executrices of the late ROBERT JOYNING, beg leave to intimate that they have DISPOSED OF the above old-established BUSINESS to Mr. WM. RUMSEY, who for the last 21 years has been engaged with the Messrs. Paul, of Cheshunt and Waltham Cross, and solicit for their Successor a continuance of the Patronage so many years afforded to their late Uncle.

Joyning's Nursery, Waltham Cross, N.

(ESTABLISHED UPWARDS of SIXTY YEARS.)

Ten minutes' walk from Waltham Station, Great Eastern Railway.

December 5, 1871.

WM. RUMSEY, late Manager at Paul's Nurseries, Waltham Cross and Cheshunt, begs most respectfully to inform all Patrons of Horticulture that he has taken the above Establishment, and intends carrying on the NURSERY and SEED BUSINESS in all its details, and hopes that his long practical experience, and strict personal attention to all Orders entrusted to him, will secure a share of that liberal support so long enjoyed by his predecessor.

Nursery and Seed Establishment, Romsey, Hants.

ELCOMBE AND SON have great pleasure in offering the following CHOICE SEEDS—price to the Trade on application:—

DWARF VICTORIA BEET.—This has been saved with the greatest care, and can be warranted true. Knowing what disappointments often occur from seed being saved in the neighbourhood of coarser kinds, they have been induced to pay particular attention to saving this superior kind, under their own care, so that they can confidently recommend this as the best Beet for all purposes that has been sent out. It has been used for the last three seasons as a ribbon and border plant in the flower garden, and no other sort has equalled it for that purpose. Leaves rich metallic crimson; growth true, even, and regular, surpassing the Perilla in the richness of its colouring. Its root is of a rich dark crimson colour, compact top, and of excellent quality. Numerous Testimonials have been received that confirm its superiority. In packets, 6*d*. and 1*s*.

FRAME CUCUMBER, HORTON PROLIFIC.—Without doubt one of the finest Cucumbers in cultivation, being equally suitable for summer and winter forcing and the open ground culture; very prolific, and of excellent quality. 1*s*. per packet.

ELCOMBE'S IMPROVED PARSNIP.—Producing handsome shaped roots, fres from fibres, and of fine flavour. Unquestionably the best Parsnip for table use. 4*d*. per oz.

KINGSHOLM COS LETTUCE.

THIS MAGNIFICENT LETTUCE made its appearance three years since in a piece of White Cos. It withstood the summer heat for a long time after all other varieties (with the exception of Wheeler's Tom Thumb) had run to seed, headed-in without tying, and formed one of the most perfect models of a Cos Lettuce ever seen. At length it ran to seed; owing to the late period of the season it had started, the produce was, however, small. The whole stock was carefully preserved for next season's seeding. The crop of seed was again very limited, but the Lettuces were magnificent, many of them weighing 7 lb. each. We are now enabled to offer seed at 1*s*. per packet, feeling confident it will give satisfaction to every one who grows it. It was seen last summer by a gentleman connected with Covent Garden Market, who remarked it was the finest Lettuce he had ever seen, and far superior to anything brought to the London Market. We recommend those who contemplate growing Lettuces for Exhibition to give this variety a trial. Get it sown in a frame, and planted out early in the season, on deeply dug and well-manured land, and we have but little fear such specimens will be produced that will defy competition.

Packets, 1*s*.; small packets, 6*d*. each, post free.
Trade price on application.

J. C. WHEELER AND SON,
SEED GROWERS,
Gloucester; and 59, Mark Lane, London, E.C.

To Planters.

J. SCOTT, Merriott, Somerset, advises Planters to send for his ORCHARDIST and its COMPANION, price 2*s*., before ordering their Fruit Trees. Ornamental planters, amateurs, and gardening folks generally, will find much useful information in J. S.'s GENERAL NURSERY, BULB, and SEED CATALOGUES; they are full of interesting matter suited for gardens and gardeners, gratis.

The FRUIT TREES cover many acres, and are in perfect health; 1000 sorts of Apple, and 1200 sorts of Pear are grown, and all other fruits in proportion.

The FOREST TREES and ORNAMENTAL SHRUBS occupy a large space, more especially Alder, Ash, Birch, Beech, Chestnuts, Elms, Firs (Austrian, Larch, and Spruce), Hazel, Oak, Poplars, and at least one million of healthy Thorns, in all the usual sizes.

A NEW CATALOGUE, containing all the names enumerated in the "Orchardist," and many new sorts introduced since that work was printed, gratis on application.

New Wrinkled Marrow Pea.

"McMILLAN'S" QUEEN of the MARROWS.—Every one who wishes a Pea of the first quality and an immense cropper, should sow this for a continuous summer crop. In the two most unpropitious Pea seasons of 1869 and 1870 it produced heavy crops of fine large Peas; while in the same ground, and treated the same, Advancer, Ne Plus Ultra, Supreme, and other similar kinds, gave very poor crops of inferior-sized Peas. In 1871 the haulm was literally covered with pods. I have now reduced the price to 1*s*. 6*d*. per quart.

It may be had of the Advertiser, and of the principal London and Provincial Seedsmen. Wholesale price on application to
H. McMILLAN, St. James' Road Nursery, Kingston-on-Thames.

SUTTON & SONS

BEG TO CALL ATTENTION TO THE SPLENDID

NEW WRINKLED PEA,

BEST OF ALL (McLean).

The best Wrinkled Marrow Pea ever introduced. It is a Main Crop variety. Height 3 feet. **5s.** per quart.

The forwardest PEA known is
SUTTONS' RINGLEADER,
Price **1s. 6d.** per quart.

SUTTON AND SONS,
SEEDSMEN BY SPECIAL APPOINTMENT TO H.M.
THE QUEEN and H.R.H. THE PRINCE OF WALES,
READING.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.
WILLOW CUTTINGS for Basket Makers' purposes.
BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.
WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"THE SALIX, OR WILLOW," second edition, post free, 1*s*.; or of SIMPKIN, MARSHALL AND CO., London.

Transplanted Scotch Fir.

J. ROY, JUN., NURSERYMAN, Aberdeen, has a very extensive stock of Transplanted SCOTCH FIR, of various growths; as the whole has to be cleared off this season he offers as under to the Trade:—

2-yr. SEEDLINGS, 2-yr. transplanted	5*s*. per 100.
3-yr. SEEDLINGS, 2-yr. transplanted	7*s*. 6*d*. per 1000.
Strong and fine do., 18 to 24 inches	10*s*. per 1000.
2-yr Seedling Native SCOTCH FIR	1*s*. per 1000.

Of RHODODENDRONS he has a very extensive stock, and to clear out he now offers his stock, which consists of upwards of 100,000 of PONTICUMS and HYBRIDS and other excellent kinds, from 9 inches to 2 feet high, at 8*s*. to 30*s*. per 100.

LIMES.—His stock of these is upwards of 100,000, from 3 feet to 9 feet. Prices will be forwarded on application: they are all clean-grown and fine straight stems.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them on terms unusually advantageous. Where selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. The plants we have sent out in execution of such orders have, we are informed, given unmixed satisfaction. The following list, with prices annexed, will be some guide to intending purchasers:—

Dendrobium Falconeri, 21*s*. to 63*s*. each; D. Wardianum, 63*s*. to 105*s*.; D. chrysotis, 21*s*. to 63*s*.; D. McCarthiæ, 42*s*. to 84*s*.; D. heterocarpum, 5*s*. to 21*s*. D. moniliforme, 10*s*. 6*d*. to 21*s*.; D. transparens, 5*s*. to 21*s*.; D. Devonianum, 7*s*. 6*d*. to 21*s*.; D. nobile, 5*s*. to 105*s*.; Odontoglossum grande, 7*s*. 6*d*. to 10*s*. 6*d*.; O. Insleayi, 7*s*. 6*d*. to 10*s*. 6*d*.; O. citrosmum, 7*s*. 6*d*. to 10*s*. 6*d*; O. luteo-purpureum, 25*s*.; O. gloriosum, 25*s*.; O. Alexandræ (Bluntii), 21*s*. to 63*s*.; O. Pescatorei, 21*s*. to 63*s*.; O. Rossi superbum, 21*s*. to 31*s*. 6*d*.; O. crocidypterum, 42*s*; O. platyodon, 31*s*. 6*d*.; O ramulosum, 31*s*. 6*d*.; O. Bictonense, 15*s*.; O. Uroskinneri, 10*s* 6*d*. to 15*s*; Vanda cœrulea, 10*s*. 6*d*. to 105*s*; Pleione Wallichii, 3*s*. 6*d*. each, 30*s*. per dozen; P. lagenaria, 5*s*. to 10*s*. 6*d*.; Cypripedium hirsutissimum, 7*s*. 6*d*. to 21*s*.; Cattleya Mossiæ, 7*s*. 6*d*. to 21*s*.; C maxima, 31*s*. 6*d*.; C. Trianæ, 15*s*: C. Warneri, 21*s*; Barkeria Skinneri, 10*s*. 6*d*. to 63*s*.; B. spectabilis, 10*s*. 6*d*. to 63*s*.; Calanthe vestita, 3*s*. 6*d*. to 21*s*.; C. Veitchii, 10*s*. 6*d*. to 42*s*.; Cœlogyne cristatum, 10*s*. 6*d*. to 63*s*.; Oncidium Papilio, 7*s*. 6*d*. to 10*s*. 6*d*.; O Krameri, 21*s*.; O. Lanceanum, fine variety, 15*s*.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, has much pleasure in offering the following at very moderate prices:—

50 choice varieties of IRIS GERMANICA, 12*s*.
12 choice varieties of TREE PÆONIES, 18*s*.
100 ARAUCARIA IMBRICATA, 25*s*.
50 LILIUM TIGRINUM FORTUNEI, 25*s*.
12 " SUPERBUM, 12*s*.
100 choice hardy RHODODENDRONS, 63*s*.
50 GHENT AZALEAS, 40*s*.
50 sorts of hardy CONIFERS, 35*s*.
25 stout plants of ABIES NORDMANNIANA, 30*s*.
100 stout PINUS DENSIFLORA, 75*s*.
100 PINUS EXCELSA, 2-yr., 20*s*.
100 ABIES ORIENTALIS, 15*s*.
100 " SMITHII, 21*s*.
100 PICEA NOBILIS, 30*s*.
25 RETINOSPORA PISIFERA AUREA, fine, 25*s*.
25 fine plants of THUJA VERVAENEANA, 40*s*.
25 fine plants of TOM POUCE (ELLWANGERIANA), 25*s*.
25 fine plants of ERICOIDES, 15*s*.
50 WIDDRINGTONIA ERICOIDES, 25*s*.
25 SKIMMIA JAPONICA, 10*s*.
100 strong SPIRÆA JAPONICA, 30*s*.
100 roots of ASCLEPIAS TUBEROSA, 25*s*.
12 fine varieties of CLEMATIS, 9*s*.
25 fine plants of YUCCA ALOIFOLIA, 15*s*.
100 strong roots of mixed CANNAS, 21*s*.
25 varieties of TEA ROSES, in small pots, 12*s*.
25 plants of BUXUS LATIFOLIA AUREA, 15*s*.
25 plants of ILEX, of sorts, 21*s*.
100 INDIAN AZALEAS, of sorts, young plants, with and without flower buds, 63*s*.
12 YELLOW RHODODENDRONS, of sorts, 18*s*.
12 RHODODENDRON MADDENII, 12*s*.
50 Greenhouse FERNS, of sorts, 25*s*.
12 LAPAGERIA ROSEA, strong, 24*s*
12 ILLICIUM RELIGIOSUM, 12*s*.
100 fine double CAMELLIAS, without buds, own choice, strong plants, £6.
2 fine stems of BALANTIUM ANTARCTICUM, £8.
100 CHAMÆROPS FORTUNEI, 42*s*. to 63*s*.
100 " HUMILIS, 20*s*.
100 CORYPHA AUSTRALIS, 63*s*.
6 DRACÆNA AUSTRALIS, fine strong plants, 18*s*.
6 " VEITCHII (SANGUINEA), fine strong plants, 30*s*,
100 GLOXINIA, in fine mixtures, 21*s*.
100 PANDANUS HUMILIS, small, 42*s*.
100 " " larger, 63*s*. to 105*s*.
100 ACHIMENES, in sorts, 21*s*.
12 ANTHURIUM SCHERZERIANUM, flowering plants, 60*s*.
25 CALADIUMS, in varieties, 25*s*.
20 sorts of TROPICAL ORCHIDS, 60*s*.
15 sorts of PALMS, 30*s*.

CUCUMBER ARMITAGE'S SATISFACTION,

1s. per packet.

HAMMOND'S IMPERIAL HARDY WHITE BROCCOLI,

1s. per packet.

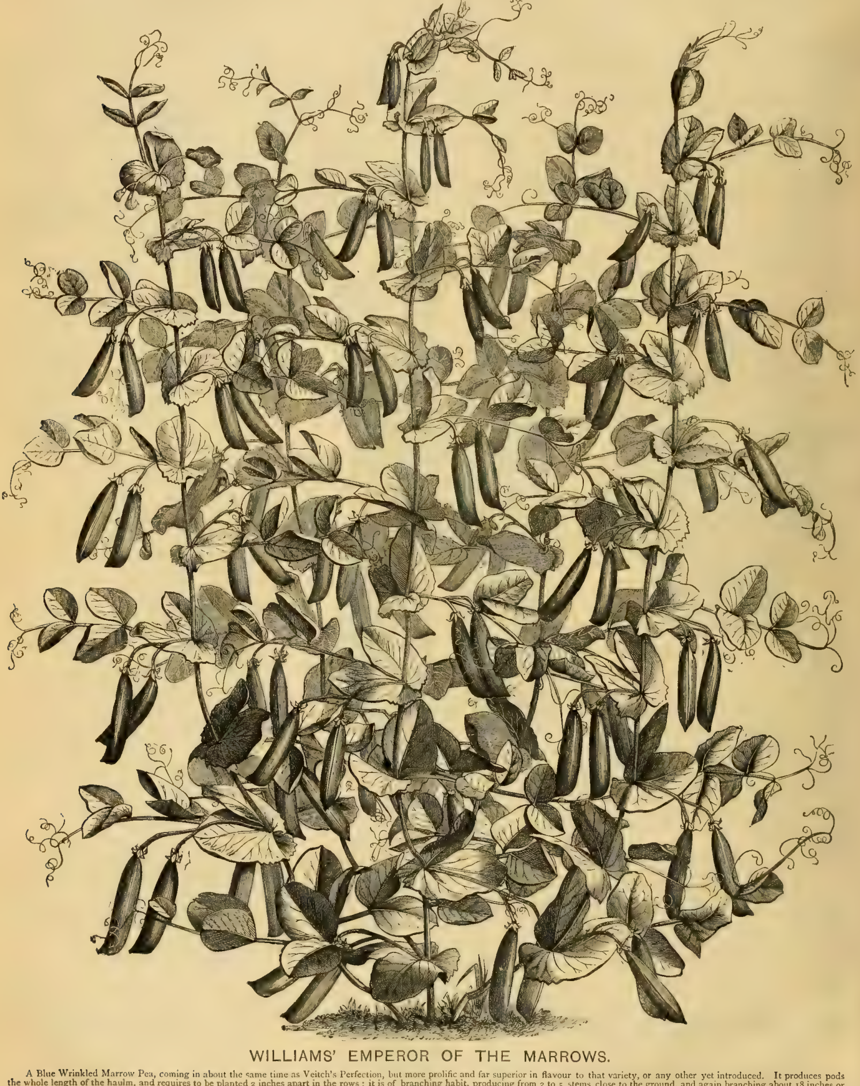
THE TRADE CAN NOW BE SUPPLIED.

WM. ARMITAGE & SON, SEED MERCHANTS, HUDDERSFIELD.
BUSINESS ESTABLISHED 1842.

THE NEW PEA OF THE SEASON.

B. S. WILLIAMS

Has much pleasure in offering the undersigned GENUINE FIRST-CLASS PEA to the Public, as a decided acquisition to our List of Vegetables.



WILLIAMS' EMPEROR OF THE MARROWS.

A Blue Wrinkled Marrow Pea, coming in about the same time as Veitch's Perfection, but more prolific and far superior in flavour to that variety, or any other yet introduced. It produces pods the whole length of the haulm, and requires to be planted 2 inches apart in the rows; it is of branching habit, producing from 2 to 5 stems close to the ground, and again branching about 18 inches or 2 feet higher up. The pods and Peas are of a large size, the latter of exquisite flavour, and it is undoubtedly the most prolific variety ever brought out. It has been pronounced by some of the best judges to be the very best Pea they have ever tasted, and in every way a Pea of sterling merit. It is very hardy, and continues bearing until late in the autumn. Height 6 feet. **Per Quart, 5s.**

☞ *A LIST OF THE TRADE WHO HAVE SECURED SUPPLIES WILL SHORTLY BE PUBLISHED.*

VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON.

Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived, and have every appearance of being above the average quality, for which they have been noted so many years.

CATALOGUES of the above, also FRUIT TREES and general NURSERY STOCK, post free on application.

Highgate Nurseries, London, N.

New Catalogue of Bulbs, Plants, Fruits, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

British Fern Catalogue.

ROBERT SIM will send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns), of his Priced Descriptive CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, Sidcup Hill, Kent.

Fruit Trees, Fruit Trees.

JOHN PERKINS, SEN., begs to offer the following:—

Standard PEARS of all the leading sorts, 5 to 6 feet stems, 60s. per 100.
Dwarf-Trained MOORPARK APRICOTS, 24s. per dozen.
" PEACHES, 24s. per dozen.
" MOORPARK CHERRIES, &c., 18s. per dozen.

52, Market Square, Northampton.

Special Notice.

ROSES and VINES at Wholesale Prices.

Fine Standard ROSES, best sorts, 10s. per dozen.
Fine Dwarf ROSES, best sorts, 7s. per dozen.
Fine fruiting VINES, of sorts, 5s. each; 25s. per dozen.
Fine planting VINES, of sorts, 2s 6d. each; 24s. per doz.

LISTS free. Terms cash. Post Office orders payable at Huntingdon.

KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

New Light Hybrid Perpetual Rose, Bessie Johnson.

HENRY CURTIS AND CO., of the Devon Rosery, Torquay, beg to offer plants of the above, in April, at 5s. each; strong dormant or shot buds, now, at 7s. 6d. each. H. C. & Co. consider BESSIE JOHNSON to be the finest large, highly fragrant, light exhibition perpetual at present in cultivation; it has the splendid foliage and hardy, free-blooming habit of its parent, Abel Grand; colour nearly white.

New English Rose (Hybrid Perpetual Climbing),
PRINCESS LOUISE VICTORIA.

WM. KNIGHT, Floral Nursery, Hailsham, the raiser of this ROSE, will send it out this month (in strict rotation), in good plants, at 7s. 6d. each, three for 21s. Has been awarded Three First-class Certificates. See Report of Floral Committee in *Gardeners' Chronicle*, September 30, 1871.

Coloured Drawing, post free, for 12 stamps.
Descriptive Priced CATALOGUES free on application.

New Tea-scented, Noisette and other Roses.

JOHN WATERER AND SONS are offering strong plants, in pots, at 12s. per dozen, comprising the following sorts:—MARECHAL NIEL, CLIMBING DEVONIENSIS, BELLE LYONNAISE, Chamois, Jeanne d'Arc, Le Mont Blanc, Madame Ducher, Madame Levet, Tour Bertrand, Lamarque a fleurs Jaunes, Reve d'Or, Isabella Sprunt.

CLEMATIS JACKMANII, | CLEMATIS RUBRO VIOLACEA, CLEMATIS STANDISHII, and others, 12s. per dozen, very strong stuff. Trade price on application.

American Nurseries, Bagshot, Surrey.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS) keep a choice assortment of EVERLASTING and DRIED NATURAL FLOWERS and GRASSES, arranged in Baskets, Wreaths, Bouquets, &c.; FRENCH IMMORTELLE WREATHS and CROSSES, for Funeral Decoration.

HOWCROFT AND WATKINS, SEEDSMEN (Successors to CHARLWOOD & CUMMINS) keep a large stock of various articles in PLAIN, ENAMELLED, and ETRUSCAN TERRA COTTA, consisting of Vases, Garden Seats, Window-Boxes, Fern-Stands, Flower-Pots, &c.

14, Tavistock Row, Covent Garden, London, W.C.

Liliums.

STEPHEN BROWN offers the following rare and beautiful sorts:—

	Each.—s.	d.		Each.—s.	d.
Auratum Beauty	21	0	Leichtlinii	10	6
" picta	15	0	Tenuifolium .. .. 5s. to	7	6
Brownii	7	6	Tigrinum splendens ..	7	6
Lancifolium atrorubens (cruentum), true, 2s. 6d. to	5	0	Vestalis	3	6

Choice selections, from 75 superb varieties, 5s., 9s., 12s., 18s., and 24s. per dozen.

GLADIOLI.

An extensive collection of the finest choice selections, 3s., 5s., 9s., 12s., 20s., and 30s. per dozen.

Also superb new varieties of 1870. See CATALOGUE.

The BULB CATALOGUE, Illustrated, Cultural, and Descriptive, free for six stamps, gratis to customers.

Seed, Bulb, and Plant Establishment, Weston-super-Mare.

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester.
Nurseries: Fairfield, near Manchester.

Forest Trees.

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" Huntingdon, 8 to 10 feet	per 100	50	0
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" " 2 to 3 feet		12	0
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ISAAC DAVIES, Nurseryman, Ormskirk.

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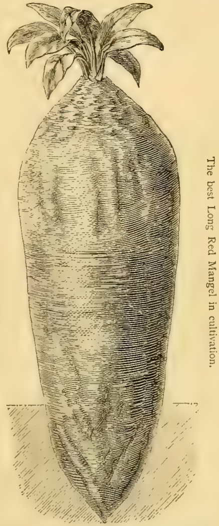

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12	" mixed bedding	50	" Striped
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ROYAL HORTICULTURAL SOCIETY,
SOUTH KENSINGTON, W.

SHOW of LATE CHRYSANTHEMUMS, HARDY EVERGREENS, &c., DECEMBER 6, 1871.

AWARDS of the JUDGES.

CLASS 1.—12 TREE CARNATIONS, distinct, in 8-inch pots. (Open.)

CLASS 2.—6 TREE CARNATIONS, distinct, in 8-inch pots. (Amateurs.)

CLASS 3.—24 CHRYSANTHEMUMS, Japanese and late varieties, cut blooms. (Open.)
1st, Mr. E. Rowe, Gr. to Mrs. Lewis, The Rookery, Roehampton, 15s.
2d, Mr. J. Douglas, Gr. to F. Whitbourne, Esq., Loxford Hall, Ilford, 10s.
3d, Mr. J. Goddard, Gr. to H. Little, Esq., Cambridge Villa, Twickenham, 7s.

CLASS 4.—Collection of HARDY EVERGREENS, bearing berries (Hollies excluded). (Open.)
1st, Messrs. John Standish & Co., Royal Nurseries, Ascot, £2.

CLASS 5.—9 HOLLIES, in 12-inch pots.

CLASS 6.—6 BOX, distinct, in 12-inch pots.

CLASS 4.—9 HARDY EVERGREENS, of the Yew or Cypress type, in 12-inch pots.
1st, Messrs. John Standish & Co, £1 10s.

CLASS 8.—Collection of HERBACEOUS PLANTS, suitable for outdoor winter decoration. (Open.)

CLASS 9.—Collection of ENDIVE, and other SALADING. (Open.)

PRIZES OFFERED by MESSRS. JAMES CARTER AND CO.

CLASS 10.—Collection of VEGETABLES, to include Carter's Little Pixie Savoy, Scotch Kale, Brussels Sprouts, Carter's Garnishing Kale, Parsnips, Scorzonera, Salsafy, and Leek.
1st, Mr. W. G. Pragnell, Castle Gardens, Sherborne, Dorset, £2 2s.

MISCELLANEOUS—EXTRA PRIZE.
Mr. J. George, Gr. to Miss Nicholson, Putney Heath, for a Box of Cut Flowers.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Prof. REICHENBACH, Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.
JAMES BATEMAN, F.R.S.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, DECEMBER 9, 1871.

ON more than one occasion it has been our duty to criticise the tasteless, uninstructive manner in which the fruit and vegetables at our great FRUIT SHOWS are arranged, and to enter our protest against the continuance of a system so little creditable to our exhibition managers. There is the less excuse in the case of fruits and vegetables, as the articles are not so fugitive or perishable as flowers, and more time could be spent in arrangement and in their subsequent exhibition than is always possible in the case of flowers. With a view of calling attention to this matter, we give a plan of the arrangement of the great fruit show held last month at Vienna, and we add a few particulars concerning the exhibition, from our special correspondent. The catalogue of the exhibition (which lasted from October 7 to 13) comprises no less than 55 closely printed pages, divided into four classes—fruit, vegetables, stove plants, horticultural seeds. There were about a hundred exhibitors, including most of the Vienna nurserymen, many Hungarian Vine growers, and private gentlemen. From one of the latter, Baron GAYMÜLLER, alone came 177 Apples and 77 varieties of Pears. Indeed the exhibition was one of great magnitude and completeness, and its tasteful arrangement may in some measure be inferred from the accompanying plan, and the remarks of our correspondent.

"The colour," writes our correspondent, "usually afforded by flowering plants was on this occasion, with the exception of a splendid collection of cut flowers of Gladioli, supplied by quantities of beautifully-coloured Apples, Pears, and Grapes, by gigantic Gourds of many hues, by Tomatos, striking in their splendid yellow and red tints, and by the large pure white Cauliflowers. Indeed, on looking down from the gallery of the building, the round tables, loaded with the fruits on dishes, bore a resemblance to large hand bouquets placed on a green carpet of turf.

"Pears and Apples were shown in great quantities, and of very fine quality. The shape of the fruits in general was very perfect and clean, but the size was often not quite up to the mark.

"Vegetable seeds appeared in general in quantities from 2 to 30 lb., there being no less than 754 exhibits in this class. We found amongst them a good collection of Potato seeds, and the well-known forcing Rape-cole of Vienna.

"The exhibition of vegetables was a very good one. It was not only richly supplied with good examples of the usual market vegetables, but also with several collections of splendid Gourds. MAYER & METZ, of Laibach, were unrivalled in their rich collection of these vegetables, not less than 134 kinds were exhibited by them, all remarkable in shape, and of great variety in colour.

"Among the collections of Beans and Peas were Laxton's Prolific, Alpha, Supreme, and Prolific Early Long-pod, Prince Albert, Victoria, and Maclean's Best-of-All, &c.

"Tomatos, from those of the largest size to those of the small cherry-like shape, made a great effect by the brilliancy of their colour. From Baron SUTTNER'S estate was sent a good collection of Potatos, which included very fine and new sorts; the same was the case also with the Beans and Peas, Onions, &c.

"Entering at that part of the exhibition hall where the plants and flowers were arranged, a long table, with many hundreds of cut flowers of Gladioli, attracted the eye by their remarkable splendour and the beautiful colours. They were all seedlings of the last year, which Mr. DANIEL HOOIBRENK, of Hitzing, near Vienna, raised from seeds collected from his own plants after artificial fecundation.

"The exhibition was decorated with plants taken from the Society's conservatories, and a very interesting collection of aquatic plants, for the use of the now fashionable aquariums, was also exhibited.

"The Botanic Garden of the University also contributed some very fine stove plants, several Aroideæ, Gesneraceæ, and a few Orchidaceous plants in flower. Among the plants exhibited by Mr. ABEL, nurseryman, of Vienna, we observed, for the first time, the Ananassa Mordilona in fruit. The fruit was already pretty large, but not fully ripe. As this Pine-apple needs but little heat for cultivation, and its weight usually amounts to 10 lb., it will be a capital acquisition for our gardens.

"A remarkable series of branches and cones of North American Pines, 43 in number, was exhibited by Mr. F. ANTOINE, the gardener to the EMPEROR, comprising many species little known in England.

"Among the many objects used in gardening, we may mention a measuring wheel, an instrument very useful for measuring long lines (on a level) in a short time. A cast-iron wheel, the circumference of which is exactly 3 feet, is fixed on a handle in such a way that we can make the wheel run before us if we intend to measure a distance. Close to the wheel is fixed a brass box, covered with a piece of glass. In that box every rotation of the wheel is marked, and when we have arrived at the end of the line which is to be measured, nothing has to be done but to look into the box and mark off how many feet have been marked in it. Another object worthy of mention consisted of water pipes composed of asphalte and paper. They are very strong, keep the water perfectly clean through their smooth and highly surfaced walls, and are of a moderate price."

The illustration on p. 1579 shows the arrangement of the exhibition above referred to.

—— IT will be remembered that in connection with the Horticultural Department of the International Exhibition of 1871, certain PERMANENT EXHIBITIONS of a horticultural character were arranged for, with the view to the decoration of the entrance to the Horticultural Gardens, and to the furnishing of certain portions of the arcades not otherwise occupied. These exhibitions have been incidentally alluded to in the course of the season, but now that the awards have been made we propose to offer a few brief notes on the whole exhibition. The assessors were the secretaries of the Horticultural Department of the International Show, aided by such foreign jurors as were present at the several meetings. These exhibitions, which were commenced with spirit, were well kept up during the season; the exhibitors being Messrs. KELWAY & SON, LANE & SON, W. PAUL, PAUL & SON, STANDISH & Co., and WILLS, and the following are the decisions arrived at:—Mr. W. PAUL earned the first position. In the early part of May he had a magnificent display of pot Roses, such as were probably never brought together before by one exhibitor. Their excellence has been marked by the special award of a gold medal. Later on Mr. PAUL kept up an excellent display of cut Roses, supplemented by ornamental evergreens and various other interesting objects in season. Messrs. LANE & SON have been awarded the next place; their exhibition was of a more miscellaneous character, and mainly consisted of hardy evergreens, with Rhododendrons and Azaleas as the chief floral elements. Messrs. STANDISH & Co. also made a very effective exhibition, which was well kept up with objects of interest of a very varied character. These three were far ahead of the remaining competitors. Mr. WILLS kept up a display of what are known as furnishing plants, and introduced a very ingenious revolving stand, which was considered deserving of special mention; the general arrangement, moreover, was very tasteful and effective. Messrs. PAUL & SON'S exhibition consisted chiefly of evergreens, set off by a supply of cut Roses throughout the season—but latterly this "exhibit" was neglected, and instead of an ornament became an eyesore; and Messrs. KELWAY & SON'S consisted wholly of Gladioli, and was, therefore, necessarily more limited in duration. The sum of £250 was set apart by the Council for the remuneration of the exhibitors, and the awards were made according to marks recorded on a monthly inspection of the several exhibitions. They were, we understand, as follows:—

Mr. W. Paul ..	.. 285 marks	.. £72	10	0	{ and Gold Medal.
Messrs. Lane & Son	.. 243 ,,	.. 62	0	0	
Messrs. Standish & Co.	.. 228 ,,	.. 58	0	0	
Mr. Wills	.. 98 ,,	.. 25	0	0	
Messrs. Paul & Son	.. 61 ,,	.. 15	10	0	
Messrs. Kelway & Son	.. 40 ,,	.. 10	0	0	{ and Silver Medal.

—— In connection with the subject of PROTECTIVE RESEMBLANCES, which has attracted so much attention, a note, extracted from the minute-book of the Linnean Society, dated April 7, 1801, may be referred to:—"An account was laid before the Society from Dr. MACCULLOCH, F.L.S., of an artifice used by the Cancer Phalangium to ensnare its prey. This contrivance consists in the insect (*sic*) dressing itself up, as it were, in fragments of a Fucus (the narrow-leaved variety of HUDSON'S ciliatus), which it seems to cut off, and to attach to the long hairs of its body and legs by means of a glutinous substance. It thus imitates a perfect plant of that Fucus so accurately as to have deceived Dr. MACCULLOCH." The plate illustrating this note, in the 6th volume of the *Linnean Transtions*, shows the clever nature of this disguise.

—— In a notice of Captain FORSYTH'S book on "The Highlands of Central India," the *Athenæum* has the following pertinent remarks on the management of INDIAN FORESTS, a subject which has frequently been adverted to in our pages:—

"One of the most important measures, as regards the well-being of the people, which has been adopted in India of late years, has been the introduction of a general system of forest conservancy. The step was not taken a day too soon. In the Central Provinces, we are told by Captain FORSYTH that the hill tribes had for centuries devastated the forests by cutting and burning the best timber to form ashes to manure their crops, while the Teak had everywhere been mercilessly cut down for household purposes. But it would seem that there is some danger of the other extreme being reached by our forest administrators. In the anxiety to produce great timber, we have neglected the demand of the masses for small timber for their houses and other purposes. Captain FORSYTH points out that the proper course would have been to have reserved the best forests for timber purposes proper, and to have applied to the rest only such measures as would ensure the best and quickest production of coppice wood for the requirements of the people. Vast expense is incurred in the attempt to conserve all the forests after a fashion, with a view to producing large timber; but he considers that the problem of cheap and efficient management of the forests will never be satisfactorily worked out until the system is revised with the further aim of the continued reproduction of small timber for the use of the people. The Government now send out scientific foresters, who have gone through a course in the schools of forestry of Germany or France. These new men, with purely professional views, are to take the places of such explorers as FORSYTH, PEARSON, MORGAN, and BEDDOME. The obvious danger is that the new school will be too narrow in its views; that it will exclude considerations bearing on the general economy of the masses of the people, in order to enforce the rules of German and French professors; and that its theories, based on the example of moist temperate regions, will be applied without sufficient caution to the very different conditions of tropical forests. One instance of such *doctrinaire* principles is mentioned by Capt. FORSYTH. The German system is to work forests in blocks by rotation, and, though the effect of stripping the soil of all trees in a hot country like India is to convert it into an arid desert, the same system is still aimed at, and is the cause of much wasteful expenditure. Our author's warning, that the wisdom of the administrator must always be joined to the technical skill of the forester to secure the best results, is well timed. Yet it is a hopeful sign for the future that the forests of the Central Provinces have even now more than returned the outlay upon them, while their prospective value to future generations, both as a source of supply for the country's wants and in mere money, is wholly beyond estimation."

—— Mr. TILLERY strongly recommends FUCHSIA RICCARTONI as an autumn-flowering hardy shrub. In a long fruit-tree border at Welbeck, he says, there are about 20 plants of the Fuchsia Riccartoni. They were planted about 11 years ago, and some of the plants are from 6 to 8 feet in diameter of branches, and tall in proportion, every branch annually drooping with flowers down to the ground. He has never seen any show Fuchsias grown in pots or tubs that would bear any comparison with these specimens of Riccartoni grown in the open air, and therefore recommends the more extensive planting of this variety in shrubberies and mixed borders. The plants above referred to have never been protected in severe winters, being usually safe at the roots; but if old tan or litter is placed round the bottom of the plants in autumn, they break sooner in the spring, and flower earlier. This Fuchsia, he adds, is one of the grandest of all flowering shrubs in the autumn, especially when the plants get large.

—— According to M. CARRIÈRE, TAMARIX PLUMOSA is one of the prettiest of shrubs, the multiplicity and the fineness of its branches giving it a most graceful appearance, and gaining for it the common name of Marabout, in allusion to its feathery character. The plant, he states, is more generally called Tamarix japonica by horticulturists, but he doubts its being of Japanese origin, and thinks it more probably originated from a sport of T. indica, which assumed a peculiar manner of growth, and has since retained it. It is as hardy as T. indica, and its culture and multiplication are identical; moreover, years before T. japonica was heard of, this T. plumosa was well known, branches of it having been cut from a stock found under some large trees, in the ancient nursery of Luxembourg, at Paris. After all, this question of origin is but secondary from a garden point of view, the important fact being, that the plant is specially meritorious.

—— We may remind young gardeners and those who are interested in the matter, that the Royal Horticultural Society's winter GARDENERS' EXAMINATION takes place on Tuesday next, the 12th inst., as announced in our advertising columns. The results of these examinations, as we stated in detail some time since (see p. 1003), are very encouraging, and should stimulate those young men who are really striving to win a place in the front ranks of the profession, to come forward and take part in them.

—— We extract the following particulars relating to a NEW GARDEN LABEL from the *Journal of Botany*. The introducer of this new label is Prof. A. CHURCH, Royal Agricultural College, Cirencester:—

"The indestructibility of solid paraffin suggested to me its use for the preservation of printed plant labels. The plan having proved successful, and the 'paraffined' labels having resisted the adverse atmospheric influences of two seasons, I cannot but hope that more extended trials will confirm my conviction that a permanent garden label, legible and inexpensive, has been attained. The following is a brief description of the mode of preparing the labels:—Print the names, &c., of the plants on stout, smooth, white paper of suitable dimensions and form. Prepare cast-iron label-holders with a flattened spike to keep them straight in the ground, and with the upper expanded portion so contrived as to have a sunk flat space about a quarter of an inch deep, and the right size for the reception of the printed label and its protective glass cover. Paint this sunk space with several coats of good white paint, and allow it to dry thoroughly. The next step is to unite the label to the glass plate with paraffin. The paper-label and the glass being cut to the same size, the latter is cleaned and kept hot,—about as hot as boiling water,—while the label is being dipped into a bath of melted paraffin. The label is then quickly pressed on to the hot glass, a board and a weight being put upon both. When cold, the glass with its adherent label is placed in the sunk space of the label-holder, and secured with good putty. Subsequently, a coat or two of paint on this putty will keep all secure. The above directions are much easier to carry out than they appear to be at first sight, while several contrivances and precautions will suggest themselves to any one who carries them out on a large scale. For instance, the glass plates may be kept hot in an oven, and removed with a pair of crucible tongs as wanted, while another pair of tongs or pincers will be useful to hold the labels during their immersion in the melted paraffin. Here it should be stated that the best paraffin is that which is freest from any kind of fat or grease, and melts at a temperature at least above 56° Centigrade. It might be found advisable to imbed the label and glass in paraffin, or to modify the plan of fixing the label to the glass by putting it, soaked in paraffin, between two sheets, but the principle of all these modifications is identical. The air and rain are excluded, and cannot give rise to the discoloration of the label."

—— The MAXIMUM TEMPERATURES of the AIR for the week ending December 2 ranged from 47° at Glasgow to 41°.5 at Sheffield, with a mean for the English stations of 43°.3, and for the Scottish of 44°.5. The MINIMUM TEMPERATURES of the AIR ranged from 35° at Greenock to 27° at Edinburgh, with a mean for the several stations in England of 30°.2, and for those in Scotland of 30°.7. Thus we see that it has been slightly warmer in Scotland than in England, both by day and by night. The highest MEAN DAILY TEMPERATURE, 39°, occurred at Newcastle-on-Tyne, and the lowest, 35°.3, at Wolverhampton, the mean for the English stations being 36°.9, and for the Scottish, 37°.6. In the south of England the weather during the past week has remained still very cold. At Blackheath the mean daily temperature has remained in defect of the average throughout. Rain or snow fell at all stations, with the exception of Greenock and Perth. The greatest falls were 1.22 inch at Newcastle-on-Tyne, 1.06 inch at Norwich, and 1 inch at Leith. The mean fall for the English stations was 0.27 inch, and for the Scottish 0.35 inch. (See Mr. GLAISHER'S Tables, p. 1589.)

—— Here is a hint which some of our practicals might do well to act on, if necessary; it refers to an expeditious method of stopping a LEAK in a BOILER. M. PAUL HANGUEL, in the *Revue Horticole*, calls attention to a self-acting, costless, and instantaneous remedy for this troublesome and, it may be, dangerous accident. The plan so confidently recommended consists in getting a quantity of horsedung (7—8 litres, say a gallon measure), stirring it thoroughly till it is completely dissolved, and then pouring the mixture into the boiler. If the leakage is not stopped by this proceeding, the plan may be repeated a second time. M. HANGUEL declares that he has repeatedly tried the plan, and always successfully. We should be glad to know if this method has been tried here.

—— We quote from the *Builder* the following letter, the subject-matter of which relates to a communication which appeared in our last issue (p. 1547) anent the question, HOW TO HEAT A SMALL CONSERVATORY FREE OF COST:—

"Now, may I suggest that the great damage is done to plants by the occasional very cold mornings our climate is subjected to? On the plan referred to, in an ordinary household the kitchen fire we may assume is extinguished by about 10 o'clock P.M. at latest. Allow an hour after that for the surrounding bricks to cool, and you have in your conservatory, by the ordinary law of heat, an even colder atmosphere by morning than if no heat had been diffused through it. May I suggest a really efficacious means for the same object, viz.:—Use the waste heat from the kitchen during the day to heat a reservoir of water, say 60 to 100 gallons. This can be raised to boiling point in about two hours, and all the ordinary kitchen operations going on just the same; then pass the air over the reservoir and out to the conservatory. The mass of water will retain its heat nearly intact until morning, and you will thus do effectually what, by the plan pointed out by 'S.,' must, I submit, be only very inefficiently attempted. If 'S.' will pay a visit to Messrs.

COMYN CHING & Co.'s establishment, Castle Street, Long Acre, he will see there how this system can be efficiently applied."

—— What possible relation can there be between the ILLNESS of the PRINCE of WALES and the FIRE at WARWICK CASTLE? This much—both misfortunes are to a large extent preventible. Typhoid fever is a well-known resultant of dirt in the wrong place—bad drainage, sewage-sodden soil, contaminated water, foul dust bins, and the like. Who can say these are not to a great extent preventible? And yet we believe that many a country house is in a worse condition in these respects than a London alley or a Liverpool cellar. Typhus fever is a resultant of famine, typhoid of dirt. The more widely these facts are known, the less we shall hear of these disasters. As to the outbreak of fire it may be impossible to have anything like absolute security in the case of a building like Warwick Castle; but at least there should be every means and facility for extinguishing it, should a fire unhappily break out; and yet how often are the precautions taken either wholly inadequate, or the machinery out of gear when the time comes to use it.

New Garden Plants.

PLEUROTHALLIS AURICULIGERA, *n. sp.*

Apoda cæspitosa.) Caulibus secundariis brevissimis, vaginis basilaribus solutis; foliis lineari-lanceolatis acuto tridentatis, superne canaliculatis, transsectione crassis semilunatis, junioribus subpunctatis, adultis obscure atroviolaceo-guttatis; floribus fasciculatis hysterochroniis, singulis; sepalo dorsali lanceo; sepalis lateralibus ab ovata basi cuspidatis, plica membranacea transversa intus ante basin; tepalis ligulatis acutis, superne minute, deorsum valde obtusangulo auriculatis, binerviis; labelli ungue lineari subito in laminam cordatam serrulatam expanso; columna superne alata, ala postica triangula, alis lateralibus semiovatis acutis crenulatis.

A very small plant, of a cæspitose habit, with very narrow leaves, and bearing single, minute flowers of a yellowish tint, and having the general appearance of those of P. aviceps, but much smaller. There are decidedly two pollinia. The history is the same as that of P. aviceps. It came from Brazil in 1866, and has flowered since 1867 in the Saundersian collection, but as it appears not so freely as Pleurothallis aviceps. The discoverer was the late lamented Mr. Bowmann. *H. G. Rchb. fil.*

PLEUROTHALLIS AVICEPS, *n. sp.*

(Apoda cæspitosa.) Caulibus secundariis abbreviatis, vaginis emarcidis, lamina folii cuneato oblongo-lanceolata acuta apice tridentata; floribus 1–2, bracteis ovariis pedicellatis brevioribus acutis; sepalis ima basi paulo coalitis, sepalo impari triangulo acuminato, sepalis lateralibus alte connatis bifidis; laciniis ovatis acuminatis; callo transverso obliquo basin versus in utraque lacinia; tepalis a basi ligulata inæqualiter triangulis; labello sagittato supra unguem linearem oblongo, carina utrinque de sagittæ crure in laminam descendente; columnæ androclinio membranaceo limbato utrinque alato descendente, serrulato, rostello truncato dependente.

A very gay, nice little plant, full of modest elegance. The leaves are crowded, lanceolate, purplish underneath. At their base there peep out many little flowers, showing a good deal of Masdevalliaceous appearance, whose buds are quite like the beaked heads of some birds. The upper sepal is green, the under ones are yellow, the former being full of numerous dark purplish blotches; the petals and lip are yellow. It is no little credit to Mr. Green's skill that this tiny little gem, an ornament *sui generis* of the Saundersian garden, has been kept in good spirits since October, 1866, when it came from Brazil, sent by the unfortunate Bowmann. I saw it in October, 1867, in beautiful flower, and have just now once more fresh flowering specimens and a Saundersian sketch at hand. *H. G. Rchb. fil.*

THE MYSTICAL PLANTS OF BRITAIN.

(*Concluded from p.* 1550).

WE now come to the Mistleto, which, from the mystery of its origin, might well attract the attention of the Druids. Perhaps they were aware that the seed must have been deposited upon the Oak by a bird, or, in their view, a heavenly messenger—possibly a god in disguise. According to Pliny the god of the Oak tree was concerned in the choice of this epiphyte. He says that the Druids had nothing more sacred than the Mistleto and the tree on which it originates. They chose the groves of Oaks where it is found, and they accomplished no mysteries without its boughs. Whatever grows upon them they thought to be sent from heaven, and a sign that they are chosen by the very god of the tree.

The Mistleto was called "the tree of pure gold," and it was gathered by the Arch-Druid with a golden hook or sickle. It was supposed to possess a fructifying quality, and to have potency in the affairs of love and marriage. It seems to have been looked upon as impregnated with the virtues of the divine ambrosia from the bright heavenly sphere above the clouds and blue sky, whence the spark of life was thought to have been first brought to mankind. Hence it was also called "the ætherial tree," and "the tree of the high summit."

For the remaining mystical plants of the Britons, we must turn to the contents of the cauldron of Ceridwen. This goddess seems to have been the same* as Ior, or the moon, in whose *cursus* to the north of Stonehenge the great slaughter of the British nobles by Hengist took place. The cauldron, surrounded by pearls, is represented on early British coins. It was boiled for a twelvemonth and a day, and this long period of concoction produced so potent a liquor, that three drops swallowed by an attendant conferred the gift of foreseeing future events. The ordinary effects of a draught were the *awen*, or bardic inspiration, and other celebrated endowments. We do not feel certain whether the favours of this mystical broth were extended to all the initiated, for it is not possible always to distinguish between the literal and the mystical signification. For instance, we find the bard Merddin thus addressing his fellows:—

> "Attend little pig, thou initiated pig,
> Burrow not with thy snout on the top of the hill,
> Burrow in a secret hiding place among the
> forests," &c.,

—without any intention, as it appears, of conveying the slightest imputation on the dispositions of his fellows, but figuratively enjoining caution in the face of the dominant Christian powers. In a similar manner we find the initiated represented as serpents, and, consequently, have been ready to question what was meant by the yearly association of that multitude of serpents, from whose hissing proceeded, according to Pliny, the celebrated *ovum anguinum*—one of the wonders of the world. Was this intended to represent an ancient British Association. There is more ground than appears at first for the inquiry, since it is certain that the serpent was a symbol of the Druid—it is said because of his casting his skin, and thus undergoing a sort of new birth; but more probably from the universally established idea of the connection (mystically) between the serpent and wisdom. However, as Pliny says he had seen this wonderful egg, we fear that we must give up the tempting explanation.

But we have almost forgotten the mystical lady in her moonlight wanderings in search of potent herbs for her cauldron. If, after all, her choice may seem somewhat capricious, we must not be too much surprised, considering all circumstances. We find then that "the placid cheerful Vervain" held a foremost place in her esteem. It is called "the enchanter's plant" and "the fiend's aversion." There seems to be no better reason for this dislike than for the lady's choice. Nevertheless, it was used in casting lots and in foretelling events. Anointing with a preparation of this was thought the readiest way to obtain all that the heart can desire. It was to be gathered at the rise of the Dog Star, without being looked upon either by the sun or the moon; the earth was to be propitiated by a libation of honey, and the left hand was to be used in digging it up. It was then to be waved aloft and dried in the air.

Another plant, whose name (Gras Duw) imports that it was a special gift of heaven, shared the chief esteem of the Druids. It was gathered in the same ritual manner, and was another of the herbs selected by Ceridwen for her magic cauldron. Nothing of iron was to touch it, nor was the bare hand thought worthy of receiving it when cut, but a peculiar vesture, applied by means of the right hand. The vesture (called by Pliny *sagus*) must have been holy, and taken off from some sacred person privately, and with the left hand only. The gatherer was to be clothed in white, namely a Druid, whose garment was white, his feet naked, and washed in pure water. He was first to offer a sacrifice of bread and wine before he proceeded to gather the plant, which was carried from the place of its nativity in a clean new napkin. We need scarcely say that no vegetable production enjoys a place of such esteem amongst the modern Welsh. The Gras Duw above (as we are informed) is none other than the common Rue (Ruta graveolens).

The Samolus Valerandi, gathered in the same ritual manner, was another plant enjoying their special consideration.

Primroses also (and here at last we commend the lady's choice) claimed a special place of favour and a

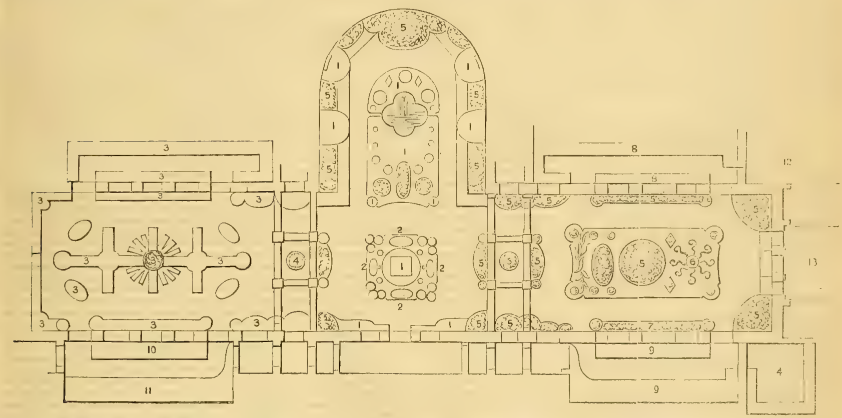

FIG. 332.—PLAN OF FRUIT SHOW AT VIENNA (see p. 1517).

1, Fruit; 2, Fruit trees in pots; 3, Vegetables; 4, Bouquets; 5, Decorative plants; 6, Bedding plants; 7, Gladioli; 8, Seeds; 9, Potatos and seeds; 10, 11, Implements, &c.; 12, Office; 13, Refreshment room.

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* This may be doubtful, but it seems clear that she was the British Ceres, and this suggests the question whether her cauldron boiling for a twelvemonth and a day did not mean simply the full produce of the revolving year. The cromlechs dedicated to her were called *Maen Ketti*. Of these one probably remains as Kits Cotty House in Aylesford, probably a place of initiation for her worshippers. *Ketti*, Welsh, to purify

name, perhaps from their golden hue, signifying dignity and power.

We close the list with the Trefoil (skilfully laid hold of by St. Patrick to illustrate to the Irish mind his explanation of Christian mysteries) which dates back its symbolic value far into the night of antiquity. We find the reason in the oracles of Zoroaster, who declares that "the mind of the Father said all things into three," together with much more about the Triad, which links together the notions of ancient Wales, of Persia, and of China. We do not stay to inquire what these ideas were, but it is easily to be conceived that the Trefoil was their natural symbol. Moreover the mark common on the leaves, resembling a crescent moon, associated the plant with all the notions embodied in the two-horned Astarte (Ashteroth-Karnaim)* much older, consequently, than the days of Abraham), the primitive queen of heaven.

We cannot fail to be struck with the grandeur of some of the conceptions of the universe entertained by the old fire-worshipping Aryan nations. They had their own way of explaining the relationship of the invisible world to those hidden forces, on whose operation they gazed as the manifestation of pervading fire. They saw in everything that was incomprehensible something divine, and their mystical plants were supposed to be in some sense interpenetrated with deity. When we reflect that the special manifestation of this divine force was to them the lightning, and that the same electric force is manifestly connected with the operations of the vegetable, and still more of the animal kingdom—when we think that even plants are capable of producing the phenomena of heat and light, and of manifesting sensibility to the touch, we shall be the less surprised that these philosophers referred their disciples to the agency of the god of the lightning as explaining the mysteries of Nature.

There seems, indeed, to be at present a kind of eddy in the tide of human thought, reverting in measure to something very near the old doctrines. Thus we read amongst some of the latest "Scientific Results" the following speculations: —

> "It is the conviction of [the author referred to] that of the two kinds of matter one exists in the elementary atomic state—simple, subtle, impressible, and imponderable—constituting what is called the ether; whilst the other is grouped into compound atoms, and constitutes the kind of matter with which we are familiar. Weight, according to this definition, is an accident of matter, and ponderable matter is merely imponderable ether, the atoms of which are grouped in a certain manner, which gives the property of gravitation. Ether constitutes the fourth state and medium of matter. It contains all the stars, penetrates into all solid, liquid, and gaseous bodies, and fills up the interstices between their molecules."

If this be correct it follows that the more important half of creation lies beyond our power of investigation, since it is the very accidents of matter which give us the opportunity of investigating its nature; and if the proximate causes of things are really hidden in an etherial and imponderable creation, we must simply confess our ignorance, for what more can we do to explore it? †

We observe that the first impress of the lines of formative energy in the cell-formation of plants are of this incognisable character, the visible originating from the invisible.

We are impressed with the same truth in regard to the animal creation. Thus, if we turn to the Amœba as an instance of one of the lowest forms of life, we find little else than an animated sac, which yet by virtue of the mysterious endowment of life is capable of acts of volition, of seizing and digesting its prey, and when the process of digestion is watched under the microscope nothing can be more wonderful than the sight—not a sign or trace of any interior organisation is found which could be supposed to direct the constant motion of the currents of assimilating food, all is as clear as crystal except the circulating particles, and they seem as if impelled by magic.‡ In a similar manner, if we regard the egg in the lower animals, we are unable to trace organisation; but if we pursue the inquiry in reference to the same in the higher type of animals, we are led to perceive that all the development is connected with electric action. The egg of a hen, for instance, may be defined to be a globular accretion of two kinds of fluids—albumen and oil—which are always situated at opposite sides or poles, so that "we may look upon the egg as theoretically a bipolar aggregation of albuminous and oily substances, which eventually exhibits a more or less elevated degree of vitality."§ The further development of the animated creature shows how widely this differs from what takes place in the crystallisation of inorganic substances, and still more is this evident in the self conserving property, both of plants and animals, which in some unknown way operates upon the individual as a whole.

In the early notions of the Aryan nations, we can scarcely trace out with any distinctness the distinction between the Creator and the thing created. But in the reformed Zoroastrian religion, as indicated in his remaining oracles (λογια), or rather sayings, this comes out so clearly that we must presume that the traditionary connection between this celebrated man and the Jews must have had some foundation in fact—that he may have even seen, and like Longinus have been struck with admiration of, the declaration, "God said let there be light, and light was."

"The Creator who, operating by Himself, framed the world," is brought into prominence by Zoroaster as "the Eternal Father" who is to be comprehended only "by the flower of the mind of man;" and a remarkable attempt is made to describe the intermediate agencies (αρχαι) by means of which the will of the Creator is supposed to be wrought out. "These (agencies), which have understood the intelligible works of the Father, disclosed them in sensible works as in bodies, being, as it were, the ferrymen between the Father and matter, and producing manifest images of unmanifest things, and inscribing the unmanifest in the manifest frame of the world." So that to them "the laws of Nature," "natural selection," and so forth were not mere expressions incapable of being logically explained, but "beings" having intelligence to understand the mind of the Father and power to execute his superior will.

Throughout the whole of these oracular fragments there is a marked attempt to think out subjects, not only those within the bounds of thought but others utterly incognisable, forgetting that what is beyond the bounds of knowledge can never be logically defined. Bacon, in his "Novum Organum," has very well described what he calls the *idola tribus*, which, he says, have their foundation in the very nature of man, as springing from the tendency noted above. "For it is falsely asserted that human intelligence is the measure of things, whereas, on the contrary, all the perceptions both of our senses and of our mind are according to the analogy of man, and not to the analogy of the universe. For the human mind resembles an imperfect mirror, distorting and confusing the image of things."

The same author describes one kind of philosophers as resembling spiders, and weaving the webs of their speculations out of their own substance. We are at no loss for illustrations of this in the present day, and it would not be difficult to point out amidst their favourite theories a triad of incomprehensibles more puzzling than those of the Druids.

We think that, from what precedes, we may fairly draw the inference that speculation is not science; that any case which rests on imagination, rather than fact, must be accounted "not proven;" and that every edifice of thought which rests on the facile foundation, "I see no difficulty in believing," is destined to pass away, and, like the idolatry of our ancestors, "leave not a wrack behind."

Is it not well to consider that, if such theories were to become prevalent as those which derive the origin of man from the most mischievous family of the brute creation, and which would reduce his faith and morality to the level of his supposed kindred, we *might* find a worse state of things resulting than that which existed in the days of the Druids, who confined their instructions to the initiated; the cauldron of Communism *might* be worse than that of Ceridwen. *H.*

ARAUCARIA IMBRICATA.—No. II.

(*Continued from p.* 1516.)

SEEDS of this tree were again brought to Europe in 1822, and some of these are said to have vegetated, but few plants were raised, on account of the attempt made to grow them on hotbeds and in stoves. A large quantity of the seeds were brought to Europe between this and 1829, but few of them germinated, in consequence of their having been mostly collected by the natives, boiled, and dried, and sent to market for food—very nice they are, too, roasted with a little butter, as I can testify from experience. Notwithstanding these failures, between 1822 and 1836 several lots of seed were brought over, and many plants were raised and distributed, so that they were to be seen of various sizes, planted and growing freely in many of the best gardens throughout the United Kingdom, being greatly admired on account of their curious and uncommon appearance.

The memorable severe winter of 1837 killed many of these thriving trees, and during my subsequent spring and summer visits to neighbouring gardens I observed that the greatest destruction had taken place where the trees had been planted low, close to the surface. Those on close, cold, clayey and unkind soils, and in damp, low-lying localities, and particularly those which were open to the first rays of the morning sun, were almost entirely destroyed; whilst almost every specimen that was planted high and dry on rubble, stone brash, in sandy loam, or on sloping banks or mounds, with rock and coarse gravel for subsoil, as well as those which were shaded from the rays of the morning sun, from being placed in a westerly aspect, withstood all the rigour of that severe winter. These are facts that many persons have no doubt observed, and have since acted on. Notwithstanding this, however, there are to be seen in every locality certain unhealthy, rusty, stunted plants, oozing gummy or resinous matter, which have been put in with very little preparation, and which are not likely to make useful or ornamental specimens.

The Araucaria does very well in plantations, along with a mixture of other trees, if the ground has been well trenched, in order to secure a free circulation of air and water. It does not flourish long when a mere hole is dug out a few feet in diameter, and the tree is planted on the level, and nothing is done to prevent the surrounding water from saturating the loose soil in which it is planted, but I have seen it flourishing in old-established woods and plantations with no other preparation than clearing and trenching a spot some few feet in diameter, casting up a mound with the surrounding surface soil, and planting the tree on the mound. Thus planted, and with the surrounding partial shelter and new soil, it is astonishing how this tree will flourish—progressing as fast as a Larch or any other free-growing Conifer.

Between 1837 and 1840 large quantities of seed were brought to this country, and numerous plants raised and distributed to all parts of the United Kingdom. The Messrs. Loddiges, of Hackney, amongst others, raised a large number, and of these a batch was sent to Bicton in 1839-40—seedlings, in 60-sized pots. These I shifted into 32-sized pots, and placed them for the winter in a cold pit, fully exposing them to sun and air in early spring. They made a free, healthy, and vigorous growth, and were again placed for a short time, in the dead of winter, in the cold pit, and then fully exposed in early spring, to prepare them for planting out. My employer proposed that they should be planted to form an avenue from lodge to lodge throughout the eastern park. In the year 1842 the late Mr. Veitch, grandfather of the present Messrs. Veitch, having men at Bicton, filling up the arboretum, was requested to see me respecting the Araucaria avenue, in order that we might discuss the matter as to the distance at which the trees should be planted, as well as the nature of the soil, and the obstruction from other trees. We accordingly met, and after consultation determined the distance at which the plants were to be placed, which was afterwards marked by taking out a sod at the place fixed upon for each tree.

Knowing as I well did, from being on the spot, the variation of the natural soil—the east end being a thick body of gravel, with but a few inches of surface soil, so that the grass was always burnt up after a few sunny days, while the middle part had a good depth of rich sandy loam, and the west end was shallow, the subsoil being a sharp red sand, fit for mortar, with a few inches only of light sandy loam over the surface—I contended that, to start this avenue fairly, so as to maintain afterwards something like uniformity of growth, there should be some uniformity in the way of preparation, otherwise the whole thing would prove a failure, and would result in stunted uneven growth and a sickly hue. My own proposition was to turn off the turf from 30 to 40 feet diameter, trench the ground thus unturfed, and cart on any quantity of good soil which might be comeatable at an easy distance, so as to form neat, easy-looking mounds, to the height of about 4 feet in the centre, where the plant was to be placed. This, I calculated, would take about 50 cart-loads for each plant, and from the place whence I was about to have it carted it would have cost, at the most, something like 3*d.* per load. *James Barnes, Exmouth.*

(*To be Continued.*)

MORSUS DIABOLI.

"IN English, Deuel's Bit" (or, more correctly, bite): "in French, Mors de Diable: in high Douch, Teuffels abbisz: in base Almaigne, Duyuels beet: of some late writers Succisa in Latine: in shoppes, Morsus diaboli: and it hath none other names whereby it is yet knowen." Thus Henry Lyte, "Esquyer," who wrote his "Nievve Herball, or Historie of Plantes," in 1578, nearly 300 years ago. At the present day we can call to mind almost a dozen other names by which Scabiosa succisa is known, some of them pretty and appropriate; but the terribly ominous name quoted above seems to have been the only one in use at the time the herbals were written; and, as we learn from Lyte and the other old and "fainful" herborists, the name was by common consent adopted by several European nations.

Whether Morsus diaboli is a name originating with the old Latin physicians, which has been handed down and translated into these various languages, we cannot say; or whether it was an original Germanic name that was thus rendered into Latin by the "high Douch," or "base Almaigne" herborists, or by the vendors of drugs, is equally obscure; but of this there is no doubt, that a good many of our modern plant names are simply translations of the names given by the old Greek and Latin physicians, and that they have been adopted by the writers of herbals in many countries, and have thus been taken into common use; and it is equally certain that in the course of time, partly on account of the imperfect knowledge possessed by the early herborists, and partly by reason of their confused methods of arrangement, names have very frequently been transferred from one plant to another; and this has rendered it very difficult, in many cases, to identify plants by their names alone. The plant in question, however, is certainly the original Morsus diaboli, because the name is descriptive of a remarkable peculiarity of growth that would fix it at once.

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* Genesis xiv. 5.

† Another writer, Dr. E. J. Mills, endeavours, in the "Philosophical Magazine" for August, to discard the atomic theory, "whilst on the other side arises the idea of motion, not of parts (for not an atom can be proved to exist), but of the whole universe." This appears like the conception of the Druids, who celebrated the revolution of the spheres by a giddy dance, probably imagining that unsettlement of the brain rendered them peculiarly alive to the mysteries of Nature. Our readers will pardon the quotation of our authority: "Drud awyrdwyth, amnwyth, amniver," which means according to the author of "Celtic Researches"), "rapidly moving, in the course of the sky, in circles," and the Druids and Bards are represented as uniting in this exercise. The same notion is thus expressed in the Oracles of Zoroaster: "All things remain in a restless whirling"—αοκνω στροφαλιγγι."

‡ "Mind in Nature," by Prof. H. J. Clark, Harvard University, Mass., 1865, p. 10.

§ Ibid, p. 37.

There are a few plants, but notably the one called in Latin Scabiosa succisa, and still in English Devil's Bit Scabious, that have their root truncated in a very strange way. If a plant be pulled up, it will be seen that what was evidently once a long tap-root with lateral fibres has been eaten away or has decayed, leaving a stump, not nearly its original length, with a scar at the end. Such a root is called in scientific language "præmorse," and it is a very remarkable form of root; but it is described in any elementary book on botany, so we need say nothing more about its general appearance and structure.

To account satisfactorily, however, for this appearance it was necessary, in less enlightened times than the present, to invent a legend; and this recites that the Devil was jealous of a plant which, by possessing so many excellent medicinal qualities, was a great boon to suffering humanity, and so, in order to destroy its virtue, he bit off a part of the root. Of course, in those dark and superstitious ages, no one would venture to doubt the truth of the explanation; for did not the plant, even to that very day, bear in its root a confirmation of the astonishing fact? One is glad to find that the malevolence of Satan did not avail anything, for the plant was as useful as ever, if we may believe the "Nievve Herball" already quoted.

> "The decoction of Deuel's bit, with his roote, boyled in wine and dronken, is good against al the diseases that Scabious serueth for, and also against the Pestilence." . . . "It doth clense the breast, and the lunges, and is good against an old cough, and the impostems of the breast, and all other inward parts, as in the clensing, riping, sodering, and healing of the same. It is also good against all itch and scuruinesse, to be found and layde to the same, or to be mixte with oyles and oyntmentes fit for the same. It doth clense the heare from all bran or white scurffe, whan the head and heare is washed therewithall." . . . "The same decoction dissolueth clotted bloud in the body, by means of any bruse or fall. Deuel's bitte fressh an greene gathered, with his roote and floures pounde or stamped, and layde to carboncles, pestilential sores and botches, doth ripe and heale the same."

There were other ailments which this plant was "good against:" and really, when we come to read over such a string of good qualities, which culminated in its being "good against all poyson," we can quite understand that an evil spirit, intent upon injuring mankind, should wish to curtail its virtues; nay, we can hardly help surmising that if it had not been bitten off, the catalogue might, perchance, like the root itself, have been twice as long. Whether Devil's Bit is in so great repute at the present day, I know not. In many of the rural parts of England, especially in the northern counties, where "yarbs" are in great demand amongst the manufacturing population of the large towns, the "yarb-doctors" still hold their own, and make a tolerable livelihood by collecting medicinal plants. I have never seen them gathering Devil's Bit; but as they consult the old herbals it is probable that the plant is still in use; though, as a rule, tonics and stomachics, like Buckbean and "Sanctuary," are the plants most in request. The latter plant (Erythræa Centaurium), and "Yellow Sanctuary" (Chlora perfoliata), are becoming quite scarce in many places, on account of the immense quantities that have been gathered for medicinal purposes; for being most potent when in flower they are collected at that time, and being annuals, it is only the few plants that escape observation that have the chance of ripening any seed.

But now I wish to offer a scientific explanation of the peculiar structure of the root of Devil's Bit, and of other præmorse roots. The Primrose, or rather the genus Primula, is one of these; and in transplanting a number of seedlings of the garden Polyanthus a couple of years ago, I was struck with a very peculiar habit possessed by the young plants, which seemed to indicate the way in which roots really became præmorse. Further observation has shown that my surmises were correct, and as in all probability the præmorse habit of root is formed in all plants in the same way, I may use the Primrose seedlings to illustrate the phenomenon.

For some time after germination nothing peculiar is observed, unless it be a continued lengthening of the stem below the seed-leaves. Still there is nothing very remarkable in this, for the part never lengthens to the extent that is seen in Mustard, for instance, and many other plants. But after the first two or three rough leaves are formed, we note the following facts. The young plant begins to bend down towards the earth. Most likely it is the weight of the leaves that actually causes this to take place, for the stem is thin and threadlike, and the leaves somewhat thick and solid. This bending down often continues until the base of the little rosette of leaves actually touches the soil. Sometimes, when the stalk may perhaps not have grown so long, or may not be quite so thin, it scarcely reaches the ground, but in every case a white root now begins to push its way out from the base of the rough leaves just above the cotyledons (see fig. 333, B). This root is much thicker, and altogether stronger than the original radicle, and soon pushes its way into the earth, and sends out lateral fibres. A second root then appears at the opposite side of the plant; in fact, as the plant grows a new root is produced from the base of each rough leaf in succession, and the plant thus has a new set of much stronger roots, through which it is enabled to obtain food from the soil. For some time the original radicle continues to grow in some degree—probably until the new roots are fully established, and are able to supply sufficient nutriment to the young plant. Then, not being required, and because the elaborated sap now finds its way to the new roots instead of going to enlarge the radicle, that organ gradually dwindles, and at last decays entirely away, and we have thus the first indication of a scar, and the commencement of what eventually becomes a regular premorse root; for the process of new roots being constantly formed above, and old roots becoming useless and dying away below, continues during the whole life of the plant. Thus we have, eventually, a rhizome or creeping underground stem, formed in precisely the same way as we observe in Ferns, in the Iris, the Wood Sorrel, and many other plants. There is another very curious resemblance in these little præmorse plants to the organ which is botanically called a "scion," of which a familiar example is the runner of a Strawberry. We have only to imagine the stalk of the seedling extending to a somewhat greater length before the rosette of leaves takes root, and we have a veritable "runner," with this peculiarity, that instead of growing from a parent plant, as it does in the Strawberry, it originates in itself; in fact, it was separated from the parent plant in the form of a seed, which in its germination echoes back the idea of an axillary bud shooting out into a new plant: and observation may show that it is only such plants as are in the habit of sending out offsets that can become præmorse in their roots in a natural way. Artificially, we always form a præmorse root when we strike a cutting, even if it be from a plant which, in a natural state, grows with long tap-roots.

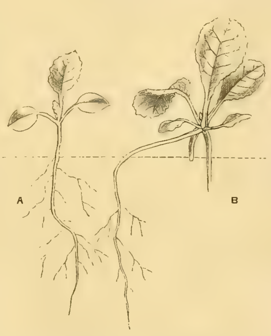

FIG. 333.—SEEDLING PLANTS OF POLYANTHUS.

I have had no opportunity of watching the growth of seedlings of Devil's Bit Scabious, but I have little doubt that observation would reveal the same set of facts, and would serve, in a somewhat prosaic way, to explain the legend of "Morsus diaboli." *Robert Holland, M.R.A.C.*

MEDICINAL HERBS AND QUACKERY.

If there be any one sort of gullability more rampant than another in this city of Manchester, it is that of persons placing implicit reliance upon the quackery of the uneducated herb doctor—and not on him alone, for the engine-tenter in my own neighbourhood fills up his spare hours by salving all kinds of sores, and even goes so far as to lance finger-ends that have been mismanaged before he took them in hand.

"But O, what perils doth environ
The man that meddles with cold iron;"

for the cures thus effected are not always creditable to the practitioner. Still in the face of the fact of the Manchester Infirmary being one of the best-managed institutions in the kingdom, we constantly hear the old cuckoo cry that such and such an herb doctor cured scores of patients after all the leading men of the faculty had pronounced the case to be incurable. Burns laid the lash on most unmercifully when he painted Death and Dr. Hornbook discussing the merits of Buchan's "Domestic Medicine." With every new generation of men there arises a new crop of quacks. As, however, I am only cavilling with the herbalist, I would but remark in passing that there are apparently three classes of these unlawful practitioners of the healing art.

The first, by what Cobbett called "mere hardness of mouth," advertises himself as competent to do impossibilities—for nothing less would do, and of his "Materia Medica" the world knows nothing. He addresses himself to moneyed people, and it is for such only that his *olla podrida* is provided. The second lives by the middle class, who consult herbals and doctor themselves and others by rule and order. The third has no literature, and his method of working consists in unwritten notions of old crones who have their "heal-all," and by means of a few herbs easily obtained at the right time of the year, they confidently assert the cure of almost all complaints, as the old ballad has it—

"O they say it's sure to do it, and it's sure to do it well,
But the first thing you must swallow is the vegetable pill."

Such parties visiting the poor are to be dreaded, for they give advice gratis, and push their opinions into practice regardless of the fearful consequences of powerful medicines misapplied. To persons struck down with disease, and so unable either to cope with them in argument or keep them at a distance, that which might have been like an angel's mission becomes an awful visitation.

But to return to the family herbals. Here before me lies Thornton's guide to the natures and properties of the various plants used in medicine, &c., the plants drawn from Nature. The English and botanical names are given, the Linnean class and orders; the Latin and French languages are freely quoted; and what has been handed down from sire to son unchallenged is still to be seen figuring by way of information. I will just quote the author's remarks on one or two plants—such plants as the late Dr. Lindley said were of no known use to mankind. Many years ago I read in some religious book that persons sleeping under the shade of the Chaste tree became chaste. This Chaste tree should rather be called Chaste bush, for the Vitex Agnus-Castus grows only to the size of a Broom bush on a common. Now, this good property in the Vitex would, to use a medical phrase, evidently be for "outward application only;" say, for a dose, a mere twig, like that of Mistleto, might be hung up where its services were required. But our author of the "Family Herbal" improves upon the doctrine of the Divine, and speaks of the four-seeded berry of the Vitex as Monk's Pepper, giving the Latin for the same, Piper monachorum, to confirm the respectability of the name—though Cobbett remarked that when nonsense was translated into French or Latin it was but nonsense still. So the doctor speaks of bachelors taking the Vitex berries—indeed, "flying to them;" this would amount to "taking them inwardly." Imagine a school-board in these days ordering a tiny besom made of Vitex twigs to be suspended in the class rooms, and a few pecks of the berries scattered about for the youngsters to nibble at, just as cage birds get Groundsel, Shepherd's Purse, and Chickweed! The doctor is seen to the greatest advantage when he comes to treat of the common field Orchis, O. mascula, where he quotes Sir John Hill's "Materia Medica" for the following:—"A fellow known to Sir John was once every year brought before the magistrates to answer for his evil deeds, and he always excused himself by saying that Orchises were then plentiful, and he could not resist eating them." The doctor says that salep made of Orchis root is given in milk, and tells us in French that the root is a very remarkable one. I have gathered this plant often as well as most of the other beautiful native terrestrial Orchises, but never saw such a harvest as Sir John Hill's criminal must have met with, when he ran mad with his belly-full of Orchis tubers. These Orchis Potatos would be worth the trouble to gather as medicine for the dull phlegmatic boys familiarly known by the *nomme de guerre*, "Want of devil," with no force of character, who would not be at the trouble to do any harm, and could not think of the self-denial required to do any good. Now, if a meal or two of male Orchis roots would only rouse such boys into the region of vivacity, how it would delight their mothers' hearts to see them capering! But, joking apart, what faith could any sane person have in such writings as these? What I want to see in such books are the truthful opinions of practical men on things as they are, and not the transcribed nonsense of other days.

I could honestly name a very homely tree whose supple twigs have mended the manners of many boys, and could back my assertion with Scripture; for a birch rod seen in repose, as it hangs on the walls of a school, is a "terror to evil-doers;" but when it is put in motion, woe betide. This, indeed, were a rod worthy of all praise.

The third class of quacks consists of the old crones who have an idea that, if the medicine is only vegetable, it will be mild in its action and safe. I have gone into the herb market here, and bought herbs for the purpose of getting at the literature of the craft, to see what certain herbs were called, and for what complaints they were reputed to be a remedy. I found none of the herb vendors so well up in the business as to know the botanical name of any one article that they sold, and many of the English names were such as have not been heard out of Lancashire lately. When any plantsman looks over the stock, and sees deadly poisons sold by the handful, or even armful, and never by weight or measure, and with no reliable instructions as to the dose for an adult, or for a child, the whole thing appears quite alarming. The business of the apothecary is regulated by law, and he qualifies for it, but the herbalist dispenses medicine in open market to all comers with impunity. I would not be severe upon the kindly old lady who sits by her herbs and roots all day long, and every market day, giving advice free, and charging very little for the medicinal herbs; but who can tell what fearful effects may be produced where excessive doses are given, and there is no duly qualified person ever called in to see the results? I have eaten the tubers of Wake Robin (Arum maculatum), and know it to be an excellent vegetable, the tubers being beautifully white when boiled, but if I had eaten as much as the size of a bean of the same roots in a raw state, I should have been poisoned. The whole secret of the Arum tubers is that the acrid principle is volatile, and goes off in boiling. In Thornton's "Herbal," above referred to, he speaks of doses of fresh Arum tubers of 10 grains taken inwardly, and that this very small dose (the 48th part of an ounce) makes the patient sweat. What a subject this fiery root would be for the herbalist to sell when fresh, while when dried or boiled it would be no better than a chip in porridge.

But strangers should come to Manchester at Whitsuntide to see the trade in Nettles. Of this plant it has been said that it has dogged the footsteps of man everywhere to hang him, as it contains a strong fibre, fit to make ropes of; but here it is made into beer, the liquor being sold at ½*d.* a bottle. When the scholars return from their yearly excursion to the country, they come home laden with Nettles, and were it not that every hair on the Nettle is a poisoned sting, the plant would have become extinct long ago—at least within 30 miles of Manchester. I have eaten the fresh Nettle sprouts in spring, gathered before they got to be longer than one's finger, and they were very good plain boiled. If this practice were more common, it would lessen the crops of Nettles, and turn this unhandsome plant to some good account. The public have nothing to fear from the herbalist making any mistakes in dispensing Nettles. The plant has a character; there is nothing mawkish about it, and it needs very little logic to explain to the dullest comprehension that it will excite (Dr. Thornton agrees with this); indeed I have seen lads dance with pain and without music when taking their first lessons on the nature and properties of a bunch of Nettles. The dulness of the ass, the thickness of his hide, and the power of his jaw-bones, are all proved by the fact that he can eat Nettles, green or dried, with impunity.

A lady lectured at Birmingham the other day on the education of women in the arts and sciences. Surely the botanical department of the "Materia Medica" would be a lady-like business, as there are already many ladies who are good authorities on our native flowering plants and Ferns; and if the subject once got into a girl's school the pupils would collect the specimens, and when these were correctly named and described, the girls would ever after know the plants by name, and be able to turn them to account. Reliable information on the nature and properties of culinary and medicinal herbs might from time to time be given in the columns of your valuable paper. Large sums of money are paid to herb-gatherers, and men may be seen fishing for the fleshy stems of Water Lilies (Nymphæas and Nuphars), and the Bog Hop, *alias* Buckbean, *alias* Water Trefoil (Menyanthes trifoliata); and women employ themselves profitably by gathering Wood Sage (Teucrium Scorodonia), Mugwort (Artemisia vulgaris), and Horehound (Marrubium vulgare); and as these parties pay no rent for the land on which the herbs grow, it is by no means an unprofitable speculation.

There is a large field open for useful service in collecting, drying, and preserving herbs. The herb teas are examples of leaves properly dried and preserved in canisters for use.

It may not be always easy to draw a hard and fast line between the duties of the housewife and those of the herbalist, for we read of the Scottish lady of rank superintending the manipulation of Elder flowers when she was asked in marriage to the Laird of Cockpen—

> "Lady Jane she was making the Elder-flower wine;"

and Solomon's ideal of a household matron, a priceless treasure, is made to consist of a lady that looketh well to the ways of her household—a worker, or as the sacred penman has it, one that eateth not the bread of idleness. Such an one would soon know plants by sight, and how to manage them. *Alex. Forsyth.*

PREPARATIONS FOR DRY SEASONS.

DROUGHTS have come upon us of late years with alarming frequency, and abnormal force; for scarcely have trees and plants recouped themselves from the effects of one dry season, than another has come upon them, threatening to wither their sap and exhaust their energy. Vegetable growing has had to be prosecuted under difficulties. The fierce glare of the sun has arrested growth, while the little forced forth under such circumstances has run into wood rather than succulency. Toughness has taken the place of tenderness, dry woody fibre that of crisp, jelly-like cellular tissue. For water, essential to all plants, is the warp and woof, and mainly the bulk and substance of vegetables. If we would have their heads or produce tender, their feet must be kept within reach of water. Therefore the water supply of gardens is a matter of paramount importance; and the old proverb, "Waste not, want not," is peculiarly applicable.

The late Mr. Loudon had a theory upon this, as upon many other subjects; and experience has justified its wisdom and truth. His principle was that every dwelling collected enough water to supply its inmates, if it were properly stored. He held the same to be true of gardens, if I remember rightly. In most gardens there is a lamentable want of facilities for the storage of rain-water. The rain that falls on glass roofs is not infrequently run off into the main drains, and lost; and until the invention of the Chatsworth Conduit Tile, all the water that fell on gravel walks was wasted, or often worse, left as a source of weakness, wetness, and ruin to good paths. But it is not of such means of collecting or storing water that I wish to write now. Every garden ought to be well furnished with water-tanks, of sufficient capacity, and in handy positions for facile access and convenient use; but all such arrangements are costly. A cheaper and better storehouse of water is at hand, and often sadly neglected. I allude to the earth itself. It is common to see deep tanks excavated to hold water, which the earth would have held better, had it only been deepened and broken up. Shallow soils are most wasteful of water; they are too flat to hold it; it falls upon them, runs through, and so passes away. Take a piece of dry sponge, press it firmly together, and pour water over it; most of the water glides off, while little is absorbed. Remove the hard pressure, gradually moisten the sponge, until it becomes expanded; then pour water upon it, and it will hold it like a vice, and only part with any at the bottom, after it is supersaturated.

These two states of the sponge are not inappropriate illustrations of the different conditions of shallow and deep soils in regard to water, and their varying ability to counteract drought. Shallow soils are like the hard dry sponge, and are soon baked into sterility. Deep friable soils are like the full sponge—nourishing the thirsty roots of plants without intermission through the longest droughts. The winter is the season for filling this great sponge, the earth, with water. Then we should set about digging, trenching, down, down to at least 30 inches or 3 feet. Then when the heavy rains or snowflakes fall, and February fill-ditch comes, all this depth will be charged with water. The rain, instead of beating down the surface, and scouring away the richest and most soluble portions of the soil into the nearest ditch or stream, will sink into the earth with a fattening, fertilising thud. The entire tilth is thus converted into a storage tank, and a sieve also; for on deep tilths no water escapes by the surface; every drop that falls has to enter in, and abide. It is only after the land can hold no more, that any water escapes; and then, if the matter is properly arranged, the waste-pipe from the great tank, the earth, is placed at the bottom, and not at the top. The result is, that the whole of the water passes through the earth before any of it is discharged; and it parts with a good deal to the earth on its passage. It gives up heat, ammonia, carbonic acid gas, and probably many other things, all which are left as a toll tax within the land. But more than this, the passage of water through the earth rends and splits it into innumerable fragments. The result of the passage of so many watercourses, each cutting a way for itself, is that the whole mass of the earth, so far as the water is conveyed, is pulverized, comminuted, and broken down into the moist state of friability. On the heels of the water follows the air, and deep tilths, so stored with water, are likewise stocked with air—the one complementary, as it were, to the other.

Water, in the state in which I have here advocated its being stored within the earth, is partly dependent upon the air; whereas the air, again, could never have so thoroughly pervaded the earth, but for the passage made for it by moving water. Again, all tanks should be furnished with a waste-pipe; otherwise, they may be filled to bursting, or till they run over, to their own injury and that of other property. The tank of our tilth is no exception to this law; without an outlet, the storage of so much water would ruin all. The earth would be soured and soddened during rain, and baked into iron or rent into fragmentary fissures during drought; but by removing the excess of water through underground drains all these evils are rendered impossible. It is not so much that drainage removes, as that it equalises the supply, and regulates the distribution of water. Deeply-cultivated, well pulverised, properly drained land holds sufficient water by capillary attraction, or suspension, to supply all the wants of plants. When the sun beats upon, penetrates, and bakes shallow, undrained tilths dry, it scarcely dries the surface of such land as I have been describing. It has deep cisterns to draw from, that the other land wots not of. It can therefore set all ordinary droughts at defiance. When the sun drains the surface, capillary attraction works on with increased energy, and sends up subterranean supplies. No sooner does the sun sink to rest, and dew begin to fall, than the whole surface begins to drink in water and hide it away in the roots or the ground, to fight the drought with on the coming morrow. This power of absorbing aqueous vapour, as well as the energy of capillary attraction, are greatest in those lands that are the most finely pulverised. The air, too, in such soils acts as a buffer against the fierce beating energy of the sun. The sun pursues the moisture of the earth with the thirst of a bloodhound after his prey; but at all points the air within the soil beats back its fiery energy, and thus arrests the loss of water.

With such tilths, stored with water in winter, drought may be set at defiance. We as a nation—and even some gardeners—only scratch the surface of the ground, and then expect it to carry good crops, and bear drought without flinching. Were we to carry to our own gardens the question—How deep are your water-tanks, that is, tilths?—most of us would be astonished at the answer we should receive. We should find that our water storage ranged from 6 inches to 48 inches, so that while the crops on some soils are ruined by the first drought, others go safely through every trying season without apparent suffering. In every garden there is nearly the same demand for water: they are cropped alike, and the yield is expected to correspond; and yet the tilth varies from 4 inches to 40 inches or 50 inches. Now, this tilth is not only the feeding-ground, but the drinking-cistern of plants; and the first means of mastering drought is to deepen it, ready for the rains to fill. The highest success in vegetable culture will never be reached, nor severe droughts set at defiance, until our gardens average 3 feet of good, rich, moist root-run. The roots, drinking from such virtually inexhaustible fountains, will develop abundant produce, distinguished by size, succulency, tenderness, and sweetness. *D. T. Fish, in "Florist and Pomologist."*

THE ODOURS OF PLANTS.

THE subject of the phenomena of odour and colour in plants, and of the causes which induce or govern them, is one of considerable interest; and the relations which exist between the two are sufficiently striking. Thus, it has been statistically ascertained, and a very little reflection will confirm the conclusion, that white flowers stand highest in number among fragrant species, next yellow, then red, and lastly, blue. And it is among white flowers that disagreeable odours are most seldom found, while orange and brown are frequently unpleasant in scent. In such calculations, however, it must be remembered that the appreciation of odours is by no means the same to different people: scents which are agreeable to one, are often the reverse to another. The strong odour of Tagetes patula and T. erecta is not objectionable to some; while others, besides the well-known fox-hunter, are of opinion that the Sweet Violet is a "stinking flower." There are even some unhappy beings—we trust they are but few—who cannot endure the scent of a Rose. The sense of smell, too, is much more acute in some persons than in others; and we have frequently remarked an analogy to colour-blindness in the want of perception of odours manifested by some among our friends.

A good summary and comparison of scents will be found in M. Lecoq's "Etudes sur la Geographie Botanique de l'Europe," from which some of the following details are borrowed. In almost every case, however, additional instances of similarity will suggest themselves to the reader, especially if he be gifted with a keen nose, and a good memory for smells. In the first place, it may be laid down as a general principle, that a larger proportion of white flowers are fragrant than those of any other colour; yellow come next, then red, and lastly blue; after which, and in the same order, may be reckoned violet, green, orange, brown, and black.

Among white flowers, certain types of scent are very prevalent. Thus many Umbelliferous plants have a strong odour of honey, which is very marked in Anthriscus sylvestris, and is found also in the aquatic Ranunculi: Eucalyptus glandulosa recalls the same scent; and in the Almond and Apricot we encounter it, qualified by that flavour of prussic acid, which is so perceptible in the Hawthorn when one does not inhale too closely the fragrance of its flowers. This scent is intensified in Spiræa Ulmaria; in S. Filipendula it is modified by a *soupçon* of the odour which is found also in the Privet and in Actæa spicata, and attains distinctness in the Elder. Many Rubiaceous shrubs have similar odours, and resemble certain Apocyneæ; and the Philadelphus coronarius has so much affinity in scent with the Orange, that it is often called the "mock Orange bloom." Other types of scent among white flowers are presented by the white Lily, the Jasmine, the Tuberose, and the Lily of the Valley. It is curious to observe, that among cultivated plants, white-flowered varieties are very often the most—if not the only—fragrant ones; this is the case with the white Petunia [?] and a commonly cultivated white-flowered Verbena [?]. It is also worthy of notice that many of the scents among white flowers are only pleasant when in very small quantity, and become absolutely disagreeable when intensified; this is the case, especially, with the Hawthorn and white Lily.

Among yellow flowers, the scent of the Orange is often found, we may note, in the common Broom, and in Biscutella saxatilis and other yellow Crucifers. The curious alcoholic odour which has earned for Nuphar lutea its English name of "Brandy-bottle" is found also in the yellow Brugmansia floribunda, as well as in the yellow catkins of Salix caprea. Hippocrepis comosa recalls the smell of cheese, and this odour attains its maximum in the blossoms of Genista scorpius. The honey scent is found in several yellow-blossomed plants, notably in Galium verum and Mahonia intermedia.

Roses and Pinks occur to one at once, when sweet-scented red-flowered plants are referred to; but with these exceptions it is difficult to characterise the odours of plants belonging to this series. But among lilac flowers a great resemblance in scent may be traced; thus the sweet odour of Vanilla, which is so powerful in the garden Heliotrope, is found again in different degrees of intensity in Petasites fragrans, Valeriana officinalis, and the common Lilac; we meet with it also in Plantago media, which is exceptional among Plantains in its fragrance and in its coloured corolla.

Blue flowers are very rarely fragrant, and when so, only in a slight degree. The blue variety of Phyteuma spicata exhales a faint perfume, and one or two Campanulas are slightly scented. Franciscea Hopeana has, however, deliciously fragrant blossoms, which recal at once the scent of the Orange and the Tuberose; but although at first blue, they soon lose their colour and become white.

Certain species, the flowers of which are of sombre hues, are very fragrant. Thus in the early flowering Calycanthus præcox, one finds a multitude of odours, such as Rose, Jasmine, and Tuberose, harmoniously blended. The night-flowering Stock (Matthiola tristis), Hesperis tristis, and one or two more, compensate by their fragrance for the absence of beauty of colour; while other dark-flowered plants, such as the Henbane, have an intensely disagreeable odour.

Thus we see that it is not the most brilliant flowers which are the most fragrant, indeed, many of the most brilliant in colour have no scent whatever. The beautiful Malvaceæ of equinoctial America, the Pelargoniums of the Cape, the Passion-flowers [?], the Gladioli, and some of the most striking Leguminosæ are destitute of perfume.

One or two conclusions as to the geographical distribution of sweet-scented plants may be arrived at from the preceding facts, united with many more which space will not permit us to cite. We have seen that a large proportion of pale and white blossoms are fragrant; and it is ascertained that these predominate in northern regions. We may therefore conclude that the relative number of odorous flowers is greater towards the poles than towards the equator. It would seem that the too powerful action of light and heat is opposed to the emanation of the odours of flowers; and we see many species, which are scarcely fragrant during the day, become so in the evening or at night. But if the odours emitted by the blossoms are more frequent in the North, the reverse is the case with the essences enclosed in the glands. Plants with fragrant leaves, aromatic fruits, and wood penetrated with essential oil, are scarcely found except in warm or tropical countries. *James Britten.*

Home Correspondence.

Theory of Lunar Influence on the Flow of Sap in Trees.—I have noticed in the *Gardeners' Chronicle* of November 11 an abstract of Mr. Hutchinson's address to the Scottish Arboricultural Society. It contains a most interesting renewal of a theory nearly 2000 years old, that there is a menstrual periodicity about the flow of sap in trees, and that, consequently, the quality of timber is influenced by the moon's age at the time when it is felled. The Romans, than whom no ancient people were more skilled in the theory and practice of working timber, appear to have kept the exact date of the felling of the timber used for important public works,* and may have deduced this belief from the traditions of long experience. To prove that the belief was general, I will translate passages from Macrobius, who lived more than 1500 years ago, from Pliny the elder, who was 300 years earlier, and from Cicero, who dates 100 years before Pliny. In his work called "Saturnalia," book vii., chap. 17, Macrobius says, "Timber felled when the moon is either full, or in the first or second quarter, is useless for building purposes, being rendered soft by the sap it then contains enclosed in its pores." Pliny in his "Natural History," book xvi., chap. 74, discussing the best times for cutting timber, says, "The lunar theory, too, is of immense importance; builders will not use timber unless felled between the 20th and 30th days of the lunar month. All agree that the best time to fell is at the moon's conjunction, or the day called, by some Interlune, by others, Still Moon [new moon]. We know that it was specified in the contract made by the Emperor Tiberius, when the Naumachian Bridge had been destroyed by fire, that the Larch trees for rebuilding it should be cut in the Tyrol on that day. Some say that the moon ought to be in conjunction below the horizon, which can only happen at night. But if a conjunction of the moon should coincide with the winter solstice, timber cut on that day will last for ever." The passage in Cicero is found in his treatise on "Divination," book ii., chap. 14. He is speaking of sympathetic influences, as proving the unity of Nature, and says, "It is thought that trees in the winter continue to become seasoned for use whilst the moon is waning, because they are then drained of sap." In estimating the value of the above passages, it must not be forgotten that the Romans for the most part placed implicit faith in meteorological as well as judicial astrology. The Emperor Tiberius was especially notorious for this. On the other hand, Cicero most ably refutes belief in astrology, whilst he admits the truth of this "lunar theory." Indeed, astrology could never have obtained such hold on men's minds had not its supporters been able to adduce such indisputable proofs of lunar influence as the tides. We know, also, what importance one of the leading geniuses of our age attaches in a recent work to traces of lunar periodicity observed in the human race. *C. Wolley Dod, Eton, Dec.* 4.

Artichoke Galls.—I will meet my friend, Mr. Murray, on his own ground, and tell him that, as a practical entomologist, he should abstain from perpetuating the use of the name, Cynips gemmæ, because this combination includes two distinct creatures, namely the maker of the gall and its parasite. It is almost as bad a plan as if some botanist were to call both the Oak and the Mistleto by the same name of Quercus! *Dixi! Alb. M.*

Certificating Grapes.—Perhaps my remarks on this subject were a little too strong, but I wrote under the feeling of irritation which always comes over me when I read anonymous attacks. The members of the Fruit Committee give their time, and attend these meetings at their own charge, and I am sure there has always been a great anxiety to come to a correct conclusion when a new fruit has been brought before them. The reply of "Lynx Eye" is so courteous to me, that I feel sorry that I wrote anything calculated to annoy him; let him consider I was defending the body to which I belong, and not the credit of any of my own productions. I think we may gather from the remarks of "Lynx Eye," that the committee cannot give a reliable judgment upon a bunch of Grapes, or even from seeing once the Vines which produced the crop from which it was selected; indeed, he says several visits paid during two seasons would be necessary. This is, at any rate, a sufficient acknowledgment of the difficulties of coming to a correct judgment of the value of a new variety. I not only concur in this view of the case, but contend that even after such a trial a Grape may disappoint many persons. There are few, if any, Vines will please every one, or grow well in all places. Nay, a Vine may do well for years and afterwards do badly with the same grower, and *vice versâ*. For several years Trentham Black did so well with me that it was admired by every one; the last two seasons it has done so badly in all three houses where I have grown it that I have destroyed them all. What makes this the more remarkable, one was an orchard-house, where little heat is used, and one is a hot vinery. But surely lovers of new fruits will not consent to wait for 20 years till everything is known about a new Grape. What we want is as correct information as can be obtained as to their value, and that is all we can expect. The question is, how can we get this? My own opinion is that when the fruit is approved of, and the tree seen growing, it is as much as is likely to be afforded in the way of information; and I think we must be satisfied with the best opinion we can get in this manner. "Lynx Eye" thinks that the only way to come to a correct decision is to prove each new Grape at Chiswick, and says that my hint, that some persons would not choose to entrust their seedlings to any one's keeping, is a serious reflection on the officers of the Society. What right has any one to draw such an inference? I would trust all I have in the hands of our present superintendent; but who can say that during the time, say two or three years, which would be necessary to prove a new Grape, he would continue in his present position, or could be answerable for every one who might have access to the growing Vine? I think the objection "has a foundation in fact," whatever "Lynx Eye" may say. Guessing, as I now do, who "Lynx Eye" is, I am surprised that the difficulties of proving new Grapes has not struck him. Is the Royal Horticultural Society to incur the expense of building new houses for the purpose? To prove new Grapes in pots would be very unsatisfactory, because it is well known that many good kinds are not adapted to this mode of culture; nor would they be properly proved by grafting, because a weak-rooted kind might be temporarily benefited, or by an unsuitable stock a good kind might be seriously injured. Whatever may be said, this scheme will never be carried out. One objection raised by another writer has great force. Mr. Ayres says if a member of the committee is asked how he could have voted for a kind which has not proved good, he replies, or may reply, "I was not there, and had nothing to do with it." "Lynx Eye" asks if I voted for Golden Champion? My answer is the same,—I was not there; if I had been, probably I should have voted for it, *i. e.*, if it was shown in good condition. Only a day or two since I received a letter in its praise, and have seen several others, though my own experience of this variety was unfavourable: perhaps I wanted the necessary skill, or was in too great a hurry in discarding it—time will show. I think if the names of those members of the committee who vote for a certificate were in future attached to the document it would meet this objection, the feeling of responsibility would be increased, and certain names would carry great weight. To come to matters more personal, "Lynx Eye" wants me to give my own opinion of my own Grapes; rather hard, is it not? If I praise them, he may say every one's "geese are swans," and if I know of faults I must in candour state them. Well, trusting that he will believe the opinion expressed candid, and hoping he will take it as one person's opinion who may be mistaken, and who is besides the most interested party, I have no objection to put my own opinion on record, and we shall see in time if it be correct. Ferdinand de Lesseps, a small bunch, with berries of the size of a Frontignan; colour a beautiful yellow, having a strong scent of Strawberries; flavour, barley-sugar flavoured with Pine-apple; the Vine a vigorous grower, very early, being ripe first of a large collection. As tastes differ so much, opinions are sure to vary a great deal about this variety. Dr. Hogg is much superior to Duchess of Buccleuch in bunch and berry, and when just ripe is very delicious; it has another good quality, it never cracks: its fault is, the flavour soon goes after it is ripe, in this respect resembling my favourite Grape, the Muscat Hamburgh. I am not quite sure I did not make a great mistake with Chilwell White. As soon as it showed a tendency to separate from the stalk when ripe, I condemned it, and ordered some hundreds of young plants to be destroyed. Within a fortnight a plant of Muscat of Alexandria in the same house behaved quite as badly, so I shall try it again. Now, if it prove that I have condemned a Vine, worth to me some hundreds of pounds, without sufficient cause, is it to be wondered at that others make mistakes as to the value of Vines they have never cultivated, but only seen once or twice? I believe out of the hundreds of seedlings I have raised, I possess some of the finest new Grapes ever seen, but so nervously anxious am I not to have a bad sort sent out with my name attached, that I will not let out any more till the public are very anxious to possess them. *I. R. Pearson, Chilwell.*

Abies Douglasii variegata.—Herewith are sent twigs cut from two trees of Abies Douglasii, which for variegation cannot, I think, be excelled. Tree No 1 is a rare beauty; it stands exactly 9 feet in height, the spread of branches 8 feet. About three years ago it was shifted by one of "M'Glashan's Transplanters" from where it originally stood to its present position, the centre of a small pinetum, where it forms a very attractive object. The removal has done it good, it being somewhat more sheltered now. It has made a growth this season of 12 inches. The tree appears to be in perfect health; it had a large number of cones upon it last year. Tree No. 2 is of a different stamp, owing to its being planted in rather an exposed situation, though in soil of excellent quality—sandy loam. The tree is growing one-sided, and has a bushy appearance; otherwise, it is quite as showy as tree No. 1. When carefully examined it does not look so healthy as the other; still it cannot be said to be an unhealthy tree. The height of this one is 7 feet 9 inches. *John M'Donald, Forester, Dupplin Castle, Nov.* 31.

Transitory Variegation in Young Plants.—My attention has often been called to this in spontaneous seedlings of the common Horse Chestnut and Sycamore. I have had many of these collected and grown on; but, without exception, they have all ultimately harked back to the green state. They have, however, varied much in the time taken to return to their natural colour. Some have gone back during the first season, others the second, and others, again, not till the third or fourth year. I have tried them in various soils—rich and poor, peat, loam, clay, sand, lime rubbish, and charcoal—but they have invariably become green at last. Such departures from the normal colour in seedlings have much less stability than branch sports, though these also frequently refuse to grow or run back. How comes this transitory variegation in the progeny of green parents, and from whence the difficulty of its propagation? *D. T. F.*

Price of Vegetables.—In answer to Mr. Morgan's letter, I beg to state that I do not attend the Borough, it being too far, and, as a rule, I think higher prices are realised at Covent Garden. I am not a West-Ender, but my experience has been in poor neighbourhoods; therefore I leave the West-Enders to answer for themselves, as I think no one should answer unless from experience. Now, these were about the average prices in poor neighbourhoods last Saturday night (December 2). I took the trouble to have a turn round to satisfy myself:—Collards, 2½*d.* to 3*d.* per bundle; Celery, 1*d.*, 1½*d.*, and 2*d.*, according to size and quality; Brussels Sprouts, 2*d.* per lb.; Savoys, 1*d.* to 1½*d.* each for best; Onions, 3 lb. 2*d.* to 1*d.* per lb.; Carrots, 3 lb. 2*d.*: Altringhams (sacked, not bunched); Potatos, 3 lb. 2*d.* to 7 lb. 6*d.* for best, some places 4 lb. 2*d.*, but these were rough samples; and Turnips 2½*d.* a bunch. As to 4*d.* to 6*d.* a small dish of Scarlet Beans in the season, the first week they were 4*d.* per lb., then they were fetching 8*s.* to 10*s.* per bushel, but after that they were down all at once to 3 lb. 2*d.*, and 1*d.* per lb. Broad Beans, 4*d.* per peck; Peas, 4*d.* to 6*d.* per peck; Champions and Ne Plus, 8*d.*, and for a week or two they were as high as

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* This appears from the sequel of the passage quoted from Pliny.

1*s*. Now, at the above prices you must not expect to see shops with fine plate-glass windows, get long credit, nor to have your articles done up so nicely in blue paper; but you generally get civility and good articles. I think these prices are lower than the wholesale ones last year, for at that time they were very dear; and when the producers were asked why, the general complaint was, we have nothing much to bring': and yet I see by Mr. Morgan's report the crops were as fine last year as this. I wish your journal were more widely read by greengrocers, as I think the *Gardeners' Chronicle* is as great a rarity in a poor neighbourhood as English Pine-apples or hothouse Grapes in May; then the subject would get more fully ventilated. I will just remark that greenstuff ruled higher in Covent Garden this morning, I suppose on account of the frost. The places I visited were Walker's Court, Berwick Street, Whitecross Street, New Cut, Caledonian Road, Hampstead Road, and Leather Lane. These are some of the poor people's favourite market places. *W. R. H., December* 6.

Pine-apple Growing in a Small Area.—The bed in which my fruiting Pines are grown is 17 feet long, and 5 feet wide, in a lean-to pit. The plunging material employed is tanner's bark. It will thus be observed that this noble fruit is grown here under circumstances and conditions exceptionally inexpensive and simple: that is, I am dependent on fermenting material for bottom-heat, and a flow and a return pipe running along the front only, to keep up the temperature. The pots I use and prefer for growing my fruiting plants in are of the sizes called 10-inch and 11-inch, and which I consider sufficiently large for all practical purposes. My suckers and successional plants are grown in the vinery underneath the shade of Grapes and leaves, a practice I much object to, because the Vines not only shade the Pines too much, but it is difficult and tedious to get at the former for the purpose of training, thinning, pruning, &c. Some excellent Pine-growers prefer a little shade occasionally, but I am decidedly opposed to the practice; indeed, my experience is, that Pines and Vines cannot be grown together satisfactorily. Nevertheless, with all these drawbacks, I have had a fair succession of Pine-apples, of tolerable size, all the year round, as will be gathered from the statement that out of an area of 85 superficial feet, or a little over 9 square yards, I have cut 15 Pine-apples in the present year, which weighed in the aggregate 61 lb. 10 oz. Perhaps in this fast-going age, to other cultivators who may fortunately possess modern appliances of the most approved principle, my achievement will not appear very extraordinary or sensational. Be it so. But what to me is far more pleasing, the produce has been pronounced by my estimable employer as possessing that desirable sterling quality, excellent flavour, without which the largest and heaviest Pine is perfectly worthless. The varieties preferred here are the Montserrat and the Smooth-leaved Cayenne, which are considered to be of equal merit. *Wilson Boardman, Gr. to S. H. Norris, Esq., Altrincham.*

The Canon Hall Grape.—In the autumn I met with some examples of this Grape, of superior merit, grown by Mr. Dell, the gardener at Stoke Rochford, near Grantham. I confess it is a somewhat precarious Grape to grow and finish in first-class order, but it evidently appears that it is possible to grow it on a par with even the old Hamburgh. It possesses two rather indifferent qualities, viz., shy setting and bad keeping; the former can be overcome, and as it is so much earlier than the old Muscat, the latter is of small importance. I hope this noble Grape will yet be successfully and extensively grown. *John Edlington, Easton Gardens.*

Hardiness of Echeveria secunda glauca.—Allow me to caution those of your readers who think of wintering this plant out-of-doors, at least in open beds. It can resist neither the frost nor the damp of our climate in winter. I grudged the space that some thousands would occupy under glass last winter, and attempted to winter them on a raised bed in a warm corner, with the assistance of mats as a covering in severe weather, and came nigh losing the entire stock, and should have done so without doubt had I not lifted them just before Christmas and put them in a cool, dry frame, which saved the lives of most of them, but not the leaves, all of which fell off. I have, however, known the plant stand the winter about London under the wall of a dwelling-house, on a dry rockery; and I have a quantity along the bottom of a south wall this winter, where they are protected from rain and covered with dry leaves, which seem to get on well enough as yet. I shall be glad to hear the result of Mr. Knight's experiment, however, in trying to winter them in their summer quarters, but I doubt its success. *J. Simpson, Wortley.*

Fruit Trees for Shrubberies.—It is a source of wonder to me that fruit trees have never been planted extensively for the ornamentation of shrubberies, at least never that I have heard of. Why this should not be done I know not, but there are several reasons why they should be grown for ornament. In the first place most kinds of fruit trees will grow in any situation, and in addition are perfectly hardy, even in our coldest winters. They might either be trained against walls, or as standards. Take the Apple, Pear, and Cherry, for instance, when they are in bloom; what shrub have we that has a more imposing effect, or is equal to them? Plant them in the shrubbery with other trees, and they will enliven the whole in the spring with their splendid blossom, and produce a grand effect with their golden fruit in the autumn. No doubt the greatest drawback to such a proceeding would be the cost of the trees, but then there are few nurserymen who have not a number of trees that would not do to send out for the fruit garden (I mean deformed trees), which they would be able to sell cheap for such a purpose, and which, when planted with other trees, would not show their deformity. The soil would have to be dug about 2 feet deep, and some manure incorporated with it, to give the trees a good start, and that would be all they would require for their well-doing. There are other trees besides the Apple, Pear, and Cherry which I might mention, such as the Quince, Medlar, and Mulberry, all of which would help to adorn the shrubbery; and, if found necessary, the fruit could be gathered either for the kitchen or the dessert, and would no doubt come in useful both for the gardener and the cook. *G. Warren, Gr., Balcombe Place, Sussex.*

Pinus excelsa Coning.—Allow me to inform Mr. Chapman that I have just taken more than a bushel of cones from a specimen of Pinus excelsa. Many of them measure 8 inches in length, and contain a quantity of good seed. *G. Peckham, Beech House, Ringwood, November* 29.

Cutting Turves for Lawns, Bowling Greens, &c.—Would you allow me a corner in one of your columns, that I may call the attention of working gardeners to plain spade work? This is no high-flown theme, larded with hard names, but still every gardener seems in duty bound to maintain the honour of the spade, in all its various shapes and forms. The push-plough used for paring and burning I consider to be the legitimate division between the gardener's spade on the one hand and the farmer's plough on the other, for the paring spade or push-plough is necessarily made strong, and is therefore an unwieldy tool for a man to use. There is another turfing spade of the push-plough kind, for cutting the egg-shaped turves that cover the wattles of labourers' cottages before they are thatched; and there is, or rather there was, a pike spade, lance-shaped, for digging hard ground; but this tool seems to have gone quite out of use, for I have not seen one for many years. We have, however, the lance-shaped peat spade, with a cutter on one side, for the purpose of cutting the peat for fuel in the Irish and Scotch bogs; then we have the half-circular spades used by brickmakers for casting clay in the first part of the process of brick-making; after all these, we have the tapering half-circular tools for draining; and lastly, we have the floating spade or turfing-iron, so essential in all new work for cutting the turves workman-like and of equal thickness throughout. On some of the London commons, in days gone by, piles of turf might be seen cut for sale, each turf 3 feet long and 9 inches wide, and so neatly cut by the handy man as to be exactly 1 inch thick. With turves thus cut from a common where the grass was eaten down so close as to be little longer than the plush on the carter's waistcoat or the livery-servant's breeches, it is easy enough to make good work in laying down a lawn or other dressed ground. I laid down the turves and levelled the lawn in front of Syon House in what appears to be their last resting-place, for no one seems to have tampered with a sod there since 1836. I had no difficulty either about the cutting or the laying of the turves, for all hands knew how to do the work quite as well, if not better, than I could tell them; and when the level pegs had once been driven, about 40 hands could work without confusion. When, however, I had to lay down a great breadth of greensward in the country, it was very far otherwise; for, in conducting the work, I had to give way to the local system, and cut turves in squares of about 1 foot, because all hands understood how to do the work best in that way. When I had to put men in the way of cutting turves for a lawn who had never cut a turf in their lives for such a purpose, I found myself in the position of the love-lorn girl in the old ballad lamenting the loss of her lover—

> "They've ta'en awa Jamie
> That delved in the yaird;"

for my assistants could no doubt "plough and sow and reap and mow, and were good farmer's boys," but to equal the London labourer in either cutting or laying turf was out of the question. After getting a turfing-iron or floating-spade forged by the country blacksmith from a paper pattern, and a handle put to a new edging-iron, I had an inch board cut to the size of a turf, 36 inches long by 9 inches wide, and this is how we got to work:—The board, or pattern, was laid down upon the turf, and the man stood upon this board and kept it firm, and with the edging-iron cut all round the board, thus securing the exact size of each turf; the man with the floating-spade came next and raised the turf, and the boy rolled them up as they were cut. I could have set any number of men to work in this way with little expense, and with the certainty that every turf would be of the right size and workmanlike, which I never could accomplish before, because the men could never be trusted to keep the turves to the right size whilst working by the line. Now as others may be in the like predicament that I have been in, I thought it might save some trouble to tell them how well beginners can be got to cut turves neatly from a wooden pattern. *Alex. Forsyth.*

Orchid Cultivation.—I have read Mr. James MacPherson's letter in your journal, and though he puts me down as one of the Tweedle family, I venture again to trespass upon that space, as I am afraid, otherwise, his letter will go unanswered. He asks if Dr. Hooker gives a list of the Orchids found growing at Darjeeling. I have the Doctor's book, but cannot find any such list. As to his other questions, a long paper could be written on each; but as most of them are fully treated upon in the second volume of the "Himalayan Journals," I refer him to that work, as being much more to the point than anything I can write. Dr. Hooker says, "In our gardens we can neither imitate the conditions of an alpine climate, nor offer others suited to the plants of such climates." He does not think the change in regard to atmospheric pressure has much to do with it. Ground Orchids go to much higher altitudes than those that grow upon trees, I should think with Mr. MacPherson, as Dr. Hooker says he found the mean of the soil higher than the mean of the air all over India. At an elevation of 16,800 feet, he found the soil 12¾° above the mean of the two days he was there, at a depth of from 2 to 3 feet, that is, 43°; at 17,000 feet he found a lake of water with a temperature of 55°. The same plants go from the sea level up to from 14,000 and 15,000 feet; they accommodate themselves to these changes as far as they can, but suffer in consequence—the seeds are produced with greater difficulty, and fewer germinate. In such altitudes, sun-heat and radiation are more important than mean temperature. Animal life is abundant in the dry, lofty provinces of Tibet from these reasons, and absent at lower elevations, where subsistence is abundant, if the air is cold and moist: when the air was at 4° the soil was 43°. Thus, the accumulated soil-heat saves plants and enables rodents to live. Vegetation is most backward also in moist and damp regions. In descending he found plants in seed at 14,000 to 15,000 feet; still green at 12,000 feet, and later again at 2000 feet. On another occasion he found fruit ripe at 13,000 feet, and still in flower at 9000 feet. Do ground Orchids require more heat than tree Orchids? In this question I take great interest, and I hope Mr. MacPherson will get some answers, though I have no great faith or expectation either. I think it will prove that the ground Orchids we have do not come from high elevations, and require more heat accordingly, because we cannot offer the conditions of alpine climates to those that do, and so lose them. Would bottom-heat, in conjunction with a cool atmosphere, suit them? Dr. Hooker gives an account of the Khasia hills, which, he says, are perennially humid:—rainfall from 500 to 600 inches; temperature, summer mean 90°, winter mean 66°; Geraniums refuse to grow, from the rarity of the sunshine; in winter hoar-frost is frequent, being produced by radiation. Now, the Orchids found in the Khasia hills are most of them tree Orchids—are tree Orchids found in any but the perennially humid climates, such as is here described, and in New Grenada? In the description of what he saw at Ghent, your correspondent, "D., Deal," says that M. Verschaffelt grows his Orchids, which he has just before told us are, as a rule, small plants, at a moderate temperature, so that plants from there are the more likely to thrive than when grown in a higher temperature. If this means anything, I must take it as an unfinished sentence, implying that the plants are being prepared either for a colder or a hotter temperature. I think I may take it for granted that M. Verschaffelt intended it to mean that Orchids grown at less than an ordinary temperature are safer for amateurs to buy; to understand it, let us examine what an Orchid is. An Orchis is a plant that produces tubers in the soil, which tubers are the storehouses of nutriment prepared for the nourishment of the next growth. An Orchid is a plant having Orchis-like flowers, and producing pseudobulbs instead of tubers, which pseudobulbs are intended by Nature to act like tubers, as storehouses of nourishment for the future growth, and they are simply an adaptation of this principle, necessitated by their habit of growing above the soil instead of in the soil. If, therefore, the temperature these pseudobulbs had been grown in was under that required by the plant, its vigour of growth would have been impaired in like proportion, and these storehouses would have been produced of a smaller size, and perforce contain a smaller stock of food for the use of the next year's growth. All Orchid growers know this fact, that a new growth is in direct proportion to the strength of the last, except some accident has happened. "What is worth doing at all is worth doing well," is still a good school maxim; but I prefer the Scripture language, "What thy hand findeth to do, do it with all thy heart," and your writers should not record without reflection what are only the economical ideas of the trade. There is also one other idea that I hear from time to time,—if an Orchid is out of health, it should be brought round gradually. Common sense practice can only be this: Has it been suffering through being out of its proper climate?—if so, the sooner you put it right the better. We have no substitute for climate, that is, the proper combination of temperature, light, food, and moisture; if these are not in due proportion, no human hand can prevent death sooner or later, and Orchid cultivation simply means giving them these conditions. You do not say where Mr. John Scott's paper on Indian Orchids can be found; I read with great interest the letter of his you published in June last. *G. H.* [Mr. Scott's paper is published in the Journal of the Agri-Horticultural Society of India. EDS.]

The Slough Auriculas.—There is now collected in the nursery of Mr. Charles Turner what may without any contradiction be considered the finest "stud" (this was my dear old friend Mr. Graves' word for them, although what similarity there was between them and "'osses" I could not make out) of Auriculas that has ever been brought together. My memory goes back to the time of the Dicksons, in Acre Lane, Brixton. I have seen Dr. Plants' in olden time, and have had some knowledge of the collections in the North, but none of them can bear comparison with that which Mr. Turner's zeal and intelligence have brought together, and which Mr. Ball so well manages. Any one who has seen those which he has from time to time exhibited in London knows what a beautiful display he can make; any one who has seen his collection at Slough has had a treat, which might make a man a florist if he had a contempt for florists' flowers before; but this year he has added immensely to his already large stock. Early in the season he became the possessor of the fine collection of that veteran grower, Mr. R. Headley, of Stapleford, the raiser of the finest Auricula in cultivation, George Lightbody, and amongst these was a large number of very fine seedlings, especially in the green-edged section; and very lately he has also obtained possession of a very superior collection through the death of an amateur in the neighbourhood of Glasgow, comprising nearly 600 plants, so that he must have pretty nearly doubled his collection. And we must also bear in mind that we have now in growth flowers which are far in advance of those which used to be considered our best flowers. In green edges probably there has not been any great advance, but in grey edges we have such flowers as George Lightbody, Richard Headley, John Waterton; and in white, Surly Beauty; in selfs, Lord Clyde, Pegasus, &c., so that the quality of the collection is equal to its extent. *D., Deal.*

Cratægus coccinea maxima.—I cannot too highly recommend this beautiful scarlet-flowered and still more beautiful bright crimson-berried Cratægus, to be grown in mixed shrubberies, and other suitable positions. At this season it is very showy, its berries, which are large, being produced in dense bunches. Cratægus coccinea minor should never be planted where the above can be had instead. *William Earley.*

On the Management of Boilers. — As a hot-water engineer I have always observed that after the first severe autumn frost those having the management of heating apparatus are more ready to listen to a little advice upon their management than at any other time; hence my now troubling you with a few remarks. Every heating apparatus that was not emptied in the spring or summer should have the water run off from them as quickly as possible, so as to carry off all sediment with it. Dirty water in an apparatus causes a slower circulation through the pipes, and increases the likelihood of steam being improperly formed in the boiler, causing an overflow at the cistern or expansion where used. Few people that have not seen inside the pipes of an apparatus that has been at work for a few years would believe the amount of mud and sediment they frequently contain. The boiler and pipes should be filled with rain-water, or, at the very least, whenever water be added it should be rain-water, for with its use boilers will last for years without furring, and this is of some importance where tubular and cast-iron boilers are employed in chalky districts. The importance of using rain-water for hot-water apparatus cannot be too much impressed on all who have the management of them. On the subject of stoking I shall make but one remark or suggestion, and that applies particularly to cast-iron tubular boilers. It is, that before opening the upper or furnace door the damper should be nearly closed, and the stoker should be careful not to leave the lid off whilst so doing. The object of this is to prevent the cracking of the bottom ring, which sometimes gives way in severe frosty weather by the rush of cold air across the underside of it when the furnace-door is open, and which, if the damper in the chimney is nearly closed before opening, cannot take place. In this way many a fine boiler may be saved from destruction. As cleanliness is said to be a virtue, all boilers and furnaces are the better for having the soot and dust cleaned out, a little every day. *Duval Campbell, Clapham Junction.* [Very important. EDS.]

Certificated Grapes.—Since writing my last note I have had an opportunity of tasting all the new Grapes in the garden of W. Newton, Esq., of this place. Madresfield Court is certainly the richest and most luscious in flavour, and Mrs. Pince's Black Muscat the second. They are quite distinct in character, the first-named being rich and juicy; the latter rich, crisp, and crackling. Neither, though the bunches are of more than average merit, shows any disposition to "crack." Alicante and Lady Downe's, compared with them, sink into perfect insignificance. Champion Muscat is also very fine, with berries of enormous size; and a three years planted Royal Ascot produced, the first year 12 bunches, the second year 30 bunches, and this year upwards of 50 bunches, averaging over half a pound each, and coloured to perfection. This, planted in the ordinary soil of the garden, without any special preparation, is a proof of the free-bearing properties of this variety. The flavour is fine and refreshing, and certainly less cloying upon the palate than some of its rivals in the market. Golden Champion has not behaved well; the berries, though very fine, damping almost before they were ripe, while now they are quite ripe, the flavour is brackish. From Mr. Newton's large orchard-house, which is not heated, I tasted some Frankenthals equal in flavour to the best I ever met with—certainly very superior to those in a properly heated vinery. *Wm. P. Ayres, Newark-upon-Trent.*

Chilian Beet is pretty well known about London as an outdoor decorative plant in more ways than one. One other way we may use it to advantage and profit, and that is, as an indoor decorative plant for winter. A packet of seed sown in May, and pricked out singly into the smallest pots when ready as seedlings, and potted into 6 or 7-inch pots in the course of a month or so after, will furnish a batch of brilliant foliage plants such as will astonish all who have the least love for fine-leaved plants. At this season, and on during all the chill months, nothing is more attractive than this Beta chilensis when grown in pots. We have used it as a dinner-room plant, on the sideboards, in gold and silver vases. The bright yellow one and the magenta-coloured varieties, both alike, have been much admired. Many never having seen it before, thought it a wonderful plant, as I confess I did on seeing it at the late M. Lierval's of Paris several years ago, in the depth of winter. It was there, however, grown in hothouse heat, and the plants had a long, lanky look. Grow it and treat it like a Cineraria, and you have for winter a thing of beauty. *H. K.*

Cedar of Lebanon Seeding.—I took three cones in the month of February, 1870, from which I obtained 30 fully developed seeds, which I sowed in three small pots, and placed in a cool vinery. All germinated, and very few damped off. I planted them out, but owing to the dry summer of 1870 they did not make much growth. This year, however, they have grown from 6 to 7 inches. I may also say that the trees here, which are very fine old specimens, are at the present time loaded with cones and catkins. *J. McLean, Gr., Prestwold Hall, Loughborough.*

Grafting Vines on American Stocks, &c.—Some years ago a friend brought me from North America some native species of the Vine, knowing that Vine culture was my hobby. The great vigour of these Vines, together with the fact of their ripening early, induced me to use them as a hardy stock for other Vines, as I was well aware of the many and great advantages of this much neglected art in Grape growing; a few other stocks, as named, were also used. The Black Lady Downe's, grafted on an American stock, and on the true Frankenthal, is best on the American. A most remarkable thing was the great vigour of the Vines, and that at every break, after stopping, fruit was shown upon laterals from the green canes of the current year's wood, the Vines at the same time carrying a good crop, and had made new rods for the next year's fruiting of 20 feet and upwards, plenty of the canes being of the size of a man's thumb. This Vine, although generally looked upon as a late and keeping Grape, forces well, and as such does well in pots. Burchardt's Prince or Aramon: This very good Vine should be more grown, it keeps well, and is hardy and prolific on the American stock. West's St. Peter's does not like grafting on the Hamburgh; on the American stock it is best. Chavoush, the Turkish Sweetwater, is much grown about Constantinople, where it is prized. It is also a favourite with all my visitors, having fine oval berries (I like this shape best), noble bunches, and handsome in foliage. Be it remembered that I have never fruited it on its own roots. Grafting, in this case, has improved the flavour. Foster's White Seedling, a twin sister of the Black Lady Downe's, very vigorous, fruitful, and good. This Grape is useful either early or late, and is hardy. Trebbiano is also good with like treatment. In some catalogues it is stated to require a high temperature; with me, grafted, I did not find such to be the case, but it is planted, as are all my Vines, totally inside. As to Gros Guillaume, or the Barbarossa, permit me to advise brother amateurs to plant this, grafted, at the warmest end of the house. Bunches like Hamburghs, of 6 and 7 lb., will be the reward if so grown. After Christmas it is first-rate; it is one of the best of keepers, and so treated I may say that it never shanks. Black Tokay, or Alicante, a Vine with very downy leaves, if true. A grafted Vine, two years from the graft, pole-trained, with four bearing rods of 6 feet each, showed, in 1869, 83 bunches; but however fine looking the bunches of this Vine, my family prefer the Black Lady Downe's. Mrs. Pince's Black Muscat does best grafted. My Vines on their own roots I have destroyed. For late hanging it appears to stand damp better than most late keepers; it does well in a low temperature, and is useful in a greenhouse where pot plants cause damp. Golden Champion, on the Frankenthal, and Raisin de Calabre, and on some American stocks (three sorts), I have not yet proved by fruiting. Madresfield Court on the Syrian does well; on American stock it has not yet fruited, on its own roots it is a good grower, and produces fine fruit. It should be planted in some form by all Grape growers. Gros Colman: this noble Grape in bunch and berry is improved in flavour by grafting; I have it on the White Frontignan, Frankenthal, and two sorts of American Vines, but it has not fruited on the two last yet. The Royal Ascot is very good for pots on its own roots; the fact of its yielding a crop of Grapes from the green canes of the current year's wood, to ripen in the winter, makes it very useful. The Vines for this require special, and the highest cultivation; it is not perpetual with me, and, as far as my judgment will allow, it is unwise to attempt to make it so. Vines of this sort for borders I prefer on the Frankenthal, and grown on my method, for which I refer the reader to your pages of November 12, 1870, p. 1508. If the Vine is for a ground vinery, I should then prefer an American stock, promoting as they do, hardy, vigorous fruitful Vines, also inducing the fruit to ripen early, which is a great point in these structures. I have other Vines grafted, including several Frontignans, the best of all Grapes to the refined taste, Black Damascus, &c.; and should these notes be acceptable, I will report progress after fruiting them. [Please do so. EDS.] I send for your inspection some of the leaves of the grafted Vines planted out. At the same time I must add that no costly borders, expensive houses, or patent boilers, helped to produce them, or the Grapes; for where the Vines are now growing, 16 months ago was a plantation of Gooseberries, and two standard Apples, which had existed several years. The ground was trenched 2 feet deep, mixing top and bottom well together, a small quantity of broken bones (kitchen scraps), and borings of bone-knife handles was forked in the top, and the Vines planted. An iron stove, used at times, is all the means at command for heating. I also send a lateral from a Vine on its own roots, showing a bunch of Grapes strongly and well (it is common for my Vines to do this) cut from a Vine of West's St. Peter's, from a green cane of this year's produce. This Vine has a good crop, only a portion of the bunches that showed being left, and it has stout canes and over 20 feet in length for fruiting next year. I submit that this proves unusual fertility and great vigour, and which, I think, has been brought about in the following manner:—During the past nine years I have propagated my own Vines, always selecting the fruiting eyes only from Vines in the most healthy and vigorous condition, that had not at least with me been subjected to undue excitement in growing the Vines or producing the young Vines from eyes—which is, if I may use the expression, growing at "express speed," and which is, unfortunately, the general practice at the present time, and to be deplored, for amateurs especially. This I do know: curiosity some 20 years ago prompted me to select fruit eyes and wood eyes of the Vine known as the Malvasia (Grove End Sweetwater), from a gentleman who resided there, who I believe introduced it to England—in Sussex it is Lashmar's Seedling. Now the fruit eyes, as I term them, produced very fruitful Vines, and in all points 30 per cent. better than those from the wood eyes. My impression is, that the always using a careful selection to produce my young Vines during the space of nine years has produced the hardy, vigorous stock I now possess. At all events Vines I receive grown in high temperatures do not perform equal to my home-grown ones. Of the American hardy Vines I have possibly the only collection in the British Isles, some 16 species and hybrids—thanks, and many of them, to kind friends on the other side of the Atlantic, and may both nations always be cemented in friendship as closely as the English-grown grafts I have joined with the North American stocks. [Bravo!] I have no doubt that they will prove valuable as stocks and for growing out-of-doors, being very robust, hardy, prolific, and not liable to disease. I send some of the leaves of these North Americans, produced from small plants, potted in 24 pots last May, having now two and three canes of 6 and 7 feet long per plant; the wood is ripe, 3 to 4 weeks in advance of the Black Hamburgh grown in pots under the same conditions. I venture to write, no other Vines, as far as I know, would have produced such fine foliage in common garden soil and in pots of this small size, at least for Vine growing. Now, Messrs. Editors, permit me to request your opinion upon the foliage of the grafted Vines: the fact of the lateral with fruit from a Vine with crop, it not being a Royal Ascot; and last, though not least, the foliage of the North Americans. *R. M. W., Fir View, Walkley, Sheffield.* [The publication of this letter has been unavoidably delayed. The lateral with fruit did not come to hand. The foliage of both grafted and American kinds were particularly fine, vigorous, and healthy. EDS.]

The Cracking of the Madresfield Court Grape.—The cracking of this new Grape may be owing to the season, and not to any constitutional defect. I had the Gros Guillaume this year very badly cracked in a late vinery, and this happened just at the time of colouring; this was in the last week of September, when 3⅛ inches of rain fell in five days, and this quantity of moisture on the outside border had the effect of cracking the berries. In the same vinery the Black Damascus, a thin-skinned Grape, likewise cracked its berries, but not to the same extent as the Gros Guillaume. All firm-fleshed Grapes like the Madresfield Court are liable to cracking at their last swelling period, if the borders, whether inside or out, are kept too moist; and this could not be guarded against in outside borders this year, from the heavy falls of rain in June, July, and September. With me the Madresfield Court, which ripened in an early vinery in June, showed no symptoms of cracking, and the colour of the berries and flavour were excellent. I think, therefore, your correspondent, James Smith (p. 1488), may safely plant as many Vines of the Madresfield Court as he has room for without fear of failure. *William Tillery.*

Potatos.—During the late bad season I had not one unsound tuber among my Sutton's Redskinned Flourball Potatos. I planted 8 lb. of each of the following sorts, side by side, treated them all in the same way—viz., manured them with horse-dung, and sowed at the rate of 6 cwt. of guano in the rows. The following is the result:—

1. Mona's Pride yielded 31 lb. sound tubers, 12 lb. unsound; total, 43 lb.
2. Haigh's Seedling yielded 25 lb. sound tubers, 29 lb. unsound; total, 54 lb.
3. Flukes yielded 23 lb. sound tubers, 14 lb. unsound; total, 37 lb.
4. Butter Kidneys yielded 20 lb. sound tubers, 40 lb. unsound; total, 60 lb.
5. Prince of Wales Kidney yielded 15 lb. sound tubers, 27 lb. unsound; total, 42 lb.
6. Early Rose American, yielded 58 lb. sound tubers, 6 lb. unsound; total, 64 lb.
7. Veitch's Early Ashleaf yielded 51 lb. sound tubers, 4 lb. unsound; total, 55 lb.
8. Paterson's Victoria yielded 59½ lb. sound tubers, 9 lb. unsound; total, 68½ lb.
9. Sutton's Redskinned Flourball yielded 96¾ lb. sound tubers, none unsound.
10. Pink-eye Regents yielded 15½ lb. sound tubers, 41 lb. unsound; total, 56½ lb.
11. Myatt's Prolific yielded 49¾ lb. sound tubers, 3½ lb. unsound; total, 53¼ lb.
12. Scotch Regents yielded 44 lb. sound tubers, 21 lb. unsound; total, 65 lb.

I may add, that the above were planted 1 foot apart in a row, the rows being 2 feet 8 inches apart. *E. Varah, Manor Gardens, Braithwell, Rotherham.*

Foreign Correspondence.

MAURITIUS.—From the interest which is attached to the flora of Mauritius, and the group of small islands surrounding it, the following extracts from a letter from Mr. Horne, the Director of the Botanic Gardens, Mauritius, on the vegetation and general character of the Quoin Island, may be acceptable to our readers:—

This little island is about three-quarters of a mile long, and about the same broad, and lies above halfway between the mainland and Flat Island, being about three miles distant from Grand Bay, the nearest point of the mainland. The island rises abruptly from the sea, and in no place are its shores less than 30 feet, and almost perpendicular. Its greatest height is at the northern end, and here it rises to 450 feet; a landing can be effected at but two places, and even at these only at such times as the sea is calm. These natural landing-places are projecting rocks two to three feet above the water-line, upon which one can step from a boat as upon a quay; from these rocks one has to climb to the top, a height of about 30 feet, over slippery rocks upon which the sea breaks in stormy weather. On the top of these rocks the volcanic part comes into view; volcanic boulders of all shapes and sizes are lying about in every direction, but they are not so numerous on the eastern as they are on the western side of the island. Here Pandanus Vandermerschii is very abundant. The ground is carpeted with Zoysia pungens, walking through which is somewhat dangerous, as it hides holes and stones alike. Over the boulders which this plant does not cover creeps the pretty little Tephrosia pumila in dense masses, its silver-coloured leaves forming a fine contrast with the blue volcanic stones. Here and there are plants of Tournefortia argentea, but it is not abundant. Neither on the Quoin, nor on Round Island, have the common oceanic plants, such as Suriana maritima, Pemphis acidula, Rhizophoras, Scævolas, &c., yet been found. This may be attributed, in a measure, to the abruptness with which these islands rise from the sea, and also to there being no quiet place for depositing soil or sand at the water's edge but what is swept by the waves. On Flat and Amber Islands, and also on the mainland, in every place where the shore is flat, sandy, or muddy, these oceanic plants abound, more especially at the parts that are protected by reefs from the force of the waves. Among the rocks near the sea, but about 25 feet above the water, two species of Portulaca were found. Even at that height, they were not beyond the height reached by the spray from the waves, which are broken in ordinary weather on the rocks below.

Passing on to the sandstone part of the island, the vegetation is more marked, and of a more arborescent nature. A species of Selaginella and Adiantum caudatum were the only Filices found; these plants were growing in the crevices of the sandstone rock, on its windward side. The top, or plateau, of this rock is the highest part of the island, and is about 450 feet above the sea.

Among Monocotyledons, the most abundant were species of Aloe and Dracæna, Cymbopogon elegans, and Pandanus Vandermerschii. This latter, excepting on the volcanic part, is, with the Dracæna, chiefly confined to hollows at the bases of the precipices in the watercourse ravines. Cymbopogon elegans grew everywhere, so also did the Aloe, which served as a guide to point out where the sandstone part ended on the surface, and the volcanic part began. Few plants of it were seen where the surface is of volcanic origin, but their number gradually increased as that was passed over. Several plants of Latania glaucophylla were seen, but it is not numerous. The island is infested with rats, which devour the Latania seeds as soon as they are formed, and which will probably be the cause of this fine Palm becoming extinct on the Quoin de Mer. On the highest part of the island grew several plants of a very pretty Asparagus. The most common Dicotyledonous plants are Clitorea Ternatea var. alba, species of Cassia, Datura, and Rhamnus lucidus, which latter grows in a compact mass on the highest part of the island; Eugenia (Jossinia) rotundifolia, which has deliciously sweet-smelling flowers, is also common, as well as Gagnebina axillaris, a very pretty shrub, rare on the mainland.

There is a reddish-brown coloured grasshopper, which is said to be peculiar to the Quoin, and not found on the mainland. It is not numerous. The volcanic part of the island may be said to be a plain, interspersed on the surface with volcanic boulders, rising gently to where on the surface it meets the sandstone which it mostly overlays. The surface of the sandstone part of the island is well undulated, and broken by small ravines and small precipices. The watercourse is in the bottom of the principal valley; the stream is not perennial, and water is only found in it during what may be termed the rainy season, or for a short time after continued heavy rain; it falls over a series of rocks before entering the sea. There are no springs on the island, consequently rain-water is the only fresh water to be obtained. The plateau on the top is about 150 yards one way by about 20 yards the other; it is surrounded by small precipices, the deepest of which is a fall of about 20 feet on the south-eastern side. The greater part of the plateau is a bare rock, soft and crumbling on the surface but hard underneath. The sandstone strata of the top or plateau, lie almost horizontal, but generally they have a steep south-east declension. The sandstone appears to be same as that of which Round Island and part of Flat Island is composed; numbers of shells and coral are embedded in it.

LA MORTOLA, ITALY: *Nov.* 20.—The observation of my friend, M. Naudin, in a recent number, that in his garden at Collioure Passiflora cœrulea fails to set its fruit, occasions me surprise. Here, as at Collioure, the plant grows half wild, spreading rapidly by means of suckers; but it also produces an abundance of fruits having seeds which germinate freely. As the plant grows with vigour, it forms a good stock on which to graft other species, such as the more ornamental Tacsonia ignea (manicata?). *Apropos* to Passion-flowers, I may remark that Passiflora edulis thrives well, and that a plant on a southern wall here produced, during the past summer, several hundred fruits, which, in spite of their numerous seeds, were by no means disagreeable eating.

Many Cape plants grow well here, but not those, like the Heaths, that require a sandy soil. We are also able to cultivate successfully several species of Eucalyptus and Casuarina, innumerable Acacias, Banksia marcescens, and some Grevilleas. Dryandras are well worth trying, but seem difficult to procure. The beautiful Stenocarpus Cunninghamii does not thrive, nor have we had any success with Castanospermum australe. *Dan. Hanbury.*

SYDNEY, NEW SOUTH WALES: *September* 2.—I observed in the *Gardeners' Chronicle* of May 13, you had engraved the drawing I sent of the Fern with adventitious buds, and attached to it the name of Alsophila excelsa, but at that time you could not have received the letter I sent by the following mail correcting the error I made in the name of the Fern to Dicksonia squarrosa. I regret my error in nomenclature the more, as Dicksonia squarrosa is naturally disposed to throw out adventitious or rather axillary buds, without having received any injury to the stem. Tthis has been observed in this Fern when growing in its natural state in New Zealand, as well as in the plants of all ages growing in the Sydney Botanic Gardens; and on minutely examining the latter specimens, not the slightest injury could be detected in the stem from whence the adventitious buds emanated—indeed, whether in the wild or cultivated state, this Fern may be said to be seldom or never seen without them. This deviation is not seen in Alsophila excelsa or others of the Tree Ferns of New Zealand or Australia, with the exception, in the latter colony, of Dicksonia Youngiæ of C. Moore. This Fern has been mentioned in Hooker's "Synopsis Filicum" as identical with D. squarrosa of Swartz, whereas D. squarrosa is a native of New Zealand, and D. Youngiæ is only found in the warmest parts of New South Wales; and when these Ferns are seen growing together (as they are in the Sydney Botanic Gardens), they have evidently a very distinctive character, for on the examination of plants of equal size, the pinnæ and the pinnules are much longer and not so rigid in D. Youngiæ as in D. squarrosa, as may be seen by the enclosed specimens, two of each species. [Quite distinct. EDS.] I observed in a plant of D. Youngiæ in a pot, which had grown about a foot in height, an adventitious bud had been developed a very short distance from the base of the stem, which was evidently not the result of injury. The pinnæ enclosed of each species were taken from plants grown of equal size. Moreover, D. Youngiæ has only as yet been found in one particular locality,—that is, on the Richmond River, north of Sydney, New South Wales, occupying an area of about 10 acres. It is not a little remarkable that this latter species also throws out adventitious buds without having sustained any injury to the stem. Can this deviation be peculiar to Dicksonia? *George Bennett, M.D., F.L.S., &c.*

AGRI-HORTICULTURAL SOCIETY'S GARDEN, MADRAS.—In your issue of October 7, I see a notice of variegation caused by grafting, in Mr. W. Paul's nursery, Waltham Cross. I have had the privilege of observing three cases of variegation in plants within the last 12 months. In one case the plant was Thespesia populnea, the other two are Calophyllum Inophyllum. The former was evidently caused by an injury to the stem of a young seedling, as under the part injured there was a branch perfectly green. In the latter two cases, as far as I can ascertain, there had been no injury, the plants having been picked from among a batch of healthy seedlings. One of them died through becoming too white, but the other is a healthy plant; and should I succeed in rearing a stock, and in safely importing them to England, they will, with their beautiful dark glossy-green and creamy-white leaves, be a great acquisition to the many variegated-foliaged plants already in our stoves. *John M. Henry, Superintendent, Nov.* 1.

Societies.

ROYAL HORTICULTURAL; *Dec.* 6.—James Bateman, Esq., F.R.S., in the chair. At the conclusion of the usual preliminary business, the chairman of the Fruit Committee announced the awards of that body, and subsequently stated that consequent upon the formation of the new garden at Chiswick there was plenty of very good wall accommodation which he had no doubt the Council, if requested, would place at the disposal of nurserymen for the exhibition of well trained trees. Mr. Marshall then commented upon some of the productions brought before the Floral Committee, and showed to the meeting some cut blooms of Scarlet Pelargoniums, of which he did not think gardeners, as a rule, made enough for winter decoration. All they had to do was to pot a few of the best of their earliest struck cuttings into 8-inch pots, and grow them on in a warm greenhouse, where in the dull months nothing would be more useful for display or more serviceable for cutting for bouquets, &c.

The Rev. M. J. Berkeley, referring to a beautiful cone-bearing spray of Picea nobilis before him, remarked that many Conifers which rarely fruited in this country were this year producing cones in abundance, a fact which he thought was due to the summer of 1870 being so warm that the wood had been better ripened than usual. He next showed to the meeting a specimen of Billbergia Moreliana, with a solitary drooping panicle of deep purplish-crimson flowers, to show what a beautiful object it was, grown, as was the case in this instance, in a cool house. Referring to the fruit of the Osage Orange (Maclura aurantiaca), a specimen of which was exhibited by E. Hubbard, Esq., that had ripened on a tree 40 feet high, in the Botanic Garden at Parma, Mr. Berkeley stated that the fruit never came to perfection in this country. It had been recommended by the late Dr. Lindley as a good hedge plant, but though it was hardy at Margate and Folkstone, and a few other places, it was not so in all parts of England. The specimen, said the speaker, puts one in mind of the Bread-fruit, though it belonged to the same order as the Mulberry (Moraceæ). Coming next to the subject of Hops, Mr. Berkeley said the question had recently been put to him, as to whether it was not the fact, that the use of manure was the cause of their becoming delicate in constitution? On this he wished to state that Dr. Plomley, in his Hop garden at Maidstone, some years ago, used only to manure his plants with the old bine, and no plants could be healthier, though he ought to state that the ground was good, and no doubt full of phosphates.

Mr. Bateman, after commenting upon the Osage Orange, which he could not get either to fruit or flower in his garden in North Staffordshire, though he believed it was ripened some years ago in the neighbourhood of Falmouth, and upon the cones of the Picea nobilis, said that quite a trade was springing up in Scotland in cones, a friend of his having, but a short time ago, been offered £70 by an Edinburgh nurseryman for the cones upon a single tree of Picea nobilis. The Douglas Fir was, without doubt, the one for Scotland and Ireland, and in the former country, especially, it was being planted in thousands. Commenting upon the Golden Yew, shown by Messrs. Standish & Co., he mentioned that many people would scarcely credit their value, but the late Lord Harrington collected at Elvaston enough to make a hedge, which was valued, shortly before his death, at £10,000. He then directed attention to a collection of models of tropical fruits which had been shown at the late International Exhibition by the India Office, who had generously presented them to the Society, and to whom he proposed that an unanimous vote of thanks should be given. He remembered some 50 years ago having seen in Bullock's Museum a similar collection of the tropical fruits of America, and he was quite sure that if any gentleman possessing this collection would present it to the Society, their best thanks would be given to him. In conclusion Mr. Bateman alluded to the losses which the Society had recently sustained in the death of Sir Roderick Murchison, Mr. William Baxter, and, more recently, of Mr. Bellenden Ker.

Scientific Committee.—A Grote, Esq., in the chair. The Secretary read the following letter from Mr. Anderson Henry, relating to a new hybrid Begonia:—"I have this season flowered a seedling Begonia, the produce of Begonia Pearcei × B. boliviensis, again crossed with B. Veitchii, the seed-bearing parent being a hybrid of my own of 1869. Before operating upon it I divested the female flower of two of the three lobes of its stigma, securing it from all other influences save that of B. Veitchii, as well after as before crossing. The produce of this double hybrid—double, at least, on one side—is a plant of almost specific distinctness, but bearing only female flowers—a diœcious plant, wholly unlike any of its parent species, which are all monœcious. I have succeeded in preserving only one plant of this cross.

"I have somewhat analogous experiments among the above tribes yet waiting to be tested.

"One other thing I wish to refer to is a singular tendency I have observed in some plants, creepers, to repel or withdraw from the contact of others, *e.g.*, I have an Ampelopsis Veitchii running up a tower, apparently to avoid a Pyracantha (Thorn) running up alongside of it. The natural tendency of the former (both on a west aspect) I thought should have been to the sun; whereas, as if to escape the latter, it tends to the north. I pointed it out to my neighbour, Colonel Ranken, to-day, and he said he had heard something of the same kind as regards the Ash tree, and that certain other trees grew away from, as if repelled by, it. On the other hand, I have on a wall adjoining the tower Ivy running up, which, where originally apart, seem, as the shoots grow up, to attract each other. Has any such law as that of attraction and repulsion been observed among plants? Can there be any such law?"

Some conversation arose on the points mentioned in Mr. Henry's letter, Dr. Masters stating, on the authority of Dr. Hooker, that a similar change in sexuality had been observed in a new hybrid Begonia, raised in the South of France, and concerning which we shall have more to say on another occasion. In the meantime it may be mentioned that the origin of Begonia frigida, which bears hermaphrodite flowers, and which was the subject of so much discussion in these columns in 1860, is not known. It is hence possible that the plant in question may be of hybrid origin.

Mr. Berkeley exhibited a leaf of Ficus reticulata, with supplementary leaves springing from the ribs on the under surface. This occurs constantly in, and other instances with the inferences drawn from them are to be found in, Dr. Masters' "Vegetable Teratology, pp. 31, 445. Mr. Berkeley also showed curious succulent stolons from Mimulus moschatus, which appeared never to have been observed before.

Leaves of a Beech with a peculiar gall thereon were shown, and which were referred to the entomologists for examination.

Mr. Blenkins exhibited a specimen of Cynomorium coccineum, in spirits, from a rock adjacent to the island of Gozo (Malta), and alluded to its parasitic habit, its employment of old by the Knights of Malta as a styptic.

Mr. Murray showed specimens of a ladybird (Epilachna), which had been sent to Dr. Masters by M. Naudin, from Collioure, the larvæ of which are plant-eaters, instead of being, as other ladybirds are, aphis eaters. This subject will be treated of at greater length, and illustrated by Mr. Murray, in a future number of the *Gardeners' Chronicle*. Mr. Murray also showed a species of Coccus, from Guatemala—a large species, used to colour wood of a grey-rose colour.

A Teazel sent by Dr. Moore, of Glasnevin, remarkable for its spirally coiled stem, the leaves being in consequence rendered "alternate" instead of "opposite."

Dr. Masters also laid on the table the report of the observations made on the growth of certain plants at Chiswick under the influence of different manures for the second season, 1870-71, This report is somewhat lengthy; its general conclusions tally pretty closely with those of the former year, and some of them, of importance to practical cultivators, will be alluded to in these columns on a future occasion. A vote of thanks was passed to Drs. Gilbert and Masters, as reporters of the sub-committee appointed to superintend the experiments now brought to a close by the curtailment of the Chiswick garden.

Fruit Committee.—G. F. Wilson, Esq., in the chair. The interest in this meeting was greatly enhanced by the exhibition on the part of Messrs. Lane & Son, Berkhampstead, of a large collection of excellent Grapes, and a fine display of vegetables made by Mr. W. Pragnell, gr. to G. D. W. Digby, Esq., Sherborne Castle, Dorset. These were shown in competition for the prizes offered by Messrs. Carter & Co., and included capital samples of several varieties of Carrots, Parsnips, Cabbage, and Onions, and of Lettuce, Flanders Spinach, Radishes, Brussels Sprouts, &c. The 1st prize was awarded. In the collection of Grapes from Messrs. Lane 12 varieties were represented, amongst which the most noticeable were good shaped, capitally finished bunches of Alicante and Muscat Hamburgh, large bunches of Trebbiano and of Barbarossa, the latter being a little uneven in the size of the berries; and a remarkably well kept bunch of Muscat of Alexandria that was ripe in July, and still in a plump, fresh condition. A Special Certificate was awarded. A similar honour was so paid to Mr. G. Johnstone, gr., Glamis Castle, for two very fine smooth-leaved Cayenne Pines, weighing 16 lb. A good fruit of the same variety, weighing 7 lb., was also contributed by Mr. Pragnell. To Mr. William Robinson, 37, Southampton Street, Strand, a Certificate of the First Class was voted for a new winter Radish, the seed of which he brought from California. The specimens, of which the annexed illustration (fig. 334) gives a fair idea, were brought from the Chiswick Garden by Mr. Barron, from seed sown in the second week in August. They averaged from 8 to 12 inches in length, and about 2½ inches in diameter in the thickest part, the flesh being white, solid, and of very good flavour. The leaves are long and strap-shaped, and in general appearance the whole is not unlike the *sablons* Turnip. The Committee entertained a high opinion of its merits for winter use, and especially for cutting up for salads. From Mr. D. Piccirillo, Wigmore Street, came fine examples of the Naples Champion Cauliflower, which the Committee considered to be identical with Veitch's Autumn Giant; and from Messrs. Criscuolo, Kay & Co., Gracechurch Street, came good specimens of a new Italian Tripoli Onion, which they say are recommended for their quickness of growth and mildness of flavour. Mr. Trigg, Hayling Island, Hants, sent 13 Shallots, which weighed 6 lb. 6 oz.; and from Messrs. Sutton & Sons came examples of new Orange Naples Garlic, about which there was some doubt experienced at first as to whether it was not a new species. and the question was raised as to whether it was Garlic at all; ultimately, the committee decided the matter by requesting to have further examples laid before them. Mr. Parsons, gr., Danesbury, sent 6 varieties of Celery; and Mr. Walker, gr. to R. Fowler, Esq., Petersham, had a collection of salading. Mr. P. J. Perry, Banbury, sent good examples of the Banbury Improved White Spanish Onion; and Mr. Cadger, gr. to W. J. Shaw Leigh, Esq., showed some very well-grown specimens of the Luton Hoo Cucumber. From Mr. William Paul, Waltham Cross, came several seedling Grapes, including a handsome bunch of his new white variety, named Waltham Cross, which, though not very remarkable for flavour, is nevertheless a useful, showy, and distinct Grape. From Messrs. Stuart & Mein, Kelso, came (but unfortunately too late to lay before the committee) a splendid sample of curled Kale, so fine, in fact, that Mr. Mein thought it would be difficult to improve it any further.

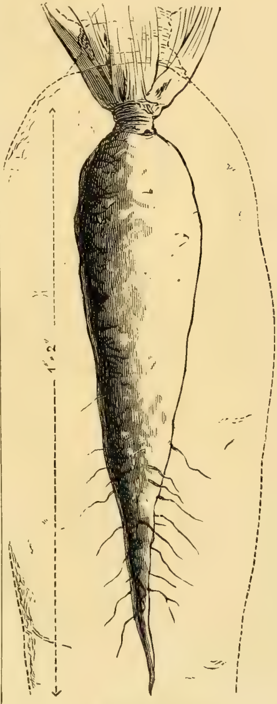

Fig. 334.—CALIFORNIAN WHITE RADISH.

Floral Committee.—W. Marshall, Esq., in the chair. This, the last meeting for the year, was as usua at this season a small and comparatively uninteresting one. Two First-class Certificates only were awarded to a small specimen of Argyroxyphium Douglasii, a Composite plant recently introduced from the Sandwich Islands, shown by Mr. Green, gr. to W. W. Saunders, Esq. In habit of growth it somewhat resembles a small Littæa, having a swollen base, and narrow, slightly curved, silky leaves of silvery whiteness; it will, when it becomes larger, be a handsome decorative plant, and a valuable one for table decoration. The other Certificate was voted to Mr. Goddard, gr. to H. Little, Esq., Cambridge Villa, Twickenham, for Cyclamen persicum Queen of Crimsons, rich deep velvety crimson, the darkest shade we have yet seen in Cyclamens. Prizes were offered for a collection of hardy evergreen plants, bearing berries (Hollies excluded), but there was only one group shown, and to that, which came from Messrs. Standish & Co., the 1st prize was given. It contained very nicely grown specimens, in pots, of Aucubas, Cotoneasters, Skimmia japonica, and Pernettya mucronata, with reddish crimson berries, and P. pilosa, with black berries, both very showy plants when well grown and closely studded with fruit. Messrs. Standish & Co. also took a 1st prize for "nine hardy evergreens of the Yew or Cypress type" with a very interesting group, which included, amongst others, a fine specimen of Taxus fastigiata aurea, a beautiful golden variegated (not striped) seedling, raised by Mr. Standish some 10 or 12 years ago, it having come up amongst a batch of seedlings of the Irish Yew. It has the merit of not becoming burnt, like the golden striped varieties, on the sandy soil at Ascot. These striped varieties do best on clay soil, and in positions where they do not get much sun. In habit it is as compact as the true Irish Yew, and for studding about on lawns it is one of the most valuable variegated plants yet sent out. Along with it was another plant, also a beautiful object, for the same purpose, Cupressus Lawsoniana fragrans, a very compact, glaucous, pyramidal-habited plant, one of a lot sent out some years ago by Mr. George Jackman under the name of C. fragrans, but which when it fruited proved to bear fruit similar to that of the true C. Lawsoniana, of which it is no doubt a distinct variety; also Retinospora lycopodoides, the most distinct of all the Retinosporas, and very hardy, the specimen shown being perhaps the largest in England; and Taxus coriacea, a Japanese form, with broadish, leathery, deep green leaves, and which is said to be exceedingly hardy, thriving at Dresden, and also at New York, where no other Yew will grow. Messrs. Standish & Co. also exhibited a nice specimen in flower of Asparagus decumbens, a native of the Cape, from whence it was introduced by Mr. Wilson Saunders, who exhibited it here two or three years ago, but not in flower, this being the first time of its showing flowers, which are small, white, and rather strongly scented. It has a slender climbing habit of growth, and will prove invaluable for winter work, and especially for cutting in bits for bouquets. From Mr. J. Freeman, gr. to Sir J. Sebright, Bart., Beechwood, Dunstable, came a nice spray of Picea nobilis, on which were very fine cones, cut from a tree 58 feet high; and Mr. R. Keen, gr. to J. G. Shephard, Esq., Campsey Ash, Wickham Market, sent two tree-flowering Carnations, Miss Joliffe, pink, with a tinge of crimson in it, apparently a free-flowering variety, and nicely scented; and Monsieur Baldwin, bright blood-red, and taller in habit of growth than the first named. Messrs. Downie Laird & Laing exhibited a new white form of Primula sinensis fimbriata, with white flowers, from 1½ to 2 inches across, with a prominent greenish-yellow eye; and Mr. J. Chambers, gr. to J. Lawrence, Esq., Beddington, Surrey, sent cut flowers of the delicate showy violet and white Ipomœa cœlestina. Mr. J. George, gr. to Miss Nicholson, Putney Heath, had a well merited extra prize for a beautiful box of cut flowers, which included white Camellias, Azaleas, Begonias, Poinsettias, Strelitzia reginæ, Cypripedium insigne, Heath, Primulas, and Eranthemum pulchellum, an attractive blue flower, which, however, does not stand travelling. To Mr. B. S. Williams a Special Certificate was voted for a nice group of improved hybrid Solanums. Messrs. Veitch & Son exhibited specimens of Capsicum Yellow Gem, a very free-bearing and showy kind, the plants being tolerably bushy, on clean stems. The prizes for cut blooms of Japanese and late flowering Chrysanthemums brought out a very nice display; the best 24 coming from Mr. E. Rowe, gr., The Rookery, Roehampton, and which included nice flowers of Dr. Masters, Red Dragon, John Salter, Mr. Brownlees, Lady Hardinge, Miss Mary Morgan, and Mrs. Haliburton. The 2d prize was taken by Mr. Douglas, gr. to Francis Whitbourne, Esq., Loxford Hall, who had some very nice flowers, especially of the Japanese forms, Grandiflora, Dr. Masters, Chang, and Apollo. The other competitors were Mr. G. Goddard, Mr. J. George, and Mr. T. Hobbs, Lower Easton, Bristol. Very good stands also came from Messrs. Jackson & Son, Kingston, and Mr. J. Shrimpton, gr. to Mrs. A. Doxat, Putney Heath, the former receiving a Special Certificate. Messrs. Rendle & Burrows exhibited a model of a span-roofed frame, and also of a lean-to one, showing a new patent improved system of glazing, whereby the method of fixing glass is dispensed with. This is done by fixing the glass by means of cramps placed on the sash-bars, on either side of which are gutters to carry off water if any should enter. The following advantages are claimed for it by the patentees:—"Requires no putty, paint, indiarubber, felt, or the like. Is perfectly waterproof and can be made quite air-tight if necessary. Is very economical. Exceedingly simple, and can be repaired with great facility; requiring only to remove the screw in cramp to loosen four panes. It has great advantages over other inventions, the fastenings not being fixed tight down on the glass, which thus prevents breakage of the glass by expansion of the metal in hot weather. Is very portable, occupying little space when packed. If made in zinc or iron is indestructible. The sash-bars can be had either in zinc, wood, cast, sheet, or wrought iron, according to the size of the buildings." A model of a new hot-water circulator was also shown by Mr. W. Umpleby, gr. to Miss Rawson, Nydd Hall, near

Leeds, upon the merits of which the Committee expressed no opinion.

HORSHAM LITERARY INSTITUTION: *Nov.* 28.—The Rev. J. F. Hodgson, vicar, gave a lecture on the Natural History of British Fungi, with incidental notices of the esculent and poisonous varieties. The lecture was illustrated with large diagrams, affording a synopsis of the whole order, with its 2 cohorts, 6 families, 30 orders, 800 genera, and 5000 species. The distinctions between the several families were explained, but the entire field being so wide the lecturer drew special attention to the first family—that of the Agaricini, or gilled Fungi, of which he presented a complete synopsis. His friends had furnished him with large coloured drawings of the various species figured in the valuable plates of Dr. Badham, Mr. Cooke, and more especially Mr. W. G. Smith, and being arranged according to their genera, subgenera, and species—the esculents at the top and poisonous immediately below—he was enabled to illustrate the entire order, and this intricate matter was rendered comparatively perspicuous even to a general audience. The drawings of Amanita were really beautiful, having been executed by a first-rate lady artist of the neighbourhood. To the well-known Agaricus rubescens and the fir-cone Agaric was appended a splendid drawing of the celebrated Italian Agaricus Cæsarea, the "Boletus" of antiquity, the *facile princeps fungorum*, which a slave might not be entrusted with, according to Martial, for fear he should eat it on his way. This was the vehicle for the poison which sealed the fate of the Emperor Claudius and sent him *in cœlum* before his time, therefore called thenceforth βρωμα θεων, and to this day also called "Cæsarea." The lecturer dwelt particularly on Agaricus (Amanita) muscarius and its intoxicating qualities, stating his impression that it was this which was inadvertently eaten by, and consequently sealed the fate of, the unfortunate Norfolk clergyman, the Rev. W. F. Welch; and at the same time stating that the poison of A. vernus was infinitely more virulent, four grains of the fresh plant being enough to kill a dog.

The merits of Agarics were next discussed, and A. procerus, A. gambosus, A. personatus, A. nebularis, A. dealbatus, A. geotrupus, A. ostreatus, A. prunulus, and A. arvensis (well pictured and described), obtained their full and well merited share of praise. It was shown how the sub-genera were distinguished by the colour of their spores and arrangement of their gills. The virulently poisonous species were also clearly drawn and dwelt upon, not that any of them would be found tempting except the "salmon-spored" A. (Entoloma) fertilis, a large forest Mushroom, growing in rings. Here the lecturer highly amused his audience by reading the experiences of Mr. W. G. Smith himself, who, when a novice, had very nearly succumbed to this "furiously" poisonous Agaric. The lecturer was greatly indebted to this gentleman for a number of plates of spores of various strange shapes magnified to 10,000 diameters; and it was stated of the smallest variety that it would take 200,000,000 to cover a square inch. Hygrophorus virgineus, Coprinus comatus, and Cortinarius violaceus, not one of which even a novice could mistake, were then noticed. The esculent varieties of Lactarius and Russula were next clearly distinguished from the rest; and, lastly, the Chantarelle and Champignon received their due encomium. Boletus edulis came in for its share of notice, with its natural ally, Fistulina hepatica; also Hydnum repandum, a specimen of which was handed round.

The Stinkhorn was not forgotten, a dried specimen being forthcoming, about which there were some amusing recollections of its delightful fragrance in its palmy days. The Giant Puff-ball was much commended, but not so the Lycoperdon cælatum, a tender-looking, encrusted, and smaller species. The genus Clavaria was greatly eulogised, especially vermiculata, or the "candle" variety. The remaining orders of Hymenomycetous Fungi, viz., the leathery and gelatinous Fungi, having been then briefly noticed, and the four next families microscopically alluded to, the lecturer passed on to Ascomycetes. Amongst these, of course, the Truffle, the Morel, and Helvella crispa obtained their merited distinction; nor was the beautiful Peziza left out of consideration. On the whole, of the various species of esculent Fungi, the palm was given to the Orange Lactarius, L. deliciosus, Agaricus prunulus, the Champignon, Boletus edulis, and the large Puff-ball when about the size of a croquet ball, and eaten the same day as gathered.

In the course of the lecture a largely magnified drawing of the Potato blight was exhibited, and the mode in which it destroys the plant described; also drawings of the "book" Fungus, the lecturer handing round some valuable books of his own which had been partially destroyed by its unwelcome ravages.

The lecture was interspersed with amusing anecdotes, not the least so being an account of a youth at Cirencester Agricultural College who one day brought home a Fungus, cooked it, and within half an hour found his uvula swollen up in his mouth as large as an orange, which occasioned "Smith's plates" to be introduced into the library, where the lecturer first saw them with the book of descriptions, whence his subsequent addiction to the pursuit, truly characterised as one which will "lead from joy to joy."

Notices of Books.

Spiritualism and Animal Magnetism, &c. By Prof. G. G. Zerffi. Hardwicke. 1871. Pp. 143.

The object of this volume is to supply a rational explanation of dreams, spectral visions, and spiritual manifestations. There is not even a ghost story, says the author, which cannot be explained from a natural point of view. Such phenomena are all subjective, and are referred by our author to the action of "the organ of dreams," an assumed organ, which is further assumed to have its seat in the ganglionic nerves, and to be acted on by many forces, of which the most effective is animal magnetism.

The spectral visions are the result of a disturbed balance between the positive and negative magnetism. Moreover, "persons in whom negative magnetism is predominant see, hear, smell, feel, taste, and even think whatever an individual charged with positive magnetism wills." The author condemns unsparingly the jugglery of so-called spiritualists, and the credulity of their followers, but it remains to be seen whether the explanations(?) given by Dr. Zerffi are one whit nearer the truth than those offered by the spiritualists. He classifies dreams as—*a*, dreams without meaning; *b*, half dreams; *c*, theorematic dreams; *d*, allegorical dreams; *e*, somnambulic dreams; *f*, clairvoyant dreams; *g*, visionary dreams.

The author's work appears to us to fall best under the latter category.

Internationale Worterbuch der Pflanzen-namen, &c. (International Dictionary of Plants, in Latin, German, English, and French, for Botanists, and especially Horticulturists, Agriculturists, Students of Forestry and Pharmaceutics.) By Dr. William Ulrich. Leipsig. 8vo. Part I. (Williams & Norgate).

A polyglot dictionary of plant names, compiled by one sufficiently conversant with modern languages and with botany, would be a great boon to botanists, and more especially to gardeners and nurserymen. Its philological value would also be considerable. How far the author of the Dictionary, of which the first part is now before us, is qualified for his task, is to us doubtful. Assuredly the English preface is not calculated to impress the reader with any high estimate of the author's knowledge of our language. His mode of spelling the Latin names is not a whit more reassuring. A few illustrations taken at random will show that our fears are not altogether groundless. Æthusa Cynapium, we are told, is called in English "Foot's Parsley, Garden Dog Poison." The "foot" is doubtless a mere misprint for "fool," but as to the second appellation we are left in doubt as to whether the poison is intended for dogs that commit trespass in gardens, or whether the word garden is introduced in the sense of cultivated, in contradistinction to some wild plant used for poisoning dogs. A similar mystery environs the English equivalent for Amaranthus caudatus, which is rendered Love-his-bleeding. Whose bleeding? we feel tempted to ask, and why are we to love it? Amaryllis formosissima is given as the "very nice Amaryllis," and so no doubt it is, but the author's qualification is certainly not a nice rendering of the Latin term. Neither is a Bucramon at all a familiar word in English for the Snapdragon, Antirrhinum majus. Bunkin, as a name for the Aristolochia Serpentaria, assuredly not in common use in this country. In fine, so far as we can judge from the part before us, which extends from A to CE (in Latin), the work will be of little use to Germans or French wishing to become acquainted with English names. On the other hand an Englishman familiar with the Latin and English names of any particular plant may feel greater confidence in turning to the German column for the German names. As a book of this character is much wanted, and Dr. Ulrich has no doubt accumulated his material and arranged his manuscripts, we earnestly advise him to submit the latter to the revision of competent French and English authorities before proceeding further with their publication, to withdraw the present part, and re-issue it in a revised form. As the author has probably never heard of Dr. Prior's work, it may be doing him a service to refer him to the pages of that useful publication for information as to English plant names and their equivalents.

We could hardly expect in such a work that the derivations should be given. The researches of philologists have, however, rendered a revision of the ordinarily accepted derivations absolutely essential. Thus Anacardium, generally derived from the Greek, and considered to be intended as an allusion to the heart-shaped form of the peduncle or of some other part of the plant, is now by Sanskrit scholars with more probability referred to the Sanskrit vrannakṛta, the name applied to a plant, and itself derived from vrana = wound, and kṛt, to produce or create.

Florists' Flowers.

WHEN a raiser of the VERBENA exhibits some nine or ten seedlings in the course of a season, and succeeds in obtaining First-class Certificates for five of them, it must be assumed that the improvement of the Verbena goes on steadily and surely from year to year. Raisers are actively engaged in the production of new varieties, and nurserymen in their distribution; therefore the Verbena must be in demand. It is in demand for exhibition purposes much more largely than is imagined, and if any one wishes to see the Verbena exhibited well, other than by Mr. C. J. Perry, a visit should be paid to the summer exhibitions held at Sherborne, Taunton, Yeovil, Shepton Mallet, &c., where stands of Verbenas are set up that would fairly test the resources and mettle of even Mr. Perry.

It is Mr. Henry Eckford, of Coleshill, who has this season won five First-class Certificates for seedling Verbenas, and in a batch of seven varieties to be distributed by Mr. Keynes next spring four of these will be included; one named Lady Braybrooke being held over, probably for want of stock. The following are the certificated flowers:—Lady Edith, pure white, with a pale rosy purple ring round the eye, very large rounded pip, and fine truss; Lady Gertrude, very pale lilac, with a rosy mauve ring round a lemon eye,—novel and good, and of fine quality; Mauve Queen, pale lilac-mauve, with a large sulphur eye,—quite new in colour, distinct, and of good quality; and Pluto, orange-red, shaded with dark round a large and bold lemon eye; pip and truss of fine quality. The remainder of the batch consists of Grand Duke, cerise-crimson, large rounded pip, and splendid truss; Isa Brunton, plum-colour, tinted with blue, large white eye,—very distinct, and having an excellent habit, suited for bedding purposes; and Royalty, dark crimson-scarlet, considered by Mr. Eckford to be one of the most promising bedding varieties he has yet distributed, having a dwarf, compact, short-jointed habit, and being very profuse of bloom: the colour also is likely to stand exposure.

Mr. C. J. Perry confines himself to a batch of six new varieties, that will be distributed, as usual, by Mr. C. Turner. But one First-class Certificate fell to Mr. Perry's lot this year, viz., for Emma Weaver, a bold and handsome flower, colour blush-white, with a large and striking violet centre; habit excellent. The other varieties consist of Carnation, white ground, distinctly striped with scarlet and crimson, bright-looking, highly effective, and a good addition to the pretty striped varieties; Hero, bluish-grey, with dark centre, large pip, and of fine form; Queen of Pinks, delicate soft pink, with large white eye, very pretty and distinct; Simplicity, white, with deep crimson centre, novel and fine; and Sprite, delicate blush white, with small pink centre, of exquisite form, and very pretty.

Mr. H. Eckford recommends the early planting-out of Verbenas, if they have been sufficiently hardened off in cold frames. The Verbena has a somewhat wiry growth, and if this is made tough by due and gradual hardening in cold frames, it is made capable of withstanding considerable exposure. Even if but little growth is made, owing to the weather being inclement, the degree of harm done to the plants will be small, and they will be drawing root, and as soon as warm weather opens, they burst into a rapid growth. Whatever be the habit of the variety, let it have a rich soil in which to grow; the starving process, to neutralise strength or redundancy of growth, is a mistake. If a variety grows freely and blooms sparingly in a rich soil, the result would scarcely be better in a poor one; and nothing looks worse than to see half-dead Verbenas in starved ground after a spell of hot dry weather in the month of August. Bedders-out are scarcely sufficiently alive to the value and effectiveness of mixed beds of Verbenas, nor will they, till the rage for masses of colour in the flower garden declines. Large, bold Phlox-like pips, and bright and delicate parti-coloured tints, that appear to rest on a dense undergrowth of foliage, make very pleasant pictures; and all that is required to keep them fresh and neat is the occasional picking off of the decaying trusses. Granted that a storm of rain or hail soon strips a bed of its beauty; but the gloom is only momentary—that singular fertility of bloom so remarkable in the Verbena soon supplies the place of the destroyed flowers; every joint of a branch appears to supply trusses of bloom, and the plants maintain this fertility of resource till quite late in the summer. The Verbena cannot yet be spared as a bedding plant. *R. D.*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, Dec. 2, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg	Deg.	Deg.	Deg	Deg.	Deg.	Deg	In.
Portsmouth	43.8	28.4	15.4	42.1	31.0	11.4	36.5	0.03
Blackheath	42.9	28.5	14.4	40.3	33.1	7.2	30.4	0.12
Bristol	..	..	..	..	..	..	..	..
Birmingham	43.0	30.7	12.3	40.9	32.7	8.2	36.6	0.13
Wolverhampton	41.8	27.1	14.7	39.3	31.8	7.5	35.3	0.03
Leicester	43.0	28.0	15.0	40.4	32.3	8.1	36.1	0.23
Norwich	42.5	30.0	12.5	40.8	32.4	8.4	36.4	1.06
Nottingham	42.7	28.5	14.2	40.4	32.2	8.2	36.1	0.24
Sheffield	41.5	32.5	9.0	40.2	34.5	5.7	37.1	0.13
Liverpool	43.0	31.0	12.0	40.7	32.9	7.8	36.6	0.14
Manchester	44.7	33.0	11.7	41.5	33.7	7.8	37.4	0.02
Salford	41.3	28.7	15.6	41.7	32.0	9.7	36.6	0.09
Bradford	46.0	30.5	15.5	42.8	33.4	9.4	37.9	0.08
Leeds	43.0	34.0	9.0	42.0	34.4	7.6	38.0	0.20
Hull	45.0	29.0	16.0	41.7	33.0	8.7	37.1	0.10
Newcastle	43.0	33.0	10.0	41.8	36.6	5.2	39.0	1.22
Edinburgh	43.0	27.0	16.0	..	..	..	35.9	0.80
Glasgow	47.0	27.5	19.5	..	..	..	37.7	0.03
Dundee.. ..	44.0	30.0	14.0	..	..	..	36.9	0.05
Aberdeen	44.2	33.2	11.0	..	..	..	37.4	0.54
Paisley	..	..	..	..	..	..	..	..
Greenock	43.0	35.0	8.6	..	..	..	38.7	0.00
Leith	44.0	31.2	12.8	..	..	..	38.7	1.00
Perth	46.0	31.0	15.0	..	..	..	37.6	0.00
Dublin	46.0	31.0	15.0	..	..	..	39.3	0.58

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, Dec. 6, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
November and Dec.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
30. Thurs.	29.65	34.7	34.0	32.8	93	2.2
1. Friday	29.80	37.5	34.6	30.5	77	2.0
2. Satur.	30.16	31.7	31.2	30.0	94	2.0
3. Sunday.	29.88	35.2	34.5	33.4	93	2.2
4. Monday	29.96	29.6	29.2	27.9	93	1.8
5. Tues.	30.13	26.3	24.7	16.9	66	1.1
6. Wednes	29.90	34.0	33.1	31.5	90	2.1

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
November and Dec.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
30. Thurs.	38.2	33.9	4.3	35.7	— 6.2	N.N.E	380	0.08
1. Friday	42.7	33.7	9.0	38.4	— 3.7	N.N.E.	465	0.02
2. Satur.	36.7	28.5	8.2	32.6	— 9.6	N.W.	95	0.00
3. Sunday.	38.0	30.0	8.0	33.9	— 8.4	W. : N.	160	0.03
4. Monday	35.0	26.5	8.5	30.7	— 11.5	N.	260	0.00
5. Tues.	33.2	24.0	9.2	28.5	— 13.7	N. : W.	195	0.00
6. Wednes	39.7	30.8	8.9	35.2	— 10.3	N.W. : N.	210	0.01

Nov. 30.—Snow fell occasionally during the morning, and rain in the afternoon and evening. Generally overcast

Dec. 1.—Variable amount of cloud prevalent, increasing toward night. A little rain fell occasionally. Strong wind.

— 2.—A little light cloud present at times. Hazy and foggy. Hoar-frost.

— 3.—Overcast in morning; cloudless and very fine from noon onwards. Snow fell in early morning.

— 4.—A generally fine day, with variable amounts of cloud. Snow fell occasionally.

— 5.—Generally cloudless till night; then variable. A little snow fell at night.

— 6.—Generally overcast. Snow fell in the morning.

JAMES GLAISHER.

Obituary.

THE death recently of one of our oldest contributors, Mr. BELLENDEN KER, at Cannes, demands notice from us. Mr. Ker was known some 20 years since as an enthusiastic plant-grower. His articles in these columns, under the signature of "Dodman," were much esteemed for their pungency of expression and common sense. Mr. Ker was also for some time editor of the "Botanical Register," and though he did not bring to his task the botanical knowledge of his successor, Dr. Lindley, the accuracy of his descriptions of the specimens before him was quite unrivalled. For some years past, Mr. Ker had taken no active part either in horticulture or botany.

Miscellaneous.

THE COMMON CUCKOO (Cuculus canorus) is a very common bird in the whole of N.E. Africa, which it traverses rapidly in spring and autumn, and seems to spend its winter in the equatorial regions. Heuglin never saw it in perfectly youthful plumage in N.E. Africa. In Egypt it arrives from the south in March up to the beginning of May, and in August it returns to the south again. It takes its migratory flights singly; for, although tolerable numbers may be observed collecting in the small Acacia woods, avenues, and Palm groves, yet none of them concerns itself about its neighbour, but pursues its passage alone. As to locality, the cuckoo in Africa is not particular. It is found in the plains round Alexandria, not unfrequently in low Date Palms. In Central Egypt more in gardens, especially in Olive plantations, on Labach and Sycamore trees, Tamarisks, and Acacias, about dwellings and ruins. In the steppes it is often seen in quite low bushes; in Soudan in thick forests, either in marshy country, lowlands, or high mountains. It flies generally north to south, and it returns mostly following the Nile or the coast of the Red Sea; but it also wanders far into the arid wastes of the coral islands of the latter. Heuglin, during his several years' residence in N.E. Africa and Arabia, never heard the bird's well-known cry. The same is asserted by Jesse and Brehm; but Professor Hartman says he heard it in March at Der (Lower Nubia), in April at Old Dongolah, in the first days of May in the woods of North Sennaar, in September at New Dongolah, and in October at Siut. In all the African specimens Heuglin found the iris always of a more or less deep brown. The common cuckoo occurs in Algeria, St. Thomè Island in the Gulf of Guinea, Madeira, South Africa (?), Madagascar (?), Mauritius (?), over the greater part of Asia eastwards to Japan and Timor, in Europe northwards to 70° N. lat. *Field.*

THE CALIFORNIAN THISTLE.—The following Notes were read before the Royal Society of Tasmania by Mr. W. Archer, F.L.S.:—

"The genus Carduus, as established by Linnæus, consists of what are called 'true Thistles,' with a hairy pappus or calyx; and 'plume Thistles,' with a feathery pappus or calyx. Bentham, in his "Handbook of the British Flora," follows Linnæus, but some botanists class the 'true Thistle' under the genus Carduus, and the 'plume Thistles,' under the genus Cnicus or Cirsium. The Milk Thistle (Carduus Marianus) represents the true Thistle in Tasmania, and the Carduus lanceolatus, or Spear Thistle (Cnicus lanceolatus of the British Flora of Hooker and Arnott), the Plume Thistle. The Spear Thistle of England is what is called in Tasmania the Scotch Thistle: but it is not by any means peculiar to Scotland. (The Scotch heraldic Thistle is the Onopordon Acanthium, which is a native of Central Europe and of Asia, but certainly not a native of Scotland, according to Bentham.) The Spear Thistle (Carduus or Cnicus lanceolatus) has a biennial root-stock, which sends up for two years (after which it dies) annual stems, winged and prickly, with broadish, pinnatifid, prickly-lobed leaves, and large, egg-shaped flower-heads, enveloped in involucral spreading bracts, with stiff, largish prickles. The Creeping Thistle (Carduus or Cnicus arvensis) has a perennial and creeping root-stock, which sends up perpetually, annual stems, with rather narrow, pinnatifid, very prickly-lobed leaves, and diœcious flower-heads—the male flower-heads nearly globular, and the female flower-heads egg-shaped, enveloped in involucral appressed bracts, with small prickles. Both the Spear Thistle and the Creeping Thistle are found abundantly in Europe and Asia. The Spear Thistle is, of course, the more easily destroyed of the two; the Creeping Thistle seems to be quite ineradicable. The Creeping Thistle is mentioned by Prof. Johnston as being called in the United States of America the Canadian Thistle—probably because it travelled thither from Canada; and so, I suppose, the same Thistle is called here the Californian Thistle because it has come to us from California. It is, nevertheless, the Creeping Thistle of Great Britain, and it never quits a country into which it has been introduced."

THE BAOBAB OR MONKEY BREAD (Adansonia digatata, L.) is popularly known on account of the immense diameter of its trunk, and the various notions that have been from time to time propounded as to the probability of its great age. Humboldt speaks of the Baobab as "the oldest organic monument of our planet." The earliest account of the tree is given by a Venetian named Aloysius Cadamosto,' who, in 1454, discovered one growing in Senegal whose trunk measured 112 feet in circumference. Adanson, in whose honour the genus is named, and who, in 1794, likewise travelled in Senegal, speaks of a tree 29 feet in diameter and 70 feet high, its estimated age being over 5000 years. Whether or not the trees now standing are of the great age imputed to them is not so easy to determine, though it is beyond doubt that trees of immense size are abundant in Africa, both on the East and West coasts, as well as across the country to Lake Ngami, and in other parts of East and West tropical and central Africa, so far as explorations have as yet been made. It has also become naturalised in many parts of the East Indies. The tree has a variety of uses, such for instance as the manufacture of cordage or rope from its tough fibrous bark, which the natives obtain in the following manner:—They make a horizontal cut in the bark of the living tree, low down upon the trunk, they then strip it up to the height required, usually a few feet, and cut it off; this process is continued as the new bark forms, so that in some old trees there is a series of horizontal rings or scars round the trunk. After the bark is so obtained, it is manufactured in the usual way into ropes and cordage of different thicknesses. The leaves are used as a food, or kind of vegetable, and in the hollowed trunks of the trees the natives deposit their dead, the bodies being, it is said, as well preserved as if they were properly embalmed; but besides these general applications, various medicinal properties are assigned to different parts of the tree—the fruits, which, when fully grown, are some 18 inches or more long, and about 6 or 8 inches diameter across the centre, are of an oval shape, and with a hard, woody rind, the inside being filled with a mass of agreeably sub-acid farinaceous pulp, in which the seeds are embedded; this pulp is used by the natives on the Zambezi for food, being mixed with water into a kind of thick paste and eaten by dipping the fingers into the dish and sucking them; it is also used in the preparation of a kind of sherbet, and has been brought to notice as a reputed remedy in dysentery—more, it is said, on account of its refrigerant and diuretic properties than for its astringency. From the flavour of the pulp the tree has been called, in some parts of Africa, the Cream-of-Tartar tree. The woody rind of the fruit, beaten up into a paste with the aid of a little water, has also been recommended for a similar purpose, while a decoction of the bark of the trunk itself has been used in India as a substitute for quinine in intermittent fevers. In Matabililand, South-eastern Africa, it is in great repute; the natives use it extensively in fevers, and as a tonic, and European travellers also frequently have recourse to it.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THE injury caused by the excess of moisture in the air at this dull season, extends equally to Orchidaceous or stove plants as well as to other subjects, and this, I think, may be explained by the fact that the density of the medium which surrounds them checks the natural exhalations from the leaves. I repeat my former suggestion, therefore, to give fresh air carefully with all possible freedom. Even this is at times of little use, so dense is the external atmosphere. Hence, as this external air, even in its driest state, is scarcely capable of expelling the moisture which abounds within our houses, it is highly judicious to light a fire upon drying days, and when air can be given most freely. The grower will not fail to perceive that this will insure to the inmates a much drier air for some days following, as well as aid a freer exhalation on the part of the plants during that particular day. Turn all plants round occasionally, to insure an equal amount of light to all sides alike. *Herbaceous Calceolarias*, which are now becoming good-sized plants, should have all decaying bottom leaves removed from them. Though these require an uniform root moisture, care must be taken not to water them to excess, or to cause the soil to become stagnant or waterlogged. Many *Cinerarias* will now push up their centre or bloom stalks freely, and should therefore have liberal waterings with liquid manure of tolerable strength. Greenfly must be assiduously watched for, and the usual antidote, fumigation, applied at the earliest sign of its existence. Many amateurs and others with too limited means endeavour to keep *Coleuses* and *Iresine Lindeni* and such like bedding plants through the winter in greenhouses only, which is often found to be a difficult matter even by with practised hands. Maintain them at the warmest end of the structure, upon a dry base, and permit them to become dry at the roots, only giving them sufficient water at distant intervals to ensure to the balls a slight latent moisture. Keep them also free from cold draughts, and do not cut them back in any way.

FORCING HOUSES.

Where *Vines* which are being forced early have their roots in inside borders, the roots must receive equal consideration, and the same amount of practical attention as the growth aboveground. Indeed, as root action does not take precedence of leaf formation, as is often erroneously surmised, the food intended for them should be ready for their wants at the time when the young fibrils or spongioles are called into active existence. To this end give to the borders a moderate application of warm water every fourth day or so, from the commencement of shutting up the house as a preliminary to actual forcing. By three or four such moderate waterings, the border will become moderately moistened, and each part will be in progress naturally together. The water given to these borders should be warmed up to 80° at least. Those who are now preparing *Vineries* for early work should bend the rods back and fasten them loosely together along the front of the structure, or in any position where the apices of the canes or rods are below the centre. In all instances where the Vines which are now being prepared for forcing have their roots out-of-doors, let the fermenting materials be got on the borders without further delay. *Peach* and *Nectarine trees* in the early house, which are now swelling their buds, must be syringed periodically, the atmosphere, too, must be well charged with moisture, and all the surroundings should be as clean and sweet as possible. It is often a very judicious procedure to sow a little *Cucumber seed* at this time, in all instances where any lack of vigour exhibits itself in bearing plants. By so doing, early seedling plants are often provided by the time they are actually wanted, though symptoms of waning health does not show thus early, the most trying time having yet to come.

HARDY FLOWER GARDEN.

Proceed with the pruning and nailing or tying-in of *Pear trees* during temperate intervals. The gross wood should also be cut out of *Filberts* in instances where they have been permitted to run too greatly into growth. No better time can be chosen than the present to prune all kinds of *Orchard Trees*. We greatly neglect the pruning of standard *Plum trees* as a rule, even in the case of the common Damsons. The crop has become from this cause, in part, a very precarious one; the trees often grow to a degree exceeding the annual bearing strength, and hence we have generally one year a heavy crop, the succeeding year little or no bloom, and perhaps the following one such an excessive crop of bloom that the trees are compelled, from sheer exhaustion, to abandon the realisation of a satisfactory crop. A little judicious pruning will do good in this case as well as in others. *Strawberries* in pots used for early forcing should now be selected from the stock. Choose those with the most prominent crowns, and in the smallest-sized pots; scrub the pots well, and place them in a temperature averaging about temperate for a few weeks, and if with a very slight bottom-heat, into which the pots can be plunged, so much the better. Continue until finished the transplanting of such *Pyramidal Fruit Trees* as are to be operated upon this season. The sooner this operation is brought to a close now the better. Cut all strong rambling roots in somewhat severely, doing so always with a sharp-edged knife. In replanting them be very particular always to keep the base and roots well up; that is, not to plant too deeply. As no tree which has been uprooted or transplanted can succeed in the work of reconstructing its former mechanical hold of the ground whilst the least oscillation or wind-waving is possible, it is needless to dwell upon the importance of immediately staking all such as are so operated on, at the earliest possible moment afterwards.

KITCHEN GARDEN.

The past frost has somewhat delayed the germination of November-sown *Peas* and *Broad Beans*, which are now coming through the soil, though where unprotected at a sad sacrifice by reason of destructive bird agency. I referred last week to protecting them by means of "rizzles" wherever these are at hand, but who would think of purchasing them, in the face of the brick and glass appliances which we now possess? Plant protectors should be in the possession of every gardener who is expected to produce as early a dish of Peas as possible, as they afford protection at once against birds, and the inclemency of biting winds, which dash the tender tops against the hard frozen ground, as well as supply shelter from snow, by which they are weighed down. Even those who possess the means of sowing in turf or pots could not fail to accept their protective aid as a boon. Mould up the rows of young Peas, forming slight ridges on either side, an inch or so from them, so as to protect them from withering cold winds. *W. E.*

Notices to Correspondents.

*** CARRIAGE OF PARCELS.—We are at all times willing to render assistance in the matter of naming plants, fruits, fungi, &c., but our correspondents should remember that this entails, on our part, a very considerable expenditure of time, labour, and expense, and the least they can do is to pay the carriage of their parcels. In cases where this is not done, we shall rigidly adhere to our rule of not receiving such communications. We cannot undertake to name more than six varieties at one time.

BEETROOT CULTIVATION: *R. M. W.* We are unable to name any one conversant with Sugar-Beet growth and manufacture; but application should be made in the neighbourhood of Lavenham, Suffolk, and Faringdon, Berkshire, where the two most extensive examples of the beet-sugar industry in this country exist at present. Probably Mr. Fish, of Bury St. Edmund's, could collect the Lavenham experience for you.

COLOUR OF GREENHOUSE STAGES: *Lady Subscriber.* This depends very much upon the surroundings, and on other circumstances. Stone colour we should think the safest to use.

CROSSING GRAPES: VINE POLLEN, &C.: *T. R., Wigan.* All that it is necessary to do is to keep the pollen in a dry place. We do not know how long the pollen so kept will retain its power, but in the case of the Aucuba it will do so for 12 to 18 months. What we require in new Grapes is constitution and flavour, combined with size. The Black Hamburgh, Royal Muscadine, Muscat of Alexandria, possess most of these qualities. These, therefore, may be crossed with any others whose peculiarities you wish to secure.

GOOSEBERRIES: *T. H. M.* writes to say, that he would be obliged by any correspondent giving him the names of the 12 heaviest Gooseberries, three of each—red, green, white, and yellow.

NAMES OF FRUIT: *Skinner & Son. Pear:* Chaumontel.

NAMES OF PLANTS: *K. & S.* Picea grandis. *A. M.—T. S. H. Horner.* Ligustrum robustum, a native of the East Indies (Khasia, Nepal, the Neilgherries, &c.)—*J. M.* Erica caffra; Cape of Good Hope.—*J. M., Southgate.* The variegated Cocksfoot grass, Dactylis glomerata variegata. Two forms of this are cultivated, one of them distinguished by gardeners as Dactylis glomerata var. elegantissima.—*J. C., Bromley.* Eupatorium glabratum, H. B. K.; native of Central America.—*S. G. K.* 1, Begonia semperflorens; 2, apparently a young scrap of Hypolepis distans; 3, the leaf of some Orchid; 4, Eranthemum sanguinolentum; 5, Begonia Martiana; 6, Begonia Griffithii. No. 3 probably only requires the usual treatment of Orchidaceous epiphytes; try it potted high in turfy peat and sphagnum, with the pot nearly full of crocks beneath the soil.

STEPHANOTIS FLORIBUNDA: *J. M.* This does occasionally produce fruit in this country.

TREE CARNATIONS: *J. W.* The following are recommended as some of the best of those which have the true perpetual-flowering habit:—Avalanche, white; Maiden's Blush, tinted blush; Vulcan, bright red; Herbert, deep rose; Garibaldi, rosy scarlet; Miss Joliffe, flesh colour, very fragrant; Jean Bart, scarlet; Valiant, bright scarlet; White Nun, white; The Dragon, scarlet; Congress, bright scarlet; Vestal, white; Life Guardsman, bright scarlet.—*Constant Subscriber.* We know of no work devoted to these plants. There are some good articles on them in some of the numbers of the *Florist and Pomologist* for the present year.

COMMUNICATIONS RECEIVED:—A. M. R. H.—H. K.—Amateur.—W. A. M.—A. H.—D. J. N.—E. H.—R. G.—J. McP.—J. R. J.—X. Y.—J. P. C (next week)—A. H. (next week)—W. B.—J. H.—J. M. T.—J. H. H.—Observer—W. F., Jun.—T. H. M.—J. T. B.—W. H.—H. W. W.—W. B. H.—D. T. F.

Markets.

POTATOS.—Southwark, Dec. 4.

During the past week the arrivals coastwise and by rail have still been in excess of the demand. Very large arrivals from France, many of which are being stored for want of sale. The following prices were barely maintained:—Yorkshire Flukes, per ton, 100*s.* to 130*s.*; Yorkshire Regents, 60*s.* to 110*s.*; Dunbar and East Lothian do., 110*s.* to 140*s.*; Perth, Forfar, and Fifeshire do., 90*s.* to 110*s.*; do. Rocks, 90*s.* to 95*s.*; Kent and Essex Regents, 50*s.* to 100*s.*; do. Rocks, 80*s.* to 90*s.*; French Whites, 65*s.* to 80*s.*

COVENT GARDEN.—Dec. 8.

We have experienced a general dulness in the trade, business both wholesale and retail being influenced by the weather. The supply, however, is fairly kept up, and hothouse produce is comparatively abundant—Grapes, Black and White, and Pines being ample. Cucumbers, Seakale, and Asparagus is also sufficient both for the London and provincial demand. Amongst novelties we have a fair supply of Truffles, and some nice specimens of the Prickly Pear are on sale. Some very good Bananas are also to hand.

FRUIT.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Apples, per ½ sieve	2 0	to 5 0	Melons, each ..	2 0	to 5 0
Cobs, per 100 lb. ..	60 0	—65 0	Oranges, per 100 ..	6 0	—10 0
Filberts, per lb. ..	0 8	— 10	Pears, per dozen ..	2 0	— 4 0
Grapes, per lb. ..	1 6	— 5 0	Pine-apples, per lb.	2 6	— 6 0
Lemons, per 100 ..	7 0	—10 0	Pomegranates, each	0 4	— 0 8

VEGETABLES.

	s. d.	*s. d.*		*s. d.*	*s. d.*
Asparagus, per 100	10 0	to 12 0	Horse Radish, per bundle	3 0	to 5 0
Beet, per doz. ..	1 0	— 2 0	Leeks, per bunch ..	0 2	— 0 4
Broccoli, purple, per bundle	10	— 1 3	Lettuces, per score..	1 6	— 2 0
Brussels Sprouts, p. half sieve.. ..	1 6	— 2 6	Mushrooms, p. pott.	1 0	— 2 6
Cabbages, p. doz. ..	10	— 1 3	Onions, per bunch..	0 4	— 0 9
Capsicums, p. 100..	1 6	— 2 0	Parsley, p. bunch ..	0 2	— 0 4
Carrots, p. bunch ..	0 5	— 0 7	Radishes, per bunch	0 2	— ..
Cauliflowers, p. doz.	2 0	— 6 0	Rhubarb, p. bund. .	2 0	— 2 6
Celery, per bundle .	1 0	— 2 0	Salsafy, p. bun. ..	0 9	— 1 3
Chilies, per 100 ..	1 6	— 2 0	Scorzonera, p. bun.	0 9	— 1 3
Cucumbers, each ..	0 6	— 1 0	Seakale, per punnet	2 6	— 3 6
French Beans, new, per 100	3 0	— 4 0	Shallots, per lb. ..	0 8	— ..
Herbs, per bunch ..	0 2	— 0 4	Spinach, per bushel	3 0	— 4 0
			Tomatos, p. sieve ..	4 0	— 6 0
			Turnips, p. bunch..	0 2	— 0 4

Potatos, Regents, 100*s.* to 130*s.*; Flukes, 120*s.* to 140*s.*

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CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
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4-4 Scrim, from 2*d.* to 5*d.* per yard, advancing ¼*d.*
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72 „ „ 4½*d.*, 5½*d.*, 6*d.*, 6½*d.*, and upwards.
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WOOL NETTING. 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."
Two yards wide .. .. 1*s.* 10*d.* per yard.
Three yards wide .. .. 2*s.* 10*d.* per yard.
Four yards wide .. .. 3*s.* 10*d.* per yard.
SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.
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WANTED, for a Private Establishment, a first-class PLANT FOREMAN, to take charge of a large Fernery and an extensive and choice Collection of Stove Plants, both Flowering and Foliage. He must also be capable of Managing Men, as he will have Ten under him. Liberal wages given, with house.—Apply, stating if married or single, with references as to ability, &c., to JAMES VEITCH AND SON, Royal Exotic Nurseries, Chelsea, S.W.

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MESSRS. JAMES VEITCH AND SONS are in WANT of a PROPAGATOR for their Nursery at Coombe Wood. He must understand Propagation in all its branches, including that of all kinds of Ornamental Shrubs, Coniferæ, Rhododendrons, &c. Liberal wages offered, and for a single Man there are lodgings on the spot.—Application to be made by letter, stating references as to ability, character, &c., Royal Exotic Nursery, Chelsea.

WANTED, in a Nursery near London, a young MAN, who has been used to the general care of Plants and Houses where Plants are grown for Sale. Must be quick at Potting. Will have charge of part of the Glass under the Foreman. Wages 16*s.* per week.—Apply, stating age and experience, to A. S., 15, St. Mary's Villas, Richmond, Surrey.

WANTED, as SECOND GARDENER, a respectable married Man, without family. Wages 18*s.* per week, with good apartments, milk, and green vegetables.—For further particulars, apply to G. ASHBY, Head Gardener, Kidderpore Hall, New West End, Hampstead, N.W.

SECOND ASSISTANT in the Herbarium, Royal Gardens, Kew (age 18 to 30).—An Open Competition for this situation will be held in London, on JANUARY 16, and following days.—Application for the Regulations and for the necessary Form should be made at once to The SECRETARY, Civil Service Commission, Cannon Row, S.W.

CLERK to the Curator, Royal Gardens, Kew (age 20 to 30).—An Open Competition for this situation will be held in London, on JANUARY 16, and following days. Candidates must be familiar with the routine duties of a Garden, and must show that they have had the necessary Technical Training.—Apply, at once, for the Regulations, and for the necessary Form, to The SECRETARY, Civil Service Commission, Cannon Row, S.W.

WANTED, an INVOICE CLERK.—Must have a knowledge of Trees and Plants, and have filled a similar situation.—Address, enclosing references, to JOHN CRANSTON, Nurseries, King's Acre, Hereford.

WANTED, a SHOPMAN.—Apply, stating full particulars, to G. AND W. YATES, Seed Merchants, Manchester.

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WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N.

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SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.
Plants and Bulbs.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 9, at half-past 12 o'Clock precisely, First-class Standard ROSES; Dwarf-trained, Standard, and Pyramid FRUIT TREES; specimen CONIFERS, RHODODENDRONS, LAURELS, HOLLIES, CARNATIONS, PICOTEES, and PINKS, HERBACEOUS PLANTS and DECIDUOUS TREES and SHRUBS; also a consignment of choice Double and Single HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, LILIUMS, RANUNCULI, and other BULBS, just arrived from Holland.
On view the morning of Sale, and Catalogues had.

Bulbs from Holland.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 11, at half-past 12 o'Clock precisely, 20 Cases of HYACINTHS, TULIPS, LILIUMS, IRIS, ANEMONES, RANUNCULI, GLADIOLI, CROCUSES, NARCISSUS, and other BULBS, just arrived from Holland.
On view the morning of Sale, and Catalogues had.

City Auction Rooms, 38, Gracechurch Street, E.C.
MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without reserve, at the City Auction Rooms, as above, on TUESDAY, December 12, at half-past 12 o'Clock precisely, about 350 choice DOUBLE CAMELLIAS and AZALEA INDICA, compact plants, 1 to 3 feet, beautifully furnished with bloom buds; 300 handsome Standard and Dwarf ROSES, of the best varieties; selected FRUIT TREES; choice Hardy CONIFERÆ and EVERGREEN SHRUBS, and AMERICAN PLANTS, with a Collection of DUTCH BULBS, &c.
On view the morning of Sale. Catalogues may be had at the Rooms, as above; and of the Auctioneers, Leytonstone, E.

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MESSRS. PROTHEROE AND MORRIS are instructed by Mr. M. Cleall to SELL by AUCTION, without reserve, on the Premises, the Hornsey Nursery, near the Church, Hornsey, on WEDNESDAY, December 20, at 12 o'Clock precisely, a large quantity of valuable NURSERY STOCK, including fine Common Laurels, 4 to 6 feet; Lygustrum ovalifolium, 4 to 6 feet; Euonymus, 500 Spruce Firs, 3 to 5 feet; 200 Cupressus Lawsoniana, &c.; 300 fine Standard and Dwarf ROSES; 500 POPLARS, of sorts; quantity of FRUIT TREES, 3000 GOOSEBERRIES and CURRANTS, 200 Double CAMELLIAS, 200 CHRYSANTHEMUMS, 200 Winter Blooming ERICAS, &c.
On view prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers, Leytonstone, E.

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The Agricultural Gazette.

SATURDAY, DECEMBER 9, 1871.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Dec. 16 { Norfolk Chamber of Agriculture, Norfolk Hotel, Norwich—12.30 P.M.

ON Wednesday evening Mr. H. S. THOMPSON presided over a meeting of the Society of Arts, before which the subject of SEWAGE DEFECATION and UTILISATION was discussed in a very elaborate paper by Mr. BAILEY DENTON. It was satisfactory to find the agricultural side of this subject so thoroughly recognised by the selection of a chairman standing in the front agricultural rank, and it was satisfactory to find the possible agricultural utilisation of a now mischievous waste material so recognised by a man of Mr. THOMPSON'S good and sober judgment as that he should be disposed to take the chair on such an occasion. It is to that part of the paper which dealt with the subject of sewage irrigation that we must confine our attention just now. We have given an extract in another page, in which filtration and irrigation are discussed. They are virtually one and the same thing, or rather the latter includes and depends upon the former, irrigation being simply filtration *plus* plant growth—notwithstanding the broad line of distinction which Mr. DENTON tries to draw between them. He has, in fact, himself shown that there are some plants not generally considered aquatic which will grow and prosper under the heaviest dressings of sewage which even a filter-bed has yet successfully dealt with. And, beyond the relation of the soil to plants, there is no difference at all between irrigation and filtration.

In all irrigation there is the passage of water through a certain quantity of the substance of the soil as well as over its surface, and in all irrigation there has, therefore, always been that intermittent filtration which, as has been proved and explained in the laboratory of the Rivers Commission, is the only kind of filtration which will effectually deal with the filth of water laden with organic impurities. Mr. BAILEY DENTON'S scheme of a large succession of beds—more than the "four equal plots" to which the Blue Book referred—on which the filthy stream may be poured at intervals of time which shall be regulated with stricter reference to the wants and powers of the plants growing on their surface than is possible in the case of a smaller number of beds, is just sewage irrigation—really nothing more nor less than sewage irrigation in the case of any farm which has to receive the whole daily sewage of a town. Moreover, even in the case of the filter-beds at Merthyr—which receive on every 5 acres or thereabouts (one quarter of their extent), six hours', or one quarter of the day's drainage of a district of 50,000 people, one-third of whom are connected with the sewers—the irrigation principle is complete. You have a channel carrying the water along the edge of a very wide bed, over which it trickles until it reaches the other end, feeding plants on its way. It is arranged with the view of giving the sewage as fair a distribution as possible, so that every square yard may have its share; and it succeeds in this—as in all comparatively flat, and therefore very slowly acting surfaces, it must succeed—in a much less degree than it does where the beds are steeper, and where you can take the tail-water away to mix with additional head-water, and run it on the land a second time elsewhere. We were for six or seven hours on the Merthyr ground, and saw in some places water running to the end of the bed, and ponding there, while in other places the water, sinking more rapidly near the carrier, never reached the end at all. If only a cross or catch-water surface drain or carrier had been drawn midway of the bed, so as to take up the stream in those places where it was more rapidly passing, and redistribute it evenly, the parallel would have been complete; and we should, by the use of the ordinary irrigation methods, have contributed to the more even application of that "filtration remedy," on which the merits of irrigation as a cleanser of town sewage so largely depend.

But, although we cannot go with Mr. DENTON in his attempt to draw a distinction between irrigation and filtration, which does not exist in any specimen of the latter process which is yet to be seen on the great scale, we must point out that it is to the great credit of that gentleman that this is so. He has himself, by his experience at Merthyr, shown that many of our vegetables will stand immensely heavier dressings of water than had before been supposed. Cauliflowers and Cabbages and Mangel Wurzels have been grown at Merthyr on land which has received the drainage of 17,000 or 18,000 people on 20 acres of land; and though this is not equal to the drainage of 3000 people per acre (of 9680 cubic yards), which was the utmost which, according to the experiments in the laboratory of the Rivers Commission, land could be expected to cleanse, yet, owing to the successful result of the Merthyr process notwithstanding the extreme unevenness of the distribution, we may declare that the work is there being successfully accomplished, notwithstanding its amount is three or four times as much in particular places as it is upon the average. The Merthyr experience does not yet quite prove that the Rivers Commissioners were wrong in supposing that the surface of a filter dealing with the waste of 3000 people per acre cannot grow profitable crops, but it certainly leads us to expect a greater possibility of growing crops under excessive dressings than they imagined possible. We earnestly hope, however, that the practice of using these excessive dressings on small areas will not be generally adopted; that, indeed, such excessive filtration will be adopted only where there is no alternative; that towns will take larger areas of land than this practice supposes, and try to utilise their waste water on a sufficient surface to yield more profitable results; and that if they should resolve that their duty is simply to destroy an enemy and abate a nuisance, they will at any rate take their filter-beds far enough away to enable the subsequent use of the sewage at a more moderate rate on lands lying between them and the town. This is what Birmingham has resolved to do. Taking its sewage to a comparatively small area of land, some 8 or 10 miles away, its conduit will command several thousand acres of land *en route*, and on these it will no doubt some day be utilised.

Let it be understood that, under the very best system known, an immense quantity of this fertilising matter is virtually destroyed. The nitrogenous matter is either absolutely decomposed and its nitrogen wasted in the air, or it is oxidised, and its nitrogen, as nitrites and nitrates, washed into the drains. It is but a modicum of the whole that is, under the best management, built up in plants. Mr. MORGAN'S last report of Lodge Farm contains an analysis of effluent water, proving that two-thirds of the fertilising matter of London sewage runs through it unused. That farm is, in fact, a great intermittent filter, as all sewage farms are, and so this unused sewage passes off no longer putrescible, and may be discharged into running streams without polluting them. This, of course, is a perfectly successful result so far as the question of river pollution is concerned; but it is an unfortunate result in an agricultural sense, and we trust that Mr. Thompson, and Mr. Bailey Denton, and other agriculturists who are now turning their attention to the sewage question, will keep the question of sewage defecation well subordinated to that of sewage utilisation, by which in an indirect and incidental way by far the best result, even for the rivers, will be obtained, at the same time that the agricultural result will be satisfactory.

There could not be a more appropriate subject for the week of the great cattle show than that discussed by Mr. J. K. Fowler, of Aylesbury, before the London Farmers' Club on Monday evening last, viz., Breeding—Facts and Principles. The paper, which will be found in another page, was exceedingly well received by a large and attentive audience, and the discussion which ensued was opened by Mr. G. Smythies, who, in consequence of Mr. Fowler having confined most of his remarks to that side of the subject embraced within the words "external form," wished to say a few words in favour of "quality," which term he applied to animals that would keep in good condition on poor land, or which, when put up to fatten, would quickly lay on flesh. He compared the weights of the prize animals in the three classes respectively for Herefords and Shorthorns at the last Smithfield Club Show, to prove that in point of flesh-producing power the former were the best, while they had also the advantage over the Shorthorn of being able to live harder, and to thrive on poorer land. As regards sheep, he considered that Southdowns—such as those bred by Lord Walsingham—were heavier than Shropshires at the same age, and these, too, did the best on poor land. It was also his opinion that a cross between the Cotswolds and Shropshires would do good in bringing out increased flesh-producing qualities.—To him succeeded Mr. Ward, who was understood to say that in breeding sheep the second and third crosses were of no use; it was the first cross from which advantage—if any—was gained.

Mr. James Howard, M.P., thought Mr. Fowler's paper would disseminate a great deal of valuable information. Were the main principles of breeding more generally understood, we should not meet so many ill-shapen animals about the country as we did now. In reference to the idea that external form depended wholly on the male parent, he said that he had found that it was correct in horse breeding; and he gave instances to prove that it was also true in the case of pigs—in the breeding of which he had had some experience. Mr. Howard specially mentioned having some 18 years ago visited the Duke of Bedford's farm, where he saw some young pigs, all of which were white, and the produce of black sows by a white boar, and he was informed that this had always been the case. He thought that if all the facts on the subject were gathered together and put into a tabulated form, they would have a very correct theory for future guidance in breeding, and this would tend in a great measure to reduce almost to a certainty what was now in most instances a mere matter of chance.

Mr. Congreve was sorry to say that, though since the Royal Agricultural Society was established, in 1838, a large amount of money has been given in prizes all over the country as an inducement to improve the breeds of cattle, the fact remains the same, that it is more difficult to buy a lot of good animals for grazing purposes now than it was 30 years ago, and what he could not understand was that the difficulty was increasing year by year. What graziers wanted were heifers that would put on flesh quickly when wanted. Mr. Coussmaker was of opinion that the great point which breeders should aim at producing was early maturity; and Mr. Treadwell said the reason why Mr. Congrieve experienced difficulty in getting good animals for grazing, was that farmers now liked themselves to feed the animals they bred. He began some years ago with a lot of common-bred cows, and since he had used a Shorthorn bull the improvement had been very great.

Mr. Mechi confessed that he was not much of a breeder, but he thought that the deterioration of cattle was due to the false economy practised by many farmers. What they wanted to impress upon the agricultural mind was the advantage of paying a little more in the first cost, and they would then obtain a better class of stock. He was a great believer in the effect of soil and climate upon animals, and instanced the big horses, big cattle, and big everything that came off the fat soils of Lincolnshire, and the smaller forms of the same from poor land, for which latter he recommended the use of covered yards.

Mr. H. M. Jenkins hoped that if any gentleman carried out the suggestion made by Mr. Howard, as to the tabulating of the facts on breeding, he would ascertain and give the value of them, especially in the case of well bred and, therefore, "prepotent" males. Mr. Trethewy believed that in some classes of animals the male exerts greater influence than in others, and said the fact much to be deplored was, as Mr. Mechi had said, that some farmers—he would not say all—continued to send their breeding stock to the cheapest instead of the best bred animals.

Mr. Tattersall thought Mr. Fowler's paper would be of great service to scientific farmers, who he believed could breed animals almost to a certainty, and to any extent. Farmers should bear in mind that corn they may have cheaper, but meat they never would.

Mr. Thomas remarked, that 40 years ago his county, Shropshire, was a good one for hackneys; but unfortunately the farmers had sold all the good mares, and had since bred from weeds. In his opinion a great deal depends upon the mare; but no matter what they bred, if the produce was brought up on good land they would be finer both in size and quality than those from off a poorer soil.

Mr. Fowler, in reply, thought that all agreed that the facts and principles he had put together were as good as could be obtained from their present limited knowledge. He agreed with Mr. Mechi as to the ill effects caused through the practice on the part of farmers of false economy, and read a letter from Mr. C. S. Read, M.P., who was unable to attend the meeting through an attack of bronchitis from which he was suffering, but who wished Mr. Fowler to impress upon those present the point that "the poorer the dam the greater was the necessity of a longer pedigreed sire."

—— A moderate supply of English Wheat at Mark Lane on Monday sold at about the prices of that day se'nnight. Wednesday's trade was quiet but steady.——At the Metropolitan Cattle Market on Monday, average quality of beasts being middling, there was a brisk demand for choice kinds, at fully late rates, and a fair clearance was effected. The trade in sheep was dull. Wednesday's trade in both kinds was slow, without change in price.——The seed trade is firm.

—— The show of the Smithfield Club has been favoured by good weather up till Thursday afternoon. About 800 people entered the Hall on Monday, nearly 23,000 on Tuesday, upwards of 38,000 on Wednesday. On the whole, several thousands more than appeared on the same days last year.

—— We learn, on the subject of Cattle Disease, that of 38 cattle shown at Birmingham applying for admission to the Agricultural Hall, at Islington, 18 were rejected as suffering from foot-and-mouth disease. Notwithstanding all preventive care, at least 15 animals were suffering in the Hall towards the end of the week. The great confusion that arose last year on the occurrence of the disease will not, however, happen now, as all animals, themselves free from the disease, may be moved and dealt with on the conclusion of the show just as if no case of disease had taken place in the Hall.—By far the most serious announcement, however, to be made in this paragraph, is the occurrence of the Rinderpest, or Cattle Plague, in Belgium, just announced, which will immediately occasion a new Order in Council.

—— We have received, too late for publication this week, a copy of the Report of the Smithfield Club, read at the General Meeting on Tuesday last. The only points which are now of material public interest in it are the resolutions to request from butchers a statement of the carcase weight of the exhibited cattle slaughtered by them, from which, as compared with the live weights now published, very useful inferences may be drawn; and the resolution, in view of the prevalence of foot-and-mouth disease, to ascertain the opinions of members by inviting a discussion at the General Meeting on the following point, viz., whether animals exhibited elsewhere, within a limited period of time before the date of the cattle show, should or should not be admitted in future during the prevalence of the disease. The Right Hon. Lord Penrhyn, who was chosen as President-elect at the last General Meeting, has intimated to the Council his regret that advancing years would prevent his discharging the duties of President; but his lordship, by presenting the handsome donation of £100, has manifested the interest that he takes in the welfare of the Club. The Council voted their best thanks for the same; and they have elected the Right Hon. Lord Tredegar, V.P., to fill the office of President for the year 1872.

—— A prize, which had been offered by Earl Powis through the Smithfield Club for any method whereby the slaughtering of animals might be effected with diminished suffering, resulted in virtually but one proposal. Mr. Thomas Kerr, of Paisley, appeared with a heavy cylindrical case carrying a stiff coiled spring acting on a sharpened bolt. The spring was pulled up tight, and on being released by a trigger, thrust forth the pointed shaft with force enough to penetrate bone. This instrument was intended to divide suddenly the spinal cord, and so destroy sensation. But neither Mr. Kerr nor any other uninstructed man could say with certainty exactly where the spinal cord lay; and so in the case of the trial, after the poor beast had received three ineffectual stabs, it was despatched by the pole-axe. Clearly, Earl Powis' humane idea has not resulted as yet in a success.

—— At the Council meeting on Wednesday last of the Central Chamber of Agriculture—Sir Massey Lopes in the chair—a resolution was adopted:—

> "That Mr. Gladstone be requested to receive a deputation from the Central Chamber and the Associated Chambers of Agriculture in the afternoon of February 5 or 6."

The committee appointed to watch the local taxation question presented their report, chiefly on the Bill introduced by Sir Charles Adderley last session, which embodied the recommendations of the Sanitary Commission. They found that its objects were:—(1), To consolidate all existing statutes on sanitary matters; (2), to make all existing provisions and regulations by means of the central authority in all rural as well as urban districts compulsory, whereas they were at present optional and permissive; (3), to enforce certain new recommendations of the Sanitary Commissioners. They reported generally that the Bill would increase the burden of local taxation, because of its compulsory clauses for the carrying out of sanitary regulations.—The report was adopted. At the General Meeting, which followed, the sixth annual report of the Council, referring to the operations of the Society, under the several heads of local taxation, insurance of farming stock, uniformity of weights and measures, the Malt-tax, the Government Licensing Bill, occupation roads and highways, the Property-tax assessment, the Game Laws, Poor-law medical relief, and the Contagious Diseases (Animals) Act, was presented and adopted. It was stated that the Central Chamber, now in its sixth year, numbers 196 subscribers, and embraced 99 Chambers, having a total constituency of 18,000 members. Mr. Heneage will be President next year, and Sir M. E. Hicks-Beach, M.P., is Vice-President for 1872.

—— A general meeting of the subscribers to the French Peasant Farmers' Seed Fund was held on Wednesday, Lord Vernon in the chair. Captain Delf had visited the districts relieved, for the purpose of reporting on the agricultural and economic effects of the operations of the Fund, and he had found that the Barley, Oats, Potatos, Vetches, and garden seeds sent had generally produced abundant crops, but that the Wheat had failed in most cases. The Wheat (Nursery) was for the most part sown during the month of March, but a little even so late as the beginning of April. Circumstances had in most cases not allowed of the due preparation of the land, and the seed-time was succeeded by three months of very unfavourable weather. The latest purchases of Wheat made by the Fund were of another description—the April Wheat—which yielded a satisfactory crop. The statement of receipts and expenditure showed that there remained an available balance in hand of about £1000, and the executive recommend that they be authorised to distribute this sum to the most necessitous peasant-farmers, in money, or in such other way as might be deemed most advisable.—The Chairman entered at some length into an explanation of the origin of the fund, and the work it had done since its establishment. He wished to remove an impression which had gained ground, that the French peasant-farmers were not grateful for the help afforded them. To this statement he desired to give a most unqualified denial. The committee had received from the French authorities and from the farmers numerous testimonials of their gratitude, and medals had also been sent from many districts. In conclusion, he paid a high compliment to Messrs. Odams and Jenkins, two members of the executive, who had rendered valuable assistance in the carrying out of the work. He also spoke in high terms of the hon. secretaries, and said he felt pain in parting, now that the object of the fund had been accomplished, with those with whom he had worked so harmoniously. A resolution was carried unanimously, "That the executive committee should be authorised to present a testimonial to Messrs. Jenkins and Odams as an acknowledgment of the great assistance they had rendered to the committee." The proceedings closed with a cordial vote of thanks to the Chairman.

—— Mr. KAINS-JACKSON reports in his *Times* letter (Dec. 4) that there has been no important change to notice in the POSITION of the CORN TRADE for the last two months. So equally balanced have been supply and demand that value for English Wheat, which was 57*s.* 2*d.* on September 2, 56*s.* 3*d.* on October 7, 56*s.* 8*d.* on November 4, is at this date 55*s.* 10*d.*, a very trifling difference in the three months following harvest.

"Writing on October 7," he says, "I used the words, 'The wish is general that prices should keep where they are, as either a decline or advance would, almost equally, create future losses,' and the result has endorsed this view.

"I can only repeat, 'The grain stocks of the world appear fully equal to the world's wants.' If I stated this nearly two months ago I may more strongly affirm it now; for to our full granaries the last months of October and November have added large imports. For the nine weeks ended November 26 we have received of Wheat:—1871, 2,056,000 qr.; 1870, 1,243,000 qr.; an increase of three-quarters of a million that must not be overlooked.

"Indeed, while value appears evenly balanced—on one end, not to be under-estimated, a heavy winter demand, on the other end of the beam a bulk of supplies that overweighs regular consumption—the range of prices has already produced a result that more than answers expectation, and again the truth is demonstrated that production of bread-stuffs in the world increases more rapidly than population and consumption. The ratio of the first is multiplied by scientific agriculture, while the latter advances only by natural laws. The differences between peace and war in the sad year of 1870 I fixed at 10*s.* per qr. for Wheat, and thus, when the current quotations of English Wheat are referred to as only 4*s.* to 6*s.* above those of last year, we must add another 10*s.*, and say they are 14*s.* to 16*s.* above the level of the years of plenty; and surely this advance is ample for any admitted deficiency of the Wheat crop in England and France for the present season. Such would appear to be the case, since in France all the markets are dull, and Marseilles is reported to have a granary and floating stock of about three-quarters of a million quarters of Wheat, and all our English ports are well stored. Of the four or five million quarters of imported Wheat which I believe France will require, probably quite two-thirds are received or bought; and recent advices assure us that the winter wants of the French people are as well supplied by import and reserves of the home crop as we are in England."

—— At a meeting of the Landlords' Committee of the ABERDEENSHIRE GAME CONFERENCE, held in Aberdeen last week, the following motion, proposed by the Marquis of HUNTLY, was carried, viz.:—

"That this meeting recommends to the Conference that all agricultural tenants should be allowed to destroy hares and rabbits, subject to certain restriciions as to the mode of killing them on their respective arable farms, by themselves, or by a deputy, and subject also to the maintenance of a close time when the winged game is nesting.'

—— Mr. MORGAN reports from the Sewage Farm at Barking, that he has weighed off 39 rods of land, all that there was of the crop, 17 tons 14 cwt. of Long Red Mangel, which thus outweighed the Globe, being at the rate of 72 tons an acre!

—— We accidentally omitted, in our report last week of the Birmingham Show, to notice the very fine collection of Bovinia or Cattle Potatos, which competed for the handsome piece of plate presented by Mrs. PATERSON, of Dundee, to whose late husband we owe the introduction of this Potato. We find in our notes that some of these Potatos outweighed some of the Turnips exhibited in the galleries at Bingley Hall. Mrs. PATERSON'S prize was won by Lord WILLOUGHBY DE BROKE.

NOTEWORTHY AGRICULTURISTS.

MR. H. S. THOMPSON, OF KIRBY HALL, YORK.

MR. THOMPSON has long been known as an active public man, wielding great power most usefully in many walks of life. His agricultural career may be said to have commenced so long ago as 1836. When still a very young man, having been convinced of the utility of agricultural societies, he then started that of Yorkshire. Laying his plan before all the leading agriculturists of his county, getting meetings and committees held, and at length gratified by the general adoption of his proposals, he had the pleasure of seeing that great provincial society started on its useful career so long ago as 1837. In 1838, on the publication of Mr. Handley's letter to the late Earl Spencer, the Royal Agricultural Society of England was established; and of this too, as Mr. Thompson was an original member, so he has ever since taken a leading share in its management. As member of its Council from the very first, as frequent steward at its meetings, as an active member of many of its committees, especially of its Journal Committee, he has devoted a large portion of his life to its service. Having worked with Mr. Pusey during the early editorship of the Journal, he became chairman of the Journal Committee on his death. For some years, indeed, he was himself virtually editor of that publication, as Mr. Pusey's successor, bearing all the anxieties and difficulties of the office, and himself contributing largely to its pages.* Mr. Thompson had this special fitness for the office, that he is himself a practical and experienced agriculturist. Moreover, though not strictly a man of science, he has always fully appreciated its value, and he was one of the most active in persuading the Society to carry out its maxim, "Practice with Science," by the establishment of a chemical professorship. His own prosecution of this maxim has indeed borne most valuable fruit, and to his observations and experiments we owe the discovery of that principle of the "absorption, decomposition, and retention of ammoniacal salts by the soil," to which the researches of Professor Way were subsequently directed.

MR. H. S. THOMPSON,

Late President of the Royal Agricultural Society of England.

In 1849 the attention of Mr. Thompson was for a while diverted from agricultural to railway matters. In that year rumours began to be circulated that Hudson's railways were not as prosperous as they had been made out to be. Accordingly, though entirely unconnected with railways at the time, seeing that something ought to be done, and that no one seemed inclined to do it, he summoned a general meeting of the Berwick shareholders at York on his own responsibility, showed up the accounts, secured Hudson's deposition, and the appointment of a new board of directors, on which, however, he himself declined to sit. But after a few months, when the York and North Midland Company had reached the lowest point of depression, he was finally overpersuaded, and consented to become chairman of their board. The results of his management may be seen in the fact that that company has now expanded into the North-Eastern — the second largest, and one of the most prosperous of the large railways in the kingdom. As a proof of the estimation in which he is held in the railway world it may be added that he has been chairman of the United Railways Association since its foundation some years ago.

We refer to this portion of his career as a characteristic illustration of the courage and persistent resolution to which Mr. Thompson owes so much of his great influence. They have also served him in good stead during the agricultural career which we have sketched, and which culminated in his election to the Presidency of the Royal Agricultural Society of England in 1867.

Mr. Thompson sat in the House of Commons for Whitby between 1859 and 1865. He was High Sheriff of Yorkshire in 1851. He is still a laborious member of the English Agricultural Society, and chairman of its Journal Committee. And no later than last Wednesday he showed his interest in one of the leading agricultural questions of the day by presiding at the meeting of the Society of Arts, when Mr. Bailey Denton's paper on the sewage problem was discussed.

OUR LIVE STOCK.

CATTLE.

THE Hereford Circular, the fourth number of which we have just received, is intended to record all events of interest connected with Hereford cattle, just as Thornton's Circular supplies us with Shorthorn news. The present number gives a report of the prize lists at Guildford, Wolverhampton, and Hereford. Next we have a price list of the periodic sale of October 18, which was noticed as a pending event, but never until now heard the result of. BACHELOR (2941), the property of Mr. P. Turner, The Leen, was purchased at 60 gs. by Mr. Fen;

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* Mr. Thompson's papers in the Journal include reports on implement shows, and essays on the absorbent powers of soils, on laying down grass lands, on road-making, agricultural progress, &c.

BANQUO, from the same herd, was bought for 48 gs. by Mr. J. Morris, and MERCURY went into the same hands at 40 gs. ; Mr. W. Tudge's CORIOLANUS was purchased for 40 gs. ; Mr. B. Roger's GROVE 3D made 57 gs. ; Mr. J. Price sold FORESTER 2D to Mr. Gwynne Vaughan for 60 gs. ; and Mr. H. Gibbon's GRATEFUL 2D was sold to Mr. Hall for 40 gs. The remainder of the cattle sold at from 20 gs. or less up to about 30 gs. Information as to the progress of Herefords in our colonies, and a list of pure-bred Herefords for private sale, concludes the Circular.

—— We take the following notice of the Shorthorn herd of the late Mr. Richard Stratton from "Thornton's Circular :"—

"More than 30 years ago Mr. Stratton had a herd of cattle in Wiltshire, which he kept in two parts; one numbering about 50 cows and heifers, as the ordinary dairy herd, the other about 40 head, as the selected herd. Expensive cattle were never bought, but the best heifers were purchased at different fairs, and put into the ordinary herd, where, if they proved good beasts and great milkers, their heifers were exalted to the selected herd; and if they in their turn became good milkers and breeders, and were worthy of the promotion, they were retained. In the selection of bulls, Mr. Stratton was most particular, and his custom was to spend a month or six weeks in looking over various stocks for the male animal, selecting him not so much for his great beauty and symmetry as his character, blood, and the excellence of his sire and dam. PHŒNIX (6290), originally called Byron, was the first pedigree bull, and he was put to a neat but rather plain red and white heifer, supposed to be a pedigree Shorthorn, which Mr. Stratton had refused at one fair, and afterwards thought better of and purchased at Highworth. These animals produced *Moss Rose*, the best heifer calved that year; she afterwards became a prize cow, and on being put to LOTTERY (4280) (who was bought of Mr. Adkins, of Milcote), gave birth to *Young Moss Rose*, and mother and daughter produced 30 calves between them. It is from these animals that the largest and best portion of Mr. Stratton's herd had been reared; and although one or two pedigree cows have been bought they have not been retained. Upon good bulls he has chiefly depended: Mr. Hayter's RED DUKE (8694), Earl Ducie's HERO OF THE WEST (8150), and Mr. Sanday's NOTTINGHAM (15,014), being among his most favourite sires. Of late years, however, he bred much from the Booth blood through Mr. Barnes' herd, but he never went direct to Warlaby. He had no love for fashionable pedigree, and it was rather by his friend Mr. Boyle's advice that he sent his prize cow *Maid of Honour* to 7TH DUKE OF YORK, and her son the 8TH DUKE OF YORK (23,808), with JAMES 1ST (24,202), (a prize winner by a Booth blood bull, out of *Queen Mary*, an own sister to *Maid of Honour*), have been the latest sires used. It is more particularly in the showyards, and especially at the Birmingham and Smithfield Club Shows, that his success as a breeder and exhibitor is so widely known. Since the modest 3 gs. were won at Devizes in 1837 for the best heifer in milk and for the best cow in milk, the amount has swollen to over £5000, and five gold medals have come from the Smithfield Club alone. At the Royal and local shows he has frequently sold his animals at high figures, chiefly to Australia, where they have been most highly esteemed; and three of his bulls have realised in the colony 400 gs., 470 gs., and 600 gs. respectively. Portions of his herd have, however, been brought into the sale ring, but no high prices obtained. At the sale in March last, it was remarkable that amid a very large company scarcely half-a-dozen Herd Book breeders were present, yet for the general herd of 55 head, most of the best being retained, an average of £36 was realised. In fact, Mr. Stratton, a sound, good judge of animal life, studied and practised breeding for the animal's sake more than for fashionable tastes; he went for sound constitutions, good quality of flesh, and abundant milking properties, and looked at a pedigree, not for its long descent, but to assure himself that the immediate ancestors were good, and of a family of good animals. If he were particular to certain points, he would prefer a good back, full thighs, large udder, and a good floor to the chest, as his friend the late Mr. Adkins described it, scorning animals with 'no heart and long necks as good dairy cattle.' He did not very strongly object to in-and-in breeding, though it was rarely practised; the cross of LOTTERY on Lottery's daughter, *Young Moss Rose*, producing *Elegance*, 'a nice stylish cow, a great milker, but not so massive as her dam,' was by mistake of the herdsman and not altogether an unsuccessful result, as she produced the *Duchess of Glo'ster*, who in their turn produced *Maid of Honour* and *Queen Mary*. Eminently successful as an agriculturist, and a great economist in management, he brought out animals that have ranked high in the showyards with the Booth, Towneley, and finest cattle of the day. Backward as some have considered him, and forward as others have remarked, in his generation he was nevertheless a man who commanded success, and who was looked up to by his brother farmers of the South as a man in advance of his time. He died on August 15, aged 62 years, and left a large family of five sons and six daughters, one only a minor. The sons, following their father's pursuits, are large occupiers, the four eldest having 6500 acres among them. Mr. Joseph Stratton, at Alton Prors, Wilts, and Mr. Richard Stratton, of The Duffryn, Monmouthshire, divide their father's herd between them."

SHEEP.

AT Mr. Cochrane's sale of Cotswold sheep and Berkshire pigs, in Canada, on October 26, there was a large attendance, and the bidding was spirited. After lunch the sale commenced with the imported Cotswold ewes. The two first were knocked down for 75 dols. (£15 12*s.* 6*d.*) each; two more, same price; two at 50 dols. (£10 8*s.* 4*d.*); the next two were 1-year-olds, and fetched the top price of 100 dols. each (£20 16*s.* 8*d.*); two at 75 dols., three at 35 dols., 15 at an average of 42 dols. each (£8 15*s.*). The rest ranged from 35 to 40 dols. The Canadian, bred from imported ewes, came next; but even some of these ranged as high as 70 dols. Ewe lambs, bred from imported stock, were sold, nine for 32½, three for 20, and three for 25 dols. each. Rams, from imported stock, brought 55, 60, and 75 dols. Twelve Berkshire sows were very strongly competed for, though they all fell to the same purchaser, who seemed determined to have them, though they stood him in 103 dols. a-piece (£21 9*s.* 5*d.*). The lowest price was 75 dols. (£15 12*s.* 6*d.*); the highest 185 (£38 10*s.* 10*d.*).

—— Last week additional testimony was contributed in another portion of the *Agricultural Gazette* as to the black tup which Mr. Bakewell is said to have used in his early improvement of the Leicester sheep. Our witnesses, however, do not agree, for Mr. B. Smith, while giving his own version of the transaction, does not hesitate to stigmatise a part at least of Mr. Bell's story as "a fabrication." After carefully reading Mr. Smith's very interesting remarks, we cannot take his story as evidence. He begins by telling us that Mr. Bates and Mr. Clifford Elches, and another friend, came to Dishley "after the meeting of the Royal, at Derby." What, we would ask, has this interesting little episode to do with the black ram? No mention seems to have been made of it, and Mr. Bates appears to have been thinking of artificial manures more than sheep. But now we come to the point. "The first that was heard of the black ram was related by Mr. Bakewell himself, and was not found out by any Pry." The story then proceeds, and finally Mr. Bakewell is stated to have addressed Mr. John Stone as follows:—"* * * In my early improvements of my flock I went to Ashbourne Fair, and the best ram I found there was a black one, which I bought, and used him, and that is how your black lamb came." As Mr. Smith relates this story, it appears to be entirely hearsay. Had Mr. Smith said, 'This information I received direct from Mr. John Stone,' we might have put some faith in it; but no such thing is said. So far as Mr. Smith is concerned, he has only contributed an addition to the gossiping story started by Mr. Bell. Lastly, on behalf of the late amiable and much respected Mr. Dixon, it does seem rather in bad taste to review his writings in the manner chosen by his critic, Mr. Smith. Doubtless Mr. Dixon in telling us that "When Bakewell received a notice to show one of his horses in London to George III., his Majesty looked more at the man than at the horse," intended the expression as complimentary to Mr. Bakewell. It was not meant to suggest that his Majesty was thinking, "What queer old soul is this, with his drab Quaker-cut coat, jack boots, and periwig?" No such thing; his Majesty was the very first man to thoroughly appreciate the talents and sterling character of the great stock breeder; and the late Mr. Dixon was too much embued with a similar reverence for genius and worth to make any remarks upon such a man as Bakewell, of a slighting character.

—— Now is the time for the "Friend of Dumb Animals" to see his long-tailed friends in perfection. We allude to the correspondent of the *Field*, who, under the above *sobriquet*, stigmatised the practice of docking lambs last August. He would now understand what was meant by his farming friends when they urged that the long-tailed sheep "would get so dirty." His innocent reply—"If getting dirty is the reason, the same argument would deprive them of their legs," falls to the ground. Alas! no. Cutting off their legs would have but little effect, and that little rather of a contrary sort. The long-tailed sheep appeals to our sympathies. He seems to say, "Pity a poor, neglected, draggled, and altogether lost individual; my brethren are at least comfortable and also decent, while I—I am not only physically miserable, but must also be a loathsome object to even my dearest friends!" Such, or similar to them, must be, or ought to be the reflections of every long-tailed sheep.

BREEDING—FACTS AND PRINCIPLES.

[The following paper was read by Mr. J. K. Fowler, Prebendal Farms, Aylesbury, before the Central Farmers' Club, London, on Monday, December 4.]

SEVERAL years ago my friend, Mr. Jas. Howard, M.P. for Bedford, and late President of this Club, called my attention to a paper read by the late Mr. Reginald Orton, at the Newcastle Farmers' Club, on the "Physiology of Breeding," and sent me a copy for perusal. It made a great impression on me at the time, and having many advantages of testing several of his propositions therein enunciated, I commenced some experiments, and began to examine the truth of his premises; and I have found them in the main correct, viz., that the male gives the external organs, which are the skin, the muscle, and the bones, and the female the internal organs, which are the whole circulatory, respiratory, and digestive organs. Mr. Orton gives credit to Mr. Walker for first enunciating this theory, as far back as 1841, which is published in Stephens' "Book of the Farm." Mr. Howard suggested to me, when the committee was selecting subjects for discussion for the present year, that this subject should be taken up as one of great interest to the Club, and also to the public generally, and I hope my humble efforts will be the means of drawing special attention to the subject. The paramount importance of providing food for the people, especially animal food, is a serious problem to be solved, and anything which can increase, not only the number of animals, but their size and quality, must be read and studied by every agriculturist in the kingdom. If, therefore, some broad principles for our guidance can be established, it will make cattle breeding more certain in its results, and render that which is now treated almost as a matter of chance a comparative certainty. I would say, "What to breed, feed, and avoid" should be our standing motto; and, as my paper is on "Breeding—Facts and Principles," I will begin by stating such facts as have come to my own knowledge, and such as have been communicated to me by some of the most eminent breeders and others in England. I shall then state what principles I think would be desirable for perpetuating the best animals in general use as agricultural stock.

Mr. Orton, in his most able paper, read at Newcastle-on-Tyne, commences by stating the following facts with regard to the mule; and, as this is so plain, and so easy of comprehension, I adduce it here, that you may be able at once to comprehend the broad proposition with which I started. He says:—

You are doubtless aware that if the male ass is put to a mare, the produce is a mule; and you will find the produce is essentially a modified ass—the ears are long, the mane erect, the tail thin, the legs slender, the hoofs high and contracted—in fact, clearly taking after the male animal. But few amongst you are perhaps aware that when a stallion is put to the ass, the produce is a "hinny"—and this is essentially a modified horse: the ears are short, but somewhat longer than a horse, the tail bushy, the skin fine, the legs stronger, and the hoofs flat, like the horse. You will, therefore, see how closely the progeny, in appearance, follows the male. But now comes a very noticeable pecularity. The body and barrel of the first named—the mule—are round and full, which resembles the mare; and those of the hinny are flat and narrow, like the ass; but the vital, or internal, organs of the mare being so much larger than those of the ass require a longer cavity or barrel to carry them, and so the bones are moulded to fit the organs, not the organs to fit the bones; so also the smaller vital organs of the ass require a smaller and flatter cavity, and so also the bones are moulded to fit them.

Many of you have perhaps heard of Lord Moreton's curious experiment with the quagga; he put a quagga stallion to a thoroughbred chestnut mare, and the produce was a quagga mule, with stripes, and many characteristics of the male. The next season he put the mare to a black Arab horse, and, to the astonishment of his lordship, she produced a foal bearing strong marks of the quagga, and this effect was visible for three generations from a blood stallion.

There is a similar case recorded in the Transactions of the Royal Society, where a mare of Sir George Ouseley's was put to a zebra, and the produce was striped like the sire, and she was next year served by a blood horse, and the foal had zebra stripes, and again the same result followed the next year.

It therefore would appear that a female once impregnated retains certain traces of the male, which remained by her for an undefined period.

Now I have taken some pains to follow this out, and in the Zoological Gardens, from that most intelligent curator, Mr. Bartlett, I find this in the main correct. He showed me a white Spanish ass, with a few dark spots on him, and he had all the outward characteristics of our male ass in this country except as to colour, and they have put him to several clever ponies, and in every case the produce was a modified ass; but he seemed to have exercised but small influence as to colour. There is one very amusing fact with this asinine gentleman, viz., that since he has had pony mares he will have nothing whatever to do with his own tribe. Mr. Bartlett says they have tried mares with the male zebra in the establishment, and he is so ferocious and savage that he has nearly killed them, and they have ceased to try them. It is said, and I believe truly, that mules do not breed, but it may not be generally known that male and female mules do have sexual intercourse; Mr. Bartlett, however, thinks some day he shall find they will breed.

I have seen some extraordinary instances of external appearances, especially as to the locomotive powers following the male, and will give you one of my own experience. I once rode a very good hunting mare, got by a thoroughbred horse called Maple. He had a sort of club fore-foot, and was lame with it. My mare had upright coronets on her fore-feet, more like donkey's, and she eventually went lame with them some years afterwards. I saw a chestnut mare with a foal by her side going to the Baron Rothschild's horse, Hungerford; she was very lame, swinging her off fore-leg. I found she had a large "bumble foot," and on inquiring found she was got by Maple. I have since made inquiries, and find that most of his progeny had peculiarly formed fore-feet. I also remember a very good horse, called Uncommon, own brother to Jericho, belonging to Lord Lonsdale, who coursed in our neighbourhood; he had a peculiar action of dishing or swinging his fore-feet outwards when going fast, either trotting or galloping, and nearly all his progeny, whatever mares were sent to him, did the same: it was well known to all our neighbourhood, who used to say, "Here comes an Uncommon."

Mr. Finlay Dun, who wrote one of the most interesting and able papers I ever perused, and read it at the Midland Farmers' Club last year, in that lucid and forcible style for which he is so noted, goes very fully into all these questions, and I shall have several times to quote him. He says—"That not only do the parents transmit to their offspring their own external configuration, they also mould the various internal organs, and implant the particular habits and temperaments. All are equally transmissible." He then goes on to state, with regard to horses—"How persistently does the blaze on the face, or white legs reappear in each generation," and mentions a case of a celebrated cart stallion in Leicestershire, where three-fourths of his stock have white leg-markings, and that in one of the best horse breeding counties in England "there is at the present time a yellow bay cart-horse, which has been repeatedly made up for showing, has gained various county premiums, and has thus acquired a local celebrity in spite of his narrow chest, his weak loins, and his round, rough, greasy legs. For several years this brute has procreated a large number of faulty foals; many are produced with deformed heads and crooked spines; from false presentations many mares put to him die. Some of his colts when dropped are unable to stole or dung, and often their urachus is imperfectly closed; those that survive for a few weeks frequently have scrophulous abscesses about the joints, more than one-third of his foals die before they are six months old, the residue are rickety, delicate, ill-thriven, and will not pay for rearing." These are the eloquent and forcible remarks of Mr. Finlay Dun, and I am sure many of my hearers can assert pretty much the same of many stallions in their locality. But do not let us give the whole discredit to the stallions; look at the wretched mares that are constantly put to the horses travelling the country—any broken-down weed, or lame old cart-mare, is deemed in many cases good enough to breed from. Some of the most fertile sources of badly bred horses is to be found in the mistaken kindness of many landowners and gentlemen in a neighbourhood who keep horses for the use of the surrounding tenants free of cost. Let them by all means keep the horses for use, but by making a charge for the mares I feel sure there would be fewer useless brutes sent to them to continue the flood of unsound animals generally to be found in the country.

This brings me to breeding of horned stock, and here my subject opens out so widely, that I fear I must somewhat trespass on your patience, and ask you to bear with me whilst I again call your attention to my first proposition as to the influence of the male. The great and distinguished lines of blood—the Bates, the Booth, and the Knightley, having each their followers, sometimes in their distinctive purity, sometimes in their judicious crossings, are each and all striving to attain perfection; and in that noble rivalry—I cannot call it a bloodless one—are all doing great service to the nation in their efforts to improve the meat-producing animals, not only of England and her colonies, but the world—for all come here for blood; whilst the colonies are hoping to add to their own pecuniary resources, they are all helping to swell the wealth of the nation. It is certainly remarkable to observe the external peculiarities of each of these tribes, and the noble carriage and grandeur of outline of the Bates tribe,—the heavy, thickly-fleshed, richly-haired character of the Booth, and the lovely sweetness of countenance, the fine shoulders and deep milking peculiarities of the Knightleys, are well known to all breeders.

There are many instances recorded as to horned stock, in which the influence of the male was felt through many generations—that of the bull Hubback (319), for instance, and also of Favourite (252), whose peculiarities of quality and style are found to the present day. In our own time let us take Earl of Dublin (10,178). The late Mr. Adkins used him on his noted Milcote herd, where he did great service, and then sold him to Sir Charles Knightley, where he did even more distinguished service than in Mr. Adkins' herd. Here was an extraordinary instance of his impressing deep milking qualities on his stock, which was an internal organisation; but on looking to his pedigree, you will find he was over and over again Princess, Princess, and Princess, through almost every sire and dam, who were all noted milkers. And, again, being used on a herd of noted milking qualities, like the Fawsleys, it was not to be wondered at that his stock to this day are amongst the most prolific and deepest milkers we have.

In reference to this point, I must quote Mr. Darwin, who, in "Animals and Plants under Domestication," vol. ii., chap. 12, p. 2, on Inheritance, says:—

> "What can be more wonderful than that some trifling peculiarity, not primordially attached to the species, should be transmitted through the male and female sexual cells, which are so minute as not to be visible to the naked eye, and afterwards through the incessant changes of a long course of development, undergone either in the womb or the eggs, and ultimately appear in the offspring when mature, or even when quite old, as in the case of certain diseases? Or, again, what can be more wonderful than the well-ascertained fact that the minute ovule of a good milking cow will produce a male, from whom a cell, in union with an ovule, will produce a female, and she, when mature, will have large mammary glands, yielding an abundant supply of milk, and even milk of a particular quality? Nevertheless, the real subject of surprise is, as Sir H. Holland has well remarked, not that a character should be inherited, but that it should fail of being inherited."

7th Duke of York (17,754) also has left his mark unmistakably on nearly everything he touched—and whether it was a pure Duchess, a Florentia, an Ursula, a Gazelle, or any others of the various tribes put to him, the progeny of one and all in external appearance were improved by him. The same thing, I am told, has been the case with Commander-in-Chief (21,451), Prince Alfred, and some others of the noted herds of Booth fame. On my visit to those extraordinary sales in the North of England last September, conducted by our old friend, Mr. Strafford, when at Mr. J. P. Foster's, of Kilhow, I was much struck with the beauty of all the young stock, their grand style, fine touch, and rich hair and colour; and, on reference to my catalogue, I found they were all by his bull, Duke of Oxford 17th (25,994). It did not matter on what he was used, they were all good; strains of blood the most opposite, and oftentimes freely mixed—yet all were good. When also at Colonel Gunter's, at Wetherby, some two years ago, the impress of 4th Duke of Thorndale (17,750) was remarkable. But this opens up a very abstruse and interesting branch of the question—that of "prepotency," or the overpowering influence of one or other of the sexes. Mr. Finlay Dun says it is mostly developed in the males, and that amongst horses, "Some of the best thoroughbred families are remarkably prepotent. Every one conversant with racing stock must admit the prepotency of Eclipse, and of Stockwell," and I would add King Tom.

He also says that the best Down sheep appear prepotent over the white-faced varieties. I myself used a bull, Hardicanute (2633), bred by the late Mr. Adkins, who was particularly prepotent; Seraphinas and Knightleys were all fully impressed by him, and his fine touch and quality were perceptible in all.

There is a very remarkable instance of the theory of natural selection in the case of the noted wild cattle in Chillingham Park, which was communicated to me by Mr. Jacob Wilson. He says, "that at present the herd numbers 67 head, and that the herd has been kept up by in-and-in breeding for several centuries, of course the master bull always serving the cows." You will see here that the strongest male, continually asserting his prowess, keeps up the vigour of the herd; and when another stronger animal rises up amongst them, he in his turn becomes "lord paramount," and as old age comes on, gives way again to his successors. In the "St. James' Magazine" is an account given of a battle for the mastery of the bulls, which, from its clever description I must give. It was written by a lady who had visited the cattle at Chillingham.

> "There is always danger in meeting a 'sulky bull,' that is, a bull banished from the herd—literally sent to Coventry. The way this is effected: the younger bull, after walking round the herd, stands ready to meet any comer. Then the older bull, stepping forth from his harem, answers the challenge, and advancing step by step, the rivals meet, and the battle rages furious and strong—the herd standing by variously excited. One or two bulls, apparently acting as self-constituted umpires, are watching with heaving flanks and foam-stained lips, the chances of war. Thus the fight goes on, amidst growls of rage, clouds of turf and dust, and the sudden heavy crash as the thick foreheads meet. Presently one of the combatants falters; then the fight is decided, for upon the first symptom of weakness, the umpire, rushing in, bears down upon the faltering bull, and completing the work with his fresh strength, literally bowls him over. As the vanquished struggles to his feet, blinded by blood, and crippled with furious blows, the herd comes upon him, and, overwhelmed by numbers, he is driven forth, disgraced, discarded, and beaten, to hide away in the forest and bracken, until, his wounds being healed, he comes forth to seek revenge in another combat."

Mr. Thomas Booth, of renowned Warlaby fame, writes to me—

> "That there can be no doubt, as a rule, that the male exerts a preponderating influence as far as the general formation of the animal goes, and this may be traced through many generations: hence the value of pure blood from whatever strain; for wherever a bull has been introduced into a herd (or a pedigree), and has left an inferior mark on his stock, that pedigree has been depreciated in value at future sales. There can also be no doubt that the founders of the breed of Shorthorns improved their stock in a great measure by the selection of sires, and as some sires became more and more closely connected by in and-in breeding, so they were more and more certain of like begetting like. I am certain that with many breeders of the present day all principles of selection on account of form and character are lost sight of, and made to give to pedigree only. This may ultimately prove injurious to Shorthorns, by losing what our forefathers tried to effect, viz., to produce the greatest amount of good meat with the least offal."

After some further observations, Mr. Booth says:—

> "You will gather from these few remarks that I am strongly impressed with the necessity of having a first-rate sire. I don't altogether mean a prize animal, for the improvement of a herd, because I know that such a sire will almost invariably leave his mark; and certain points may at times be traced back for three or four generations."

These remarks, coming from so distinguished an authority, add great weight to the broad proposition.

But perhaps one of the most extraordinary instances of the influence of the male as to externals is to be found in a trial of my own with the Brahma and the Dorking fowls. After reading Mr. Orton's excellent paper, in which he recorded his trials with the Cochin and Dorking, I began with the Brahma and Dorking. The uninitiated of my listeners must understand that the Brahma has four claws only, has feathered legs, lays a buff-coloured egg, and the cock crows, or roars, like the Cochin, and that the Dorking has five claws on each foot, has no feathers on the legs, lays a white egg, and the cocks have large combs, and crow with a shrill sharp note.

I put a Brahma cock to Dorking hens, and the chickens almost invariably had four claws on each foot, in some instances five on one and four on another, and the pullets from these laid white eggs; and, most remarkable of all, the cockerels crowed like the Dorking, but they had small combs, and had all the external appearance of the Brahma. Now, in putting the Dorking cock to the Brahma hens it was reversed in a most remarkable degree, for nearly all the chickens had five claws, and the pullets laid buft eggs; in all these instances showing unmistakably that the externals followed the male, and that the internal organisation, *i. e.*, egg-laying and the crowing, which was from the internal organisation of the throat, followed the female. A most singular case also occurred to me about four years ago: Amongst my Aylesbury ducks a Rouen drake got mixed for only one night, and one of the white Aylesburys subsequently produced one or two coloured ducklings; she was therefore carefully put away, but as she was one of the best and purest strains, she was bred from the next year, and she every now and then threw out a duckling with partially brown plumage. The next year she was tried again; and, although for two years she had never been near a Rouen drake, she continued to breed an occasional duckling with a few discoloured feathers. Here was one of those strange occurrences which we shall have to consider more deeply before we close this subject. The Rev. Mr. Smythies told me that he bred a chicken from a game hen by a Dorking cock, and that one leg had five claws, and was white in colour, and the other was yellow, and had but four claws. This was a strange combination.

With turkeys, perhaps it is not generally known that one fecundation by the cock bird is sufficient to fertilise all the ovary of the hen. I have myself had a hen turkey sent away to a neighbouring farm to a cock bird, and she has never been near one again, and yet every egg was fertile; and, still more remarkable, after bringing up her brood, she laid again, and although never having been to the male bird since the first time, the new laying of eggs were also fertile. Here we have a remarkable impress of the male beyond one generation. Many such instances can be adduced, and Darwin, through repeated trials with pigeons, shows the same results. There, are, however, many singular cases where the influence of the female has been prepotent even in externals, or where she has exercised extraordinary influence through either the imagination, or some other cause, almost inexplicable. Mr. Savidge, whose veracity is unimpeachable, tells me that on one occasion, when he lived with the late Mr. Langston, of Sarsden, a neighbour sent a pure Shorthorn heifer to one of their purely bred bulls, and as she was difficult to drive, they sent an Alderney cow to accompany her. He (Mr. Savidge) remonstrated with the man for doing it, and said the heifer would be sure to have an Alderney-coloured calf. She was served by the bull, and the produce was to all intents an Alderney, both in colour of nose and general appearance.

The same gentleman also told me that the late Lord Ducie—who was particularly noted for his breed of pure white pigs, as was also Mr. Langston—gave him a very celebrated white boar who had gotten him some of his best pigs. Mr. Langston put this boar to his best white sows, and they produced him some first-class white pigs. Through the kindness of Mr. Langston, his tenants and cottagers were permitted to send some to him, and many of them were Berkshires, and others black sorts, and from that time this boar began to get black and spotted pigs from the pure-bred white sows to which he had been previously put. Now, here was a case of imagination on the part of the male, if such a thing could happen. I have also an interesting letter from Mr. Smith, of Henley-in-Arden, one of our most celebrated Berkshire breeders:—

> "I always notice the male to transmit the greatest external influence to the young ones, but very seldom continued beyond the second generation. In colour, when I first began breeding, 16 years ago, I used to let my neighbours send sows to my Berkshire brawns, and many instances have occurred where the produce has been all the colour of the brawn, good-looking Berkshires. For the last ten years I have never let any sows but my own pure Berkshires be served by my brawns. I had an idea at that time that if a white gilt was put to a young Berkshire brawn, the next pure-bred one that he served the offspring would be spotted; but of this I cannot speak for certain, for I discontinued ever allowing a white to go near them. I have always found the influence of the

> female in the internal organisation very great as to transmission of fecundity, milking powers, and constitution, to all her offspring. Some years ago I had a very favourite sow that had bred me six farrows of pigs, and most of them had taken prizes. She then refused to breed, after being sent to every Berkshire brawn I could get her to. I then put her to her own son: the produce were half cripples, the hind feet being in the place of the fore ones, &c. She afterwards bred me six more farrows, the last one of 12 pigs the best she ever bred."

And Mr. Duckering, of Kirton Lindsey, the noted breeder of white pigs, writes to me thus,—"I have ever found symmetry depend much on the male animal; I should therefore have him as perfect in form as possible, displaying all the points of his race." And he also states,—"Occasionally my neighbours send a Berkshire sow to my white boar, and the produce has invariably been all white."

I have also an interesting letter from the Rev. Mr. Storer, of Hellidon, of Shorthorn notoriety, and he says, with regard to my broad proposition with which I started, that it is what the Scotch call "not proven"—of doubtful certainty,—"but that external peculiarities are often transmitted by the male through many successive generations, and where not strictly transmitted they have appeared after remaining in abeyance. But my experience does not lead me to think that such power of external peculiarities is confined to the male animal. I conceive that all depends upon which of the two is the more prepotent." "As an example," he says, "I saw a few years since, at a farmer's in Notts, a Shorthorn roan heifer, with a large black spot on her thigh, and corresponding with it a black bar across the tail, and was informed that she was descended from a cow of Mr. Burgess', six generations back, which cow had an exactly similar blemish. This was a case of reversion or atavism." With regard to colour, "in many cases," he says, "the calf is more likely to derive its colour from one or other of its grandparents, than from either of its parents."

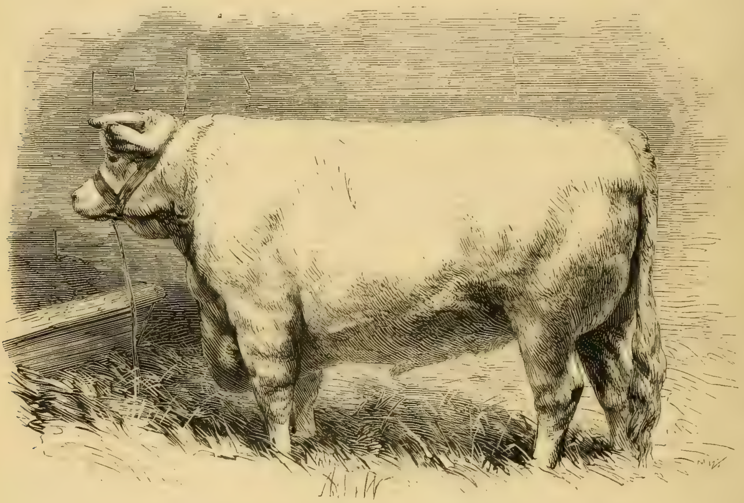

FIG. 336.—MR. STRATTON'S SHORTHORN OX, WINNER OF THE SMITHFIELD CLUB CHAMPION PRIZE, 1871.

With regard to sheep, it is well known how a ram influences the external characteristics of a flock. The Oxfordshire Down, which now ranks as an established breed, was produced about the year 1830, by crossing Hampshire or Southdown ewes with the Cotswold ram, and despite the assertion to the contrary, I know the greatest difficulty is experienced in keeping up the great characteristics of the breed. Here we find the male leaving behind in his progeny size, wonderful external appearance, thickness of the lean and closeness of grain of the meat—being an internal production following the female. As an instance of remarkable careful selection, and thus keeping a breed of sheep pure, nothing can surpass Mr. Valentine Bayford's flock; for nearly 50 years he never bought a ram, but selected the best of the best every year, and produced a flock, which for evenness of character and perfection of shape has never been surpassed. So did Mr. Jonas Webb with his Southdowns. Mr. Darwin mentions the case of the Ancon sheep as a very curious instance. He says, "they were first raised in Massachusetts—a ram having been accidentally born with short, crooked legs, and a long back; it was soon multiplied and raised into a new stock, known by the name of the Ancon breed."

We therefore see, from the number of facts which have been produced, that the proposition I first laid down—that the male chiefly exercises the external and the female the internal organisation—is in the main correct. If I chose to carry on this paper farther, I should tire your patience, and could say no more than I have now. We have seen how this principle acts with the horse and the ass, in horned stock, with sheep and pigs, and also in numberless cases with poultry.

I admit there are many weak points in my armour, and which will probably be found out by the practical and scientific men I see around me; but let us see if we cannot apply these facts, and try to form principles to guide us in our attempts to improve the live stock of this country.

In our horses let us look well to the stallion—that he has good carriage, fine action, speed, and good colour; that our mares have strong constitutions, free from constitutional blemishes, strong in wind, with great powers of endurance, and, above all, good tempers.

With sheep, that our tups shall have strong limbs, thick scrags, broad loins, length, and good heads and ears; that the ewes have good fleeces (whichever we go in for—long, short, or lustre wool), broad chests, showing strong internal structure, good milking powers, and disinclination to roam about in our southern districts, and good foraging powers on hill and mountain sides.

That our boars should be powerful, with good hair and plenty of it, short heads and good loins, straight and long, with short legs; our sows quiet, feminine-looking, great motherly instinct and great fecundity, with full milking powers and great aptitude to fatten.

That our bulls should be of noble bearing, with fine crests, good manes, and shaggy frontlets, grand carriage, strong hind legs, sweet yet masculine heads, and good tempers; the cows quiet, lazy, good-tempered creatures, with deep good bosoms, great milkers (the most essential of all), lovely heads, well expressed as "Knightley," &c.

These would be general characteristics, but we must be careful of association. I feel sure that a herd of valuable Shorthorns ought never to have a polled Scot, an Alderney, or any but their own breed with them; and, if we are to believe the statements we have heard, even the external surroundings must be attended to. Mr. McCombie, I am assured has all his buildings, his gates, his gateposts, and everything about his farm, black; so that no imagination shall disturb his black-polled stock. I have heard that a certain lady, of well deserved and well known Shorthorn fame, had wondered at the preponderance of white calves which were chiefly bred on her establishment, and that the roans, year by year, were getting lighter. It was suggested that her annual practice of lime white-washing her buildings should be discontinued; she did so, and very rapidly her ladyship's cows produced fewer white calves, and the roans got darker. Whether it was imagination or not I will not pretend to say, but I state the facts, and out of them, perhaps, principles may be determined. We have also seen how "prepotent" some animals are over others, and I am almost inclined to think that oftentimes the female is prepotent over the male, even in externals, but this has been inherited in former generations from the male. I have studiously avoided alluding to the human race, but I cannot forbear mentioning a well-known fact, as an illustration, that the thick lips of the Imperial house of Austria are said to have been inherited from the marriage of the Emperor Maximilian with Mary of Burgundy; and in a well-known ducal house of this country, the prominent finely-arched nose has been inherited for several centuries, in both the male and the female line.

There is one other circumstance that ought to receive consideration, that is, the influence of food and climate in modifying species. The Rev. Mr. Titcombe, in the reports of the Victoria Institute, in speaking of the origin of the negro, says—

> "That the action of food and climate exercises great influence in modifying size, colour, and even structure; in food it is well known that Hemp seed given to birds of the Finch tribe will turn them black. Rich and plentiful food, when given to young swine, directly tends to make their heads broader and shorter, whereas poor food works a contrary result. Horses fed on fat marshy grounds, grow to a large size, while on strong soils or dry heath they remain small."

And I therefore think, if a man leaves the district to which he has been accustomed, and takes a farm in another county, he should fully study the class of animals indigenous to that district before he brings into operation his own pre-conceived ideas; and you may rely on it that, on the whole, the breeds which have become indigenous to a district are generally the most suitable. There are some notable examples. I believe the Shorthorns will adapt themselves to every part of the three kingdoms, and have proved themselves capable of living in almost every climate in the world. The Berkshire pig, too, seems to thrive everywhere. The Leicester sheep fail in many localities, and the Sussex Downs in many districts of England are comparative failures. I believe the Suffolk horses flourish nowhere but in the eastern counties. There are also many parts of England where the Dorking fowl cannot be reared to advantage, and there is no doubt that the early maturity and delicacy of colour of the Aylesbury duck rapidly deteriorates when removed from the neighbourhood of Aylesbury.

My subject has such a tendency to branch off into so many lines, that I must bring my remarks speedily to a close. But do not let it be imagined that I have here shown how easy breeding a good class of animals is. Successful breeding requires the greatest possible care, skill, and attention; and to obtain marked success every minutiæ must be attended to. Darwin says (p. 3, vol. ii.):—"Some writers, who have not attended to natural history, have attempted to show that the force of inheritance has been much exaggerated. The breeders of animals would smile at such simplicity, and, if they condescended to make any answer, might ask what would be the chance of winning a prize if two inferior animals were paired together? They might ask whether the half-wild Arabs were led by theoretical notions to keep pedigrees of their horses? Why have pedigrees been scrupulously kept and published of blood horses, of Shorthorn cattle, and more recently of the Hereford breed? Is it an illusion that these recently improved animals safely transmit their excellent qualities, even when crossed with other breeds? Have the Shorthorns without good reason been purchased at immense prices, and exported to every quarter of the world, a thousand guineas having been given for a bull? With greyhounds pedigrees have been kept for generations, and the names of such dogs as Snowball, Major, &c., are as well known to coursers as those of Eclipse or Herod on the turf. Even with the game cock pedigrees of famous strains were formerly kept, and extended back for a century. With pigs, the Yorkshire and Cumberland breeders preserve and print pedigrees; and to show how such highly bred animals are valued, I may mention that Mr. Brown, who won all the 1st prizes for small breeds at Birmingham in 1850, sold a young sow and boar of his breed to Lord Ducie, for 43 gs.; the sow alone was afterwards sold to the Rev. F. Thursby for 65 gs., who writes: 'She paid me very well, having sold her produce for £300, and having now four breeding sows from her.' Hard cash paid down, over and over again, is an excellent test of inherited superiority. In fact the whole science and art of breeding, from which such great results have been obtained during the present century, depends on the inheritance of each little detail of structure. But inheritance is not certain, for if it were, the breeder's art would be reduced to a certainty, and there would be little scope left for all that skill and perseverance shown by the men who have left an enduring monument of their success in the present state of our domesticated animals."

Before I conclude I must say one word as to crossing. I have always observed a tendency to revert to one or both parents, which is very strong, and endures for many generations. In "Youatt on the Pig," Mr. Sidney states that, in a litter of Essex pigs, two young ones appeared which were the image of the Berkshire boar that had been used 28 years before in giving size and constitution to the breed; and Mr. Darwin also says that he observed, in a farmyard at Betley Hall, some fowls showing a strong likeness to the Malay breed, and was told by Mr. Tollet that he had 40 years before crossed his birds with Malays, and that he had often tried to get rid of this strain, but gave it up in depair, as the Malay character would reappear.

I have now tired myself, and perhaps exhausted your patience, and I trust that these disjointed opinions may open up an enlarged view of the subject, and that in the next two or three years some more able writer will be enabled to lay before the country a statement of results showing that this paper has not been written in vain, and that the discussion of this evening may stimulate the farmers of England, and the nobility and gentry, who are amongst our most distinguished leaders in this most seductive art, to make experiments for enlarged exertions to provide food for our ever increasing population. And whilst I have given you the opinions of many of our leading farmers on this subject, and see around me so many of them distinguished by their zeal and success in the cause, let us not forget that not only we but many of the highest in the land are our competitors; and from the liberal yet judicious way in which they spend their money for breeding purposes, we may one and all congratulate ourselves that they are fully alive to the importance of this subject.

SMITHFIELD CLUB SHOW.

Agricultural Hall, Islington, December 4 *to* 8.—The large hall, with its galleries and off-set apartments, has been filled with the usual display of the live stock and implements of the farm, and with more than the usual crush of sightseers during the week. The live stock department is short in some classes of cattle, and in the sheep classes as a whole, but fuller than usual in the classes of Devon cattle, and about as good as usual in the various breeds of pigs. Hereford cattle are poorly represented in respect of numbers, chiefly owing to the large number of animals which, though starting in sound health from Birmingham, were nevertheless found, before presenting themselves for admission at Islington, to be suffering from foot-and-mouth disease. Shorthorns are hardly so numerous as usual, but they include, we think, as good a set of illustrative specimens of the breed as is generally seen. The black polled heifer which received the champion prize at Birmingham as the best animal in the yard, is here again in competition with Mr. Stratton's white ox, and the decision of the Birmingham judges is overruled—the champion prize is here awarded to the Shorthorn. We give in another page a sketch of the winner, taken from a photograph, and therefore a trustworthy likeness. He stood a little awkward, but the engraving successfully represents his ripe and massive form, the beauty of his head, thickness of flesh over loin and back, depth of hind-quarter, and size and depth in front. The heifer against which he was pitted is also a perfect illustration of animal symmetry and quality, whether from the the butcher's or breeder's point of view. It is perhaps right that where so near an approach to equality exists, the palm should be given to the individual which belongs to the more generally useful breed.

THE CATTLE CLASSES.

The *Devon* breed stands first in the Smithfield Club lists. The younger class of steers includes seven entries, of which three were also shown at Birmingham, and the Queen's ox, 1st there, is also 1st here; Mr. Senior takes the 2d prize, and H.R.H. the Prince of Wales is placed 3d, with the largest ox in the class, carrying a capital top of thick flesh over loin and back. The older classes of Devon oxen are very good; no fewer than ten of the entries here had been previously shown at Birmingham, but several of them were absent, owing to the foot-and-mouth disease. Mr. Smith, of Exeter, takes the 1st prize in the younger class with a well-made ox, carrying a lot of useful flesh. Mr. Ford, of Rushton, takes the 2d prize with an animal which had not previously been shown, and the 3d prize goes to Mr. Farthing's Birmingham prize steer. In the older class, which has been generally commended by the judges, with three special high commendations in addition, Mr. Bond, of Huntworth, takes the 1st prize with an ox not previously shown. Mr. Overman is 2d with an ox, also new to the class, carrying a great weight of flesh, but somewhat disfigured by a drooping rump; and Mr. Taylor, of Glynley, is placed 3d with a very large and heavy ox, especially thick over loin and back. There is a very pretty class of Devon heifers—some of them of unusual weight. The 1st prize is taken by Mr. Senior with a cow barely four years old, extraordinarily fine in width and front, and carrying also a beautiful top, loin, and rib. The older cow class includes several of the Birmingham entries—the 1st prize goes, however, to Mr. Davy's old cow, not previously shown. The live weights here do not nearly reach the average attained in the younger class.

The *Hereford* class are sadly shorn of their beauty by the foot-and-mouth disease—24 entries of oxen have dwindled to 16. Two heifers are shown in place of five, and several in the cow class also have been unable to obtain admission. Mr. Baldwin takes the prize in the younger class of oxen with a short, thick, well-made beast; and Mr. Pike is 2d with a much heavier steer, two months older, rather flat-sided, but very deep and heavy. In the medium class of oxen, Mr. Groves takes the 1st prize with his very long and deep ox, shown at Birmingham. Mr. Wortley is 2d with a thick but rather short and lumpy 3-year-old, remarkably fine in front. The older class of oxen contains, among other fine animals, Mr. W. Heath's exceedingly well-fed and well-bred 1st prize ox—first-rate over top and hind-quarters, with also a wide and large bosom; Mr. Loyd's 2d prize ox, rather deficient in thigh and twist, is also well covered over back and ribs. These two oxen weigh close on 20 cwt. each. There are two very pretty Hereford heifers shown in their class, Her Majesty taking the 1st prize, and Mr. Allen, of Tisbury, taking the 2d with a heifer not quite so fat. The cow class is rather more numerous; Mr. Wortley is 1st, and Mr. Bettridge 2d.

The younger class of *Shorthorn* oxen is not very good, the 1st prize goes, however, to a very well made steer, with a back straight to the very end, and well covered with useful flesh, though not fatter than we often see breeding animals shown at the meetings of the Royal Agricultural Society. The 2d class of oxen is very fair; most of the animals had been shown at Birmingham, Mr. Bruce, of Forres, again taking the 1st prize, Colonel Lindsay 2d, and Mr. Foljambe 3d. The older class of oxen includes a number of very fine beasts—Mr. Stratton's white ox, figured on opposite page (fig. 336), taking the 1st prize in his class, as well as the champion prize of the meeting. We take the following description of him from the report in the *Mark Lane Express* of the Birmingham show:—

> "Mr. Richard Stratton's 'walking advertisement' for the Burderop herd has gone on famously. He is a particularly handsome beast, and has continued to feed very level, as in fact for his weight and size it is not often that a better balanced ox has been brought out. He is very good to meet, has a neat, bloodlike head, and, a great point, is better out of than in his stall, so gay is his carriage and so smart his appearance. His touch is wealthy enough for that of a Hereford, or, as some superfine connoisseurs might call it, rather strong, but in our times this is a fault in the right direction. Moreover, the white steer is 'well connected,' for his grand-dam on the sire's side, *Diadem*, was a gold medal cow at the Smithfield Club, and his half-sister, *Village Rose*, 'a very sweet lengthy heifer, with every promise of growing into a handsome cow,' was the 1st prize calf at the last All-Yorkshire meeting, where she beat the 2d prize calf from the Wolverhampton Royal. By BUDE LIGHT out of *April Rose* this ox is a twin, but the other went wrong and died young. As is well known his breeder, Mr. Richard Stratton, died a few months since, and the ox was entered here by one of the sons, Mr. Joseph Stratton, so that he was ineligible for the combined fed-and-bred premium. Otherwise, up to a certain point, he won everything he could easily enough, as, beyond his class, when it came to the best of all the Shorthorns, the judges had the winners in the several classes paraded just for form's sake, and then arrived at an instantaneous decision. We quite expect to see the white ox do as well in London as he did in Birmingham, if not even better, for with three Shorthorn judges against a mixed bench, the Shorthorns have now always 'the pull' at the Smithfield Club when it comes to a comparison of breeds."

Mr. Farthing, of Bridgwater, a breeder of Devons, takes the 2d prize in this class with a deep and stocky, well-made beast, particularly well covered over the loin. There are well-filled classes of heifers and cows, Messrs. Kennard, Mace, and How taking the 1st, 2d, and 3d prizes in the younger class, and Sir W. C. Trevelyan, Colonel Lindsay, and Mr. Kirkham standing 1st, 2d, and 3d in the older class.

Large entries of *Sussex* cattle are made, as usual, but there are several absentees. The prize animals are hardly to be distinguished from Devons, and in the older class of oxen, along with good quality there are a large number of very heavy weight, several animals standing over a ton upon the weighbridge. The class of Sussex cows has the compliment passed upon them by the judges of a general commendation. Mr. Brand, M.P., takes the 1st prize in this good class, Mr. Shoosmith the 2d, and Mr. G. C. Coote is highly commended.

There is a very poor show of the polled *Norfolk* breed, which is generally very well represented at the Smithfield Show. The *Longhorns* hardly deserve their prizes by their number. Three in two classes are not enough to justify the continuance of the prize list. The West Highland breed is fairly represented, as also are the Scotch horned breeds. There is a fair display of polled breeds, including one or two very admirable specimens—among them Mr. Bruce's remarkable heifer, already named.

The prize list will give the names of the other successful exhibitors. There is no competition in Irish or Welsh cattle, and the cross-bred classes are as numerous, though hardly so interesting, as hitherto.

The following is the list of the judges and their awards:—

JUDGES.—Devons, Herefords, Sussex, Norfolk or Suffolk Polled, and Longhorns: H. W. Keary, Bridgenorth; G. Smythies, Marlow, Leintwardine; Thomas Pope, Horningsham, Warminster, Wilts. Shorthorns, Scotch, Irish, Welsh, Cross, or Mixed: M. Savidge, Sarsden Lodge Farm, Chipping Norton; William Torr, Aylesby Manor, Grimsby; T. W. Ruddock, Tweed House, Berwick-on-Tweed.

Class 1. Devon Steers, not exceeding 2 years and 6 months old.—1st, £20, Her Majesty the Queen: Silver Medal to breeder, Her Majesty the Queen; 2d, £15, T. L. Senior, Broughton House, Aylesbury; 3d, £10, H.R.H. the Prince of Wales.

Class 2. Devon Steers, not exceeding 3 years and 3 months old.—1st, £30, W. Smith, Hoopern, Exeter, Devon: Silver Medal to breeder, J. Passmore, jun., Aller Farm, South Molton; 2d, £20, J. Ford, Rushton, Blandford, Dorset; 3d, £10, W. Farthing, Stowey Court, Bridgewater. Commended: H.R.H. the Prince of Wales

Class 3. Devon Steers or Oxen, above 3 years and 3 months old.—1st, £30, T. Bond Park, Huntworth, Bridgewater: Silver Medal to breeder, T. Bond; 2d, £20, J. Overman, Burnham Sutton, Burnham Market; 3d, £10, W. Taylor, Glynley, Eastbourne. Highly Commended: the Queen, Mr. W. Smith, and Mr. J. H. Buller. Commended: the class.

Class 4. Devon Heifers, not exceeding 4 years old.—1st, £25, T. L. Senior, Aylesbury, Bucks: Silver Medal to breeder, J. D. Hancock, Halse, Taunton; 2d, £15, S. R. Jefferys, Maiden Bradley, Wilts; 3d, £10, J. C. Senior, Broughton Pastures, Aylesbury. Commended: Mr. J. Coate, H.R.H. the Prince of Wales, Messrs. J. Ford and J. H. Buller.

Class 5. Devon Cows, above 4 years old.—1st, £25, J. Davy, Flitton Barton, North Molton: Silver Medal to breeder, J. Davy; 2d, £15, W. Smith, Hoopern, Exeter; 3d, £10, J. H. Buller, Downes, Crediton. Highly Commended: Mr. S. R. Jefferys. Commended: Mr. H. Hitchcock.

Class 6. Hereford Steers, not exceeding 2 years and 6 months old.—1st, £20, J. Baldwin, Luddington, Stratford-on-Avon: Silver Medal to breeder, J. Baldwin; 2d, £15, A. Pike, Mitton, Tewkesbury.

Class 7. Hereford Steers, not exceeding 3 years and 3 months old.—1st, £30, W. Groves, Brompton, Shrewsbury: Silver Medal to breeder, H. Linell, Enstrey; 2d, £20, R. Wortley, Suffield, Aylsham; 3d, £10, C. Hall, Brickwood Villa, Croydon.

Class 8. Hereford Steers or Oxen, above 3 years and 3 months old.—1st, £30, W. Heath, Ludham Hall, Norwich: Silver Medal to breeder, T. L. Meire, Eyton-on-Severn; 2d, £20, L. Loyd, Monks Orchard, Addington Surrey; 3d, £10, J. Ford, Rushton, Blandford, Dorset. Highly Commended: the Countess Dowager Cowper, Earl of Darnley, and Mr. H. Betteridge. Commended: the class generally.

Class 9. Hereford Heifers, not exceeding 4 years old.—1st £25, Her Majesty the Queen: Silver Medal to breeder, Her Majesty; 2d, £15, J. D. Allen, Tisbury, Salisbury.

Class 10. Hereford Cows, above 4 years old.—1st, £25, R. Wortley, Suffield, Aylsham: Silver Medal to breeder, J. Connop, Noakes Court, Leominster: 2d, £15, H. Bettridge, Wantage; 3d, £10, W. Groves, Brompton, Shrewsbury. Highly Commended: Mr. W. Heath.

Class 11. Shorthorned Steers, not exceeding 2 years and 6 months old.—1st, £20, Lieut.-Colonel Lloyd Lindsay, V.C., M.P., Lockinge Park, Wantage: Silver Medal to breeder, Lieut.-Colonel Lloyd Lindsay, V.C., M.P.; 2d, £15, F. J. S. Foljambe, M.P., Osberton Hall, Worksop; 3d, £10, J. J. Sharp, Broughton, Kettering, Class 12. Shorthorned Steers, not exceeding 3 years and 3 months old.—1st, £30, R. Bruce, Newton-of-Struthers, Forres, Moray: Silver Medal to breeder, R. Bruce; 2d, £20, Lieut.-Colonel Lloyd Lindsay, V.C., M.P.; 3d, £10, F. J. S. Foljambe, M.P.

Class 13. Shorthorned Steers or Oxen, above 3 years and 3 months old. -1st, £30, J. Stratton, Alton Priors, Marlborough: Silver Medal to breeder, the late R Stratton, Burderop, Swindon; 2d, £20, W. Farthing, Stowey Court, Bridgewater; 3d, £10, W. Sissinan, Buckworth Lodge, Kimbolton. Commended: Lieut.-Colonel Reeve, Mr. T. Mace.

Class 14. Shorthorned Heifers, not exceeding 4 years old.—1st, £25, Rev. R. B. Kennard, Marnhull Rectory, Blandford, Dorset: Silver Medal to breeder, Rev. R. B. Kennard; 2d, £15, T. Mace, Sherborne, Northleach; 3d, £10, W. How, Tottington, Thetford. Highly Commended: Rev. W. Sneyd.

Class 15. Shorthorned Cows, above 4 years old.—1st, £25, Sir W. C. Trevelyan, Bart., Wallington, Newcastle-on-Tyne: Silver Medal to breeder, Sir W. C. Trevelyan, Bart.; 2d, £15, Lieut.-Colonel Lloyd Lindsay, V.C., M.P.; 3d, £10, J. W. Kirkham, Cadeby Hall, Grimsby.

Class 16. Sussex Steers, not exceeding 3 years old.—1st, £20, Lee Steere, M.P., Jayes Park, Dorking: Silver Medal to breeder, Lee Steere; 2d, £10, G. C. Carew-Gibson, Sandgate, Sussex; 3d, £5, G. C. Coote, Tortington, Arundel.

Class 17. Sussex Steers or Oxen, above 3 years old.—1st, £25, Mary Coote, Climping, Littlehampton, Sussex: Silver Medal to breeder, the late T. Child, Slinfold, Horsham, Sussex; 2d, £15, J. M. Montefiore, Worth Park, Crawley; 3d, £10, J. Neale, Coldwatham, Pulborough. Highly Commended: Mr. J. Shoosmith. Commended: Mr. F. Gates.

Class 18. Sussex Heifers, not exceeding 4 years old.—1st, £20, T. Smith, Knelle Farm, Beckley, Ashford: Silver Medal to breeder, T. Smith; 2d, £15, Lee Steere, M.P., Dorking. Commended: Messrs. W. Neale and L. Huth.

Class 19. Sussex Cows, above 4 years old.—1st, £20, the Right Hon. H. Brand, M.P., Glynde Place, Lewes: Silver Medal to breeder, Right Hon. H. Brand; 2d, £15, J. Shoosmith, Berwick, Lewes, Sussex. Highly Commended: Mr. G. C. Coote. Commended: the class generally.

Class 20. Norfolk or Suffolk Polled Steers or Oxen, of any age.—1st, £15, J. J. Colman, M P., Carrow House, Norwich: Silver Medal to breeder, the late J. Savory; 2d, £10, W. Durrant, Brunstead Hall, Stalham.

Class 21. Norfolk or Suffolk Polled Heifers or Cows, of any age.—1st, £15, J. J. Colman, M.P.: Silver Medal to breeder. Sir E. Kerrison; 2d, £10, J. S. Postle, Smallburgh Hall. Commended: Mr. S. Slipper.

Class 22. Longhorned Steers or Oxen, of any age.—£10, Sir J. H. Crewe, Bart., Calke Abbey, Derby: Silver Medal to breeder, Sir J. H. Crewe, Bart. Commended: Mr. W. T. Cox.

Class 23. Longhorned Heifers or Cows, of any age.—£10, W. T. Cox, Spondon Hall, Derby: Silver Medal to breeder, W. T. Cox.

Class 24. Scotch West Highland Steers or Oxen, of any age.—1st, £30, J. G. Leigh, The Hoo, Luton; 2d, £15, W. McCombie, M.P., Tillyfour, Aberdeen, N.B. Commended: Mr. J. Tingey.

Class 25. Scotch West Highland Heifers or Cows, of any age.—1st, £15, Sir W. C. Trevelyan, Bart., Wallington, Newcastle-on-Tyne.

Class 26. Scotch Horned Steers or Oxen, of any age.—£10, G. and J. G. Smith, Glenlivat Distillery, Banff: Silver Medal to breeders, G. and J. G. Smith. Commended: Mr. R. Wortley.

Class 27. Scotch Horned Heifers or Cows, of any age.—Not sufficient merit.

Class 28. Scotch Polled Steers or Oxen, of any age —1st, £30, J. S. Postle, Smallburgh Hall: Silver Medal to breeder, W. Salmon; 2d, £15, J. Stephen, Conglass, Inverurie. Commended: Mr. W. Scott.

Class 29. Scotch Polled Heifers, not exceeding 4 years old.—1st, £15, J. Bruce, Fochabers, Elgin: Silver Medal to breeder, A. Paterson; 2d, £10, W. Brown, Linkwood, Elgin.

Class 30. Scotch Polled Cows, above 4 years old.—£15, W. McCombie, M.P.; Silver Medal to breeder, W. McCombie, M.P.

Class 31. Irish Steers or Oxen, of any age.—£10, R. Wortley, Suffield, Aylsham, Norfolk.

Class 32. Irish Heifers or Cows, of any age.—No entry.

Class 33. Welsh Steers or Oxen (Runts), of any age.—£20, J. E. Parry, Glynn Hall, Harlech, Merioneth: Silver Medal to breeder, J. E. Parry.

Class 34. Welsh Heifers or Cows, of any age.—No entry.

Class 35. Cross or Mixed-bred Steers, not exceeding 3 years old.—1st, £25, J. and W. Martin, Aberdeen: Silver Medal to breeder, J. Johnston, Ellon, Aberdeen; 2d, £15, W. Slatter, Stratton, Cirencester, Gloucester; 3d, £10, the Hon. Matthew H. Moreton, Newton-of-Struthers, Forres, Moray. Commended: Messrs. J. D. Allen, and W. Scott.

Class 36. Cross or Mixed-bred Steers or Oxen, above 3 years old,—1st, £25, W. Brown, Linkwood, Elgin, Moray: Silver Medal to breeder, W. Brown; 2d, £15, J. J. Colman, M.P.; 3d, £10, J. Overman, Burnham Sutton, Burnham Market Highly Commended: J. Stratton and Sir W. Trevelyan. Commended: R. Skelton.

Class 37 Cross or Mixed-bred Heifers, not exceeding 4 years old. 1st, £20, W Brown, Linkwood, Elgin: Silver Medal to breeder, W. Brown; 2d, £10, S. Goulder, Woodbastwick, Norwich.

SHEEP.

These animals are, as usual, a great show both for farmers and amateur spectators. The pens filled this year, however, are not so many by 38 as appeared last year; but there are ample for every purpose which can be answered by a Christmas fat stock show.

The *Leicesters* are not up to their usual standard, either in mutton or wool, some of the latter being very light, and of inferior quality. The value of this pure breed, however, now consists in the way in which the males produced are adapted for imparting form, quality, and a pre-disposition to fatten to other coaser breeds, as the Lincolns—the "Improved Lincolns" being, indeed, a judicious admixture of pure Leicesters and the heavier meat and wool producing Lincolnshire sheep. The Keythorpe Hall flock still takes the lead, for the executors of the late Lord Berners take the 1st prize in each class in which they exhibit, while Colonel Lowther and Mr. Brown are also good exhibitors of pens of this valuable pure breed.

The *Cotswolds* follow the Leicesters as white-faced long-woolled sheep, but there are only four pens. This breed is well supported, though, by Messrs. Wheeler's, Mr. Hall's, and the late Mr. Gillett's sheep.

In the *Lincolns*, however, although they also number only four pens, there is the principal attraction in the sheep classes, for the piece of plate, value £50, for the best pen of sheep in the Hall is awarded to Mr. Byron for his pen of ewes, 45 months old. This is a great honour for the Lincolns, and on closer examination it appears to be deservedly won, for these ewes are very heavy, both in mutton and wool. As compared with the yearling wethers, the average live weight of the three pens is 7 cwt. 2 qr. 12 lb., while the three 3-year-old ewes weigh 9 cwt. 1 qr. 2 lb., or 186 lb. more. These ewes are, besides, the heaviest pen in the Hall. This is evidently fair evidence of the utility of recording the live weight of the animals, both for present purposes and for comparison in future years, for we have no hesitation in saying that had not the weight of these Lincoln ewes been presented to the judges, they would not, standing as a single pen of ewes as they did, have been brought out for competition for the plate for the best pen in the Hall. These sheep were bred from Mr. Thomas Kirkham's Biscathorpe stock. The Lincoln wethers were only three pens, and they were only of middling appearance.

Turning to the short-woolled sheep, the *Southdowns*, of course, stand first in general interest. In these classes, however, we miss on this occasion the great size combined with fine quality which used to be sent from Merton. The perfect trimming, too, which John Day, the late Lord Walsingham's shepherd, used to display, is also conspicuous by its absence. However, Mr. Rigden, whose flock has not been so very much "in luck" of late years, is 1st in the heavy weight yearlings with a capital pen, and 2d in the class for sheep under 200 lb. live weight. His Royal Highness the Prince of Wales, Sir William Throckmorton, the Duke of Richmond, Mr. Foljambe, M.P., and Mr. Overman meritoriously support the prize-takers in this class. The 2-year-old pens are a great class, the Duke of Richmond's 1st and Mr. Overman's 2d being particularly good, both for size and the quality to which they had been fed. Their respective weights were 6 cwt. 3 qr. 9 lb., and 6 cwt. 3 qr. 6 lb. Of these there are six pens. The pens of these Southdowns number altogether 32.

The *Hants* or *Wilts Downs* are as interesting as any breed in the Hall. These sheep are greatly improved, from the present breeders having studiously observed the advantages of selection. Not many years ago their coarseness was obvious, from their excessively large heads, but now this organ is comely to look at, and the excellence of the backs of the sheep corresponds to the improvements elsewhere. An indirect compliment is paid to this breed by the Smithfield Club offering no prizes for 2-year-old wethers. These sheep are too big, and they carry too much lean meat, to require to be kept beyond two years of age. At one year old they are generally heavier than the Shropshires are at two years of age. This, with the fine quality of the mutton they produce, has stopped the outcry which used to be made against them, and particularly by the Shropshire men. Their yield of wool is not heavy, but as a rule it is very fine, and we find that the prizes in the Shropshire classes are generally awarded to such "close coated" sheep as Lord Chesham's, in preference to the much heavier sheep with "open" coats, as shown by Mr. Nock, of Sutton Maddock. To carry this comparison a little further, Lord Chesham's 1st prize pen of close-coated Shropshires weighed 5 cwt. 3 qr. 22 lb., while Mr. Nock's unnoticed pen of the same breed, which carried twice as much wool of nearly equal quality, weighed 6 cwt. 3 qr. 5 lb., or 95 lb. the pen of three more. The decision, which similarly occurred both at Birmingham and in London, is not an encouragement to the combined growth of a large and fine quality of mutton and wool, which has long been a regular boast among Shropshire men.

The *Shropshires* are undoubtedly, however, a great show. They are not so numerous as they have been of late years, but they are all good; all of them have dark faces, and they certainly display more than any other breed that which is so much coveted, viz., a large production of dark-fleshed mutton of fine grain, combined with a heavy growth of wool of fine quality. After what we have said, however, in our comparative remarks above in connection with the Hants and Wilts Downs, we need not further discuss these points, but we may add, that the popularity of these sheep is shown in the fact that of the 12 pens exhibited in the three classes, four of them only were from their native ground, the others having come from Cornwall, Buckinghamshire, Cambridgeshire, Herefordshire, Northamptonshire, and Yorkshire.

The *Oxfordshire* pens are only five, but the sheep in them are of the great size which we have been in the habit of seeing from the flocks of this breed. Much improvement in the quality of their flesh is in some cases observable, which is indicated to the eye by the dark brown, whole-coloured faces of some of the specimens shown. As these sheep were originally a direct cross between the Hants Downs and Cotswolds, there is no doubt but that, by judicious selection, a very fine quality of flesh could be produced in combination with a great weight of mutton and wool.

The miscellaneous breeds, as we may term them, as they appear at the Agricultural Hall, are various in numbers as well as form. There are the Kentish, or Romney Marsh sheep, with their dull, heavy white faces, and somewhat coarse straight wool, of medium length, growing on flatter sides than one would choose. These sheep, however, are very useful in their native place, as they are hardy, and thrive fairly on their not over-rich feed off the marsh whence they take their name. Then there are the Ryelands, Cheviots, and Dorsets, the former of which have a very circumscribed district, while the Cheviots are a famous breed for hardiness and fecundity, and are bred by hundreds of thousands on the hills of Northumberland, Cumberland, Roxburghshire, and other high grounds of the North. These sheep are not heavy individually, but they produce a good weight of meat to the acre; and when the wethers run to three and four years of age, as they are often allowed to do, they are much esteemed for their good size and fine flavour. The Dorsets are too well known for their white faces and curly horns, for their compact frames on short legs, and for the early lambs which they produce, to need any further reference.

Besides the above tribes there is the class for mountain breeds, which admits of a variety of hill sheep being shown. Accordingly Exmoors, Scotch Highlands, Scotch Horned (which appears to be a distinction without a difference), and Cheviots are here shown, a pen of the latter carrying off the 1st prize for the Duke of Roxburghe. These sheep confirm our remarks above, so far as their age go, for they are four years and eight months of age, but they have had something more to eat than they could have found either on the Cheviots proper or the Roxburgh hills. Their weight at this advanced age is 4 cwt. 2 qr. 16 lb., or 173 lb. each. But, as we have said, these sheep are adapted for producing a heavier weight of mutton and wool by numbers, and not in the form of one frame.

The following are the Awards:—

JUDGES.—Leicesters, Cotswolds, Kentish or Romney Marsh, Crossbred, Longwools, Oxford, Mountain, Crossbred Long and Short Wools, Lincolns: James W. Mann, Spaldwick, Kimbolton, Hunts; John Bryan, Southleigh, Witney, Oxon; John Linn, Church Farm, Stroxton, Grantham. Southdowns, Hampshire or Wiltshire Downs, Shropshire, Ryeland, Cheviot, and Dorset: J. S. Turner, Chyngton, Seaford, Sussex; Thomas Horley, The Fosse, Leamington; Edward Little, Lanhill, Chippenham.

Class 38. Fat Wether Sheep of the Leicester breed, 1 year old (under 23 months).—1st, £20, the Executors of the late Lord Berners: Silver Medal to breeder, the late Lord Berners; 2d, £15, Colonel Lowther, M.P., Barleythorpe Hall, Oakham, Rutland; 3d, £5, W. Brown, Holme-on-Spalding Moor.

Class 39. Fat Wether Sheep of the Leicester breed, 1 year old, (under 23 months), each Sheep not to exceed 220 lb. live weight,—1st, £20, the Executors of the late Lord Berners: Silver Medal to breeder, the late Lord Berners; 2d, £15, W. Brown, Holme-on-Spalding Moor; 3d, £5, Colonel Lowther, M.P.

Class 40. Fat Ewes of the Leicester breed, above 3 years old (that must have had a lamb).—£10, Colonel Lowther, M.P.: Silver Medal to breeder, Colonel Lowther.

Class 41. Fat Wether Sheep of the Cotswold breed, 1 year old under 23 months).—1st, £20, J. Wheeler & Sons, Long Compton, Shipston-on-Stour: Silver Medal to breeders, J. Wheeler & Sons; 2d, £15, R. Hall, Barford House, Deddington.

Class 42. Fat Ewes of the Cotswold breed, above 3 years old (that must have had a lamb).—£10, the Executors of the late T. Gillett, Kilkenny, Faringdon: Silver Medal to breeder, the late T. Gillett.

Class 43. Fat Wether Sheep of the Lincoln breed, 1 year old (under 23 months).—1st, £20, J. Byron, Kirkby Green, Sleaford: Silver Medal to breeder, J. Byron; 2d, £15, J. Pears, Mere, Lincoln; 3d, £5, T. Gunnell, Willow House, Milton.

Class 44. Fat Ewes of the Lincoln breed, above 3 years old (that must have had a lamb).—£10, J. Byron, Kirkby Green, Sleaford: Silver Medal to breeder, J. Byron.

Class 45. Fat Wether Sheep of the Kentish or Romney Marsh breed, 1 year old (under 23 months).—1st, £15, B. W. Tassell, Hode, Patrixbourn, Canterbury: Silver Medal to breeder, B. W. Tassell; 2d, £10, W. Burch, Rhode Court, Selling, Faversham.

Class 46. Fat Wether Cross-bred Longwoolled Sheep, 1 year old (under 23 months).—1st, £15, Sir W. de Capell Brooke, Bart., Geddington Grange, Kettering, Northampton: Silver Medal to breeder, Sir W. de Capell Brooke; 2d, £10, withheld.

Class 47. Fat Wether Sheep of the Southdown breed, 1 year old (under 23 months).—1st, £20, W. Rigden, Hove, Brighton, Sussex: Silver Medal to breeder, W. Rigden; 2d, £10, H. H. Penfold, Selsey, Chichester, Sussex; 3d, £5, Lord Sondes, Elmham Hall, Thetford, Norfolk. Highly Commended: Mr. F. J. S. Foljambe, M.P. Commended: No. 280.

Class 48. Fat Wether Sheep of the Southdown breed, 1 year old (under 23 months), each sheep not to exceed 200 lb. live weight.—1st, £15, Sir W. Throckmorton, Bart., Buckland, Faringdon: Silver Medal to breeder, Sir W. Throckmorton, Bart.; 2d, £10, W. Rigden, Hove; 3d, £5, H. H. Penfold, Selsey Highly Commended: Duke of Richmond.

Class 49. Fat Wether Sheep of the Southdown breed, 2 years old (above 23 and under 35 months).—1st, £15, the Duke of Richmond, Goodwood: Silver Medal to breeder, the Duke of Richmond; 2d, £10, J. Overman, Burnham Sutton. Highly Commended: Mr. F. J S. Foljambe.

Class 50. Fat Ewes of the Southdown breed, 3 years old (that must have had a lamb).—£10, H. D. Barclay, Eastwick Park Farm, Leatherhead: Silver Medal to breeder, H. D. Barclay. Commended: Lord Sondes.

Class 51. Fat Wether Sheep of the Hampshire or Wiltshire Down breed, 1 year old (under 23 months).—1st, £20, A. Morrison, Fonthill House, Tisbury: Silver Medal to breeder, A. Morrison; 2d, £15, J. Russell, Sutton-at-Hone, Dartford; 3d, £5, J. & M. Arnold, Westmeon, Petersfield. Commended: Messrs. Russell.

Class 52. Fat Ewes of the Hampshire or Wiltshire Down breed, above 3 years old (that must have had a lamb).—£10, J. Rawlence, Bulbridge, Wilton, Salisbury: Silver Medal to breeder, J. Rawlence. Commended: Mr. J. Barton.

Class 53. Fat Wether Sheep of the Shropshire breed, 1 year old (under 23 months).—1st, £20, Lord Chesham, Latimer, Chesham: Silver Medal to breeder, Lord Chesham; 2d, £10, Sarah Beach, The Hattons, Brewood, Penkridge; 3d, £5, Lord Wenlock, Escrick Park. Highly Commended: Lord Sondes. Commended: Mr. G. Cooke.

Class 54. Fat Wether Sheep of the Shropshire breed, 2 years old (above 23 and under 35 months).—1st, £15, Lord Chesham: Silver Medal to breeder, Lord Chesham; 2d, £5, Lord Wenlock.

Class 55. Fat Ewes of the Shropshire breed, above 3 years old (that must have had a lamb).—£10, Lord Chesham: Silver Medal to breeder, Lord Chesham.

Class 56. Fat Wether Sheep of the Oxfordshire breed, 1 year old under 23 months).—1st, £20, the Duke of Marlborough, K.G., Blenheim Palace: Silver Medal to breeder, the Duke of Marlborough; 2d, £15, N. Stilgoe, Manor Farm, Adderbury; 3d, £5, S. Druce, Eynsham, Oxford. Highly Commended: Mr. Z. Stilgoe.

Class 57. Fat Wether Sheep of the Oxfordshire breed, 2 years old (above 23 and under 35 months).—No entry.

Class 58. Fat Ewes of the Oxfordshire breed, above 3 years old (that must have had a lamb).—£10, the Duke of Marlborough, K.G.: Silver Medal to breeder, the Duke of Marlborough.

Class 59. Fat Wether Sheep, of the Ryeland, Cheviot, Dorset, or any other pure breed, not specified in any of the foregoing divisions, of any age.—1st, £15, H. Farthing, Nether Stowey, Bridgewater: Silver Medal to breeder, H. Farthing; 2d, £10, J. B. Downing, Holme Lacey, Hereford; 3d, £5, J. McGill, Rotchell, Dumfries.

Class 60. Fat Wether Sheep, of any Whitefaced Mountain breed, of any age.—1st, £15, J. Tapp, Twitchen, South Molton: Silver Medal to breeder, J. Tapp; 2d, £10, W. Smith, Hoopern.

Class 61. Fat Wether Sheep, of any Blackfaced or Speckled-faced Mountain breed, of any age.—1st, £15, the Duke of Roxburghe, Floors Castle, Kelso: Silver Medal to breeder, the Duke of Roxburghe; 2d, £10, T. Roy, Tullylumb, Perth.

Class 62. Long and Short-woolled Cross-bred Fat Wether Sheep, 1 year old under 23 months.—1st, £20, J Overman, Burnham Sutton: Silver Medal to breeder, J. Overman; 2d, £15, N. Stilgoe, Adderbury, Oxford; 3d, £5, H. A. Brassey, M.P., Preston Hall, Aylesford, Kent. Highly Commended: Mr. J. Hine. Commended: Colonel Lowther.

PIGS.

The swine are a remarkably good collection, for although they are not so very numerous, there are none which are coarse or over-fed, while all are ripe, and for the most part they have been fed till they are of the correct touch as regards firmness. This is the case, both as regards the softer Suffolk whites and Essex blacks, and the firmer Berkshires and Yorkshires, which shows that feeders generally have learned to use barley, or pea or bean meal, according as the swine need to be mellowed or made firmer. Pigs, however, appear to run in courses as regards the production of prize animals. For a few years one or two particular breeders take the leading prizes, when they appear to retire, and another herd of swine comes to the front. This is the case just now. Mr. John Biggs, of Cublington, Leighton Buzzard, Beds, has come upon the scene at the Agricultural Hall, and takes the 1st prize in three important classes with his Berkshires, and the Silver Cup, value £20, for the best pen in any of the classes. The hogs for which the latter honour is awarded in London, are the same which took a similar honour at Birmingham last week. The Suffolk whites and Essex blacks have seldom been better as a whole; in short, they are so good that our prize list will scarcely convey the names of the several breeders who exhibit meritorious pens. The pens shown number 60, which are divided into 10 classes.

The following are the Awards:—

JUDGES.—John Angus, Whitefield, Morpeth: John Fisher, Wood House, Cross Hills, Yorkshire; Joseph Smith, Henley-in-Arden.

Class 63. Pigs of any White Breed, not exceeding 9 months old. 1st, £10, Her Majesty the Queen: Silver Medal to breeder, Her Majesty; 2d, £5, Capt. R. P. Warren, Worting House, Basingstoke. Commended: Mr. T. Cartwright.

Class 64. Pigs of any White Breed, above 9 and not exceeding 12 months old.—1st, £10, J. and F. Howard, Britannia Farms, Bedford: Silver Medal to breeders, J. and F. Howard; 2d, £5. Her Majesty the Queen.

Class 65.—Pigs of any White Breed, above 12 and not exceeding 18 months old. 1st, £10, W. H. Dunn, Standen Manor, Hungerford: Silver Medal to breeder, W. H. Dunn; 2d, £5, R. E. Duckering & Son, Northorpe, Kirton Lindsey. Commended: H.R.H. the Prince of Wales.

Class 66. Pigs of any Black Breed, not exceeding 9 months old.—1st, £10, T. Chamberlayne, Cranbury Park, Winchester: Silver Medal to breeder, T. Chamberlayne; 2d, £5, C McNiven, Perrysfield, Oxted, Godstone. Highly Commended: Mr. J. Coate.

Class 67. Pigs of any Black Breed, above 9 and not exceeding 12 months old.—1st, £10, J. Coate, Hammoon, Blandford: Silver Medal to breeder, J. Coate; 2d, £5, N. Benjafield, Short's Green Farm, Motcombe, Shaftesbury. Highly Commended: Mr. A. Benjafield.

Class 68. Pigs of any Black Breed, above 12 and not exceeding 18 months old.—1st, £10, T. Chamberlayne, Cranbury Park: Silver Medal to breeder, T. Chamberlayne; 2d, £5, A. Benjafield, The Poplars, Stalbridge, Blandford. Highly Commended: Mr. J. Coates, Earl of Aylesford, Mr. H. G. Sturt, M.P.

Class 69. Pigs of any other breed, not exceeding 9 months old. —1st, £10, J. Biggs, Cublington, Leighton Buzzard, Beds: Silver Medal to breeder, J. Biggs; 2d, £5, J. Roberson, Bayfordbury, Herts. Highly Commended: Rev. H. G. Baily. Commended: the class generally.

Class 70. Pigs of any other breed, above 9 and not exceeding 12 months old.—1st, £10, J. Biggs, Cublington, Leighton Buzzard: Silver Medal to breeder, J. Biggs; 2d, £5, the Marquis of Ailesbury, Home Farm, Savernake Forest. Highly Commended: Mr. S. Druce. Commended: Mr. J. Treadwell.

Class 71. Pigs of any other breed, above 12 and not exceeding 18 months old—1st, £10, and Silver Medal to breeder, J. Biggs, Cublington; 2d, £5, the Marquis of Ailesbury. Highly Commended: Mr. J. H. Clarke. Commended: the class generally.

EXTRA STOCK.

£10 and Silver Medal to the exhibitor, for the best Steer or Ox, J. Bruce, Inverquhorney, Aberdeen. Commended: Mr. Jardine, M.P., Lord Penrhyn, Mr. J. G. Leigh.

£10 and Silver Medal to the exhibitor, for the best Heifer or Cow, R. H Harris, of Earnhill, Forres. Commended: Mr. J. J Colman, M.P.

Silver Cup to the exhibitor, for the best Wether Sheep, of the Leicester, Cotswold, Lincoln, and Kentish, or other Longwool breed, J. Pears, Mere, Lincoln. Highly Commended: the late Lord Berners. Commended: Mr. R Hall.

Silver Cup to the exhibitor, for the best Wether Sheep of the Southdown, and Hampshire or Wiltshire Down breed, A. Morrison, Fonthill House, Tisbury, Wilts. Highly Commended: Mr. Rigden, Sir W. Throckmorton. Commended: Duke of Richmond.

Silver Cup to the exhibitor, for the best Wether Sheep of the Shropshire, Oxfordshire, Cross-bred, or any other breed not specified above, Sarah Beach, The Hattons, Brewood, Penkridge, Stafford. Highly Commended: Mr. J. Overman. Commended: Mr. A. Stilgoe.

Silver Cup to the exhibitor, for the best single Pig, T. Chamberlayne, Cranbury Park, Winchester, Hants. Highly Commended: Messrs. Duckering.

SILVER CUPS.

Silver Cup, value £40, to the exhibitor, for the best Steer or Ox in any of the classes, J. Stratton, Alton Priors, Marlborough, Wilts. Gold Medal to Breeder, the late R. Stratton, Burderop, Swindon.

Silver Cup, value £40, to the exhibitor, for the best Heifer or Cow in any of the classes, J. Bruce, Fochabers, Elgin. Gold Medal to Breeder, A. Paterson, Mulben, Keith, Elgin.

Silver Cup, value £20, to the exhibitor, for the best pen of Leicesters, Cotswolds, Lincolns, Kentish, or other Longwoolled breed, in any of the classes, J. Byron, Kirkby Green, Sleaford, Lincoln.

Silver Cup, value £20, to the exhibitor, for the best pen of 1-year-old Southdowns, Hampshire or Wiltshire Downs, W. Rigden, Hove, Brighton, Sussex.

Silver Cup, value £20, to the exhibitor, for the best pen of 1-year-old Shropshire, Oxfordshire, Cross-bred, or any other breed of Sheep (not specified in Prize List) in any of the classes, Lord Chesham, Latimer, Chesham, Bucks.

Silver Cup, value £20, to the exhibitor, for the best pen of Pigs in any of the classes, J. Biggs, Cublington, Leighton Buzzard, Beds.

CHAMPION PLATE.

A Piece of Plate, value £100, to the exhibitor of the best Beast in the Show (Extra Stock included), J. Stratton, Alton Priors, Marlborough, Wilts.

A Piece of Plate, value £50, to the exhibitor of the best pen of Sheep in the Show, J. Byron, Kirkby Green, Sleaford, Lincoln.

IMPLEMENT DEPARTMENT.

The implement department of the Smithfield Club's Christmas meeting this year is a complete success, both as to novelty and the number of articles exhibited. This is easily accounted for in the latter case, for, capacious as the great Hall is, it is, we need hardly say, wholly inadequate to afford accommodation to a tithe of what the implement trade exhibited at Wolverhampton; hence, as exhibitors grow older they become wiser, and know how to erect additional sub-gallery room, and pack closer, so as by both full-sized articles and models to give the public the best sample they can of their manufactures. We never saw the Agricultural Hall at Islington so closely packed or better laid out for public inspection. But while we admit all this, there is one blank—a total failure—we mean the absence of a Smithfield Club catalogue! In point of fact, we hardly know how to tell it to our readers in this age of printing by steam—or what it really means. The old proverb says, Necessity acknowledges no law—but we don't believe it applies to the case in question, for hitherto the public have paid *6d.* for their pennyworth. At the Royal Agricultural Society's meeting we got a pennyworth for *1d.*, and the catalogue, with all its shortcomings, pays, and something over. Popular as the cattle department is, yet admitting this, the implement department has its increasing attractions; for it is now a well authenticated fact that before you can grow cattle in perfection you must first reclaim and cultivate the land by means of improved machinery, so as to grow food for your improved stock, and so on; all this will be understood by the practical reader.

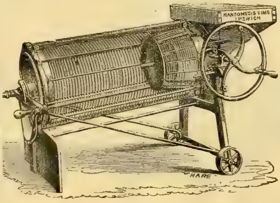

FIG. 337.—RANSOME'S CYLINDRICAL SCREEN.

Steam engines, &c., are not, perhaps, much above an average, at the same time the different classes of portable, traction, horizontal, and vertical fixed engines, are well represented. On entering the Hall from the Barford Street entrance, we meet with Tuxford, of Boston, the father of portable engines, on the right hand, and John Fowler & Co. on the left. The reader will readily perceive in this an instructive lesson in the march of improvement, for, say in Baker Street, the former always occupied a prominent position, limited as the space was for steam motors, whilst the latter, prominent as it now is, was nowhere then. This, however, is not all that the critical observer will perceive, for on the right hand he will see the prize steam culture windlass of the Royal Agricultural Society of England at Wolverhampton, and on the left hand the friction drums and clip drums of Fowler & Co. giving way to the winding drum system of haulage. True, there is a very remarkable difference between the winding drums of the Boston and Leeds firms, for the axes of the former are horizontal, whilst those of the latter are vertical. The two plans of winding may be termed rivals, and up to the present time nothing very definite has been done to determine whether the advantages of this or that preponderate. Certainly the award at Wolverhampton is in favour of the Boston system of windage, which, practically speaking, is that of Smith, of Woolston, at the Chelmsford meeting of the Royal, 1856, *versus* Fowler at the same trials, so that results must be weighed in the balance of the future.

In the absence of a catalogue (no great loss after all), we shall give our readers a running outline. Turning to the left, we have Fowler & Co's 12-horse steam ploughing engine and an 8-horse traction engine, a 4-furrow balance steam-plough, a turning cultivator, and two Pirie double-furrow ploughs; a better selection for the corner of the great hall could not be found. Clayton, Shuttleworth & Co., Lincoln and London, exhibit an 8-horse portable and a 10-horse traction engine, with safety differential movement; also a fixed engine, with improved bed-plate. But the greatest novelty, if novelty it can be called, is the reduction which this celebrated firm have recently made in the price of their engines. This is not the first reduction, and it is perhaps the most significant movement made in the march of improvement that calls for special notice on the present occasion, for whilst this firm have given their workmen the full benefit of "the nine hours' movement," they, at the same time, by means of advances in the manufacture of machinery by machinery, are enabled with profit to reduce the price to their customers. Facts of this kind never fail to speak for themselves, and in the case in question experience already proves they will not be silent. No doubt this reduction movement will meet with "trade opposition," but just so much the greater credit to those who triumphantly make it.

Humphries' threshing-machine, and Underhill's vertical engine and double-furrow ploughs require no comment. Burrell's 8-horse Thomson traction engine calls for a more lengthened notice than our space and time will permit; suffice it to say, it is highly promising. The fixed engine and sawing tables of C. Powis, Millwall, although common at the meetings of the Royal Agricultural Society of England, are novelties in their way here, and a relief to the eye of the agricultural student as he pushes his way onwards. The engine, band-saw, and sawing table are fine specimens of workmanship, and practically equally successful.

We next come to one of the best stands the Messrs. Howard, Bedford, ever exhibited at this Christmas gathering, including details of their "safety steam-engine, steam and horse tillage implements, &c." Their steam-plough is interesting, inasmuch as it brings us back to the question between Fowler and Howard—in Fowler's the two sets balancing on a common fulcrum, whereas in the Messrs. Howards' plough each set balances on its own fulcrum; whilst at the same time the weight of the one set out of work brings up the weight of the other set in work by means of the connecting chains. It was this balance connection that was found to be an infringement of Fowler's or rather of Fisken's patent implement. And now that Fowler's and Fisken's patents are both expired, the return to such special mechanism has a very significant meaning, practically speaking; indeed, such facts in the march of steam-culture progress ought not to be overlooked. In point of fact it has not been so, for there is another example exhibited in the stand of Amies & Barford, where each set of ploughs or cultivators has its own fulcrum, on which it balances by means of a connecting chain. This year Messrs. J. & F. Howard do not show either a portable or a traction engine, the space allotted to them being occupied with tillage implements, steam and horse power haymaking, reaping, and mowing machines, &c.—the popular implements of the day. Are we, then, to conclude that the double-fulcrum balance-ploughs are to supersede the single-fulcrum balance-ploughs, and that the double-furrow horse-ploughs are gaining a triumph over steam? The principle is represented in our engraving (fig. 339), which shows the balance-plough of Messrs. Amies, Barford & Co.

The Messrs. J. & F. Howard have a splendid show of double-furrow, one-way, and ridge-way ploughs, cultivators, and harrows; their reaping and mowing machines involve considerable novelty by way of improvement since last Christmas meeting. Thus, the one-way double-furrow ploughs are special novelties; so are the two subsoilers or cultivating tines to the digging plough. The reaping-machine, although closely resembling that of last year, has been much improved in detail since the Wolverhampton meeting of the Royal Agricultural Society of England. Their new mower is both a novelty and a complete success, and would require an illustration to do it justice.

Passing the refreshment stall, we come to Aveling & Porter's 8-horse traction engine and 8-horse road roller, machines which have justly earned the highest merit at all the trials at which they have recently competed. In short, this firm have gained a world-wide celebrity with their traction engines and road rollers.

Holmes & Son exhibit a 9-horse engine with threshing-machine, also their celebrated Clover-machine, drills, &c. The Beverley Co. have their cattle conveyance carts, common carts, waggons, clod-crusher, liquid manure carts, reapers with self-tipping platforms, &c.

Messrs. Ransomes, Sims & Head have a fine show of engines, threshing-machines, double-furrow ploughs, one-way ploughs, &c.; hay-harvesting machines, chaff-cutter, grinding and bruising mills, &c. They have this year erected a sub-gallery, which affords increased space for samples, and room is thus obtained for an unusually good illustration of their various manufactures. We give above an illustration (fig. 337) of their well-known cylindrical corn-screen.

Edington, Turner, Ashby, Jeffry & Lake, Woods & Cocksedge, we have noted "as usual."

The Reading Company have added something novel to their well-filled corner, viz., a series of small fixed engines, of 1, 2, 3 and 4-horse power, engines which are annually becoming more and more useful in the march of improvement. In this class of engines a very marked demand has recently sprung up—the best possible evidence of their usefulness in chaff-cutting, corn and cake bruising, &c. The well-known firms of Marshall & Son, Nalder & Nalder, P. & H. Gibbons, Brown & May, are noted "as usual at this season."

Davey, Paxman & Co., of Colchester, introduce a novelty that calls for a more detailed inspection, relative to the vertical boilers which have gained the approbation of the engineering public ever since the trials at Oxford, 1870, of the Royal Agricultural Society of England. We give an illustration (fig. 338), of their vertical steam-engine and a section of the boiler, showing the water-tubes within the fire-box, in which there is a constant current of water upwards, with a deflecting cap over each, sending the water downwards again through the outer boiler space.

At the stand of Messrs. Wallis, of Basingstoke, was shown an addition to the ordinary locomotive engine of a long chamber, into which the waste steam passes, It there condenses, and passes into the water supply for the boiler, which again is pumped back through pipes in the same chamber, made annular by cores, and therefore more efficient for receiving the heat of the outer steam. In another part of the gallery Mr. Perowne, of Great Snoring, Norfolk, shows a Banbury turnip-cutter, with an ingenious device for clipping in bits the last slice, which escapes the action of the barrel.

Robey & Co., Lincoln, also exhibit improvements in engines and threshing-machines introduced last year, whilst this year we have a new patent wheel for road and farm traction engines, the invention of a Mr. Mackindery. It would require an illustration to do justice to the merits of this new wheel. the tire of which consists of a series of segments, each supported by a spring, so that as the weight comes upon the spring it "gives," so as to enable the wheel to rotate without any further obstruction than is due to the deflection of the periphery from its axis.

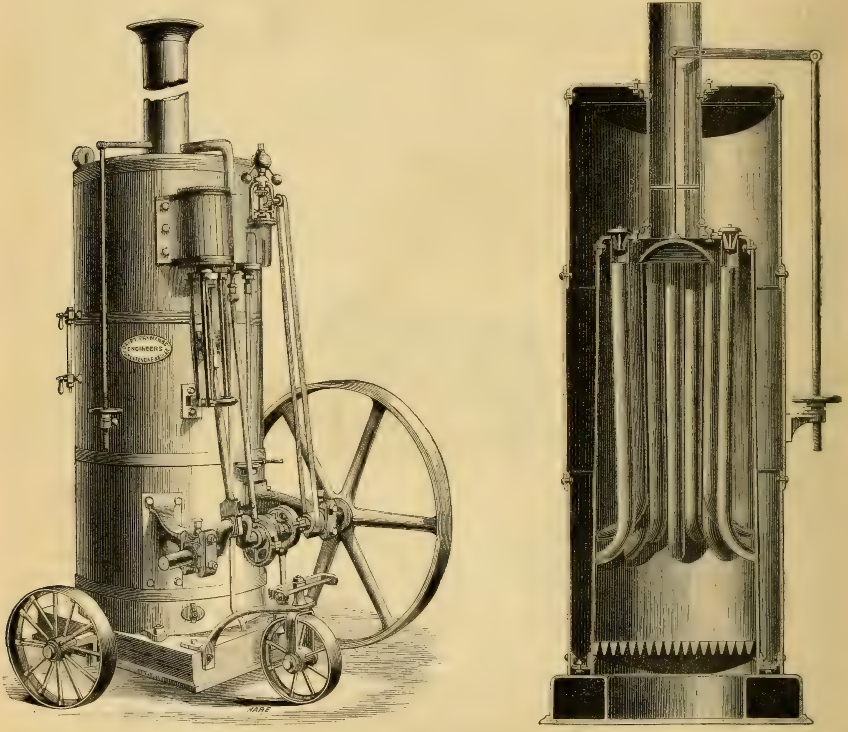

FIG. 338.—DAVEY, PAXMAN & CO.'S VERTICAL ENGINE AND BOILER.

Garrett & Sons we have noted, "as usual at Christmas," which is in itself a high commendation of their stand. They exhibit very fine examples of threshing-machines and drills, &c.

Hornsby & Sons have made considerable improvement in their reapers, mowers, and double-furrow horse-ploughs, since the Wolverhampton meeting. At Manchester, this firm was *first* in reapers, and ever since it has maintained its elevated position. In the double-furrow plough trials it has been very successful this year, winning the 1st prize at the principal competitions in Norfolk, &c. Two improvements merit special notice, viz., the alteration of the seat in the reaper, so as to counterbalance the weight of the platform and pressure of the pole on the horses' necks, and at the same time increase the bite of the driving-wheel and cutting action of the knife; and the self-acting land-wheel of their double-plough. Barrows & Stewart, and Tasker & Sons are noted "as at Wolverhampton," which reads, "both are in advance of last year."

This brings us to the gallery, where, on the right-hand from the principal staircase, we find Amies & Barford on the right-hand with a new steam-plough, illustrated elsewhere (fig. 339), in addition to their usual exhibit of cattle food steaming apparatus; and on the left Burgess & Key, with their reaping and mowing machines. We shall follow, as below-stairs, the left-hand course.

The Messrs. Burgess & Key, who may justly be termed the fathers of the modern reaping and mowing machines, have since 1851 been steadily and annually advancing in the march of improvement, on sound mechanical principles. What we have to notice since Wolverhampton are improvements in detail *i. e.*, the perfecting, as it were, of the progress previously made. In other words, they have added an undulating cam to their reel-raker, the latter to guide both reels and rakes across the platform, and deliver the sheaf at the side out of the way of the track of the team next turn. From the manner the rotating standard crosses centres with the knife and bearing wheels, they are enabled to do so with shorter reel and rake arms than would otherwise be the case, and hence with a saving of motive-power, tear and wear, &c. The direct thrust of the knife and the improved method of lubricating the axes, are now too well known and appreciated to require description. True, certain parts may be subject to further improvement, but the advances made by this firm during the past year continue to keep them in advance of their rivals—the most successful of whom (Hornsby & Sons) are their licentiates.

Passing over Morton & Co.'s (London and Liverpool) mode of roofing, Hope's artificial food, and Hale's sheep-wash, we arrive at a very interesting and instructive stand, viz., average samples of the produce of Mr. Hope's sewage farm at Romford. This is a grand affair, and highly encouraging when seen, as it ought to be, from a practical point of view; for if Mr. Hope is not the father of successful sewage farming, he is undoubtedly the most advanced leader in the vanguard of progress, whose example sewage farmers in general would do well to emulate, as in every product of his farm a practical lesson is to be learned, both as to quality and weight of crops per acre, with the variety of crops grown. Smith, Kettering, and Nicholson, Navan, we noted "fine stands as heretofore;" and the same may be said of Alway & Sons, whose dairy utensils have long been something more than prominent in the Agricultural Hall.

The Messrs. Samuelson, of Banbury, the first who introduced the D'Orsay reel-raker into England, in 1861, have added a foot-gear movement for throwing their implement into and out of action by means of two chains with the necessary clutch-work and foot levers. We should prefer a single-link connection to that of a chain; but this is matter of detail, at the option of purchasers, for although chains are liable to stretch by a continuance of hard work, they actuate the clutches successfully *pro tempore*.

The eye here finds relief in a novelty, in the form of a small windmill for irrigation and other purposes, exhibited by Pollard, Jephson & Co., engineers, Southwark.

Priest & Woolnough have their usual selection of first-rate drills, &c., and Baker corn-dressing machines.

This brings us to Coleman & Morton's new Potato-digger, one, if not the only peculiar novelty of the Islington Hall for the current year. The principle is simple, viz., a common double mouldboard-plough for splitting the drills, a rotary riddle for separating the earth from the Potatos, and two adjustable mouldboards for filling the riddle. Thus, as the ridging-plough splits the drill, the earth and Potatos turned right and left are by means of two mouldboards turned inwards, or upon the herring-bone rotary riddle, which is said effectually to separate the earth from the tubers. An illustration is needed to do justice to this new implement—an American invention, reduced to practice to suit the requirements of English Potato-growers, the price of the machine being within the reach of all who grow a few acres of this all-important edible.

Hunt & Pickering exhibit their reaper, with a bell-crank movement of the knife between two connecting rods; also a new dry-earth closet, with a large and varied assortment of their usual articles. The two Balls have each, on opposite sides of the gallery, fine exhibits of their prize carts, &c. Dell, the great London house, comes in for millstones, and the various requirements of the miller; so do Bryan & Corcoran, with the other metropolitan firms in this branch of art. Grinding, kibbling, bruising and crushing mills for the preparation of food for cattle, are well represented, but those for private family use are below an average. Thus we miss Pinfold of Rugby, and some other makers who have of late been introducing novelty in the improvement of family mills as well as of cattle mills. There is, however, no great reason to complain. The Bristol Waggon Company have, as usual, a select stand. C. Denning & Co., Chard, Somerset, exhibit Spenser's patent chain corn-drill, a first-rate implement, of which we present an illustration (fig. 341), in which it will be seen that the corn in the hopper is fed into the seed funnels by endless chains, passing through openings, which drag a constant stream of grain with them. Corbett & Son, of Wellington, show a new plough, the mouldboard of which is serrated on the lower side, which is said by the exhibitor to have a more effective pulverising action than the American rotary mouldboard, which won its laurels at Wolverhampton. These ploughs are being brought out in three classes, viz., single, double, and ridging ploughs; and at the recent triennial trials of the Manchester and Liverpool Agricultural Societies easily beat six of their rotary mouldboard rivals. The pulveriser is followed by a subsoiler when necessary, and the autumnal reports speak very favourably of this new invention, which, in point of mechanism, is a very simple affair. Treen's dibbling-machine was noticed at Wolverhampton. T. W. Wedlake, of Hornchurch and Romford, exhibits his glandless steam-engine, in addition to his usual selection. James & Son, of Trindlie, have added to their water-carts a chain-pump, by way of novelty, for irrigation and other purposes. In this department of the Hall there is a fine show by Owen & Co., Hayward, Tyler & Co., and others. The Messrs. Hayward & Co. show a pony gear for pumping apparatus, which, in numerous cases, is being usefully employed for irrigation. Thomas Baker, Compton, Berks, shows a tumbler or tip liquid-manure cart, which can be fitted with outlets and pipes for distributing liquid manure to drilled crops grown at different widths of drills; but the quantity of liquid calculated per acre is by far too small. Bentall, Robey, Carson & Toone, Penny & Co., Riches & Watts, Hayes & Son, Le Butt, are noted "as usual;" and so are the London firms of Lloyds, Whitmore, Pierce, Rollins, &c. On Messrs. Boby's stand we have, among other instances of their well-known corn screen, one in which the corn delivered from the hopper actuates by its weight an arrangement for working the oscillating discs by which the sloping screen is kept clean. It is, in fact, a self-acting screen of a very clever and efficient kind. John Gray & Co., of Uddingston, near Glasgow, exhibit two of their double furrow ploughs (Gray's and Pirie's patents combined), which are well patronised. Walter A. Wood shows his new American reel-raker, which would require an illustration to do it justice. His common reapers and mowers have also been improved by the substitution of iron for wood, and tube mechanism for nuts, &c. C. F. Whitworth, of Lincoln, and Brigg, Lincolnshire, exhibits gates of a very ingenious construction of "midway catch and locking bar," which has recently gained the prize of the Liverpool Agricultural Society, in competition with other gates. E. Davis, of Rhuddlam, Flintshire, exhibits a chaff-cutter on an old principle, but with upward stroke instead of downward, as in the old machines of Salmon, &c., also a new axle. Cattle cribs, sheep racks, and other articles of this kind are as numerous as usual. Benjamin Reid & Co., Aberdeen, show their "patent drain-clearing rods," with other articles, as last year. G. D. Powell, of Lorraine Road, Holloway, a new exhibitor, shows rick-cloths, with the various articles of tarpaulin manufacture. In this department there is always a large show. Stands with "pure linseed-cakes" are on the increase.

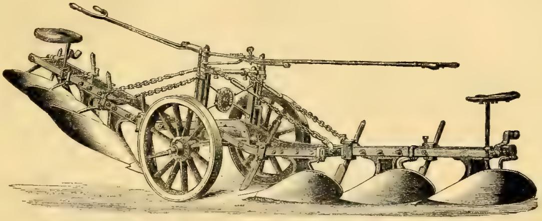
FIG. 339.—MESSRS. AMIES, BARFORD & CO.'S DOUBLE FULCRUM BALANCE STEAM-PLOUGH.

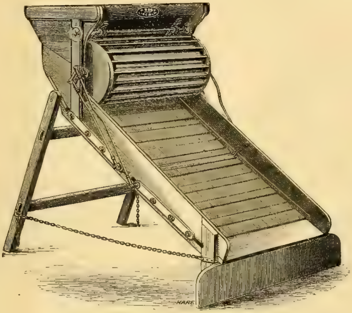
FIG. 340.—BOBY'S SELF-ACTING CORN SCREEN.

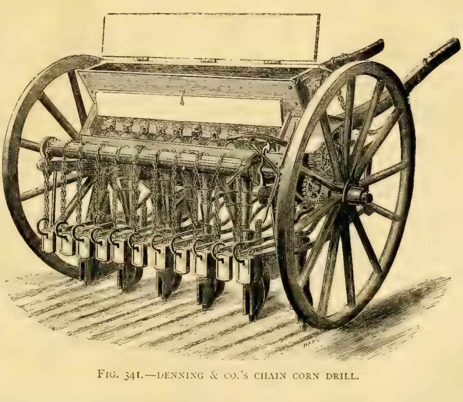
FIG. 341.—DENNING & CO.'S CHAIN CORN DRILL.

The artificial manure trade is well represented in the galleries and in the arcade, as usual, by Mr. Stoffell (late Messrs. Whitworth & Co., Atlas Works, Rotherhithe), whose fish-manures are highly valued, more especially in our Hop-growing districts. H. J. Salmon, manure manufacturer, Bermondsey, is for the first time an exhibitor in the gallery, and also in the concert-hall. The general show in the bazaar baffles description, even granting that the passages had been less crowded than they were. What our country cousins thought of this department it were hard to say, but some of them, by the time they had got halfway round, appeared as anxious to get out as they were to wedge their way in by 4 P.M. It was amusing to hear the jokes expressed in plain home-spun English, Scotch, and Irish. Even in this fancy fair one or two exceptions may be quoted. Thus we have Lawrence's "cooler," for milk or beer (wort), which is also adapted for heating milk at this season. It is largely used amongst brewers in cooling wort, but to what extent it has been applied in the dairy we are not informed. They are made of corrugated copper. The cold water flows upwards internally, the wort downwards externally, and the cooling power is said to "surpass belief."

As usual the stands of the great seedsmen are one of the principal features in the galleries. Messrs. Gibbs & Co., the seedsmen to the Royal Agricultural Society, have a very good collection, flanked by enormous Cabbages of Mr. Robinson's growth, with a capital set of specimens of Mangel Wurzel, Swedes, Kohl Rabi, &c. Beyond this Messrs. George Gibbs & Co. exhibit roots and tubers, and seeds, in a large and well-arranged stand, including especially remarkably fine specimens of the White Belgian Carrot, besides Mangels, Swedes, and Turnips. Messrs. Raynbird, of Basingstoke, have a good collection of roots—their Globe Mangels, in particular, being very fine. In a corner of the gallery we have "average samples" of the results of sewage irrigation on Mr. Hope's poor gravel farm at Breton's, below Romford—capital Cabbages and Mangel Wurzel. Messrs. Carter, of 238, High Holborn, have an extraordinarily fine collection of Kohl Rabi, Long Red Mangel, probably the heaviest and largest in the hall; Cabbages, Swedes of very good quality, a large collection of Potatos, &c., graced with the silver cups which they offer as prizes at meetings of the Royal Horticultural Society. Beyond these you come to Messrs. Sutton's stand, in which are the largest and heaviest Swedes to be found in the Hall; some remarkably large Long Red Mangels, the largest Kohl Rabi we have ever seen, and a very fine collection of Potatos. Messrs. Wheeler, of Gloucester, have a very good stand; their Yellow Tankard Turnips are very fine, and their usual display of large roots of other kinds. Mr. King, of Coggeshall, shows a remarkably fine quality, combined with good size, of Globe Mangel Wurzel. Mr. Radclyffe, High Holborn, exhibits a good general collection of roots. Our woodcut (fig. 342, p. 1603) shows a collection of roots, measured and sketched on the scale of one-fifth, selected from the stands of Messrs. Sutton and Messrs. Carter, the roots to the right representing Messrs. Suttons' Mammoth Red and Long Yellow and Globe Yellow Mangel, their enormous Kohl Rabi and Swede; those to the left showing the largest Long Red Mangel on Messrs. Carter's stand—close on 60 lb., and there are here also Turnips and Swedes and Kohl Rabi. On the whole, the roots impress us with the idea that the season has been productive of large and coarse quality. If it is proper to single out any names as especially remarkable for the quality of the roots they have exhibited, we should be disposed to refer to Mr. King's Globe Mangels and Mr. Hall's (Westbury) Swedish Turnips.

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, December* 6.—Present: Sir Watkin W. Wynn, Bart., M.P., President, in the chair; Viscount Bridport, Lord Chesham, Lord Tredegar, Lord Vernon, Sir A. K. Macdonald, Bart.; Mr. Baldwin, Mr. Barthropp, Mr. Booth, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clive, Mr. Davies, Mr. Dent, M.P.; Mr. Druce, Mr. Edmonds, Mr. Brandreth Gibbs, Mr. Hornsby, Mr. Bowen Jones, Colonel Kingscote, M.P.; Mr. Leeds, Mr. M‘Intosh, Mr. Masfen, Mr. Milward, Mr. Pain, Mr. Randell, Mr. Rigden, Mr. Sanday, Mr. Shuttleworth, Mr. Stone, Mr. Thompson, Mr. Torr, Mr. G. Turner, Mr. Jabez Turner, Mr. Wakefield, Mr. Earle Welby, M.P.; Mr. Wells, M.P.; Mr. John

Wells, Mr. Whitehead, Mr. Jacob Wilson, and Dr. Voelcker.

The following new members were elected :—

Angas, George, Beeford Grange, Lowthorpe, Hull.
Baird, Alexander, Robeston Hall, Milford Haven.
Balston, Richard James, Boxley Abbey, Maidstone.
Bott, Joseph Fennell, Morrell Roothing, Dunmow.
Boucher, Charles, Caenby, Market Rasen.
Bradbury, G. E. Hobroyd, Longroyde, Rastrick, Yorkshire.
Cocks, Charles, Packington, Lichfield.
Eve, Frederick, Sherington, Newport Pagnell.
Fremlin, W. Arthur, Teston, Maidstone.
Hack, Algernon, Buckminster, Grantham.
Heneage, Edward, Hainton Hall, Wragby.
Hilliard, Rev. J. A. Stafford, Little Wittenham, Abingdon.
Huntley, W. V., Welsh St. Donatts, Cowbridge.
Leighton, Stanley, Sweeney Hall, Oswestry.
Mackenzie, James, Camden Quay, Cork.
Paull, James W., Knott Oak House, Ilminster.
Pogson, Frank M., Caxthorpe, Grantham.
Pratt, Frederick, Greatford, Stamford.
Price, Henry, Undy, Chepstow.
Pylms, John, Court Farm, Magor, Chepstow.
Rowcliffe, E. Lee, Hall Place, Cranleigh, Guildford.
Stratton, Rev. J. Y., Ditton Rectory, Maidstone.
White, George, Hunton, Maidstone.
Wright, William, Fiskerton, Newark.
Wright, W. Twaites, St. Nicholas, Cardift.

FINANCES.—Major-General Viscount Bridport (chairman) presented the report, from which it appeared that the Secretary's receipts during the past month had been examined by the committee, and by Messrs. Quilter, Ball & Co., the Society's accountants, and found correct. The balance in the hands of the bankers on November 30 was £337 14*s.* 1*d.* The committee recommend that £500 be sold out of the reserve show fund to meet payments required. The committee recommend that the bye-law No. 76, relating to members compounding for their subscriptions, be extended to governors of the Society. The committee have met nine times, and made nine reports.—This report was adopted.

JOURNAL.—Mr. Thompson (chairman) reported that 19 competitors* had entered their farms for the prizes offered by the President and the Society; that Mr. Bowstead, of Eden Hall, Penrith, had accepted the office of reporting judge; that the President had nominated Mr. Thomas Jenkins, of Plasyward, as one of the remaining judges; and that the Secretary had been instructed to obtain the services of another judge on the list prepared by the committee. It was recommended that applications from the Viceroy of India for a complete set of the Journal, and from the Veterinary Department of the Privy Council for the numbers since 1864, should be acceded to. It was also recommended that the botanical report of Mr. Carruthers, F.R.S., be printed in the next number of the Journal, and that a Botanical Committee be appointed, as jointly recommended by the Journal and Chemical Committees. In reference to the protest of Messrs. Robertson and Richardson against the report of the judges of churns at the Oxford meeting, as published in the Journal, the committee, after consultation with the judges, see no reason to alter the report in question. This report having been adopted, Mr. Dent Dent, M.P., moved that the chairman of the French Peasant Farmers' Seed Fund (Lord Vernon) be requested to furnish, for publication in the Society's Journal, an account of the agricultural features of the work at that institution. This resolution having been seconded by Mr. Wakefield, was carried unanimously.

CHEMICAL.—[The reports of Dr. Voelcker and of the Chemical Committee must be postponed until next week.]

HOUSE.—Major-General Viscount Bridport (chairman) reported the recommendation of the committee, that a new arrangement be made with reference to the porter, and that in the meantime, pending such arrangement, the necessary temporary assistance in the house-work be procured.—This report was adopted.

LORD VERNON'S COMMITTEE ON RECEIPTS AND EXPENDITURE.—Lord Vernon (chairman) reported that the committee had arranged a schedule of questions to be referred to the several standing committees of the Council, and that it was recommended that comparative statistical tables in reference to these questions, comprising the receipts and expenditure for the last ten years, be printed for the use of the Council.—This report was adopted.

STOCK PRIZES.—Mr. Milward (chairman) reported the following recommendations of the committee: (1) That no second prize be given unless at least three animals be exhibited, except at the special recommendation of the judges, with the consent of the stewards; (2) that sheep unfairly prepared for show, by oiling or colouring, may be disqualified on the recommendation of the inspectors of shearing; and that (3) the conditions relating to cows and heifers producing living calves be modified in accordance with the resolution at the last Council meeting. This report having been adopted, it was moved by Mr. Jacob Wilson, seconded by Mr. Bowly, and carried unanimously, that the general rule No. 19 of the stock prize-sheet be amended to read as follows:—"No animal can be removed from its place without leave from the director or stewards, and any infringement of this or any other rule will render the exhibitor liable to a fine of £1 by the stewards, and to the forfeiture, by decision of the Council, of any prize he may be entitled to; nor can any animal be taken out of the showyard without leave in writing from the director or stewards."

VETERINARY.—Mr. J. Dent Dent, M.P., reported that, in consequence of the death of Professor Spooner, the post of Principal of the Royal Veterinary College is now vacant; and that it is possible that alterations may be made in the staff and course of study at the College. Under these circumstances it was recommended that the Council do postpone its decision on the relations of the Society to the College until the committee are able to make a further report.—This report wat adopted.

GENERAL, CARDIFF.—Lord Vernon (chairman) reported that the lists of prizes, proposed to be offered by the local committee of the Glamorganshire General Agricultural Society, had been revised, and were recommended for adoption; that the offer of some additional prizes by the Marquis of Bute be gratefully accepted; and that the following members of the local committee be added to the general Cardiff committee:—The Mayor of Cardiff; W. Alexander, Esq.; J. S. Corbett, Esq.; G. C. Williams, Esq.; Major Turberville. The committee had also considered the proposition of the local committee that they should have a separate yard, in which hunters exhibited should be allowed to jump, but they did not recommend this proposal to the Council.—This report having been adopted, the stipulation attached to the prizes offered by the Glamorganshire Agricultural Society was taken into consideration, viz., that the subscribers to that society should be allowed to compete for those prizes on the same terms as the members of the Royal Agricultural Society. This proposal having been moved by Mr. Randell, and seconded by Mr. Jacob Wilson, was carried unanimously, after a few words from Mr. Dent, who pointed out that this was admitting a new principle, and doing away with one of the inducements which the Society had hitherto held out to attract new members.

SELECTION.—Mr. Thompson (chairman) reported the recommendation of the committee that Mr. Rawlence, of Bulbridge, Wilton, be elected a member of Council, to fill the vacancy caused by the election of Mr. Holland as a Vice-President. This report having been adopted, Mr. Rawlence's election was moved by Mr. Thompson, seconded by Mr. Randell, and carried unanimously. The first report of the Consulting Botanist, containing an account of his investigations for members of the Society since his appointment in August, was laid before the Council, and ordered to be printed in the next number of the Journal.

The Secretary was instructed to address letters relative to the country meeting of 1873 to the authorities of Darlington, Durham, Hull, Newcastle, and York.

The annual reports of the several standing committees were received, and the usual committees were appointed for the year 1872, with the addition of a Botanical Committee.

The report of the Council to the general meeting was prepared.

A communication from the Agricultural Society of New South Wales, in reference to a system of judging stock by points, was referred to the Stock Prizes Committee.

Letters from the Secretary of the Veterinary Department of the Privy Council, and from the Royal Agricultural Society of Ireland, in reference to the alleged diseased condition of Irish cattle imported into England, were laid before the Council, and the Secretary was instructed to forward a suitable reply to the latter communication.

At the GENERAL MEETING of the Royal Agricultural Society, held at noon on Thursday, Sir W. W. Wynn, Bart., M.P., President, in the chair, the annual report of the Council was read and adopted. It referred to the statistics of the Wolverhampton meeting—the prize farm competition—the forthcoming meeting at Cardiff—the chemical reports of Dr. Voelcker—the appointment of a botanical professor, and the prevalence of cattle disease. We are reluctantly forced to postpone it till next week.

SOCIETY OF ARTS.

Sewage as a Fertiliser of Land, and Land as a Purifier of Sewage.—On Wednesday evening Mr. J. Bailey Denton read a paper on this subject, of which, for the present, we can only present an extract, taking it from the Journal of the Society of Arts:—

Sewage Irrigation.—So much has been written and said recently on the practice of sewage irrigation, that I should be disposed to say very little on the subject, had not the special properties of the soil itself for appropriating the fertilising matter of sewage, and for cleansing the sewage itself, been, to a very great extent, omitted from consideration, and had not Boards of Health—the worst farmers in the world—been the principal cultivators up to the present time. Believing that, with a recognition that the soil will perform the functions accredited to vegetation as, or more, effectually than vegetation itself, and that the two in combination will obtain the best results, both as a means of profit and a sanitary agency, I regard all calculations that have hitherto been made as to the number of persons contributing sewage per acre, and the rules that have been laid down on that score, as worth very little as a guide for the future, when the principle shall be fully recognised that the surface of land must be rendered so absorbent that no sewage shall pass off into the river courses.

In the application of sewage to land, the local features will, in future, decide the question whether the purification of the sewage and its profitable use should be treated as objects of equal importance, or whether the purification should be the paramount object, and utilisation a subsidiary one. If sufficient land for wide irrigation is not to be obtained, or, if obtained, only at a price that shall place the application of the sewage, by way of irrigation, beyond the possibility of profit, it is manifest that we must call to our aid the cleansing powers of an aërated soil, and regard the land more in the character of a filter than we have hitherto been disposed to do; and by adopting intermittent application, the effect of which has been so admirably explained by the Rivers Pollution Commissioners, realise all the advantages to be gained from it.

The two processes of irrigation and filtration are already viewed so differently from the way in which they were regarded in their first introduction, that it is necessary to state how we stand with regard to them at the present moment. It will be remembered that, up to very recently, an opinion prevailed with respect to irrigation that, "the object of getting sewage on to the land was, not to let it percolate into the ground, but to keep it on the surface," and that subsoil drainage would not do for sewage farms, because the sewage passed too rapidly to the roots of vegetation, and descended downwards.

Under-drainage as Essential to Irrigation as to Filtration.—Some members of this Society may remember, on the occasion of my reading a paper on "The Water Supply of the Metropolis, in Relation to the Thames and its Tributaries," my friend Mr. Rawlinson, who has ever been the consistent and able advocate of the application of sewage to land, stated in this room, without giving any opinion himself, that some persons practically "acquainted with sewage irrigation would prefer, from their experience, to irrigate clay lands without underdrainage, if Italian Rye-grass, which was the most profitable crop, were to be sown;" and the little difference of effect that was to be noticed at Norwood, where the land was clay, and the manager had actually plugged the drains in order to keep the land in a state of supersaturation, when compared with Croydon, where the land is free and is naturally drained, has often been quoted as a reason why sewage irrigated land should not be drained. I will not stop to condemn this view, which is repugnant alike to the sanitarian and the agriculturist, as it may be already observed that, with very few exceptions indeed, operators now disclaim the opinion that under-drainage is unnecessary. So decided has the appreciation of drainage become with the majority of sewage irrigators, that in the eagerness to secure rapid absorption, sewage farms have become filter beds of too rapid action, and by the adoption of inappropriate drains the purifying powers of the soil have been jeopardised. Short as the interval has been since intermittent downward filtration was first suggested by the Rivers Pollution Commissioners, that process has, like irrigation, undergone a change. The Rivers Pollution Commissioners stated—evidently under the impression that sewage would only be applied to a barren or fallow surface—"That with a properly constituted soil, well and deeply drained, nothing more would be necessary than to level the surface and divide it into four equal plots, each of which in succession would then receive the sewage for six hours. In this way the sewage of a water-closet town of 10,000 inhabitants could, at a very moderate estimate, be cleansed upon 5 acres of land, if the latter were well drained to a depth of 6 feet." They then go on to state that, nevertheless, there are three formidable objections to the general adoption of the process:—(1.) "It is entirely unremunerative." (2.) "The whole of the manurial ingredients of the sewage would be absolutely wasted." And (3) "The collection of solid fæcal matters upon the surface of the soil, with no vegetation to make use of them, would probably give rise to formidable nuisance, especially in hot weather." The change to which I have referred has arisen on the proof which I have had the satisfaction myself of affording, that vegetation may be grown upon the surface of filtering areas, even when receiving sewage equal to the discharged refuse of 3000 persons to each acre; thus adding, in the most apposite manner, to the cleansing powers of the soil the scavengering properties of vegetation. When speaking presently of land as a purifier of sewage, I shall give the particulars of the instance referred to, which, though the first and only case in which intermittent filtration has been tried and modified by the growth of crops, cannot fail to prove that the objections anticipated by the Rivers Pollution Commissioners may be avoided.

Technical Description of Irrigation and Filtration.—With the general admission that under-drainage is essential wherever sewage is applied to the surface of land, it must now be generally understood that irrigation means the distribution of sewage over as many acres as it will

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*Campbell, John, Down Hauslephan, Carmarthen.
Culverwell, James, Penrose Farm, Abergavenny.
Falconer, Archibald, Berllandywyll, Llandilo.
Hall, William, Ty Newydd, Brecon.
Hill, John, Llancayo, Usk.
Jones, Griffith, Trevigin, Cardigan.
Jones, John, Pant y Goetre Farm, Abergavenny.
Owen, Daniel, Ash Hall, Cowbridge.
Parsons, Valentine, Slough Farm, Caerwent, Chepstow.
Powell, William S., Eglwysnunyd, Taibach.
Price, Henry, Undy, Chepstow.
Pybus, John, The Court Farm, Magor, Chepstow.
Roberts, Thomas, Malthouse Farm, Lanedern, Cardiff.
Roberts, W. B., Lovestone, Pembroke.
Spencer, Michael, West Aberthan, Cowbridge.
Thomas, John, Ty Du, Cardiff.
Thomas, John, Eastfield House, Cowbridge.
Thomas, Rees, Saint Athan, Cowbridge.
Till, James, Caerwent, Chepstow

wet without supersaturation, having in view a maximum growth of vegetation from the amount of sewage applied, and that any departure from this, resulting in excessive application, is a waste of fertilising matter. I think it may also be taken as proved that filtration through soil should not necessarily mean its application to a fallow or barren surface (as contemplated by the commissioners), but the concentration of the sewage, intermittently, on as few acres of land as will absorb and cleanse it, without excluding the production of vegetation at the same time.

Irrigation.—Having given the interpretation of irrigation as the application of sewage to as many acres as it will wet without supersaturation, I should point out that, owing to the absence of a proper apportionment of the sewage at command to a certain quantity of land, considerable waste has resulted in most instances of sewage farming. The Italian irrigators reckon that they lose half their water when carrying the other half forward for us ; and having the advantage of enormous quantities of water to deal with, and a power of regaining that which was absorbed by the soil, by tapping it at a lower level, they are indifferent to loss; but in England, where we reckon the value of sewage by the ton, and have taken its intrinsic value at 1*d.* per ton, we cannot be content to follow such an example. We must, in fact, in this country reject any mode of distributing sewage which does not aim at the utmost economy, and which I may here state would not be attained, in my opinion, if the average quantity of sewage applied to each acre per annum exceeded 2000 tons, which represents the sewage (proper) of 62 persons, with a water supply of 20 gallons a head.

Land may be too Porous.—To judge of the waste resulting from the present mode of applying sewage to the surface of land, we have only to look to the reports of the proceedings at the Lodge Farm, near Barking, published by Mr. Morgan, to whom the public are greatly indebted for the explicit way in which he has given the quantity of sewage applied and of vegetation grown, and we shall see that an average quantity of 4435 tons of sewage per acre were applied during the year ending August 31, 1870, while the quantity used up to August 31 last was 3808 tons per acre. If we put ½*d.* a ton—which I have said sewer authorities ought to receive for their sewage—on each of these quantities, we find that the payment in the first year would have been £9 4*s.* 9*d.*, and in the last £7 18*s.* 8*d.* Turning again to Mr. Morgan's report, it will be seen that as much as 21,488 tons of sewage have been applied per acre in one field of Italian Rye-grass. This at ½*d.* a ton would amount to £44 15*s.* 4*d.* This is the extreme of the year, but taking the whole of the Italian Rye-grass produced, it will be seen that the average quantity of sewage applied from the date of sowing was 288 tons for every ton of Rye-grass produced and cut. At ½*d.* a ton the tenant would have to pay 12*s.* for this, which is the value of the grass when cut, so that he would suffer a loss of all outgoings in the shape of rent, rates, labour, seed, &c. The waste exhibited by these figures is clearly due to the extreme porosity of the soil, and its unfitness for irrigation on that account.

A Proportion of Clay Desirable.—With the limited time at command I must not enlarge upon the advantages certain soils have over others for irrigation. It may be sufficient to state that, if we desire to make the most of sewage, it is necessary that a proportion of clay should exist in the soil, and that, although very stiff clays, from the difficulty attending their management, should be avoided, it is much more likely that soils may be too free than too stiff; I am now, of course, speaking of the retention of the fertilising matter of sewage by the soil, and not of the process of filtration as a means of purification. That is quite another matter. That clayey land is more grateful for sewage is very distinctly shown by Mr. Morgan's report, for the same quality of Italian Rye-grass was produced from clay lands as from free soils, though Mr. Morgan informs me the former did not absorb more than 4000 tons per acre, which is a little more than one-third of the sewage applied to the Italian Rye-grass grown on the free soils. I need hardly point out that the rapidity with which land will absorb sewage must depend, not only upon the nature of the soil—its density and porosity—but equally upon the inclination of the surface over which the sewage travels, and the character of under-drainage beneath, and that, therefore, it is the duty of the engineer, when laying out land for absorption, to regulate the inclination of the surface, and the number, position, and size of the under-drains upon which the effect mainly depends according to the degree of porosity of the soil, in order that a given quantity of sewage may go as far as possible.

Filtration.—Having dwelt upon the practice of irrigation, I ought now to explain the process of intermittent filtration as it may be carried into practice, but as I shall presently deal with it when considering "land as a purifier of sewage," I will only state that by adopting the process as technically described, the liquid refuse of from 1000 to 3000 persons—and probably more—may be cleansed by the soil of a single acre of land.

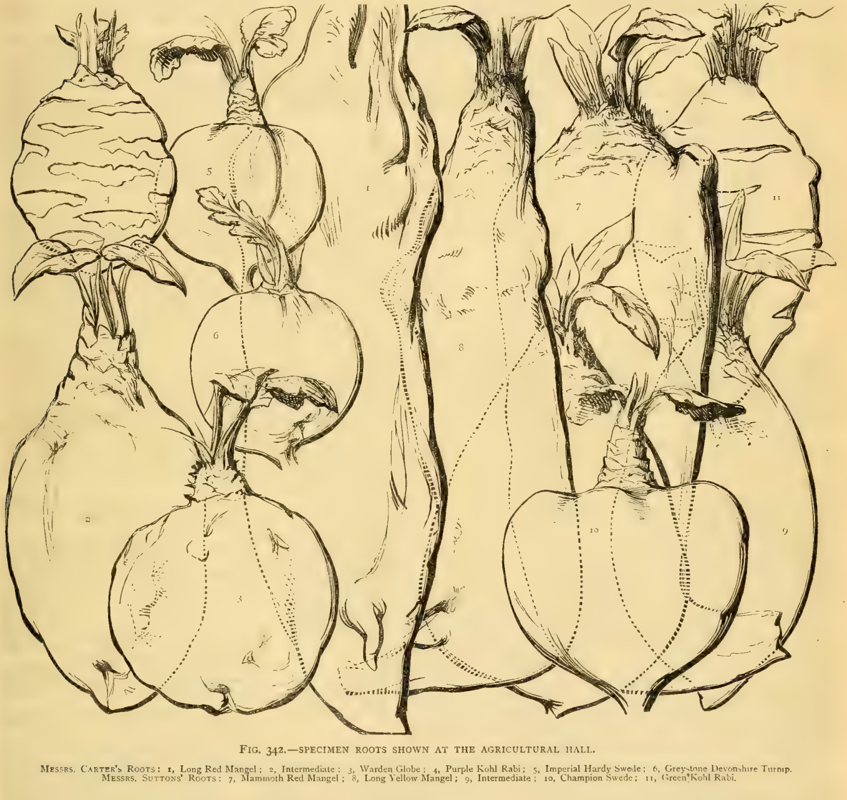


FIG. 342.—SPECIMEN ROOTS SHOWN AT THE AGRICULTURAL HALL.

MESSRS. CARTER'S ROOTS: 1, Long Red Mangel; 2, Intermediate; 3, Warden Globe; 4, Purple Kohl Rabi; 5, Imperial Hardy Swede; 6, Greystone Devonshire Turnip.
MESSRS. SUTTONS' ROOTS: 7, Mammoth Red Mangel; 8, Long Yellow Mangel; 9, Intermediate; 10, Champion Swede; 11, Green Kohl Rabi.

Return from Irrigation.—Up to this time, though sewage-farming has been practised for some years, we have not obtained sufficient data for the guidance of those who desire to follow it as a business. Although local boards and companies have had the farms in their own hands, no balance-sheets, showing the quantity of sewage applied to, and the money realised by the sale of, the various crops grown, have been published. Still, the occasional results that have been obtained afford us positive evidence of what will be done under the management of men practised in the cultivation of land.

The Table on the next page exhibits certain results obtained at various places at different dates.

From these instances sufficient proof is afforded that, with one crop per annum of a kind that will yield largely to the application of sewage, and command a certain and ready sale in the neighbourhood, a sufficient return may be gained to pay a full rent for the land and a halfpenny a ton for the sewage, besides affording a good profit after paying all outgoings in the shape of rates, taxes, hand and horse labour, repairs and restoration of implements, seeds, interest on capital, &c. It is true that crops as large, and even larger, than those grown with sewage have been produced by good farming without sewage, and there would be nothing to say specially in favour of irrigation, were it not that the united advantages of manure and water ensure crops year after year under every vicissitude of season, and allow of two crops being taken from the same land occasionally. From the experience gained in the cultivation of Italian Rye-grass, it is found that it may readily be grown in excess of the demand for it in a green state, and that, as this description of grass is most difficult to convert into hay, it is desirable to limit its growth to a narrower space. It absorbs and appropriates, however, a larger proportion of sewage than any other description of crop, and it is only because it thus helps to swallow up sewage that it is continued to be grown by those who seek rather to get rid of the sewage than to make the most of it. That speciality loses its force directly a fair value is put on the sewage, or when sewage is applied to land which is itself capable of absorbing and cleansing it, as in such case the manurial matter is stored in the soil for use by following crops. The following is the Table referred to :—

Description of Crop.	Year of Production.	Place.	Value of Crop per acre.		
			£	s.	d.
Italian Rye-grass.	1868	Norwood	22	0	0
	1869	Lodge Farm, Barking	25	0	0
	,,	Norwood	25	0	0
	,,	Edinburgh	32	0	0
	1870	Lodge Farm, Barking	37	0	0
	1871	,, ,,	22	0	0
	,,	Warwick	12	14	0
	,,	Banbury	13	16	10
Mangels	1870	Lodge Farm, Barking	32	0	0
	1871	,, ,,	44	0	0
	,,	Warwick	26	5	0
	,,	Rugby	21	9	0
Swedes	1871	Warwick	26	5	0
	,,	Rugby	18	15	0
	,,	Banbury	14	6	8
Carrots	1869	Lodge Farm, Barking	38	0	0
	1870	,, ,,	45	0	0
	1871	Rugby	45	0	0
	,,	Warwick	35	0	0
Parsnips	1868	Lodge Farm, Barking	35	0	0
	1870	,, ,,	35	0	0
	1871	,, ,,	52	0	0
	,,	Warwick	35	0	0
Cabbages	1868	Lodge Farm, Barking	35	0	0
	1870	,, ,,	15	0	0
	1871	,, ,,	24	0	0
	,,	Banbury	21	11	6
	,,	Warwick	35	0	0
	,,	Rugby	15	0	0
	,,	Merthyr	20	0	0
Potatos	1869	Lodge Farm, Barking	33	0	0
	1870	,, ,,	25	0	0
	1871	,, ,,	18	0	0
Onions	1869	Lodge Farm, Barking	38	0	0
	1870	,, ,,	62	0	0
	1871	,, ,,	104	0	0
	,,	Warwick	35	0	0

Return from Intermittent Filtration.—The acreage return to the cultivator from the growth of crops on land used for intermittent filtration will depend upon the extent to which the intermittent principle is extended. If several series of filtering beds are adopted, as I have advised in the case of several towns, among which I may mention Birmingham, where the Sewage Inquiry Committee have declared their intention to adopt it, the return will be found to be quite as great, if not greater, than that to be obtained from irrigation ; for with the land rendered actively absorbent by drainage and deep cultivation, and laid up in bouts or ridges, crops may be grown while the sewage is being applied without suffering from excess of wetness. By extending the filtering process from one series, as suggested by the Rivers Pollution Commissioners, to several series of areas, so as to give two or three years' rest from filtration, such lands become available for the growth of the greatest amount of vegetation that can be produced from the land ; for with the sewage at command, any amount of watering that the crops require can be obtained by diverting the sewage for a time from the filtering areas in use. At Merthyr, the money realised by the sale of crops, comprising various roots and Cabbages, grown between June 14 and August 31 last, amounted, on an average of a day's sale by auction, to £17 15*s.* per acre, while the crops which were sold afterwards realised upwards of £20 an acre. These figures will bear comparison with the returns from irrigation proper ; and I may here state that although the works have been very costly, owing in a great measure to their being the first of the kind carried into execution, and in being themselves the result of Chancery proceedings, the chairman of the Board (Mr. William Jones, of Cyfarthfa), says in a letter to me that much as the land and works have cost, "the filtering areas may yet pay ;" adding that "had we obtained the land at a fair agricultural value, and the works been executed at the cost they would now be executed for, with acquired experience, I have no hesitation in saying they would be a source of great profit to the ratepayers of this district." These figures and the chairman's opinion are encouraging, and show a fair prospect of profit, if the authorities who have charge of such works abstain from growing the more refined kinds of gardeners' crops, which involve expensive hand-labour, and which are dependent on very fickle markets for sale.

Many considerations led to the conviction that it will seldom be within the power of the sewer authorities of towns to adopt the widest use of sewage, which would result in the provision of one acre for rather more than 40 persons, if we adopt the rate I have before stated, of 62 persons to 1 acre, with an allowance of 50 per cent. for increasing population. With constantly arising opposition based on a fear of a nuisance (which under proper management will not arise), the difficulty of obtaining land, and the high price to be paid for it, will always stand in the way of wide irrigation. To compensate for the limitation these obstacles will impose, it must not be forgotten that the produce of sewage farms loses much of its value directly it overreaches the home market, and with a large area used for irrigation in the neighbourhood of a town this may be easily done. Already we hear of the produce of the Warwick Sewage Farm being sent to Birmingham, and that of Romford to Liverpool, and various instances of a like kind might be mentioned. One great advantage in the adoption of intermittent filtration, in the shape of concentrated irrigation, is that a greater variety of crops may be grown, and the over-stocking of the market with vegetables avoided, inasmuch as by giving each series of filtering areas a rest of a year or two, the growth of cereals and other crops, which are not successfully grown by ordinary irrigation, would take their part in rotation, and thus dispose of those manurial elements which might otherwise be left in the soil.

It would be too sanguine a view to suppose that the ratepayers of a district adopting the filtration process in its narrowest form would receive as much for their sewage as when irrigation is adopted under advantageous circumstances, in its widest form, but it is more than likely that, in a majority of cases, a better return may be gained from a medium course of action than from any other, though it is our duty, in a national point of view, to aim at making the most we can of the valuable matter with which we have to deal.

Land as a Purifier of Sewage.—Having spoken of the general purification of sewage by land, when treating of irrigation and filtration, it is only necessary to add a brief description of the process of intermittent filtration, as it has been carried out under my directions at Methyr-Tydfil. There 20 acres of land have been laid out for the purification of the sewage of the district, of which the dry weather flow at the time when the works were commenced amounted to 870,430 galls. per diem, the least flow during the day being 500 galls., and the greatest 663 galls., a minute. The population contributing this sewage exceeds 50,000, but at present less than half the houses are connected with the sewers, so that the sewage may be taken as equivalent to the discharge of about 30,000 people. The number of water-closets being few, the sewage may be considered to be weak. Upon occasions of rainfall (which is above the average), the flow of the sewers is much increased, the storm waters frequently raising the discharge at least 50 per cent. above the ordinary dry weather flow, and this excess finds its way to the filtering areas. The 20 acres of land were divided into four equal parts, and before forming the surface to receive the sewage the whole was drained from 5½ to 7½ feet deep, and deeply cultivated. By this means 2 cubic yards of soil for every square yard of surface became serviceable as filtering material, there being but very few rods of ground in which the full depth of 6 feet was not secured. The quantity of filtering material was fixed upon so that the maximum quantity of sewage which would at any time have to pass through each cubic yard of soil would not exceed 7½ galls. per diem, while the mean quantity of dry weather sewage would pass through at the rate of 5 galls. per cubic yard. The under-drainage was so designed that no sewage could travel over the surface directly above the drain, which is the case in instances of irrigation of free soils in which the results have not been so favourable.

Here the result has been the most complete purification of the sewage up to this time, and the realisation of the fact that the effluent water from the under-drains was as pure when the whole of the sewage was passing through half the filtering areas, viz., 10 acres, as when it passed through 15 and 20 acres, showing clearly that a less number of acres than 20 acres would suffice for the purification of the quantity of sewage dealt with, and that therefore if the sewage had been double the strength or double the quantity, as it may ultimately be when the whole of the sewage of the 50,000 persons is discharged by the sewers, there will be a certainty of complete purification of the whole if the board manage the works efficiently now they are completed.

During the period when the existing sewage, increased at times by the rainfall, was discharged upon the 10 acres (half the areas), they were receiving as much as 144,000 galls. per acre, which is equal to a depth of nearly 6½ inches, and never less than 72,000 per acre (equal to a depth of 3¼ inches).

Instead of following the mode of distribution usually adopted in sewage irrigation, when the fluid is either run over a regular surface, or along the ridge to flow over the slopes on either side, the surface of the Merthyr filtering areas was laid out in the ridge and furrow form, as before explained, the object being to allow of the use of the horse and hand hoe, and while growing crops on the ridge to allow the sewage to flow in the furrows, and rise up to the ridge sides with a certainty of being absorbed, and of feeding vegetation at the same time. This treatment has been so successful that, in spite of the deposit of the finer particles of floating matter in the furrow, the whole of the sewage has disappeared within four or five hours after application, and the land has acted as a purifier up to this time in such a way that the effluent water from the under-drains is pronounced by Dr. Benjamin Paul to be cleaner than the Thames water above the intakes of the metropolis water companies.

Notices of Books.

Easy Lessons in Rural Industry — Small Farms made Profitable.

Two little essays, written by Mr. Baldwin, Superintendent of the Agricultural Department of National Education in Ireland. These books are quite in character with the previous writings of the author. Within a small compass they contain much valuable information, thoroughly trustworthy, and in a remarkably readable form. In the "Easy Lessons on Rural Industry," those subjects are treated which concern a large proportion of the Irish population, and it appears to us that this book might with advantage be placed in the hands of sons and daughters of farmers engaged in the cultivation of large as well as small farms. The rearing of cattle, management of pigs and poultry, are pretty fully discussed, whilst a very elaborate, almost exhaustive, treatise on dairy management is introduced. In giving prominence to this question, Mr. Baldwin does well. It is an important one for the Irish farmer, as the following extract will show :—

"The small farmers of Ireland own nearly a million of milch cows, and derive a very considerable part of their income from these animals.

"For want of proper shelter in winter, and of proper care and skill in feeding throughout the year, the average return from these cows is upwards of £5 less than it should be.

"There are in Ireland a million and a half of milch cows, which produce annually about a million and a half cwt. of butter. From want of proper accommodation, and of skill and care, one third of this does not bring the top price in the market, the remainder ranging in quality from seconds to sixths.

"By a good system of dairy management, all the butter produced in the country might rank first or second, and never should be lower than third. It is difficult to arrive at an accurate measure of the improvement that might be effected in this branch of industry ; but we are quite safe in saying that if the dairy were well managed in all parts of Ireland, it would increase the average value of the butter produced at least £1 a cwt., and add to the wealth of the country £1,500,000 a year."

Some pages are devoted to "cottage gardening," and we are made acquainted with the fact "that there are in Ireland upwards of 400,000 householders who have plots of ground set apart as gardens, but who do not grow any vegetables except Cabbage, and even this in inadequate supply, and often of the coarsest description." To remedy this, the author describes a simple system by which a good supply of vegetables might be produced, and if the classes for whom this book is intended could be induced to follow the directions, a vast improvement in home comforts would follow. If the Irish, and we might say English, cotter and small farmer could see how much palatable and economical food the Belgian derives from his plot of ground, a desire to follow the example would be engendered.

In "Small Farms made Profitable," Mr. Baldwin does not stand forth as the special champion for the small farm system. He "believes it is the interest of society that there should be a gradation of farms, from the smallest which will support a family, to the largest which a man is capable of directing," and knowing the defects of the present system of Irish agriculture, in his book he shows how many may be remedied. He is quite Mechian in his desire to see the inferior pastures broken up, as appears in the following extract :—

"The surface of Ireland contains upwards of 20 millions of acres ; one-half of it is in permanent grass, one-fourth is under tillage, and the remaining fourth is under water and waste.

"The area under grass is far greater than in any country in Europe similarly circumstanced, and ought to be reduced. The rich fattening lands and all the high hills should be left in pasture ; but there are four millions of acres of medium land now growing poor grass which would pay far better in tillage. If those four millions of acres were skilfully cultivated, the wealth of the country could be increased to the extent of £3 an acre, or £12,000,000 a year, which would be available for distribution among labourers, farmers, manure and seed merchants, and shop-keepers of all kinds. In due time, too, the landlords would obtain an increase of rent.

"The average yield of the six millions of acres of grass land that would remain, could, by the application of correct knowledge, be increased to the extent of at least 10*s.* an acre, or £3,000,000 a year.

"The present state of our grass lands arises from—1st, ignorance on the part of the farmer of the proper grasses to grow on given soils ; 2d, want of care and skill in sowing them ; and 3d, want of care and attention in weeding the grass land, as well as of want of skill in top-dressing it. There is not, perhaps, in Irish small farm management a greater defect than the mode of producing grass. Sometimes the farmer does not sow any grass seeds at all, but allows the land to cover itself with whatever herbage it throws up naturally. Again, thousands of small farmers put their land into grass when it is reduced by corn crops and bad management to such a state of poverty that it will no longer give even a middling crop of grain. Now, of all farm crops, the grasses luxuriate most in rich land. And, accordingly, good farmers never put land into pasture unless it is in good condition."

Having noticed the chief defects in the management of small farms in Ireland, the author points out remedies under the following heads :—The crops to grow and how to grow them ; suggestions for improving the condition of the more backward of our small farmers ; cottier and school farms ; details of the most profitable way of managing a farm of 5 or 6 acres of arable land ; our horse farms.

The subject matter of these heads is treated in a masterly manner. Whilst perfect clearness is ensured the style is terse, and we are presented with a *multum in parvo*, as is evidenced by the following notes on haymaking :—

"As, however, all grasses do not flower at the same time, the following rules may be observed :—

"Italian Rye-grass should always be mown on the appearance of the flowers. Ordinary Rye-grass may be allowed to produce the flowers. Clover is best cut when the heads are in full blossom. Mixed meadows should be mown when the bulk of the herbage is in full flower ; or when the seeds of the earliest grasses are fully formed, such as sweet-scented vernal grass and Meadow Foxtail ; and the seed of the late grasses, such as Crested Dogstail and Meadow Fescue, are just beginning to produce the floral organs. Timothy, Italian Rye-grass, perennial Rye-grass, and Cocksfoot, generally flower during the latter half of June, which is the proper time for mowing the cultivated grasses.

"The ruling idea in the saving of hay should be to allow it to remain in the field as short a time as is absolutely necessary, and to rick it as soon as it can be done with safety. The time within which this can be accomplished varies with the succulence of the grass. In the case of Rye-grass, and mixed grasses, from light or dry soils, the period may, by skilful management, be reduced to four days in dry weather ; in rich low-land it takes, at least, a week or ten days.

"By delaying the process too long the hay is burnt up by the sun : and it is also liable to have its soluble constituents washed out of it by the rain.

"Well-made hay retains its green colour and possesses an agreeable odour. Hay exposed to too much sun and rain is of a whitish colour, without flavour, and looks dry and coarse, like straw."

A great deal of good might be done by making use of these little books for reading lessons in our rural schools. The sons and daughters of labourers and cottiers, into whose hands they might be put, would acquire information which in after-life might be very serviceable. The books are in use in one or two of our reformatories, where boys are trained in agriculture, and whence several boys are annually emigrated. With a desire to be of service to the community, the author offers a very liberal discount in the price of these books for such schools as come under the class of charitable or benevolent institutions.

Notices to Correspondents.

Bean-meal for Cows : *W. H.* It is meant (p. 1184) that 4 lb. should be given a day, mixed with Turnips, &c.

Books : *H. J.* "Handbook of Farm Labour," Cassell, Belle Sauvage Yard, Ludgate Hill, E.C. ; M'Combie on Stock-feeding—we have not the exact title.

Weeds : *G. H.* It is extremely unlikely that Couch-grass can be destroyed in a meadow, except by the destruction of all the other grasses in at least the patches where it prevails. Plough up, or pare and burn, and fallow the land. There is, however, a bare possibility that the growth of any particular grass may be so promoted by the use of special manures that its development may crush out others, and therefore, it may be, your problem may come within the scope of experiments with various manures. If by experiment or accident a manure could be found distasteful to the Couch-grass, and one favourable to the growth of some other grasses, the Couch-grass would have to go to the wall. Consult the reports of experiments at Chiswick and Rothamsted.

Markets.

SEED MARKET.

Our markets have been well attended during the past few days, owing to the presence in London of a large number of agriculturists who have come to town for the cattle show. The seed trade maintains the same firm position noted in our last. Yearling parcels of English Clover command a ready sale, at high prices. White Clover and Alsike are both firm. In Rye-grasses and Italian there is a brisk business doing, at the recent advance. For Rape and Mustard seed the demand is quiet. Trefoil is steady. Feeding Linseed moves off freely, at late rates. Winter Tares meet with scarcely any inquiry.

John Shaw & Sons.

MARK LANE.

Monday, Dec. 4.

The moderate supply of English Wheat to this morning's market was sold at about the prices of this day se'nnight. The attendance was good, but foreign Wheat sold slowly at last week's rates. Barley was rather cheaper ; Beans and Peas steady ; Oats 6*d.* per qr. lower. There was no alteration in the value of Flour.

Price per imperial Quarter.	*s.* *s.*		*s.* *s.*
Wheat, Essex, Kent, Suffolk..White	54—59	Red......	54—57
— fine selected runs ....do.	57—61	Red......	56—58
— Talavera	59—63		
— Norfolk	—	Red......	—
— Foreign	51—69		
Barley, grind. & dist., 26*s* to 31*s*..Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
Oats, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
Rye	31—33	Foreign ..	—
Rye-meal, Foreign..................			
Beans, Mazagan.... 35*s.* to 38*s*...Tick	49—50	Harrow ..	49—50
— Pigeon ....51*s.* to 59*s*...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian .	33—34
Peas, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —*s.* to —*s.* ....Grey	—	Foreign ..	36—44
Maize	—	Foreign ..	32—35
Flour, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack..	38—60

Wednesday, Dec. 6.

The grain trade to-day was quiet but steady. There were fair supplies of English Wheat on sale, while the arrivals from abroad were on a liberal scale. Transactions were restricted, but prices were supported. Choice Barley was steady, but other sorts were cheaper. Malt sold slowly on former terms. The show of Oats on the stands was large, and trade was moderately active, and for sound corn extreme prices were obtained. Beans and Peas were purchased to a limited extent, at previous quotations. Flour was quiet, but unaltered in value.

Arrivals of Grain, &c., into London by Water Carriage.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	970	530	—	—
Irish ..	—	—	—	—
Foreign ..	11,030	2100	28,280	300 — brls.
	12,000	2630	28,280	

Liverpool, Dec. 5.—The market was fairly attended by town and distant millers and dealers, and for Wheat there was an improved demand, at full prices. Flour : the transactions were but limited, the better qualities only attracting attention ; quotations were again unaltered. Oats were again flat, and Oatmeal slow, with a drooping tendency. Egyptian Beans as on last market day. Canadian Peas were reported firm, and hardening. Malt without change. Grinding Barley 1*d.* to 2*d.* per bushel lower. Indian Corn : mixed American, though active, realised an advance of 3*d.* per qr.

Averages.

	Wheat.	Barley.	Oats.
Oct. 28	56*s* 7*d*	37*s* 7*d*	23*s* 5*d*
Nov. 4	56 8	37 5	23 8
— 11	56 5	37 4	23 5
— 18	55 11	36 9	23 0
— 25	55 10	36 8	23 8
Dec. 2	56 7	36 10	23 8
Average ..	56 4	37 1	23 5

METROPOLITAN CATTLE MARKET.

Monday, Dec. 4.

We have a much larger number of English Beasts, but fewer foreign than last week ; the average quality is again very middling, and consequently the demand is brisk for choicest kinds, at fully late rates ; a fair clearance is made of all descriptions. There is a considerable falling off in the supply of foreign Sheep, the English number about the same as of late. Trade is dull, and prices are scarcely as good Choice Calves are still scarce and dear. Our foreign supply consists of 1380 Beasts, 8980 Sheep, and 105 Calves ; from Scotland there are 100 Beasts ; from Ireland, 1200 ; from Norfolk and Suffolk, 90 ; and 1400 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	6 4to6 6
Best Shorthorns..	5 6—5 10	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 10	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 8—6 10	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 0—6 6
		Pigs	3 4—5 0

Beasts, 4180 ; Sheep and Lambs, 16,890 ; Calves, 109 ; Pigs, 60.

Thursday, Dec. 7.

We have a considerable increase in the supply of English Beasts, but there are very few foreign. The average quality is not by any means choice ; trade is slow, yet there is no change in prices. The Sheep market is very unimportant, both as regards supply and demand, either in English or foreign ; quotations remain unaltered. There are very few Calves on offer ; choice qualities are still dear. Our foreign supply consists of 141 Beasts, 560 Sheep, and 52 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 8to6 0	Best Long-wools	6 4to6 6
Best Shorthorns ..	5 6—5 10	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 10	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 8—6 10	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 4—6 8
		Pigs	3 4—5 0

Beasts, 1260 ; Sheep and Lambs, 2860 ; Calves, 86 ; Pigs, 35.

METROPOLITAN MEAT MARKET, Dec. 7.

Best Fresh Butter .. .. .. 18*s.* per dozen lb.
Second do. do. .. .. .. 16*s.* ,,

Small Pork, 4*s.* 2*d.* to 4*s.* 4*d.* ; Large Pork, 3*s.* 4*d.* to 3*s.* 10*d.* per 8 lb.

HAY.—Per Load of 36 Trusses.

Smithfield, Thursday, Dec. 7.

PrimeMeadowHay,	80*s.*to	90*s.*	Clover, old	115*s.*	130*s.*
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	40			

Cumberland Market, Thursday, Dec. 7.

Sup. Meadow Hay	92*s.*to	100*s.*	Inferior Clover ..	84*s.*to	110*s.*
Inferior do.	70	84	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	40	45
Superior Clover ..	126	134			

Joshua Baker.

Whitechapel, Thursday, Dec. 7.

Fine Meadow Hay	84*s.*to	92*s.*	Prime old Clover..	130*s.* to	140*s.*
Inferior do.	63	78	Inferior do. do. ..	—	—
Prime New Hay ..	—	—	Prime 2d cut do...	110	120
Inferior	—	—	New Clover	—	—
Straw	34	38	Inferior do.	—	—

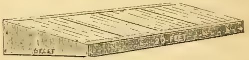
COALS.—Dec. 6.

Cowpen Hartley, 19*s.* 6*d.* ; West Hartley, 19*s.* 6*d.*; Walls End Harton, 21*s.* 3*d.*; Walls End Hetton, 22*s.* 6*d.*; Walls End Hetton Lyons, 21*s.* 3*d.* ; Walls End South Hetton, 22*s.* 3*d.*; Walls End Tunstall, 21*s.* 3*d.* ; Walls End Hartlepool, 22*s.* 3*d.* ; Walls End East Hartlepool, 22*s.* 3*d.* ; Walls End Original Hartlepool, 22*s.* 6*d.*; Walls End South Kelloe, 22*s.* 3*d.*; Walls End Tees, 22*s.* 3*d.*; Brancepeth Cannel, 19*s.*—Ships at market, 26 ; sold, 25 ; unsold 1 ; at sea, 10.

W. S. BOULTON and CO., Norwich, Horticultural Builders and Hot-water Apparatus Manufacturers.

New labour-saving machinery enables us to supply first-class CONSERVATORIES, VINERIES, ORCHARD HOUSES, FORCING PITS, &c., at very low prices. Designs and Estimates furnished. Carriage paid to any station in the kingdom.

MELON and CUCUMBER LIGHTS ready for delivery.



These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

Prices.—Carriage paid to any station within 200 miles of Norwich when orders amount to £3 and upwards.

8 feet long by 6 feet wide..	£2 15	16 feet long by 6 feet wide..	£5 0
12 feet long by 6 feet wide..	£3 17	24 feet long by 6 feet wide..	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above :—

10½ feet long by 6 feet wide..	£3 0	24½ feet long by 6 feet wide..	£7 0
17½ feet long by 6 feet wide..	£5 0	31½ feet long by 6 feet wide..	£9 0

Other sizes at prices in proportion.

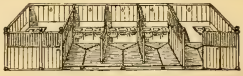
PLANT PRESERVERS.

Illustrated Catalogues free on application.

Rose Lane Works, Norwich.

By Appointment to H.R.H. The Prince of Wales.

BARTON'S PATENT STABLE and HARNESS ROOM FITTINGS, BRACKETS, &c.

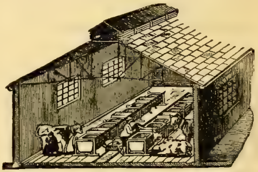


Patronised by H.H. the Viceroy of Egypt, the King of the Belgians, the King of Italy, the King of Holland, by the principal Nobility of the Kingdom, and adopted by the first Architects and Builders of England and the Continent. Illustrated Catalogues sent on receipt of six stamps.

For ALTERATION of STABLES a competent person can be sent to any part, to inspect and give Estimates.

JAMES BARTON, Iron Works, 370, Oxford Street, W.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not fixtures, removable at pleasure ; no Woodwork or Partitions to impede Ventilation or breed Vermin ; Hay Rick dispensed with as unnecessary ; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

Prospectuses free of COTTAM and CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Glass for Garden Purposes.

JAMES PHILLIPS and CO. beg to submit their REDUCED PRICES as follows :—

PROPAGATING GLASSES.

	Each.—*s.* *d.*		Each.—*s.* *d.*
2 inches in diameter ..	0 3½	12 inches in diameter ..	1 9
3 ,, ,, ..	0 4½	13 ,, ,, ..	2 0
4 ,, ,, ..	0 5½	14 ,, ,, ..	2 6
5 ,, ,, ..	0 6½	15 ,, ,, ..	3 0
6 ,, ,, ..	0 8	16 ,, ,, ..	3 6
7 ,, ,, ..	0 10	17 ,, ,, ..	4 0
8 ,, ,, ..	1 0	18 ,, ,, ..	5 0
9 ,, ,, ..	1 2	19 ,, ,, ..	6 0
10 ,, ,, ..	1 4	20 ,, ,, ..	7 0
11 ,, ,, ..	1 6		

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter ..	0*s.* 6*d.*	9 inches in diameter ..	1*s.* 8*d.*
5 ,, ,, ..	0 8	10 ,, ,, ..	2 0
6 ,, ,, ..	0 10	11 ,, ,, ..	2 6
7 ,, ,, ..	1 1	12 ,, ,, ..	3 0
8 ,, ,, ..	1 4		

Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2*s.* 0*d.*	16 inches long	1*s.* 4*d.*
22 ,, ...	1 10	14 ,, ...	1 2
20 ,, ...	1 8	12 ,, ...	2 6
18 ,, ...	1 6		

WASP TRAPS, 3*s.* 6*d.* per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—*s.* *d.*		Each.—*s.* *d.*
12 inches	6 6	20 inches	10 6
14 ,, ...	7 6	22 ,, ...	11 6
16 ,, ...	8 6	24 ,, ...	12 6
18 ,, ...	9 6		

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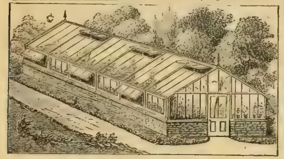

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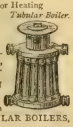

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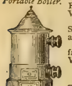

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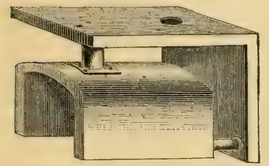

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	5	0	0
20 "	18 "	24 "	450	6	0	0
20 "	18 "	30 "	600	7	0	0
24 "	24 "	24 "	700	8	0	0
24 "	24 "	30 "	850	10	0	0
24 "	24 "	36 "	1,000	12	0	0
24 "	24 "	48 "	1,400	15	0	0
28 "	28 "	60 "	1,800	20	0	0
30 "	30 "	72 "	2,600	30	0	0
36 "	36 "	96 "	4,500	50	0	0
48 "	48 "	108 "	7,000	75	0	0
48 "	48 "	144 "	10,000	100	0	0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES & SONS.

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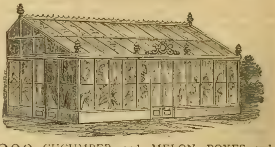

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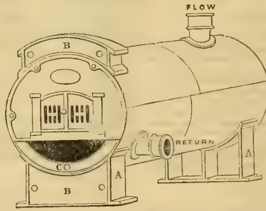

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Appended are a few Testimonials :—

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"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

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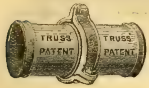

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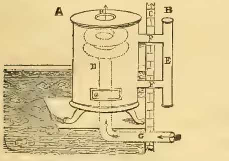

A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

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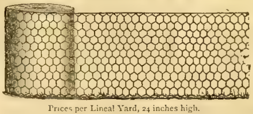

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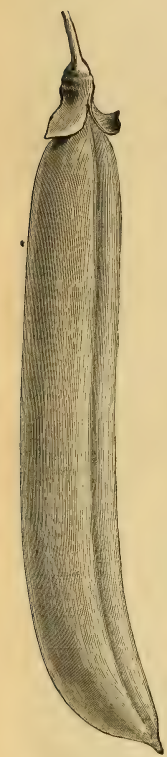

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, December 9, 1871.

THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

No. 50.—1871.] SATURDAY, DECEMBER 16. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Strong and fine do., 18 to 24 inches	10*s.* per 1000.
2-yr Seedling Native SCOTCH FIR	1*s.* per 1000.

Of RHODODENDRONS he has a very extensive stock, and to clear out he now offers his stock, which consists of upwards of 100,000 of PONTICUMS and HYBRIDS and other excellent kinds, from 9 inches to 2 feet high, at 8*s* to 30*s* per 100

LIMES.—His stock of these is upwards of 100,000, from 3 feet to 9 feet. Prices will be forwarded on application: they are all clear-grown and fine straight stems.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.

WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.

WILLOW CUTTINGS for Basket Makers' purposes.

BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.

WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"THE SALIX, OR WILLOW," second edition, post free, 1*s.*; or of SIMPKIN, MARSHALL AND CO., London.

To Planters.

J. SCOTT, Merriott, Somerset, advises Planters to send for his ORCHARDIST and its COMPANION, price 2*s.*, before ordering their Fruit Trees. Ornamental planters, amateurs, and gardening folks generally, will find much useful information in J. S.'s GENERAL NURSERY, BULB, and SEED CATALOGUES; they are full of interesting matter suited for gardens and gardeners, gratis.

The FRUIT TREES cover many acres, and are in perfect health; 1000 sorts of Apple, and 1200 sorts of Pear are grown, and all other fruits in proportion.

The FOREST TREES and ORNAMENTAL SHRUBS occupy a large space, more especially Alder, Ash, Birch, Beech, Chestnuts, Elms, Firs (Austrian, Larch, and Spruce), Hazel, Oak, Poplars, and at least one million of healthy Thorns, in all the usual sizes.

A NEW CATALOGUE, containing all the names enumerated in the "Orchardist," and many new sorts introduced since that work was printed, gratis on application.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, has much pleasure in offering the following at very moderate prices :—

50 choice varieties of IRIS GERMANICA, 12*s.*
12 choice varieties of TREE PÆONIES, 18*s.*
100 ARAUCARIA IMBRICATA, 25*s.*
50 LILIUM TIGRINUM FORTUNEI, 25*s.*
12 ,, SUPERBUM, 12*s.*
100 choice hardy RHODODENDRONS, 63*s.*
50 GHENT AZALEAS, 40*s.*
50 sorts of hardy CONIFERS, 35*s.*
25 stout plants of ABIES NORDMANNIANA, 30*s.*
100 stout PINUS DENSIFLORA, 75*s.*
100 PINUS EXCELSA, 2-yr, 20*s.*
100 ABIES ORIENTALIS, 15*s.*
100 ,, SMITHII, 21*s.*
100 PICEA NOBILIS, 30*s.*
25 RETINOSPORA PISIFERA AUREA, fine, 25*s.*
25 fine plants of THUJA VERVAENEANA, 40*s*
25 fine plants of TOM POUCE (ELLWANGERIANA), 25*s.*
25 fine plants of ERICOIDES, 15*s.*
50 WIDDRINGTONIA ERICOIDES, 25*s.*
25 SKIMMIA JAPONICA, 10*s.*
100 strong SPIRÆA JAPONICA, 30*s.*
100 roots of ASCLEPIAS TUBEROSA, 25*s.*
12 fine varieties of CLEMATIS, 9*s.*
25 fine plants of YUCCA ALOIFOLIA, 15*s.*
100 strong roots of mixed CANNAS, 21*s.*
25 varieties of TEA ROSES, in small pots, 12*s.*
25 plants of BUXUS LATIFOLIA AUREA, 15*s.*
25 plants of ILEX, of sorts, 21*s.*
100 INDIAN AZALEAS, of sorts, young plants, with and without flower buds, 63*s.*
12 YELLOW RHODODENDRONS, of sorts, 18*s.*
12 RHODODENDRON MADDENII, 12*s.*
50 Greenhouse FERNS, of sorts, 25*s.*
12 LAPAGERIA ROSEA, strong, 24*s.*
12 ILLICIUM RELIGIOSUM, 12*s.*
100 fine double CAMELLIAS, without buds, own choice, strong plants, £6.
2 fine stems of BALANTIUM ANTARCTICUM, £8.
100 CHAMÆROPS FORTUNEI, 42*s.* to 63*s.*
100 ,, HUMILIS, 20*s.*
100 CORYPHA AUSTRALIS, 63*s.*
6 DRACÆNA AUSTRALIS, fine strong plants, 18*s.*
6 ,, VEITCHII (SANGUINEA), fine strong plants, 30*s.*
100 GLOXINIA, in fine mixtures, 21*s.*
100 PANDANUS HUMILIS, small, 42*s.*
100 ,, ,, larger, 63*s.* to 105*s.*
100 ACHIMENES, in sorts, 21*s.*
12 ANTHURIUM SCHERZERIANUM, flowering plants, 60*s.*
25 CALADIUMS, in varieties, 25*s.*
20 sorts of TROPICAL ORCHIDS, 60*s.*
15 sorts of PALMS, 30*s.*

ORCHIDS. — Gentlemen interested in this class of Plants would do well to inspect our Establishment at Fairfield, and to judge of our mode of growing for themselves. The House we have recently erected, in which the plan of supplying moisture by continued precipitation, without any disadvantage to neatness in appearance, has been the admiration of every visitor, and excites universal surprise that means so simple should have been so long neglected.

JAMES BROOKE AND CO., 16 and 18, Victoria Street, Manchester.
Nurseries: Fairfield, near Manchester.

New Japanese Lilies, Orchids, Maples, Conifer Seed, &c.

MESSRS. TEUTSCHEL AND CO., Colchester, Agents for Messrs. KRAMER & Co., Seedsmen and Nurserymen, Yokohama, Japan.

CATALOGUES of Importations in preparation, will include three New Lilies and L. Leichtlinii, several New Orchids, Seeds of Abies Firma, &c.

Nurseries, Chippenham.

W. BRYANT, NURSERYMAN, SEEDSMAN, FLORIST, &c, respectfully informs his Friends and the Public that he has taken the NURSERIES, situate on the Causeway, lately occupied by Messrs HEALE & Co, with which business he has been many years connected.

W B embraces this opportunity to gratefully acknowledge the past favours he has received, and to tender his sincere thanks to those who have promised him their future patronage, assuring them that he will endeavour to merit it, by devoting unwearied attention to the selection of the best samples of the most reliable AGRICULTURAL, GARDEN, and FLOWER SEEDS, and that all orders entrusted to him shall be promptly and carefully executed.

☞ W. B. will continue to attend Markets as usual.

CROYDON.
A. HENDERSON
EAST · SURREY · SEED · WAREHOUSE
ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon

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To the Trade.

EWING AND CO., The Royal Norfolk Nurseries, Norwich, will be happy to furnish prices to the Trade of the following :—

Common LAUREL, 2 to 3 feet.
Japan PRIVET, transplanted.
PURPLE BEECH, worked.
,, ,, the best dark variety, 6 to 8 feet.
Variegated MAHALEB, fine stands.
ELM, Chichester, straight and fine, 6 to 10 feet.
,, Herefordshire, straight and fine, 6 to 8 feet.
LABURNUM, Common, 8 to 10 feet.
LIMES, red-twigged, fine, 8 to 10 feet.
,, cut-leaved, fine stands, with good heads.
MAHONIA AQUIFOLIUM, transplanted.
SEAKALE and ASPARAGUS ROOTS.
Dwarf ROSES, on Manetti, of the most popular kinds.
Specimen Common YEWS, 3, 4, and 5 feet.

GEORGE DAVISON, White Cross Nurseries, Hereford, offers for cash :—

	Per dozen.—*s.*	*d.*
Abies Douglasii, 3 to 4 feet	18	0
,, canadensis, 4 feet	12	0
Biota elegantissima, 9 inches	15	0
,, japonica, 2 feet	9	0
Cedrus atlantica, 3 feet	9	0
,, Deodara, 2 to 2½ feet	18	0
Cryptomeria Lobbii, 2 feet	9	0
Cupressus macrocarpa, 2 feet	9	0
,, sempervirens, 3 to 4 feet	9	0
Juniperus virginiana, 3 feet	6	0
Picea balsamea, 2 feet	4	0
,, Nordmanniana, 1 foot	16	0
,, Pinsapo, 1½ foot	16	0
Pinus austriaca, 3 feet, per 100, 30*s*	5	0
,, Laricio, 3 feet	6	0
Taxus baccata, 2½ feet	8	0
Thuja Lobbii, 1½ foot	8	0
,, occidentalis, 3 to 4 ft.	5	0
Berberis japonica, 1 foot	8	0

	Per dozen.—*s.*	*d*
Berberis Darwinii, 2 feet	6	0
,, dulcis, 2 feet	4	0
,, Mahonia, 2 feet	2	0
Cotoneaster microphylla	2	6
Ivy, Irish, for edgings	1	6
Laurel, Common, 2 to 2½ ft., per 100	15	0
,, Portugal, 1 foot, bushy, per 100, 20*s.*	3	0
Laurustinus, sorts, 1 to 1½ foot, per 100, 25*s*	3	6
Roses, Standards, best sorts	15	0
,, Dwarfs	9	0
Selected from Catalogue.		
Hazel, Seedlings per 1000	8	0
Scotch Firs, 2 feet per 100	3	6
,, ,, ,, per 1000	30	0
Strong Cider Apples	18	0
Blenheim, Lord Suffield, &c., Apples	18	0

Special Notice.

ROSES and VINES at Wholesale Prices.

Fine Standard ROSES, best sorts, 10*s.* per dozen.
Fine Dwarf ROSES, best sorts, 7*s.* per dozen.
Fine fruiting VINES, of sorts, 5*s.* each; 54*s.* per dozen.
Fine planting VINES, of sorts, 2*s* 6*d.* each; 24*s.* per doz.

LISTS free. Terms cash. Post Office orders payable at Huntingdon.

KIRK ALLEN, The Nurseries, Brampton, Huntingdon.

Bessie Johnson Rose.

HENRY CURTIS AND CO., Torquay, not having received a sufficient number of orders for this fine ROSE to justify them in sending it out in April, according to previous Advertisement, have considered it best to EXHIBIT the ROSE first, and send it out in NOVEMBER NEXT. Those who have kindly ordered them will be first supplied with strong Plants.

Elvaston Nurseries.

WILLIAM BARRON AND SON'S Priced Descriptive CATALOGUE of CONIFERÆ and other ORNAMENTAL PLANTS, ROSES, RHODODENDRONS, FRUIT TREES, &c., is now ready, and may be had, post free, on application.

A visit to the Nurseries from intending purchasers is respectfully solicited. Elvaston Nurseries, Borrowash, near Derby.

RICHARD SMITH'S LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their generic, specific, and English names, native country, height, time of flowering, colour, &c., and general remarks, free by post.

RICHARD SMITH, Nurseryman and Seedsman, Worcester.

SURPLUS STOCK of the following to be SOLD, cheap:—PRINCE ALBERT, LINNÆUS, and VICTORIA RHUBARB; FASTOLF RASPBERRIES; 4-yr. old ASPARAGUS; SKIMMIA JAPONICA; CLEMATIS LANUGINOSA; CUPRESSUS LAWSONIANA; PERNETTYA SPECIOSA, the berry-bearing variety; AUCUBA LIMBATA, bicolor and viridis; SALIX BABYLONICA SALOMONII, the hardy Weeping Willow. Prices, &c., on application.

ISAAC DAVIES, Nurseryman, Ormskirk.

TWO HUNDRED THOUSAND extra fine 3-yr. transplanted QUICK, 3 to 4 feet.
100,000 2-yr. transplanted QUICK, 2 to 3½ feet.
500,000 2-yr. Seedling do., 1½ to 3 feet.
50,000 2-yr. transplanted ASH, 3 to 5 feet.
1,000,000 ENFIELD MARKET CABBAGE PLANTS.
3 tons ASHTOP KIDNEY and EARLY ROSE POTATOS.

Samples and prices on application to
W. COCKS, Old Nurseries, Donington, Spalding.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON AND SONS, "NEWTON" Nurseries, Chester.

Cœlogyne cristata.

R. S. YATES' matchless stock of the above have have now matured their growth. He has Ten or Twelve PLANTS, with 600 or 700 bulbs and 70 or 80 flower-spikes on each, part of which he offers (for cash only) at from 15 to 25 guineas each. Good plants from two guineas

Sale, Cheshire; or 14, Corporation Street, Manchester.

Celosia pyramidalis.

R. S. YATES will offer (early in the spring) packets of his unequalled collection of the above gorgeous flower. His stock will be very limited. The plants from whence the seeds are collected may be inspected at Sale, on application to Mr. PLANT, or Cut Blooms daily, at 14, Corporation Street, Manchester.

HOLLIES, RHODODENDRONS, CUPRESSUS, THUJA, PICEA, and other EVERGREENS.—To parties building, having built, or intending to build mansions, and desirous of adding an approximate antiquity to their grounds, R. S. YATES invites them to inspect his unsurpassed and in some things unequalled STOCK of the above, many of which are upwards of half a century old. Their safe removal will be fully guaranteed. In Green Hollies he has the largest stock of large plants in the world, which can be removed with unerring safety. R. S. Y. received the commands of a gentleman to plant him an avenue nearly 1 mile in length with specimen Hollies, 10 feet to 12 feet high, and 5 feet to 6 feet diameter. These were planted the first week in June last, and all have made a splendid growth. They may be transplanted with safety (if required), all the year round. Sale, Cheshire, December 5, 1871.

NEW CUCUMBERS.

HEATHERSIDE RIVAL.

Universally acknowledged to be a very superior kind, of the most perfect form, quite smooth, of a dark green colour, and scarcely any heel, also a great cropper.

2s. 6d. per packet.

DEAN'S EARLY PROLIFIC

(TRUE).

A great cropper, and excellent for winter work, smooth, and of good form; average length about 15 inches.

1s. 6d. per packet.

PRICE TO THE TRADE ON APPLICATION.

THOMAS THORNTON,
HEATHERSIDE NURSERIES, BAGSHOT, SURREY.

CUCUMBER ARMITAGE'S SATISFACTION,

1s. per packet.

HAMMOND'S IMPERIAL HARDY WHITE BROCCOLI,

1s. per packet.

THE TRADE CAN NOW BE SUPPLIED.

WM. ARMITAGE & SON, SEED MERCHANTS, HUDDERSFIELD.
BUSINESS ESTABLISHED 1842.

SPECIAL OFFER of SURPLUS STOCK.—
PYRAMIDAL APPLES, Lord Burghley, 9s. to 15s. per dozen.
MAIDEN APPLES, Annie Elizabeth, 9s. and 12s. per dozen.
PYRAMIDAL MORELLO CHERRIES, 12s. and 15s. per dozen.
STANDARD ROSES, leading varieties, 75s. per 100.
CURRANTS, large Red, very strong, 15s. per 100.
ALMA KIDNEY POTATO, 10s. per cwt.
AMERICAN EARLY ROSE, 15s. per cwt.
MONA'S PRIDE KIDNEY, 12s. per cwt.
ADVANCER PEA, 10s. per bush.
McLEAN'S PREMIER, 12s. per bush.
VEITCH'S PERFECTION, 11s. per bush.

The above are all of my own growth. Fruit Trees are fine strong healthy stuff. Potatos are true, and free from disease. Peas are hand-picked samples. Terms, nett cash. Reference requested from unknown Correspondents.

JOHN HOUSE, Nurseryman, &c., Peterborough.

MILFORD NURSERIES,

near Godalming.

For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For HARDY ORNAMENTAL TREES and SHRUBS, EVERGREENS, &c., see MAURICE YOUNG'S New Descriptive CATALOGUE.

For RHODODENDRONS and other AMERICAN PLANTS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For STANDARD and HALF STANDARD ROSES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For NEW JAPANESE AUCUBAS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For JAPANESE NOVELTIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For Cheap EVERGREENS and SHRUBS for COVER PLANTING or SHRUBBERIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For PLANTS suitable for WINTER BEDDING, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For TRANSPLANTED FOREST TREES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For EXTRA TRANSPLANTED or QUARTERED FOREST TREES for Planting Belts or Shrubberies, see MAURICE YOUNG'S New Descriptive Catalogue.

Forwarded on application enclosing stamp.

Milford Nurseries, near Godalming.

1871.—Planting Season.—1871.

THOMAS KENNEDY AND CO. offer the following Transplanted TREES, &c., which are healthy, well grown, well rooted, and in excellent condition for removal. Prices on application.

100,000	ASH, Common, from 1 to 1½, 1½ to 2, 2 to 3, and 3 to 5 feet.
100,000	ASH, Mountain, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000	ALDER, Common, 1½ to 2, 2 to 2½, and 3 to 5 feet.
150,000	BEECH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
200,000	BIRCH, 1 to 1½, 1½ to 2, 2 to 2½, and 3 to 4 feet.
30,000	BLACKTHORN or SLOE, 1½ to 2, 2 to 2½, and 2½ to 3 ft.
100,000	HAZEL, Common, 1 to 1½, 1½ to 2, and 2 to 3 feet.
50,000	HORNBEAM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
	LIMES.—An immense stock of fine handsome Trees, 2 to 3, 3 to 4, 5 to 6, and 8 to 10 feet.
200,000	LARCH FIR, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
1,000,000	SCOTCH FIR, grown from true native saved seed, the plants twice and three times transplanted, 9 to 12 inches, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
500,000	SPRUCE FIR, Norway, all three times transplanted, 9 to 12, 12 to 15, 15 to 18 inches, and 1½ to 2 feet.
50,000	SILVER FIR, 6 to 9, and 9 to 12 inches.
100,000	PINUS AUSTRIACA, 9 to 15, and 15 to 18 inches.
100,000	PINUS LARICIO, true Corsican, 6 to 9, 9 to 12, and 12 to 15 inches.
150,000	OAK, English, 1 to 1½, 1½ to 2, 2 to 2½, 2½ to 3, 3 to 4, and 4 to 5 feet.
200,000	PRIVET, Evergreen, 1½ to 2, 2 to 2½, and 3 feet.
50,000	SYCAMORE or PLANE, 1½ to 2, and 2 to 3 feet.
1,000,000	THORNS or QUICKS, of all sizes.
50,000	WILLOWS, Huntingdon, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000	WHIN or GORSE, 1½ to 2 feet.

Besides the above, they have an extensive general stock of FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., which they are selling at moderate prices.

Railway Station Nurseries, &c., Dumfries.—November, 1871.

Orchids.

JAMES BROOKE AND CO., Nurseries, Fairfield, near Manchester.—Our recent importations of choice ORCHIDS, especially of the best winter flowering kinds, having been extensive, and the plants being all in excellent condition, we are enabled to offer them on terms unusually advantageous. Where selections to a fixed value, say £10 to £50, are desired, and the choice is left to ourselves, the purchaser pays less than the catalogue prices, and is no loser in regard to merit and variety. The plants we have sent out in execution of such orders have, we are informed, given unmixed satisfaction. The following list, with prices annexed, will be some guide to intending purchasers :—

Dendrobium Falconeri, 21s. to 63s. each; D. Wardianum, 63s. to 105s. ; D. chrysotis, 21s. to 63s. ; D. McCarthiæ, 42s. to 84s. ; D. heterocarpum, 5s. to 21s. D. moniliforme, 10s. 6d. to 21s. ; D. transparens, 5s. to 21s. ; D. Devonianum, 7s. 6d. to 21s. ; D. nobile, 5s. to 105s. ; Odontoglossum grande, 7s. 6d. to 10s. 6d. ; O. Insleayi, 7s. 6d. to 10s. 6d. ; O. citrosmum, 7s. 6d. to 10s. 6d. ; O. luteo-purpureum, 25s. ; O. gloriosum, 25s. ; O. Alexandræ (Bluntii), 21s. to 63s. ; O. Pescatorei, 21s. to 63s. ; O. Rossi superbum, 21s. to 31s. 6d. ; O. crocidypterum, 42s. ; O. platyodon, 31s. 6d. ; O. ramulosum, 31s. 6d. ; O. Bictonense, 15s. ; O. Uroskinneri, 10s 6d. to 15s. ; Vanda cœrulea, 10s. 6d. to 105s. ; Pleione Wallichii, 3s. 6d. each, 30s. per dozen; P. lagenaria, 5s. to 10s. 6d. ; Cypripedium hirsutissimum, 7s. 6d. to 21s. ; Cattleya Mossiæ, 7s. 6d. to 21s. ; C. maxima, 31s. 6d. ; C. Trianæ, 15s. : C. Warneri, 21s. ; Barkeria Skinneri, 10s. 6d. to 63s. ; B. spectabilis, 10s. 6d. to 63s. ; Calanthe vestita, 3s. 6d. to 21s. ; C. Veitchii, 10s. 6d. to 42s. ; Cœlogyne cristatum, 10s. 6d. to 63s. ; Oncidium Papilio, 7s. 6d. to 10s. 6d. ; O. Krameri, 21s. ; O. Lanceanum, fine variety, 15s.

Gladioli Seedlings, by Name, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), offer the following :—

		£	s.	d.
GLADIOLI SEEDLINGS, first-class, per 100, 7s. ; per 1000		£3	0	0
100 GLADIOLI, by name, 10 sorts		0	8	0
100 ,, ,, 25 ,,		0	14	0
100 ,, ,, 50 ,,	£1 to	2	0	0
100 ,, ,, 100 ,,	£2 to	6	0	0

And upwards, according to the novelty of the sorts; all in good flowering bulbs. Cheque on Bankers accepted for payment.

To Market Gardeners, &c.

FOR SALE, cheap, 200 strong Bush APPLES, just coming in for bearing, of best varieties, and handsome : also two dozen very stout, narrow-leaved ENGLISH ELMS, 10 to 12 feet, with good heads, and well rooted. For price, &c , apply to

ROBERT F. DARBY, The Nurseries, Cirencester.

WANTED, by the above, 4000 or 5000 CRAB STOCKS, clean, strong, and well-rooted.

Cheap Offer of Thorn Quicks, 2-yr. Seedling.

THORN QUICKS, 2-yr. seedling, from 4 to 8 inches, very good to transplant, £7 10s. per 100,000.

PORTUGAL LAUREL, good roots, 1½ to 2 feet, bushy and fine, 10s per 100; 2 to 2½ feet, 12s per 100.

AMERICAN ARBOR-VITÆ, transplanted spring, 1871, 2½ to 3 feet, 10s. per 100.

Delivered free in Liverpool. Terms cash. Cultivated and grown for sale by

MICHAEL GRANT, Nurseryman, Newry, Ireland.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.

Of all Nurserymen and Seedsmen.

STEVENSON'S ABYSSINIAN MIXTURE,

For the Destruction of all Insects Infesting Plants.

TRADE MARK.

Entered at Stationers' Hall.

Surpasses all other remedies for—

1. EFFECTIVENESS.	Killing easily Mealy Bug, Brown and White Scale, Thrips, &c.
2. EASE OF APPLICATION	To be used with a Syringe, or in any other convenient way.
3. CLEANLINESS.	Leaving the foliage as though it had been polished.

Sold by all Nurserymen and Seedsmen in the United Kingdom, in bottles, 1s. 6d., 3s., 4s. 6d , and 5s. 6d. each, with full directions for use.

Sole Manufacturer, F. STEVENSON, Lark Hill, Timperley, Cheshire.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited),
Battersea, London, S.W.

ALEX. WILKIE'S

"CONDENSED" COMPOSITION

Is allowed to be the CHEAPEST and only EFFECTUAL MEALY BUG, SCALE, and THRIP DESTROYER.

Sold in bottles, containing ½ pint, 2s. ; 1 pint, 3s. 6d. ; 1 quart, 6s.

Can be obtained from any of the undermentioned Nurserymen and Seedsmen, who will also be pleased to furnish a printed Copy of Testimonials on application :—

Messrs. Backhouse & Son, York
,, Barr & Sugden, King Street, Covent Garden, W.C.
,, Cutbush & Son, Highgate, N.
,, F. & A. Dickson & Sons, Chester
,, Jas. Dickson & Sons, Chester
,, Dickson & Turnbull, Perth
,, Downie, Laird & Laing, Edinburgh
,, Downie, Laird & Laing, Forest Hill, S E.
,, Drummond & Sons, Stirling
,, Drummond & Sons, Dawson Street, Dublin
,, Garaway & Co., Bristol.
,, Harrison & Sons, Leicester
,, E. G. Henderson & Son, Wellington Nursery, St. John's Wood, N.W.
,, Hogg & Robertson, 22, Mary Street, Dublin
,, Hurst & Son, 6, Leadenhall Street, London, E.C.
,, Kennedy & Co., Dumfries
,, Laird & Sinclair, Dundee
,, J & C. Lee, Hammersmith
,, Little & Ballantyne, Carlisle
Messrs. Lowe & Co., Wolverhampton
,, Osborn & Sons, Fulham, S.W.
,, Dick Radclyffe & Co., 129, High Holborn, London, W.C.
,, Rollisson & Sons, Tooting
,, Smith & Son, Market Street, Aberdeen
,, Stuart & Mein, Kelso
,, Sutton & Sons, Reading
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,, T. B. Thomson, 20, High Street, Birmingham.
,, B. S. Williams, Upper Holloway, N.
,, George Wheeler, Warminster. [Wilts

Joyning's Nursery, Waltham Cross, N.

December 5, 1871.

J. AND M. WOOD, Nieces and Executrices of the late ROBERT JOYNING, beg leave to intimate that they have DISPOSED OF the above old-established BUSINESS to Mr. WM. RUMSEY, who for the last 21 years has been engaged with the Messrs. Paul, of Cheshunt and Waltham Cross, and solicit for their Successor a continuance of the Patronage so many years afforded to their late Uncle.

Joyning's Nursery, Waltham Cross, N.

(ESTABLISHED UPWARDS of SIXTY YEARS.)

Ten minutes' walk from Waltham Station, Great Eastern Railway.

December 5, 1871.

WM. RUMSEY, late Manager at Paul's Nurseries, Waltham Cross and Cheshunt, begs most respectfully to inform all Patrons of Horticulture that he has taken the above Establishment, and intends carrying on the NURSERY and SEED BUSINESS in all its details, and hopes that his long practical experience, and strict personal attention to all Orders entrusted to him, will secure a share of that liberal support so long enjoyed by his predecessor.

To the Trade.

DIMMICK'S NONPAREIL DWARF GREEN-TOP BEET.—A very fine and perfectly distinct variety, foliage green and very dwarf; root, medium size and well formed; colour, deep crimson (not purple), very bright and rich, without the purple stains and rings which prevail in other varieties; flavour excellent.

Vide GARDENERS' CHRONICLE, *November* 11, 1871, *p.* 1459 :—

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CHARLES DIMMICK having cultivated this variety for several years, and compared it with what are considered the best sorts, is convinced of its superior excellence and value, and now offers it for the first time in the Trade. Price on application.

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FRAME CUCUMBER, HORTON PROLIFIC.—Without doubt one of the finest Cucumbers in cultivation, being equally suitable for summer and winter forcing and the open ground culture; very prolific, and of excellent quality. 1s. per packet.

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TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy Thrip, Red Spider, Green and Black Fly, and Mealy Bug, and burns without the assistance of blowing, and is entirely free from paper or rags. Price 3s. 6d. per lb., carriage free. A reduction in price for large quantities.

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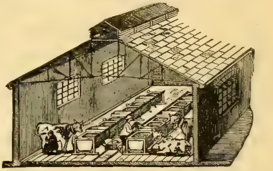

Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

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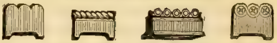

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OF THE

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The FIRST PRIZES at this SHOW were again AWARDED to CLAYTON AND SHUTTLEWORTH, viz. :—
First Prize for Horizontal Fixed Engine of 10 H.P. ; First Prize for Steam Engine, with Boiler combined.

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FOREST, SCREEN, and TIMBER TREES.
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WHEELERS' KINGSHOLM COS LETTUCE

This magnificent Lettuce made its appearance three years since in a piece of White Cos. It withstood the summer heat for a long time after all other varieties (with the exception of Wheelers' Tom Thumb) had run to seed, headed-in without tying, and formed one of the most perfect models of a Cos Lettuce ever seen. At length it ran to seed; owing to the late period of the season it had started, the produce was, however, small. The whole stock was carefully preserved for next season's seeding. The crop of seed was again very limited, but the Lettuces were magnificent, many of them weighing 7 lb. each. We are now enabled to offer seed at 1*s.* per packet. It was seen last summer by a gentleman connected with Covent Garden Market, who remarked it was the finest Lettuce he had ever seen, and far superior to anything brought to the London Market. We recommend those who contemplate growing Lettuces for Exhibition to give this variety a trial. Get it sown in a frame, and planted out early in the season, on deeply dug and well-manured land.

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This is undoubtedly the best Cabbage Lettuce in cultivation, and a remarkable favourite. It is good both summer and winter. In our Little Book for 1872 are extracts from 13 letters, speaking in the very highest terms of its excellence.

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HAVE MUCH PLEASURE IN AGAIN OFFERING
THE SPLENDID

NEW WRINKLED PEA

(Sent out by them last season and which has
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BEST OF ALL (McLean).

A Main Crop Wrinkled variety, raised by the late Dr. McLean, and pronounced by him to be the BEST OF ALL his introductions.

It is of robust and vigorous growth, with large pods (containing 7 to 10 fine peas), completely covering the haulm, and of most delicious flavour. Height, 3 feet.

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Retail price, 5s. per quart.

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SEEDSMEN BY SPECIAL APPOINTMENT TO
THE QUEEN and H.R.H. THE PRINCE OF WALES,
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RAISED BY MR. LAXTON,
ARE NOW OFFERED FOR THE FIRST TIME BY
JAMES CARTER & CO.

These two varieties, DIFFERING FROM EACH OTHER, inasmuch as one is a smooth Pea and the other an indented Marrow, present a different type from any yet introduced, and may be probably the forerunners of considerable improvements in Garden Peas. From the distinct and peculiar colour of the seed, that invaluable desideratum, a dish of really Green Peas at table, may be realised, even when the outward appearance of the pods denote maturity.

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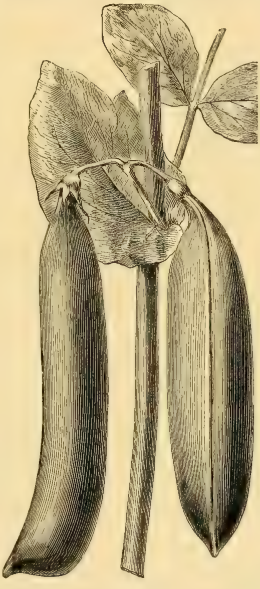

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"*Vide* Report of the Royal Horticultural Society."
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ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Dutch and other Bulbs, Plants suitable for Bedding and Decorative Purposes, Fruit Trees, Grape Vines, Sweet Violets, &c., is now published, and will be forwarded to applicants.
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Hyacinths, Tulips, and other Dutch Bulbs.

WM. CUTBUSH AND SON'S importations of the above have arrived, and have every appearance of being above the average quality, for which they have been noted so many years.
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Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz. :—

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W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
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JAMES BATEMAN, F.R.S.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, DECEMBER 16, 1871.

AT the last meeting of the Scientific Committee of the Royal Horticultural Society, a report on the GROWTH of twelve DIFFERENT SPECIES of PLANTS, under five DIFFERENT CONDITIONS of MANURING, as observed during 1870-71, was presented by Dr. MASTERS. This report forms the complement to a former one recording the results of the previous year's experiments, and embodying also the results of the elaborate chemical analyses and calculations made by Dr. GILBERT. This first report, which is not yet in the hands of the public, has been previously alluded to in our columns (1870, p. 155), as also the circumstances which led to the establishment of the experiments, and the mode of conducting them.

The full details, which are necessarily somewhat lengthy, seeing that the observations were taken at intervals of a week or a fortnight during the greater part of two years, on 72 separate plots, will be published in future numbers of the Journal of the Royal Horticultural Society. Suffice it here to say that, making due allowances for the different, and in some respects improved, conditions under which the experiments were carried on during the second season, the results obtained presented a very general agreement with those obtained during the first year, except in the case of the root development of the several plants, which presented some singular discrepancies not easily to be accounted for. This is the more satisfactory as many circumstances concurred to throw a doubt over the trustworthiness of the first year's trials. But this uncertainty applied not so much to the physiological and structural questions involved, as to those connected with the chemical constitution of the plants acted on. We may here cite some of the general results deduced from the mass of facts now collected together :—

"At the conclusion of my remarks on the growth of the plants during the season of 1869," writes Dr. MASTERS, "I alluded to the 'habit' or special organisation of the plant as an element of the very highest importance in all questions concerning growth; and the result of the observations in 1870 does but increase my sense of the importance of this factor. In no single instance, either in 1869 or 1870, was any *absolute change* in habit observable. Changes in degree there were, a certain peculiarity being intensified, or the reverse, according to varying conditions of manuring; but there was nothing that would lead one to infer that by the agency of any manure, or the operation of any climatal vicissitudes, any change in the plant of a kind that a naturalist would deem of 'specific' value could be artificially induced.

"All that the manures did in this direction was to enhance the vigour of growth or the reverse. The effect on the vegetative system (leaves, stem, &c.) was in all cases more pronounced and decided than it was on the flowers and seeds.

"That greater changes might have been induced by careful selection is of course not open to doubt, but that is not the point with which we are here concerned.

"It would seem from this, as indeed all evidence we have yet obtained shows, that 'specific' characters are not influenced by external conditions, at any rate within short periods of time. The specific character is an innate quality transmitted by hereditary descent, and not materially altered by changes in external conditions. This was exemplified by the circumstance that in the case of the Plantain (Plantago lanceolata), numerous self-sown seedlings appeared in all the experimental boxes (five treated with as many different manures, one unmanured), and among these seedlings were many variations in shape and colour of leaf, pubescence, &c., variations which could not be attributed to the immediate operation of external conditions, seeing that they appeared in all the boxes indifferently, and in each box under the same conditions.

"The physiological characters, however, as we have seen, are materially influenced by these agencies, and it is quite conceivable that in course of time they might determine specific changes. These may seem large inferences to be drawn from such premises as are afforded by the Chiswick experiments, but the reader must judge of their value for himself, and he will recollect that so far as this matter goes few or no experiments have been made—always excepting the magnificent series of similar experiments carried on with a different object and under somewhat different conditions at Rothamsted for so many years—and few opportunities of examining for any length of time so large a number of plants grown under more than usually definite conditions. Moreover, the opinions here expressed tally with those of most who have written on the subject.

"In reference to the main objects for which these experiments were carried on, the following considerations also seem to claim attention. They are not novel, but from that very circumstance, as also from the fact that they apply to the cultivation of all or any plants, they seem worth constant attention.

"To ensure the successful culture of any plant, and to gain the greatest possible advantage from it, its whole life-history, from germination to death, should be as thoroughly known as possible.

"Without such knowledge cultivation must be empirical; and although under one set of circumstances such cultivation may be as successful as could be desired, yet the grower would be at fault in the event of the occurrence of adverse conditions. Possessed of such knowledge the cultivator can do much to remedy any evil which may arise, or make compensation for its effects. At the worst he knows its extent.

"Scarcely less important than a knowledge of the mode of life of the plant is an acquaintance with the circumstances causing modifications in it. Among these latter points may be mentioned the physical and chemical character of the soil, both important, the former specially so, always presuming there be no excess of hurtful ingredient in the soil and no absolute deficiency of essential elements therein. The effects of temperature and moisture have already been referred to. All that I would allude to now, in reference to climatal vicissitudes, is the importance in such inquiries as those now under consideration of considering the time at which the changes take place, and the special work which the plant is doing, leaf, flower, or seed-making, at that particular period.

"Another point which strongly impresses itself in working out the results of the experiments is the advantage that is derived from an admixture of manures. In hardly any instance did mineral manures, or nitrate of soda, or ammonia salts when applied by themselves, produce anything like the same amount of vigour as was produced by an admixture of mineral manures with ammonia salts, or with nitrate of soda respectively. These are points which will probably be dealt with by the more experienced hands of Dr. Gilbert, who has charge of the chemical points concerned in these inquiries.

"Lastly, may be mentioned the circumstance, which repeated observations seem to justify, viz., that certain plants prefer to grow in association with others rather than by themselves. This was noted, especially in the case of the vernal grass, Anthoxanthum, which made very unsatisfactory progress whenever grown by itself. A similar circumstance, though less marked, was observable in the case of the Dutch Clover, Trifolium repens."

Such are some among the conclusions arrived at from a physiological and cultural point of view. The chemical points involved will probably be dealt with by Dr. Gilbert on another occasion. In conclusion, it may be stated, that owing to the curtailment of the space, consequent on the new arrangements at Chiswick, the experiments are discontinued. It is hoped, however, that a similar series on a smaller scale will be carried out at Oxford under the superintendence of Prof. Lawson. The experience gained in watching and noting these experiments at Chiswick has convinced us, that the number of species experimented on was too large for adequate supervision, and that, for the proper control of experiments of such magnitude and importance, the responsible observer should reside on the spot.

—— One of the greatest of the many benefits conferred by Mr. Rivers on fruit growers and fruit lovers in this country, is the culture of English Dessert Oranges, as carried on by him at Sawbridgeworth, Such a sight as the Orange-house presents would gladden the eyes and hearts of all lovers of gardening—so unique, so bright, so perfect is it! The house is 12 feet wide and 70 feet long, heated by eight 4-inch hot-water pipes—four above the flue and four on a level with it, covered with slates, so as to form a warm surface of slate, on which the pots stand. The temperature maintained now is about 64°. The former are heated all the year, except in hot weather, the latter when the Oranges commence to ripen in September. The path down the centre forms an avenue of green leaves and golden fruit, on a level with the countenance, and dipping into the mouth, seeming to say, Come, eat me! The Tangierines, or Mandarins of classic Covent Garden, are now fully ripe, and most abundant, some of the trees having from three to four dozen on each; the other kinds are the Maltese Blood and varieties of the St. Michael's, all nearly related, and differing only in form, colour, and delicacy of flesh. The first started was the Egg Orange, perfectly ripe, and seedless; then the Silver, with its delicate whitish rind, and the Long Orange, an oval fruit, said to be delicious, but not yet ripe; this tree is planted in the border, and is making prodigious growth. The Navel Orange is said to be of great excellence, as is the White Orange. The Maltese Blood, but not always red in its flesh, as one tree often produces two kinds—one with its flesh red, and the other with flesh of the usual colour—is always of the finest quality, its flesh crisp and very rich, differing much from those imported. Mr. Rivers is now laying out a large Orange-house, 100 feet by 24; this will be heated by six or eight pipes on each side. The central border will be devoted to trees of the most vigorous kinds, and he hopes to live to see trees bearing half and even a bushel each of fine dessert fruit. The side borders will be used for trees of humbler growth in pots, or the Tangierine planted out. And now arises the question, why are not these houses of real luxury found in our great gardens? The fruit and flowers of Orange trees are of equal beauty. In January the trees commence to put forth their blossoms, and continue to do so till April, or even later. No feature in modern gardening can be more charming than the golden hues of the fruit, the silver tints of the flowers, and that most agreeable of all colours, the verdant green of their leaves.

—— At a recent meeting of the American Pomological Society, Dr. Wylie exhibited some remarkable Seedling Grapes, concerning which the "Gardeners' Monthly" thus reports:—

"But Dr. Wylie has persevered year after year for now nearly 20 years, marking down exactly the parentage of each, and continually producing something valuable. Here, at this meeting, he had a large variety of seedlings, almost all of which, by repeated selections, most Grape eaters would consider superior even to the famed Grapes of Italy or the Rhine. Some of the scientific results are very curious. For instance, year after year he placed the pollen of the European Grape on the flowers of the Scuppernong, but it had no more effect than so much earth. The Scuppernong refused to be a parent to the European Grape, nor would it reproduce any better when the other American species were tried. Not even our common Fox Grape had any effect on the reproductive organs. But when the Scuppernong was employed as a male parent, and its pollen introduced to the other species, a mongrel race was produced, and when the pollen of this mongrel race was introduced back again to the Scuppernong, then it was effective, and new varieties could be raised from the Scuppernong in this way. Thus, the female Scuppernong Grape will not intercross with the male flowers of any other Grape, but it will do so with a mongrel male which is the progeny of a male of its own species."

—— The *Food Journal* for the present month calls attention to the economic value of the Sunflower. Our contemporary is quite right in pointing to this as an instance of neglected opportunities. The leaves may be used as fodder, the stalk yields abundance of fibre, or might be burnt for potash, and the seeds yield a large supply of oil. The culture is as simple, or simpler, than that of the Cabbage, and there are waste places all over the country that might be utilised in its cultivation, at the expenditure of wonderfully little time or labour. Our contemporary also alludes to the Jerusalem Artichoke, a plant we have before now called attention to, in the hope of getting some experimentalist to grow it in an orchard-house, or other structure, where seeds would be produced, and whence we could in due time obtain by selection an improved variety.

—— From the daily papers we learn that the Chancellor of the Exchequer recently received at Downing Street a deputation, introduced by Mr. C. Reed, M.P., relative to the proposed building on the reserved land around the Victoria Park. It is proposed to build upon some 35 acres on the confines of the park, and a very strong feeling of opposition to this encroachment has sprung up among the population of the East End. Victoria Park, it was urged, is situated in the midst of the borough of Hackney, and Bethnal Green, Bow, Stepney, and other densely-populated districts lay around.—Mr. Heath said that the population abutting on the park had increased from 530,000 in 1841 to 831,000 in 1871, and that as many as 150,000 persons had visited the park in one day.—The Chancellor of the Exchequer said that the deputation had shown, what he never doubted, that it was desirable that their object should be attained. But he had to look upon the matter from a different point of view. The money for the park had been advanced by the Government to buy land, a certain portion of which was to be given to the Board of Works for a park, and another to the Woods for building. That land was therefore the property of the people of the whole country, but they asked him to give it to the people of the East End. He should deal with it as if it was money in bank, and they asked him for the cash to make an additional park. He granted it was desirable they should have the park, but why should the people of England, Ireland, and Scotland pay for a park for them? They were numerous, and perhaps poor, but they were not all poor. Some of those who owned property in the East End were very rich, and why should the whole people be taxed for their benefit? —Mr. Reed said that the principle was admitted in the West End parks.—The Chancellor of the Exchequer: They are Royal parks, and we have them traditionally. Of course we should never dream of making them if we had to do so now.—Mr. Hansard: If there be a prospect of getting the money to buy the land, will you suspend the building?—The Chancellor of the Exchequer: Yes, anything I can do in that way I will, if you try and buy the land.—Mr. Hansard: It is a weak reed to lean on.—The Chancellor of the Exchequer: I hope you do not mean that for your representative (Mr. Reed). This *bon mot* brought the interview to an end. We cannot pretend to discuss what is and what is not a proper thing for Government to do, as compared with what should be done by private effort; but we know that it is miserably false economy to neglect the interests of the poor and labouring classes, and it will ultimately prove most disastrous to the health, welfare, and social order of the community in general.

—— Parliament is to be applied to next session for power to construct Market Houses and other buildings, approaches, and streets, and a Railway Station, and other works, in Leicester Square. The market will be for the sale of fruits, flowers, vegetables, meat, fish, poultry, butter, cheese, and other provisions. The station will be in connection with the Central, the North-Western, Midland, and South-Eastern Railways.

—— Londoners will learn with much satisfaction that the covenanted sum of £45,000 has been at length paid over by the Metropolitan Board of Works to Sir John Maryon Wilson, as lord of the manor of Hampstead, in purchase of all his rights over the Heath, and that the deed has been signed and sealed by which that open space has been permanently secured for the benefit of Londoners in general. The Metropolitan Board of Works has also borne the legal and other incidental expenses of the transfer, amounting to £2000 more. In commemoration of this transaction a number of the inhabitants of Hampstead and the neighbourhood have lately raised by subscription a sum of £650 as a testimonial to Mr. Philip H. Le Breton, barrister-at-law, chairman of the Hampstead Vestry, and representative of that parish at the Metropolitan Board, by whose exertions mainly the Heath was thus secured. The testimonial, consisting of a silver tea and coffee service, a gold watch, and a purse of £500, was formally presented last week to Mr. Le Breton at a public meeting at the Hollybush Assembly Rooms.

—— From Belgium we learn that the Commission appointed to represent Belgian interests at the Horticultural Department of the International Exhibition of 1872, consists of MM. de Cannart d'Hamale, Ronnberg, Linden, A. Verschaffelt, and E. Morren.

—— Buxus Fortunei is the name given by M. Carrière to a Chinese Box, cultivated under the name of B. longifolia, but not the plant of Jacqueminot so-called. It is a compact growing evergreen bush, with numerous erect branches, bearing long narrow subcuneiform leaves. This Box is extremely hardy, enduring the severest winters of the climate of Paris. Jacqueminot's B. longifolia, on the other hand, is tender, has loose branches, long distant spreading leaves, attenuated at both ends, but is an elegant shrub, and is recommended by M. Carrière as an evergreen suitable for the decoration of apartments.

—— Few subjects are gayer in the spring months, or more useful for forcing purposes, than the Double-flowered Peaches—white, common, or striped. The French horticulturists have another striped-flowered variety, named Striata, which is said to be distinct from versicolor, although somewhat resembling it. It is a vigorous, abundant blooming plant, with freely expanded flowers, the greater number of which are flaked with bright red, others being partially, and some wholly, of the brilliant red colour. It is cultivated in the garden of the Paris Muséum.

—— The Maximum Temperatures of the Air for the week ending December 9 ranged from 43° at Perth to 37°.5 at Leicester, the mean for the English stations being 39°.8, and for the Scottish 40°.5. The Minimum Temperatures of the Air ranged from 28°.2 at Leith to 9° at Norwich, the mean for the several places in England being 19°.2, and for those in Scotland 26°.4. By comparing the temperatures given above, it will be seen that the days have been warmer during the past week in Scotland than in England, in a slight degree, but at night the difference was much greater. The highest Mean Temperature, 34°.8, occurred at Leith, and the lowest, 27°.7, at Manchester, the mean value for the English stations being 31°, and for the Scottish 33°.6. During the past week the weather has remained very cold, and at Blackheath the mean daily values have been all greatly in excess of the average. On the 8th the mean temperature was but 22°.4, the departure from the average being 19°.3. The greatest fall of rain was 1.05 inch at Newcastle-on-Tyne, the mean fall for the several stations in England being 0.15 inch, and for those in Scotland 0.12 inch. (See Mr. GLAISHER'S Tables, p. 1623.)

—— Dr. SYME contributes the following NOTE ON THE FERTILISATION OF CEREALS to the *Journal of Botany* :—

"I am not aware of any observations on the Fertilisation of Cereals. This year I turned my attention to the subject, from being at work on the grasses for the third edition of 'English Botany;' and as my residence is in the midst of cornfields, I had ample opportunities of investigating the subject. In Wheat and Barley the stigmas receive the pollen from the anthers before the latter are protruded, and the exserted anthers I found to be always empty. In the Oat most of the protruded anthers are empty, but occasionally anthers with pollen are to be found after protrusion, and stigmas exposed at the sides of the florets, which I have not been able to find in Wheat and Barley. All the British forms of the Agropyrum section of Triticum, and Hordeum murinum, maritimum, and bulbosum, protrude their stigmas and unemptied anthers in the manner usual among the Euryantheæ. My observations are confined to the county of Fife, and the case of the Oat seems to show that the mode of fertilisation is not always constant in the same species, so that observations are required in other places. The question is more important than it appears at first sight. I have noticed letters in the newspapers from farmers, predicting a bad Wheat harvest because the 'wind had blown off the flowers.' Now, if the anthers may be blown off without affecting the fertilisation no harm is done, and the belief of this may save a needless panic and uncalled-for rise in the price of corn."

—— In the French gardens SAMBUCUS FONTENAYSII, a variety obtained by M. BILLARD, nurseryman at Fontenay-aux-Roses, from seeds of S. glauca, is spoken of as a very desirable shrub, on account of its vigorous habit of growth, and the meritorious quality of being continually in flower from the month of June onwards. The leaves are large, and the yellowish flowers, which are arranged in very broad cymes, sometimes as much as 16 inches across, have a most agreeable odour. The plants present a peculiarity of growth which is not common, namely, the secondary or lower buds push more vigorously than the principal ones above them, this character inducing a proportionate lateral extension in its development. As the plant seldom fruits, it is chiefly multiplied by layers.

HARDY CLIMBERS.

IN our rage for novelties we are too apt to overlook old favourites; in our addiction to one style or one feature of gardening we too often neglect others. Is there any good reason, for instance, for the prevalent neglect of hardy climbers? With the exception of climbing Roses, which we cannot do without, and of the Ivies, which, from their evergreen habit, their beauty, and variety, are sure to hold their ground, it is comparatively seldom that we meet with hardy climbers in any variety. In old-fashioned gardens we may find a Hop doing grand service, or perhaps a sweet-flowered Honeysuckle, but there is a wealth of hardy climbers which would answer admirably for covering arbors, concealing trellises, and other like purposes. Periploca græca, with its shining green leaves, and its oddly-shaped flowers, is one instance; Menispermum canadense is another; then there are various species of Smilax, some with spotted foliage, quite *à la mode*, as that is at present understood.

Those curious in such matters would do well to pay a visit to that treasure-house of all that is interesting in plant-culture—the garden of Mr. Wilson Saunders, at Reigate. There are gathered together scores of hardy climbers, placed side by side, with a view of testing their merits. It is curious to see how very many of our neglected wild plants come in grandly for this purpose, such as some of the Vetches, the Solanum Dulcamara, and of course the Bryonies, white and black. But it is among the Vines that we must chiefly look for fine plants of this character: the Parsley-leaved Vine, the claret Grape, and many others occur to us, beautiful in form and resplendent in colour in autumn; and then there is the history attaching to them, much of which would be *caviare* except to the professed botanist, but much of which also is of interest to any plant lover.

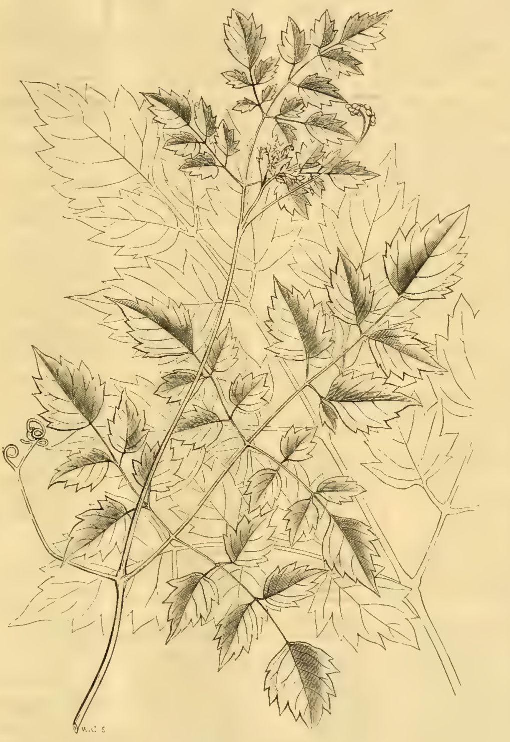

FIG. 343.—CISSUS ORIENTALIS.

These plants and their tendrils are alive in a sense hardly dreamt of by most gardeners. They show more method—we had almost said more reason—in their movements than many a mollusc, or even insect. How gently but surely they move towards their support; how sensitive they are to a touch; how particular they are sometimes in their selection; how firmly they grasp when they do lay hold; what manifold contrivances they have to secure their hold;—all this belongs to the poetry of science—the mere herbarium botanist can hardly appreciate it, the heedless gardener passes it by; and yet the grand charm of a garden is its life. However, we do not care to enter into such disquisitions just now, our main object being to recommend to the notice of our readers an old favourite in the form of Cissus orientalis (see fig. 343), which formed a splendid object in the nurseries of Messrs. Veitch last autumn, and which, we fear, is all but lost, though possibly still to be found in some of the old nurseries, where it languishes, neglected and unnoticed. Our drawing, though giving accurately enough the form of a single leaf, fails completely to realise the grace and beauty of the plant.

SEEDLING PEARS.

AN elementary fact in the culture of the Pear is the circumstance that the seed produces as many varieties as individuals. The seeds, although belonging to improved varieties, produce seedlings which more or less resemble the original form of wild Pear. When by accident a variety is obtained sufficiently distinct as to the productiveness of the tree, the beauty of the fruit and the quality of its flesh, it is multiplied by means of grafting on the Pear stock or on the Quince. Many attempts have been made by raisers to increase the relatively small number of good varieties produced by seed. The Belgians especially have enriched pomology with a number of fine Pears, and have put on record a number of useful facts concerning their production. Van Mons was the first who occupied himself on a large scale with seedling fruit trees. He began in 1780, when 15 years of age, and continued his operations without interruption until his death in the 78th year of his age. A believer in the degeneration of cultivated varieties, he sowed the seeds and stones of recently obtained sorts. After from 12 to 20 years of experiments he obtained fruits which were for the most part rough, small, and bad in flavour. He waited, believing that the seeds of this first crop would give him in due time improved varieties and better fruit, and his patience was rewarded after the lapse of from 12 to 15 years. Van Mons sowed the seeds produced by this second crop, which was already superior to the first, and thus gradually, by means of successive sowings and careful selection, he succeeded in obtaining in almost all cases good varieties, some delicious in flavour and bearing early. Contemporaneously with and after Van Mons, Hardenpont, Esperen, Grégoire,—Nélis, and others increased the number of good varieties by similar means, a further explanation of which I now proceed to lay before the reader.

Selection of Seed.—Large well-formed pips are taken from the finest and best Pears amongst those which ripen in winter, preferably from a comparatively new not yet degenerated variety. The pips are placed one by one in a glass or other vessel protected from mice, and towards the end of January, when the severe frosts have abated, they are washed to remove the sticky mucilage which surrounds them, and then spread out to dry in a place where they are neither exposed to frost nor to injury from heat. Some days afterwards they are sown. Others put the pips into sand as soon as they are gathered.

Sowing the Seed, &c.—At the commencement of February the seeds are sown in pans filled with sandy soil, kept moist, but without excess of damp. If the weather be fine the pans are placed out-of-doors, if frosty they are put in a cellar or fruit room, but not in any place that is too much heated, and they are taken out when the thaw comes. Towards the middle of April the young plants are pricked out on to a well-prepared border, under a north-east wall, or under any other shelter which protects them from excessive heat. The plants are removed with a small trowel, and as soon as they have produced two leaves above the seed leaves: the end of the radicle is pinched off to prevent the formation of a tap-root. They are then replanted in lines an inch or two apart.

Transplantation of Seedlings.—After a year's growth the plant attains a height of from 4 to 12 inches. In the spring the more vigorous of them are taken up and replanted at wider intervals than before. Those less developed are not transplanted until the succeeding year. In this manner, every year, while the plant is at rest, the most vigorous plants are taken up, their tap-roots cut, and themselves replanted at distances favourable to the full development of the branches. Every plant will thus be transplanted every two or three years, with the view of checking its growth, and of favouring the production of fruit-spurs. When they have attained a considerable size, and have only a scanty quantity of fibrous roots, their transplantation in a light soil may be a hazardous proceeding. In that case the soil is removed from around the stem of the tree, and some of the longer roots cut through.

Pruning.—During the first few years the seedlings generally make only spiny and unproductive wood, and they must not be headed back until they have produced strong, vigorous branches without spines, and provided with well-developed leaves. Where this happens the plants have attained the period of fructification, and the flowers will be produced on those branches which have lost the characters of the wildings. All that it is necessary, therefore, to do in the way of pruning is to shorten the laterals, so as to favour the development of the leader. The main object is, not to produce a symmetrical tree, but to obtain as early a production of fruit as possible.

Fructification.—The most precocious seedling Pears are those which begin to produce fruit at the age of five or six years. The latest are those which do not yield fruit till 20 years have elapsed. Can the period of fructification be hastened by grafting on the Quince, or on another Pear? Experience has proved that this cannot be done. Moreover, it may be easily understood that the graft, taken from a seedling plant, not yet of age to produce fruit, will require as long a time as the parent, from which it was taken, to arrive at adult age. The production of fruit, then, is not hastened, but the quantity of the first crop is doubled, and the merits of the new variety can be more quickly appreciated. The first fructification of a seedling is not sufficient to enable one to decide on its qualities; the size of the fruit is increased by grafting, and often the period of maturity is modified. Hence we never send out a new Pear before having tested it on its own roots, as well as grafted, for at least three or four years. *Ernest Baltet, Troyes, France.*

NEW PLANTS, &c., CERTIFICATED

AT THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS, 1870—71.

⁂ *The awards marked* * *were made by the International Jury, the remainder by the Floral Committee.* F.C. *indicates First-class Certificate*, S.C. *Second-class Certificate.*

Acer japonicum dissectum	Veitch, April 19, 1871—F.C.
,, ,, ornatum	Veitch, April 19, 1871—F.C
,, palmatum crispum ..	Linden, June 7, 1871—F.C.*
,, ,, roseo-dissectum ..	Linden, June 7, 1871—F.C.*
Acineta sella turcica.. ..	Laurence, Aug. 2, 1871—F.C.
Adiantum asarifolium ..	Williams, May 17, 1871—F.C.
,, Capillus-Veneris admirabile	Lowe, Jan. 18, 1871—F.C.
,, ,, Daphnites	Lowe, June 27, 1871—F.C.
,, ,, maximum	Veitch, Oct. 5, 1870—F.C.
,, ,, perfectum	Lowe, June 27, 1871—F.C.
,, peruvianum	Veitch, Sept. 7, 1870—F.C.
,, sessilifolium	Veitch, June 8, 1870—F.C.
,, Veitchii.. .. .	Veitch, May 4, 1870—F.C.
Æchmea Mariæ Reginæ ..	Wendland, July 19, 1871—F.C.*
Agave Bessereriana amœna	Green, Feb. 15, 1871—F.C.
,, ,, candida	Green, Sept. 21, 1870—F.C.
,, Celsiana albida ..	J. Verschaffelt, Sept. 6, 1871—F.C.*
,, dealbata compacta ..	J. Verschaffelt, Sept. 6, 1871—F.C.*
,, ,, compacta angustifolia	J. Verschaffelt, Sept. 6, 1871—S.C.*
,, cuspidata	Green, March 2, 1870—F.C.
,, cucullata	Wood, June 29, 1870—F.C.
,, elegantissima	J. Verschaffelt, July 19, 1871—F.C.*
,, ensiformis	Wood, June 29, 1870—F.C.
,, festiva	Veitch, May 3, 1871—F.C.
,, imbricata	Croucher, Aug. 16, 1871—F.C.
,, Mescal fol. var. ..	J. Verschaffelt, July 19, 1871—F.C.*
,, ,, nigrispinis	J. Verschaffelt, Sept. 6, 1871—F.C.*
,, Regelii macrodonta ..	J. Verschaffelt, July 19, 1871—F.C.*
,, revoluta fol. variegatis	Croucher, June 7, 1871—F.C.
,, rotundifolia	Veitch, Sept 20, 1871—F.C.
,, Simsii	Croucher, Aug. 16, 1871—F.C.
,, sp. nova	J. Verschaffelt, July 19, 1871—F.C.*
,, Toneliana	J. Verschaffelt, Sept. 6, 1871—F.C.*
,, Verschaffeltii variegata	Croucher, July 5, 1871—F.C.
Alloplectus vittatus	Linden, July 5, 1871—F.C.*
Alnus glutinosa rubronervia	Veitch, May 18, 1870—F.C.
Alsophila Shepherdii ..	Bull, July 5, 1871—F.C.
Alternanthera magnifica ..	E. G. Henderson & Son, Sept. 21, 1870—F.C.
Amaranthus salicifolius ..	Veitch, Sept. 6, 1871—F.C.
Amaryllis Chelsoni	Veitch, March 15, 1871—F.C.
,, marginata perfecta ..	Williams, May 3, 1871—F.C.
,, Prince Henry	Williams, April 5, 1871—F.C.
Angræcum Ellisii .. .	Williams, April 6, 1870—F.C.
Anæctochilus (Goodyera) Ordianus	Laurence, Aug. 2, 1871—F.C.
Anæctochilus pardina ..	Bull, June 8, 1870—F.C.
Anthurium ornatum	Green, Aug. 16, 1871—F.C.
Anthurium Scherzerianum Dixoni	Dixon, April 19, 1871—F.C.
Aralia japonica (Sieboldii) aureo-reticulata ..	Linden, July 5, 1871—S.C.*
,, Veitchii	Veitch, June 8, 1870—F.C.
Areca monostachya	Veitch, May 4, 1870—F.C.
,, regalis	Bull, March 15, 1871—F.C.
Argyroxiphium Douglasii .	Green, Dec. 6, 1871—F.C.
Asplenium marinum admirabile ..	Lowe, June 29, 1870—F.C.
,, ,, capitatum . ..	Lowe, June 27, 1871—F.C.
,, ,, ochimthianum ..	Lowe, July 19, 1870—F.C.
,, ,, Thompsoniæ ..	Lowe, June 27, 1871—F.C.
,, ,, schizodon	E. G. Henderson & Son, March 15, 1871—F.C.
Aster longifolius var. ..	Backhouse, Oct. 5, 1870—S.C.
Athyrium Filix-fœmina Alexandræ	Lowe, June 27, 1871—F.C.
Athyrium Filix-fœmina Belairsiæ	Lowe, June 27, 1871—F.C.
,, ,, bellum	Mapplebeck, June 27, 1871—F.C.
,, ,, Blakei	A. Parsons, Sept. 21, 1870—F.C.
,, ,, Caput-Medusæ ..	Mapplebeck, July 19, 1870—F.C.
,, ,, caudiculatum ..	Mapplebeck, June 27, 1871—F.C.
,, ,, ceratophyllum ..	Mapplebeck, June 27, 1871—F.C.
,, ,, comicum	Mapplebeck, July 19, 1870—F.C.
,, ,, Craigii glomeratum	Mapplebeck, June 27, 1871—F.C.
,, ,, Craigii splendens ..	Mapplebeck, July 19, 1870—F.C.
,, ,, defecto-sectum ..	Mapplebeck, July 19, 1870—F.C.
,, ,, densissimum ..	Mapplebeck, July 19, 1870—F.C.
,, ,, dilatatum	Mapplebeck, June 27, 1871—F.C.
,, ,, exemplum	Lowe, July 19, 1870—F.C.
,, ,, flabellifolium ..	Mapplebeck, July 19, 1870—F.C.
,, ,, flabellifolium cristatum	Mapplebeck, July 19, 1870—F.C.
,, ,, flabellifolium tenue	Mapplebeck, June 27, 1871—F.C.
,, ,, furcillans	Mapplebeck, July 19, 1870—F.C.
,, ,, Gillsoniæ	Mapplebeck, June 27, 1871—F.C.
,, ,, Gillsoniæ furcans ..	Mapplebeck, July 19, 1870—F.C.
,, ,, Gulsoniæ	Lowe, June 27, 1871—F.C.
,, ,, invincere	Lowe, June 27, 1871.—F.C.
,, ,, Jonesii	Mapplebeck, July 19, 1870—F.C.
,, ,, kallisteumaton ..	Lowe, June 29, 1870—F.C.
,, ,, kephalobares ..	Lowe, June 29, 1870—F.C.
,, ,, Lawsoni	Lowe, June 27, 1871—F.C.
,, ,, Loweæ	Lowe, June 27, 1871—F.C.
,, ,, rectangulare ..	Mapplebeck, June 27, 1871—F.C.
,, ,, secale	Lowe, June 27, 1871—F.C.
,, ,, strombominon ..	Lowe, July 19, 1870—F.C.
,, ,, trifidum	Ivery, June 7, 1871—S.C.
,, ,, triumphale	Lowe, June 27, 1871—F.C.
,, ,, trossulum	Lowe, June 27, 1871—F.C.
Aucuba japonica (fœmina) aureo-maculata ..	Cutbush, Nov. 2, 1870—F.C.
Auricula Alderman Wisbey	Turner, May 3, 1871—F.C.
,, Colonel Champneys ..	Turner, April 20, 1870—F.C.
,, Marquis of Westminster	Turner, April 19, 1871—F.C.
,, Sultan	Turner, April 19, 1871—F.C.
Azalea (indica) Alice ..	Van Houtte, April 19, 1871—F.C.
,, Comtesse de Beaufort	Van Houtte, April 19, 1871—F.C.
,, Comtesse de Flandres	Turner, May 17, 1871.—F.C.
,, Francois de Vos ..	Cutbush, April 6, 1870—F.C. Standish, April 6, 1870—F.C.
,, George Loddiges ..	Van Houtte, April 19, 1871—F.C.
,, La Reine	Dallière, May 17, 1871—S.C.
,, Marquis of Lorne ..	Van Houtte, April 19, 1871—F.C.
,, Marvel	Bull, April 19, 1871—F.C.
,, President de Ghellinck de Walle . ..	Van Houtte, April 19, 1871—F.C.
,, Roi d'Holland.. ..	Turner, May 18, 1870—F.C.
Bactris Marissa	Rollisson, June 8, 1870—F.C.
Barkeria spectabilis superba	Veitch, June 29, 1870—F.C.
Begonia Chelsoni	Veitch, June 29, 1870—F.C.
,, multiflora elegans ..	E. G. Henderson & Son, Aug. 2, 1871—F.C.
Billbergia chlorosticta ..	Green, Nov. 1, 1871—F.C.
Blechnum Spicant crispatum	Mapplebeck, June 27, 1871—F.C.
Bougainvillea speciosa variegata	Masters, May 3, 1871—F.C.
Bowenia spectabilis ..	Veitch, Aug. 3, 1870—F.C.
Brodiæa coccinea	Thompson, June 8, 1870—F.C.
Caladium Princess Alexandra	E. G. Henderson & Son, May 4, 1870—F.C.
Calamus cinnamomea ..	Veitch, Sept. 7, 1870—F.C.
,, ex Menado	Linden, June 21, 1871—F.C.*
Carludovica rotundifolia ..	Veitch, May 4, 1870—F.C.
Carnation (tree Maiden's Blush	W. Lee, Dec. 7, 1870—S.C.
,, (tree) Miss Joliffe ..	Masters, May 3, 1871—S.C. Masters, June 7, 1871—F.C
,, (tree) Vulcan	E. G. Henderson & Son, Nov. 2, 1870—F.C.
" (tree) White Nun ..	W. Lee, Dec. 7, 1870—F.C.
Catalpa syringæfolia aurea	Cripps, Aug. 17, 1870—F.C.
Cattleya Dominiana lutea ..	Veitch, Nov. 2, 1870—F.C.
,, Mossiæ Marianæ ..	Williams, June 8, 1870—F.C.
,, Reineckiana	Denning, May 17, 1871—F.C.
,, Trianæ Atalanta ..	Wilson, Jan. 19, 1870—F.C.
,, ,, Io	Wilson, Jan. 19, 1870—F.C.
,, ,, Laurenceana ..	Laurence, Feb. 16, 1870—F.C.
,, ,, Penelope	Wilson, Jan. 19, 1870—F.C.
,, ,, Venus	Wilson, Jan. 19, 1870—F.C.
Cerasus Laurocerasus rotundifolia	W. Paul, January 19, 1870—S.C.
Chamædorea graminifolia ..	Rollisson, June 29, 1870—F.C.
Cheilanthes Mathewsii ..	Denning, March 1, 1871—F.C.
Chrysanthemum (Japanese) Bismarck	E. G. Henderson & Son, Nov. 2, 1870—F.C.
,, (Japanese erecta superba	E. G. Henderson & Son, Nov. 2, 1870—F.C.
,, (Japanese) Jane Salter	Bull, Nov. 2, 1870—F.C.
,, (Japanese Renown ..	Bull, Nov. 2, 1870—F.C.
Cineraria asplenifolia ..	E. G. Henderson & Son, Sept. 21, 1870—F.C.
Clematis, Gem	Baker, Aug. 17, 1870—F.C.
,, Lord Londesborough..	Noble, May 4, 1870—F.C.
,, Sylph	Cripps, June 8, 1870—F.C.
,, Victoria	Cripps, Aug. 17, 1870—F.C.
Cochliostema Jacobianum ..	Williams, May 4, 1870—F.C.
Coleus Tryoni	Guildford, Aug. 2, 1871—F.C.
Collinsia violacea	Thompson, May 17, 1871—F.C.
Corypha Martiana	Veitch, Oct. 5, 1870—F.C.
Cotyledon spinosa	Atkins, April 5, 1871—F.C.
Croton Johannis	Veitch, May 3, 1871—F.C.
Cupressus Lawsoniana aurea	J. Waterer & Sons, March 2, 1870—F.C.
,, ,, erecta viridis ..	A. Waterer, Feb. 16, 1870—F.C.
,, ,, gracilis	A. Waterer, Feb. 16, 1870—F.C.
Curculigo recurvata striata..	Bull, Nov. 2, 1870—F.C.
,, recurvata variegata ..	Bull, August 17, 1870—F.C.
Cyanophyllum spectandrum	Veitch, May 18, 1870—F.C.
Cycas Armstrongii	Bull, June 8, 1870—F.C.
,, Broughtonii	Bull, August 3, 1870—F.C.
Cyclamen persicum giganteum	Edmonds, April 6, 1870—F.C.
,, ,, kermesinum ..	Welch, Jan. 19, 1870—F.C.
,, ,, Queen of Crimsons	Goddard, Dec 6, 1871—F.C.
,, ,, Snowflake	Goddard, March 15, 1871—F.C.
,, ,, purpureum ..	Goddard, Dec. 7, 1871—F.C.
Cyclobothra pulchella ..	Thompson, June 8, 1870—F.C.
Cypripedium Dominianum	Veitch, June 8, 1870—F.C.
,, niveum	Ward, April 19, 1871—F.C.
,, vexillarium	Veitch, Jan. 18, 1871—F.C.
Cyrtanthus, sp., Cape G. H.	Green, August 2, 1871—F.C.
Dæmonorops cinnamomeus	Bull, Sept. 7, 1870—F.C.
,, plumosus	Williams, March 2, 1870—F.C.
Dahlia, Annie Hobbs ..	Hobbs, Sept. 21, 1870—F.C.
,, Bucks Lass	Turner, Sept. 20, 1871—S.C.
,, Flower of Kent ..	Harris, Sept. 7, 1870—S.C.
,, Gem of the Grove ..	Harris, Sept. 21, 1870—F.C.
,, George Peabody ..	Rawlings, Sept. 21, 1870—S.C.
,, Golden Beauty ..	Rawlings, Sept. 20, 1871—S.C.
,, Incomparable	Keynes, Aug. 3, 1870—S.C.
,, James Cocker	Keynes, Sept. 21, 1870—S.C.
,, John Batten	G. Parker, Sept. 20, 1871—S.C.
,, John Standish	Turner, Sept. 6, 1871—F.C.
,, Kate Haslam	Turner, Sept. 6, 1871—F.C.
,, Lady Herschel ..	G. Parker, Sept. 6, 1871—F.C.
Dahlia, Livonia	Turner, Sept. 20, 1871—F.C.
,, Maid of Essex.. ..	Rawlings, Sept. 6, 1871—F.C.
,, Marchioness of Bath ..	Wheeler, Aug. 17, 1870—F.C.
,, Marquis of Lorne ..	Keynes, Sept. 6, 1871—S.C.
,, Mary Keynes	Keynes, Sept. 21, 1870—F.C.
,, Master M'Grath ..	Turner, Sept. 20, 1871—S.C.
,, Mephistopheles ..	Turner, Sept. 20, 1871—F.C.
,, Monarch	Rawlings, Oct. 5, 1870—F.C.
,, Mrs. Bennett	Rawlings, Sept. 20, 1871—S.C.
,, Mrs. Waite	Turner, Sept. 6, 1871—S.C. Turner, Sept. 20, 1871—F.C.
,, Mrs. Watts	G. Parker, Sept. 7, 1870—S.C.
,, Prince Imperial ..	Perry, Oct. 5, 1870—S.C.
,, Ranunculus	Turner, Sept. 20, 1871—S.C.
,, Robert Lambert ..	Hobbs, Sept. 21, 1870—S.C.
,, Souvenir d'Herbert Turner	Turner, Sept. 6, 1871—F.C.
,, Victory	Keynes, Sept. 21, 1870—S.C.
,, William Keynes ..	Keynes, Sept. 6, 1871—F.C.
,, William Laird	Keynes, Sept. 6, 1871—S.C.
,, Yellow Standard ..	Parker, Oct. 5, 1870—F.C.
,, Yellow Standard ..	Turner, Sept. 20, 1871—F.C.
,, (fancy) Admiration ..	G. Parker, Sept. 20, 1871—F.C.
,, ,, Dolly Varden ..	Keynes, Sept. 6, 1871—F.C.
,, ,, Flora Wyatt ..	Keynes, Aug. 3, 1870—S.C.
,, ,, Flossie Williams ..	Keynes, Sept. 21, 1870—S.C.
,, ,, Mrs. Saunders ..	Turner, Sept. 6, 1871—F.C.
,, (bedding) Model ..	Lidgard, Sept. 6, 1871—S.C.
Daphne (indica) elegantissima	Veitch, Sept. 7, 1870—F.C.
Davallia clavata	Rollisson, Mar. 15, 1871—F.C.
Deckenia nobilis	Veitch, May 4, 1870—F.C.
Delphinium nudicaule ..	Thompson, June 8, 1870—F.C.
Dendrobium chrysotis ..	Brooke & Co., Sept. 21, 1870—F.C.
,, sp. Veitch	Veitch, June 29, 1870—F.C.
,, thyrsiflorum	Veitch, April 6, 1870—F.C.
Desmodium penduliflorum ..	Bull, Oct. 4, 1871—F.C.
Dicksonia Sellowiana ..	J. Verschaffelt, July 19, 1871, F.C.*
Dieffenbachia Bausei ..	Veitch, June 27, 1871—F.C.
,, Bowmanni	Veitch, June 8, 1870—F.C.
,, imperialis	Linden, July 5, 1871—F.C.*
Dioscorea chrysophylla ..	Linden, July 5, 1871—F.C.*
,, el-dorado	Linden, July 5, 1871—F.C.*
,, meleagris	Linden, July 5, 1871—F.C.*
,, prismatica	Linden, July 5, 1871—F.C.*
Dracæna amabilis	Veitch, June 27, 1871—F.C.
,, Fraseri	Fraser, Aug. 2, 1871—F.C.
,, Guilfoylei	Rollisson, March 16, 1870—F.C.
,, lutescens striata ..	Linden, June 7, 1871—F.C.*
,, porphyrophylla ..	Veitch, Nov. 2, 1870—F.C.
,, splendens	Bull, Sept. 6, 1871—F.C.
,, Wisemanni	Veitch, June 27, 1871—F.C.
Dyckia brevifolia	Green, May 3, 1871—F.C.
Echeveria agavoides ..	F. Perkins, March 16, 1870—F.C.
Elisena longipetala	Green, May 3, 1871—F.C.
Encephalartus mirabilis ..	Bull, April 6, 1870—F.C.
,, Vroomii	J. Verschaffelt, July 19, 1871, F.C.*
Epacris hyacinthiflora carminata	Rollisson, Mar. 16, 1870—F.C.
Epidendrum Fredirici-Guilielmi..	Linden, July 5, 1871—F.C.*
,, paniculatum	Linden, June 7, 1871—S.C.*
Erythrina Parcelii	Bull, June 29, 1870—F.C.
Euterpe sylvestris	Veitch, May 4, 1870—F.C.
Ficus dealbata	Veitch, May 18, 1870—F.C.
,, lanceolata	A. Henderson & Co, Jan. 18, 1871—S.C.
Fuchsia (tricolor) Sunray ..	Milner, July 19, 1871—F.C.
Gasteria nigricans	Kellock, May 3, 1871 F.C.
Gastronema sanguineum flammum	Bull, Feb. 15, 1870—F.C.
Geonoma elegans	Bull, June 8, 1870—F.C.
,, pumila	Veitch, May 4, 1870—F.C.
,, speciosa	Bull, June 8, 1870—F.C.
Gladiolus Araximenes ..	Kelway, Aug. 16, 1871—F.C.
,, Archelaus	Kelway, Aug. 16, 1871—F.C.
,, Astrea	Kelway, Aug. 16, 1871—F.C.
,, Celestial	Tillery, Sept. 6, 1871—F.C.
,, Francis Whitbourne ..	Douglas, Aug. 16, 1871—F.C.
,, Hogarth	Kelway, Aug. 2, 1871—F.C.
,, John Standish	Douglas, Sept. 21, 1870—F.C.
,, Lord Bridport	Kelway, Aug. 16, 1871—F.C.
,, Mrs. Francis Whitbourne	Douglas, Aug. 16, 1871—F.C.
,, Oberon	Kelway, Aug. 2, 1871—F.C.
,, Phidias	Kelway, Aug. 16, 1871—F.C.
,, Pictum	Kelway, Aug. 2, 1871—F.C.
,, Talisman	Douglas, Aug. 16, 1871—F.C.
,, William Earley ..	Douglas, Aug. 16, 1871—F.C.
,, Yellow King	Kelway, Aug. 16, 1871—F.C.
Gloxinia, Alice ..	Rollisson, June 8, 1870—F.C. Veitch, June 8, 1870—F.C.
,, Rev. H. Dombrain ..	Rollisson, May 3, 1871—F.C.
,, Scarlet Gem	Williams, April 20, 1870—F.C.
Gongora portentosa	Green, June 8, 1870—F.C.
Griffinia dryades	Green, Sept. 7, 1870—S.C.
Hechtea argentea	Green, Sept. 20, 1871—F.C.
Hollyhock, Jeanie	Mackeller, Sept. 6, 1871—F.C.
,, Peerless	J. J. Chater, Sept. 6, 1871—F.C.
,, Rose of Sharon ..	Mackeller, Sept. 6, 1871—F.C.
,, Rose Queen	Bird Porter, Aug. 17, 1870—S.C.
Houlletia odoratissima antioqiensis	Green, July 5, 1871—F.C.
Hyacinth George Peabody..	Cutbush, March 15, 1871—F.C.
,, Marquis of Lorne ..	Cutbush, March 15, 1871—F.C.
,, Princess Louise ..	W. Paul, March 15, 1871—F.C.
,, William Thackeray ..	Cutbush, March 15, 1871—F.C.
Hyacinthus candicans ..	Green, June 29, 1870—F.C.
Hydrangea japonica speciosa	E. G. Henderson & Son, Aug. 3, 1870—F.C.
,, stellata flore-pleno ..	Paul & Son, May 18, 1870—F.C.
Hymenophyllum unilaterale Kinahanii	Lowe, June 27, 1871—F.C.

(*To be Continued.*)

ON THE CULTURE OF TREE CARNATIONS.

THE reason why Tree Carnations are not to be seen more at this season of the year must be either that their culture is not properly understood, or that they are not sufficiently appreciated by the possessors of gardens. The latter reason seems to be to me impossible, for who is there that doesn't love a Carnation flower at this, the dullest of all seasons? The unsightliness presented by their straggling habit of growth during the trim summer months may be supposed as another reason why they are not as they should be just now. In short, I think they are looked down upon in summer too much, and are apt to be shoved aside for some other showy, trim-looking plant, in the same way as early forced Roses are too often huddled into any out-of-the-way corner, to be chilled, parched, soddened, and tattered.

Tree Carnations, to be in perfection at this season, require attentive summer care, and I have always found that indoor care is the safest, and with it more heat (dry heat), with plenty of air. To have Carnation flowers all the year round in quantity, one must have a quantity of plants. Of course we could cut them every day in the year, not from the same set of plants, but from sets of plants—plants of all ages, from the rooted cutting to those four years old. The oldest plants we rely upon chiefly for flowers at this season, and the younger at spring-tide. To keep up a stock of plants we put in a batch of cuttings at any time—every month, say—one cutting to the smallest pot, in sandy loam, or loamy sand rather, for the sand predominates by being added, and they are placed under a hand-light or bell-glass. Two hand-lights are kept going for the purpose. When a batch is rooted, others follow. They are potted on gradually from 2 to 12 inch pots; and while in sizes less than 6-inch they are stopped sufficiently to form a good bottom of from five to ten or more breaks. In this form and condition they are potted into the 10 or 12 inch pots in a pure loam, without any dung or any stimulating mixture whatever, further than a dash of sand. They get, when once the pots are full of roots, a liquid-manure watering every week from the manure-tank.

Further than this, they get only that which common sense dictates, namely, staking and tying with care every growth that cannot support itself. Hazel stakes we find best for the larger plants, and Privet ones for the smaller ones; a painted stake should only be used when these are not to be got. Further, care must be used in putting long enough stakes after the second year, as the growths are sometimes over 3 and 4 feet long. We have many times seen people look critically on such long spindley-looking plants; and some practicals, who probably have been brought up in the faith, with stiff formal habits of turning plants to a shape and the evenest contour, have passed them by as beneath their notice. But ladies of taste here are the critics, and a dozen blooms at this season soon compensate for the want of symmetry in the plant's habit. Whoever, therefore, can't bend his ideas to the plant's wants and requirements must leave Tree Carnations alone, and seek for plants of a more uniform mien.

The sorts we grow are the following, and to-day more than a dozen fine blooms have been cut, and as many more could have been furnished had they been wanted:—Henshaw's Scarlet, Rembrandt, Eclipse, Hector, Comte de Douy, Beauty, M. Valiant, Eugéne Ducreux, Charles Baltet, Prince of Orange, The Bride, Jubilee, Belle Rose, Lady Stuart, and several seedlings of merit. Of course the summer-flowering variety, Souvenir de la Malmaison, finds a favourable place in the collection. Tree Carnations I regard as first-class flowers, ranking as high as the Gardenia, Camellia, and Daphne, and infinitely superior to Cinerarias and other kinds of flowers usually to be seen at this season. We grow our plants on the side stages of our Heath-house, where they have plenty of head room, which they really require, for some of the plants are fully 5 feet high and 2 or 3 feet through. I may remark further that we cut the flowers a day or two after they are opened, if likely to be wanted in numbers, and place them in damp sand in a cool room, as we do Gardenias and such-like flowers. In warmer, much warmer localities, I have grown Tree Carnations out-of-doors in summer, and lifted, as is done here in autumn; but never did I find them so satisfactory as when kept always in pots—for this reason, that I failed to lift them with sufficient root to winter them well, far less to flower them to my liking. *H. K.*

FIG CULTURE IN THE OPEN AIR.

I QUITE agree with "S. W.," p. 1552, that the less the knife is used the better. Plant the trees in poor soil, such as a mixture of lime rubbish, road sand, and loam, on a dry bottom. If they grow strongly at first, pinch the shoots into weakness, and let the trees grow into half standards, backed up against the wall. Thus treated, they will form short-jointed wood, full of fruit, like the sample enclosed (fig. 344). As the fruit swells give two or three soakings of manure-water. From the time it approaches maturity the drier the roots can be kept the better. Except in the sunny South, only one crop can be ripened in the year out-of-doors. This suggests the vital question, which crop? Upon the answer to this two courses of treatment depend. These may be called the covered and the exposed. Those who cover say, Why the largest of those fruit that show in the autumn (see fig. 344) shall be our crop for the succeeding summer. By excluding the frost from these they will begin growth next May at the point where they stopped in October, and we shall gather an early and a bountiful harvest. Well, they may or may not. There is little certainty about it. The rats may gnaw the fruit, or more likely, when the trees are uncovered next May or June, the transition from darkness to light will prove too much for the fruit, and down it will drop.

Thus it has happened that, taking an average of seasons, I have found the covering of outdoor Figs not worth the candle. My crop, which is mostly plentiful, comes forth from the ends of many shoots left. Beyond the green Figs on the shoots sent, you will observe Figlets, if I may so call them, in embryo. These and a few more that cluster around the terminal bud unseen, and develope themselves as it starts into growth, constitute our main crop. These have plenty of time to ripen, and hardly ever fail; but in mild weather, many of the larger ones also stand, and provide us with a longer succession.

Our out-of-door Figs are grown in a small stable or court yard, surrounded on all sides with buildings. They, therefore, grow on every aspect, and we gather ripe fruit off north walls. Of course the east, west, and south yield better. We intend to cover all the roofs with the trees, as I find they do well on the tiles. The trees have no borders, and the yard is paved throughout. Now the trees have got into full bearing, all the attention they have is to tie-in the branches, and gather the fruit; and as they are strong and ripe for fruit-bearing, they have had no water but the rain that falls on them for some years. The buildings are troughed. We have several varieties, but the Brown Turkey is the best for this mode of treatment. This tree looks rough, and would offend the eye and taste of the slashing knife-men, and the straight-edge and chalk-line trainers. But they are clean, healthy, and, above all, fruitful to a degree that astonishes most visitors who have seen them. The branchlets sent are a fair specimen of the upper portion of the trees. They are literally studded closely with fruit. *D. T. Fish.*

—— The south of England is, of course, so far as this country is concerned, the place *par excellence* for Fig growing, and, as a general rule, they do not make so much wood as in the midland and northern counties. I remember what splendid crops of Brown Turkey I used to gather 15 years ago, when living on the south coast. All the pruning required was done in the summer, and most of it with the finger and thumb, and there was no bother with covering up with mats in the winter. Is there not too much of that coddling done? I know it is generally recommended, but I much doubt the wisdom of indiscriminate covering. I believe in very exposed positions, where a little protection may be necessary, it is put on too early and kept on too long. In my opinion, the great thing to aim at is to get firm, short-jointed, and thoroughly well ripened wood. And I think the way to secure that is to pay more attention to the roots, by lifting and root-pruning, to check that gross and luxuriant habit which the Fig in the midland and northern counties too much assumes; and when, in addition, a close attention is paid during the summer to pinching and stopping, not much knife-work is required.

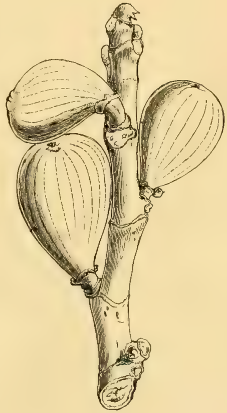

Fig. 344.—Prolific branch of Fig.

I remember some 20 years ago, when I was a pupil of the late Mr. Markham, of Hewell Grange, Worcestershire (a well known practical fruit grower), what fine crops used to be grown, both in the houses and on the open walls; and if my memory serves me rightly, most of the trees were trained horizontally, which had a tendency to equalise the flow of the sap. Great pains were also taken with the young wood to place it in such a position as to thoroughly expose every leaf and branch to the full influence of sun and air, and whenever symptoms of too much grossness of habit were perceptible, a trench was dug along the front of the tree and the roots pruned, and a little sound loam added, but no manure or any exciting stimulant.

To sum up in a few words, after an experience of upwards of 20 years in the southern, eastern, and midland counties, I would say—Let the border be well drained, and the bottom concreted; for soil, select the top 3 or 4 inches of an old pasture, with or without a few crushed bones, according to the quality of the soil, and if too heavy incorporate with it a proportion of old mortar rubbish from old buildings. Disbud early, leaving only sufficient shoots to form bearing wood, so that every leaf may have, as far as possible, the benefit of full exposure. Pinch with finger and thumb at the fourth or fifth leaf, and pinch persistently. If at any time too much luxuriance is apparent, check the supplies by root-pruning. Mulch in hot dry weather to save watering; and, if the cultivator is a protectionist, whenever severe weather is expected, stick a few feathery Yew or Spruce branches about the trees, and draw over all an old fishing-net, to prevent the wind moving them. *Edward Hobday, Ramsey Abbey, Hants.*

—— Your correspondent, "S. W.," at p. 1552, remarks that the knife should rarely be used in the culture of this fruit, and I quite agree with him in the case of large standard trees, if large fruit is not the object. In the summer of 1869 I had the opportunity of seeing several large trees (standards) of this fruit, growing at Scadbury Park (Viscount Sydney's home farm), Kent, all of which were carrying heavy crops; but, as might be expected, the fruits were not large like those gathered from trees trained against a wall, otherwise the result was all that could be desired. I may here remark that from the appearance of the trees at Scadbury Park they cannot have had an application of "Saynor" for many years past. There are here several hundred feet of wall covered by Fig trees, one of which has a spread of branches of 60 feet, and they all receive a like treatment, which is similar to that of the Peach; the knife has been applied freely every year, and with very satisfactory results. "S. W." says that the treatment of this fruit seems, to him, to be little understood by gardeners in general. Now, allowing him to be an authority on the subject, will he be kind enough to give the readers of the *Gardeners' Chronicle* the benefit of his experience. *H. W. Ward, Longford Castle, Salisbury.*

—— "S. W." don't seem to like the knife. I would like to know what he would do bending down a branch 4 feet long, and as large as one's thumb. What good is a branch that size? perhaps he will say; you can't expect any fruit from it. But I do, and, moreover, I get it. What does "S. W." want to check growth for? I say, give the trees every opportunity to make strong growth. "Check their growth, or you won't get any fruit," is, I believe, a mistaken idea. With me it is "the stronger the wood the better the fruit, and more of it." The grand secret (as most gardeners are already aware) is to have the wood well-ripened, and I think that if "S. W." takes good care to have his wood well-ripened by early autumn pruning—that is, pruning away all small and useless branches as soon as the crop is gathered, and exposing those intended for bearing to the direct influence of the sun's rays—he will be well satisfied with the result. *J. H. H., Twickenham.*

Home Correspondence.

Abies Douglasii.—In your report of my remarks at the last meeting of the Royal Horticultural Society, I am made to say that a friend of mine in Scotland was offered £70 for the cones on a single plant of Picea nobilis! Here there is a twofold error. It was for all the cones on his many specimens of Abies Douglasii, and not for those on a single specimen of the former species, that the liberal offer to which I adverted had been received. Indeed, I do not know—and should be much obliged to any of your correspondents who would tell me—whether living plants have ever been raised from cones of Picea nobilis grown in England. *J. B.*, 9, *Hyde Park Gate South.*

Scolopendrium vulgare crispum amplum.—In Lowe's "Native Ferns" mention is made of Scolopendrium vulgare crispum amplum, which is described as "a magnificent crispum, with fronds 18 inches long and 4 inches broad, deeply and densely frilled, and having a crenate margin; found by Mrs. Hole, of Parke, Bovey Tracey." I should feel greatly obliged if any of your correspondents would inform me where I could obtain a plant of this fine variety, as I cannot find it in any catalogue that has come under my notice. I am very much surprised at so few persons cultivating our native Ferns, as they require so little attention, and the numerous varieties are so beautiful. Cannot you do something to wake up the interest of your readers in this matter? *Jay Aye.* [Probably this variety has never been in the trade, but has remained in private hands, as many others have done. EDS.]

The Introduction of Araucaria imbricata into England.—In the notice of Araucaria imbricata by your esteemed correspondent, Mr. Barnes, I observe that he attributes its introduction to Sir Joseph Banks, and names 1795 as the date. I am sure he will excuse me for remarking that this is obviously an error, as Sir J. Banks returned to England in June, 1771, and did not make any other South Sea voyage. I believe the true history of the introduction is as follows, taken from Vancouver's Voyage, the narrative of which is most elaborate and valuable, though at this time I have not access to it. As far as memory will serve, the case stands thus:—Somewhere about the year 1795, Menzies, surgeon and naturalist to the expedition, saw at the table of the Governor of Valdivia seeds from the cones of A. imbricata, placed as an article of dessert, and attracted by what he knew and heard of the forests of these trees on the slopes of the Andes, he brought a few to England. It is probable, therefore, that the well-known tree at Kew was raised from this source, and if so it must be about 80 years old. Seeds were again introduced to a large extent nearly 40 years ago. The name of Menzies, who was a man of much ability, is perpetuated in Abies Menziesii from the north-west of America. *G. Bath, Dec.* 12.

Cineraria acanthifolia.—I don't think this species can be too highly estimated, as a very distinct and showy white-foliaged hardy bedding plant. The frost of some days ago—very sharp indeed on our somewhat exposed position on the London clay—left it unscathed, while Echeveria secunda glauca, on a sheltered raised bed, was completely killed. C. acanthifolia is of an elegant and uniform habit, and when the sun shines on it, or a brisk air dries the leaves, it is nearly as silvery in appearance as Centaurea candidissima. Perhaps it is more capable of withstanding frost than damp, and while I believe winter and spring gardeners in the southern part of the kingdom will find it one of the most valuable additions to their lists they can receive—for we are very short indeed of hardy silvery-leaved plants—I do not go the length of advising spring gardeners in the midland districts, or the North, to plant it in the open air in autumn till they are fully assured of its capability to stand the winter. I would advise that it be kept in cold frames in pots through the winter, and planted out in the beginning of March, a process it would be a good plan to adopt with Myosotis dissitiflora in uncertain and inclement localities. *R. D.*

Blue Gown Cucumber.—I have always a jealous eye to new varieties of anything, more particularly in the shape of those kinds that have to be relied on for a supply. I look upon this Cucumber as the handsomest and finest of all Cucumbers, and also as prolific. We have fruit of it 20 to 24 inches long, even at this date. I find it is both a black and a white spine, both kinds being seen on one fruit. Mr. Parker, of Tooting, witnessed this with me some months ago. *H. K.*

Primula vulgaris auriculiflora.—I send herewith a few blooms of this Primrose, gathered from plants growing in a pan in a cold frame, to show its usefulness for winter work, as the plants in question were lifted from the open ground during October, being then in flower; they have continued to produce blooms ever since, and I have no doubt will still continue so to do until the spring. The Primrose, as its name implies, is akin in habit and appearance to the common variety, but is earlier to flower, and the individual blooms greatly surpass it in quality. The flower has good substance, is well rounded in form, and the colour is deep rich crimson, which is somewhat heightened by a bright lemon centre; it is also thrum-eyed. It is to me a matter of regret, that the plant should be overweighted by such an exceedingly technical name. A Primrose, however beautiful, is but a Primrose after all, and the public are jealous of having an old favourite called by any other designation. I should be glad if the Editors could find a name for it, at once fitting and descriptive, yet simple. Flowers of this Primrose, if used in conjunction with a leaf of either Primula or Violet, make very natty "button-holes," and will endure exposure to cold with greater freedom than will flowers that have been raised in heat. Even for such a purpose I think it would pay well as a speculation for those who trade in that direction to plant up a large frame full of it. Established plants are best for such a purpose, as they flower much earlier and more abundantly than younger ones. A box of plants in flower was exhibited at South Kensington last March for the attention of the Floral Committee, when it failed to gain the notice it deserved; however, I propose to try the patience of that body yet again. *Alex. Dean, Bedfont.* [Why not call it Early Crimson Primrose? It is of a richly-tinted maroon-crimson, with large yellow eye, and altogether is of a very showy character. EDS.]

How to Heat a Small Conservatory.—Observing that you treat this as an important question, I beg to suggest a method, having thoroughly proved the principle. Having a register grate in a sitting-room, at the back of which is a small conservatory or plant-pit, let a hole, 9 inches long, and 4 or 5 inches deep, be cut through the iron back of the register, 3 inches or more below the level at which the register valve hinges. The conservatory flue is connected with this hole, which is, in fact, the entrance to it, the cover of the flue being anywhere above this hole, and below the level of the valve hinge. The return-flue must enter the chimney just above the level of the register valve. Light the fire with the register-valve open. When the chimney is warmed close the valve. The draught will now get in through the hole, and the hot air, &c., will travel through the flue before it enters the chimney. You will have the full comfort of the fire in the sitting-room, and see nothing about the grate beyond that which is commonly seen, viz., an orifice for the escape of smoke. The conservatory will have the benefit of the heat which is commonly wasted up the chimney, besides that at the back of the fire. The back of the register below the hole may form one side of the leading flue. Your readers may rest assured that the principles which govern draught are fully observed in this arrangement, and need not fear any failure on that ground. Moreover, it is of no importance whatever that the leading flue may have to descend. The proposed plan offers the peculiar advantage that the flues may be built at any level, or in any position, most convenient. Precautions: A register grate should be chosen which has the valve near the fire, so as to be well exposed to its heat. A flue may travel in any direction so long as the bottom of the chimney with which it is connected is well warmed; and the conducting property of iron will enable the valve to effect this all-important object. The valve must fit and close well. The joints of the flue in the conservatory should be well secured. The return flue should enter the chimney above and close to the valve. If more heat be required the hole must be nearer the fire. The back of the fireplace may be a strong grating, and the draught have to pass through the fire in order to get into the flue. This will involve of course the consumption of more fuel. If this grated back is used there ought to be a hole also, as before described, with a valve fitting loosely, and pivotted at each end. When this valve is closed the draught will be through the grating, but when open it will be through the hole. I gave a plan on this principle to a lady some years since. It worked most satisfactorily, although the workmen ridiculed it during the process of construction, because the fire was to be in the harness room, much higher than the level of the flues. If the leading flue has to descend care should be taken so to arrange the construction as that fuel and ashes should not be able to drop through and choke the mouth of the flue, or so as to remove such matters. This may be done by making a side brick of the flue movable; but the joint should be well secured; the draught must be from the sitting-room, not from the conservatory. Accumulation of soot in the flue may be prevented by opening the register valve when fresh fuel is supplied to the fire and much smoke is given off, and closing it again when the fire is clear. *J. M. Taylor, Seer Green Vicarage, near Beaconsfield.*

Senecio argenteus, S. incanus, and S. uniflorus are all represented to be hardy, and, therefore, of great value for outdoor decoration. I saw them at the Hale Farm Nurseries, Tottenham, at the end of the summer, and was much pleased with them; Mr. Ware spoke of the two former in the highest terms. The first-named has a habit of growth representing a "silvery-white compact rosette, 4 to 6 inches across," as Messrs. Backhouse & Son, who sent it out, correctly described it; and Mr. Ware stated that it seemed to thrive best when planted in the borders in good loam, raised with plenty of stones. Respecting its hardihood, Messrs. Backhouse & Son state that they have "proved it for two or three winters, and can recommend it with the utmost confidence." S. incanus forms dense tufts of foliage, that appear to be quite as attractive as the former, but it grows more freely in the open border, and produces larger tufts. *R. D.*

Hardiness of Dracæna indivisa, Agaves, &c.—Having a reserve stock of this plant, I this season left about two dozen in their summer quarters in the flower garden, and although we have had on three different occasions as much as 16° of frost, they are not in the least degree injured. Should this fine plant prove to be perfectly hardy, it will be invaluable for "winter bedding," for although we have left out so few, their beauty and grace enliven the whole terrace garden. It must not be confounded with Cordyline indivisa, which is far more difficult to grow. Agave americana and A. americana variegata have also withstood all the frost we have yet had, apparently unscathed; and though there are 40 fine plants, I have determined still to let them stay and risk them, as they are the admiration of all visitors. I may say that all the Agaves are planted on a carpet of Sedum glaucum and Sedum corsicum, encircled with Echeveria secunda glauca, which will withstand all the frost of an ordinary English winter. Why I say this is, that last winter, being a severe one, some of my neighbours lost all their stock; and though I did not, like Mr. Simpson (p. 1584), I had a narrow escape. The winter previously they stood perfectly. I have this season got my reserve stock planted out under some of "Rendle's plant protectors," and which, I doubt not, would be ample protection in the severest winter. *W. Wildsmith, Heckfield.* [Our correspondent appears to refer to Dracæna or Cordyline australis. EDS.]

A Potato Trial.—During last winter I devoted a portion of my time to the successful growth of the Potato, in pursuance of which object I closely consulted the works of C. W. Johnson, Sibson and Voelcker, Shirley Hibberd, Thomas C. Fletcher, Macdonald, and others; and thinking that the trial conducted during the past summer in accordance with a plan resulting from such study may be acceptable in your readers, I feel pleasure in forwarding the following statement. The trial ground was 1⅓ acre, all manured, and treated in the same manner, the soil being of a loose sandy nature, very much like the Long Valley at Aldershot, from which it is distant five miles. Sixteen different sorts of Potatos were subjected to trial, side by side, the trial and result being given in a tabulated form. The ground was subjected to the following treatment:—In the autumn it was manured with ten tons of stable manure to the acre, and ploughed to a depth of 12 inches, thus it remained for the winter. In the early part of March it was again manured at the rate of 6 tons to the acre, and then cross-ploughed to a depth of 9 inches; after that it was treated with a dressing of artificial manure sown broadcast in the following proportions:—

	Bush. per acre.
Soot	20
Salt	20
Guano	5
German calcined potash salts*	5
Superphosphate of lime	5
Dissolved bones	1½
Gypsum	4

Sixteen sorts of Potatos were then planted in drills with the hoe: early Potatos, 18 inches between the rows and 9 inches between the sets; late Potatos, 24 inches and 12 inches. The Potatos were all planted together during the first week in April, and when the plants were about 2 inches high they were top-dressed with 1½ cwt. of sulphate of magnesia or Epsom salts, and 1½ cwt of nitrate of soda to the acre. And now for the Table, to see the results:—

Sorts planted.	Early, Medium, or Late.	Whole, or Cut.	Bushels planted.	Bushels raised.	Produce per bushel.	Price per bushel for Seed.	Condition.
Myatt's Prolific ..	Early	Whole	4	22	5½	8s.	Sound
Mona's Pride ..	,,	,,	4	13	3¼	10s.	,,
White Rock ..	Late	,,	3	33½	11⅙	6s.	Very sound indeed
Fluke Kidney ..	,,	,,	3	10	3⅓	7s.	Tolerably sound
Dalmahoy ..	Med.	,,	2	10½	5¼	7s.	Sound
Webb's Imperial ..	,,	,,	3	18	6	9s.	,,
Walker's Improved Regent	Late	,,	2	13	6½	7s.	,,
York Regent ..	,,	,,	39	140	3⅗	6s.	Much† diseased
American Early Rose (Sutton)	Early	,,	1	5¼	5¼	18s.	Tolerably sound
American Early Rose (Hooper, Covent Garden)	,,	,,	1	6¾	6¾	28s.	Sound ‡
Wood's Scarlet ..	Med.	,,	½	2¼	4½	18s.	,,
Early Goodrich ..	Early	,,	1	6¼	6¼	18s.	Slightly diseased
King of Potatos ..	Med.	,,	2	10	5	9s.	Sound
Bovinia	Late	Cut	12	124	12	10s.	,,
Redskin Flourball	,,	,,	2	13½	6¾	18s.	,,
Paterson's Victoria	,,	Whole	4	24½	6⅛	8s.	,,
Suttons' Race-horse Kidney	Early	,,	1	2¾	2¾	18s.	Diseased

Thus, for 84½ bush. planted we have 455¾ bush. raised—or an average of 5⅜ bush. raised per bush. The Potatos were all dug together in the latter part of August. The previous year the crop of Potatos off this same piece of ground, 1⅓ acre, was only 210 bush., from 30 bush. planted, ground only commonly manured. This was before I came to the place. The crop were all York Regents. It will thus be seen that by my mode of treatment I raised more than double the crop from the same ground. The artificial manures were applied upon the principle of supplying what the Potato contains. According to Professor Anderson the ash of a Regent Potato contains:—

	Per cent.
Peroxide of iron	0.31
Lime	1.79
Magnesia	8.75
Potash	50.52
Chloride of potassium	5.39
Common salt	2.07
Phosphoric acid	11.49
Sulphuric acid	7.08
Silicic acid	0.98
Carbonic acid	11.30
Charcoal	3.65
	100.33

John P. Cheyne, Commander R.N., Penrose Villa, Fleet, Hants.

Successful Peach Culture.—I have two Peach-houses here, the united length of which is 80 feet, and they are 8 feet wide. They are heated by a common brick flue; and I have Peach and Nectarine trees on the back wall, and also on a trellis in front. During the present year I gathered from these houses 764 fruit, or upwards of 63 dozen Peaches and Nectarines; many of the Peaches weighing 8 oz. each, and some more. My trees not being large and strong, I cut away more than 300 fruit, for the purpose of giving them a partial rest, having the previous year (1870) gathered from them the prodigious number of 1728, or upwards of 142 dozen Peaches and Nectarines. In 1868 I gathered 1280, or more than 106 dozen. I may, therefore, I think, safely say that I have not laboured in vain. From my youth I have been a great admirer of this beautiful and luscious fruit, and earnestly devoted to its cultivation, in which I find that some amount of skill and assiduous attention is required to ensure success. But although the attention required is almost interminable, the successful cultivator is amply rewarded by such results. I once gathered from a Royal George Peach tree, on an outside wall, in one season, 600, or 50 dozen fine fruit. That tree never failed for seven successive years to produce excellent fruit in abundance. Indeed, the worst crop I ever had from it was 420, or 35 dozen Peaches. The tree was not at all diminished in health and vigour. *Wilson Boardman, Gr. to S. H. Norris, Esq., Altrincham.*

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* Sown on March 20, and then harrowed in. In making this mixture, the guano was first mixed with the gypsum, the dissolved bones with the salt.

† Planted on same ground before.

‡ Direct from America.

Pterocephalus Parnassi, a dwarf free-growing silvery-leaved tufted alpine, was seen very attractive at the Hale Farm Nurseries; it is allied to the Scabious, and bears flesh coloured flowers. I can't say whether it is hardy or not, but it seemed likely to prove a useful plant in the garden. I have called attention to this and other silvery-leaved plants, as Cineraria acanthifolia, Senecio argenteus, &c., for the sake of those who indulge in a little winter and spring gardening. Silvery-foliaged plants are peculiarly attractive under the leaden skies of mid-winter; they serve to light up the garden in a very pleasant manner, and according to the brightness of the weather will be the measure of their effectiveness. As I write, a most welcome gleam of sunshine has just broken through the heavy clouds that all the morning have hung in the sky like a funeral pall, and the silvery tint of the Cineraria acanthifolia answers to it with a heightened brightness. It occupies the centre of a mass of Myosotis dissitiflora, as yet quite untouched by frost; round the Myosotis there is a band of white double Daisies, and Aubrietia græca, alternately with Bellis aucubæfolia, forms a margin to the bed, which is edged with a kind of wall of Sempervivum californicum, planted in a perpendicular fashion. *R. D., Ealing.*

American Early Rose Potato.—My trial of this having been on a very limited scale this season, I would feel obliged by any of the readers of the *Gardeners' Chronicle* who have made a comparative test of it under different conditions and on various soils, giving the results of their experience. It is certainly a good cropper, and very early ready for use, but with me the quality was not equal to Myatt's Prolific Kidney; and the reports from several who have tried it in the northern district of Scotland are so varied and conflicting, that I would like to know how it has done elsewhere. Some speak of it as just a thin skin with a globe of water; others as being waxy, and very inferior in flavour. *Amateur.*

Orchid Cultivation.—I am not about to enter into any controversy with your versatile correspondent, "G. H.," about his Orchids. He has mistaken my motives. I did not ask information, but made suggestions, more or less clear. I am obliged to him for referring me to the "Himalayan Journals;" I read them two or three times over some years ago, but had forgotten whether the Orchids were included in the valuable account of Darjeeling: hence my query. I quoted "Ex-Cantab," I remember, in the allusion to Tweedledee! I think I have nothing further to explain, so now for a word about "ground Orchids," so called, in which I will try and answer a question which "G. H." tells me I asked. I once traced a road, passing over a rock (elevation about 6000 feet, and between 11° and 12° N. lat.), upon which grew Aerides Lindleyanum. I sat upon that rock in the sun, and found it—well, warm. This struck me. I went home and took the thermometer from my verandah, then standing at 68°, and placed it upon a rock near my garden, and the glass—the mercury I mean, I must be careful—went up to 116° (nevertheless frost settles on these rocks during the night in moist places). I wish most particularly to explain that this was not "at a depth of from 2 to 3 feet," but on the surface of the rock, as nearly as may be, where the Orchids would grow. "G. H." further remarks—"the same plants (Orchids)? go from the sea level up to from 14,000 and 15,000 feet." I challenge such a statement, but if "G. H." is satisfied as to its correctness, then what in the name of fortune has he been arguing about so long? Your correspondent makes Dr. Hooker say—"In our gardens we can neither imitate the conditions of an alpine climate, nor offer others suited to the plants of such climates." Now what bearing can this possibly have upon Orchid cultivation? I am sure the Rhododendrons, introduced by Dr. Hooker himself, are from alpine climes, and I cannot help thinking that your worthy correspondent "G. H." had best give up all ideas of cool Orchid growing if he believes it "will prove that the ground Orchids we have do not come from high elevations." *James Macpherson.*

Amaranthus salicifolius.—I was so struck with the appearance of Messrs. Veitch's Amaranth at the Edinburgh show, that I really thought, at a little distance away, it was a Croton angustifolium, with the elegant colour of foliage, and I little thought it was an Amaranth until Mr. Harry Veitch told me it was one. It is, so far as I know of that class of plants, one which will rank high in gardens, and, in fact, the whole tribe is not half grown as it should be. The variety I raised in France, elegantissimus so named, was between tricolor and caudatus: could we get A. caudatus with a tricolor elegantissimus leaf, it would be a splendid thing; but we have in Veitch's Amaranth one which is of equal or more value, not only as a pot plant but as a flower garden decorator, and at the same time a magnificent vase plant for conservatory or elsewhere. It will also, I have no doubt, make a chaste dining-room plant. *H. Knight, Floors.*

George's Patent Calorigen.—At the present moment the all-important subject with those who have small and unheated conservatories and greenhouses is—how they can most efficiently keep up the required temperature, with a due regard to economy. This being the case, we take the opportunity of directing the attention of those interested to the invention above named, and which, from an examination, we believe to be one of the most satisfactory yet introduced. For heating small conservatories, the Patent Gas Calorigen is well adapted, as the temperature can be regulated almost to a nicety, thus obviating the great injury done to the plants through over-heating. The annexed illustration, fig. 345, shows the general outline of the stove, and its working may be described thus:—In rooms or buildings where a chimney is not available, two holes are made in the wall to allow the pipes F and F to pass through. The cylinder E is attached to the ends of the pipes F and F, with the open end upwards. When the gas is lighted the action is as follows:—The product of combustion leaves the stove by the upper pipe F, and is discharged into the cylinder E, at the same time a current of air passes through the cylinder E, through the lower pipe F, to support combustion. One end of the pipe G is inserted in the opening at the bottom of the stove, while the other end is carried either through the floor or wall, to communicate with the external atmosphere. When the gas is burning in the stove it will heat the coil contained therein, thereby causing the air to rush in through the pipe G, and out at the opening H, thus affording a constant supply of pure air warm to the apartment in which the stove is fitted up. The door of the stove is kept closed, and when not in use a cap is placed on the outlet H. Water being one of the results of combustion, the pipes F and F decline slightly from the stove, and so cause it to flow into the cylinder, where a small hole is provided for its escape. The manufacturers are Messrs. J. F. Farwig & Co., 36, Queen Street, Cheapside, E.C. [EDS.]

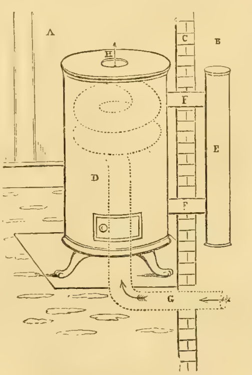

FIG. 345.—GEORGE'S PATENT GAS CALORIGEN.

A, Interior of room; B, Exterior of building; C, Wall; D, The Calorigen; E, A cylinder; F, F, Pipes communicating to supply air for combustion, and carry off products of combustion; G, Pipe for passage of cold air to Calorigen; H, Outlet for air into the apartment, after being made warm.

Judging Fruit.—At a provincial horticultural show, held in September last, a special prize was offered for the best three bunches of Grapes, of any variety. Two competitors entered the lists, one showing three well-finished bunches of the Black Hamburgh variety, large in berry, well coloured, perfectly ripe, and of excellent flavour; the other exhibitor showed three well-developed bunches of the Muscat of Alexandria, with berries of fair size, but quite green, and in an evidently unripe condition. The judges, however, awarded the prize to the Muscat Grapes. During the present season I attended as a judge at another provincial exhibition, and amongst other fruits exhibited was a very creditable display of table Plums of various sorts, amongst which was a rather ordinary dish of Green Gages. My coadjutor said the first prize must, of course, go to the Gages. This, however, I most decidedly failed to see, so an umpire was called, who at once said, "Oh, you can't get away from the 'Gages,'" so the Gages had to have it. I have not unfrequently heard a similar summary argument used with respect to Strawberries and other fruits, such as "You can't get away from the Queens," &c. But to return to the Black Hamburgh and Muscat Grapes, alluded to above. I must say that I could not by any means endorse the decision of the judges, as it was very evident that the former were a much closer approximation to that degree of perfection which the particular variety may be supposed to be capable of attaining, than were the latter, *i.e.*, the Muscat of Alexandria; or, in other words, the Black Hamburghs were in all respects better Grapes, according to their kind, than were the Muscats, according to their kind, and on that account they ought, in my opinion, to have taken the prize. It appears to me it is only in instances where equality may be considered to exist that the acknowledged superiority of one variety over another should be taken into consideration; but your opinion, Messieurs Editors, or that of some of your experienced correspondents, upon the subject would be much valued by possibly many of your readers, as well as by *G.* [Grapes ought never to be rewarded unless fairly ripened. EDS.]

Water Required for Vines.—I have read your remarks upon Messrs. Lane's fine Grapes, and think they should be remembered by all Vine growers. If agreeable to you, I will write a short article proving the great quantity of water which the grand Vines of America—mostly native species—thrive in, mounting the tops of the highest trees. I may add that I have been a rambler in nearly all parts, and have passed 14 months in North America. The Vine is my hobby; it was so when I was a schoolboy, and in all parts of the world it has had my attention. I have a section of the Water Frost Vine, a native of Canada, $1\frac{7}{8}$ inch thick, $10\frac{3}{4}$ inch girt, which weighs over half a pound; it is perfectly solid, there being no pith. This was cut where it was growing, just out of the water at the river side. It was a grand Vine. *R. M. W.*

Hardiness of Cytisus racemosus.—I notice in a garden here (at Scarborough) a plant of Cytisus racemosus now in perfect health and vigour, with flowers upon it, and perfectly uninjured by the severe weather which has prevailed more or less for the last month, and during which time there has certainly more than once been as much as 15° of frost. I learn from inquiry that the plant was grown in a greenhouse until last spring, when it was planted out in the open garden. It has had no protection whatever, and does not seem as if it would require any. What can you, or any of your correspondents say as to the hardiness of this well known and most valuable winter-flowering greenhouse plant? *C. W. Strickland, Dec.* 10.

Lawn Mowing, Daisies, &c.—Some short time since my attention was called to a singular circumstance, by a gentleman residing near Cork. He has for some years taken great pride in having a well-kept lawn, employing every season one or two persons to eradicate weeds of every description, so as to have nothing but the finest grasses and Clovers. Early in the spring his lawn was in splendid condition; being, however, fond of trying experiments, he used a lawn-mowing machine without the grass-box attached, and, so well pleased was he with the efficient manner and rapidity with which his lawn was mown, that he advised numerous friends to adopt the same plan. On my calling upon him early in November, he asked me my opinion respecting machines used without the grass-boxes. I could scarcely give him a decided opinion. Without expressing any himself, he asked me to look at his lawn, and to my astonishment it was one mass of Daisies; in fact so full, that little if any grass will be left in spring if some remedy is not applied at once. The question arises, How can this extraordinary crop of Daisies be accounted for? Both the gentleman and myself were of the opinion that the grass, Daisy flowers, &c., being only chopped in pieces, and allowed to remain on the grass, the seeds to a great extent matured themselves; and the result is, that in the moist, genial climate of the Cove of Cork, nearly every seed must have germinated, and thus undone the work of years. We may be wrong, and should any of your numerous readers be able to give their experience with machines used in the same manner, it may tend to elucidate the, at present, puzzling phenomena. I could not advise any remedy excepting digging the whole lawn, levelling, and sowing with the finest lawn mixtures. Before doing so, I asked him to try a small portion with Watson's lawn sand, and I hope he will be enabled to give you his experience in the use of it. *William Heale, Victoria Nurseries, Upper Holloway.*

Pinus excelsa Seeding.—With respect to the seeding of Pinus excelsa in England, I may say that I have many fine plants grown from seed gathered at High Elms, near Farnborough, in Kent. *C. W. Strickland, Dec.* 10.

Centaurea Clementei.—This is a charming addition to our stock of foliage bedding plants, and far outstrips older varieties for grace and beauty. Its value as a winter decorative plant for conservatory or greenhouse cannot be over-estimated. The rich silvery whiteness of its deeply cut and serrated leaves, which are of unusual size, have a most charming effect. This variety is not so liable to damp off when lifted from the open ground as most others, and it also comes perfectly true from seed, which I consider the readiest mode of getting a stock. The propagation of the Centaurea by means of cuttings has hitherto been attended with much loss, on account of their liability to damp; this may be got over to a great extent by cutting each shoot about half way through, and slightly breaking it over about ten days before finally taking it off. By adopting this system, cuttings may be put in at almost any time when they can be had, with success. *J. Taylor, Rose Hill Lodge, Botcherby.*

Asphalte.—I should be glad to understand from any of your correspondents by what means I can hasten the stiffening process, consequent upon the dry formation of asphalte, as it, at this season of the year, is a long time setting firmly, with only plain gas-tar, dry lime, and Portland cement, with gravel in proportions, as directed. *W. B. Hurnard.*

The Twelve Heaviest Gooseberries.—We send you the following, in answer to your correspondent, "T. H. M.," who asks for the names of the 12 heaviest Gooseberries:—*Red:* Dan's Mistake, 30 dwt. 5 gr.; London, 31 dwt. 20 gr.; Rover, 29 dwt. 11 gr. *Yellow:* Leveller, 28 dwt.; Mount Pleasant, 28 dwt. 7 gr.; Ringer, 28 dwt. 9 gr. *Green:* Stockwell, 31 dwt.; Rough Green, 27 dwt. 14 gr.; Village Green, 28 dwt. 14 gr. *White:* Antagonist, 29 dwt. 18 gr.; Freedom, 26 dwt. 20 gr.; Overseer, 26 dwt. 13 gr. *E. Salsbury & Sons, Melbourne, near Derby.*

—— *Red:* London, Companion, Wonderful; *Yellow:* Catherine, Drill, Leader; *Green:* Thumper, General, Queen Victoria; *White:* Freedom, Queen of Trumps, Snowdrop. *Andrew Meikle.*

Horse Dung as a Remedy for Leaky Boilers.—This is nothing new. Horse-dung is not so good as cow-dung, and both are poor makeshifts. Besides, the construction of most heating apparatus is such as to render it difficult to get the dung inside the boiler. In some cases it will staunch a leakage for weeks, and in others it will either not act at all or not for more than a few days. But at the present day, when there is so much treacherous cast-iron used in the construction of boilers, where it can be applied it will sometimes answer—say if a leakage takes place in severe weather, and it is not possible to replace the boiler without great injury to the inmates of the houses that are heated by the leaky boiler. *T. Baines, Southgate.*

—— I have used horse-dung for stopping a leak in a boiler on several occasions, and always with success when the aperture in the boiler was not very large. *J. Williamson, The Castle Gardens, Whitehaven.*

Witsenia corymbosa.—I have here a grand specimen of the above, measuring about 2 feet through. It has been one mass of flower from about the end of last July, and has still every appearance of giving me a good supply of flowers during the winter. Any one who has to keep up a constant supply of cut flowers for bouquet making, &c., at this time of year, would find this a valuable plant to add to their collection. Its flowers are of a purplish-blue, and answer admirably for nosegay and bouquet making. It is easy of cultivation, and only requires an ordinary greenhouse to grow it in. It delights in good, fibry loam, with a mixture of peat, and good drainage. *T. Carlton, Ashtead Park.*

Large Vegetable Marrow.—I have at present in my possession a Turk's Head Marrow of the extraordinary weight of 22 lb. 8 oz., which was grown in a cottage garden in the parish of Ockham, in Surrey. I would gladly show it to any of your readers who might happen to be coming this way. *W. R. Tate, 2, Strode Road, Crown Road, Fulham.*

On the Management of Boilers.—I would go much further than Mr. Campbell, who speaks of emptying all heating apparatus periodically. Every boiler ought to have an inch or an inch and a-half tap at its lowest point in the stokehole, and all warm water that is required for washing pots and other purposes of almost daily occurrence ought to be drawn from such tap, when the water is hot and in full circulation. By this means, if there is any sediment, it will come away as fast as it is made. On the subject of stoking I quite agree with your correspondent as to the necessity of checking the draught before opening the furnace door when strong fires are used. At the same time I may observe that it is much easier to give directions than to get them implicitly carried out, and a far better remedy is to use wrought-iron instead of the treacherous cast-iron boilers. *T. Baines, Southgate.*

Amaranthus salicifolius and Celosia aurantiaca.—I have not yet had the pleasure of seeing this new Amaranth, but if the figure and description of it be correct (which there is no reason to doubt), a grand acquisition will undoubtedly be secured. Even if it should not prove sufficiently hardy for outdoor cultivation, it will nevertheless be eminently suited for the decoration of the conservatory and greenhouse, and as a dinner-table plant it must prove to be all that can be desired. I would also beg to take this opportunity of calling attention to a plant of kindred race, viz., the Celosia aurantiaca, which I think only requires to be better known to be more appreciated. I am unable to give any certain information as to the time of its introduction, although I believe it to have been introduced within the last few years. It is, strictly speaking, a tender annual, and, to succeed well, ought to be grown in a stove, or intermediate house, or warm greenhouse. It comes quite true from seed, that is, the plants do not vary in any degree from each other, and it has no tendency whatever to revert to the "tufted Cockscomb" style of growth; it is erect and pyramidal in its form of growth, attaining a height of from 18 inches to 2 feet; stem of a pale yellow colour, with pale green foliage, producing immense spikes, or rather plumes, of rich chrome-yellow, and remains in full beauty for several months. It is an exceedingly suitable plant for dinner-table decoration, and has a very pleasing effect when mixed with Dracænas and other ornamental foliaged plants in the stove or intermediate house, where it will continue in beauty until Christmas, or later if desired. The seed should be sown in heat about the middle of March, and treated in all respects similar to Cockscombs, with the exception of using a soil less rich than is usually supplied to the last named plants. Over-potting ought also to be avoided, and the plants are somewhat impatient of over-watering. Very fine specimens can be produced in 6-inch pots, and this size of pot is found to be generally the most convenient for placing upon the dinner-table. *P. Grieve, Culford.*

Odours of Plants.—Mr. Britten (at p. 1583) says that "blue flowers are very rarely fragrant, and when so only in a slight degree." Allow me to observe that there is at any rate one exception to this rule, viz., the Primula viscosa (or P. rhætica?—I am in doubt as to the correctness of my names). The plant I mean has the habit of a Cowslip, with the flowers of a very rich deep blue, and have a deliciously sweet scent, which they in some degree retain for some years when dried and kept in paper. I apprehend it is not very common, as the only place where I remember to have seen it growing, though I have been much in the Alps, is the Wallnitzer Tavern, between Bad Gastein and Wallnitz, in Carinthia. I should be very much obliged to any one who would put me in the way of obtaining plants or seeds of this charming little plant, which I am sure would be a great favourite if it can be got to grow on rockwork in our gardens. It grows high up on the mountains in Carinthia, but I do not recollect whether on granite or on limestone. *Alex. Nesbitt, Ashurst Lodge, East Grinstead.* [What about blue Violets? Eds.]

The Circulation of Hot Water.—It appears to me that the theory of hot-water circulation is a very simple one. An apparatus for heating by hot water may be compared to a wheel suspended on its axis: it will remain stationary if let alone, but put a pressure downwards on one side it will begin to revolve. The water will remain stationary until one side is expanded by heat: this expansion can only take place vertically, for laterally the water is confined by the pipes, and as these were as full as they could be, the surplus caused by the expansion goes into the feed cistern or expansion pipe, thus leaving one side of the wheel lighter than the other; the consequence is, the heavy side comes down, and the wheel begins to revolve, and as the process is continuous the revolutions are continuous also. I think the question to be considered is, not why the water circulates, but what is the best way to get the heat out of it. One worthy of credence says, by making the return-pipe the highest, but theoretically the water does not begin to return until it begins to fall, and that is not until it has passed the highest point in the pipes; for as water will find its own level, it is the vertical not the lateral direction that makes the length of the journey: it is not correct to call the highest pipe (if ascending) of an apparatus the return-pipe. The usual plan of horticultural engineers when putting in a heating apparatus is to get the boiler well below the place to be heated; they like a good rise from the boiler into the house, next they give the flow-pipes a gradual ascent to the furthest point to be heated, then the return-pipes descend to the bottom of the boiler. One great objection to this plan is, that if the houses are at different levels, the highest will get most heat; its demands are satisfied first, and it sometimes happens that there is not heat enough left in trying times for the lowest place. I cannot see the practical difference between this (which I call the usual plan) and Mr. Cannell's; they both have the pipes ascending. In my houses the pipes all descend thus:—From my boiler I have a vertical flow-pipe to a valve-box (containing valves corresponding to the houses), higher by 24 inches than any pipes; from this box the water flows downwards through the houses, the lowest heating as well, perhaps slightly better, than any other. I have never seen an apparatus work so rapidly; the water rushes downhill to the bottom of the boiler, there to recuperate. There are many advantages to this plan, and not the least is, that it does away with the necessity for a deep stokehole, for the top of the boiler may be above the pipes. *William Foster, Jun., Stroud.*

The Provincial Visits of the Royal Horticultural Society.—These visits are nearly as far off from the goal of perfection, in a social point of view, as they were the first day the Society bore its banner away from Kensington. Truly it cannot be said that this is owing to the want of invitation to discuss the matter, for any one who has been a reader of the *Gardeners' Chronicle* since those visits were established well knows that that journal has always in the kindliest spirit invited the co-operation of gardeners and others who have the interests of horticulture at heart, by making known, either through its own columns or those of other gardening periodicals, any suggestions that would be likely to benefit the undertaking; and though those invitations have been accepted and acted upon, and certain good done, yet nothing definite has been the result. One year we had a congress, another we had a dinner, and now the question is, what are we to have next as a social companion to the great exhibition? We naturally look for something greater from those annual visits than from our own local exhibitions, emanating, as they do, from the centre of intelligence and from a Society which has been the parent of other exhibitions. We look to that Society for greater things, but unless it has hearty outside support, we can hardly expect to see those great things realised. We should like to see the Royal Horticultural Society on these occasions hedged round by hosts of gardeners, not looking on with eye askance, but taking an active part, so that the exhibitions might be worthy the nation they represent, and that not only in an exhibitional or a spectacular point of view, but also socially and intellectually. At one time it was evident that this latter part received good support both from within and without, and had favourable circumstances attended the other parts of the undertaking, the Congress at Old Trafford might have foreshadowed a pleasing episode of the exhibitions; but the rebuffs which were subsequently dealt out with liberal hand naturally led to some little coolness on the part of those who took part in the proceedings, and deterred them from entering again into a like movement. Diverse opinions may exist as to the desirability of these social meetings at our exhibitions; but those who cannot see beyond the limits of fruits, flowers, or vegetable, are surely not awake to the interests of horticulture. No class of men have less opportunity for intercourse with their fellow-men than gardeners. Happy in the confidence of their employer, happy at their fireside, they cannot be but happy amongst their flowers; and it almost seems a pity to intrude upon their felicity, to drag them forth to fill up a niche in this Juggernaut of horticulture, and perhaps only to fall a sacrifice under its wheels. Again, in the main, a gardener has no social status. A political nonentity, for him social questions have little attraction. The nature of his calling absorbs nearly all his mental faculties. If he has time to plot, it is as to how he may annihilate the vermin which are constantly on his track. Sunday and Saturday, off work and on work, his mind is busy both with the present affairs of his garden, and with those deep in the womb of time. Then as to his isolation. Other craftsmen are continually rubbing up against some social question, but beyond a spasmodic lecture in the village school, gardeners have seldom the opportunity of that intercourse necessary to give them confidence to take a prominent part in any public assembly. With a little more intercourse with their fellow men perhaps the country would find "Odgers" of a different stamp rising from amongst the Roses — men more able to deal with scientific questions affecting their trade, and also social questions affecting their welfare. The nation is becoming more and more horticultural in its character every year, and though we cannot see how every man is to have a "house and garden in the country," we are alive to the importance of horticulture; and whether it be to raise the social status of those employed in it as a profession, or the sympathy of those who embrace it as a pleasure, intercourse is necessary to raise and widen the intelligence of both. And what more fitting opportunity for this intercourse to take place than at those exhibitions? How can it be right, when so much requires to be done, to let such opportunities be lost—to let them go without something to mark their advent beyond the mere recollection of the *£ s. d.* won in the encounter —without something which might grow with us and blossom and ripen into golden fruit? Fortunately, we have the benefit of past experience. We have seen how this tree of horticultural sociality has been planted. The ground was not fully prepared, the roots found no great depth of tilth wherein to ramify, and when the droughty season came, the plant withered up almost to lifelessness, but, let us trust, not beyond the power of resuscitation. The cold shoulder may have been more imaginary than real, and we hope to see the affairs managed at Birmingham in a manner that will tend to corroborate that opinion. On the social question we would advise or suggest that it should partake more of an intellectual than of a convivial character. [Why not both?] True, the intelligence gained at convivial meetings is not of a durable character, for when the viands have tightened their belts, speakers and hearers are more humoursome, and however desirable it may be to have a little wit to help our digestion, this is not what I would recommend to raise the social status of gardeners. The same elements partly enter into the character of a *soirée*, but had I the choice, I would rather have genial after-dinner speeches than the somnolent lucubrations which float on the top of Mocha or cocoa. Beyond these everyday occurrences, the clash of knives or the clatter of Wedgewood, gardeners should be invited to a really intellectual repast, such as a lecture given by some eminent professor, which might take place in the evening and in the town; or take part in a congress, where the papers would be less in number and in length than was the case at Manchester. This might take place in a tent on the ground, but I would suggest that there be but one entrance to it, and that in front of the chair. I cannot but think, with fewer papers, and more discussion, the congress will yet play an important part at those great exhibitions. At least I think it capable, in a great measure, of raising the social status of gardeners. There are other means by which the social advancement of gardeners might be accomplished, but there is one in particular which, if not beneficial to gardeners in general, would at least be of great benefit to a certain branch of the profession, and one which is entirely within the province of the Royal Horticultural Society, and if brought into existence would form no mean feature of those annual exhibitions, and that is to have an exhibition of the competitive designs for such public parks or pleasure grounds as may have been advertised during the past year. That plan drawing—the style of execution—is at a low ebb even amongst landscape gardeners, is evident from the fact that the prize plans of public parks, &c., for the last two or three years, have always come from the drawing-table of the civil engineer; and if this be not looked into, the landscape gardener may sink lower and lower. That such an exhibition would be highly interesting to the rising generation of gardeners no one can doubt; nay, I have conversed with old gardeners, who have declared that they had learned more from such a display than from all the flower shows they ever beheld. But how are we to have such a display? Easy enough. There are the designs sent by numerous competitors to Rochester, for the Castle gardens, and which would form an exhibition of themselves. There are the designs of the pleasure gardens at Bournemouth, and those of Raikes Hall, Lancashire, all within 8 months, and there may be more for anything I know. Beyond a stray advertisement, nothing more is heard of these designs. The plans are sent in, the prizes awarded, and the designs exhibited, and all is over. No critical remarks; no, not even the names of the successful competitors. Well, there are those plans. Let the assistant-secretary of the Society communicate the object to the authorities, and the names and abodes of those who furnished plans will be readily obtained; open communication with them, and the thing is done. There are no civil engineers, architects, landscape gardeners, and others, but what would willingly lend their productions to back an exhibition. In conclusion, I trust to see everything in connection with the great meeting amicably arranged and carried into effect. The Council of the Society, if we are to have a Congress, should have the management of papers, as of yore; and in case some gardeners, who may treat on remunerative points, should have their papers rejected and feel disappointed, I beg distinctly to state that the Society should not be made a stepping-stone to the wages question. However magnanimous on the part of the Society to entertain the point, it would be more magnanimous on our part not to hamper the Society with the question. If we are to have any discussion on the remuneration of gardeners, let us have it under our own Vine and Fig tree. If we have not the heart to do so, but must have the countenance of the Royal Horticultural Society to enable us to discuss the rewards of horticultural merit, or, in plainer words, how to raise the wages of gardeners, then we are indeed a weak lot of brethren, for whom social questions have little attraction. *A. M. R. H.*

—— A few words as to the duration of the show and one or two other subjects I hope will not be wasted. Are five days actually necessary to make it successful? I am persuaded that four days is sufficiently long enough for any exhibition, and if a Saturday must be included let the opening day be Wednesday. As great a success as the Nottingham show was, I think the same would have been achieved with four days. It must be well known that when exhibitions begin on Tuesday exhibitors from a distance have to prepare for packing on the Sunday previous, and when extended to the Saturday following, the day of rest is again broken, and the greater portion of the plants have another day unnecessarily away from home, to say nothing of the extra expenses, which are always heavy enough. I may mention that our actual expenses at Nottingham were £35 10*s.* The conveyance of plants from the railway stations is another serious matter to exhibitors, more especially strangers, who have to run hither and thither for horses or conveyances, as the case may be. It is true something was attempted at Nottingham for the carriage of plants to and from the stations to the exhibitions, but at such a high rate of charges that that something would have been better left alone. We had two trucks loaded with plants, and for the cartage of these plants alone a charge of £2 2*s.* 6*d.* was made, besides 2*s.* for our own van. Some of the vans provided were not larger than a good-sized hand-cart, and yet they were called loads when full. On our return we employed the Midland Railway Company to take our plants to the station, and I must say their charges were very reasonable, being only 16*s.* Now could not the Royal Horticultural Society be as liberal as the Leeds and York societies are, and convey the plants from and to the different stations free, or if not free, at a rate that would not so seriously add to the expenses of exhibitors? Exhibitors could easily inform the secretary or manager what time and at which station they would arrive, stating what conveyance and horses would be required. Again, the staging of fruit at exhibitions, as at present carried out, is to me very objectionable. In the first place, there is scarcely any attempt at grouping for effect; next, the quantity that is spoilt by exposure to dust and decay is incredible, to say nothing of the losses by pilfering. I would suggest continuous frames (with nicely-made lights well glazed) to fit any length of tabling, of a suitable width, the height at back sufficient to admit Grapes and Pines, the lights on sliding hinges, and to open, with ventilation at the back, the fruit to be judged before the closing of the lights. I think this would prevent dust, fingering, and the spoliation of so much fine fruit; and then, instead of the meagre spreads we have now, we should have grand exhibits, and plenty of them. Vegetables, too, will bear some alterations in their arrangement on the exhibition-tables. I think it is not actually necessary to show vegetables on green baize. Could not trays for different classes (such as Mr. Chapman's), with perforated bottoms, be used instead of baize? We see a tray here and there, a few plates, a few dishes of diverse shapes and sizes, and a few boxes; and a great many vegetables are not very artistically arranged on the baize. By using trays the articles could be sprinkled with water once or twice during the day, to keep them fresh, which would add to the effect. In conclusion, we want more unanimity between managers and exhibitors, more friendship, and not so many petty jealousies. What if we lose in a contest, it is not disgrace; but, if we win, it is a credit. *J. Thorpe, Paddock Nurseries, Stratford-on-Avon.*

Foreign Correspondence.

ALLAHABAD.—We have received the following extracts from a letter written by Mr. G. Batcock, and dated October 18, 1871:—

When I first came out I was directed to proceed from Bombay to Nagpore, there to await orders from Mr. H. Rivett Carnac, the Cotton Commissioner for the Central Provinces and the Berars. As I passed along in the train I naturally took notice of the cultivation generally, and though Cotton fields were repeatedly passed, it was some time before I could really feel assured that the little bare sticks, about 18 inches high on the average, studded with little balls, were Cotton plants—they were so unlike what I had seen in Egypt, where, in August, the fields are one mass of foliage; and later on, when the leaves have dropped more or less, they still give the idea of strong vigorous growth. I was ultimately posted to Sheagaum, in West Berar, where an experimental farm had been commenced and carried on during the preceding year. This is one of the leading districts for Cotton cultivation; the soil is "regur," averaging 4 to 6 feet in depth, resting on a very calcareous subsoil of variable depth; beneath this, again, is a stratum of broken and disintegrated trap lying on the solid trap. The underlying rock seems to be deposited in an undulating manner; here and there it crops out, forming low ridges, especially towards the south of the Berar valley. These ridges are, of course, bare of soil, and the solid rock is covered by a stratum of *débris*, known locally as "moorum," which is extensively used for making roads, and as ballast for railways. The proximity of the rock with its stratum of moorum to the surface has naturally a marked effect upon the crops grown thereon. In the northern part of the Berar valley, where the regur is of great depth, a variety of Cotton known as "Jurree" is grown. Towards the south, where the soil becomes shallower and somewhat altered in character by an admixture of pulverised moorum, "Bunnee" Cotton is grown. "Jowarree" (Holcus Sorghum) is grown generally throughout Berar, though the crops in the southern parts have not the height and vigour of those in the north of the valley, where, from the great depth of the soil and consequent abundant supply of moisture, a vigorous growth is always the result, perhaps at the expense of the quality of the produce. On dry lands "Bajree" (Penicillaria spicata) is generally grown. This is, I believe, the staple grain of the Deccan, as Jowarree is of Berar.

The Jurree Cotton is a strong and vigorous growing kind; under fair cultivation it will give 70 to 80 lb. of clean Cotton per acre. The staple is strong, though somewhat harsh; the best will give 37 per cent. of clean from seed Cotton. The plant is characterised by a sturdy habit, varying in height according to circumstances; five-lobed leaves, of firm texture, with bright yellow flowers, the entire plant being densely pubescent. This kind is very susceptible as to the deficiency of regur or otherwise in its cultivation. In a deep soil of the former nature its growth is vigorous, averaging 6 to 8 feet high, but in shallow regur, or in soils of a somewhat loamy nature, its successful cultivation seems to be doubtful.

"Bunnee" differs considerably from "Jurree" Cotton; its habit is less sturdy, the branches longer and weaker, the lobes of the leaves are also less broad, and the degree of pubescence much less than in "Jurree." The Cotton of this kind is, however, much more silky, staple good and strong. In some places where the soil is a brown, friable loam, with less of regur, this kind has been improved in staple and altered in character. This is seen in the Wurdall valley, where the change has been so considerable, owing to the superior nature of the soil, that the Cotton produced there is known specially as "Hingunghat." The principal difference in this form from the original consist in the leaf lobes being much narrower, with rudimentary lobes occurring in one or more of the sinuses, the branches are longer and weaker, and the bolls more elongated and conical than in the usual form of Bunnee. From what experience I have had in Indian Cottons I believe that this kind, if cultivated in an open friable loam of good body, would sooner or later produce Cotton equal to ordinary American.

The regur, though a soil well adapted to the imperfect methods of agriculture adopted throughout the country, is not of a sufficiently fertile nature to produce extraordinary crops, it is light and sandy, and easily affected by climatic changes. Manure will produce better results, but care is needed in the application of manure, for the soil being devoid of that retentive power possessed by a good loam, any nutrition applied will soon pass away. I believe that a coating of 3 inches of good clayey marl would improve the soil naturally. A considerable degree of improvement, however, lies in the hands of the native cultivators, if they would but take advantage of it; this is principally in the picking, which, if carefully done, would cause the Cotton to realise higher prices than at present, as it is now allowed to hang till a large quantity has fallen on the ground, and then gathered up with any soil or rubbish that may adhere to the fibre.

In the North-west Provinces another variety of Cotton is grown peculiar to the country; it is evidently akin to the Berar varieties, though of more rambling habit: the development of the fibre is not so good as in the Berar kinds, the bolls are small and the staple short and harsh; it is, however, a prolific kind, and will, as a rule, produce a greater weight of Cotton per acre than the others. The want of development in the fibre may perhaps be due to the absence of decaying vegetable matters, and the consequent want of humus in the soil, which is a fine sandy alluvium. Wheat is grown extensively in Berar and the Central Provinces during the dry, or winter months; the lands generally selected for this purpose being low-lying, and with a moist subsoil. In regur soils a good Wheat crop averages 700 to 800 lb. of grain per acre, and is 3½ months in coming to perfection. In the sandy soils of the Ganges valley in the North-west Provinces Wheat will yield from 1200 to 1600 lb. per acre, and is about six months coming to perfection.

A good deal of garden cultivation is carried on throughout Berar. Each plot so devoted is furnished with one or more wells for irrigation during the dry months. The crops principally cultivated in these plots are Capsicums, Egg plants, Sweet Potatos, Onions, Arachis hypogæa, Rice, Tobacco, and different kinds of vegetables. The fruits principally cultivated are Plantains, Limes, Custard Apples, Oranges, and Guavas. Zizyphus Jujuba is also preserved wherever it grows, though not cultivated as in the North-west Provinces, where orchards are planted, and some care bestowed on the cultivation of this plant, the fruits of which are in flavour something like an inferior Apple.

The general aspect of the Berar valley is that of an undulating plain bounded on the north by the serrated ridge of the Sautpoorah hills, and on the south by the tabular Ajunta hills, which form the northern extremity of the Deccan plateau. The general lay of the valley is a gradual slope towards the Poornah river, a few miles from the base of the Sautpoorah. It being entirely an agricultural country, there are no forests; in fact, the amount of arborescent vegetation in Berar is comparatively small, and mainly found immediately around the villages. The kinds of trees principally grown are the Mango (usually grown in orchards, or topes, as they are here called), Tamarind, Melia Azadirachta and M. sempervirens, Bassia latifolia, Acacia arabica (found everywhere), Ficus religiosa, and two or three other species of Ficus. Euphorbia Tirucalli is largely used for making hedges; trees of this with a stem diameter of from 8 to 12 inches may frequently be met with. Butea frondosa occurs plentifully, but is not often found beyond the size of low shrubs, as the natives dig up every season the largest plants for the sake of the liber of the root bark, out of which they make coarse but strong ropes. The Butea is a striking object when in flower, the brilliant scarlet of its blossoms making it conspicuous from a long distance. I have seen forests of this plant in the Central Provinces and the Punjab, averaging 12 to 20 feet high, looking like a scarlet sheet spread over the country.

Berar is very deficient in herbaceous vegetation possessed of any interest. The creeping plants belong principally to Convolvulaceæ and Cucurbitaceæ; a climbing Leea or Vitis is common, bearing corymbs of dark coloured berries, which are eaten by native children, the taste being nearly identical with that of the Elderberry in England. A tuberous rooted Aristolochia is very common, and a plant of Compositæ—perhaps a Vernonia—is plentiful, from which the natives informed me a tonic drink is made.* Leguminosæ are largely represented in Berar, Hedysarum, Indigofera, Mimosa, and Phaseolus being the principal genera.

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* Vernonia anthelmintica, Willd., and V. cinerea, Less., are both used in India as tonic medicines

Notices of Books.

Contributions to Botany, &c. By John Miers, F.R.S. Vol. iii., containing a complete Monograph of the Menispermaceæ. 4to, pp. 402; tab. lith., 66. Williams & Norgate.

Some time since an eminent Continental botanist proposed a guage by means of which the benefits conferred on botanical science by different authors might be tested and their value estimated. This guage consisted in the number and excellence of the illustrations published by any given author. The test is a good one as far as it goes, but it must not be relied on too exclusively, or a Jussieu or a Robert Brown would have to yield precedence to a Jacquin. Accepting, however, the test, subject to the requisite modifications, and applying it to the works of the veteran botanist whose name stands at the head of this notice, it will be seen that there are very few to whom modern botanists are under greater obligations than to Mr. Miers. For many years he has laboured diligently to make known the structure and affinities of the plants collected by himself and others in Chili, Brazil, and other parts of South America. Readers of the Proceedings of the Royal Horticultural Society will also recall the fact that the plants collected by Weir were determined by Mr. Miers. In addition, certain groups, such as the Solanaceæ, Bignoniaceæ, Styracaceæ, &c., have been the subjects of Mr. Miers' special study, and he has conferred great benefit on science by the publication of his notes and illustrations on these plants.

The Menispermaceæ, the order to which the present volume is devoted, present great difficulties, from the circumstance that their flowers are unisexual, and there is the consequent difficulty of matching the sexes, from their variability, the frequent minuteness and occasional complexity of the structure of their fruit and seed.

We shall not presume to criticise Mr. Miers' work, as we believe no other botanist has studied the plants in question so profoundly, or knows them so well as he. If, therefore, we find that our author entertains different views as to the limitation of genera and species from those now prevalent in this country, we can but concede that he has acquired an indefeasible title to his own opinions. There can be only one opinion as to the importance of the facts he has accumulated with so much patient skill and keenness of observation; the ultimate value of these facts is the same in whatever way they are made use of, whether in the construction of a few large genera, or in the formation of a great number of less densely peopled groups, the plan preferred by our author. Mr. Miers also merits the grateful recognition of every scientific naturalist for the manner in which he has, by precept and example, upheld the value of a full investigation into structural points. Too often the exigencies of the "system" necessitate the placing together in the same group of plants that really have little right to be so closely set together. This happens often, not from any wilful disregard of structure, but from the immense and constantly growing accumulation of unsorted material which requires to be thrown into some sort of order at once, so as not to obstruct progress, or delay the formation of descriptive catalogues—an urgent want—longer than can possibly be avoided.

Mr. Miers, however, has always subordinated system to facts, and there can be no possible doubt of the correctness of his principle, even on the part of those who may occasionally take exception to the way in which he applies it.

In the case of the Menisperms the peculiar structure of the wood, the simplicity of the floral structure, the arrangement of the several parts of the flower, the curious combinations of the stamens, the complex nature of the seed, &c., present points of very great interest to the structural botanist, who will find in Mr. Miers' pages a large series of carefully observed and well illustrated facts.

As illustrations of the simplicity of construction of the flower in some genera, we may allude to the flower of Antizoma, with its two sepals placed immediately over its two petals, or the even simpler flower of Cyclea, in which there is only one sepal, with one petal in front of it, and in the centre a single carpel.

Looked at from a horticultural point of view, Menisperms are not important, as their flowers are usually small. The old M. canadense is a graceful, hardy climber, too rarely met with, and there are many other species well worth growing as elegant climbing plants. The bitter tonic drug, Calumba, is the produce of an African plant of this family.

The Amateur's Flower Garden: *a Handy Guide to the Formation and Management of the Flower Garden, and the Cultivation of Garden Flowers.* By Shirley Hibberd. Illustrations. London: Groombridge & Sons.

The scope of this book may be learned from its second title, and the mention of the headings of some of its 19 chapters, such as Forming the Flower Garden, the Parterre, the Bedding System, Cultivation of Bedding Plants, Hardy Border Flowers, Selection of Hardy Herbaceous Plants, Rose Garden, American Garden, Subtropical Garden, &c. It is practical throughout, and the directions appear to be safe and sound, while the numerous woodcut illustrations serve to elucidate more completely the subjects treated on. What, however, the author can mean by his figure labelled "Gloxinia-leaved Foxglove," which looks far more like some hothouse Thunbergia, we cannot divine. There is a very good chapter on the making and management of lawns, a subject which it may be assumed the majority of amateur gardeners know comparatively little about. As to herbaceous plants, the author says:—

> "Herbaceous plants are for the most part easily multiplied, and, generally speaking, may be increased by the very simple process of division; but it is better to plant a small plot of ground in such a way as to ensure a good effect at once, than to lay out a great extent of border space with the intention of filling it 'some day' with home-grown stock. To enjoy herbaceous plants, they should be left undisturbed for years, to form great masses, or 'stools,' as they are called, for it is only when thoroughly established that many of the best of them present their flowers profusely, and show all their characters in full perfection. It is a strange thing that people who are always ready to expend money in the most liberal manner on bedding-plants, become ludicrously niggardly the instant they become convinced of a glimmering faith in herbaceous plants. * * *
>
> "The best way is not everybody's way. The furnishing of an extensive border by the purchase of sufficient of the very best herbaceous plants, will prove a more expensive business than every reader of this book may be prepared for. It follows that something should be said on the raising of plants by a cheap and simple method of procedure. Many good plants produce seed abundantly, and the careful cultivator may by this means increase the stock to any extent that may be desired. The best seed is that saved at home, and the best way to deal with it is to sow it, as soon as it is ripe, in large shallow pans and boxes, and keep these in cool frames until the plants appear. Some kinds of seed remain a whole year in the soil before they germinate, and therefore it is only the patient who are well rewarded."

As amateurs sometimes find seed-saving a difficulty, they are recommended to place a lot of bell-glasses, mouth upwards, on a shelf in a sunny greenhouse, and when a seed-cluster is just beginning to ripen to cut it and throw it into one of these glasses with a label inscribed with its name, when the ripening process will soon be finished, and the seeds become fit either for storing or sowing. There are half a dozen plates of popular flowers printed in colours, but we cannot say much for the artistic merits of these, nor are they of much utility, as the names of the varieties are not indicated. Still the book will be useful and acceptable to the class for whose use it is provided.

— We have to announce the publication of Dr. Hogg's *Gardeners' Year Book* for 1872 (171, Fleet Street), a publication which has long been indispensable to gardeners.

The Apiary.

In reply to your correspondent, "A. H.," I can only answer the suggested alterations in his very ingenious sketch to be applied to the former bar-frame hive of September, 1870, in the *Gardeners' Chronicle*, by "remember cost of hinges," &c. The great thing is to contrive some simple, cheaply constructed box, which may become the bee-house—guarding the bees from the extremes of temperature, by leaving the space around the bar-frames (which carry the combs and bees); but surely by "internal moderator" ventilation is not meant by "A. H.," which a Mr. Nutt attempted to suggest and carry out in his collateral boxes many years ago. The bees will never permit any such plan to succeed more than the Woodbury compound bar-frame, with straw around it, ever did, except to harbour moths, beyond even the straw hives of old; and "A. H." gives credit only for the bar-frame hives being free from moths or other enemies. The true bar-frame hive, we believe, contains within itself all the requirements of the most successful bee-keepers, unless they are of the class who are beguiled by the super and nadir hiving systems, or greedy-of-gain bee-keepers, who have not the judgment to divide the summer gatherings with their bees.

Feeding below is better, because of the accidents of overflowing, and the slanting alighting board is best fixed without space for the bees to come under the bar-frames, which the bees will not do on the flat bar. The top openings of the bar-frame will prevent all condensation of heated air, which the piece of carpet or flannel will absorb; the broad pieces require no extra dividing slides, as in my experimental bar-frames with the glass frames, &c. *W. A. Munn.*

Garden Memoranda.

Castle Kennedy, the Seat of the Earl of Stair.—Thirty years ago Castle Kennedy was unknown to fame. No doubt it had the local celebrity due to a picturesque site, and that sort of traditional interest which is shared by scores of other border peels—little romances of its own, tales of private warfare waged between neighbouring chiefs, and also its own county distinction as the residence of a Scotch nobleman; but extra-parochial fame it had none; any connection with national progress or general science did not come within its dreams of the possible. But it has achieved it—thanks to the combination of the talent of an able and educated gardener and the support of its liberal and far-seeing owner. Silently and imperceptibly it has come to the front, as an object of general interest. Here, far to the North, are to be seen growing and thriving, in the open air, a multitude of the rare and costly trees and shrubs that have been imported from distant climes of late years. The climate of the district has proved favourable to many species that do not grow at all in Britain, except in a few similar localities. I know, indeed, of no other part of the kingdom, except at Bicton and some of the other mild localities of Devonshire and the South of Ireland, where the rare and tender Mexican and Himalayan Conifers have been found to stand the climate, nor where so much information is to be gathered as to what will or will not grow in favoured circumstances in Britain, or what will be the effect of successful growth, either singly or in masses. It is one thing to read a description of a plant or to look at a figure, or even to see a living plant in a nurseryman's pot, and another and a very different one to see the same plant growing of good dimensions in the open air, showing its natural habit, and the appearance that a full-grown tree may be expected to bear. For this purpose Castle Kennedy has already become an object of pilgrimage to the lovers of trees, and especially Conifers, and with every year that passes it will become more so as it becomes more worthy.

Castle Kennedy lies at the western extremity of Wigtonshire, three miles from Stranraer. In order to reach it the visitor from the south or east leaves the Caledonian or North-Western Railway at Carlisle for Dumfries, and thence proceeds by the Dumfries and Galloway line through Galloway, or "The Stuartry" as it is there called, and Wigtonshire to Stranraer, and Castle Kennedy is the last station before reaching Stranraer, at either of which places the visitor can stop. The Castle Kennedy station, however, is that nearest to the Pinetum and also to the house of Mr. Fowler, the gardener, who professes—and I do not in the least doubt his sincerity—to derive real satisfaction from the visit of any one who feels sufficient interest in flowers or trees to desire to see those under his charge. If the visitor descends at Stranraer, he will find himself at the other side of the domain, and nearer "Lochinch," the mansion of the proprietor, the Earl of Stair, who sets the example of liberality and hospitality to his people by throwing the grounds open on certain specified days of the week.

Situated thus close to the Irish Sea, and deriving as it does so much of its present celebrity from its Pinetum, the visitor might perhaps expect that as he approaches Castle Kennedy he will find a luxuriant, thickly-wooded, and highly cultivated country. He had better dismiss any such expectations. After leaving Dumfries, he passes for many miles through a rich and smiling landscape almost as densely wooded as Kent or Surrey, while the surrounding scenery is still more beautiful. Kirkcudbrightshire, indeed, seems the natural country of the Oak. It grows like a weed. Much of the timber, although not so old, is as fine as any of its age that can be found in England. The contents of the great bogs go to show that the Oak was aboriginal to the district, plenty of bog Oak being there found. As the traveller pursues his way, however, he finds the railway gradually rising—the trees become fewer, the rich fields give place to moorland farms, and by the time he reaches Wigtonshire he is high up among heath clad mountains, from which the descent is gradual to Stranraer; but although he leaves the heather and the mountains behind, he does not recover the rich arable fields or the hedges and trees. With the exception of Newton Stuart, which is a lovely oasis nestling in a nook at the base of the hills, bleakness and bareness is the character of the whole country to the very gates of Castle Kennedy. Nor is there any improvement even there, until within the gates, and even then it must be understood that 30 years' growth of timber, however luxuriant, can do little to clothe the nakedness of a country side, especially when, as here, the planting has only been gradually extending, and the most important part of it is all concentrated about the Castle—for 30 years ago there was no timber about the place except a bank of stunted Beeches and a few Ilexes, the remains of ancient hedges or wildernesses suffered to take their own way. These have acquired a certain celebrity, certainly not from their beauty or any excellence in the trees themselves—unshapely, straggling, leggy things, they are like Hollies drawn up in unthinned plantations. But they are Ilexes, and Ilexes are rare in Scotland; and in a district where no trees at all existed the occurrence of Ilexes of considerable age and size naturally became an object of interest. Then they were said to have been planted by a former owner and ancestor of the present family, a General (nay, I am not sure but that he was a Marshal), who had been present at the battle of Dettingen, or some of the other battles on the Continent of that date—and in memorial of that event it was said that he had caused his plantations to be laid out in plots representing the formation of his army on that occasion. Unhappily for the story, the formation and plans have been adhered to by his successors, and these show that the formation is what no army ever could have been made to assume, but exactly such a plan as was common at that date for formal gardens laid out on the Italian style. Upon that plan, or rather upon an expansion of the principle of that plan, the grounds around Castle Kennedy have been laid out. Miles of smooth shaven grass terraces, with groves divided by radiating alleys, extend along the lake which surrounds the peninsula on which the Castle stands; and these groves now consist of different kinds of Conifers, and each radius has been made an avenue consecrated entirely to one particular species. On some future occasion I may note one or two of the more interesting of these. *A. M.*

Obituary.

A BRIEF notice in the *Times* of the 12th inst. announces the death of Dr. BERTHOLD SEEMANN, the managing director of the Javali Mine, Nicaragua. Dr. Seemann, the paragraph goes on to state, had "only recently reached the mine, and died of fever, caught in Colon, on his journey out." From our own correspondents we learn that this is only too true, his death having taken place on October 10. Dr. Seemann has long been known as an acute botanist, an intrepid traveller, and an accomplished man of science. Latterly, Dr. Seemann had chiefly turned his attention to mining affairs in Central America, and his frequent visits to that country enabled him to send home many important novelties, in the form of ornamental plants. We propose on a future occasion to give a fuller account of the career of this distinguished naturalist, accompanied by a portrait.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, Dec. 9, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth	40.8	21.2	19.6	37.3	24.4	12.9	30.7	0.00
Blackheath	39.7	18.6	21.1	34.8	25.1	9.7	29.8	0.04
Bristol	..	..	..	..	..	..	..	..
Birmingham	40.2	21.8	18.4	37.6	26.3	11.3	31.8	0.04
Wolverhampton	38.6	17.5	21.1	35.5	24.0	11.5	29.6	0.09
Leicester	37.5	17.7	19.8	35.3	24.4	10.9	29.7	0.02
Norwich	40.0	9.0	31.0	33.9	22.1	11.8	27.9	0.25
Nottingham	39.4	16.6	22.8	36.9	23.7	13.2	30.2	0.04
Sheffield	40.0	17.0	23.0	38.1	28.6	9.5	33.3	0.01
Liverpool	40.0	22.9	17.1	38.5	29.5	9.0	33.9	0.08
Manchester	38.0	17.0	21.0	34.3	21.4	12.9	27.7	0.02
Salford	41.7	17.4	24.3	37.4	22.0	15.4	29.6	0.00
Bradford	42.5	23.7	18.8	39.1	28.6	10.5	33.7	0.04
Leeds	40.0	23.0	17.0	38.4	30.6	7.8	34.4	0.09
Hull	39.0	18.0	21.0	35.0	25.7	9.3	30.2	0.50
Newcastle	39.0	26.0	13.0	36.6	30.0	6.6	33.2	1.05
Edinburgh	40.0	24.0	16.0	..	..	..	32.2	0.00
Glasgow	40.2	24.6	15.6	..	..	..	33.0	0.16
Dundee	40.0	27.0	13.0	..	..	..	34.0	0.00
Aberdeen	40.0	27.9	12.1	..	..	..	33.8	0.56
Paisley	..	..	..	..	..	..	..	..
Greenock	..	..	..	..	..	..	..	..
Leith	40.0	28.2	11.8	..	..	..	34.8	0.00
Perth	43.0	27.0	16.0	..	..	..	33.6	0.00
Dublin	..	..	..	..	..	..	..	..

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, Dec. 13, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
December.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
7. Thurs.	29.93	31.9	31.2	29.6	89	1.8
8. Friday	30.33	19.4	19.3	18.6	97	1.2
9. Satur.	30.22	27.8	26.8	22.6	78	1.5
10. Sunday	30.17	34.2	32.2	28.8	80	1.9
11 Monday	30.27	30.3	29.5	27.1	87	1.7
12. Tues.	30.33	37.8	37.2	36.4	95	2.6
13. Wednes	30.32	41.2	40.0	38.4	91	2.6

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
December.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
7. Thurs.	35.5	26.0	9.5	30.7	— 11.3	variable	300	0.00
8. Friday	28.7	18.6	10.1	22.4	— 19.3	variable	85	0.00
9. Satur.	33.5	21.3	12.2	29.0	— 12.3	W. by S.	160	0.00
10. Sunday	36.3	31.1	5.2	33.6	— 7.4	WSW	110	0.00
11. Monday	40.8	27.2	13.6	33.9	— 6.8	WSW	120	0.00
12. Tues.	44.7	36.6	8.1	40.6	0.0	WSW	165	0.00
13. Wednes	44.4	36.9	7.5	40.7	+ 0.2	W.	165	0.00

Dec. 7.—Overcast till noon; variable amounts of cloud prevalent during the afternoon. Occasional snow.
— 8.—The sky was covered with cloud, and great gloom prevailed between 10 A.M. and noon; generally cloudless at other times. Hazy and foggy.
— 9.—Overcast throughout. Hoar-frost in morning. Snow fell thinly during the day.
— 10.—Overcast, and at times very foggy throughout the day.
— 11.—Nearly cloudless and very fine till noon; overcast afterwards, and a little thin rain fell.
— 12.—Variable, but generally fine. Slight fog.
— 13.—Overcast throughout. Thin rain fell occasionally. Slight fog.

JAMES GLAISHER.

Miscellaneous.

THE DYAKS OF BORNEO ascend the trees by driving strong pegs of Bamboo into the trunk, which they connect with an upright Bamboo, and thus form a good ladder. The people of Timor literally walk up the trees by means of a long piece of creeper put round them and the extremities held in the hand. It is a wonderful sight to see a man thus ascend a vertical trunk, 100 feet high, and then creep out upon a horizontal branch and coolly brush away the myriads of bees from a comb a yard in diameter, and become immediately enveloped in a cloud of angry insects, while he cuts oft the comb and lets it down to his companions below by a slender cord. In this manner, many tons of wax are annually collected. *A. R. Wallace*, "*Linnean Journal.*"

A PERPETUAL FLOWERING ACACIA.—The French gardens have yielded this, in the Robinia Pseud-Acacia semperflorens, which produces flowers from April or May onwards through the season. The new variety, which was raised in the Paris gardens, has the ordinary aspect and habit of the False Acacia, but the young plant was observed, three or four years since, to flower a second time during summer, after flowering at the usual season. The same habit was repeated in succeeding years, and in the present season the blooming has been still more abundant and continuous. We may, therefore, expect, in this perpetual-flowering Acacia, a really good acquisition amongst our ornamental deciduous trees.

KANGAROO RATS GOOD THISTLE ERADICATORS.—This discovery has been made by several farmers on the Loddon River, in South Australia. "It has been found," says the *Bendigo Independent*, "that these animals dig down under the Thistles, and eat the roots of the plants, which thus necessarily die. One farmer has issued orders that no kangaroo rats are to be killed on his land, in consequence of their having been of much service to him in destroying the obnoxious Thistles." The roots, and especially the stems, of Thistles have been used for food in England. Evelyn recommends that they should be boiled, or baked in a pie.

CALIFORNIAN GRAPE CROP.—One of the leading wine-makers of California, who has extensive dealings with Grape growers, estimates that the crop of this year will produce from 6,000,000 to 7,000,000 galls. of "must," or raw wine. Alluding to this estimate, the *San Francisco Bulletin* of October 25, says:—

"This 'must' is worth about 30 cents a gallon, making an aggregate value of 2,100,000 dollars. The Grapes for wine-making sell in bulk at about 1 cent per lb. There is, in addition, a large amount of table Grapes, raised for home consumption and for shipment. The choice varieties sell in the home markets at much lower rates than formerly. It will not be wide of the mark to estimate the cash value of the Grapes grown for other than wine purposes at 400,000 dollars. The aggregate value of the vintage for this year, in California, may be set down at 2,500,000. The estimate may be a low one, but there are data to support it. Moreover, there are a large number of Vines which are just coming into bearing, but which will not produce a full crop until next year. From all quarters we hear that the quality of Grapes was never better than this year. The dry weather has nowhere shortened the crop. In some vineyards noticed by us in Napa Valley, the yield of the better sorts of Grapes was enormous. The proprietor of one vineyard, containing about 20 acres of choice varieties, estimated that the nett returns would not be less than 10 cents per lb., the entire crop having been engaged for the home markets."

WINTERING ONIONS.—A few years ago we met a Western farmer who was growing 2000 or 3000 bushels of Onions yearly. They were sent chiefly to the Southern market. He wintered the Onions in pits as we do Potatos. A moderate freezing, it is well known, does not injure the Onion, provided the frost is drawn gradually, and it is not allowed to freeze and thaw more than once. The best conditions for keeping them are a dry place and temperature just above the freezing point. We have covered with dirt only, using no straw, to the depth of 12 or 18 inches, according to the exposure of the pit, and the Onions came out crisp and sound in the spring. The danger to be avoided is heating. It should be remembered that some frost is safer than too much heat. If too much covering is used, the entire pile will rot. *Toronto Globe.*

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

"KEEP the frost out, and all will be right; hence I'll fire away well for additional safety." Such is now the mental soliloquy of the uninitiated. Add to this the fact that the plants look thrifty, are growing freely, and you have at once as good an illustration of what plants do *not* require, in regard to future success, as well can be. It cannot be too strongly urged that all growth of any account made at this season is injurious. The only result is, that a languid and impoverished vitality is framed, which, by the advent of summer, has so deteriorated the wonted robustness of the plant, that a strict period of rest should ensue. If I can convince the amateur or others of the importance of these facts, I shall perhaps do enough to induce them to fire less freely and more cautiously, though at the expense of some personal comfort and convenience. I would further add, rather let the temperature of your stove fall by the early hours of morning, down to even 53° or 54°, than risk engendering an excess of heat of even a few degrees only, and permit the temperature of your greenhouse to fall during a severe night down to a minimum of 40°, rather than endanger your plants by a higher degree of heat. Though I have before suggested the desirability of using external coverings, I would again revert to the subject, knowing what important economisers of the heat such covering are, independently of the reduction of necessity of using excessive fire-heat. Some plants which are now assuming a period of rest, such as *Hoyas*, *Stephanotis*, *Rhynchospermums*, *Kennedyas*, *Allamandas*, *Agapanthus*, *Stigmaphyllum ciliatum*, &c., might receive a moderate shift into a good fibrous compost suitable to their wants, and receive the necessary complement of new stakes, the requisite tying, &c. Some of the neat subjects, which form chaste edgings in front of the general flowering plants, such as *Isolepis gracilis*; *Lycopods* of the free growing recumbent forms, as Selaginella denticulata, &c.; *Tradescantias* and others, should also now be divided, and potted into small pots for early spring and summer decoration. Look sharply after *Camellias*, which are now swelling their buds and are about to bloom, and insure their having a sufficient supply of root moisture. Those planted out into the open borders, especially such as have their roots cramped for room in boxes or very shallow beds, or are growing in the vicinity of flues, &c., should be thoroughly well moistened at this time. A dearth of water at this time invariably causes their flower-buds to drop off.

FORCING HOUSES.

The general stock of *Pines* should now enjoy a mean artificial temperature of 60° to 62° by night and 64° to 65° by day, if dull, and fire-heat has to be relied on, allowing an advance of 5° or 6° by sun-heat only. Need I say that, in regard to *Pines*, the necessary arid heat enforced must be met and neutralised by a slight expenditure of moisture, which, scattered upon the floors, and other cool surfaces, will give off a moderate vapour. If the tan upon the surface, however, is at all wet, an occasional stirring will afford the necessary supply. Those *Forced Vines* which are now about to break, should be examined occasionally to see whether the buds are swelling uniformly along the whole length of the rod. Those that are not doing this kindly should have their apices kept down persistently to the lowest level possible, thereby to encourage the buds which are nearest the base to advance more quickly to the stage which the others have arrived at. Syringe the Vines at this juncture very lightly with moderately warmed water, and by the customary means diffuse a nice wholesome humidity throughout the house. Do not forget also that every puff of fresh air, when not too harsh and ungenial, is an unqualified gain. Those in pots which are introduced about this time need only to have the pots plunged into a sweet bottom-heat of about 80°. Let the rods repose upon the surface around, without any kind of tying or restriction, and they will break more kindly. Introduce *Peach* or *Nectarine trees* in pots, if well established, plunging the pots into a nice bottom-heat. This will in all probability give a few dishes of early fruit, which will prove very acceptable. Those who force *Potatos* early should now place some "sets" in moderately small pots, and introduce them into a house having an intermediate temperature to make their preliminary growth. Where proper pits exist for the purpose, *Peas* of the dwarf Tom Thumb kind may now be sown; a dish or so should also be grown in pots where the necessary room exists. This dwarf sort does best when sown and grown like dwarf French Beans, about five or six plants only in 32-sized pots. A good batch of all kinds of flowering subjects that will force, may now be introduced into the forcing-pit.

HARDY FLOWER GARDEN.

All who know the value of decomposed leaves should now endeavour to collect as many as possible. Now that the frosty weather has gone, lawns and walks, &c., should have a thorough sweeping and rolling, to bring them back to their usual neat and cleanly appearance. Look over the store roots of *Dahlias*, to detect any that are showing symptoms of decay. Should the frost keep off, use every means to transplant trees, shrubs, &c., which always do better than when left even a few weeks longer. Besides, it is very probable other frosts will follow.

HARDY FRUIT GARDEN.

The above remarks apply also to all kinds of *Fruit Trees* which are not already planted, as suggested at an earlier date. Loose no favourable opportunities in regard to the advancing of all pruning and nailing operations, as work multiplies so rapidly in the early spring months. Give attention at this dull time also to the re-naming of any kinds of fruit which have their labels more or less obliterated, whether from age or otherwise.

KITCHEN GARDEN.

The many kinds of vegetables maintained in cold pits or frames will need little other attention than keeping them from injury by frost. For this reason additional coverings must be placed over and around them. In regard to such subjects as *Salads*, *Cauliflowers*, *Carrots*, *Radishes*, &c., it will be advisable, should the frost penetrate sufficiently to freeze any, to keep the covering over them when a change sets in, so as to insure a gentle thaw, which in a great degree aids their perfect recovery. Where the repeated suggestions I have made, as to wheeling manure on to all vacant spaces, trenching up old soils, &c., have been carried out, little will remain for me to add at this time. *W. E.*

Notices to Correspondents.

APPLES FROM FRANCE: *E. A. O.* "The fine Calville Apples" which you have received from France, and which you say are only useful for cooking, are no doubt the variety Calville Blanc, upon which so much has been said during the last few years.

CELERY-LEAF FUNGUS: *W. D. F.* The Fungus on your Celery plants is Puccinia Apii, Corda. *M. J. B.*

ICE KEEPING: *A. Y.* A cellar is not a good place to keep ice in, unless properly prepared in the way of draining and made moisture-proof above, in which case it will answer perfectly. At the same time there are many other simple methods, the best being a conical mass on the surface, in the shade if possible, and well thatched with wheat-straw. In this, if the heap be made of fair size to give body to the ice, it will keep the year round. If a small place, and a mound of that size be unsightly, it can be faced to a walk with a sort of rustic summer-house or Russian log-hut; that gives a reason for the ridge of thatch. Any hole in the shade, old gravel-pit, quarry, &c., facing the north, is best, but not a necessity. We have tried the Canadian system of straw walls—that is, straw packed between two rough wood fences, a foot or so apart, forming something like a small cow house with rough thatched roof. In this it keeps well. *F.*

NAMES OF FRUITS: *A. G. Apple:* Egg, or White Paradise. *Pear:* Glou Morçeau. *J. H., Lyndhurst. Pears:* 1, Crassane; 2, Beurré Defais; 62, Knight's Monarch.

NAMES OF PLANTS: *W. W.* Lapageria rosea, a greenhouse plant. *P. H. Gosse.* Oplismenus compositus. It is a very close ally of the variegated grass, now so much grown in hothouses under the name Panicum variegatum. This grass, or forms closely allied to it, is pretty universally distributed throughout the tropics. —*Cantab* sends several plants not in flower, and not easily recognised. No. 1, may probably be Ceratonia Siliqua—the Carob; 2, is Rhododendron ciliatum; 3, very probably Olea excelsa; 4, Mammillaria, somewhat near to depressa, but not quite identical; 5, Kleinia tomentosa; 6, a Mesembryanthemum, crushed by the Post-office punches; 7, Bupleurum fruticosum. *J. L.* Pteris serrulata cristata, Lastrea quinquangulare, Cheilanthes alabamensis. The Adiantum is not enough developed: probably A. æthiopicum, or A. venustum.—*H. R. S.* Oxalis versicolor, a beautiful little greenhouse bulb, now seldom met with. *C. W. S.* It looks like a small variety of Burlingtonia granadensis, but you do not tell us whence your plant came.

PINE-APPLES BLACK AND DECAYED: *F.* This may arise from too much moisture overhead when ripening. There are, besides, a good many varieties that will not keep any time after being cut in the dull months. As the best Pines exhibited last season were grown on the old system of half manure, perhaps some of the successful exhibitors will oblige us with their experience.

SELECTION OF FRUITS: *C. P., Stewkley, Bucks.* For 6 of the best late kitchen Apples we would have:—1, Dumelow's Seedling; 2, Besspool; 3, Norfolk Beaufin; 4, Rymer; 5, Northern Greening; 6, Yorkshire Greening. For three best stewing Pears:—1, Catillac; 2, Uvedale's St. Germain; 3, Verulam. Rivers' Prolific is the earliest Plum, succeeded by Gisborne's Autumn Compôte, and Sandall's, a very good late sort. You do not say whether for dessert or cooking. We have given you a choice of the latter.

TREE TRANSPLANTER: *Subscriber.* Apply to Mr. Barron, Borrowash, Derby.

VILLAGE TREES: *H. S.* The Elm (Huntingdon), Horse Chestnut, Plane, Lime, with the Thorn and Mountain Ash as smaller growers if desired. In the churchyard, Cedar of Lebanon, Deodar, or Yew; but the latter is a slow grower. The Weeping Wych Elm would be a characteristic deciduous tree.

VINE BORDERS: *X. Y.* A good Vine border is made thus:—Excavate a space 12 feet wide, 3 feet in depth. Put a drain at the bottom, then fill in 12 inches of broken bricks, &c., for drainage, and 2½ feet of soil—thus, good fresh turfy loam, mixed with about one-fourth of lime rubbish, and a sprinkling of ground bones—say half a bushel to a cubic yard. Inside and outside borders are all made on the same principle. The borders may be of any width, from 4 to 20 feet.

WIRING WALLS: *Kildare.* We are not aware of any objection, only keep the wires close to the walls.

CATALOGUES RECEIVED:—Dick Radclyffe & Co., Spring Catalogue of Vegetable, Agricultural, and Flower Seeds, Garden Requisites, Horticultural Decorations, &c.—E. Salsbury & Sons, Trade List of Gooseberry and Currant Trees.—H. Lane & Sons, Descriptive Catalogue of Roses, Fruit Trees, American Plants, Conifers, Deciduous and Evergreen Trees and Shrubs, &c.

ERRATUM. We are requested to state that in our report of the last meeting of the Floral Committee, we omitted to mention that a Special Certificate was awarded to Mr. J. Shrimpton, for a very good stand of Chysanthemums. In remedying this omission, we beg to remind our readers that we do not undertake to mention all the awards made at flower shows, nor to notice all the objects there shown.

COMMUNICATIONS RECEIVED: C. W. S.—A. F.—F. W. B.—J. F.—H. R. S.—R. D.—L. L.—W. A.—W. P.—J. S.—J. R. J.—J. Weeks & Co.—W. E.—G. E.—W. T. (thanks).

Markets.

COVENT GARDEN.—Dec. 15.

Business generally, and especially the West End trade, is very depressed, in consequence of the illness of H.R.H. the Prince of Wales, so that our demand for choice goods is very limited. The country trade has not been so much influenced, though we have not had so many provincial dealers as usual at this season. Trade in the Potato market is rather better.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½ sieve	2 0 to 5 0	Melons, each	2 0 to 5 0
Cobs, per 100 lb.	60 0 — 65 0	Oranges, per 100	6 0 — 10 0
Filberts, per lb.	0 8 — 10	Pears, per dozen	2 0 — 4 0
Grapes, per lb.	2 6 — 6 0	Pine-apples, per lb.	2 6 — 6 0
Lemons, per 100	7 0 — 10 0	Pomegranates, each	0 4 — 0 8

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, green, ea.	0 6 to 0 8	Herbs, per bunch	0 2 to 0 4
Asparagus, per 100	8 0 — 10 0	Horse Radish, p. bun.	3 0 — 5 0
Beet, per doz.	1 0 — 2 0	Leeks, per bunch	0 2 — 0 4
Broccoli, purple, per bundle	10 — 1 3	Lettuces, per score	1 6 — 2 0
Brussels Sprouts, p. half sieve	1 6 — 2 6	Mushrooms, p. pott.	1 0 — 2 6
Cabbages, p. doz.	10 — 1 3	Onions, per bunch	0 4 — 0 9
Capsicums, p. 100	1 6 — 2 0	Parsley, p. bunch	0 2 — 0 4
Carrots, p. bunch	0 5 — 0 7	Radishes, per bunch	0 2 — ..
Cauliflowers, p. doz.	2 0 — 6 0	Rhubarb, p. bund.	1 6 — 2 0
Celery, per bundle	1 0 — 2 0	Salsafy, p. bun.	0 9 — 1 3
Chilies, per 100	1 6 — 2 0	Scorzonera, p. bun.	0 9 — 1 3
Cucumbers, each	1 0 — 2 0	Seakale, per punnet	2 6 — 3 6
French Beans, new, per 100	3 0 — 4 0	Shallots, per lb.	0 8 — ..
		Spinach, per bushel	3 0 — 4 0
		Tomatos, p. sieve	4 0 — 6 0
		Turnips, p. bunch	0 2 — 0 4

Potatos, Regents, 100*s* to 130*s.*; Flukes, 120*s.* to 150*s.*; French Shaws, 60*s.* to 70*s.*

BOROUGH MARKET.

WHOLESALE PRICES.

1871	Savoys	Greens.	Parsnips.	Red Beet.
	Per doz.	Per doz bun	Per score.	Per doz.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
Dec. 9	0 7 to 1 0	2 0 to 3 0	0 8 to 1 0	.. to 0 6
— 12	0 4 — 1 0	.. — 3 0	0 10 — 1 0	.. — 0 6
— 14	0 8 — 1 0	1 6 — 2 6	0 8 — 1 0	....

POTATOS.—Southwark, Dec. 11.

During the past week the arrivals coastwise have been quite equal to the demand. The consumption is limited, owing to a want of quality, and a deal of waste in the root. Very large arrivals from France, and many of them stored for want of sale. Quotations as follow:—Yorkshire Flukes, per ton, 100*s.* to 130*s.*; Yorkshire Regents, 60*s.* to 110*s.*; Dunbar and East Lothian do., 110*s.* to 140*s.*; Perth, Forfar, and Fifeshire do., 90*s.* to 110*s.*; do. Rocks, 90*s.* to 95*s.*; Kent and Essex Regents, 50*s.* to 90*s.*; do. Rocks, 80*s.* to 90*s.*; French Whites, 60*s.* to 80*s.*

Indestructible Terra-Cotta Plant Markers.

MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

LABELS, LABELS.—PARCHMENT or CLOTH LABELS.—Tree or Plant Labels, punched parchment, 4 inches long, 4*s.* per 1000, or 10,000 for 35*s.*, cash on delivery. Sample Label sent on receipt of a postage stamp Orders delivered free in London by JOHN FISHER AND CO., Label Works, Boston, Lincolnshire.

Save your Plants from the Frost.

MARRATT'S SELF-REGISTERING THERMOMETER, for Marking how Cold it has been, and telling the Present Temperature. No Gardener should be without it. Price 1*s.*, or by post, 1*s.* 4*d.*
MARRATT, Optician, 63, King William Street, London Bridge, E C.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

JAMES GARVIE AND SONS, HORTICULTURAL BUILDERS, beg respectfully to intimate that they have now special facilities for the Manufacture and Erection of HORTICULTURAL BUILDINGS of every description, all the departments of the work being executed by experienced workmen in their own employment and under their personal superintendence.

CONSERVATORIES, GREENHOUSES, VINERIES, STOVES, &c., in a great variety of designs, plain and ornamental, and with the latest improvements in VENTILATION and HEATING, at very moderate prices.

SASHES, HOT-BED FRAMES, and every requisite of the kind for the Garden.

HOT-WATER APPARATUS of the most efficient description fitted up in New and Old Houses.

Old Houses Repaired, Painted, and Fitted up with Improved Ventilating Apparatus. Designs and Estimates on application.

STEAM JOINERY WORKS, 60, Huntly Street, Aberdeen.

SLATE, for Gardening and Agricultural Purposes, &c.
GARDEN BOXES, not liable to rot, can be made of any size
Prices from 16*s* 6*d.* [Prices from 35*s*
MANGERS, easily kept clean, non-absorbent, and not liable to rust.
GARDEN STEPS and PAVING, unsusceptible of vegetation.
DUST BINS, clean, take up little space, and do not decay.
CORN BINS, CONSERVATORY SHELVES, CISTERNS, CATTLE and PIG TROUGHS, CUCUMBER and MELON FRAMES, &c.
ALFRED BRABY, Bangor Wharf, Belvedere Road, Lambeth, S.E.

Corporation of Manchester.

PARK KEEPER or HEAD GARDENER.

ALEXANDRA PARK.—The Public Parks Committee are prepared to received applications for the Situation of KEEPER or HEAD GARDENER at the Alexandra Park, at the wages of 32*s* per week, with house, coals, gas, and water. Applications, addressed to the Chairman of the Public Parks Committee, with testimonials, to be delivered at the Town Hall, King Street, not later than MONDAY, January 1 next.—By order,

Town Hall, Dec. 8, 1871. JOS. HERON, Town Clerk.

WANTED, a steady, industrious Man, as FRUIT FOREMAN, who would also be required to take charge of the Ornamental Trees and Shrubs—THOMAS S. WARE, Hale Farm Nursery, Tottenham, Middlesex.

REQUIRED, within the next two months, by a Gentleman living in Berkshire, between Reading and Windsor, and Farming 400 Acres of Light Early Land, an experienced and active WORKING BAILIFF, or FOREMAN, without family He must be well acquainted with Modern Farm Machinery and Steam Cultivation, and should have been brought up on a Farm since boyhood. A Man between 30 and 40 years of age will be preferred; his Wife will have to undertake the entire Management of the Dairy and Poultry.—Apply, by letter, containing full particulars of present and former situations, age, &c., to E. W , Post Office, Wokingham, Berks

WANTED, a GARDENER, near Dublin; salary £100 a-year, with house, fuel, &c —A Gentleman desires the services of a really first-class Man, who will have the entire control. Ten hands kept, with Foreman in each department. Pleasure Grounds and Glass extensive.—Apply, with copies of testimonials, to A , Monastereven, Ireland.

WANTED, an UNDER GARDENER.—One who has had a little practice in House-work, Fires, &c., which will be his chief employment. No bothy. Wages 14*s.* per week, with vegetables.—E. W., Farnborough Hall Gardens, Banbury.

WANTED IMMEDIATELY, in a London Retail Seed Establishment, an ASSISTANT; one well conversant with Flower Seeds will have the preference.—Apply, in own handwriting, to M. B., *Gardeners' Chronicle* Office, W C.

WANTED, as IMPROVER, an industrious, active young Man, in the Glass department of a Provincial Nursery. One who has had some experience, and is anxious to work and get on.—Address, stating wages, FELTON AND SONS, Birmingham Nursery, 56, Harborne Road, Edgbaston, Birmingham.

WANTED, a HANDY LAD, used to Watering and Potting.—JAS. REEVES, 176, High Street, Notting Hill, W.

WANTED, a GENERAL PROPAGATOR, chiefly Soft-wooded; a MAN to take charge of Azaleas, Camellias, and Ericas; also a MAN accustomed to Grow Pelargoniums, &c , for Market None but competent hands, with good reference, need apply.—Address, stating terms, &c., JOHN REEVES, Nurseryman, Acton, W.

SECOND ASSISTANT in the Herbarium, Royal Gardens, Kew (age 18 to 30)—An Open Competition for this situation will be held in London, on JANUARY 16, and following days—Application for the Regulations and for the necessary Form should be made at once to The SECRETARY, Civil Service Commission, Cannon Row, S W.

CLERK to the Curator, Royal Gardens, Kew (age 20 to 30)—An Open Competition for this situation will be held in London, on JANUARY 16, and following days Candidates must be familiar with the routine duties of a Garden, and must show that they have had the necessary Technical Training.—Apply, at once, for the Regulations, and for the necessary Form, to The SECRETARY, Civil Service Commission, Cannon Row, S W

To Corresponding Clerks.

MESSRS. JAMES VEITCH AND SONS are desirous of MEETING with a thoroughly efficient CORRESPONDING CLERK. Liberal and progressive wages will be given to a suitable person—Apply, in the first instance, by letter, stating full particulars, Royal Exotic Nursery, Chelsea, London, W.

WANTED, a CLERK, or CLERK and SALESMAN.—The Advertiser is desirous of engaging a Person in the above capacity. To an intelligent young Man, desirous of getting on in the business, this is an excellent opening.—Apply, by letter, giving references and other particulars, to DELTA, *Gardeners' Chronicle* Office, W.C.

WANTED, a SHOPMAN, having a thorough knowledge of the Garden and Farm Seed Departments—Particulars as to age, salary expected, &c., to DRUMMOND, BROTHERS, 52, George Street, Edinburgh

Seed Trade.

WANTED, a SHOPMAN, who thoroughly understands the Retail Seed Trade; or a young Man who has served his Apprenticeship, and is competent, active, and of good address. Character strictly investigated.—FELTON AND SONS, 96, High Street, Birmingham

WANTED, a JUNIOR SHOPMAN.—Messrs. WAITE, BURNELL, HUGGINS & Co. are in want of the above—Apply by letter only, Southwark Street, S.E.

WANTED, a JUNIOR SHOPMAN.—One who has served his Apprenticeship in a general Retail Establishment preferred—State age, experience, and salary expected, to DRUMMOND, BROTHERS, 52, George Street, Edinburgh.

WANT PLACES.—Letters to be Post Paid.

Gardeners and Under Gardeners.

WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N.

EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

GARDENER (HEAD).—Thoroughly understands the Management of Stove and Greenhouse Plants, Orchids, Ferns, &c , Early and Late Forcing, and Gardening generally.—T. M., Pine-apple Nursery, Maida Vale, London, W.

GARDENER (HEAD).—Has had extensive experience in Early and Late Forcing, the Cultivation of Stove and Greenhouse Plants, Flower and Kitchen Gardening, and the Management of Land and Stock.—J. T., Pine-apple Nursery, Edgware Road, W.

GARDENER (HEAD).—JOHN SAINSBURY, Gr. to Major Vaughan H. Lee, is at liberty to engage with any Nobleman or Gentleman requiring the services of a thorough practical Man. Has had experience in the Erection of Houses, &c. No single-handed place accepted. Good character.—Lanelay Gardens, Pontypridd, Glamorganshire.

GARDENER (HEAD), where three or four are kept.—Age 31, married, no family. Four years' good character, and other references—T. B W., Claydon House, Winslow.

GARDENER.—Age 30, married; has a thorough practical knowledge of the profession in every branch. Good references.—W T., Rose Cottage, London Road, Staines, Middlesex.

PROPAGATOR of Soft Wood, or ASSISTANT (under General)—Has had several years' experience of the same—F. S , 12, Townfield Gate, Keighley, Yorkshire.

IMPROVER, in the Houses.—Age 22. Reference: — Wingfield, Esq , Tickencose Hall, Stamford.—R. BILLIALD, Ketton, Stamford

To Wholesale Seedsmen, &c.

COMMISSION.—The Advertiser, who has a good connection amongst London Florists and Seedsmen, and a thorough knowledge of the business, is open to an engagement with a good House to Sell on Commission.—G. C., Mr. Hand, 38, Russell Street, Covent Garden, W C.

SEED TRADE.—A young Man, age 28, single; 12 years' practical experience. Part knowledge of Plant and Fancy Trade No objection to go abroad.—A. B. C., Adam Johnston, Nelson Street, Gateshead-on Tyne.

SHOPMAN, or NURSERY MANAGER.—Many years' experience in the best London Houses.—A. F. D., Post Office, Carshalton, Surrey.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING AND COMPANY (Limited),
CORN, SEED, MANURE, and OILCAKE MERCHANTS.
Address, 26, Seed Market, Mark Lane, E.C. ; or Basingstoke.
Samples and prices post free on application. Prize Medals, 1851, for Wheat ; 1862, for "Excellent Seed Corn and Seeds."

For Double Ploughs,
APPLY TO
J. AND F. HOWARD, Bedford,
or their Agents in any part of the Kingdom.
Catalogues free

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER AND CO., 71, Cornhill, London, E.C. ; and Steam Plough Works, Leeds.

THE CELEBRATED GRANITIC PAINT. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Price Lists, Testimonials, and Patterns of Colours, apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

THE SILICATE ZOPISSA COMPOSITION. To CURE DAMP in WALLS, and Preserve Stone, &c., from Decay. Manufactured Solely and Only by the Silicate Zopissa Composition and Granitic Paint Company.
For Particulars and Testimonials apply to THOMAS CHILD, Manager, 39A, King William Street, London, E.C.

Russia Mat Merchants.
MESSRS. G. D. MARENDAZ AND FISHER, importers of ARCHANGEL and St. PETERSBURG MATS, dealers in TANNED GARDEN NETTING, TIFFANY, LABELS, TARRED and other TWINES, LINES, &c.
9, James Street, Covent Garden, London, W.C.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100s. ; Petersburg, 60s. and 80s. ; superior close Mat, 45s., 50s., and 55s. ; packing Mats, 20s., 30s., and 35s. per 100 ; and every other description of Mats at equally low prices, at
J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from *2d.* to *5d.* per yard, advancing *¼d.*
54-inch Hessian and Scrim, *3d.*, *3½d.*, *4d.*, *4½d.* and *5½d.*
72 " " " *4½d.*, *5½d.*, *6d.*, *6½d.*, and upwards.
J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.
JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.

PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.
WOOL NETTING, 2 yards wide and 1s. *6d.* per yard.
"FRIGI DOMO" CANVAS."

Two yards wide	1s. 10*d.* per yard.
Three yards wide	2s. 10*d.* per yard.
Four yards wide	3s. 10*d.* per yard.

SCRIM CANVAS, 72 inches wide, 70 yards long, *5½d.* to *8½d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, *6¾d.* and *8¾d.* per yard.
ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C. ; and of all Seedsmen in London or the Country.
NOTICE.—Removed from 7, Great Trinity Lane.

CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind Rain, and Frost ; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them
They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.
Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester
A remittance from unknown Correspondents will have attention.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex ; late of the firm of J. & J. Fraser, Lea Bridge Road.

JOSEPH NEWTON, LANDSCAPE ARCHITECT.
Office : 42, Bishopsgate Street Without, E.C.
Private Address : 74, Oxford Terrace, Hyde Park, W.

TO BE LET, in the Broomfield Road, close to the Chelmsford Railway Station, a very fine GRAPERY, on the newest principle, with large Boiler-power and Pipes, the Vines coming into full bearing, on which 800 bunches have been grown in one year ; together with a genteel DWELLING-HOUSE adjoining. There is a WHEELWRIGHT'S SHOP and DWELLING-HOUSE TO BE LET, together or separately.
Mr. E. N. PALMER, House and Estate Agent, Chelmsford.

SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.
Plants and Bulbs.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 16, at half-past 12 o'Clock precisely, First-class Standard and Dwarf ROSES ; Pyramid, Trained, and Standard FRUIT TREES, SHRUBS, CARNATIONS, PICOTEES, and PINKS, HERBACEOUS PLANTS, CONIFERS, LAURELS, &c. ; also an importation of choice HYACINTHS, TULIPS, CROCUSES, IRIS, ANEMONES, NARCISSUS, RANUNCULI, LILIUMS, and other BULBS, just arrived from well-known farms in Holland.
On view the morning of Sale, and Catalogues had.

Bulbs from Holland.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 18, at half-past 12 o'Clock precisely, several importations of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, ANEMONES, LILIUM, RANUNCULI, GLADIOLI, and other BULBS, just arrived from Holland.
On view the morning of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, December 19, at half past 12 o'Clock precisely, first-class LIGHT BRAHMAS, from Dr. Campbell, of Essex ; and a great variety of other choice POULTRY and PIGEONS, from the yards and lofts of well-known Breeders and Exhibitors.
On view the morning of Sale, and Catalogues had.

Choice Lilies and Seeds.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 28, at half-past 12 o'Clock precisely, 40 Lots of SEED of PRIMULA JAPONICA, in 6 varieties. Each Lot will contain about 8000 Seeds, and Coloured Illustrations of all the varieties, by native artists, will be exhibited on the day of Sale. A quantity of SEED of LILIUM AURATUM and ABIES FIRMA, and some SEED of PHŒNIX PALUDOSA, &c., and some rare LILIES from Japan.
On view the morning of Sale, and Catalogues had.

REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano ; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.
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The Agricultural Gazette.

SATURDAY, DECEMBER 16, 1871.

MOST people, we fear, still regard the drainage water of our towns rather as an enemy to be destroyed or a nuisance to be abated than as a power to be turned to good account, or a valuable property to be realised, and yet the latter is the truer view—and the sooner it is adopted, the better even for the achievement of the end contemplated in the former view of the subject.

The POWER of LAND to DEFECATE and PURIFY TOWN SEWAGE—in fact, to abate the nuisance and destroy the enemy—depends materially on the even distribution of the sewage over the square yards and through the cubic yards of the soil which is to act upon it ; and the best way to ensure a tolerably even distribution of this kind is to cover those square yards with plants, and to put them in charge of a man who knows what plants need, leaving it to him to see that every plant shall have its share of the food it wants. In this way, then, and altogether irrespectively of the power of plants actually to consume and to convert the filth of sewage, it appears that the agricultural view of our subject is one which ought very early indeed to engage the attention. We are glad, therefore, that this aspect of the subject engaged the attention of Mr. DENTON in his recent lecture before the Society of Arts.

It is to this view of the subject that we wish to confine attention now. We are very anxious that it should be understood how much the success of sewage-farming, and therefore the satisfaction of the ratepayers of a town with any scheme of sewage irrigation which may be adopted for them, depends upon their land being properly *farmed.* Boards of Health, Mr. DENTON tells us, are the worst possible farmers. It is, therefore, very important that they should at once put their land in the hands of a man who understands soil and plants, who will not think that, because sewage contains the food of plants, therefore it is at all times and on all occasions a useful thing to apply to plants.

Speaking generally, the means employed on the sewage farms throughout the country are in all cases the same ; yet there is the greatest possible difference in the condition of the land. In some cases everything looks in good order, and the land is covered with a prosperous crop. In others everything is in a muddle, and sewage irrigation, so far as its balance-sheet is concerned, is a failure. Moreover, in some cases the effluent water is foul, in others it is clean. Let us add, too—and as a result of recent visits to many of these farms we are able to do so with the utmost confidence,— there is nothing in the various maxims of which we have heard in connection with sewage distribution to account for these differences. Two of the best farms, probably, of the number are those of Aldershot and Norwood ; the former is a sand, draining easily, and *drained*, the water indeed sinking away almost as soon as it reaches the surface ; the latter, over a considerable extent of it, is a clay soil, receiving the tail-water from one area over a second, and over a third, and *undrained.* In both of these cases the effluent water is beautifully clear ; in both, and especially we may say the *latter*, the Italian Rye-grass is strong, and clean, and prosperous ; in both the land is in the hands of a good man, who knows how to grow plants. Cases of this kind prove, we think, that while it is always true that land should be managed according to the rules of good farming, such maxims as we have heard on the subject of drainage, in connection with sewage irrigation, do not apply with anything like rigid necessity to the subject.

We must further say, that whether drained or not, and whether clay or sand, there is, in all cases of irrigation, that agency of intermittent filtration in operation of which we have heard so much. All water poured over a sloping surface of cultivated soil goes through it as well as over it more or less, and thus becomes subjected to those influences to which in intermittent filtration proper it is subjected. Mr. DENTON speaks of intermittent filtration having been explained in the laboratory of the Rivers Pollution Commissioners : it is only fair to Dr. FRANKLAND to say that it was not merely explained but invented there. The idea of aërating a filter at regular intervals of time, in order to the maintenance of its power as an oxidating agency over any liquid passing through it containing organic impurities, originated, we believe, with him ; and it is, no doubt, a great gratification to him to have seen his process so courageously adopted and carried out as it has been by Mr. BAILEY DENTON, at Merthyr, where he has not only succeeded in purifying sewage by this means, but in growing during the past summer heavy crops of Cabbages, and Mangels, and Broccoli.

Mr. DENTON calls attention very strongly to the fact that the Rivers Pollution Commissioners assumed that the surface of the land to be used as a filter, 6 feet deep, for cleaning the drainage of 3000 people per acre, would not be capable of growing plants. He has found, on the contrary, that the drainage-water of 1000 people per acre does not interfere with the growth of vegetables ; in fact, promotes their growth in an extraordinary degree ; but even if it should be found, as it probably will—for the water is most unevenly distributed at Merthyr, and some parts of the land have three or four times more to do than others —even if it should be found that the drainage-water of 3000 people per acre will not kill, but, indeed, promote the growth of plants, we fear that the contrast which the Commissioners drew between the filtration and the irrigation methods will remain virtually unshaken. The filter-beds at Merthyr may produce £20 or £30 worth of plants per acre, but this will be barely *2d.* or *2½d.* a head per annum for the people draining on to them ; whereas, in a sewage irrigation farm, when only 50, 75, or 100 people contribute to the fertility of 1 acre, the yearly £15 or £20 worth of produce may amount to 8*s.*, 5*s.* 4*d.*, or 4*s.* a head. Filter-beds, therefore—*i. e.*, arrangements for cleansing anything like the drainage of thousands upon mere acres—must be looked upon as virtually a machinery for destroying not only an enemy, but a valuable property ; and it is to be hoped that they will never be adopted where irrigation on a larger area is possible.

AN instrument which will inflict a swift and painless death on animals intended for human food, is doubtless a thing to be desired ; but when Lord POWIS, as President of the Smithfield Club, offered a prize for a "pithing" instrument, to supersede the poleaxe, he failed to stimulate the inventive faculties of any who are skilled in the work of slaughtering, for the simple reason that these practical persons are aware that the poleaxe is itself a most effective "pithing" implement whenever the operator is minded to employ it for the purpose. The instrument which was brought forward, and tested on Thursday, December 7, at MARKHAM'S slaughter-house, in the Metropolitan Market, in the presence of the judges, Professor SIMONDS, Mr. ARNOLD, instrument-maker, and Mr. HIGGLEDON, butcher, failed completely, and therefore the question of how far it is capable of superseding the poleaxe does not present itself for discussion ; but the really important question as to the advantage of pithing as a mode of slaughter remains open, although it should have been determined before any attempts were made to construct an apparatus for the effective performance of the operation. Most of our readers will understand the difference between "pithing" and "poleaxing," but for the benefit of the ignorant in such matters, we will attempt to make the distinction obvious. "Pith" is the butcher's term for the spinal cord or marrow—that mass of nerve matter which continues from the brain along the spinal canal nearly to its termination. As the brain is the seat of consciousness, and the place of origin of the nerves of special sense, as those of smell, sight, and taste, and also of common sensation and motion for parts in the vicinity of the cranium, so the spinal cord is the place of origin of nerves which supply other parts of the body generally with motion and sensation. All nervous function depends for its continuance on the integrity of the brain, and if that organ ceases to act, vitality is necessarily, if not immediately, destroyed. Division of the spinal cord, at a point near its origin from the brain, cuts off the communication with the principal centre of nerve force and consciousness, and the animal falls instantly in a state of apparent insensibility. This process of dividing the spinal cord, no matter how, is called "pithing;" its effect is to render the animal's body motionless for a time, but the spinal cord is a centre of nerve force as well as the brain, and the mere separation of the connection which normally subsists between the two does not at once destroy all the functions of either. The various organs, and parts of the head, will act under stimulation; and, as to the body, every slaughterman knows that the "pithed animal" cannot be touched with the knife without the immediate occurrence of violent muscular action, including, in plain terms, very decided kicking, and sometimes efforts to rise from the floor of the slaughterhouse. In such circumstances it is consolatory to the looker-on to be told that the violent muscular movements are merely the results of reflex action, and do not depend upon conscious efforts; but there is the ugly fact, that certain nerves which arise low down in the neck are in intimate contact with the important nerves of the brain, and as this organ is in no way injured by the operation of pithing, it is at least possible that the animal may retain some sense of what is being done, and the attempt to convince oneself that it does not is only partially successful. At any rate, the assurance of the animal's being insensible is more complete when it is known that the brain itself has been destroyed, or mortally injured, by the blow of the axe or mallet, or the entrance of a bullet into the cranium.

"Pithing," however well done, being a less effectual means of destroying sensibility than either poleaxing or shooting, very little was to be hoped for the success of the instrument which Mr. CAIRD introduced, or the ordinary short dagger which the other competitor offered for trial, but which no one could be tempted to test.

Mr. CAIRD's weapon consists of an iron tube in which a short stilette moves under the influence of a strong double spiral spring; the instrument is set by pulling the stilette upwards against the spring until it reaches a catch, from which it is released by pulling a trigger; the stilette is then shot forward with great force. The theory was that, the instument being placed at the back of the bullock's head, the stilette should be driven between the first bone of the neck and the skull, where there is an unprotected space, into the spinal marrow; the practice was quite the reverse. The first bullock was tied up for slaughter, and Mr. CAIRD placed the instrument behind the ridge of the head in the part which, in ourselves, would be called the nape of the neck, holding it at an angle of about 60°: he pulled the trigger, and sent the stilette against the bone, bending the instrument so as to render it useless. A second stilette was fitted, and a second attempt was made on the same animal, with a like result, a second stilette being spoiled. Another animal was brought forward, the first having been slaughtered in the usual way, and a third stilette was tried and bent out of shape as the others had been, after which the inventor retired from the field, leaving the poleaxe triumphant.

On no sentimental grounds do we object to the experiments which were carried out, at the cost of some unnecessary suffering to the animals that were selected for victims; the object was to find a way to lessen the suffering which must be inflicted, and if the means offered proved to be ineffectual, the failure may be deplored, but it cannot be made a subject of censure,—but we protest against any further blundering in the same direction. Division or puncture of the spinal marrow is not the best way of rendering a bullock insensible, If it were, the poleaxe can be used for the purpose with unerring effect; its point never bends, and if the bone comes in the way, it offers to the blow a resistance no greater than that of paper, but the result is nevertheless incomplete—the animal when struck falls as if shot, but a second blow on the forehead is always necessary in order to make an opening into which the cane is thrust for the purpose of breaking down the spinal cord, so as to destroy the power of motion before the beast is "stuck." Pithing is often resorted to by the slaughterman when an animal refuses to be tied up or to stand quietly to receive the blow in the forehead, but the frontal stroke is always inflicted afterwards, and had Mr. CAIRD'S instrument succeeded, by penetrating the spinal marrow, the poleaxe would still have been necessary to finish the work.

—— THE GREAT CHRISTMAS CATTLE MARKET at ISLINGTON on Monday last resulted in a rather smaller show than has been usual on these occasions. The actual weight of meat on sale was, however, about an average. The condition of some of the stock excited well-deserved admiration, and testified to the excellency attained by English breeders of large stock. And a somewhat remarkable feature in the show was the decided improvement in the quality of the foreign stock. The success which has hitherto attended the endeavours of foreign breeders to improve their stock, and to enable them to cope more successfully with their English brethren, has been very great, as any one conversant with the condition of the foreign beasts exhibited in the market some six or seven years ago will allow; but they have a long way to go before they attain the weight, symmetry, and, in fact, general excellence which have now become the established characteristics of home-bred stock. In point of excellence the Scots carried off the prize. North country graziers continue to keep up their reputation, as far as quality and purity are concerned. The show of stock on Monday was in every respect satisfactory, although it must be admitted that the abundance and cheapness of keep have enabled Scotch graziers to bring up their stock at less expense than during many previous seasons. Shorthorns, also, were powerfully represented, and were close rivals with the Scots. The number was good, and the condition on the whole satisfactory. Some choice Welsh Runts were offered, and generally experienced a quiet sale. Hereford cattle were not so well represented, and there were few Devon and Sussex animals at the stands. A few Irish beasts were offered, but they did not call for special observation. The annexed return shows the number of beasts exhibited, and the prices realised for them on the "Great Days" during the last 30 years:—

Year.	Beasts shown.	s. d.		s. d.	Year.	Beasts shown.	s. d.		s. d.
1841	4,500	3 8	to	5 0	1856	6,748	3 4	to	5 0
1842	4,541	3 4	to	4 8	1857	6,856	3 4	to	4 8
1843	4,510	3 8	to	4 4	1858	6,424	3 4	to	5 0
1844	5,713	4 0	to	4 6	1859	7,560	3 6	to	5 4
1845	5,326	3 6	to	4 8	1860	7,860	3 4	to	5 4
1846	4,570	4 0	to	5 8	1861	8,840	3 4	to	5 0
1847	4,282	3 4	to	4 8	1862	8,430	3 4	to	5 0
1848	5,942	3 4	to	4 8	1863	10,370	3 6	to	5 2
1849	5,765	3 4	to	4 6	1864	7,130	3 8	to	5 8
1850	6,341	3 0	to	3 10	1865	7,530	3 4	to	5 4
1851	6,103	2 8	to	4 2	1866	7,340	3 8	to	5 6
1852	6,271	2 8	to	4 0	1867	8,110	3 4	to	5 0
1853	7,037	3 2	to	4 10	1868	5,320	3 4	to	5 8
1854	6,181	3 6	to	5 4	1869	6,728	3 6	to	6 2
1855	7,000	3 8	to	4 2	1870	6,425	3 6	to	6 2

The comparative absence of animation in the trade was doubtless attributable to the fact that the time between this and Christmas is too long to suit butchers, and they consequently exercised some caution in dealing. On the other hand the general excellence of no small proportion of the supply was the theme of universal comment, and imparted a firm tone to the quotations. The best Scots and crosses occasionally made 6*s.* 2*d.*, but 6*s.* per 8 lb. was the more general top quotation.—A change of weather and large supplies of beasts at Thursday's dead meat market caused a depression, and prices on the average were lower.

—— At MARK LANE on Monday trade in English Wheat was steady, at the previous Monday's prices; transactions on Wednesday were limited, Monday's prices being realised with some difficulty.—The SEED Market is very quiet; and a general advance has been realised in the WOOL Market.

—— The following is the substance of the new Order in Council, to which the appearance of the CATTLE PLAGUE in Belgium has given rise:—

At the Council Chamber, Whitehall, December 8, 1871. By the Lords of Her Majesty's Most Hon. Privy Council. Present: Mr. Secretary BRUCE and Mr. FORSTER.

The Lords and others of Her Majesty's Most Honourable Privy Council, by virtue and in exercise of the powers in them vested under the Contagious Diseases (Animals) Act, 1869 (in this Order referred to as the Act of 1869), and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows:—

1. This Order shall take effect from and immediately after December 8, 1871; and the words in this Order have the same meaning as in the Act of 1869.

2. Cattle brought from any place in Belgium or France shall not be landed at any port or place in Great Britain.

3. The following articles brought from any place in Belgium or France shall not be landed at any port or place in Great Britain:—Manure or hay.

4. The following articles brought from any place in Belgium or France shall not be landed at any port or place in Great Britain, except at the ports at which foreign animals may be landed, and shall not be removed from the place where landed without a certificate of an Inspector of the Privy Council, certifying that such articles are not likely to introduce any contagious or infectious diseases:—Meat, hides, fat, hoofs, or horns.

5. Subject to the provisions contained in the Orders of Council relating to the ports of Granton and Leith, dated August 10, 1869, and in the Order of Council relating to the port of Southampton, dated October 1, 1870, all the regulations in the 4th schedule to the Act of 1869 shall apply to sheep and goats brought to Great Britain from any place in Belgium or France, and landed in Great Britain, and all such sheep and goats shall be slaughtered within 10 days after the landing thereof, exclusive of the day of landing. Provided, nevertheless, that cattle, sheep, or goats being, or having been on board any vessel at the same time with any cattle brought from any place in Belgium or France shall not be landed at any port or place in Great Britain.

6. Notwithstanding any Order of Council to the contrary, no sheep or goats brought from any place in Belgium or France, and landed within the port of London, shall be moved alive out of any part of the port defined as a part within which foreign cattle may be landed for slaughter.

No further spread of the Cattle Plague has yet been reported from Belgium.

—— We desire to correct a mistake in our report of the show at the Agricultural Hall. Mr. H. J. SALMON, of Bermondsey, has long been an exhibitor at these annual shows; and it was not, therefore, by any means for the first time that he appeared there last week.

—— At a MEETING of AGRICULTURAL LABOURERS, held on Friday of last week at Brampton Bryan, Herefordshire, Mr. G. DIXON, M.P., in the chair, the first speaker, attired in a cleanly washed smock-frock, said the wages in the district (part of North Hereford and South Shropshire) were 9*s.*, 10*s.*, or 11*s.* per week, and the men wanted 15*s.* He combated the idea that the farm labourer was better off now than 20 years ago; if wages were higher, provisions were higher also. Other speakers pointed out that out of the 10*s.* per week 1*s.* had to go for rent, and where there was a family it took 5*s.* or 6*s.* for bread, leaving only 3*s.* or 4*s.* for all the other necessaries of life. Flesh meat, the men declared, they seldom if ever taste, and one man said he had only had 3 lb. of butter in his house for 12 months. The masters, it was declared, did not as a rule give their men milk for their families. At present the cottages are all in the hands of the farmer, who rents them to his labourers, and when a labourer leaves his "job" he has to leave his cottage also. The men all argued strongly in favour of being allowed "a little bit of land to keep a cow." One or two of the men had grievances of another character; earning 10*s.* a-week, and having a family to support, they had "to pay 1*s.* a-week to the Union to support their poor old parents, which they didn't care to do if the poor old folks got the benefit of it, but they didn't." This, one man declared, "was enough to make a fellow give up altogether, and not try to pay his way no more." Another was "puzzled how he got on at all, and when he went to bed at night he often wished he should wake up in the morning in America, or somewhere, where a man who liked to work hard could pay his way, and put something up for a rainy day." In default of any improvement at home, emigration seemed to be thought the natural remedy, and letters were read from emigrants who left the district a few years ago, and who are now in comparatively prosperous circumstances. Having heard the different speakers, the Chairman said he could not help thinking it would be kind, generous, just, and wise, on the part of the farmers and landlords, if they were to take the condition of the men into their consideration and try to improve it. He thought they had made out a strong case for increased wages and for sufficient land to keep a pig and a cow. He believed the real cause of all their grievances was the fact that there were too many of them upon the ground, and he agreed with them that the great remedy was emigration.

—— The following RULES of CONSTRUCTION appear to us to deserve all the publication we can give them. They are from the pen of Mr. R. RAWLINSON, C.B. We abridge them from his letter on the subject in the *Times* of Dec. 2. First, however, we quote some instructions from the same pen on the remedies required for mismanagement in old houses:—

"With respect to house drains, many houses, both in town and country, have drains in the basements, usually square on section, porous, and just beneath the floors.

"The remedy here will be to break up the entire basement, cleanse away all removable filth, fill up all cesspits and dumb wells with concrete, remove the old rotten sewers and drains entirely if practicable, lay in the old sewers and drains stoneware pipes, bedded in concrete and filled round and over with concrete, and connect closets and sinks with the new pipe sewers and drains.

"Ventilate all water-closet pipes, so that the water-trap shall not have any accumulation of gas.

"Ventilate all water-closets at or near the ceilings by air bricks, or by some one or other of the ventilators advertised in such publications as the *Builder*.

"Sink pipes should end outside the house wall, over a prepared chamber, at the end of the drain, which chamber is to be covered with a fine grate to let out any gas from the drain.

"Persons complain that foul smells arise from sewer and drain ventilators, and stop them up or cry out for this to be done, forgetting that the escape must be somewhere, and most probably into the house or houses of those who complain. That foul smells come from ventilators is the best proof that ventilation was and is required; the true remedy will be, not to stop up one, but to form a second, a third, and so on, until, by dilution and dispersion at several points (as far asunder as is practicable), concentration in a sewer or drain is prevented, and the sensation of smell ceases."

"Cesspools should not exist within the walls of any inhabited dwelling. If there are cesspools on any part of the premises, they should be abundantly ventilated to the external air, and no drain to the house should connect direct. But it is safer to abolish every cesspool on the premises, and if the sewage is to be used for garden or irrigation purposes, let any cesspool or tank be away from the house, in the garden, or on the land of the farm. Houses situate on elevated sites, if the sewers and drains have a steep gradient or fall, are most difficult to sewer and drain. As sewers and drains are also flues, and if refuse fluids flow rapidly down gases of decomposition flow rapidly up; and if the connection is complete from the sewers by drains, by water-closet stack-pipes, by sinks, by internal waste-water pipes, and by overflow-pipes from water-supply cisterns to the inside of the house, no form of trapping is of any avail. Let it be clearly understood that traps on drains and pipes from unventilated sewers, cesspools, and house drains are 'a delusion, and a snare.' The delivery end of sewers should be protected with a flap, to prevent the wind blowing into the open end, and so driving any gases back to the town or house with the force of the wind's velocity for the time. Every main sewer should have means for external air ventilation, not less than one such ventilator in each 100 yards. All drains should be permanently and fully ventilated outside the walls of the house. All sink pipes and waste-water (overflow) pipes from fresh-water cisterns should discharge above the trap of the drain, and not be sealed in with the drain. There should be ventilation at this point, so that any gas evaporated from the drain will pass outside to the open air and not to the inside of the house. Water-closet stack-pipes should be continuous, from the drain through the roof or above the battlements, so that an accumulation of sewer gas cannot rest against the closet-pan trap. Water-closets should have means for full and permanent ventilation at or near the ceiling, independent of windows. The arrangements for such ventilation should also be so contrived that they cannot be seen, and then they may escape being tampered with. No water-closet should be within the body of the house, but should be against an external wall, and receive light direct, not a 'borrowed light.' The valve or pull-up handle of every closet should be capable of action with the lid down. This lid should always be down when the closet is not in use. House drains, stable drains, and yard drains should be flushed once each week; a clean-looking drain is no proof that it may not be very injurious. The purport of these remarks amounts to this: Isolate the house from the drains and sewers by full permanent external ventilation, and provide for permanent means of ventilation at or near the ceiling of every water-closet room. Arrange means to have all drains flushed not less than once each week, and order that they be so flushed. Every bed-room should have means for permanent ventilation at or near the ceiling.

"The philosophy of the question seems to be, that stinks in the open air do a *minimum* of injury, but that gases of decomposition within rooms and in stagnant air become dangerous to health."

NOTEWORTHY AGRICULTURISTS.

DR. J. H. GILBERT, F.R.S.

[We take the following note and portrait from the "Farmers' Almanac," published by Cassell & Co.

JOSEPH HENRY GILBERT, whose name, in conjunction with that of Mr. Lawes, is familiar to all students of agricultural chemistry, was born at Hull, August 1, 1817. His father was the Rev. Joseph Gilbert, the author of several theological works. Dr. Gilbert's monther (Ann Gilbert), who survived until 1866, also contributed to literature, writing originally with her sister, under the names of Ann and Jane Taylor.

DR. J. H. GILBERT, F.R.S.

After his school education, and the loss of several years by a gun-shot accident, which much impaired his health, and deprived him of the sight of one eye, Dr. Gilbert commenced his college courses at the University of Glasgow. Here, as elsewhere, he paid special attention to chemistry, devoting some time to analytical chemistry in the laboratory of the late Professor Thomas Thompson. He next studied at University College, London, attending the classes of Professor Graham and others, and working in the laboratory of the late Dr. Anthony Todd Thompson, then the Professor of Materia Medica, Therapeutics, and Toxicology. A short time was then spent in the laboratory of Professor Liebig, at Giessen, where he took the degree of Doctor of Philosophy. Returning to University College, London, Dr. Gilbert was class and laboratory assistant to Professor A. T. Thompson, in the winter and summer sessions of 1840-41, and attended other courses at the college at the same time. On leaving college he devoted himself for a time to the chemistry of calico printing, dyeing, &c., in the neighbourhood of Manchester.

In 1843 Dr. Gilbert became associated with Mr. J. B. Lawes, of Rothamsted, Hertfordshire; and from that time has continued to be engaged with him in a systematic series of researches in agricultural chemistry and physiology. The results of their investigations have been published from time to time in the Journal of the Royal Agricultural Society of England, the Reports of the British Association for the Advancement of Science, the Journal of the Chemical Society of London, the Proceedings and Transactions of the Royal Society of London, the Journal of the Society of Arts, the Journal of the Horticultural Society of London, the Journal of the Royal Dublin Society, the "Edinburgh Veterinary Review," the "Philosophical Magazine," in some Official Reports, and elsewhere. Dr. Gilbert was elected a Fellow of the Royal Society in 1860, and in 1867 the Council of the Society awarded to him, in conjunction with Mr. Lawes, one of the royal medals; he has been a Fellow of the Chemical Society of London since 1841, and is at the present time one of the Vice-Presidents of the Society. There is no single labourer in the field of agricultural research, nor indeed any society or association of labourers in that field, to whom agricultural progress owes so much as it does to Dr. Gilbert and to Mr. Lawes. The results of their investigations have been given in a series of papers, too long for enumeration here, which, as regards the agricultural history and literature of the past 20 years, are quite one of the glories of the English tongue.

OUR LIVE STOCK

CATTLE.

OUR export trade in live stock yearly increases. Without giving minute particulars with reference to the animals, and the herds from which they were selected, we abstract the following from Thornton's Circular: — Four heifers were shipped on board the Erin, Aug. 19, for E. G. Bedford, Kentucky, U.S.; one bull (GLENSMAN) for Prince Edward's Island, on August 29; two heifers and one young bull on board the Germany, for R. Gibson, Minneapolis, U.S., on August 4; two heifers, on board the Austrian, for R. Gibson, August 26. Two heifers, on board the Paramatta, August 28, for D. Jenkins, Sydney, Australia; two heifers were sent to Mr. P. W. Anderson, Sydney, and two heifers, to Mr. E. King Cox, Sydney, by the same vessel; four young bulls were shipped in September for Mr. J. B. Watt, Sydney; two young bulls, per the Sobraon, from Grays, September 29, for Messrs. F. & W. Fanning; and four heifers and five bulls were consigned on board the same vessel to Messrs. Dangar, Gedye & Co., and to Mr. Vickery, Sydney; four bulls were shipped, in the Thomas Stephens and Kosciusko, to Messrs. Dalgaty, Ducroy & Co., Melbourne. The European took out a very considerable cargo of live stock to Canada on July 20, comprising twenty-five heifers and four bulls; BRITISH BARON was shipped to Mr. Snell, Edmunton, Ontario, on August 4; two heifers left Liverpool on board the Nova Scotian for the Messrs. Hunter, Sunnyside, Wellington, Canada; seven heifers and two bulls left Liverpool for Canada, consigned to Mr. J. S. Thomson; Mayfield, Whitby, in August. Five heifers and one bull were shipped from Liverpool in July for Messrs. Shaw & Dryden, Ontario; two heifers for Mr. Davidson, Canada; two heifers for Mr. G. Zoeppritz Ganterhof, Germany; and one bull for M. Olde, Germany; and three other bulls also found their way to Germany. Seventy-three females and 32 bulls, all pure-bred Shorthorns, have therefore been exported during the last half year, besides others which have probably escaped notice. Above 100 animals! And yet when we look at the requirements of the world the number appears unutterably insignificant. If the Shorthorn is to become the prevalent breed in America, Australia, and New Zealand, we see little prospect of the trade becoming overstocked, or prices sinking, for some years to come.

—— Breeders of stock appear to be unanimous upon the point once more brought forward by Mr. J. K. Fowler at the last meeting of the Farmers' Club, namely, that the external form of an animal is due to the influence of the sire, while the internal organs and constitution are transmitted by the dam. With this somewhat stale, but not the less true observation uppermost in our mind, thanks to Mr. J. K. Fowler, we took the following quite superficial survey of the cross-bred cattle at the late Islington exhibition, in the hope of detecting the "prepotency" of the male in transmitting his form to his offspring. This point having been so lately discussed, further preface is unnecessary, and we therefore proceed at once to chronicle our rough notes taken in the Islington Hall:—

In Classes 35 and 36 we noticed the following cases:—

Walter Scott, of Glendronach, Huntly, Aberdeen, showed a 2 years 10½ months steer (196); sire Shorthorn, dam a cross-polled cow, second cross. The produce of this cross was polled, brindled red and black and white.

James D. Allen, of Tisbury, Salisbury, showed a 2 years 7 months steer (197); sire Hereford, dam Shorthorn. The produce was Hereford in colour and appearance, with face a little mottled, and back, with the exception of the shoulder-top, all red.

J. & W. Martin, of Aberdeen, showed a 2 years and 5 months steer (198); sire Shorthorn, dam Aberdeenshire, second cross. Colour and general appearance, Shorthorn.

Hon. M. H. Moreton (Mr. Bruce), of Newton-of-Struthers, Forres, Moray, showed a 2 years and 7 months steer (199); sire a Shorthorn, dam Scotch first cross Appearance, distinctly Shorthorn.

John Overman, of Burnham Sutton, showed a 2 years and 11 months steer (200); sire Shorthorn and Norfolk poll, dam Shorthorn, second cross. Produce polled, dark roan and white, and general contour scarcely characteristic of either breed.

Edmund Beck, of Oxwick, Fakenham, Norfolk, a 2 years 9 months steer (201); sire Shorthorn, dam a Dutch cow, second cross. Appearance, that of a Shorthorn.

William Slatter, of Stratton, Cirencester, showed a 2 years 11 months steer (202); sire Hereford, dam Hereford and Shorthorn, second cross. Produce, Hereford in appearance.

Robert Skelton Senior, Gabriels Park, Edenbridge, Kent, showed a 4 years and 9 months steer (203); sire Shorthorn, dam Shorthorn and Sussex, first cross. Shorthorn in appearance.

William Taylor, of Glynley, Eastbourne, a 4 years 7 months steer (205); sire Devon, dam Kyloe cow, first cross. Of dubious appearance.

Sir W. C. Trevelyan, Bart., of Wallington, Newcastle-on-Tyne, a 3 years 7 months steer (206); sire Shorthorn, dam pure Galloway polled. Polled like a Galloway, red in colour.

Walter Scott, of Glendronach, Huntly, Aberdeen, a 3 years and 9 months steer (207); sire Shorthorn, dam a cross polled cow, third or fourth cross. Appearance, Shorthorn.

William Brown, of Linkwood, Elgin, Moray, a 5 years 7 months steer (208); sire Shorthorn, dam polled Aberdeenshire, first cross. Polled Aberdeen in outline, "pepper and salt" coloured.

Nos. 219 and 210 were withdrawn.

Joseph Stratton, of Manningford Bruce, Marlbro', Wilts, a 3 years and 4 months steer (211); sire pure Shorthorn, dam first cross from pure Brittany cow by pure Jersey bull. Very mixed appearance.

Robert Wortley, of Suffield, Aylsham, Norfolk, a 3 years and 2 months steer (212); sire Hereford, dam Shorthorn, first cross. Hereford in appearance, face blotched, back and shoulders all red.

No. 213 not present.

John Overman, of Burnham Sutton, a 4 years and 4 months steer (214); sire Devon, dam Shorthorn first cross. Red in colour, Devon in character, although larger than a Devon.

J. J. Coleman, M.P., of Carrow House, Norwich, a 4 years 6 months steer (215); sire Shorthorn, dam Lincoln, firstcross. Appearance, Shorthorn.

216 not present.

Hugh Stratford Stratford, of Thorpe Lubbenham, Market Harborough, Leicester, a 3 years 3 months steer (217); sire Shorthorn, dam polled Scot, first cross. Colour black and white, but horned, resembling the Welsh cattle.

Gathering these observations into a form in which their meaning will be more or less easily perceived, we have the following list:—

196. Apparently took after cross polled dam.
197. Apparently took after Hereford sire.
198. Apparently took after Shorthorn sire.
199. Apparently took after Shorthorn sire.
200. Of dubious appearance.
201. Apparently took after Shorthorn sire.
202. Apparently took after Hereford sire.
203. Apparently took after Shorthorn sire.
204. —
205. Of dubious appearance.
206. Apparently took after polled Galloway dam.
207. Apparently took after Shorthorn sire.
208. Apparently took after polled Aberdeen dam.
209 and 210. Absent.
211. Very dubious appearance.
212. Apparently took after Hereford sire.
213. Absent
214. Apparently took after Devon sire.
215. Apparently took after Shorthorn sire.
216. Not present.
217. Dubious in appearance.

Thus, out of 17 animals examined, three took after their dams, and singularly in each case after black polled dams; ten took distinctly after their sires, whether Shorthorn, Devon, or Hereford, and four were of mixed or dubious appearance, two of these being mongrel (mixed) rather than cross-bred animals.

CHALKING AND LIMING LAND.

MR. F. EVERETT, touching on the above subject in his paper, read before the Newbury Club (p. 1405), remarked:—"I think the most practical man will allow that no amount of farmyard manure is an effective substitute for chalk when land requires it. So thoroughly convinced am I of the importance of supplying lime in one of its various forms of combination, when its application to the soil can be 'proved' to be necessary, that I have made the subject a special matter of inquiry." He at once proceeds in the right direction, by consulting with Professor Voelcker as to the real state of things. The reply he received from the Professor confirmed his suspicions: "It will be useless to go to any great expense in the purchase of any manures till your land has been either limed or chalked." The Professor's decision was formed after an analysis of the soil, enabling him thereby to ascertain correctly what constituents the soil was most deficient in. Having analysed the soil, the remedy, that is, a manure containing the largest amount of the constituents that are wanting, or their equivalent, having been applied—crops of a cereal or leguminous nature, Wheat or Beans, having been reaped—are we not in a position to say with accuracy, what has been added to the soil in the manures applied, or withdrawn therefrom by the crop harvested? This is like Baron Liebig's minimum law, repeating Mr. Everett's remark, "which, though for the present it may be scorned by practical men, is destined ere long to be acknowledged as lying at the root of all sound practice, and is a safe guide to all who are not unwilling to confess, that the researches of scientific men materially assist us in working out our everyday practice." The inorganic or mineral constituents of the plant are taken from the soil, it is these we require to return; and to replenish Nature's storehouse must be our diligent care. How is the deficiency or increase of any constituent of the soil to be ascertained? Need we analyse again? Let us see what information we can cull from our neighbours and friends.

Our soil has been analysed, disclosing to us its mineral constituents. It behoves us now to consider, knowing the weak or minimum points therein, what crop we ought to grow. First, we must inquire what state our field is in, as to its mechanical condition. Have the processes of cultivation been guided by intelligence as to the proper time and seasons for executing them? If so, they cannot fail to be productive of much good. But let it be understood that the mechanical operations of cultivation, ploughing, harrowing, &c., however well timed or performed, do not add anything to the soil—they, however, most certainly aid in bringing into activity certain constituents now dormant therein; the physical and chemical condition of the field will no doubt improve—the chemical store has not been increased, only made more comeatable, the power of the land to assimilate and convert to the use of the plants the elements of food supplied by the atmosphere is brought into greater activity; the rain percolates more freely, carrying with it, to be detained by the soil for the use of plants, the carbonic acid and ammonia of the air; in other words, the repeated exposure of the soil to the action of the atmosphere, by means of ploughing, &c., causes a decomposition of mineral matter, while the carbonic acid and ammonia of the air unite with the various acids of the soil. It has been given on trustworthy authority, "That the atmosphere contains every organic constituent of the plant, in the form of ammonia, carbonic acid, water, &c., and of these it is considered there is a sufficiency for the proper growth of our crops, if we would but open up and loosen the pores of the earth for their reception, affording easy access for the roots of our plants, enabling them to ramify, spreading themselves in search of their natural food;" or, as Jethro Tull would express it, "fit pastures for the young and tender rootlets." The organic constituents are provided by an All-wise Providence: it remains for us to utilise them, which we cannot do better than by thorough and deep cultivation, and returning to the soil the inorganic constituents derived therefrom by the crops we grow. Here is cheering encouragement to the deep cultivator. The productive power of the soil is increased, still he must not allow himself to be misled in this matter; he must endeavour to make himself acquainted with, and able to discriminate rightly between the appliances requisite to make effective the nutritive elements already in his fields and those which keep up the lasting productiveness of his land. Professor Voelcker, speaking of atmospheric influences, says "We may positively say that all soils that are not penetrated by air are unproductive, no matter how much food they may otherwise contain."

The soil being in a good mechanical condition, the next question that suggests itself is that of manuring, and it will be as well to keep the crop it is intended to grow in mind in determining the kind, yard or mineral, as well as quantity, of manure, it may be considered requisite to apply. A crop having been taken since our analysis, we can note what mineral constituents have been withdrawn by it from the soil; by replacing those constituents which have been removed from it, we will restore it to its normal fertility. It may be questioned whether the mineral condition of the field has not been altered by the mechanical operation it has undergone, such as mineral constituents rendered more soluble by the action of the air on a subsoil thoroughly broken up, or by disintegration from loose stones or rocks beneath. Granted; still we are able to estimate this increased return, and are but debtors in a greater degree in reckoning with our fields. It is here we recognise the wisdom of a rotation. If we have by successive crops of Beans withdrawn to a damaging degree the potash, the lime, or the phosphates from the soil—and this fact we can determine by the ash constituents contained in the bulk grown by following Beans with Oats—very little pressure will be put on the lime resources of the field, and the potash and the phosphates will not be drawn upon in so great a degree by one-half. By a judicious application of manure on a suitable course of rotation, the deficiency can be rectified to such a degree as to enable us to draw from the soil the largest nett return, while the capabilities of the land are at the same time maintained and increased; also the agencies which improve the mechanical and physical condition of the soil are most important, for an actual increase in the majority of instances is less attributable to the addition made to the store of mineral constituents than to their distribution—to the fact that certain dormant substances have been rendered available; and it has been noted by the highest authority "that no plant can be cultivated upon a soil unless the mineral constituents of the soil are in proportion to the special requirements of that plant." By reference to "Morton's Encyclopædia," "Our Farm Crops" (Wilson), or "How Crops Grow" (Johnson), we are able to note the ash constituents withdrawn from the soil, and what have been added in the manure. With an analysis, say once during a rotation, to guide us, to point out our weakest part, a debtor and creditor account can be written for each field. The thorough disintegration of the soil renders the manures applied more effective: a knowledge of their constituents will enable us to apply them more in accordance with the requirements of the land.

Mr. Everett draws attention to the different chemical composition and mechanical structure of chalk; and Mr. Sibson, after analysis, points out that "it should be used in more moderate quantities than is customary in the district;" in other words, from want of the knowledge imparted by science, chalk had been wastefully applied. Does not this hold good in regard to the manures of the farm? Let the farmer reason thus:—My soil contains, by analysis, a very fair percentage of the constituents requisite for the profitable growth of the generality of farm crops, excepting one—lime. What quantity, and in what form of combination, can it be best applied? It must be kept in mind, that the functions which lime performs in the soil, though chiefly chemical, are also in part mechanical,—in the former, resulting in causing the materials of the soil to become more available to plants, aiding the plants themselves to draw more fully on what the soil contains; in the latter, consolidating the light and sandy soils, and, as a rule, opening such as are heavy and difficult to work. If some such reasoning were brought into action when considering the necessities of each field and crop, there cannot be a doubt but that the manures, as now applied, without such consideration, would be made to yield far more satisfactory results, at the same time rather improving than diminishing the reproductive power of the soil. Those antiquated covenants, so stereotyped in leases, a slur alike to landlord, tenant, and English agriculture, would then be scouted; a mutual bond of good feeling and thorough confidence would be the result; and then we may be sure that honest benefactor of agriculture, Baron Liebig, would erase with feelings of noble pride and joy the last paragraph of the following sentence recorded in his "Natural Laws of Husbandry:"—"There is no profession which, for its successful practice, requires a larger extent of knowledge than agriculture; and none in which the actual ignorance is greater." *West Indian.*

ON MEAT-MAKING.

LAST year I tied up 23 Hereford bullocks; the year before, the same stalls were occupied almost together by blacks, or Castlemartin oxen. The year before I had a mixture, mainly of Shorthorns, with some cross-bred animals. I took those animals in one year, having bought them up at fairs or anywhere where I could get them during the months of September, October, or November. When I bought them I turned them out on grass, and tied them up about the middle of November. I, of course, endeavoured to get good animals, of prime quality, and tolerably fresh, as we say. I saw to that before I tied them up. The Herefords of last year I bought from a person living on the borders of Herefordshire, to whom I was recommended by my friend, Mr. Brodie. They were 2-year-olds, as they were called, but I think in the month of October, when I bought them, they were about two years and nine months. I prefer for feeding purposes 3-year-old oxen when I can get them; but I have sent to fairs and all about the country, and have found it impossible to collect a large number of oxen over two years old, for they all find their way out of the country at an earlier age. The graziers and butchers in England are so fond of our cattle that they carry them all away generally as 2-year-olds and often as yearlings.

Well, I will say of the Herefords of last year, and the blacks of the year before, and the Shorthorns and mixtures of the year before that, that they were all tied up in the same stall and fed precisely in the same way. There were all tied up about the middle of November, and were sold out as the butchers required them. In fact, they were nearly all sold in Llanelly as they were wanted by the butchers. They came out in April, May, and June, and generally came out very ripe, and would be called superior butcher's meat. They were not so fat as those animals Mr. Brodie takes to the Swansea market at Christmas. They were not so fat as that; but he has, in a few instances bought of me a few of my animals when they were ready for our butchers in April or May, and has kept them on again to Christmas. But I do think this—I have heard the prices he has got for them—I do think that for my 25 weeks' keep I would have realised a larger profit than Mr. Brodie did.

The question is, how did I feed them? As I have said, upon an average they were tied up for about 25 weeks. Our friend has talked a good deal about hay. Now none of those animals had hay. They never tasted a bit of hay. Mind you, I have nothing to say against hay, but I have none to spare, inasmuch as I keep too many horses. The food I give to them is straw, the produce of the stackyard as it is threshed from the rick; it is chaffed and mixed with pulped Swedes and Mangels, and carried to the animals five or six times a day, quite regularly, with about a quart measure of concentrated food, consisting of crushed Barley, Oats, and Beans or Peas, for each animal, which would be varied from time to time. I believe that the mixed food, as given by me, contains all the elements of flesh, muscle, bone, and fat. Therefore, having prepared all this food by water-power, it is done quickly and with very little trouble. It is done in a sort of barn, which I built about four years ago, and in which I put up a 16 feet diameter water-wheel, and that has since done all the work of the farm. So that in a short time every day we prepare all this food, and there is nothing to do but to shovel it into tubs or buckets as it comes from the machine. There is no trouble, and besides it is more concentrated when done in this way. The food would consist of Barley crushed, Oats crushed, with a small quantity of Beans occasionally, or Peas. If you will use a small quantity of them you will produce more flesh, I think. I use a small quantity of cereals, but you use as a rule ten times the quantity of cereals that I do, and all these things must make a difference in the cost of feeding. I put a small quantity of cereals, as I have said, into this chaffed straw and roots, and it is very good when placed before the animals.

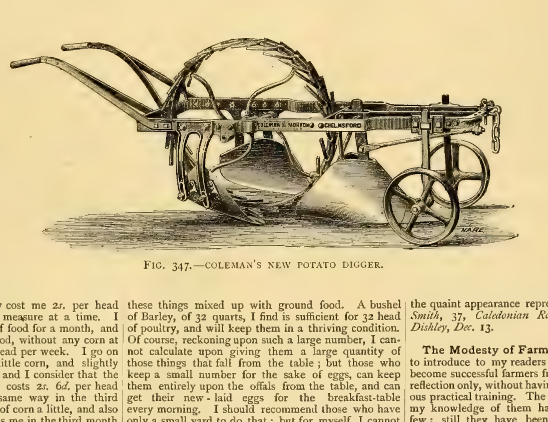


FIG. 347.—COLEMAN'S NEW POTATO DIGGER.

I would begin to feed my cattle with this concentrated food, and it would only cost me 2*s.* per head per week, giving them a quart measure at a time. I would continue that quantity of food for a month, and in that way the concentrated food, without any corn at first, would cost me 2*s.* per head per week. I go on in the next month adding a little corn, and slightly increasing the quantity of food, and I consider that the food during the second month costs 2*s.* 6*d.* per head per week. I proceed in the same way in the third month, increasing the quantity of corn a little, and also the quantity of food, which costs me in the third month about 3*s.* each per week. I then add a little oilcake, and give a larger quantity of corn, until in the fourth month the food costs me 4*s.* per head per week, and then I give a larger quantity of corn, and in the fifth month the cost is 5*s.* per head; and then finishing off they cost me 6*s.* per head per week. Now, the average of that—I have been taking time about it; for I do not give the food too quickly, as the animals would not be able to assimilate it, but taking the average, the cost would be 4*s.* per head per week. In 20 weeks that would be £4, and five fours are 20. Therefore, at the end of 25 weeks my animals cost me £5 per head each. Well, if I paid for them £12 10*s.*, and £13 10*s.*—those were the very prices—they did not cost me more, except the carriage. I bought 15 at £12 10*s.* each, and the other six at £13 10*s.*; and taking the carriage, they cost me about £13 each. Well, £13 and the cost of feeding them, £5 each; that would be £18 each. I ought to put down something for attendance. Say that they cost me £18 5*s.* per head. I will not go farther into numbers, only to say that last year in buying a lot of sheep—you all know how dry the summer was, and how the animals were, there being no roots—I bought them cheap in April, May, and June; and butchers' meat became very high, and I made a very handsome profit by them. And besides that, I had 250 cartloads of rich farmyard manure, not poor manure such as you have from dairy cows, where all the phosphates are consumed in the milk and cream. Where the animals are taken out fat the manure must be very rich.

I would merely say, comparing the three past years, that the Herefords were not so satisfactory to the butchers, after they killed them, as the blacks were, as they did not turn out so fat inside. That is a characteristic of the Herefords. They do not secrete fat inside. They look fatter outside than they are inside, whereas the black ox does not look so fat outside as he proves to be inside. I will say nothing against Shorthorns. They paid me very well; but they did not put on fat so readily as either of the other breeds upon the same food. The question with me is profit. I paid a good deal more for them than for the others, and I got more for them; but the profit was not so good, because they cost me more.

As to poultry, I am quite as much at home in the feeding and breeding of poultry as I am with the other animals. I would recommend any one who has even a good large yard to breed poultry. A small yard will not do to keep them in health, as they require a little liberty, and where there is a tolerable run they live and feed better. They live largely upon insects and on things they find in their rambles. Ducks feed upon such things as slugs and snails, and do a great deal of good in a garden without doing any mischief. As to feeding them, my poultry-maid comes to me once a week to know what food she is to have to feed the poultry. How do I ascertain that? In this way. I have generally several head of poultry. I lately, before I left home, had some of the poultry counted, and I found I had 46 turkeys, not quite so many geese, rather more ducks, and as to fowls of different kinds, I have Brahmas, Cochin Chinas, Spanish, Hamburghs, and so on, all of which I keep in separate walks. The number of these vary every week, and how do I ascertain how to keep them? This is how I manage it. I allot a bushel of Barley to every 32 fowls; that is, 32 quarts—a quart for each. Half the Barley is crushed, and half is given whole, and mixed with Potatos, and with the offals that fall from the table. I find that they feed well upon these things mixed up with ground food. A bushel of Barley, of 32 quarts, I find is sufficient for 32 head of poultry, and will keep them in a thriving condition. Of course, reckoning upon such a large number, I cannot calculate upon giving them a large quantity of those things that fall from the table; but those who keep a small number for the sake of eggs, can keep them entirely upon the offals from the table, and can get their new-laid eggs for the breakfast-table every morning. I should recommend those who have only a small yard to do that; but for myself, I cannot reckon upon that. I am obliged to cater for the whole of them, as I have got a large quantity. I reckon each of the turkeys and geese as two fowls, and give them 2 quarts each, and that really keeps them in a good thriving condition. Then comes the question—Does it pay? I say no. In keeping poultry on that large scale, I have never found it to pay, at the market price, mind. But I have this great advantage—I have always nice fat poultry for the table; and although a lean turkey is one of the driest things you can have, yet a nice fat turkey is one of the most acceptable things you can have on the table, and the same may be said of geese and fowls. I do not know that I have anything more to say. I have said that it does not pay to breed poultry—or rather, it would not pay me if I sent them to market; but I think it does about pay me, for this reason, I sell a good many to folks at a distance. I do not confine my poultry to the town of Llanelly, but send them to Glamorganshire and farther up very frequently. From this time up to the breeding time in the spring, people are continually writing to me. I had a letter a day or two ago. The writer says, "Have you any Dorkings?" In reply I say, "Oh yes; but mind the price is a guinea for a cock and two hens." So in that way I sell a great many, and I get those prices for them. Then, as you know, I take a great many prizes in the year. I take prizes here at Carmarthen, at Swansea, at Neath, and that makes it up. I don't want to get a shilling by keeping poultry, but of course I don't want to lose anything. I say, as long as poultry pay their way, I don't care, for I have all the pleasure of breeding them and looking at them. *Mr. Buckley, at a meeting of the Carmarthen Agricultural Society.*

THE NEW POTATO DIGGER.

FROM the following illustration (fig. 347), for the use of which we are indebted to Messrs. Coleman & Morton, of Chelmsford, it will be seen that the earth, first moved by the double mouldboard-plough, and afterwards thrown back again by the two side mouldboards facing each other, is thrown, the whole of it, in the inner rim of the revolving wheel, which lifts the stuff and shakes it, and leaves its contents on the surface.

Home Correspondence.

Leicester Sheep.—On reading an article which appeared in the *Agricultural Gazette*, dated December 9, commenting on my letter inserted in your issue of December 2 last, I felt that my letter was in some respects misunderstood. In the first place, allow me to explain that I was not aware of Mr. Dixon's demise, but even so, I submit that when an author, in writing on public topics, makes a mis-statement (no doubt through receiving erroneous information), it is better that the error should be pointed out. With reference to the misunderstanding about the history of the black ram, the article above referred to states as follows:—"After carefully reading Mr. Smith's interesting remarks, we cannot take his story as evidence. He begins by telling us that Mr. Bates and Mr. Elches and another friend came to Dishley after the meeting of the 'Royal' at Derby. What, we would ask, has this interesting little episode to do with the 'black ram?'" I answer that Mr. John Stone related at table at Dishley, in my presence, in the year 1820, the story of the black ram, when the conversation was upon the black lamb that was produced at Dishley in the same year, and which was related to Messrs. Bates and Elches by myself at Dishley; and, with reference to Bakewell standing in the presence of George III. with the black horse, and the implication to be drawn from Mr. Dixon's language, that the king looked more at the man than at the horse, I can only say that, having re-read Mr. Dixon's statement, I cannot see what implication or inference can be deduced therefrom other than that contained in my former letter. I have frequently heard my father (who knew Bakewell personally) speak of him as a most gentlemanly man, and there is no doubt that he did not present the quaint appearance represented to Mr. Dixon. *B. Smith*, 37, *Caledonian Road, London, N., late of Dishley, Dec.* 13.

The Modesty of Farmers.—I promised (p. 1466) to introduce to my readers a few gentlemen who had become successful farmers from observation, study, and reflection only, without having passed through any previous practical training. The number, however, as far as my knowledge of them has extended, has been but few; still they have been like lights shining in a gloomy atmosphere, guiding the travellers who have been wise enough to follow their leading, if not into a clear and brilliant light, yet into one that could be followed with perfect safety until the fog cleared away, and opened to them a safer and a better way. But since my letter was published, announcing my intention, I have received intimations from these gentlemen asking me not to publish their names, as my doing so would bring them into hostility with their farming neighbours, as raisers of their rents, and with whom they wished to live in friendship. Now, my respected readers, let us have a little reasoning together on the fear, among agriculturists, that the publishing of isolated systems of successful farming would be injurious to the farming community. That the opinion that it is so is pretty general these specimens are types, for the gentlemen I am referring to live very many miles apart, and, I believe, are strangers to each other; yet all fear to make known the successful system of farming they have been pursuing, lest the doing so should excite hostility against them as raisers of rents. But, I ask, do not farmers know, what all other men know, that the price of all the various kinds of productions depends upon the supply of them and the demand for them? Does not every market woman know that when in the spring eggs are plentiful the money price for them is low? and, on the contrary, when about Christmas they are scarce, the price for them is high? And is it not the same in everything that mankind really requires? If land were to become a drug, and over plentiful, of course it would be of little money value, but in a country as thickly populated as our country is, land that can grow corn and support sheep and cattle, either for breeding or fattening them, or both, can never be so cheap, either to purchase or to rent, as it would where there are but few inhabitants and the land is poor and sterile, and not in demand. But who are the persons who have it in their power to raise rents, and do so? Are they not the farmers themselves? And is not one chief cause of this their great eagerness to obtain land, and to add farm to farm? I am by no means opposed to moderate-sized farms, but I am decidedly of opinion, and from long observation, that there ought to be farms of very few acres, as well as farms of hundreds of acres. No rule can be laid down as to how small farms should be, but I think the welfare of the country is opposed to arable farms being in any case larger than 500 or 600 acres, unless in peculiar cases. I will show that farmers themselves are the raisers of rents in their bidding for land against each other; but before I give proofs of this I will just observe that I believe low-rented farms are a reproach to the neighbourhood where they exist, and a loss to the community at large. Farmers bid against each other for every bit of land and farm that becomes vacant and letable. And here I give one example of this:—A friend of mine, who possesses several farms, had a small one of 150 acres to let in consequence of the death of the tenant; and, as I knew the farm well, the proprietor of it wrote to me to ask my opinion as to the rent he should re-let the farm for, and I replied that £2 or 2 gs. an acre would be a fair price—the land, I observe, is very good. But what was the result? It was this, that the tenant of an adjoining farm, who occupied near 1500 acres, two-thirds being arable, offered 3 gs. an acre for the farm. But I almost fancy I hear a hundred voices crying out, He could not pay that rent! My friends, he does pay it; and let me inform you, that to my knowledge he commenced farming a poor man, with a very little quantity of land, and that now 800 of the acres he occupies are his own. Of course he is now a very old man, and his sons are stepping, or have stepped, into his shoes; but he had purchased his land while the whole of that land he occupies was in his own hands. Nor is this an isolated case, for many more of the same character might be adduced. But when a man can afford to give £470 a-year for a farm that other farmers would proclaim to be highly rented at £300 a-year, does not this prove that the land was by superior farming made to yield the additional produce, to enable the extra rent to be paid? No fear can be more senseless than that any class of men, and especially farmers, can be injured by the adopting, and then publishing, the results of superior farming. *George Wilkins.*

Southdowns at Bingley Hall.—You may think it worth your while to correct an error in your report of the Southdown Class 32 at the Birmingham show. You say, "Colonel Kingscote shows a commended pen of rather smaller sheep, with finer wool and quality." Colonel Kingscote showed three pens: neither of them were commended; and, if you will refer to the weights on p. 150 of the catalogue, Nos. 172 and 173 (his two best pens), you will see they are more weight than the 2d or 3d prize sheep. As regards your remark on their being finer wool and quality, there can be no doubt but you are correct; and, I may safely add, showed as much, if not more, of the pure Southdown type than any pen in their class. *Francis Burnett.*

Australian Meat. — The introduction into this country of preserved beef and mutton from Australia offers to effect a great and much-needed change in our meat trade. The meat is at present on probation, and from what I can learn from the opinions of others, and my own experience, the decision seems likely to be a favourable one. Its introduction is viewed with varied feelings by those most interested—the breeder, the butcher, and the consumer. Owing to cattle plague, pleuro-pneumonia, foot-and-mouth disease, &c., which has recently prevailed in this country, the stocks of cattle and sheep, not only in this country but also in Continental nations, have been much thinned, and as our consumption has been on the increase, great difficulty has for the past few years been experienced in bringing sufficient into the market to meet the demand. This has naturally led to an important rise in prices, which rise has induced breeders to prefer feeding to keeping for dairy purposes, another cause conducing materially to the diminution of the national stock. Thus, milk, butter, and cheese, from consequent scarcity, have also advanced in price, and the question has been more than once mooted, if these causes would not in the course of years lead to the gradual extirpation of cattle did not something arise to supplement the deficient supply. We have the authority of high-class medical journals that milk is simply impossible to be had in most of our large towns, and that its scarcity has led dealers to manufacture a spurious compound, which they sell under that name. To this cause the same journals attribute the high rate of infant mortality which prevails in cities and large towns. May we not, then, congratulate ourselves as a nation that the vast herds and flocks of Australia have come so opportunely to our relief? We never knew of a monopoly which long conduced to the benefit of any one interested, not even to those who for a period enjoyed that monopoly; for in a country like ours, where competition is so close, it must necessarily be short-lived. From all the counties in the United Kingdom we have accounts of surplus feeding stuffs—grass, roots, &c., simply because we have not stock to eat it. At the present time many farmers are leaving their Turnips in the fields to rot for manure. In the spring of this year a gentleman well acquainted with agricultural matters, who had been on a journey to the south of England, told me that it had pained him beyond expression to see thousands of acres of rich and luxuriant pasture land through which he had travelled almost tenantless of stock, and wasting, as, owing to the high prices asked for young cattle and sheep, the owners of the lands hesitated to speculate in grazing stock. Should the present supply of good Australian meat continue, it must, in a few years, have the effect of renewing our almost exhausted supplies of both cattle and sheep; and we may reasonably hope to see a reduction to fair limits of cheese, butter, and milk. In place of these articles becoming, as they have threatened to become, expensive luxuries, we may hope that they will once again assume the shape of ordinary marketable produce, within the reach of all classes. There appears to be a morbid fear amongst some persons, who are not thoroughly acquainted with the question, that it is simply impossible that graziers can send good meat from the Antipodes to this country at less price than we can purchase it, and that though the attempt has been previously made in Australia, the meat sent was not fit for human food. To this I reply, that in Australia the farms, or "runs," are not counted by the acre, but by miles, and that on some of these "runs" you may travel 20 miles before you reach the "blasted tree" which marks one squatter's boundary. From this it will be readily inferred, looking at the sparse population of the country, that markets cannot there be found for the flesh of the countless herds of sheep and cattle which depasture on these "runs." Then why keep them? I answer, the land is so cheap, vegetation so luxuriant and plentiful, that good profits can be made from hides, wool, and tallow, and that hitherto the flesh, after being boiled down to get the latter, has been used for manure. Some few years ago the idea of utilising this meat for the European markets was entertained, but, as may be easily imagined, some time elapsed before the necessary experiments to that end were crowned with success; and when the first batches of the preserved meat reached this country it was found that it had not kept well over the voyage, although quite good and fresh when shipped. This created a prejudice in the public mind against it, until the recent shipments were landed, when, after fair trial in all imaginable ways, it has been found to be both cheap and nutritious. When we look at the unlimited supply of cattle in Australia, it dispels the idea that the meat preserving companies will have any interest in using anything but good and marketable stock, although, no doubt, as in our own markets, some of the preserved meat canisters will be better than others; for how seldom is it that we get joints of uniform quality? We look upon the importation of this meat as a great national good, and as such I hail it, and wish it success, believing that it will benefit all members of the community, the farmers included; for it must be borne in mind that if their produce brings unusually high rates, the natural laws of supply and demand will enhance the prices of all other articles, and in the end they will be none the gainers. I have tried the meat in a variety of ways, and find it good in all. As almost every cook has a different mode of treating dishes, according to the palates of those for whom they cater, it is useless to specify any set rules, but I can confidently set at rest one great objection which I have heard urged against it—cook it as you will, it has not the flavour of meat cooked a second time. In conclusion, I would urge butchers to lose no time in adopting the preserved meat as a part of their business, or they will speedily find it almost wholly in the hands of the grocers and provision dealers. *J. R. R., North Lancashire.*

Origin of Swedish Turnip.—In the *Agricultural Gazette* of November 18 I read a paper inquiring the "origin of the Swede Turnip." As it is not answered yet, if you think the following statement worthy of a place in your journal, you can publish it. My father has often told me when he was a young man, 70 or 80 years ago, a Mr. Cox, a gentleman who resided at Fair Oak, between Petersfield and Midhurst, in Sussex, brought a quantity of seed home with him from Sweden. Some he sowed himself, but the larger portion of it he gave to a Mr. D. Dennett, who at that timed held Woolbeding Farm, about a mile from Midhurst. His (Mr. Dennett's) cattle liked it so well, he saved a large quantity of seed, which the neighbouring farmers gladly purchased of him, and he made a great deal of money from it; hence the origin of the Swede Turnip in the South of England. Fair Oak is at present the seat of the Hon. J. J. Carnegie. *A. L. M. M., Hawkley.*

On Running to Seed.—As there have been several communications in your widely-circulated *Agricultural Gazette* on the subject of "bolting" or "running to seed" of Mangels and other annuals and biennials, I beg leave to state that I am of opinion that we are indebted, in a great measure, to the excessive heat of the previous summer for these untimely flowers. I therefore beg leave to ask the authorities at South Kensington, if it be not probable that the constant heating rays of the sun during the ripening of those seeds in July and August of last year did not develope the flowering matter so much as to charge the cotyledons of the seeds with more than the average quantity, and hence the "bolting" of the cross-petalled plants, and particularly Kohl Rabi. My seeds came from one of the "first houses" in London, and about one-half of my Kohl Rabi has "bolted." That annuals have this flowering matter more highly developed in their seeds than perennials may easily be conceived. Watch the common Gorse develope its seeds in tolerably good land: you will find that it is several years before it flowers much, and the year before it makes its first grand display of yellow flowers, its whole bark is so deeply tinged with yellow, that he who runs may read that a display of flowers is nigh at hand. The difference in the length of time required by the fleshy-leaved American Aloe to charge itself with floral material in this country, and that of the Turnip, is, according to tradition, 100 years. Hence, may we not assume that when a large bulb of Turnip is planted in "poor" land for "seeding," and a small bulb in "rich" land for the same purpose, the seeds of the latter may be equal to those of the former, though in a cold summer the seeds of the latter may be the best. As "bolting" is general both in the farm and the garden this season, it is hardly probable that all the seeds can have been reared from "bolting parents," or from what is called bad or indifferent bulbs for the production of seed. *C., on the banks of the Tern, near Shrewsbury.*

Steam Cultivation.—Recently I have had no end of letters asking for advice upon the question of steam cultivation. Here is an extract from one received this morning:—

"I am anxious to commence steam cultivation, but before I begin I should like all the best advice on the matter I can get. My farm consists of 1000 acres, 300 in grass, 700 arable, of which 600 are deep loam and 100 clay fields; are generally large, with straight fences. Now comes the gist of the matter. What system am I to adopt—double-engine, single-engine, with clip-drum and anchors, or roundabout? and where am I to get the best? If you would kindly give me your advice, I should feel much obliged."

Now, sir, I beg that you will allow me to give this advice publicly, by publishing a copy of the letter that I have forwarded to the gentleman who asked for the advice, and thus let all the world know what to do:—

"Woolston, Bletchley Station, Nov. 29, 1871.

"Dear Sir,—I shall not be at the Smithfield show. It is utterly impossible for me to answer your question, for I cannot know what your notion of a true application of steam-power is. This much I can tell you. All land intended for autumn sowing ought to be smashed. All land intended for spring seeding ought to be ridge-ploughed, and subsoiled in the autumn. Is it your intention to go upon your own hook, and play at steam cultivation as others have done after asking my advice? If so, you will buy a double-engine set, or perhaps a clip-drum, with all the implements recommended by the makers of those engines, and you will make but little progress, especially in damp autumns. If, on the other hand, you wish to be guided by me, you will buy a roundabout set, and work your land exactly as I do mine. Come to Woolston to see the work with the results; that may guide you, if you are guidable. I write thus plainly, for no end who come to Woolston fancy they come to guide me instead of being guided by my 17 years' practice. Mind you, I have no interest in the matter, except that of showing how to work land clean, deep, and cheap—much cheaper and cleaner than double-engine or clip-drum sets can, and no end cheaper than horses can; and besides all that I get a greater produce than either of them can. It is my ridger and subsoiler that makes me their master upon the produce point as well as in cost.

"WILLIAM SMITH."

Woolston, Bletchley Station, Bucks, Nov. 29.

Mustard Seed in 1872.—Our Mustard markets being now over, I can furnish you with a tolerably correct estimate of the yield of the crop of this year. As I have, in former letters, brought to your notice the exclusive monopoly which exists among the Mustard-seed crushers, who are, of course, the only buyers of the seed, I will not now trespass to any great extent upon your space by dilating upon their iniquities, particularly as they this year have given us a fair price for our produce; but, at the same time, I do not for one moment suppose they would have done so had there been a full crop and as large an acreage grown as usual, but it was no generous motive that prompted the representatives of the manufacturers to start this year by giving 16*s.* per bushel, but really from the fear lest they might come down next year and find little or none to be bought at any price; for, as I ventured to predict in my note last season, that farmers were tiring of growing Mustard to sell it at about 8*s.* 6*d.* per bushel; and the result this year has proved that I was correct, for the acreage this year under Mustard was considerably less than it has been for many years: besides the small area, the yield per acre was this year much less than an average, for the following reasons—the first month or two after the seed was sown the weather was unfavourable to its growth, and many pieces that were drilled early lost plant a good deal, and notwithstanding the growing summer that followed, remained thin and patchy until harvest; in fact, on nearly all the lands which were not in very good condition, the crop was thin throughout. On "britch land," as newly broken up pasture is called, however, the plant was very thick, too thick indeed, for many of the heads were rendered fruitless, being smothered by others above them, hanging over them, excluding light and warmth and air, and at harvest day these stems were found rotten and worthless, many of them having never flowered, and none having seeded. When I tell you that red Mustard frequently grows 7 and even 8 feet high, your readers will readily understand that with the plants thick on the land the results I have endeavoured to explain would naturally occur; under these circumstances it was not to be expected that the yield would be very large, but when the threshing machine was called into operation, "Oh what a falling off was there!" not more than 20 bushels per acre being the rule, many even less; and while some lucky men got 24 bush., yet these were like the visits of angels, "few and far between." I would just remark, in conclusion, that it was instructive to note the unanimity which existed among the buyers as to the maximum price to be given for the seed on the several market days; for instance, on the first Saturday the highest price offered was 16*s.*, but as they saw that the growers were rather inclined to hold, and knowing that the supply was not so large as in former years, the following week they laid the rate at 17*s.*, and at the third market they gave 18*s.*; but though on each of these days scores of samples made the price I have named, not one was known to exceed it. On the whole, however, farmers are well satisfied with the crop this year; and in the hope of getting the same prices for the seed next year, I have no doubt many will become growers who this year grew none. *Nemesis, November* 18.

Sewage Irrigation.—The accompanying letter, relative to the Birmingham sewage question, is well worth the attention of professionals in sewage matters; and if the scheme, as at present proposed, is allowed to pass unchallenged by the agricultural and engineering professions it will be a great reproach to them. The burgesses and Corporation are alike ignorant of the operation, and, though rich, are no doubt anxious to see accomplished that which will be a credit to them hereafter. But unless pressure is brought to bear on them they have no alternative, and the consequence will be that an abortive precedent will be witnessed against sewage irrigation, and by the first large town to adopt it. Connected with the difficulty are two admirable intercepting tanks, with steam-power attached, and a 100-acre sewage farm. There is wealth of water-power during the best part of the year, passing the outfall; also much suitable land below it for the site of manure manufactories, alike convenient for water, road, or rail carriage, besides land to much purpose on both sides of the Tame valley (especially the south side), which can be commanded by gravitation, or pumping, or both. As to the sewage: on the move it looks and smells like other sewage, but when at rest becomes of a red-rusty colour, so charged is it with the refuse of hard, ware manufacture. The engineer in his report proposes to transmit this along a gradient of 1 in 3520, hugging the Birmingham and Fazeley Canal for about 9 miles, and getting in and out of seven tanks on the way, at or about the starting-point of which he proposes to add sulphate of alumina, and, at distances in the course, milk of lime. It may well be asked, as did a workman who knows about the cleaning of the Birmingham sewers, "Does he mean to concrete the passage" for the sewage with three of the most binding substances in nature—iron, clay, and lime? Should the sewage get the length, it is to be received on to land, already "over head and ears" in water, and had it been proposed, it would have been no less a feat for engineering skill to have taken powers to suspend this selected land some height in air, as then there would have been some hope of the water getting away from it, and of the air taking its place; but be it encompassed with embankments and filled with drains, it is only in the driest of seasons that either aëration, or any other action connected with agriculture, can happen on it. Of course, to be independent of wet, or weather other than of their own making, the whole 960 acres can be covered in with glass, and I daresay if any in their zeal told some of the good hopeful people of Birmingham so, they would believe it. Other than the importation of an amount of hot zeal—rushing into figures of hundreds of thousands of pounds—little else has been tried to grapple with the subject; but when it is scrutinised by the cool hand of experience, something more tangible and practical, and less extravagant, will be advanced, very much to the delight of the ratepayers, who are of the belief that feeing and feasting are about the most they have been able to make out from what has been done. *D. & S. E., Birmingham, Nov.* 28. [The following is an extract from the letter in question about the land to be irrigated, addressed to the *Birmingham Daily Post*:—

"Without wishing to be thought hostile or acrimonious to the gentlemen who are responsible for it, the selection may simply be said to be unfortunate. In the whole valley of the Tame a more unsuitable extent of land, in character and position, could scarcely be found; and supposing two-thirds of it to be presented to the Corporation, it would be no compliment for the purposes of purification, or any other irrigation. The area within the boundaries given amounts to 1250 to 1280 acres, which can be divided into three degrees of land:—(1), 310 acres of upland, well suited for irrigation, but at present, for ordinary culture, in need of draining; (2), 180 acres of flat land, very broken and unevenly surfaced, not liable to surface-flooding from the river, but standing in the backwater of it—no outfall for drainage, and out of the question for irrigation—soil thin, an obdurate pocstone, and to put drains in it would all require to be picked; (3), 760 acres, situated in the old natural course of the River Tame, over which it spreads after three or four hours' rain in its upper parts. This land, when the water is off it, is used as outrun for steeplechasers, at other times is famous wild duck shooting. The floods remain for a week or so on it, frequently to the depth of 3 or 4 feet well up from the river's channel.

"The burgesses of Birmingham should go and inspect the facts of this selected land for themselves. At the first glance of it from Kingsbury Bridge they cannot mistake concluding the whole land of the flat of it being subject to floods. They can inquire, or rather get in through it; and at a long distance inland they can observe and measure for themselves the height of the floods by the line [on the hedges] left by the wreck of grass and drift in the current of water through them; and, without contemplating its irrigation, they can satisfy themselves as to the advisability of a great engineering undertaking, with 6 feet draining; they can try the soil for themselves, but don't go away with the idea that for a few loose stones on its surface that it is free and gravelly throughout. As they traverse the 310 acres of upland, excepting its shape, they cannot but be struck with its suitableness for draining, and its complement—irrigation. *J. John Martin, Shore, Kincardine-on-Forth, Nov.* 20."]

Prices 300 Years ago.—The enclosed bill of fare (cut from an old newspaper) of an entertainment given by the Mayor of Norwich, in the year 1561, shows the astonishing difference in prices between that time and the present. *J. Taylor, Rose Hill Lodge, Botcherby.*

Eight stone of beef, at 14 lb. to the stone	£0	5	4
Two collars of brawn	0	1	4
Four geese	0	1	4
Eight pints of butter	0	1	4
A fore quarter of veal	0	0	10
A hind quarter of ditto	0	1	0
A leg of mutton	0	0	3
Loin of mutton and shoulder of veal	0	1	0
A breast and coast of mutton	0	0	7
Six plovers	0	1	0
Four brace of partridges	0	2	0
Four couple of rabbits	0	1	8
Two guinea pigs	0	1	0
Four couple of hens	0	2	0
Two couple of mallards	0	1	0
Thirty-four eggs	0	1	0
Two bushels of flour	0	1	6
Sixteen loaves of white bread	0	0	4
Eighteen of wheaten ditto	0	0	9
Three of maslin ditto	0	0	3
One barrel of double beer	0	2	6
One barrel of small ditto	0	1	0
One quarter of wood	0	2	2
Nutmegs, mace, cinnamon, and greens	0	0	5
Four pounds of barberries and sugar	0	1	6
Fruit and almonds	0	0	7
Sweet water and perfumes	0	0	4
Sixteen oranges	0	0	2
Two gallons of white wine and claret	0	2	0
One quart of sack	0	0	9
One quart of malmsy	0	0	5
One quart of bustard	0	0	3
One quart of muscadine	0	0	6
Total	£1	18	1

Tenancy at Will.—I heartily endorse the remarks of your correspondent, "H. H. O.," in reference to the unsatisfactory relations existing between landlords and tenants in other counties than Hampshire. If you will allow me, I will give your readers a short sketch of my experience of the system of tenant-at-will. In 1850 I took a farm of 160 acres in the county of Durham; it was undrained, had bad roads, bad buildings, and was thoroughly out of condition, and none but those who have had such a farm can really appreciate the difficulties and enormous expense of bringing it into anything like a good state of cultivation. Believing in the solemn promise of the landlord, that so long as I treated the land well and paid my rent I should keep the farm, I set to work in earnest, made a good road nearly the length of the farm, carted materials for a quantity of new buildings from a considerable distance, had almost the entire farm furrow-drained, the landlord finding the pipes; and the land, which was covered with a carpet of Twitch, and almost every kind of noxious weed, I had thoroughly cleaned, very deeply ploughed, and both limed and well-manured. Now, of course, the effect of all this outlay was very speedily seen in the luxuriance of the crops, and in the greatly improved general aspect of everything connected with the farm, and I naturally looked forward to getting a fair and reasonable return for what I had put into the land. But will it be believed, that when these improvements were all finished I received a six months' notice, that unless I would pay £100 per annum more rent I must quit, and that without a single farthing compensation? Yet such was the stubborn fact. Anxious to have some good of these years of labour and expense, I offered £50 a-year increase, but was told by my "honourable" landlord that some one else had offered him all he asked. Now, if this is not a case of downright robbery, I don't know where to find one. The man had no right in equity, whatever he had in law, to pocket the results of my hard labour. It is perfectly clear that if a fair system of compensation for unexhausted improvements had been in operation in the case above mentioned, I should have been a richer man by several hundreds of pounds. To put a finishing touch to this recital, I ought to add that my successor, who was acknowledged to be one of the very worst farmers in the district, allowed everything to go to wreck, bought no manure, and then, after reaping the benefit of my improvements, he left the farm completely impoverished. Let me strongly advise any young man who may contemplate taking a farm on mere words of promise, to take, instead, *Punch's* advice to those about to marry—Don't! I read the *Agricultural Gazette* every week, and have got several useful hints from it, which I am glad to tell you I have put into successful practice. *Anglo-Saxon.*

The Potato Crop.—The Potato crop is now harvested throughout the three kingdoms, and as these tubers have become a most important part of the consumption of the peoples of the kingdoms, it may not only be interesting, but highly necessary to ascertain the extent and produce of the crop, as by such acquired knowledge the trade and consumption may in a great measure be regulated. Ireland is generally the foremost in the product of Potatos. The acreage under this crop during the past five years is as follows:—1867, 1,001,781 acres; 1868, 1,034,681 acres; 1869, 1,041,902 acres; 1870, 1,043,583 acres; 1871, 1,058,287 acres; being a gradual but slow increase in the growth of Potatos, the present year showing the largest increase, *i. e.*, 14,704 acres, The total breadth planted is very large, but not being planted after the liberal manuring and costly expenditure of this country, the yield is far less abundant; and as the disease is very bad, and nearly universal, the crop is a seriously defective one. The consumption of Potatos in Ireland is enormous, and all other food being dear, the presumption is that it will be greatly increased, and so much so, that very few will be exported to this country. This will make a considerable difference to the supplies in our markets, which it is to be feared will not be compensated by the produce of our home crops, which are in all districts badly diseased, and in some localities almost worthless. The acreage under the Potato crop in this country is far below that of Ireland. The returns of the past five years for Great Britain are as follows:—1867, 492,217 acres; 1868, 541,543 acres; 1869, 585,211 acres; 1870, 587,661 acres; 1871, 628,287 acres; being an increase in breadth planted over 1870 of 40,626 acres, and over 1867 of 136,070 acres, or nearly 30 per cent. increase within the past five years. This is encouraging, and had not the disease been so prevalent, and the attack so early in the growth of the Potato, it would have done much to keep up our supplies; but unfortunately the reverse is the fact. In every district of the country the crop is a light one, and in some parts deplorably diseased. From a number of reliable reports before me I abstract the following, *i. e.*, Scotland only one-fourth of the crop will be marketable; Cornwall, only one-third good; Cambridge, one-third lost; Cumberland, two-thirds do.; Devonshire, one-fourth do.; Lincolnshire, one-fourth bad; Gloucestershire, much diseased; Leicestershire, do.; Yorkshire, one-half diseased; North of England, a bad crop—heavy lands very bad; Lancashire very virulent; Cheshire much rotted; Huntingdonshire, very bad; Kent, a light crop; Warwickshire, not an average, greatly diseased; Worcesshire, much diseased; and the like reports are general. The conclusion is, that Potatos must be scarce and dear, therefore the public must economise in every way; and as other vegetables and esculents are unusually plentiful, great resort should be had to them as substitutes for the Potato. *O. F.*

On Gravelling Clay Soils. — There is an old story of a man who, having a very stony field, determined to experiment on the value of these stones in the growth of his crops. With this view he divided his field into three equal parts; from No. 1 he gathered all the stones, which he spread upon No. 3, leaving No. 2 in its original condition. He then sowed Barley over the whole field, and carefully noted the results. The story ends by saying that No. 1 bore a miserably poor crop, No. 2 a tolerable one, and No. 3 a splendid one. I quote this story as a text on which I wish to speak, as to the advantage of gravelling heavy clay soils. Some weeks since I spent a few days at the village of Milnthorpe, Westmoreland, and, driving one day with Mr. Hutton, the celebrated bone-setter, to look at his farm, I remarked that the land was very stony, being covered with stones (not pebbles) having very much the appearance of road metal. He replied that these stones were essential to the fertility of the soil, and said that some years before there was a great demand for such material in the neighbourhood of Preston, and the high prices stimulated the farmers to gather these stones from their land, and send them to Preston; but the consequences were so injurious to the growth of their crops, that they were compelled—at least, those who had the means of doing so—to load stones again upon their land before the crops would grow with the vigour which they had before the stones were abstracted. This brought to my mind what had occurred in my own farm practice. A church was built in the neighbourhood, and the stones for it were hewed on the corner of a field which was afterwards sowed with Wheat, and I remarked that the straw was much brighter, the ripening was forwarded 10 days, and the sample was much better where the stones had been hewed than elsewhere in the field. (The stones of which the church was built were of ordinary sandstone, probably millstone grit.) Borrowing from this hint, I had the field covered with about 400 cartloads of alluvial gravel to the acre, and the land was then ploughed two furrows deep, one plough following another. Previous to this gravelling the land was a stiff, obdurate clay nearly to the surface. The subsequent effect was the doubling or, more probably, trebling the value of the land, which has now become a nice friable soil. I was much amused with the criticisms of some of the neighbouring farmers (men of the old school), one of whom remarked to me that he had seen land tilled in various ways before my time, but until now he had never seen a field tilled with cobble stones. I said, "What is your objection to it, John?" "Why, ye see, it makes th' land so poor." I replied, "Making anything or anybody poor means robbing them of something. If you had twenty shillings in your pocket, and I filled up your pocket with these cobble stones, how much poorer would you be? Of what have I robbed this field by putting the gravel into it?" "Why, of nothing; but it looks so queer?" I said, "John, did you never hear of a man gathering the stones off his field and then having to lead them back again?" "Yes, I have; but then they were naturable to th' soil." I said, "What does manuring land mean, but putting something into it of which it is short? You don't till a muck midden. If, in stony land, stones are essential for the vigorous growth of the crop, is it not exceedingly probable that they will be still more beneficial in stiff land, which has no stones in it?" This is a doctrine I tried many years ago to inculcate to our friend Mechi, and some of his land (I speak of its condition 20 years since) needed such a gravelling as much as any land I ever saw. Whether he adopted my suggestion, or his land remains in the same condition now as then, I don't know; but if it does I would just suggest to him, and to all landed proprietors who own stiff clay land, if they are near to gravel pits, to try a small portion by gravelling it freely, and let us hear the result. *T. G.*, *Clitheroe, December* 2.

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

GENERAL MEETING: *Dec.* 7.—The following is the report of the Council to the general meeting of the Royal Agricultural Society on Monday of last week, to which we were, in our last issue, only able to make a short reference:—

The Council of the Royal Agricultural Society of England, in presenting their half-yearly report, have to state that since the last General Meeting in May, 6 governors and 53 members have died, and the names of 33 members have been removed from the list; on the other hand, 1 governor and 252 members have been elected, so that the Society now consists of 69 life governors, 72 annual governors, 1622 life members, 4030 annual members, 14 honorary members, making a total of 5807, showing an increase of 198 members during the year 1871.

During the past half-year the Council has lost some of the oldest of its members, the ranks of the trustees having been thinned by the death of Sir Thomas Dyke Acland and Lord Berners; the list of Vice-Presidents by the decease of Mr. Samuel Jonas; and the general body of the Council by the death of Mr. John Clayden. These vacancies have been filled up by the following elections:—Mr. E. Holland as a trustee, in the place of Lord Berners; Sir A. K. Macdonald, Bart., as a trustee, in the room of Sir Thomas Dyke Acland, Bart.; and Mr. B. T. Brandreth Gibbs as a Vice-President, in the room of Mr. Samuel Jonas. Mr. M'Intosh, of Havering Park, Essex, has been elected to fill the vacancy in the Council caused by the death of Mr. John Clayden, and the vacancies caused by the previous elections have been filled by the election of the Hon. Wilbraham Egerton, M.P., of Rostherne Manor, Knutsford.

The half-yearly statement of accounts to June 30, 1870, has been examined and approved by the Society's auditors and accountants, and has been published for the information of the members in the last number of the Journal. The permanent funded capital of the Society remains the same as at the last half-yearly meeting, namely, £20,000 New Three per Cents., but the Reserve Show Fund has been reduced by the sum of £500.

The financial results of the county meetings at Oxford and Wolverhampton having been a loss to the Society of about £4000, owing chiefly to the extensive and costly nature of the trials of implements, the Council have appointed a special committee to consider the whole question of the receipts and expenditure of the Society, and the possibility of securing equal results at less cost.

The extensive nature of these trials also presses with great severity on the local committees in years when land has specially to be hired for the purpose. The Council have therefore resolved that when the trials of implements at the country meetings are not held in the showyard, one-half of the expenses of providing trial-fields shall, in future years, be borne by the Society; but to enable the Council to know the extent of its engagements, it has been stipulated that the competing localities shall state the maximum cost of the land required for the trial of implements, the acreage wanted being furnished by the Society.

The Wolverhampton meeting was distinguished from previous exhibitions of the Society by the extensive trials of steam cultivating machinery and traction engines, full reports on which have been furnished to the members in the last number of the Journal. Notwithstanding a long continuance of unfavourable weather, the Council are able to congratulate the Society on the practical results of these trials. They have pointed out to the agricultural communities the best combinations of machinery for the cultivation of the land by steam-power, not only by the medium of the most powerful sets of tackle, but also by means of less expensive machinery within the reach of individual farmers in districts where no system of hiring is in force. The competition for Lord Vernon's Prize Cup, offered for a set of machinery not to exceed £700 in cost, and that for the Society's prizes for sets of tackle in which the weight of the engine was restricted, as well as for others to be driven by ordinary portable engines, produced results which will be practically useful to farmers of every class who may be desirous of cultivating their land by the aid of steam.

The trials of traction-engines were an entirely new feature, and the exhaustive report of the engineer judges has placed on permanent record the valuable additions which they made to our knowledge of the principles of steam-traction on common roads, and the inferences which they suggest to the practical engineer.

The competition for the prizes offered in the section of Hop machinery was not so extensive as the Council had hoped to excite, but this disappointment has been to a great extent overcome by the fact that the trials exposed to exhibitors and other implement makers many striking defects in the existing machines.

The exhibition of live stock did not in some cases equal that of last year, but the show of Shropshire sheep was the largest that has ever been held under the auspices of this Society. The liberality of the local committee in offering prizes for numerous additional classes of horses did not meet with an encouraging response from exhibitors, but it is to be feared that the charges for conveyance by the railway companies have a very prejudicial effect on this department of the Society's show. Although the Council have frequently endeavoured, unsuccessfully, to obtain concessions from the railway companies for the conveyance of live stock, and more especially of horses, they have recently placed themselves once more in communication with the railway authorities with this object in view.

The farm-prize competition in connection with the Wolverhampton meeting excited great interest in the counties of Shropshire and Staffordshire, as well as in other parts of the kingdom. A full report on the successful farms, written by Mr. Wheatley, one of the judges, has been published in the Society's Journal, and it is hoped that it may aid in producing results commensurate with the liberality of the landowners in the two counties in offering the first prizes, the enterprise of the competing tenant-farmers, and the careful investigation of Mr. Wheatley and his colleagues.

The series of farm-prize competitions will be continued next year, a silver cup, value £100, having been offered by the President of the Society (Sir Watkin W. Wynn, Bart., M.P.), and a second prize of £50 by the Council. These prizes will be awarded to the two best managed farms in South Wales and Monmouthshire which shall conform to the following conditions:—1. That they are not less than 100 acres in extent. 2. That not less than one-fourth of the land (not including sheepwalk) is under tillage. 3. That they are held (*a*) by a tenant-farmer paying a *bonâ-fide* rent for not less than three-fourths of the land in his occupation, or (*b*) by a land-owner occupying his own farm, the total extent of whose property in agricultural land (exclusive of sheepwalk) does not exceed 200 acres, and whose sole business is farming.

The implement prize-sheet for the ensuing country meeting to be held at Cardiff has received the careful attention of the Council, and prizes have been offered for portable steam-engines, threshing-machines, straw and hay elevators, corn screens, corn dressing machines, and seed drawers. The regulations of the trials and the instructions to the judges have been revised, especially in reference to the points representing perfection in threshing-machines, and further restrictions have been imposed on exhibitors with a view of keeping the exhibition of implements within moderate limits.

The regulations affecting the awards of medals to miscellaneous articles have also been once more under the consideration of the Council, and such modifications of them have been introduced into the Cardiff prize-sheet as will ensure that the medals are awarded either to implements belonging to the classes to be tried at that meeting, or to those which have an entirely novel construction, and which are not included in the Society's classification.

The Council have renewed the education grant for the year 1872, on the same conditions as were attached to the examinations this year, feeling that more time must elapse before the advantages arising from success at these examinations can be generally appreciated.

Since the commencement of the publication of the quarterly reports of the consulting chemist, the number of analyses make by Professor Voelcker have increased, during 1871, by 150 in excess of those made in 1870, and 265 over those of 1869; and the Council are satisfied that the publication of these quarterly reports has caused agriculturists more to appreciate the value of chemical research, and has aroused a spirit of inquiry in this department of agriculture which cannot fail to produce very satisfactory results. They trust, therefore, that the continuation of the publication of these reports of the consulting chemist may not be less advantageous to the members of the Society than they have hitherto been.

The Council have to announce that they have appointed Mr. W. Carruthers, F.R.S., chief of the national botanical collection at the British Museum, to be the consulting botanist to the Society. In making this appointment the Council have endeavoured to secure the services of a competent botanist, whose duty it will be to examine plants, seeds, &c., for the members of the Society; to report on the principal work performed by him during each year; and from time to time to furnish papers to the Journal on special subjects of botanical interest. The following schedule of charges has been provisionally fixed by the Council for the examination of plants and seeds for the use of members of the Society:—

No. 1.	A general opinion as to the genuineness and age of a sample of Clover seed (each sample) ..	5*s.*
No. 2.	A detailed examination of a sample of dirty or impure Clover seed, with a report on its admixture with seeds of Dodder or other weeds (each sample)	10*s.*
No. 3.	A test examination of Turnip or other Cruciferous seed, with a report on its germinating power, or its adulteration with ooo seed (each sample ..	10*s.*
No. 4.	A test examination of any other kind of seed or corn, with a report on its germinating power (each sample..	10*s.*
No. 5.	Determination of the species of any indigenous British plant not parasitic, with a report on its habits (each species	5*s.*
No. 6.	Determination of the species of any epiphyte or vegetable parasite, on any farm crop grown by the member, with a report on its habits, and suggestions where possible) as to its extermination or prevention (each species)	10*s.*
No. 7.	Report on any other form of plant disease not caused by insects	10*s.*
No. 8.	Determination of the species of a collection of natural grasses indigenous to any district on one kind of toil (each collection)	10*s.*

The prevalence of foot-and-mouth disease in English herds has induced the Council, on more than one occasion during the past half-year, to draw the attention of the Government to the existing regulations in reference to the importation of both foreign and Irish cattle, and to the restrictions which it is desirable to impose in order to diminish the risk of their conveying contagious or infectious diseases to English stock. The correspondence between the Veterinary Department of the Privy Council and the Secretary of the Society, together with a *précis* of the various Acts and Orders in Council relating to the importation of foreign animals, has been published in the last number of the Journal; and, with regard to Irish stock, the Council have received the assurance of the Government that measures are being taken which, it is hoped, will be found satisfactory.

The existence amongst lambs of a wide-spread disease, of home origin, has been brought under the notice of the Council by the Lincolnshire Agricultural Society during the past half-year. The nature and origin of this disease have been previously described in the Journal of the Society, but in view of the great losses which it has this year caused to Lincolnshire flockmasters, the Council have requested Professor Simonds to make a thorough and immediate examination of the nature of the disease and the circumstances under which it most commonly occurs, and to give suggestions for its treatment and prevention.

The relations between the Royal Veterinary College and the Society are still under discussion by the governing bodies of the two institutions; but the Council are still hopeful that the result will be to extend the usefulness of the Veterinary Department of the Society in accordance with its increasing importance to the English agriculturist. In consequence of the death of Professor Spooner, the post of Principal of the Royal Veterinary College is now vacant, and it is possible that alterations may be made in the staff and course of study at the College. Under these circumstances the Council have postponed its decision on the relations of the Society to the College. —By Order of the Council,

H. M. JENKINS, Secretary.

The adoption of this report was moved by Mr. Botley, and seconded by Professor Coleman, who said, that although the loss which the Society had sustained through their annual shows was great, he believed that the advantages of these exhibitions to the country fully repaid them for the money that, he would say, had been admirably laid out.

Sir JOHN H. MAXWELL congratulated the Society on the great reduction that had taken place in the cases of adulteration of manures and feeding-stuffs since the publication of the chemical reports.

Mr. NIELD suggested that, to recoup the Society of the financial losses of the shows, they should show both agricultural and light horses in harness, as they did at Liverpool, which was the most successful show of the Society.

Mr. ARKELL was of opinion that the appointment of a botanist was a good step, and also that the precautions taken for the detection of adulteration in manures would effect much good. He thought that the names of the merchants who sold inferior manures should be communicated to the secretary, and furnished to tenant-farmers without prejudice. With regard to the disease in lambs he was of opinion that an entomologist should be appointed to investigate the nature and habits of the insects which caused the disease.—The report was unanimously adopted.

Mr. TORR referred to the losses the Society had sustained by the two last shows. They could not, he said, carry out trials of steam machinery at hundreds, but thousands of pounds must be spent. These thousands had been spent, but the result would be seen for a number of years to come. With respect to the disease in lambs, he mentioned that he had lost over 100 animals himself, which was very small in comparison with the general loss. Along with six or seven Lincolnshire farmers, he had had a consultation with Professor Simonds on the nature of the disease, and that gentleman had given them most elaborate information respecting the worms which were the cause of all the mischief. When he got home he intended to send grass to Professor Simonds, where it was thought they existed in a parasitic form. It was known that they did exist in a parasitic form during the winter, reappearing in the spring, and were then taken up by the lambs. The great object of the inquiry was to trace the insect, and with that end in view they intended to begin early next spring, and ascertain how and when the insect was transformed from a parasite into a worm. The Society had liberally granted funds, and he was engaged with a committee in Lincolnshire in collecting all the information on the subject they could.

The CHAIRMAN then asked if there was any member who wished to make any suggestions, whereupon,

Sir JOHN H. MAXWELL said that at a former meeting there had been a regret expressed that more tenant-farmers were not members of the Society, and he gave his opinion that there were more tenant-farmers members of the Highland Society than there were members of the Royal Society. With a view to obtaining positive information on the question, he wrote to Mr. Menzies, Secretary of the Highland Society, and received the following answer :—"In 1850 we had only 2700 members on our list, only 239 of these being tenant-farmers, nearly all of them life members. In that year it was resolved that tenant-farmers should be admitted on a subscription of 10*s.* per annum, or £5 5*s.* for life, instead of £1 5*s.* 6*d.* per annum, or £12 12*s.* for life—the ordinary rate. The number of tenant-farmers is steadily increasing : we have now 4033 members of all classes, and 1784 of these are tenant-farmers. In 1861, we had 1540 tenant-farmers ; in 1866, when I became secretary, we had 1684, and in 1871 we had 1784. I have no doubt it has benefited the Society as well as the country, reducing the subscription to tenant-farmers—so much so, that I have induced the Society to add a number of other classes to the same list." He asked if English tenant-farmers could not practically be admitted to the Royal Society under the same or similar conditions to those enjoyed by the Scotch tenants who entered the Highland Society.

The SECRETARY (Mr. H. M. Jenkins) said, although he had not gone into statistics, he thought there were many more tenant-farmers in the Highland Society than in the Royal ; but in the Scotch Society these tenant-farmer members were not entitled to the privileges of chemical analysis without extra payment.

Sir W. W. WYNN, as the close of the meeting, speaking of the prize farm competition, said, there was a large class of men in Wales who farmed their own land, which their families had done each succeeding generation ; and he was, therefore, of opinion that they ought to be allowed to compete under the same conditions as *bonâ-fide* tenant-farmers, at the same time carefully eliminating all those who farmed more for amusement than for profit. He was glad to find that the course taken by the Society of exposing those people who had for years been robbing the farmers, had met with approval, as they knew farmers were a little too fond of trying to buy the cheapest stuffs ; and it was therefore the duty of the Society to endeavour to guard them from being cheated.

The meeting afterwards separated.

We now add the report of the Chemical Committee to the Council of the Society, read at the Wednesday meeting last week :—

CHEMICAL :—In his annual report, Professor Voelcker states that, whereas in the year 1870 the number of analyses furnished by him were 115 in excess of those for 1869, this year the unprecedented number of 730 analyses, or 150 more than in 1870, had been referred to him.

He calls attention to the further addition to his staff which this amount of work entails, and takes the opportunity of mentioning that his staff consists of only well-trained paid assistants, several of whom have been in his service for many years.

Dr. Voelcker states that several of the samples of manures sent were found all but worthless, and he reiterates his advice that purchasers of artificial manures should always obtain, if possible, a guarantee by analysis of their composition and fertilising qualities. The practice of buying superphosphate of a guaranteed strength is, he adds, gaining more and more ground, and he recommends the stipulation that a proportionate deduction be made if the bulk of manure on delivery do not contain the guaranteed percentage of soluble phosphates.

With respect to bones, they have become scarce and dear, and few manufacturers supply genuine dissolved bones ; nine-tenths of the bulk of what is sold as dissolved bones is a mixture of ordinary superphosphate with more or less of bone-dust. Such mixtures should be sold under a name which expresses more fairly the real character of the article.

Most of the samples of bone-dust analysed in 1871 were pure and of good quality.

Sulphate of ammonia has risen much in price this year, the present price being £21 to £22 per ton, and it is very necessary to have the percentage of ammonia guaranteed, which in the first quality should be 25 per cent., and in the second not less than 23 per cent.

The quality of the guano from the Guanape Islands has not improved ; three-fourths of the samples of guano analysed by Dr. Voelcker were from the Guanape Islands, and the majority were too wet and lumpy for direct application to the land. Many samples contained from 23 to 24 per cent. of water, and but few more than 10 per cent. of ammonia. In former years such guano would have been sold as sea-damaged, varying according to the intrinsic value of the cargo. During the last season, Guanape Island guano has all been sold at one uniform price, and importers would not allow samples to be taken of the quality of the various cargoes, so that analyses might be made before purchase. The sales guano have, consequently, fallen off very much.

There is reason to believe that the Peruvian guano which will be offered in future, when the Government sales in this country are undertaken by the new contractor, will be of a superior character. The supply of good guano, Dr. Voelcker adds, is of the greater importance, because, whilst phosphatic fertilisers are being constantly discovered, and the supply from phosphatic rocks and minerals is practically inexhaustible, the sources from which ammonia can be obtained are limited. The supply, therefore, of guano from the Ballestas Islands, which may be looked for next year, and samples of which Professor Voelcker has already analysed, will be most welcome.

The accompanying Table shows the analysis of 17 different cargoes of Ballestas Islands guano, an abundant supply of which may be looked forward to for a good many years.

Ex	Isaac Hall.	Dominion.	Palmas	Fairy Bell.	Clevra.	General Shepley.	British Empire.	Thomas Lord.	Crusader.	Squando.	Detroit.	True Briton.	Elize Mathilde.	Satellite	Northumbria.	Lady Belleau.	Hertha
Moisture	18.04	18.06	18 93	19.19	18.86	17.01	16.67	17.77	18.51	13.48	17.01	17.70	17.93	16.77	16.60	18.18	19.28
*Organic matter and ammonia salts..	49 22	46.81	47 97	48.19	45.57	50.35	49.61	49.04	49.11	45.56	51.01	49.10	48.73	50.71	48.03	48.83	48.05
Phosphates	22.18	23.20	21.95	20.69	23.29	22.01	21.26	21.69	21.97	25.37	22.65	21.76	20 63	21.74	22.97	22.68	21.72
**Alkaline salts, &c.	8.40	9.49	9 40	9.40	10.45	9 28	11.17	9.86	8 94	12.75	8.04	9.85	11.32	9.09	10.16	8.87	9.61
Silica	2.16	2.44	1 75	2.53	1.83	1.35	1.29	1.64	1.47	2.84	1.29	1.59	1.39	1.69	2.24	1.44	1 34
	100.00	100 00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
*Containing nitrogen	12.91	12.27	12.99	13.60	12.14	13.26	13.20	13.60	12.73	10.75	12.98	11.98	12.59	12.78	12.52	12.97	12.26
Equal to ammonia	15.67	14.89	15.77	16.51	14.74	16.10	16.03	16.51	15.46	13.05	15.76	14.54	15.29	15.51	15.20	15.75	14.88
**Containing phosphoric acid	2.82	2 70	2.49	2.47	3.07	2.74	2 95	2.31	2.26	3.25	2.90	2.39	2.96	2.10	2.32	2.36	2.42
Equal to tribasic phosphate of lime..	6.16	5.89	5.43	5.39	6.70	5.98	6.44	5.04	4.93	7.09	6.33	5.21	6.46	4 58	5 06	5.15	5.28

As respects feeding cakes, the Professor again calls attention to the adulteration of linseed cake with earthnut cake ; and of rape cake, including green German rape cake, with Mustard seed.

Five or six cases have been brought under his notice, in which decorticated cotton cake was alleged to have caused the death of sheep and lambs ; as, however, some of these cakes were of a superior quality, and none of them contained any poisonous ingredients, it is Dr. Voelcker's opinion that the animals probably partook too freely of the cake, and could not digest the large proportion of nitrogenous compound contained in good cotton cake, and he suggests the admixture of Indian Corn or some similar starchy food.

Out of the 36 samples of water sent for examination, Dr. Voelcker found many largely contaminated with sewage, and he earnestly invites attention to the serious injury which may be produced to health by the use of such impure waters.

The following is a summary of analyses made for members of the Society from December 1870 to December 1871 :—

Guano	78
Superphosphate, dissolved bones, Wheat manures, and similar artificial manures	202
Bone-dust	36
Refuse manures	31
Nitrate of soda, sulphate of ammonia, and potash salts	31
Marls, limestones, fireclays, and other minerals	20
Soils	44
Oilcakes	212
Feeding meals	24
Vegetable productions..	12
Waters	36
Examinations for poisons	4
Total	730

The following are the papers contributed by Professor Voelcker to the February and August numbers of the Journal for 1871 :—

1. On Sugar-Beets and Beetroot Distillation.
2. On the best mode of Preparing Straw-chaff for Feeding Purposes.
3. On Field Experiments on Root Crops.
4. On the Composition and Nutritive Value of the Prickly Comfrey (Symphytum asperrimum).
5. Quarterly and Annual Reports.

The following is the quarterly report of the Chemical Committee :—

1. Dr. Voelcker reports the analyses of three samples of guano sent to him by Mr. H. W. Hollis, Estate Offices, Keele, near Newcastle, Staffordshire, in May, 1871.

These three guanos were found to have the following composition :—

	No. 1.	No. 2.	No. 3.
Moisture	7.56	7.02	15.55
* Organic matter and ammoniacal salts	21.67	21.91	40.25
Phosphate of lime	14 85	15.34	23.06
Carbonate of lime	9 67	10.31	..
Alkaline salts	8 08	7.20	6.05
Insoluble siliceous matter	38.17	38.22	15.08
	100.00	100.00	100 00
* Containing nitrogen	4.56	5.01	9.55
Equal to ammonia	5.54	6.07	11.59

The prices of the three samples were—No. 1, £14; No. 2, £12 15*s.* ; No. 3, £16.

The first and second samples are adulterated, for both contain as much as 38 per cent. of sand, and about 10 per cent. of carbonate of lime (chalk) ; and the one yields only 5½ per cent. of ammonia, and the other 6 per cent. of ammonia, in round numbers.

The composition of these two samples is pretty much the same, the second being slightly better than the first, although it was sold at 25*s.* less money per ton than No. 1. The third sample is genuine guano, but of an inferior character, inasmuch as it contained 15 per cent. of insoluble matter and yielded only 11½ per cent. of ammonia. Such guano, is not worth £16 a ton, and the adulterated samples, No. 1 and No. 2, sold respectively at £14 a ton and £12 15*s.*, were not worth more than £8 a ton.

Dr. Voelcker wrote for the names of the sellers of these guanos, but obtained no reply in answer to his inquiries.

2. A sample of artificial manure, sent by Mr. J. Reeve, Snetterton Hall, Thetford, on analysis was found to have the following composition :—

Moisture	13.53
*Organic matter	25.06
Oxide of iron and alumina	10.35
Phosphate of lime	1.70
Carbonate and sulphate of lime	16.74
Magnesia and alkaline salts	2.01
Insoluble siliceous matter (sand)..	30.61
	100.00
*Containing nitrogen	.87
Equal to ammonia	1.05

This artificial manure, it will be seen, contained only 1¾ per cent. of phosphate of lime, and yielded only 1 per cent. of ammonia. It contained 30½ per cent. of sand and a large proportion of oxide of iron, alumina, carbonate of lime, and similar worthless materials.

No information could be obtained respecting the names of the vendors or the price of the manure, which hardly deserves the name.

3. Mr. Edward Taylor, Whitton, Leintwardine, sent a sample of manure, which he purchased as genuine dissolved bones.

This manure on examination was found to contain no more than 10 per cent. of green loam at the most, and consequently was not genuine dissolved bones. The name of the dealer of these so-called dissolved bones could not be obtained.

4. Dr. Voelcker had previously reported on the composition of a sample of fish and bone manure sent by Mr. Nathaniel Baskett, Braines Hall, Wetheringsett, Stonham, Suffolk, as follows :—

Moisture	11.98
*Organic matter	8.88
Phosphate of lime	3.43
Sulphate and carbonate of lime	51.06
Magnesia and alkaline salts	2.70
Insoluble siliceous matter (sand)	21.95
	100.00
*Containing nitrogen	.31
Equal to ammonia	.37

This manure was sold at £5 a ton, but is scarcely worth 10*s.* a ton, delivered free of cost on the farm.

In answer to the inquiry made as to the vendors, Mr. Baskett wrote on July 6 :—

"You applied to me for the name of the manufacturer of some fish and bone manure I sent you for analysis a short time since, and which you valued at the low sum of 10*s.* a ton. I beg to state that I had it from H. Marshall & Co., Wivenhoe, Essex ; also from the same firm the guano sent to you at same time for analysis, and which you stated to be adulterated, and not worth more than £7 10*s.* a ton, and for which I paid £12 15*s.*—I am, yours faithfully, NATH. BASKETT."

5. Mr. Baskett sent again in July two samples of manure, marked No. 1 and No. 4, which were both sold to him at £5 a ton cash, delivered, by Messrs. H. Marshall & Co., Wivenhoe, Essex.

The two manures had the following composition :—

	No. 1.	No. 4.
Moisture	7 51	9.68
* Organic matter	16.25	11.85
Oxide of iron and alumina	1.40	.89
Phosphate of lime	2.46	5.72
Carbonate and sulphate of lime, &c. ..	67.15	63 46
Insoluble siliceous matter	5.23	8.40
	100.00	100 00
* Containing nitrogen	.44	.49
Equal to ammonia	.53	.59

No. 1 manure was scarcely better than the sample of fish and bone manure which Mr. Baskett sent me before, and which was valued at 10*s.* a ton in comparison with Peruvian guano.

This manure, it will be seen, contains but little phosphate of lime, and yields only ½ per cent. of ammonia.

No. 4 is very similar to No. 1, but somewhat richer in phosphate of lime, and worth about 7*s.* more per ton than No. 1. Both these manures consist principally of gypsum and carbonate of lime or chalk.

6. The next case is a sample of blood and bone manure, which was sent by Mr. T. H. Saunders, Watercombe Farm, near Dorchester, who states that it was manufactured by Messrs. Festing, Brothers, near Weymouth, and sold at £5 a ton. On analysis its composition was found to be as follows :—

Moisture	22.72
*Organic matter	19.97
** Phosphoric acid	1.82
Oxide of iron and alumina	11.59
Lime, carbon, and sulphate	8.85
Alkalies, &c.	5 73
Sand	29 32
	100.00
*Containing nitrogen	.88
Equal to ammonia	1.07
**Equal to tribasic phosphate of lime	3 97

This so-called blood and bone manure, it will be seen, contained only 4 per cent. of bone-phosphate, and only 1 per cent. of ammonia, and as much as 22¾ per cent. of moisture, and 29 per cent. of sand. I reported it to be worth not more than £1 10*s.* a ton, but Mr. Saunders thinks 20*s.* a ton.

In the course of their inquiries, the Chemical Committee frequently find that the vendor agrees to abide by the analysis of Professor Voelcker, and so, the purchaser being satisfied, there is no opportunity for further investigation. Two samples of cake, for instance, were submitted to Professor Voelcker ; one, stamped pure, contained seeds of some 20 different weeds, and was made of very dirty seed. Another contained Castor-oil Beans, but the purchaser wrote that he was in correspondence with the vendor, and did not wish to have any further analysis.

In presenting their annual report to the Council, the Chemical Committee beg to observe that they have had very serious responsibility thrown upon them, in consequence of the publication of Dr. Voelcker's analyses in their quarterly reports. The committee offer their sincere thanks to the Council for the support they have received, and the confidence that has been reposed in them. They are thoroughly satisfied of the good that has been done by these publications, and they trust that, while continuing them as usual, the experience they have acquired may render the reports equally valuable to the public, and at the same time not provoke any legal proceedings.

SMITHFIELD CLUB.

WE make the following extracts from the report for 1871 :—

The Right Hon. Lord Penrhyn, who was chosen as President-Elect at the last general meeting, has intimated to the Council his regret that advancing years would prevent his discharging the duties of President, but his lordship, by presenting the handsome donation of £100, has manifested the interest that he takes in the welfare of the Club. The Council voted their best thanks for the same, and they have elected the Right Hon. Lord Tredegar, V.P., to fill the office of President for the year 1872.

The Council have to lament the loss by death of the Right Hon. Lord Berners, the Right Hon. Lord Walsingham, and the Right Hon. the Earl of Aylesford, Vice-Presidents of the Club ; and also of Mr. John Clayden, the chairman of the Agricultural Hall Company ; and Mr. Richard Stratton, both members of the Council. Mr. Clayden would have retired by rotation at this meeting, and therefore the Council have not filled the vacancy caused by his death. They have elected Mr. Joseph Stratton in the place of Mr. Richard Stratton.

The Council have revised the prize sheet for the present show, and the following alterations have been made :—

In the division for Scotch polled cattle, a new class has been established for cows, separate from the heifers. In the Irish division, the wording has been amended, so as to keep the classes exclusively for Irish breeds. The class for light-weight cross-bred sheep has been discontinued. The rule restricting any animal once exhibited at the Club's show from being again shown, except as extra stock, has been expunged, and in lieu thereof the following substituted :—"No animal exhibited at any previous show of the Club can again compete in the same class."

Several minor alterations and emendations have been made.

The Council have determined, that in addition to having every animal weighed, and its live weight published, the butcher purchasing each shall be invited to send in a return of the dead weight, and that the name and address of the purchaser shall be published in conjunction therewith, in recognition of the wishes of the Club having been complied with.

The Council having received a communication from the Agricultural Hall Company to the effect that the publication of an implement catalogue entailed a pecuniary loss, the Council resolved to accept the offer of the company to add to the stock catalogue a list of implement exhibitors, with the address and trade of each, the number of the stand, and a plan of the building, indicating the position of each stand.

The Council lay before the meeting printed copies of the annual balance-sheet, duly audited, showing balances in hand on December 1, £2863 11*s.* 10½*d.*, and stock invested in the 3 per Cent. Consols, £4664 18*s.* 11*d.*

The Council having regard to the great importance of this subject as affecting the future exhibitions of the Club, and the necessity of all due precautions being taken for the protection of exhibitors' interests so long as the disease shall continue to be prevalent, have determined to endeavour to ascertain the feelings of the members of the Club generally by inviting a discussion at the general meeting on the following points, viz., "Whether animals exhibited elsewhere within a limited period before the date of the Club's Show should or should not be admitted in future during the prevalence of the foot-and-mouth disease."

The Council will take the opinions then expressed into final consideration at the February Council meeting. The Council will then discuss whether any, and if so, what modifications shall be sought to be obtained from the Privy Council in reference to the regulations affecting the foot-and-mouth disease generally. By order of the Council (Signed) *B. T. Brandreth Gibbs, Hon. Secretary.*

CHESHIRE.

Education Adapted to Rural Districts.—At the annual meeting of this Chamber of Agriculture, held at Crewe on the 22d ult., Lord de Tabley in the chair—

Sir HARRY MAINWARING, Bart., introduced the subject of "education in the rural districts of the country," the consideration of which had been postponed from last meeting. He said this was a subject which appeared to be causing great contention now, and which would give infinite trouble to the next generation—a subject which had been discussed far and wide by garrulous and loquacious persons of every station in life ; by persons of every religion and religious persuasion ; by infidels, a very large and numerous body at the present time ; by enigmatical persons in female clothing ; and by the great writer and poet of the day, who said—

> All you who write and talk on education,
> And all such themes of doughty disputation,
> For mercy's sake, do study condensation,
> Or sense in fewest words—consolidation.

He proposed to act on this writer's advice. The subject might be consolidated into these few words, "Train up children in the way they should go," or, in other words, "Give children an education such as would materially help them and push them on in the profession which they adopt or which is adopted for them." Our clergy were educated for the profession, so were soldiers, sailors, and others. Why, then, were not agricultural children educated for their profession? Why was the one and the same system of education pursued in all our parochial schools? Whether it be a school at a seafaring place like Birkenhead, or a mechanic school as at Crewe, or a school at a manufacturing place like Staleybridge, or a school at a purely agricultural place like Over Peover, the system of education was the same. It was no matter of surprise, therefore, that, with some few exceptions perhaps, children educated at parochial schools in agricultural districts should be found to be grossly ignorant of the profession which they adopted. He was opposed to all compulsory education of children after they attained the age of eight years, and thought the State should not dictate to parents as to their management of their children after that age. In these days, when labour was so scarce and costly, children in agricultural districts were of great use to farmers, and of great advantage to their parents. In addition to this, he did not think that children should be kept at school after they were eleven years of age. He never yet knew a good farmer or a good cheesemaker kept at school after that age. If they remained any longer, boys were afraid of pulling off their coats and dirtying their hands, and all wanted to become excisemen or railway clerks, and girls wished to become milliners or something else. But why was one and the same system of education pursued at all parochial schools in the country? The children in agricultural districts were now taught things which could in no way profit them. Some years ago, when the inspectors first came, they asked one of them if he could give them a system of education adapted purely to an agricultural district, and the inspector replied that there was only one form of education, and that no other would be allowed in the schools which he inspected. Let them look for a moment at the "Book of questions proposed to candidates for admission into training schools" issued by the Education Department, for Christmas, 1870. In it the student was required to read, write, and parse the following passage :—

> Woods that wave o'er Delphi's steep,
> Isles that crown the Ægean deep,
> Fields that cool Ilissus laves,
> Or where Mæander's amber waves.

More consummate nonsense he never read. But that was not all. The student was requested to explain the following words :—"Many-twinkling feet, sympathetic, incense-breathing, azure." He was further asked to comment briefly on the subjoined lines from Gray's Ode :—

> Ye towers of Julius, London's lasting shame.
> Modred, whose magic song
> Made huge Plinlimmon bow his cloud-topped head.

At page 33 he was required to describe the struggle with the Danes in the reign of Ethelred II. The Lord only (said Sir Harry) knew when that man lived. He was then asked to describe the relations between France and England in the reign of Henry I. The next question must be a joke, if the Education Department were jocular. It was this—"Describe the union of England and Ireland, how it was accomplished ; give the terms of the union." This was the book for the masters of schools in the agricultural districts of Cheshire. He (Sir Harry) wished to know something about the state of the schools, so he made application to a person who, after visiting several of them reported that the children were extremely ignorant of subjects of importance to them. Sir Harry then read a little sketch of an examination of boys, which contained the following amongst other questions :—Do you intend to be a farmer? Yes. Can you measure land? No. Can you measure a tree? No. Can you measure a road? No. Can you map a road? No. What counties border on Cheshire? Don't know. What are the principal rivers of Cheshire? Don't know. What are the principal market towns of Cheshire? Don't know. They knew all about Plinlimmon and Ethelred, but nothing about the market towns and rivers of Cheshire. Where do coals come from? Station. Have you ever walked the boundary of the parish and then mapped it? No. Are there any books upon farming in your parish? No. Is London in the north or south of England? Don't know. This appeared to show the system of education pursued. This wretched system ought to be altered, and he made three suggestions—1st, that they should have agricultural schools for boys between 8 and 11 years of age ; and 2d, that that Chamber should intercede with the Board of Education, and request them to give a little more suitable education. He had, however, no confidence in boards, and as there was no elasticity in them, if they were asked to supply an education adapted to the farming business, the board would say one system must be adopted. His third suggestion was that trustees of schools in agricultural districts should supply schools with books on farming, and agricultural periodicals. It was their duty to supply suitable education for boys who were intended for farmers, and if they did not supply it they were neglecting their duty.

Major EGERTON LEIGH said there was no doubt that a mechanic required a different education from a person employed in agriculture, and he did not see why education suitable to such should not be given. They ought not to be satisfied with learning things they did not want. There was no use in knowing anything about Plinlimmon, but there might be in knowing something about Penmaenmaur. He coincided with Sir Harry Mainwaring in thinking that agriculture ought to be taught in our schools. The simple A B C of education must be very much the same everywhere ; but if there was any education after that it ought to diverge into the particular profession which the greatest number of boys in a district would eventually follow.

The Hon. W. EGERTON, M.P., thought Sir H. Mainwaring should have tried to suggest some remedy for what he complained of, but he had not suggested any definite scheme. He had laid down that nobody should attend school after they were 8 years old. But they must admit that before they could have special education they must have general education, and what chance was there of teaching the son of an agricultural labourer, or a farmer, special education before he was 8 years old? The proposal to teach such a one special education was either absurd, or they must continue the education after the boy was 8 years old. Then they must have compulsion if the scheme was to be carried out, but how could they compel sons of labourers to attend between 8 and 12 years of age, between which ages of course some special education might be given? Between 8 and 12 years old there were many employments in which an agricultural labourer's son could be usefully engaged. He believed, from evidence given before Commissioners, it was undesirable that the children should be employed in agricultural operations before the age of 10, and therefore, between the age of 10 and 12, they came to a time when they might have a higher education, and when they might do some agricultural work. He believed that the question of compulsory powers would again come before Parliament, and he had no doubt they were given to school boards as an experiment. He thought the Factory Acts might be advantageously extended to agriculture.

SOCIAL SCIENCE CONGRESS, LEEDS.

Local Taxation.—Mr. E. K. FORDHAM read a paper on this subject. He said local taxation, unlike almost every other system in the country, remained just in the state in which it was originally organised. It started with the assumption that every one in the country should contribute to the exigencies of the State in proportion to his ability to do so. This was fairly secured in the then state of things, when the only income from property was that derived from houses and land, or nearly so. Now, the income from land and houses was only about one-third of the people's annual income, instead of constituting nearly the whole, as formerly. It seemed to be conceded that the onus of maintaining the pauper, of educating him, of making roads, and supporting a police force for the security of the population, ought to be thrown on the people generally. How is it, then, that all these charges, which were always increasing, should still remain almost the exclusive burden of a part of the State, the owners of real property? There were several ways of accounting for this. One was, that property in land had enjoyed a protective duty on corn, which probably enhanced its price by 6*s.* per quarter on all the produce of these islands, say 8,000,000 qr. of Wheat, and 2,000,000 qr. of other grain. This would give them nearly £3,000,000, a considerable set-off towards the charge of keeping up these institutions, which then did not exceed £6,000,000; but now that this annual grant of £3,000,000 was withdrawn by the repeal of the Corn-laws, and also on the importation of cattle, there seems no reason why these charges should not be again equally shared by the whole wealth of the country, or at any rate, why a much nearer approximation to equality should not prevail. This might be accomplished in two ways. The area of taxation might be much extended—it might be extended to mines, now employing a large population, but paying little or nothing to the vast mass of pauperism created by such population. Then, again, see the enormous number of ships—floating houses—their lettable value immense, tenanted by seamen, earning countless millions for the shipowner, and leaving their pauper population, belonging to those employed in such vessels, a burden borne by real property only, from which these ships are exempt. Then there were the many millions of property in railways paying a very small proportion of income of the shareholders towards the rates. Why should not railways be rated as land was? Why should not the rail owner contribute the same proportion of his income from rent, or estimated rent, of a railway as a landowner did from the rent of his land? The vast amount of wealth still untaxed for these purposes would bear some share of those charges which were paid from the national exchequer by arresting the diminution of duties on such articles as tea and sugar, and slightly increasing those on alcohol. Let the Post-office charges remain as they were, and there would be a constantly increasing surplus from this source. The property and income tax also would yield a rapidly large increasing sum. These sources would almost imperceptibly rectify the flagrant injustice of the present plan, now obsolete. With respect to the incidence of rates on houses, he contended that it was much more unjust than on land, and that it fell almost exclusively on the tenant. This state of things had an important incidence, thus: £6 rental would be rated at £5, and a poundage rate of 4*s.* would thus deprive the tenant of £1 per annum. In the case of a labourer who earned 12*s.* per week, which would give him an annual income of £31 4*s.*, it would represent in his case a property tax of 8*d.* in the pound as his contribution towards the support of pauperism, &c., as occupier, while the owner of the house, much more able to contribute, would not, in respect of this property, pay a fraction. If this very unequal impost were removed, the labourer's house would cost him only £6, instead of £7, as it did now; and he would have the £1 to pay for a house with a second or third bedroom, so essential to the interests of morality. With regard to land, exactly the reverse was the case. Every tax, such as land-tax, tithe, rates, is always paid by the owner, and its amount affects the value of the land to the owner, but in no way concerns the tenant.

Mr. BURHAM SAFFORD said, those burdens of local taxation of a purely local character should be separated from those that should be national. The spirit of the basis of the existing Poor-law, passed in the 43d Elizabeth, cap. 2, contemplated that personal as well as real property should support their mutual offspring, the poor. Since the rise of trading companies, the rising influence of commerce had, instead of relieving the land, enabled it to add to the burden of the land the maintenance of the vast number of paupers caused by commercial failures. He contended that many of the grievances of taxation arose from the existence of too great a variety of financial machinery, and said many desirable results would accrue by rendering the taxation of the country equitable by transferring to one machinery all those subjects which were of a national character. The nuisance of collectors calling for taxes, he considered, might be obviated, and, at the same time, economy be secured, by having certain days appointed by public notice when the taxes could be received by an officer on circuit. He suggested the establishment of free money-orders for small sums, payable on account of taxes, as Government receipts were free of stamp duty.

Mr. BOTLEY said land had increased very much in value by the great commercial operations of this country, and the fact was they were continually sending children from the agricultural districts into the manufacturing towns for occupation; therefore it would be seen that the manufacturing districts were employing the children of agriculturists. With respect to the question of keeping up the roads, he said, remembering the wear and tear of harness and other stock, there was nothing more profitable to the agriculturist than good roads; therefore he thought they should bear their share of maintaining the roads in repair. As to the income-tax, he thought it would be better to put it on to real property than to tax a man for what he earned by the sweat of his brow. Everything, he maintained, went to show that land did not bear an undue proportion of the taxes.

Mr. D. FORDHAM thought the argument that land was rising in value, and did not pay a fair proportion of the rates, was a mistake. The increase of the value of land was an accidental circumstance, and there were other kinds of property which had risen much more rapidly in value than land. He instanced railway property, and particularly the rapid rise in the shares of the Great Northern Railway Company. He did not see why agriculture, although it did derive the great advantages from the roads referred to by the previous speaker, should pay so much more towards their maintenance than other property. There were some persons using the roads in certain localities very much who paid nothing to the roads. He thought, as the country was now thrown into highway districts, they should have a "Highway District Chargeability Act," the administration of which should be similar to the Poor-law, because it would be found that in the neighbourhood of railways the rates were very high.

Mr. F. WILSON (London) thought the rates should be paid by land, because it was land which benefited by the population raised upon it. As the population accumulated, so should the landlord have an interest in improving his property. Thus, he thought, as the landlord was benefited by the population, he should pay for the roads. The remedy for the present unsatisfactory state of things was for the municipalities to become the proprietors of the property in the municipality, and they would thus regulate the amount of rates; therefore, no differences would ensue. They ought not to permit the increase of the rates by allowing landlords to build upon land which was not fit for building purposes, thus engendering fever and disease, which meant an increase of rates.

Mr. E. CHADWICK said the whole of the evils of our present taxation were due to the early system upon which the Poor-law was established. He said the one principle acted upon with respect to our taxation for many years past had been this—wherever the rates were high, the people in that district began to consider how the rates could be shifted. In those districts where manufacture was the most heavily rated they tried to put it upon agriculture, and *vice versâ*. Now it had come to this—and he saw it throughout the entire country—that one section of the community was trying to shift the onus of taxation upon the other. Even the Government, he was sorry to say, was following in that suit. Local municipalities assumed that nothing could be better than their own administration. He thought that in the towns the local rates were kept down to the lowest possible amount. In London the object was to stop outdoor relief in supplement of wages. The fact was that out of the entire sum given in relief, three and a-half millions was relief given in abuse, and they would not get rid of abuse until they improved the administration. He maintained that if local administration was properly carried out there was no part of it which was not beneficial to landed property. One great cause of the present unsatisfactory state of things was central legislation. It was the penalty we were paying for centralisation.

The CHAIRMAN said the sum received in England for local taxation was £17,000,000. It was made up in the following general proportions:—Poor-rate, £8,000,000; county, hundred, borough, and police rate, £3,000,000; highway rate, £1,500,000; the rest being made up by property, watch, improvement, and other rates. As to the incidence of the taxation, the difference between the English, Scotch, and Irish systems was that in England the local taxes were wholly paid by the occupiers, and in Scotland and Ireland in proportion by both owners and occupiers. In England the rates were managed by the magistrates; in Scotland, by the owners entirely; and in Ireland, by bodies on which the occupiers were represented. The discussion, so far as it had gone, pointed very clearly to the imperfect nature—not to use a stronger word—of the English plan of assessing the whole of these rates from the occupier alone. A very considerable part of these rates was a charge on sound principles of economy. The occupier, of course, on all principles of right, and expediency, and economy, was fairly liable to provide out of his own resources a certain part of the local expenditure, such as lighting, police, and the poor-rate; but he should hardly be liable to what might be called permanent purposes. He should hardly be liable to take upon himself the cost of such great works as, for example, the cost, once for all, of extensive public works, drainage, or county or borough buildings. These clearly ought to be borne by the owner, and at the present time a considerable part was borne by the owner. What had been done of late years, especially in the metropolis, had pointed to a much more extensive division of those local burdens than had been made in England up to the present time—that was to say, the adoption in England of those principles which had been wrought out with more success in Scotland, and to a certain extent in Ireland, than perhaps they had been worked out anywhere else. Then there was the much larger question which was incidentally raised, whether, in regard to this local revenue, some other kind of property besides real property should be brought into account. They knew that in England, and also in Scotland and Ireland, and he might say in nearly every other country in Europe, whatever the theory, the only fact was that those local burdens were assessed almost entirely upon real property. It was fortunate for the purpose of that discussion that they were able to refer to what had been done in the State of New York with regard to this question of the mode of assessment. The result of inquiries was to prove that the attempt which had been in force in New York and contiguous States to raise the local revenue by assessment on real and personal and all kinds of property had been an entire failure; and it had been recommended that in future the assessment should be confined entirely to real property. For his part, he entirely agreed in that recommendation. The local taxation of Belgium, which might bear comparison with that of any other country, was placed entirely upon the basis of taxing only the visible, tangible, and real estate possessed by a man. When they went beyond that, they found themselves landed in a maze of difficulties, out of which there was no escape at all.

Notices of Books.

Twenty-seventh Annual Report of the Botley and South Hants Farmers' Club. *Hampshire Advertiser* Office, Southampton.

The annual issue of the proceedings of our local Farmers' Clubs is really one of the most serviceable agricultural publications of the year. A whole agricultural library might be very easily extracted from the excellent papers which are in the course of years communicated to the various Farmers' Clubs, Societies, and Chambers of Agriculture; and failing the work of selection, which would, no doubt, be advisable, those do good service who collect for each society by itself some record of its 12 months' work, for distribution to its members. The Botley Farmers' Club, which seems very well served by its office-bearers, has now for more than a quarter of a century distributed in this way its annual report to its members, and the pamphlet just published gives its twenty-seventh year's transactions. They include papers on the Chemistry of Feeding-stuffs, the Employment of Agricultural Labour, the Impediments to Agricultural Progress, and the Four-course System; its Evils and Remedies,—four capital essays, to which we referred in our pages at the time they were read. We now extract the address of the committee to the members, by which these essays are introduced to their notice:—

"In presenting to our members the twenty-seventh annual report, the first point which strikes our attention is the wonderful contrast between this season and the last. Then, after a hot and dry summer, we had a large produce of Wheat wherever there was a sufficient plant; and but little besides. Now, after a moist season and a low temperature, the yield of Wheat is bad, with a good crop of spring corn and Pulse, but the straw in a damaged condition. The hay crop is considerably greater than in 1870, but to a great extent has been injured by rain; whilst instead of the poor root crop of last year, we have now one of the finest ever known. Unfortunately as regards the latter the average of the two seasons cannot be thrown together. The scanty crop of 1870 has produced its baneful results. It has caused three animals to be slaughtered instead of two, and thereby seriously reduced the number and enhanced the cost of the stock that we looked for this year to convert our roots into mutton and beef. Never were two seasons more unlike each other.

"Our discussions during the last year have by no means been deficient in interest, as the little volume before us will sufficiently testify.

"The relative value of feeding stuffs, at all times a useful subject, but particularly so in such a peculiar season as the last, was introduced, as his first paper, by Mr. Albert Spooner, and was well received.

"This was followed by a very practical paper by our President, on the 'Employment of Farm Labour,' and was fully and ably discussed.

"To which succeeded an able paper by Mr. Blundell, on 'The Impediments to Agricultural Progress.' The subject, although necessarily discursive, excited much attention, and elicited a good discussion.

"For our last subject, 'The Four-course System, its Evils and Remedies,' we are indebted to a gentleman from a distance, Mr. Hughes, of Market Harborough, who introduced it in a very elaborate paper; a good discussion succeeded.

"For the second time in our history we have to mourn the loss of our President. A good man and true has been taken from us, and one who, whether as chairman of our club, competitor at our shows, in active business, or in private life, performed his part honourably, and performed it well.

"In conclusion, we have to congratulate ourselves that this country has escaped the horrors of a European war, and the distant horizon happily exhibits no signs of disturbance. This favourable aspect may in a great measure be ascribed to the glorious constitution under which we live, to the sound common sense and moderation which, with some slight exceptions, pervade all classes, and which induce them to respect and revere, and if need be to defend our laws, our liberties, and our institutions, and the throne of a thousand years which knits them altogether."

Farm Memoranda.

A PRIZE DAIRY FARM.—We extract the following, from the pen of the late Mr. Jackson, of Tattenhall Farm, describing in the official report of the second prize farm (Journal of the Royal Agricultural Society) the labours of the dairy:—

Mr. Walker has made on an average over 4 cwt. of 120 lb. of cheese per cow, even the last three bad years—his winter-made cheese fetching 81*s.*, and the summer-made more than 83*s.* per cwt. of 120 lb. He has also gained the three 1st prizes of the Staffordshire Agricultural Society, and the Society's three silver medals for the best cheese in both classes, thick and thin. Last year he took the 1st prize of A. Bass, Esq., M.P., open to all Staffordshire and 15 miles from the borders. He has taken two 1st prizes for cheese of the Derbyshire Agricultural Society, together with a number of local cheese prizes; and as the system of cheese-making practised by Mr. Walker has not been described or known, except in that important dairy district, a special visit was made with a view to record some of his more peculiar features of dairy management.

1st. Mr. Walker gives his cows through the summer two feeds of grains per day, viz., 17 stones, at 4*d.* per stone, and 8 stones of Indian meal, at 1*s.* per stone, costing for 50 cows 13*s.* 8*d.* per day. This will explain the large quantity of cheese made per cow per year, and the exceptional richness of the milk, 90 lb. of which yielded 3 lb. 4 oz. of butter. It was remarkable, in the month of July, to see how eagerly the cows left their pastures and rushed to their stalls; and Mr. Walker considers that the cheese and butter pay for the food, and leave him a profit in the increased fertility of his pastures.

2d. He, by rearing a large number of female calves, is enabled to draft off his worst milkers, and by putting them late to the bull they milk through the winter and part of the second summer, when they generally fetch high prices for winter milkers; and thus he makes cheese through the winter.

3d. The cows are milked by the men, Mr. Walker and his farm pupil assisting; and the importance of good milking may be illustrated by the case of Mr. Brown, of Preston, one of the competitors, who thus writes:—

> "I give high prices for my cows, I keep them on expensive food, and to hear and see them badly milked is a trouble I cannot bear. So well as my cows did the last year, considering the season, I am satisfied they would have done much more if my milkers had been up to their work. It is my determination to have only those that would go about their work in a way so as to give the cow an apparent pleasure in giving her milk, rather than hold it back, as she will do to an indifferent milker. Again, I strictly enforce habits of cleanliness, a vessel of clean water and a towel being kept in or near the shippon, in order that each milker should keep his hands perfectly clean. It is the want of proper attention to these matters of detail that is the cause of so much ill-flavoured cheese and butter being sent into the market."

We have no doubt that the milking is better done by males, and in Mr. Walker's case it has the advantage of giving those employed in the dairy an extra three hours per day for their work, which they really need.

The milking commences at 5 o'clock, night and morning, and ends from 6.15 to 6.30 o'clock—one of the milkers carrying the milk, with a yoke and swing tins, crossing the farmyard, through the kitchen, and into the cheese-making room, where each night the milk is poured into four milk coolers. These coolers are placed in a trough made of Staffordshire bricks and cement, into which the dairy help has pumped spring water. After remaining in the water for about three-quarters of an hour, having been frequently stirred, the milk is poured into one of the two cheese tubs, such as are known in the district as "Travise's Patent," and for which Messrs. Mellard, of Rugeley, last year obtained a prize at the Oxford Show. These tubs or vats, made of block tin, stand on wooden stages about 10 inches high. One tub is 3 feet 4 inches, and the other 3 feet 1 inch in diameter, and both are 2 feet deep. Each tub has a perforated follower called a sinker; and for putting pressure on the sinker is a wooden frame with a contrivance above, resembling those of the lever cheese presses, but having a much heavier weight—say of 40 or 50 lb. In the front of the tubs are two vents, the one about 6 inches above the other, to each of which a screw plug is fitted, and withdrawn at pleasure to let out the whey. The first milk from the coolers being poured into the tubs or vats, the same coolers are refilled with milk, and replaced in the cooling trough, into which the help has again for about 10 minutes been pumping spring water. The milk, both in the coolers and the vats, gets a frequent stirring until bed-time, to keep the cream from rising.

The household consists of Mr. and Mrs. Walker, a farm pupil, three little children, a cowman, a pigman, waggoner, and two lads; the dairy help, vessel cleaner—who is also housemaid—and the nurse girl, Mrs. Walker acting as dairymaid.

The dairy duties begin in the morning at 5 o'clock—the vessel cleaner or housemaid lighting the cooking-range fire, and the dairy help the vessel-boiler fire. The dairy help is, fortunately, strong, active, and interested in her duties. She is intrusted to skim, scald, and purify the whey "top," or cream, a barrel churn being used, and in July about 30 lb. of butter per week was taken, or over half a pound per cow for 50 cows. But some cream is now being taken off the evening's milk, in consequence of the cheese being so rich and tender, for although one of the samples of cheese exhibited at Wolverhampton was commended, and the other highly commended, they were, as stated by the cheese judges, wanting only in firmness.

The morning's milk, when brought in from the cows, is poured into the cheese-making tub by the milk carrier, in such proportions as directed by the help; when she and the housemaid take from the cooling-trough one of the milk-coolers of the evening's milk, and lift it on the side of the vessel-boiler; then both mount the boiler, and gently let down the milk-can into the boiling water, and when it is sufficiently heated they again bring it and pour it into the cheese-making tubs; and this process is repeated until the new milk and the old in tub No. 1—for two cheeses—is raised to about 80°, and in No. 2 tub—for one cheese—to about 90°; there being in No. 1 tub double the quantity of milk, for two cheeses, it will retain more heat, so that by the time coagulation has taken place the heat in both will be nearly equal; and no further heat is applied in the process of cheese-making. Were heat applied as in the Cheddar, or slip-scalding process, there would, we apprehend, be no danger of excessive richness in the cheese, and much labour would be saved. When the temperatures already indicated have been obtained, an ordinary-sized teacup twice filled with rennet is put into No. 1 tub, and once filled into No. 2 tub; and a tablespoon twice filled with liquid annatto—prepared by Mr. Hodway, of Tutbury—is put into No. 1 tub, and once into No. 2. The contents then being well stirred, the tubs are left uncovered; but previous to the stirring, about 2¼ lb. of salt is put into No. 1 tub, and half the quantity into the other. This is done instead of salting the curd, and is a new feature; the small quantity of salt put in the milk is accounted for by the cheese being salted under press; and although this may be well for thin Derby or Leicester cheese, it would not do for thick cheese like Cheddar or Cheshire.

The rennet and colour are added at 6.20 A.M. to No. 1 tub, and at 6.30 A.M. to No. 2; in the first coagulation was complete by 7.20, and in the other by 7.50 A.M., probably the extra 20 minutes in the second case may be taken as an indication that the smaller quantity of milk had cooled too rapidly, which could be avoided by the use of the steam or hot-water vat.

The mode of preparing the rennet is new, interesting, and cheap. A gallon of the greenest or poorest of the whey is kept, put into a saucepan and gradually heated and skimmed until it has thrown up all the curds. A pint of strong brine is then added, and the whole boiled for 10 minutes and put to cool until, say, 85° temperature, when three dried vells or "bag skins," kept from the previous year in salt pickle, are put into the liquid and well rubbed in it. Then the three last bag-skins are taken from the former rennet, distinguished by being tied together, and these six are left in the rennet, which on the second day is fit for use, and serves for about two weeks.

When the men servants had breakfasted, they carried the whey tubs from the whey room to the kitchen, and poured their contents into a cast-iron head, and so the whey passed to the pigs' food-house. Putting the contents of each tub at 112 lb., a man on each side managed it, without much slopping, at ten journeys, the weight of the whey exceeding half a ton.

The rennet and colour having been added as described, breakfast intervened, while coagulation was taking place, up to 7.20 A.M. The help had hitherto acted as dairymaid, leaving Mrs. Walker free for domestic duties, and to scatter her bounty to a numerous and no doubt profitable progeny of poultry.

After breakfast I noted the following course of operations:—

The dairy-help commenced by lifting the presses and turning 18 cheeses, rubbing each on the edges and sides with salt, and pricking or stabbing with a thick skewer on each side of the three cheeses from the previous day, and putting clean dry cloths on them all. Mrs. Walker, at 7.20 A.M., proceeded to break up the curd or custard, with an ordinary tin curd-breaker (save that the handle was placed at an angle of 45° to enable it to be worked under the beam over the cheese tub, which supports the screw and lever, by which pressure is put on the sinker), by passing the breaker up and down, slowly at first, to prevent any loss of curd in the whey. When finishing, the breaker was used more freely. A great improvement on these breakers is the American frame, with a series of sharp thin steel knives, which cuts the tender curd instead of bruising it.. When No. 1 tub was finished, the sinker was slowly let down on the curd to settle it more rapidly than by its own specific gravity. The same process was repeated on No. 2 tub; and at 8.10 A.M. the whey tubs, which had been carried out by the men to the vessel-shed, were brought cleaned by the housemaid. A hair-sieve—with a contrivance for hooking it inside the whey-tubs—was then placed under the vents of No. 1 tub, and the upper plug withdrawn, until the tub was sufficiently filled, so that Mrs. Walker and the help could carry it into the whey-room and pour its contents into larger tubs on the stage, which required considerable strength. When the whey from No. 1 tub had been drawn down to the upper vent, a strong wooden frame was placed on the sinker, and slight pressure applied by the contrivance from above. This done, the same operation was repeated on No. 2 tub. At 8.25 A.M. the frames and sinker from No. 1 tub were removed, and the whey drawn from the lower plug, and then Mrs. Walker and the help, each with a large knife, standing on the wooden stage and leaning on their breasts over the edge of the tub, proceeded first to cut the curd into cubes, and then into slices of from a quarter to half-an-inch thick, in order to set the whey at liberty. At 8.50 A.M. the sinker and frame were returned, and increased pressure applied; next the curd in No. 2 tub was subjected to like treatment. At 10.20 A.M. No. 1 tub was in like manner cut up, and increased pressure applied; and for the third time at 11.20 A.M. No. 2 was thus treated for the third time at 12 o'clock, then both were left to stand until after dinner. Having to stoop under the beam or frame, which passes over the tub, renders the position of the cheese-maker difficult, and, if she be a mother, perilous, as may be inferred from a neighbouring farmer stating that his wife advised him to give a wholesale order for busks, for she broke so many while cutting up the curd. At 2.15 P.M. the frame and sinkers were again removed from tub No. 1, and the curd cut into slices of about 2 inches thick, when the curd-mill, consisting of two wooden barrels or cylinders, thickly studded with wire spikes, was used; and, as the curd was firm and tough, considerable power was needed to turn it. Under the mill was placed a mould or cheese-vat 18 inches over, and about 4 inches deep; over this was spread a clean dry cheese-cloth, and the ends brought up to the sides of the mill to prevent any crumbs from falling, and when half the curd from No. 1 tub was ground the cloth was folded over the cheese, and it was removed to the lever press. In like manner the curd was ground for the other cheese, and also for the one cheese from No. 2 tub. After remaining under the presses for four days, and turned daily, the cheeses will be taken to the cheese-room, where, until they are about three weeks old, they will be daily rubbed with the hand and turned over; after this they will be turned alternate days until sold, when about two months old.

As I left before 4 o'clock, I give the following sketch of what remained to be done before bed-time, or 10 o'clock P.M.:—

The three newly-made cheeses had to be thrice taken from under the press and pricked with a skewer, the last time about 9 P.M. Both the cheese-tubs, with the sinker and wooden frame, and also the curd mill, had to be carefully cleansed and scalded; the whey room, cheese-making room, and kitchen floors to be well washed down; some 20 cheese-cloths to be washed and put to dry for morning; water pumped for this, and also to twice fill the milk-cooling trough; the evening's milk to be cooled, stirred, and treated as before described. The evening's milking vessels had to be all well washed and cleansed, the whole or part of the upstairs cheese to be turned and rubbed, and to what has already been described must be added the household duties of this weak staff—churning, butter-making, baking, cooking, washing, mangling, and a host of other domestic duties in a family where there are seven males, four females, and three young children to be fed and cared for. It is not very wonderful that Mrs. Walker, the daughter of a successful and retired dairy-farmer, at one time resolved that she would not be the dairymaid; but the difficulty of getting hired servants to successfully manage a dairy eventually broke down her resolution, and she now smiles at her work, though this round of duties knows no cessation, for the cheese-making here continues all through the winter. I therefore feel that I cannot better conclude than in the words of Mr. MacAdam in his admirable treatise on "Domestic Dairying:"—

> "At present there is heard from many quarters a loud and earnest appeal for sufficient rest and leisure, and fewer hours of labour, and no class has better cause to turn this appeal into a demand than those employed in

cheese-making. It is no uncommon thing to find them engaged from 5 o'clock in the morning till after 8 at night, in milking, making, and turning cheese, or cleaning the dairy and utensils; and this Egyptian bondage is seldom lightened by the repose and sanctity of the Sabbath, for the thoughtlessness, or prejudice, of landlords and farmers, or a false motive of economy, often compel them to continue their drudgery on that day. Surely such a state of affairs is worse than a want of profit, and far more reprehensible than a lack of success. Must these have no leisure, no recreation, no culture, nothing save the protracted hours of labour and a stinted allowance of rest? Must all their energies of mind and body be directed to the accomplishment of such tasks as selfishness or apathy is pleased to impose, and which circumstances compel them to perform?"

When Mr. MacAdam penned the above, he was an advocate for "Domestic Dairying." He and his sons are now managing several American cheese factories, and he advocates their adoption in England with still greater prospects of success.

The Week's Work.

DECEMBER 16.—*Water Meadows*, in southern counties at low levels, attend to as in November, making due allowance for a fall of temperature; not unfrequently the close of this month is as good for watering as the close of the last, but generally the earth and atmosphere both become colder. In the North, frost and snow more frequently interfere with the operations. The thermometer requires close watching, even in open weather, and should a slight frost overtake, the opening of the sluices a little more, so as to supply an extra flow of water, may carry the waterman through, when otherwise his labours would be locked up in ice. Much depends upon the natural temperature of the water, and the land being irrigated, and the mode of irrigation. The temperature of the former (the water) will be influenced by that of the land over which, or through which, it flows in the carriers. With regard to the actual temperatures of the water and meadow, these should always be ascertained by a wet-bulb thermometer.

Irrigation Works.—This is a favourable time for execution of such, most rivers being sufficiently high to determine practically "the influx and efflux levels," *alias* "feed and tail levels;" springs are likewise open, and past experience ought to teach both landlord and tenant the propriety, not only of laying out works for immediate use, but for storing water for summer use, if it cannot be got direct from springs or rivers, for applying more especially to grass land, whether lying in permanent meadow or under alternate husbandry. No doubt strong prejudices still exist to the irrigation of land only lying one, two, or three years in grass; but such prejudices are based upon a bygone experience, for the thorough underdrainage and subsoiling of land, with the liberal use of artificial manures, have removed the practical objections of the olden time. Water can be successfully applied to corn and green crops of every kind, including Turnips and Potatos, as well as to grass, during the early period of their growth in spring and summer; but the water must be brought to the land before it can be so applied, and an effort should be made at this season to provide the supply for next summer, when pipes and other underground modes of conveyance can be laid down without interfering with growing crops. As to the immediate application of the water to grass lands, the water levels and surface of the land will determine the nature of the work. When the water can be applied to a plain sloping surface of permanent meadow or pasture, either on the ridge-and-furrow or catch-water plan, at 1*s*. or so per acre, the gutters from the underground mains being opened by a plough, the rule is plain.

Warping, natural and artificial, should be carried out at this season, and the latter (artificial warping) to a much greater extent than has yet been done. A large area of poor peaty soil in North Lincolnshire and the West Riding of Yorkshire adjoining, has been successfully warped, and the whole of the Fen country and bogs of Ireland may be so warped in the same way. And besides fen and peat-bog there are immense tracts of sandy, gravelly, and chalky soil, capable of being warped at this season, when there is a command of water almost everywhere for the conveyance of the warp. As to the quality of the warp, it is not necessary that it should be "Nile mud," or Humber mud, or anything chemically like either. "Lay clay on sand and you buy land," is an old proverb, and the fertilising effects of clay is as well known on some Irish bogs as in the Bedford Level. And nothing would be more thankful for clay warp than poor chalky soils.

Chalking, Marling, &c., are sometimes done wholly by manual labour, as claying is done in the Fen country. Thus in places where chalk is covered with a few feet of drifted clay, parallel trenches are opened, and the chalk dug out and spread between the trenches. In other cases the chalk is drifted into large beds and covered with a subsequent layer of drifted clay. In this case, also, the chalk may in many places be dug up and spread by manual labour; but in examples of drifted chalk it is more common to open pits, and apply the chalk by carting. Marl, shell sand, and green sand are applied in the same way, not only to clayey soils, but to all soils differing in character from themselves. When applied to peaty or fen soils, clay and sand should be mixed with the chalk and marl, or applied separately. Pure sand, applied to peat earth, will greatly sharpen and improve its quality in growing corn-straw and roots.

Carting in frosty weather is an old rule, and where the ploughing is done by steam, and the strength of teams reduced to what is required for constant carting, the work should be kept well in advance, the road work being done in open weather, and the field work in frosty, and also in dry weather when the land will carry. Carting by steam has become an exceptional practice, but from the importance of getting the carting expeditiously done, it will no doubt with the progress of things very soon become the rule, and horse-carting the exception; or the two may be so combined that the bulk of the heavy work will be done by the former, leaving only the light work and the minor details of the heavy work for the latter.

Notices to Correspondents.

CLOVER: *W. H.* The best manure you can give it, under the circumstances, is either bone dust (10 bush. per acre, rotted in sand), or superphosphate of lime (3 cwt. per acre). 60 bush. of hot lime, made into a compost, and well slacked, with a lot of mould, roadside turf, &c., would be a good dressing per acre. Or, if you can get old gas-lime, and make a compost with it and similar stuff, you might put on 20 or 30 bush. per acre of it with advantage; only you must take care that the compost is turned over several times, so that its mischievous causticity is taken out of it.

Markets.

SEED MARKET.

As usual about Christmas our markets are just now very quiet, very few people caring to go into stock towards the close of the year. Values of all descriptions are, nevertheless, exceedingly firm, and a good business is anticipated early in January. Yearling parcels of home-grown Clovers are held for long prices. Alsike and white Clover show no alteration. The same can be said of Trefoil seed. Foreign Italian continues to advance in price. For feeding Linseed we have an improved demand. Hemp and Canary seed move off steadily, at late rates. Blue Peas are in slow request. Mustard and Rape are quiet. Sainfoin now meets with some attention.

JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

MARK LANE.

MONDAY, Dec. 11.

The supply of English Wheat to this morning's market was small, and the trade steady at the prices of this day se'nnight. There was the usual attendance, and the few sales of foreign Wheat were of Russian and American, at late rates. Barley was very difficult of sale and rather easier. Beans were cheaper. Peas unchanged in value. Oats brought an advance of 6*d*. per qr. upon the prices of this day week. Maize was unchanged in value. Flour sold slowly at late rates.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk . . White	54—59	Red	54—57
— fine selected runs . . . . do.	57—61	Red	56—58
— Talavera	59—63		
— Norfolk	—	Red	—
— Foreign	51—69		
BARLEY, grind. & dist., 26*s* to 31*s* . . Chev.	38—40	Malting . .	33—38
— Foreign . . grinding and distilling	28—31	Malting . .	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire . . Potato	25—27	Feed	—
— Irish . . . . Potato	24—26	Feed	20—22
— Foreign . . . . . . Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign . .	—
RYE-MEAL, Foreign			
BEANS, Mazagan . . . . 33*s*. to 35*s*. . . Tick	35—50	Harrow . .	35—50
— Pigeon . . . . 38*s*. to 59*s*. . . Winds	—	Longpod .	—
— Foreign . . . . Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent . . Boilers	40—42	Suffolk . .	42—45
— Maple, —*s*. to —*s*. . . . . Grey	—	Foreign . .	36—44
MAIZE	—	Foreign . .	32—35
FLOUR, best marks, delivered . . per sack	44—50		
— 2d ditto . . . . ditto	40—42	Country . .	40—42
— Foreign . . . . per barrel	24—28	Per sack . .	38—60

WEDNESDAY, Dec. 13.

There were limited supplies of English Wheat on offer here to-day, and from abroad the arrivals were only moderate. Transactions in all descriptions were restricted, and some difficulty was experienced in realising Monday's currencies. Fine Barley was unaltered, but other qualities were easier to purchase. Malt sold slowly on former terms. The show of Oats was large. The demand was not animated, but prices were maintained. Beans and Peas were dull, and drooping in value. Flour met with a quiet sale, at about late rates.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch . .	50	240	—	—
Irish . .	—	—	—	—
Foreign . .	5890	5560	22,020	160 — brls.
	5940	5800	22,020	

LIVERPOOL, Dec. 12.—The market was well attended A fair consumptive demand, at the extreme rates of Friday, and in some instances rather more money is paid for red American sorts. Flour in moderate demand, without change in value. Beans steady. Oats and Oatmeal unaltered. Indian Corn in slow demand, and rather in favour of buyers; mixed American, 32*s*. 9*d*.

AVERAGES.

	Wheat.	Barley.	Oats.
Nov. 4	56*s* 8*d*	37*s* 5*d*	23*s* 8*d*
— 11	56 5	37 4	23 5
— 18	55 11	36 9	23 0
— 25	55 10	36 8	23 8
Dec. 2	56 7	36 10	23 8
— 9	56 10	37 1	24 2
Average . .	56 4	37 0	23 7

METROPOLITAN CATTLE MARKET.

MONDAY, Dec. 11.

This being the annual "Great Market," the supply of Beasts is larger than on ordinary occasions, and about the same as on the corresponding day last year. The trade is not very brisk, yet choicest qualities make a high price. Some of the best Scots have reached 6*s*. 4*d*. per stone; the general quality is very good, yet there are not so many of the largest descriptions as we have sometimes seen. The restrictions on the removal of cattle have greatly interfered with the trade. Butchers living beyond the metropolitan district were loudly complaining that they could not purchase the animals they so much needed. The number of Sheep is not large, but enough for the demand, this being a day on which but little attention is paid to this department. Trade is dull, and late prices are with difficulty realised. Choice Calves are still scarce and dear. Our foreign supply consists of 970 Beasts, 6630 Sheep, 15 Calves, and 10 Pigs; from Scotland there are 1190 Beasts; from Ireland, 1000; from Norfolk and Suffolk, 600; from Western Counties, 380; and 2180 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. . .	5 8to6 0	Best Long-wools	6 4to6 6
Best Shorthorns . .	5 6—5 10	Do. Shorn . .	. . — . .
2d quality Beasts	4 4—5 0	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds . .	6 8—6 10	Do. Shorn . .	. . . . — . .
Do. Shorn . .	. . — . .	Lambs . .	. . . . — . .
		Calves . .	. . 4 4—6 8
		Pigs . .	. . 3 4—5 4

Beasts, 6320; Sheep and Lambs, 17,240; Calves, 41; Pigs, 70.

THURSDAY, Dec. 14.

The number of Beasts is not excessive for the day, but the change of weather and large supplies at the dead market have caused a depression in the trade; prices on the average are lower, and a clearance cannot be effected. We have but a few Sheep on offer, but quite sufficient for the demand, which, for reasons stated above, is very limited. Calves are scarce, and consequently very dear. Our foreign supply consists of 330 Beasts, and 1150 Sheep.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. . .	5 8to5 10	Best Long-wools	6 4to6 6
Best Shorthorns . .	5 6—5 8	Do. Shorn . .	. . — . .
2d quality Beasts	3 8—4 8	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds . .	6 8—6 10	Do Shorn . .	. . — . .
Do. Shorn . .	. . — . .	Lambs . .	. . — . .
		Calves . .	. . 5 0—7 0
		Pigs . .	. . 3 4—5 0

Beasts, 1930; Sheep and Lambs, 5270; Calves, 60; Pigs, 15.

METROPOLITAN MEAT MARKET, Dec. 14.

Best Fresh Butter	18*s*. per dozen lb.
Second do. do.	16*s*. ,,

Small Pork, 3*s*. 8*d*. to 4*s*. 4*d*.; Large Pork, 3*s*. 0*d*. to 3*s*. 6*d*. per 8 lb.

HAY.—Per Load of 36 *Trusses.*

SMITHFIELD, Thursday, Dec. 14.

Prime Meadow Hay,	85*s*. to	98*s*.	Clover, old	118*s*.	130*s*.
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. . .	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	40			

CUMBERLAND MARKET, Thursday, Dec. 14.

Sup. Meadow Hay	92*s*. to	100*s*.	Inferior Clover . .	84*s*. to	108*s*.
Inferior do.	70	84	Prime 2d cut do. . .	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	42	46
Superior Clover . .	120	130			

JOSHUA BAKER.

ENGLISH WOOL.

There has been a good demand for English wool during the last week, and an almost general advance has been realised. Buyers begin to see that there is no chance of manufactured goods going cheaper, and consequently place their orders more freely.

HOPS.

BOROUGH MARKET, Dec. 14.

Messrs. Pattenden & Smith report that there is rather more inquiry for all descriptions of Hops, prices being very firm. The Continental markets, like our own, are almost cleared of Hops, and the tendency is upwards.

COALS.—Dec. 13.

Cowpen Hartley, 20*s*.; West Hartley, 20*s*.; Holywell Main, 21*s*. 6*d*.; Walls End Harton, 22*s*. 9*d*.; Walls End Haswell, 24*s*.; Walls End Hetton, 24*s*.; Walls End Hetton Lyons, 22*s*. 9*d*.; Walls End Tunstall, 22*s*. 9*d*.; Walls End Kelloe, 23*s*. 6*d*.; Walls End East Hartlepool, 24*s*.; Walls End South Kelloe, 23*s*. 6*d*.; Walls End Tees, 24*s*.; Brancepeth Cannel, 19*s*.—Ships at market, 22; sold, 22; at sea, 30.

Greenhouses.

H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 106, Mare Street, Hackney, E. Good substantial-made GREENHOUSES, Glazed, ready for fixing, 42 feet long by 13 wide, price £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. A handsome CONSERVATORY in stock, 36 feet long, 18 feet wide, £110.

Estimates given for any branch in the above line in Wood or Iron.

Smokeless Stoves.—No Flues.

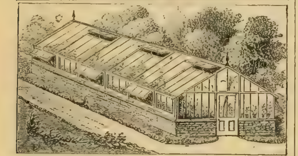
NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming require no attention; with one supply of fuel burn 12 hours.

The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12*s.* 6*d.* to Six guineas. PATENT FUEL, 18*s.* per 120 lb.; in sacks and bags of 30 lb. and 60 lb at 4*s.* 6*d.* and 9*s.*

AMERICAN CHARCOAL BOX IRONS.
Price 5*s.*, 6*s.*, and 7*s.*

PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21*s.* and 10*s.* 6*d.* Medical Testimonials and Prospectus Free on application.

SWAN NASH, Ironmonger, 253, Oxford Street; and JOYCE'S STOVE DEPOT, 119, Newgate Street.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C. W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

Estimates given for Conservatories or Greenhouses to any Design.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.

Tubular Boiler.

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HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s.* each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s.* 6*d.* each.

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Elliptic Boiler.

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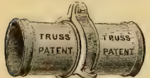

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CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

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BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to

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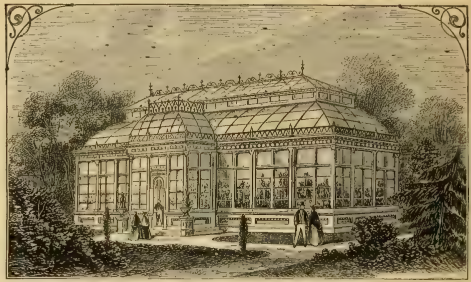

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ARCHITECTS' DESIGNS CAREFULLY CARRIED OUT.

APPLY FOR ESTIMATES TO
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GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., NO. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER.

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

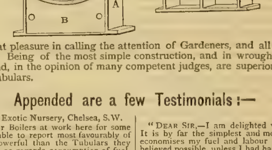
"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

STEVENS'

"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler. It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

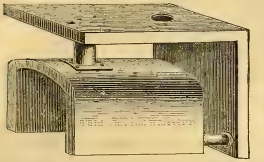
"Atherstone Grapery.

"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED,
FENTON, STOKE-ON-TRENT.
LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.
From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 "	18 "	24 "	450	6 0 0
20 "	18 "	30 "	600	7 0 0
24 "	24 "	24 "	700	8 0 0
24 "	24 "	30 "	850	10 0 0
24 "	24 "	36 "	1,000	12 0 0
24 "	24 "	48 "	1,400	15 0 0
28 "	28 "	60 "	1,800	20 0 0
30 "	30 "	72 "	2,600	30 0 0
36 "	36 "	96 "	4,500	50 0 0
48 "	48 "	108 "	7,000	75 0 0
48 "	48 "	144 "	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees, J. JONES & SONS.

Price Lists of HOT-WATER PIPES and Connections, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

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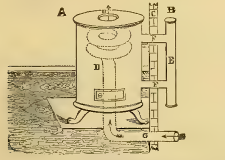
For WARMING and VENTILATING.

PRICES:—

COAL CALORIGEN, £6 6s. | GAS CALORIGEN, £3 3s.



A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

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Genuine White Lead, Oils, Colours, Brushes, &c.
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Prices upon application.

JAMES PHILLIPS AND CO.

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GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated

SQUARES 20 by 12, 20 by 13, 20 by 14, 20 by 15, 20 by 16, 20 by 18.

	16 oz. to the foot.	21 oz.
Fourth quality	15s. 0d.	20s. 0d.
Third quality	18s. 0d.	23s. 0d.
Seconds	20s. 0d.	28s. 0d.
English	22s. 0d.	30s. 0d.

The above prices include the boxes, which are not returnable.

HORTICULTURAL GLASS.

Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths.	3rds.	2nds.	Best.
				s. d.	s. d.	s. d.	s. d.
11 by 9	12 by 9	13 by 9	14 by 9	14 0	16 0	18 0	19 0
12 by 10	13 by 10	14 by 10	15 by 10				
13 by 11	14 by 11	..	..				
14 by 12	15 by 12	15 by 11	16 by 11	15 0	18 0	20 0	22 0
18 by 12	19 by 12	16 by 12	17 by 12				
16 by 13	17 by 13	20 by 12	..				
16 by 14	20 by 13	18 by 13	..				
17 by 14	18 by 14	20 by 14	..				

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	12s. 6d.
by 6	8½ by 6⅝	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	13s. 6d.

Boxes 2s. each, returnable at full price.

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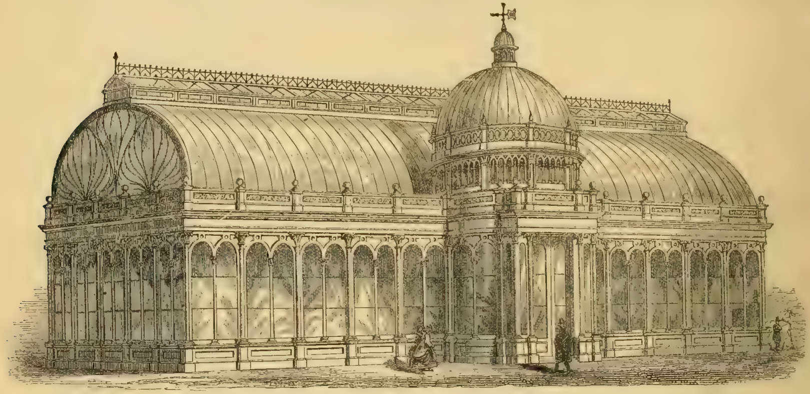

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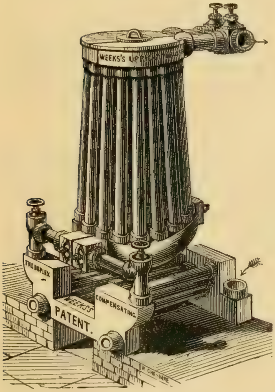

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, December 16, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 51.—1871.]
SATURDAY, DECEMBER 23.
{ Registered at the General
{ Post Office as a Newspaper. }
Price 5d.
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TWO HUNDRED THOUSAND extra fine 3-yr. transplanted QUICK, 3 to 4 feet.
100,000 2-yr transplanted QUICK, 2 to 3½ feet.
500,000 2-yr. Seedling do., 1½ to 3 feet.
50,000 2-yr. transplanted ASH, 3 to 5 feet.
1,000,000 ENFIELD MARKET CABBAGE PLANTS.
3 tons ASHTOP KIDNEY and EARLY ROSE POTATOS.
Samples and prices on application to
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ROSES and VINES at Wholesale Prices.
Fine Standard ROSES, best sorts, 10s per dozen.
Fine Dwarf ROSES, best sorts, 7s. per dozen.
Fine fruiting VINES, of sorts, 5s. each; 54s. per dozen.
Fine planting VINES, of sorts, 2s 6d each; 21s per doz.
LISTS free. Terms cash Post Office orders payable at Huntingdon.
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Gladioli Seedlings, by Name, from Paris.

LEVEQUE ET FILS, NURSERYMEN, Ivry-sur-Seine, near Paris (late Boulevard de l'Hopital), offer the following :—

	£	s.	d.
GLADIOLI SEEDLINGS, first-class, per 100, 7s.; per 1000	£3	0	0
100 GLADIOLI, by name, 10 sorts	0	8	0
100 ,, ,, 25 ,, ...	0	14	0
100 ,, ,, 50 ,, ...	£1 to 2	0	0
100 ,, ,, 100 ,, ...	£2 to 6	0	0

And upwards, according to the novelty of the sorts; all in good flowering bulbs. Cheque on Bankers accepted for payment.

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WILLIAM BARRON AND SON'S Priced Descriptive CATALOGUE of CONIFERÆ and other ORNAMENTAL PLANTS, ROSES, RHODODENDRONS, FRUIT TREES, &c., is now ready, and may be had, post free, on application.

A visit to the Nurseries from intending purchasers is respectfully solicited. Elvaston Nurseries, Borrowash, near Derby.

ROBERT NEAL, NURSERYMAN, Wandsworth Common, Surrey, S.W., begs to offer to Gentlemen who intend planting this season his large and varied stock of FRUIT, FOREST, and ORNAMENTAL TREES, Standard and Dwarf ROSES, RHODODENDRONS, CONIFERÆ, SHRUBS, &c., which are now in fine condition for removal. CATALOGUES may be had free on application

The Nurseries are within a few minutes' walk of the Clapham Junction, and Wandsworth Common Railway Stations.

FINE HEALTHY NURSERY STOCK.

	Per dozen.—s.	d.
ABIES DOUGLASII, 4 to 5 feet, clean and well grown, dark green colour .. .. per 100, 75s.	12	0
BERBERIS DARWINII, 2 to 3 feet, bushy, fine ,, 20s.	4	0
PINUS AUSTRIACA, 2 to 3 feet .. .. .. ,, 20s.	4	0
,, ,, 3 to 4 feet, well transplanted	9	0
THUJA LOBBII, 3 to 4 feet	12	0
COTONEASTER SIMMONSII, 2 to 3 feet	6	0
AMERICAN ARBOR-VITÆ, 3 to 4 feet	9	0
PORTUGAL LAURELS, 2 to 3 feet, bushy	9	0
Paul's New Double Scarlet THORN, 5 to 6 feet .. per 100, 75s.	12	0
RIBES SANGUINEA, 2 to 3 feet .. .. .. ,, 20s.	3	0
RHODODENDRONS, fine hybrids, various colours, fine bushy healthy plants, 2 feet .. per 100, 35s.	6	0
,, 3 feet .. .. ,, 60s.	9	0
10,000 fine named Hybrid Perpetual ROSES, on Manetti Stock, fine plants .. .. per 100, 50s.	9	0

HENRY MAY, The Hope Nurseries, Bedale, Yorkshire.

Forest Trees.

WOOD AND INGRAM offer as follows, very fine stuff :—

	Per 1000.—s.	d.
OAKS, 3-yr. Seedlings	7	6
,, 3 to 4 feet	30	0
,, 4 to 5 feet	35	0
ELM, English, 1-yr. Seedlings	5	0
,, ,, 2-yr. Seedlings	7	6
,, Huntingdon, 8 to 10 feet .. .. .. per 100	50	0
HORSE CHESTNUTS, 3-yr. Seedlings	8	0
,, ,, 2 to 3 feet	12	0
OAK, Evergreen, 1-yr. Seedlings	10	0
,, ,, 3-yr. Seedlings	15	0

Samples sent on application.
The Nurseries, Huntingdon.

GEORGE DAVISON, White Cross Nurseries, Hereford, offers for cash :—

	Per dozen.—s	d.
Abies Douglasii, 3 to 4 feet .	18	0
,, canadensis, 4 feet ..	12	0
Biota elegantissima, 9 inches	15	0
,, japonica, 2 feet	9	0
Cedrus atlantica, 3 feet ..	9	0
,, Deodara, 2 to 2½ feet	18	0
Cryptomeria Lobbii, 2 feet ..	9	0
Cupressus macrocarpa, 2 feet	9	0
,, sempervirens, 3 to 4 feet	9	0
Juniperus virginiana, 3 feet .	6	0
Picea balsamea, 2 feet ..	4	0
,, Nordmanniana, 1 foot .	16	0
,, Pinsapo, 1½ foot ..	16	0
Pinus austriaca, 3 feet, per 100, 30s	5	0
,, Laricio, 3 feet	6	0
Taxus baccata, 2½ feet ..	8	0
Thuja Lobbii, 1½ foot ..	8	0
,, occidentalis, 3 to 4 ft.	5	0
Berberis japonica, 1 foot ..	8	0

	Per dozen.—s.	d.
Berberis Darwinii, 2 feet ..	6	0
,, dulcis, 2 feet ..	4	0
,, Mahonia, 2 feet ..	2	0
Cotoneaster microphylla ..	2	6
Ivy, Irish, for edgings ..	1	6
Laurel, Common, 2 to 2½ ft., per 100	15	0
,, Portugal, 1 foot, bushy, per 100, 20s.	3	0
Laurustinus, sorts, 1 to 1½ foot, per 100, 25s.	3	6
Roses, Standards, best sorts.	15	0
,, Dwarfs	9	0
Selected from Catalogue.		
Hazel, Seedlings .. per 1000	8	0
Scotch Firs, 2 feet .. per 100	3	6
,, ,, ,, per 1000	30	0
Strong Cider Apples	18	0
Blenheim, Lord Suffield, &c., Apples	18	0

MILFORD NURSERIES,
near Godalming.

For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

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SELECT LIST OF KITCHEN GARDEN AND FLOWER SEEDS,

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THE LARGEST, CHEAPEST AND BEST STOCK OF ROSES

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WILLIAM PAUL'S.

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EVERY ARTICLE SUPPLIED TO THEIR CUSTOMERS. THEIR STOCK AND RESOURCES ARE ALMOST

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THEIR MOTTO IS "LIBERALITY."

Please write for their NEW CATALOGUE, and also for their SEED CATALOGUE, to be published January 1, 1872, which will contain a large fund of useful information.

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SURPLUS STOCK of the following to be SOLD, cheap:—PRINCE ALBERT, LINNÆUS, and VICTORIA RHUBARB; FASTOLF RASPBERRIES; 4-yr. old ASPARAGUS; SKIMMIA JAPONICA; CLEMATIS LANUGINOSA; CUPRESSUS LAWSONIANA; PERNETTYA SPECIOSA, the berry-bearing variety; AUCUBA LIMBATA, bicolor and viridis; SALIX BABYLONICA SALOMONII, the hardy Weeping Willow. Prices, &c., on application.

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WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
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The Cheapest and Best Insecticide.

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Of all Nurserymen and Seedsmen.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy Thrip, Red Spider, Green and Black Fly, and Mealy Bug, and burns without the assistance of blowing, and is entirely free from paper or rags. Price 3*s.* 6*d.* per lb., carriage free. A reduction in price for large quantities.

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Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

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CANDLE COMPANY
(Limited),
Battersea, London, S.W.

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The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

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Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
2 inches in diameter	0	3½	12 inches in diameter	1	9
3 ,, ,,	0	4½	13 ,, ,,	2	0
4 ,, ,,	0	5½	14 ,, ,,	2	6
5 ,, ,,	0	6½	15 ,, ,,	3	0
6 ,, ,,	0	8	16 ,, ,,	3	6
7 ,, ,,	0	10	17 ,, ,,	4	0
8 ,, ,,	1	0	18 ,, ,,	5	0
9 ,, ,,	1	2	19 ,, ,,	6	0
10 ,, ,,	1	4	20 ,, ,,	7	0
1 ,, ,,	1	6			

BEE GLASSES, with ventilating hole through knob.

4 inches in diameter	0*s.*	6*d.*	9 inches in diameter	1*s.*	8*d.*
5 ,, ,,	0	8	10 ,, ,,	2	0
6 ,, ,,	0	10	11 ,, ,,	2	6
7 ,, ,,	1	1	12 ,, ,,	3	0
8 ,, ,,	1	4			

Either flat or conical tops.

CUCUMBER GLASSES.

24 inches long	2*s.*	0*d.*	16 inches long	1*s.*	4*d.*
22 ,,	1	10	14 ,,	1	2
20 ,,	1	8	12 ,,	2	6
18 ,,	1	6			

WASP TRAPS, 3*s.* 6*d.* per dozen.

HAND GLASSES, WITH OPEN TOPS.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
12 inches	6	6	20 inches	10	6
14 ,,	7	6	22 ,,	11	6
16 ,,	8	6	24 ,,	12	6
18 ,,	9	6			

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LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS PAINTS of various colours ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices and Estimates forwarded on application to

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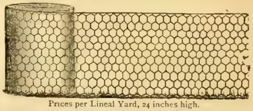
Awarded "Mention Extraordinaire" at the Amsterdam Exhibition, 1869.



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Mesh.	Mostly used for	Light.	Medium.	Strong.
in.		*s.* *d.*	*s.* *d*	*s.* *d*
2	Poultry	0 3¾	0 4½	0 5¾
1⅝	Rabbits, Hares, &c.	0 4¼	0 5¼	0 6¼
1½	Smallest Rabbits	0 5¼	0 6¼	0 8

All guaranteed, and carriage paid to any railway station.

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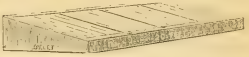

These are strong and well-made Sliding Lights, glazed, and painted three coats. Height of frame, 14 inches at front, 25 inches at back. With handles complete.

PRICES.—Carriage paid to any station within 200 miles of Norwich, when orders amount to £3 and upwards.

8 feet long by 6 feet wide	£2 15	16 feet long by 6 feet wide	£5 0
12 feet long by 6 feet wide	£3 17	24 feet long by 6 feet wide	£7 5

If prepared with wood cills, to build on brick wall, and lights to slide, prices, carriage paid as above:—

10½ feet long by 6 feet wide	£3 0	24½ feet long by 6 feet wide	£7 0
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Other sizes at prices in proportion.

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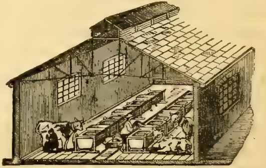

Their advantages are—Portability, not fixtures, removable at pleasure; no Woodwork or Partitions to impede Ventilation or breed Vermin; Hay Rick dispensed with as unnecessary; increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*

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WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds, Roofing Tiles in great variety, Slates, Cements, &c.

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SILVER SAND, fine or coarse grain as desired. Fine 14*s.*, Coarse 17*s.* per Ton. In Truck Loads 1*s.* per Ton less. Delivery by Cart within three miles, or to any London Railway or Wharf, 2*s.* per Ton extra. Samples of Sand free by post.

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FRUIT TREES of every description.
CREEPERS, for Trellises and Walls.
FOREST, SCREEN, and TIMBER TREES.
SHRUBS for GAME COVERTS.
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For the Orchard:—Pyramid, Dwarf Maiden, Cutback, and Trained Fruit Trees. For the Garden:—Embracing all the finest and popular varieties of Apple, Pear, Plum, Cherry, Peach, Nectarine, Apricot, &c.

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Almonds, Chestnuts, Walnuts, Figs, Cobnuts, Currants, Gooseberries, Strawberries, Medlars, &c.

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Of all the best new and old varieties of Provence, Moss, Hybrid Perpetual, Bourbon, Noisette, China, Tea, Climbing Roses, &c.

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(Including the Clematis).—Well adapted for covering Verandahs, Pillars, Festoons, Walls, Porticos, Trelliswork, &c.

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(For Lawn and Pleasure Grounds)—which embrace most of the fine hardy species and varieties in cultivation.

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(Suitable for Clumps, Belts, Screens, &c.)—containing a choice collection of all shades of foliage.

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N.B.—G. J. & SON, knowing that Nursery credited accounts are generally very long, compared with many other businesses, have, after due consideration, decided to offer advantageous cash terms (see cover of Catalogue). This old-established Firm being large Wholesale Growers, the Public (favouring them with orders) will also derive the benefit of obtaining their goods direct from the producers.

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TO THE TRADE.

HURST & SON,

HAVING PURCHASED THE HALF STOCK OF THE

UNDER-NAMED NEW PEAS

Have much pleasure in offering to the Trade, for the first time this season, TWO NEW PEAS raised by Mr. Laxton. These two varieties, DIFFERING FROM EACH OTHER, inasmuch as one is a smooth Pea and the other an indented Marrow, present a different type from any yet introduced, and may be probably the forerunners of considerable improvements in Garden Peas. From the distinct and peculiar colour of the seed, that invaluable desideratum, a dish of really Green Peas at table, may be realised, even when the outward appearance of the pods denotes maturity.

LAXTON'S EVERGREEN PEA.

A very distinct novelty. A smooth Pea, of a peculiar dark green colour when cooked. Very productive, and of excellent flavour.

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A tall, late, green wrinkled Pea, exceedingly productive, and of a fine rich flavour. This variety is most distinct, the seed being of a very bright green colour, with a white eye—the produce coming to table with a beautiful appearance.

THE WHITE GEM PEA.

This novelty is thus described by the eminent Canadian Seedsmen, Messrs. J. A. BRUCE & Co., Hamilton, Ontario :—"This is a very early variety, not more than four days later than 'First Crop' or 'Ringleader,' pods large and well filled, excellent flavour, and very prolific. We consider this a valuable acquisition to the list of extra early Peas." Height, 15 to 18 inches.

THE FIRST CROP BLUE PEA.

This is the combined result of natural and artificial cultivation selected from "Little Gem" and "Laxton's Supreme." The following description is also from the trial of Messrs. J. A. BRUCE & Co., Hamilton :—"This Pea comes into use with 'White Gem,' with very similar habit and foliage—a good bearer, pods large and of uniform size. It is a fine flavoured Pea." Height, 12 to 15 inches.

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SEED GROWERS,
GLOUCESTER and LONDON,
Offer the following interesting Novelties, &c., this season.

WHEELERS' KINGSHOLM COS LETTUCE

This magnificent Lettuce made its appearance three years since in a piece of White Cos. It withstood the summer heat for a long time after all other varieties (with the exception of Wheelers' Tom Thumb) had run to seed, headed-in without tying, and formed one of the most perfect models of a Cos Lettuce ever seen. At length it ran to seed ; owing to the late period of the season it had started, the produce was, however, small. The whole stock was carefully preserved for next season's seeding. The crop of seed was again very limited, but the Lettuces were magnificent, many of them weighing 7 lb. each. We are now enabled to offer seed at 1*s.* per packet. It was seen last summer by a gentleman connected with Covent Garden Market, who remarked it was the finest Lettuce he had ever seen, and far superior to anything brought to the London Market. We recommend those who contemplate growing Lettuces for Exhibition to give this variety a trial. Get it sown in a frame, and planted out early in the season, on deeply dug and well-manured land, and we have but little fear such specimens will be produced that will defy competition.

Packets, 1*s.* ; Small Packets, 6*d.* each, post free.

A Packet of this Lettuce will be given gratis with our celebrated Guinea Collection of Garden Seeds.

WHEELERS' TOM THUMB LETTUCE.

This is undoubtedly the best Cabbage Lettuce in cultivation, and a remarkable favourite. It is good both summer and winter. In our Little Book for 1872 are extracts from 13 letters, speaking in the very highest terms of its excellence.

Price 1*s.* per Packet, post free. Small Packets, 6*d.*

WHEELERS' COCOA-NUT CABBAGE.

Wheelers' Cocoa-nut is a new and very early variety, perfectly distinct, of most excellent flavour. It should be planted 18 inches apart : will yield an early and continuous supply. This Cabbage is a decided novelty and a great acquisition.

Owing to the small supply of seed this season, we much regret that we cannot supply the Trade until we have harvested our next crop.

Price 1*s.* per Packet, post free. Small Packet, 6*d.*

WHEELERS' LITTLE BOOK for 1872, Illustrated, will be published on January 1, price 6*d.*, post free, gratis to customers.

J. C. WHEELER AND SON,
SEED GROWERS,
GLOUCESTER ; and 59, MARK LANE, LONDON.

CARTER'S GENUINE SEEDS,

Carriage Free.

THE EARLIEST PEA KNOWN IS

CARTER'S FIRST CROP

(Or Ringleader) ;

Vide *Report of Trial made by the Royal Horticultural Society.*

PER QUART, 1s. 6d.

CARTER'S FIRST CROP BLUE PEA.

This is the combined result of natural and artificial cultivation, selected from LITTLE GEM and LAXTON'S SUPREME. The following description is also from the trial of Messrs. J. A. BRUCE & Co., Hamilton :—

"This Pea comes into use with CARTER'S WHITE GEM, with very similar habit and foliage — a good bearer, pods large, and of uniform size. It is a fine-flavoured Pea."

Height, 12 to 15 inches.

PER QUART, 2s. 6d.

CARTER'S ILLUSTRATED

VADE MECUM FOR 1872,

PRICE ONE SHILLING,

Is now ready, and will be forwarded Gratis and Post Free to Purchasers.

JAMES CARTER AND CO.,
UNDER THE IMMEDIATE PATRONAGE OF THE QUEEN, AND THE PRINCE OF WALES,
237 and 238, HIGH HOLBORN, LONDON, W. C.

To the Trade.

MIXED HYACINTHS, Named HYACINTHS, Mixed TULIPS, Named TULIPS, Mixed Crocus, YELLOW CROCUS, WHITE CROCUS, BLUE CROCUS, and Named Seedling CROCUS, POLYANTHUS NARCISSUS, GARDEN NARCISSUS, &c., at very low prices. Quotations will be given The quantity required should be named.

BARR AND SUGDEN, 12, King Street, Covent Garden, W.C

Spring Flowers.

HYACINTHS, TULIPS, CROCUS, NARCISSUS, &c., for filling flower-beds, making edgings, or planting in the flower-borders.—These may be had at very low prices, as the bulbs are now being cleared out to make room for seeds.

HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., for flowering indoors, at very low prices.

BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

Autumn Planting.

PETER LAWSON AND SON have respectfully to recommend the early planting of FOREST TREES and ORNAMENTAL TREES and SHRUBS, as producing more successful results than when deferred until late.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIRS, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application. Edinburgh and London, October, 1871.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—Notice is hereby given, that the ANNUAL GENERAL MEETING of the MEMBERS of this SOCIETY will be held at the Bedford Hotel, Covent Garden, on THURSDAY, January 11 next, when an ELECTION for THREE PENSIONERS will take place.

The Chair to be taken at 6 o'Clock precisely.

The Voting Papers have all been delivered; any Subscriber not having received one is requested to make immediate application.

EDWARD R. CUTLER, Secretary.

14, Tavistock Row, Covent Garden, W.C., December 20, 1871.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz. :—

Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Prof. REICHENBACH, Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.
JAMES BATEMAN, F.R.S.

Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, DECEMBER 23, 1871.

AS we write these lines, cartloads of Holly are passing our windows, Mistleto pours into our great metropolitan market by the ton, and Spruce Firs, in quantities sufficient to form a veritable Wood of Birnam, are carried by our doors. Away in the country shrubberies have been ruthlessly despoiled of their stores, the orchards of Somerset and Worcester, of Normandy and Brittany have yielded their stores of mystic Mistleto, and nimble fingers are gaily stitching and tacking and nailing the leafy devices which are to quicken our thankfulness, gladden our hearts, and testify that even in the gloomiest of midwinters hope and joy and good fellowship are to be found among us.

If we remember that there is nothing in the spelling of the words "holiday," and "holyday," to justify our pronouncing the former as if it were spelt holliday, and that this pronunciation is solely determined by custom, it will not be difficult to believe that what we now call the HOLLY TREE was by the earlier writers upon plants spoken of as the "Holy tree." But if we go back to the Saxon, we find "Holegn" is the Holly tree, while "halig" is holy. In Anglo-Saxon times, too, the Holly was, according to Dr. PRIOR, called "elebeam," or oil-tree, from its branches having been used for Olive branches and strewed before th Cemage of JESUS, in certain solemnities of the church that represented His entry into Jerusalem. It is evident that the fruiting branches of the tree have long been in use for religious festivals amongst many northern nations in Europe, since we find it called Christmas in England, Christdoan by the Germans, and Christoon by the Swedes and Danes. Doubtless its "thorny leaves, and berries like crimson drops," have been regarded by Christians in all times as symbolical of an event which they thankfully keep in remembrance.

We all know how extensively the branches of this tree are used for decoration at this season, both in houses and churches, both with berries and without berries, although there is no Scriptural authority or warrant for its use, since none of the kinds grow in Western Asia, and it is not one of the trees mentioned in the Bible. It is this extensive use of Holly that leads us to think that some account of its culture for decorative uses might be acceptable at this season.

In some parts of England Holly occurs in great abundance, and increases from seed; but in nurseries it is found a saving of time to strike cuttings of the ripened wood under glass in some sheltered situation, while the rarer sorts are usually grafted upon the common Holly. Seeds, that is, the berries, may be sown in October, and covered with about an inch of soil, but none of them begin to vegetate until 15 months afterwards, while some will remain dormant for more than three years.

Owing to this uncertainty about their germination, we cannot recommend raising plants from seed to those who have not a surplusage of land and labour to spare, to say nothing of the risks of loss by frost, if the seedlings should unfortunately be left unprotected. Besides, it cannot be worth while for any amateur to incur all this trouble and risk when he can buy seedlings 9 inches high for 50*s*. per 1000.

It next becomes a question, what sized plants it would be most economical in the end to buy. Our recommendation is to purchase Hollies about 3 feet high, which can be had in parcels of 50 at the rate of about 75*s*. per 100.

These should be planted 5 feet apart in rows 5 feet from each other, and the first plant of the second row should be put in 2½ feet from the end of the row, so that trees shall all have as much root room and air as possible.

The plants should be obtained from some respectable nurseryman who is a large grower, for it is important to the speedy well-doing of the young trees that they should have been transplanted several times before they find their way into the purchaser's hands. Bushy plants should be selected, since good crops of leaves and berries are the main requirements.

The soil in which Hollies grow best is a deep sandy loam. They will grow in almost any soil that is well drained; but they have a decided objection to a wet subsoil, or to any situation where their roots are constantly damp. It cannot fail to have been noticed that the Holly trees on the top of the hedge-banks by the sides of roads have usually finer crops of berries than the trees in plantations or woods; and this fact indicates that a plantation of Hollies should be made upon a raised bank or an incline, and that a deep ditch or drain should run between the rows, if the soil should be at all retentive of moisture.

The time for planting is in April, when mild, open weather should be selected; or, better still, the middle of October, as there is perhaps less to fear from November frosts than from May sunshine, though protection from either extreme of temperature, and particularly from cold, dry winds, is imperatively necessary.

Cutting the branches for decorative purposes is not a matter which it is prudent to trust to the man who chances to have the sharpest knife or the thickest-skinned fingers. Much judgment and discretion are required, for upon the ability or ignorance exhibited depend to a great extent the future "crops." No branches ought to be cut from a young tree until it has been planted a year. Supposing there are 100 young trees from which a few branches might safely be cut, it will be better in the end to cut from the 25 strongest plants, and then leave them untouched for four years. By thus cutting at only 25 in each year, although more is taken out of each tree, the trees have a longer time to recover the pruning, and ultimately keep up a succession of berries, since by more frequent pruning the trees would be less to be depended upon for a regular crop. No doubt hard pruning has a tendency to make a tree produce a heavy crop of fruit; but this is an abnormal condition of affairs, which is by no means to be recommended, for although it might give a quantity of berries one year, there would probably be none the following Christmas.

Grafting and budding must not be forgotten, as it is by these means that the variegated kinds of Hollies are cultivated, the common green kind being the stock preferred. From the middle of July to the middle of August is the best season, care being taken to choose wet or damp weather for the operation, and to shade young buds from the sun, if the weather becomes hot and fine.

As, however, this sort of work requires an amount of practice and patience which amateurs might deem expensive if purchased by experience, we should not be surprised to find that many will prefer buying the variegated sorts ready grafted, since nice young plants can be had from 15*s*. to 40*s*. per dozen of all the best varieties.

We began this article with an allusion to the suggestive or sentimental uses of Holly. We passed on to a question of philology, quickly diverged into the regions of practical gardening; suppose, by way of wishing our readers a Happy Christmas, we conclude by singing them a verse or two of an old carol—here it is :—

> Here comes Holly, that is so great,
> To please all men is his intent.
> Allelujah !
>
> Whosoever against Holly do cry,
> In a loop shall be hung full high.
> Allelujah !
>
> Whosoever against Holly do sing,
> He may weep, and his hands wring.
> Allelujah !

IT is often said of a certain personage, who shall be nameless, that he is not so black as he is painted; and, though we have had of late but too painful reminders of the wickedness and imperfection of human nature, there has been one redeeming feature amid all the horrors and miseries of which we have been the unwilling witnesses, and that feature is SYMPATHY—human sympathy. We all know the world is bad enough—most of us can at least see the faults of our neighbours—but we are tempted to ask, is human nature really so bad as it is sometimes stated to be? GOD knows there is no cause for vainglorious boasting or pharisaical self-complacency, but we may fairly, as a nation, feel that we did what we could to assuage the miseries of our neighbours across the Straits of Dover in the time of their direst need. When Chicago, all but burnt to the ground, but still undaunted, set to work to repair her losses with a degree of pluck that commanded the admiration of the British heart, our sympathy was not limited to words. Science has done for us, in fact, what ARIEL only hinted at in words empty as "airy nothings," and no more noble service has been done by the wire at the bottom of the Atlantic than that which conveyed from our shores the message of practical sympathy. Still more recently, in a case where no actual outlay has been required from us, there has been a genuine outburst of human sympathy, more valuable by far than many a costly offering, more valuable as indicative, in these oft-decried days of selfishness and hardness, of a real store of charity unsuspected by the GRADGRINDS and MAWWORMS of the world we live in. We look on these facts as valuable evidences of the intrinsic sound-heartedness of our fellow citizens. Appeal to their sympathies in a good cause, and see how ready and cheerful is the response. Cast but the shadow of a doubt as to the goodness of the cause, however, and all the commercial instinct and business prudence returns, and for the time substitutes the implacable columns of the ledger for the nobler impulses of the heart. Thus has it been to a great extent with the FRENCH HORTICULTURISTS' RELIEF FUND Started at a time when all Europe was ringing with the distress and miseries of the French in the invaded districts, the fund in question was fairly set going by and amongst our own horticulturists. Some five hundred pounds were subscribed, and then came the Commune. It is needless to dwell on its horrors: suffice it to say that the effect was to put an instant stop to the flow of charity. It was not quite logical to make the unoffending gardeners of Paris responsible for the frightful catastrophe that ensued; but now that that has passed, it may not be amiss to call attention to the subject once more, and to make public certain facts which have just come to our knowledge. The French Relief Commission, with which our own Committee has been in communication, have drawn up a list of the estimated losses sustained by the gardeners around Paris, detailing only those on whom the loss has fallen heaviest, and omitting altogether those who, from the possession of larger capital or other circumstances, were considered only less fitted to be recorded in such a list. The case stands thus:—In 20 districts or communes in the department of the Seine, *i.e.*, in the neighbourhood of Paris, 555 nurserymen are enumerated as worthy to be helped, from the extent of their losses or the poverty of their resources. In the commune of Montreuil 354 nurserymen are estimated to have lost by the destruction of their premises an amount equal to 238,338 f., and by the loss of their plants 151,667 f. In the district of Vitry the losses incurred by 123 gardeners and small nurserymen are estimated at 1,444,714 f. 30 c.

The sum total of this loss is estimated at 2,626,330 f., and (let us be precise) 52 centimes—equal in round numbers to upwards of £100,000.

Now, the sum to be set against this as our contribution towards our fellow horticulturists is

13,500 f. (£540), there or thereabouts. Surely it is sufficient to put the two sums in juxtaposition to awaken once more the slumbering sympathy of British horticulturists, and induce them, ere the subscription list is finally closed, to render the disparity a little less striking. We may also here state that we have been requested to ask that all subscriptions not yet paid, and all monies received by nurserymen or others for the fund, be paid in at once to the Treasurer, G. F. Wilson, Esq., Weybridge Heath; or to the Secretary, Rev. H. H. Dombrain, Westwell, Ashford, Kent.

At home, fortunately, we have no tale of distress of such magnitude, but the list of candidates for the Gardeners' Royal Benevolent Institution, as well as other cases—one of which is mentioned in a communication in another column—are sufficient to show that there is enough for each and all of us to do in the matter of human sympathy and help for our fellows. We may surely ask those who have the social welfare of their *employés* at heart, to bestow some consideration on the social evils of which the best and most honourable among our gardeners complain, in the matter of scanty wages, long hours, inadequate house accommodation, and that horrible announcement in our advertisement columns, summed up in the two words, "no encumbrance." Our Christmas will be none the less merry, and our New Year none the less happy, if we each and all in our several degrees, and according to our several means, endeavour, in a practical, demonstrable, but not self-laudatory manner, to love our neighbours as ourselves.

—— On Saturday last an adjourned Public Meeting of the Market Gardeners, Nurserymen, and Farmers' Association, to which were invited the shop-keepers, salesmen, and other persons renting stands or premises in Covent Garden, was held at the Bedford Head Hotel, Covent Garden, for the purpose of further discussing the great necessity of a roof being constructed over the uncovered area of the market. Mr. H. Meyers, who occupied the chair, stated the object of the meeting, and said they would be very pleased to hear any remarks or suggestions upon the subject. He had every reason to hope that the question would meet with a favourable reception at the Bedford Office, and although he had now been 40 years endeavouring to obtain this much-wanted protection, he did not despair. The principal objection raised by the shop-keepers was that the market gardeners would turn higglers, and stay late in the day to retail their goods to the public; but he believed if they would consent to an extra toll if they sold after a certain hour, that objection would be overcome. Mr. Pocock called attention to the statement that the place would be unbearable for habitation if wholly covered in, and that currents of air were absolutely necessary for their health. One of the shop-keepers complained that they would have to inhale the noxious breath of the costermongers if the present open parts were covered in. The Chairman said he believed another obstacle was, that the amount provided by the Act of 1828 for the covering was not considered sufficient to make a reasonable return. Several of the growers present objected to the proposal of an extra toll, as very often the morning-gathered Strawberries did not arrive until late, and others objected to it upon principle; but it was generally acknowledged that the present over-crowded state of the market could not long continue, as on a full market the growers' carts and waggons filled all the surrounding streets, toll being taken from them as if they were in the market; while a great portion of the available space was appropriated to the retailing of foreign produce. Mr. Clarke said the market gardeners should follow the example of the flower growers, and purchase a market for themselves, and drew the attention of the meeting to the proposed new market in Leicester Square, and Newport Market, which offered a fine site, as shown on the plans. Mr. Lobjoit moved that the memorial for the covering of the open parts of Covent Garden be presented to His Grace the Duke of Bedford, and said that although he was willing to make any reasonable concession, he could not agree to the proposed extra toll, as he could not see how it could be collected; if all present were to agree to it, others not present might disagree to it, and an Act of Parliament would have to be obtained. As to the statement which Mr. Pocock had called their attention to, he believed the Act never intended that Covent Garden should be occupied by dwelling-houses, at least, not to the prejudice of those for whom it was originally granted, viz., the growers. In reference to the price fixed by the Act, he thought if 3*d*. per foot was considered sufficient 43 years ago, surely it was enough now, with our economical roofs of iron and glass. He was sorry the shopkeepers had not accepted their repeated invitations to the public meetings, as he felt sure a little friendly discussion would soon dispel all their fears as to the injurious effect of the covering, and he hoped all present would, like their worthy Chairman, persevere in their efforts to obtain the long-sought protection. The resolution having been carried, a vote of thanks to the Chairman closed the proceedings.

—— The Council of the Royal Agricultural and Botanical Society of Ghent has issued a notice that it intends to hold, in the end of March, 1873, its usual quinquennial International Horticultural Exhibition. The programme of this exhibition will appear early in 1872, and it is presumed that the display will exceed in magnitude and importance that of 1868. M. de Ghellinck de Walle is President, and C. Charles Leirens, Secretary.

—— We learn that the opening of the Provincial Show of the Royal Horticultural Society, at Birmingham, has been fixed to take place on Tuesday, June 25. The show will close on Saturday, June 29.

—— We hear officially from Manchester that the Botanical and Horticultural Society of that city, which has been for some time past in correspondence with some of the leading exhibitors, with the view of establishing there Monthly Floral and Horticultural Meetings similar to those held fortnightly at South Kensington, has determined upon holding six such meetings in the ensuing year, on the following Tuesdays, namely, February 20, March 19, April 9, September 10, October 8, and November 19. The Annual National Horticultural Show, under the auspices of this Society, will be held in May, from the 18th to the 23d; the Rose and Fruit Show on July 5 and 6. The monthly meetings are to be held in a suitable room in the city, and it is intended that First-class and Second-class Certificates and Commendations shall be awarded according to merit, by a competent committee, to the novelties which may be exhibited on these occasions.

—— We are requested to state that the Journal of Botany, lately under the Editorship of Dr. Seemann with the assistance of Mr. Baker and Dr. Trimen, will in future be published under the direction of the latter gentleman.

—— In an early number we propose to give a Table of the Dates Fixed for Exhibitions throughout the country, when these are sent to us officially, or are announced in our advertising columns. The secretaries of the various Societies and others concerned in the management of flower shows, are requested to afford us early information on this point. The Table will be repeated monthly for the convenience of persons requiring to consult it.

—— Last year the French journals called public attention to a Disease in Aucubas, which attacked the leaves, and destroyed them wholly or partially. The removal of the affected parts appeared to be an efficient remedy, as the plants pushed forth new leaves, but, unfortunately, such has not proved to be the case, since the disease has again appeared this year in a form which has proved fatal to the plants. When attacked, the leaves show black spots and droop, the roots become rotten or ulcerated, and the pith blackened. Neither a cause nor remedy for this disease has been suggested.

—— The Maximum Temperatures of the Air during the week ending December 16 ranged from 50°.9 at Birmingham to 40.°5 at Paisley, with a mean for the several English stations of 48°.4, and for the Scottish of 47°.5. The Minimum Temperatures of the Air ranged from 35°.5 at Sheffield to 23° at Norwich, the mean for the places in England being 29°.4, and for those in Scotland 29°.7. Thus it will be seen that the days have been warmer and the nights colder in the southern country than in the northern during the past week. The highest Mean Temperature, 44°, occurred at Bradford, and the lowest, 33°.1, at Paisley. The mean for the English stations was 40°.3, and for the Scottish 39°.5. The wave of rising temperature that set in on the 9th continued steadily till the end of the week. The mean daily temperatures passed above the average on the 13th, and have continued in excess since that day. The remarkable cold wave that preceded this rise had lasted from November 2, and reached its minimum on December 8, with a mean daily value of 22°.4. Rain fell at all stations on one or more days during the past week, the fall being much greater at the Scottish stations than at the English. The maximum fall, 2.05 inches, occurred at Greenock. The mean for the English stations was 0.24 inch, and for the Scottish 0.81 inch. (See Mr. Glaisher's Tables, p. 1655.)

—— The colonists of New South Wales find a substitute for our Christmas Holly in the Ceratopetalum gummiferum, which is named by them Christmas Tree. It is a very elegant tree, with a profusion of delicate branches, and attains a height of from 15 to 30 feet. Dr. Bennett says, that in November it is covered with minute white blossoms, which, in the following month (about Christmas Day), assume a red colour, as if the flower had changed suddenly from white to red: most persons consider this appropriate to the time of year, and as ushering in the festive season. The change of colour is caused by the disappearance of the white corollas, while the persistent calyces remain, thus imparting to the tree a beautiful red colour, which lasts until the end of February. It formerly grew in the vicinity of Sydney in abundance; but, owing to persons at Christmas cutting down entire trees, the owners of the land stopped the destruction. By enclosing and carefully tending those remaining, they have succeeded in preserving it. It is a common greenhouse plant here.

—— In Mr. Baker's paper, at p. 1516, on the Fruit of Yuccas, it is inferred that Hesperaloe yuccæfolia had not been introduced into this country. This we now learn is an error, a young plant having been sent to Kew by Professor Asa Gray.

—— The volume of the *Botanical Magazine* for the current year is dedicated by its Editor, Dr. Hooker, to Mr. I. Anderson-Henry. A gentleman more deserving such a recognition it would be hard to find, as there are very few who have been the means of introducing more valuable plants, and still fewer who take up horticulture in a scientific spirit, increasing its bounds and its resources by carefully devised and well conducted experiments.

—— Professor Balfour has recently published, in the *Transactions of the Botanical Society of Edinburgh*, an account of a species of Hieracium, which alters its character materially at different seasons of the year. In June the plant presents itself in two small-flowered forms, one with, the other without offshoots or stolons. Many of these stolons produce flower-heads in August, such flowers being considerably larger than those produced on the primary stem in June. Others of the stolons root near their extremities, and become independent plants. Some of these latter produce one or two large flower-heads in October and November; others do not produce flowers till the succeeding year, when they flower like the June form. The species referred to is considered to be H. stoloniflorum, but whatever it may be it affords an excellent example of variation in habit of the same individual species, apparently not dependent on the action of external conditions, and so far confirms what was stated at p. 1481.

—— A good instance of an Armorial Bearing originating in a play upon the name of the family who bore it, may be found in the case of the family Malherbe, of Devonshire, who bore three nettle-leaves proper. Gwillim, in his *Display of Heraldrie*, figures this coat of arms, and says, "The Nettle is of so touchie and froward a nature that no man may meddle with it, as many testy-natured people are. One writes that a little girle being stung by a Nettle, in her father's garden, complained to him that there was such a curst herbe in his garden, as that it was worse than a dogge, for it would bite them of their owne house. Her father answered her, that it was the nature of it to be impartiall, and friend or foe were all alike to it. Yet this propertie it hath, that the harder you presse it, the lesse it will sting."

—— We extract the following passage relating to Dr. Mayer's researches on the Effects of Heat on Plants, from an article of Prof. Tyndall's in a recent number of *Nature*. Dr. Mayer, it may be remarked, recently received the Copley Medal from the Royal Society for his researches:—

> "Having thus with a firm step passed through the powers of inorganic nature, his (Dr. Mayer's) next object is to bring his principles to bear upon the phenomena of vegetable and animal life. Wood and coal can burn; whence come their heat, and the work producible by that heat? From the immeasurable reservoir of the sun. Nature has proposed to herself the task of storing up the light which streams earthward from the sun, and of casting into a permanent form the most fugitive of all powers. To this end she has overspread the earth with organisms which, while living, take in the solar light, and by its consumption generate forces of another kind. These organisms are plants. The vegetable world, indeed, constitutes the instrument whereby the wave-motion of the sun is changed into the rigid form of chemical tension, and thus prepared for future use. With this provision, as shall subsequently be shown, the existence of the human race itself is inseparably connected. It is to be observed that Mayer's utterances are far from being anticipated by vague statements regarding the 'stimulus' of light, or regarding coal as 'bottled sunlight.' He first saw the full meaning of De Saussure's observation of the reducing power of the solar rays, and gave that observation its proper place in the doctrine of conservation. In the leaves of a tree, the carbon and oxygen of carbonic acid, and the hydrogen and oxygen of water, are forced asunder at the expense of the sun, and the amount of power thus sacrificed is accurately restored by the combustion of the tree. The heat and work potential in our coal strata are so much strength withdrawn from the sun of former ages. Mayer lays the axe to the root of many notions regarding the vital force which were prevalent when he wrote. With the plain fact before us that plants cannot perform the work of reduction, or generate chemical tensions, in the absence of the solar rays, it is, he contends, incredible that these tensions should be caused by the mystic play of the vital force. Such an hypothesis would cut off all investigation, it would land us in a chaos of unbridled phantasy. 'I count,' he says, 'therefore, upon assent when I state as an axiomatic truth, that during vital processes the conversion only and never the creation of matter or force occurs.'
>
> "Having cleared his way through the vegetable world, as he had previously done through inorganic nature, Mayer passes on to the other organic kingdom. The physical forces collected by plants become the property of animals. Animals consume vegetables, and cause them

to reunite with the atmospheric oxygen. Animal heat is thus produced, and not only animal heat but animal motion."

New Garden Plants.

Cypripedium Ashburtoniæ, *hybr. nov.* (*Cypripedium barbatum × insigne.*)

Foliis ligulatis apice bidentatis haud ita conspicue obscure reticulatis; pedunculo pilosulo, bractea carinata acuta ovario pilosulo duplo breviori; sepalo dorsali magno cuneato ovato acuto, crassinervi retinervi; sepalo inferiori oblongo acuto ovarium non æquante; tepalis ligulatis obtuse acutis margine hinc undulatis, pilis brevibus et raris pilis elongatis ciliatis, basi pilosulis, calcei ungue bene implicito in processum triangulum obtusum utrinque exeunte; canali aperto, sacco pandurato conico, limbo medio antice paulo emarginato, utrinque extus acutangulo, staminodio semirotundo, basi bifido emarginato, antice forcipato, dente in medio abbreviato, superficie pilosulo.

The leaves are ligulate, with two teeth at the apex, of a very dark green, with some indications of dark netting (not represented in the engraving), a span long, between 1 and 2 inches broad. The peduncle is hairy, deeply violaceous or purplish (like the juice of the fruits of Sambucus nigra, the common Elder). The bract is greenish, with a violaceous base, and with five similar nerves, oblong, subacute, carinate on the back, half as long as the atroviolaceous hairy ovary. The dorsal sepal is cuneate-oblong, acute, ciliate at the borders, puberulous outside, with numerous dark purplish nerves, becoming white and one-coloured over the whole upper part, with many purplish blotches on the nerves toward the inferior part; the numerous ascending transverse reticulations of the nerves are greenish; and there is a narrow purplish tint next to the nerves. The inferior sepal is triangular, acute, whitish, with greenish nerves, dotted with purple internally near the base over the nerves. The tepals are ligulate, transverse descending, with a few undulations, ciliate, greenish-white with purplish veins, the borders coloured totally with purple, and some purplish reticulations of transverse nerves. The claw of the lip is turned in, and bears an open channel; the sac is pandurate saccate, bearing an acute edge on each side; its colour is pale purplish, with yellow tints and numerous purplish blotches on the pallid nail. The column is wholly yellow. The staminode half circular, split on its base in two acute teeth, forcipate in front, with a shorter tooth in the centre of the sinus. There are numerous short purplish hairs on the surface.

The plant is a hybrid between the two species above-named, raised by Mr. Cross, at one time gardener to Lady Ashburton, at Melchet Park, in Hampshire. It is just intermediate between the two, though at first sight it looks much nearer C. insigne, notwithstanding the purplish tints of the flower. It has the circumscription of the leaves of Cypripedium insigne, but they are much shorter, darker, with some indications of reticulation. The peduncle and bract are more like those of Cypripedium barbatum. The superior sepal is nearly as in C. barbatum, but there are the reticulations and some blotches of C. insigne. The inferior sepal is nearly as short as in Cypripedium barbatum. The petals have much more resemblance to those of Cypripedium barbatum, being not dilated at the apex, and narrow. There are some very peculiar reticulations, which I can only find in a very few of the number of flowers of Cypripedium barbatum at hand. The lip, too, is just intermediate, and in its emulation of an elegant lady's shoe reminds one a little of that organ in Cypripedium Stonei. It is much nearer in size to Cypripedium insigne. The staminode approaches that of the Cypripedium barbatum, but it is narrower, and longer, and hairy, thus approaching that of Cypripedium insigne.

It is quite a pleasure thus to observe how the parents contributed their gifts to their child, and it is satisfactory that our views on species and their limits get by-and-by enlightened by such experiments. This gay novelty is dedicated most respectfully to a zealous promoter of gardening, the Right Hon. the Lady Ashburton. I am indebted for a flower and two leaves, also for the history of the plant, to Messrs. Veitch & Sons, the happy possessors of the whole stock of the plant.

The accompanying woodcut (fig. 348) represents, at 1, the staminode of our plant; at 2, that of Cypripedium barbatum; at 3, that of Cypripedium insigne; and at 4, a side view of the lip. *H. G. Rchb. fil.*

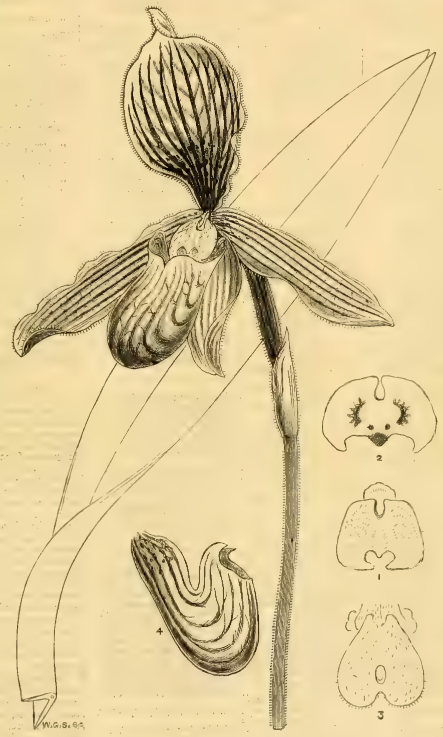

Fig. 348.—Cypripedium Ashburtoniæ.

ARAUCARIA IMBRICATA.—No. III.

(*Continued from p.* 1580.)

At the time referred to in my last letter, the main road was about to be diverted, so as to remove it further from the church, American garden, &c., and a common foot-path was also about to be diverted, and taken across an old grass field, a rich meadow, and the lower end of the park. In carrying out these improvements, I proposed to take as much of the surface soil—any amount might have been had—as would enable me to carry out my proposition, and thus to make a lasting and ornamental avenue. This abundant supply of fine soil was, moreover, close to the spot, only a few hundred yards distant. We paid but 4*s*. per day for the labour of one horse and cart and man, wear and tear included, and each cart would take from 20 to 25 loads a day, averaging one day with the other, so that the cost was but trifling. There was besides a large extent of old high and wide Devonshire banks to be thrown down, and the soil, which was turfy loam, taken out, to effect this extensive deviation of the road and footpath, so that any quantity of the most suitable soil was at command. Both my employer and Mr. Veitch assented to my proposal, but a few days after our conversation I was informed that, in consequence of my having at the time a multiplicity of alterations in hand and much extra work going on, and Mr. Veitch having men already at work on the place, an arrangement would be made with him to prepare and plant the Araucaria avenue. The work was set about a short time afterwards, two one-horse loads of the soil I have referred to being placed in a steep hillock on the spot marked for each tree; but this not being approved, it was levelled down, and the avenue of Araucarias was then planted—that is, the little shrubby, healthy plants were simply turned out of 32-sized pots, and a little wire cage for protection was placed around each.

The large Araucaria standing in the flower garden, on a little circle of grass surrounded by a gravel walk, being in a stunted condition, getting brown, and having resinous matter oozing at the base of the stem, I set about renovating the soil, with the view to induce healthy growth. First, I had a trench taken out all round it 2 feet wide, and 4 feet deep, and the soil being a solid, natural sand, I had a foot of stones and rubble placed all round the bottom, and on this turf to drain away the superfluous water from its roots. I then filled up the trench with turfy loam. It was astonishing what a splendid, vigorous growth the tree made after this, and continued to do so, regaining its beautiful dark green colour, and being no longer affected by the oozing of resin from the stem. The second year afterwards it showed some splendid cones.

There were two other smaller plants in the flower garden, near the Temple, which had got into the same stagnated condition. These I treated in the same manner. A specimen in the Arboretum, planted at the base of a slope, had quite given up growing, and was terribly browned, giving out from its bulged, carbuncled stem quantities of resin, which hung like bunches of snake's eggs, and as large. This tree was thought to be dying and incurable. The large female tree I proposed to remove to the Arboretum, the second year after making the preparation, which was assented to. I made a rare provision for it, as we were throwing down some old banks close by. I had the turf laid back to a diameter of 50 feet, trenched the space from 2 or 3 feet deep, and carted on as many loads of new soil; we then successfully removed this noble tree, with a ball of earth 8 feet across by 4 feet deep, wonderfully matted together by the mass of new roots made in the soil which had been placed around it. It was removed to its new position most successfully, although, with its many tons of earth, it had to travel a very awkward road up hill and down, and over a wall. It was placed with its huge ball on the trenched raised surface just referred to, and probably nearly 200 loads of old bank soil, turfy loam, &c., which we had close at hand, were placed round about it, to form an easy mound gently sloping away in the distance. Here it continued to bear annually heavy crops of cones, so that we were obliged to take off quantities in their young state. This tree did not seem to receive the least check in its removal; it grew but slowly in height, its head being immensely thick and healthy, and its branches sweeping down a good deal, which I think was caused at first by the weight of the cones. However, the stem increased very much in size and the head in diameter, and it is altogether a very fine tree, and likely to continue so for many years to come, since the preparation made for it was of a durable character. It certainly is a memorial tree, as being the first in Europe to produce perfect seeds from which plants (now several feet high) were raised. The poor unhealthy resin-oozing plant in the Arboretum, I removed to the new part of the American garden, making similar preparations for it, and to my own surprise, and that of many others, it soon began to recover. We scraped off the resinous matter, and painted over its stem with a paint made with chimney soot, clay, and cow-dung, and it is really wonderful how robust and healthy it became, and what a splendid symmetrical head it made. What is still more remarkable is, that in three years it proved itself a male plant, and was thus the first plant in Europe that produced catkins, a fact recorded at the time in this Journal and elsewhere. Some of the catkins were taken, when the pollen was ripe, to the old female coning plant. Had it been known previously that it was a male plant, it would no doubt have been replanted in the Arboretum, with a good preparation for its roots, and not have been removed to a distance. One of the other Araucarias, then in the flower garden, was, after due preparation, both of the tree and of the site, removed to a corner in the deer park, near the lake, where, like the rest, it grew vigorously, proving itself to be a female, and soon producing immense cones. In a few years this became the most vigorous free-growing and handsome plant on the estate. It is somewhat curious, but true, that the remaining Araucaria left in the flower garden, after having been removed to fill up a vacancy in the eastern park, proved also to be a male. Had this been previously known, it would probably have been placed in the Arboretum. *James Barnes, Exmouth.*

(To be Continued.)

NEW PLANTS, &c., CERTIFICATED

AT THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS, 1870—71.

*** *The awards marked * were made by the International Jury, the remainder by the Floral Committee.* F.C. *indicates First-class Certificate,* S.C. *Second-class Certificate.*

Concluded from p. 1616.)

Iberis gibraltarica	Downie & Co., May 3, 1871—F.C.
Iris iberica	Ware, May 4, 1870—F.C.
Juniperus chinensis aurea	Young, Aug. 2, 1871—F.C.
Korthalsia robusta	Rollisson, June 8, 1870—F.C.
Lælia elegans gigantea	Williams, Aug. 17, 1870—F.C.
,, Pilcheri alba	Veitch, March 2, 1870—F.C.
Lastrea dilatata spectabilis	Lowe, June 29, 1870—F.C.
,, ,, spectabilis ramosa	Lowe, June 27, 1871—F.C.
,, ,, Calomelanos	Lowe, June 27, 1871—F.C.
,, Filix-mas accepta	Lowe, July 19, 1870—F.C.
,, ,, Belperi	Lowe, June 27, 1871—F.C.
,, ,, depauperata Padleyi	Lowe, June 27, 1871—F.C.
,, ,, revolvens	Mapplebeck, June 27, 1871—F.C.
,, ,, variegata	Lowe, June 27, 1871—F.C.
Lathyrus Sibthorpii	Thompson, June 7, 1871—S.C.
Leptosiphon roseus	Thompson, June 8, 1870—F.C.
Libonia penrhosiana	Ismay, Feb. 16, 1870—S.C.
Licuala horrida	Bull, Nov. 2, 1870—F.C.
Lilium auratum Charles Turner	Turner, Aug. 3, 1870—F.C.
,, ,, Purity	Thomson, Aug. 3, 1870—F.C.
,, californicum	Wilson, June 27, 1871—F.C.
,, canadense flavum	Wilson, June 27, 1871—F.C.
,, Leichtlinii	Wilson, Sept. 7, 1870—F.C.
,, longiflorum albo-marginatum	Wilson, Aug. 17, 1870—F.C.
,, penduliflorum	Wilson, June 27, 1871—F.C.
,, puberulum	Wilson, June 27, 1871—F.C.
,, tigrinum flore-pleno	Wilson, Aug. 3, 1870—F.C.
,, tigrinum splendens[?]	Bull, Aug. 17, 1870—F.C.
Linum campanulatum	Atkins, June 7, 1871—F.C.
,, salsoloides	Backhouse, July 5, 1871—F.C.
Lithospermum petræum	Backhouse, July 5, 1871—F.C.
Livistona altissima	J. & C. Lee, Sept. 21, 1870—F.C.
,, rotundifolia	Veitch, Sept. 7, 1870—F.C.
Lobelia (Erinus) Brilliant	E. G. Henderson & Son, July 19, 1871—F.C.
,, ,, Omen	Bull, July 5, 1871—S.C.
,, (pumila) Celestial Blue	E. G. Henderson & Son, July 19, 1871—F.C.
,, (speciosa) White Perfection	J. & C. Lee, July 19, 1871—F.C.
Lomaria nuda bipinnatifida	Wood & Ingram, July 19, 1870—F.C.
Lomatophyllum Saundersii	Green, Nov. 1, 1871—F.C.
Lycopodium dichotomum	Jacob-Makoy & Co., June 7, 1871—F.C.*
,, mandioccanum	Jacob-Makoy & Co., June 7, 1871—F.C.*
,, taxifolium	Jacob-Makoy & Co., June 7, 1871—F.C.*
Macrozamia magnifica	Bull, Aug. 3, 1870—F.C.
,, spiralis	Williams, Oct. 4, 1871—F.C.
Maranta Mazellii	Linden, July 5, 1871—F.C.*
,, Wallisii discolor	Linden, July 5, 1871—F.C.*
Masdevallia Harryana (amabilis)	Veitch, Sept. 6, 1871—F.C.
,, ignea (shown as elephanticeps)	Pilcher, March 1, 1871—F.C.
,, infracta	Williams, June 8, 1870—F.C.
,, Lindeni	Linden, May 17, 1871—F.C.
Maxillaria luteo-grandiflora	Williams, April 19, 1871—F.C.
Molinia thurifraga achilleæfolia	E. G. Henderson & Son, Nov. 2, 1870—F.C.
Mormodes Cartoni	Green, Dec. 7, 1870—F.C.
,, Colossus	Veitch, Jan. 18, 1871—S.C.
Nepenthes Sedeni	Veitch, June 8, 1870—F.C.
Odontoglossum Alexandræ pendulum	Wilson, March 16, 1871—F.C.
,, odoratum	Denning, April 19, 1871—F.C.
,, retusum latro	Backhouse, March 1, 1871—F.C.
,, triumphans nigrescens	Wilson, April 6, 1870—F.C.
Œnothera (Godetia) Whitneyi	Thompson, August 3, 1870—F.C.
Oncosperma Van Houtteanum = Deckenia nobilis	Veitch, May 18, 1870—F.C.
Oncidium cryptocopis	Bull, June 7, 1871—F.C.
,, leopardinum	Denning, Jan. 19, 1870—F.C.
,, Phalænopsis	Wilson, March 16, 1870—F.C.
,, splendidum	Denning, Feb. 16, 1870—F.C.
Ophrys insectifera	Needle, March 16, 1870—F.C.
Pandanus decorus	Bull, June 8, 1870—F.C.
,, Veitchii	Veitch, June 8, 1870—F.C.
Pansy (bedding) Golden Bedder	E. G. Henderson & Son, April 20, 1870—F.C.
,, ,, Sunshine	Hooper, April 20, 1870—F.C.
,, (fancy) Mrs. Shirley Hibberd	Hooper, April 20, 1870—F.C.
Pelargonium (show) Ada	Wiggins, July 5, 1871—F.C.
,, ,, Achievement	Turner, June 27, 1871—F.C.
,, ,, Admiration	Turner, June 8, 1870—F.C.
,, ,, Blue Bell	Foster, June 7, 1871—F.C.
,, ,, Cæsar	Turner, June 27, 1871—F.C.
,, ,, Charlemagne	Turner, June 8, 1870—F.C.
,, ,, Conquest	Foster, June 7, 1871—F.C.
,, ,, Duke of Edinburgh	Turner, June 8, 1870—F.C.
,, ,, Enterprise	E. G. Henderson & Son, July 5, 1871—S.C.
,, ,, Iron Duke	Turner, June 8, 1870—F.C.
,, ,, Lord Byron	Foster, June 7, 1871—F.C.
,, ,, May-day	Turner, June 8, 1870—F.C.
,, ,, Pollie	Turner, June 29, 1870—S.C.
,, ,, Pompey	Turner, June 27, 1871—F.C.
,, ,, Prelate	Nye, June 21, 1871—F.C.
,, ,, Syren	Turner, June 8, 1870—F.C.
,, ,, Zephyr	Turner, June 27, 1871—F.C.
,, (bronze zonal) Mrs. John Lee	J. & C. Lee, Sept. 21, 1870—F.C.
Pelargonium (double-flowered, Crown Prince	Cannell, Aug. 17, 1870—F.C.
,, ,, Jewel	Laxton, Aug. 2, 1871—F.C.
,, (Ivy-leaved) Golden Queen	J. Parker, Oct. 5, 1870—S.C.
,, (nosegay) David Garrick	Bell & Thorpe, Sept. 7, 1870—F.C.
,, ,, Flame	George, June 7, 1871—F.C.
,, ,, Polly King	George, June 7, 1871—S.C.
,, (variegated) Avalanche	W. Paul, May 4, 1870—F.C.
,, ,, Baroness Burdett Coutts	Turner, May 17, 1871—F.C.
,, ,, Lady Dorothy Nevill	W. Paul, June 7, 1871—S.C.
,, ,, Miss Goring	E. G. Henderson & Son, Oct. 5, 1870—F.C.
,, ,, Mont Blanc	W. Paul, June 7, 1871—S.C.
,, ,, Mr. Rutter	Turner, March 1, 1871—F.C.
,, ,, Mrs. Rousby	Turner, May 17, 1871—F.C.
,, ,, Prospero	Carter & Co., Aug. 2, 1871—S.C.
,, ,, The Bride	Pestridge, June 21, 1871—S.C.
,, (zonal) Ianthe	W. Paul, June 7, 1871—S.C.
,, ,, King of Trumps	Eckford, Nov. 2, 1870—S.C.
,, ,, Magnificum	Barron, Aug. 3, 1870—S.C.
,, ,, Master Christine	Cannell, June 8, 1870—F.C.
,, ,, Sir C. Napier	W. Paul, June 7, 1871—F.C.
,, ,, Wellington	W. Paul, June 7, 1871—F.C.
Peristrophe angustifolia aurea	Williams, March 16, 1870—F.C.
Pescatorea Wallisii	Denning, Sept. 20, 1871—F.C.
Petunia Coquette	E. G. Henderson & Son, July 5, 1871—F.C.
,, Pantaloon	Royal Horticultural Society, June 7, 1871—F.C.
Phaius Marshalliæ	Wilson, June 21, 1871—S.C.
Picotee Ada Ingleton	Norman, Aug. 2, 1871—F.C.
,, Beauty of Plumstead	Norman, Aug. 2, 1871—F.C.
,, Charles Williams	Norman, Aug. 2, 1871—S.C.
,, Delicata	Wood & Ingram, Aug. 2, 1871—F.C.
,, Lady Holmesdale	Norman, July 19, 1871—S.C.
,, Miss Fanny Ingram	Wood & Ingram, Aug. 2, 1871—S.C.
,, Miss Ingleton	Norman, August 2, 1871—F.C.
,, Morning Star	Norman, July 19, 1871—F.C.
,, Mrs Brown	Norman, July 19, 1871—F.C.
,, Ne Plus Ultra	Payne, July 19, 1871—F.C.
Pilumna fragrans	Denning, Feb. 15, 1871—F.C.
Pink, Dr. Masters	Turner, July 5, 1871—F.C.
,, Shirley Hibberd	Turner, July 5, 1871—F.C.
,, Godfrey	Turner, June 21, 1871—F.C.
,, Lady Blanche	Turner, June 7, 1871—S.C.
,, (forcing) Flower of Eden	Shenton, June 8, 1870—F.C.
,, (scarlet) Princess Louise	W. Lee, April 19, 1871—F.C.
Platycerium alcicorne majus	Veitch, Oct. 5, 1870—F.C.
Pleopeltis irioides cristata	Lowe, June 27, 1871—F.C.
Polypodium vulgare cornubiense (Whytei)	Ivery, June 7, 1871—F.C.
Polystichum angulare acrocladon majus	Lowe, June 27, 1871—F.C.
,, ,, ariprepes	Lowe, June 27, 1871—F.C.
,, ,, brachiato-cristatum Smithii	Mapplebeck, July 19, 1870—F.C.
,, ,, congestum	Ivery, September 21, 1870—F.C.
,, ,, monsogenes	Lowe, July 19, 1870—F.C.
,, ,, pictorum	Lowe, June 27, 1871—F.C.
,, ,, proliferum conspicuum	Lowe, June 27, 1871—F.C.
,, ,, pulchrum Bellairsiæ	Ivery, June 7, 1871—F.C.
,, ,, rotundatum erectum	Lowe, June 27, 1871—F.C.
,, ,, transforme	Lowe, June 27, 1871—F.C.
Primula Boveana	Veitch, March 15, 1871—S.C.
,, ,, Couttii	Veitch, April 6, 1870—F.C.
,, japonica	Bull, May 3, 1871—F.C.
,, ,, lilacina	Bull, May 3, 1871—F.C.
,, sinensis semi duplex striata	Turner, March 16, 1870—F.C.
,, ,, Princess Louise	Tomkins, Feb. 15, 1871—F.C.
Pritchardia pacifica	Veitch, May 18, 1870—F.C.
Pteris aquilina cristata Gloveri	Mapplebeck, June 27, 1871—F.C.
,, ,, grandiceps	Mapplebeck, June 27, 1871—F.C.
,, ,, incurva	Mapplebeck, June 27, 1871—F.C.
,, serrulata major cristata	Royal Horticultural Society, Aug. 3, 1870—F.C.
,, ,, gleicheniæfolia	A. Henderson & Co., Aug. 17, 1870—F.C.
Reseda odorata eximia	F. Parsons, May 4, 1870—F.C.
Retinospora obtusa erecta	J. Waterer & Sons, March 2, 1870—F.C.
Rhaphis humilis	Veitch, May 18, 1870—F.C.
Rhododendron multiflorum	Veitch, March 16, 1870—F.C.
,, The Bride	Fairbairn, April 19, 1871—F.C.
Rose Belle Lyonnaise	Turner, April 19, 1871—F.C.
,, Comtesse d'Oxford	Paul & Son, July 19, 1871—F.C.
,, Earl of Eldon	Paul & Son, May 3, 1871—F.C.
,, Louis Van Houtte	Paul & Son, July 19, 1871—F.C.
,, Mdlle. Eugène Verdier	Paul & Son, April 6, 1870—F.C.
,, Marquise de Castellane	Bennett, March 15, 1871—F.C.
,, Marquise de Mortemart	Turner, March 2, 1870—F.C.
,, Mons. Paul Neron	Turner, May 17, 1871—F.C.
,, Princess Beatrice	W. Paul, May 3, 1871—F.C.
,, (climbing) Climbing Victor Verdier	Paul & Son, April 5, 1871—F.C.
,, ,, Princess Louise Victoria	Knight, Sept. 20, 1871—F.C.
Saxifraga valdensis	Atkins, April 5, 1871—F.C.
Scolopendrium vulgare acceptum	Lowe, June 27, 1871—F.C.
,, ,, asumbleton	Lowe, June 29, 1870—F.C.
,, ,, axion	Lowe, June 29, 1870—F.C.
,, ,, cochleatum	Lowe, June 27, 1871—F.C.
,, ,, consummatum	Lowe, Jan. 18, 1871—F.C.
,, ,, corculum	Lowe, July 19, 1870—F.C.
,, ,, Davyi	Lowe, June 27, 1871—F.C.
,, ,, eupleces	Lowe, June 29, 1870—F.C.
,, ,, Fellowsii	Lowe, June 27, 1871—F.C.
,, ,, Flora	Lowe, June 29, 1870—F.C.
,, ,, innocuum	Lowe, June 27, 1871—F.C.
,, ,, inusitatum	Lowe, June 29, 1870—F.C.
,, ,, Iveryanum	Ivery, Sept. 21, 1870—F.C.
,, ,, keratophoron	Lowe, June 27, 1871—F.C.
,, ,, kephaloton	Lowe, June 27, 1871—F.C.
,, ,, kompsotes	Lowe, June 29, 1870—F.C.
,, ,, kraspedon	Lowe, July 19, 1870—F.C.
,, ,, krosson	Lowe, July 19, 1870—F.C.
,, ,, lacerato-cristatum	Ivery, Sept. 21, 1870—F.C.
,, ,, margine	Lowe, July 19, 1870—F.C.
,, ,, megeraton	Lowe, June 29, 1870—F.C.
,, ,, Mooniæ	Lowe, June 27, 1871—F.C.
,, ,, multifidum Malyoni	Malyon, June 29, 1870—F.C.
,, ,, omnilacerum Lowei	Lowe, June 27, 1871—F.C.
,, ,, perfectum	Lowe, June 27, 1871—F.C.
,, ,, perikallon	Lowe, July 19, 1870—F.C.
,, ,, pictorum	Lowe, June 29, 1870—F.C.
,, ,, poluskiston	Lowe, June 19, 1870—F.C.
,, ,, præcinctum	Lowe, June 27, 1871—F.C.
Scolopendrium vulgare proodonton	Lowe, June 29, 1870—F.C.
,, ,, semnon	Lowe, July 19, 1870—F.C.
,, ,, Smeei	Lowe, June 27, 1871—F.C.
,, ,, stephanedon	Lowe, July 19, 1870—F.C.
,, ,, thaumaston	Lowe, June 27, 1871—F.C.
,, ,, transformatum	Lowe, June 29, 1870—F.C.
,, ,, tumulum	Lowe, June 27, 1871—F.C.
,, ,, virginale	Lowe, June 27, 1871—F.C.
Sedum acre elegans	E. G. Henderson & Son, Nov. 1, 1871—F.C.
Selaginella Martensii albo-lineata	Perkins & Sons, Dec. 7, 1870—F.C.
Senecio argenteus	Backhouse, Oct. 5, 1870—F.C.
Sobralia macrantha albida	Williams, May 3, 1871—F.C.
Solanum ciliatum	Carter & Co., June 7, 1871—S.C.
Solanum (Pseudo-Capsicum) compactum	Williams, March 16, 1870—F.C.
Stock (intermediate) Mauve Queen	G. Smith, May 17, 1871—F.C.
Tacsonia Buchanani (Passiflora vitifolia)	R. Parker, June 21, 1871—F.C.
Thrinax elegantissima	Linden, June 21, 1871—F.C.*
,, grandis	Bull, April 6, 1870—F.C.
Thuja semperaurea	J. & C. Lee, Sept. 7, 1870—F.C.
Thymus citriodorus aureus	E. G. Henderson & Son, Sept. 21, 1870—F.C.
,, ,, aureo-marginatus	Fisher, Holmes & Co., June 21, 1871—F.C.
Tillandsia (Platystachys) complanata	Jacob-Makoy & Co., July 19, 1871—F.C.*
,, Lindeni	Williams, May 4, 1870—F.C.
,, staticiflora (Morreniana	Jacob-Makoy & Co., June 7, 1871—F.C.*
Torenia auriculæfolia	Rollisson, April 5, 1871—F.C.
Trichomanes auriculatum	Williams, June 27, 1871—F.C.
Trichopilia crispa marginata	Williams, May 18, 1870—F.C.
Tropæolum Minnie Warren	Cattell, July 19, 1870—F.C.
,, Mrs. Bowman	Downie & Co., May 3, 1871—F.C.
Vanda cœrulescens	Veitch, March 16, 1870—F.C.
Verbena Emma Weaver	Perry, Sept. 6, 1871—F.C.
,, George Peabody	Eckford, July 19, 1870—F.C.
,, Grand Monarque	Eckford, July 19, 1870—F.C.
,, John Laing	Perry, July 19, 1870—F.C.
,, Lady Braybrooke	Eckford, Sept. 20, 1871—F.C.
,, Lady Edith	Eckford, Sept. 6, 1871—F.C.
,, Lady Gertrude	Eckford, Sept. 20, 1871—F.C.
,, Miss Charlotte Mildmay	Eckford, Sept. 7, 1870—S.C.
,, Mauve Queen	Eckford, Sept. 20, 1871—F.C.
,, Mrs. Boulton	Perry, Aug. 17, 1870—F.C.
,, Mrs. Dodds	Eckford, July 19, 1870—F.C.
,, Mrs. G. Prince	Perry, July 19, 1870—F.C.
,, Perfection	Perry, July 19, 1870—F.C.
,, Peter Williams	Eckford, Sept. 21, 1870—F.C.
,, Pluto	Eckford, Sept. 6, 1871—F.C.
,, Rev. C. P. Peach	Perry, July 19, 1870—F.C.
Verschaffeltia melanochætes	Linden, June 21, 1871—F.C.*
Viola lutea major	R. Parker, May 4, 1870—F.C.
Vriesia brachystachys	Veitch, Sept. 20, 1871—F.C.
Welfia regia	Bull, June 8, 1870—F.C.
Wigandia imperialis	E. G. Henderson & Son, Oct. 5, 1870—F.C.
Xanthosoma Lindeni	Linden, June 7, 1871—F.C.*
Zalacca Wagneri	Bull, Nov. 2, 1870—F.C.
Zamia sp. New Caledonia	J. Verschaffelt, July 19, 1871—F.C.*

THE GRAVITATION OF FLUIDS.

THE words "rise," "sink," and "float" are those commonly used to express the movements of bodies in air, water, and other fluids. Now these words all bear a neutral sense, and in their use imply simple acknowledgment of the phenomena rather than comprehension of their nature and causes. Such a set of words afford by their general use a singular proof of the extent to which the idea has spread, and of the hold it has obtained on men's minds, that bodies rise and float or sink in air or water "of themselves,"—for such terms imply that these actions have their immediate origin in the bodies themselves. They certainly imply that the fluids (air and water) have no more to do with these motions than to afford a field for their exercise. Modern nomenclature aims at giving instructive names. We follow God's rule if we make a name convey useful meaning. It should be not such as serves to shroud ignorance, but to remove it.

Now the very fact that the ordinary terms applied in this case are at least vague, not to say misleading, should *à priori* incline us to hold the common theory which affects to account for these movements in suspicion.

The uninquiring mind is easily satisfied that light bodies float "of themselves," when the locality in which they are witnessed is the atmosphere. Air not being visible, and not therefore forcing its presence upon the observation, is easily (to use an Irishism) lost sight of, and its agency in the matter wholly neglected and unacknowledged. But when we turn from air to water as the locality of these phenomena, popular language undergoes a change, which implies acknowledgment of the existence of the fluid, and an idea that it has something to do with the matter. Cork and wood do not float when taken out of the water. These things are not found, then, to "rise of themselves," or to possess "a tendency to rise." They are spoken of, therefore, as "floating in water," not as floating "of themselves."

And if the mind would take one step further from the spot thus reached, suspicion at least would be aroused as to the correctness of the language applied to the flotation of bodies in the invisible fluid, air. Air is a fluid having a very perceptible, though invisible existence. One need not rise from one's seat to find that out; but to own its existence when thinking of the flotation of bodies in it, would at once modify the terms used. We should use this form of language, that "while certain heavier bodies float in water, other lighter bodies float in air." The words "of themselves" would probably slip out of the sentence, and the next thought would be that the air in which the bodies are seen has something to do with their flotation.

Another step in advance is thus made, and the distrust (betrayed by the change of language) felt in regard to the popular theory invites us into the track of useful investigation which opens out here from the pathless waste of error.

It is necessary to attack the vague popular theory at the outset of such inquiry. That theory, however unsatisfying, is, in the absence of a better, too strongly held to allow true reasoning at once to assert its superiority. The mist of error must be cleared to some extent from the vision to make truth visible.

Akin with this misconception with respect to the floatation of bodies in fluids, were such old ideas as that the sun moves round the earth, that the earth is flat, and that the stars are in the blue "vault" of heaven. With the conviction that wide-spread, long-lasting and deeply rooted notions can in each of these three cases be distinctly traced to ocular deception and blind uninquiring submission to it, how much reason have we for suspicion that the common theory about floating bodies has no better foundation.

And while the three former errors are those of the past, the latter will appear to be an error of the present time also. Not only among the generality of educated persons will such views be still expressed in answer to inquiries, though perhaps not very confidently; but many (at least) of the books which affect to teach, speak of light bodies as having a tendency to rise and form a vacuum, and of the heavier fluids as flowing in to fill up the vacancy. Such words are still uttered, and especially with regard to atmospheric pressure and draughts. There is need, therefore, for investigation, and most useful results may flow from it.

And the most effectual way of combating error, perhaps, is to invite men to look again a little more accurately at the facts, a hasty and partial view of which has misled them. Thus they teach themselves; the most pleasant and satisfactory of all teaching. The mind thus shapes itself by degrees to the mould of truth, in which it will finally fit accurately and contentedly. The rule in arithmetic, unintelligible and uninteresting as it appears at the head of the chapter, becomes far more intelligible to the learner after a few trials and examples, and interesting from the confidence with which it fills the mind. The great value and interest of the theory are found by looking upon it again and again from the track of experiment and illustration. Such, then, I propose as the most instructive and profitable course.

Something, then, being ascribed even by common corrected observation to the fluids in which bodies float, in relation to their flotation, experiment will go to show what that something is, but first it will show—a very important matter too—that flotation is not due to any inherent property in the floating body.

All bodies have one property, which prevents them from rising and floating of themselves: that property is weight. Weight is well known to be due to the earth's attraction, and to the liability of all matter to be acted on by that attraction. And that attraction is well known to be exactly proportional to the amount of matter (regardless of size or dimensions) contained in the body acted on. Every body, therefore, is subject to this action. Every body, in other words, has weight; and weight results in nothing else than a falling to the earth. The lightest, moreover, of all bodies has weight, for lightness means truly and really nothing else than less weight, while heaviness means more weight. All bodies, therefore, have a natural tendency to fall.

Some bodies, indeed, could not be weighed in a scale, in the ordinary way, the scale being used in the atmosphere. It would be needful to weigh them in a vacuum. Floating phenomena are developed in a fluid atmosphere, which interfere and perplex. The atmosphere, therefore, must be removed. Then will the lightest gases lie in open vessels like water, and may be weighed in grains, or fractional parts of grains. A philosophical experimentalist could tell us the weight of a pint of carburetted hydrogen, show us the little metallic weight, and ask us if a piece of metal has any tendency to rise. He would thus teach us most conclusively that, however easily such a body of gas might be lifted, it would certainly fall "by itself," if weight could make it to do so.

The huge war steam-vessel, with all its cumbrance of armour plating, guns, shot, anchors, &c., weighing thousands of tons, has no tendency to rise. It rises, however, without the possibility of failure, by the letting in of water into the dry docks. Water running beneath, filling up the space below, insinuating itself between the wall and the vessel's side, though but a few inches intervene, lifts up the whole enormous mass, and never fails under the burden. "Lifts," I say, for who shall account for so stupendous a result, by finding out any inherent property of lightness in this monstrous mass which should account for this elevation of it? We can show that a fluid body does act, and from the condition in which it exists in a body must act, and that it can do so with ample power to lift such a mass as this, but we can find no other cause. We may conceive an ideal cause, and clothe it with a name, but the name will have more sound than sense, and serve but to shroud a deception and shelve a difficulty.

The bather can help our inquiry. A large stone laid hold upon and lifted from the bottom of the pool feels so light in the water that he can hardly believe it to be a stone. His eye corrects this thought, though the lightness seems anomalous. But lo! as he lifts the stone out of the water, the full weight due to its nature is perceived. It is perceptibly and materially increased. Why is this? The water has helped him in lifting it, and lifting the arm too which held it. It has a lifting power; in no other way can the matter be accounted for. The stone at any rate has no tendency to rise.

But again, his arms which, should he suffer them to do so, will drop down to his side, will, as he steps into deeper water and leaves them free, be carried to the surface. Nay, not only will his arms be lifted up, but, if he is not careful, he will himself be lifted off his feet, so small now is the pressure with which he bears on the ground below that the smallest elastic action of the muscles of his feet would cause him to leap right away from his position. If he can plant his feet firmly on to a plastic clay bottom, excluding the water beneath them, he will stand somewhat more firmly; but the moment he withdraws a foot, he will feel the pressure of the water like a broad, soft, but powerful hand thrusting him upwards.

Now the very same course of experiments, though not so easily carried out, applies to the fluid, air, and with the same result. The stone which is found heavier in air than water will be found heavier still in a vacuum. Hence we know not only that water lifts or helps to lift the stone, but that the air also helps to lift it. If we are not mistaken in the teaching of the water experiment, we may strongly infer that we are not in error as to the lifting power of air.

If we would now ask ourselves why a toy balloon rises to the ceiling when let go from the hand, we should answer, "Why even a stone experiences the lifting power of the air. The stone does not give way to the power because it is too heavy to obey the amount of lifting force, but the balloon being light enough must obey it." This would be the lesson taught by the experiment.

Observe: the toy ballon rises because of the lifting force of air, and because it is light enough to obey the lifting force. It would do so if filled with hot air instead of gas. Is not the theory of draught contained in these words, and illustrated by this fact? I should not use the word draught if I knew of one more accordant with the lifting theory for which I contend. *J. M. Taylor*, *Seer Green Vicarage, Beaconsfield.*

(*To be Continued.*)

THE AMATEUR GARDENER.

Winter Work in the Kitchen Garden.—A good gardener may be known by his winter operations as well as by the more attractive work of the fine months of the year. Amateurs are apt to grow remiss when the cold weather arrives, and to leave the plot of ground devoted to fruit and vegetables in an untended and untidy condition till longer days and warmer suns imperatively call for exertion. But this is neither creditable to themselves nor advantageous to their gardens; indeed, it may be truly affirmed that the character of the results of the whole coming season will be greatly influenced by what is now done. As regards the soil, not a foot of it unoccupied should remain unturned during the frosts, which act most beneficially upon it, and prepare it for the coming seed-time. It should be thrown up on the ridge and furrow system, so that the frost may penetrate it, by which it will become well pulverised in the spring.

An early seed-time is very important for many crops, but it is often delayed by a fortnight or more when the soil has not been well exposed to the frosts in the winter weather. Two neighbouring gardeners may thus find themselves in very contrasted positions in the month of February; the one who has, so to speak, cultivated the ground in the winter, may be getting his Onions in in fine style, while the other is regarding his compartments despondingly as too damp to admit of the necessary raking.

Remembering the destructive effect of the frosts last spring among all the Brassica tribe, all possible protection must be given at the present time. We have laid down all our Broccolis with their heads towards the north or east, by taking out a good spadeful of earth on the side of the plant which is to be levelled, and placing it on the other side, so as to keep it down, spreading it at the same time over the crown of the stem as much as possible. In small gardens the stock can readily be protected by mats, boards, and other such appliances. A ridge of earth thrown up on the most exposed side of rows of young Cabbages will be of great service in saving them in a hard season. It may be useful to observe that laying down Broccolis with their heads towards the north or east is to preserve the coming flower-heads from bright sunshine, which is more destructive in frosty weather than could be imagined without experience. Turnips may be taken up and pitted like Potatos, and will be found good till February. Celery is very likely to be rotted in the trenches by hard weather, and therefore straw or leaves should be strewn thickly over the tops, to be removed whenever a thaw takes place. We always take up a few dozen roots in December, when frost seems imminent, and place them flat, one on the other, in a cellar or outhouse, with the roots all one way. It will grow in such a position, and be kept quite fresh and crisp by a watering to the roots now and then. Seakale can be forced at any time by the application of warm manure, but where that is not easily attainable the stools can be potted in large pots and put into a warm cellar. We always grow some roots especially for this purpose, and the same process applies to Rhubarb. The Seakale left in the rows for later use need not be earthed up till after Christmas. Frost does good to the plant, and a mass of earth upon it in mid-winter rather retards its growth than advances it. Seakale can be forced, but its growth cannot be retarded in the spring. We mention this because a suburban friend with a large garden has just asked us where he could procure a good stock of plants, as he wanted to have blanched Seakale in the summer! Asparagus beds should be slightly forked over, after being thoroughly weeded and receiving a dressing of rotten frame manure, to the depth of about 3 inches. Lettuces should be all in their quarters before now, but if they have been neglected the strongest plants can be taken up with balls of earth, and put in the warmest borders; these will be fit for use early, but the beds of young plants, as a rule, had better be undisturbed till the end of January.

The saving of Peas is a vexed subject with gardeners, some being very zealous to bring a crop through the winter, while others think the little time gained is not worth the trouble, and the great risk of failure. Where a gardener is not stingy of a little care and labour in bad weather, we would advise him to try a row or two of the early sorts, to be sown in a protected situation, and to be watched through the winter, earthed up when needed, and screened from severe frosts by some artificial light covering. In this way a dish of Peas may be ready a week or ten days before those are ready which are sown in March, and in very favourable seasons a fuller crop may be obtained. Broad Beans can be sown at any time when there is no frost in the ground.

All pruning is best done in November, or even earlier, but in large gardens this is not practicable, and it must be got over gradually as the weather permits. Fine days should be taken advantage of for attending to wall trees, for it is cruel to set a man to this work in wet or frosty weather. Trees which do not need nailing can be done at any time, unless hard frosts do not prevail, for a man can keep himself warm at this work. Simultaneously with all these operations, the rake and broom should be kept going, to clear away all leaves and decayed vegetation with which the beds may be encumbered. *H. B.*

ON BOTTOM-HEAT AND COLD.

A WATER-BOTTLE of porous terra-cotta, of much the same consistency as an ordinary flower-pot, is called in the trade a water-cooler. Now, when this bottle made of burnt clay is used it produces its natural effect upon the water inside, for if the outside of the bottle is kept moist, it will assuredly evaporate moisture and cool the water. A well-watered plant in a flower-pot will likewise have the outside of the pot moist as well as the inside, and hence there will be evaporation from the surface of the pot, and the roots inside will be cooled just as in the case of the water-cooler. This will explain the reason why plants in pots do best when plunged in earth, ashes, or the like; for as the bulk of the roots is generally at the sides of the pot they must suffer more or less from every change, because when the pot is exposed to the sun and wind, the unglazed pot will prove itself a good root cooler. It must indeed be clear to every practical man that all plants in pots are more or less affected in this way.

The late Thos. Andrew Knight, full of the very sensible idea "that it was the air that heated the earth and not the earth that heated the air," saw no reason why bottom-heat should be needed in the culture of Pine-apples, nor indeed in the culture of anything else; therefore he mounted the Pine-apple plants on a shelf to grow, and so they did, but so slowly, that the Aloe, which is reputed to flower once in 100 years, might have overtaken Mr. Knight's Pine plants before they ripened their fruit. He had unconsciously applied the cooler, so that the roots of his Pine-apple plants would be chilled even in the midst of a tropical heat, and would only warm a little when the pot was dry, and that but slowly through half an inch of burnt clay. From that time Mr. Knight's "shelving" the Pine-apple plants has been set up as a beacon to beginners, and it has answered that end, for I have not heard of the experiment being repeated for 30 years past.

Many years ago I had suffered so much annoyance from the green scum and dirty character of common flower-pots—requiring so much labour to keep them clean—that I had a lot made of glazed ware, which could be easily washed at any time, and, when washed, would remain clean for years. Evaporation from such a surface was out of the question; besides I got rid of using crocks at the bottom of these pots, for my glazed pots had a colander kind of bottom, full of small holes, to let out water, and had, moreover, a ledge to stand upon, like the chimb of a barrel. If the pots in which some of the species of Acacia have been grown should get broken and be eventually smashed up for crocks to drain some important plants, its best roots would at the earliest opportunitity be right in the midst of this poison. The vent hole in flower-pots is frequently so large as to need an oyster shell to cover it first, and then some 2 or 3 inches of sharp-edged crocks, of no cultural use to the plant beyond drainage, and causing a wanton waste of room where room is so important a matter. I used less than half an inch deep of clean coarse sand in the glazed flower-pots, and as there were plenty of small holes all over the bottom of the pots, the drainage was perfect. Objections were raised at the time against glazed pots because the old brick pot was said to admit air to the roots, which the glazed pot could not. On this point I remark, that the radicle and plumule always take different directions, the root running away from the air with all its might, and enjoying the calm of the dark damp earth. Such objections only show that we have yet a deal to learn in our dealings with plant life.

The Melon plant is a short-lived subject, seldom living more than half a year from the time of sowing until it has ripened its seeds; and it has been grown to perfection for many years on a hotbed of prepared stable dung, but where is the plant that has ever had such a supply of bottom-heat as the Melon? In short, its treatment is altogether unequalled in modern horticulture. When did either Grapes or Pine-apples get such a supply of moist sweet heat to root and branch as does the Melon?

Cuttings of rare plants live a sluggish life in a pot of moist sand, and the evaporation is prevented by covering them with a bell-glass until the callosity is formed at the bottom of the cutting by the action of the descending sap, and when this stage has been reached the application of bottom-heat will soon begin to tell. I invented a system of striking cuttings by having a small potful of water inside the cutting-pot, so as to keep the cuttings moist without any other watering than what percolated through the porous pot; and the system had many other advantages, for the cuttings did not damp off as before, and could be examined by lifting up the inner pot, without damaging the cuttings.

When I had seen the splendid specimens of Pine-apples, produced by a very strong bottom-heat, at Oak Hill, East Barnet—such a heat as I durst not until then have applied—I longed to try what bottom-heat could do for other plants. The early forced Vines there had a slight hotbed of leaves and dung over the Vine border, so that whilst the leaves were steaming in warm vapour, the roots were by no means left out in the cold; but how rarely do we see a bed of tanner's bark in a proper state of fermentation for plunging Pines in, and still more rare is it to see a Vine border protected properly from cold and wet, not to speak about bottom-heat for it. I had a fire-flue running under a bed of Pine plants planted out, and the soil rested on slates supported on iron bars, and we got a supply of useful fruit in this way with little trouble; and at a neighbouring place of great note I saw rows of hot-water pipes running under the Pine beds, and there also the plants were not in pots, and they seemed to be doing well.

When I lived in the botanical department at Syon, we borrowed a hothouse from the kitchen garden for the purpose of forcing flowers; and I was at great pains to get a good bottom-heat in order to give hardy plants a dose of that which suited exotics so well. My idea was to maintain a growing heat in the house, but to let the roots feel that they were wanted by keeping up a sharp bottom-heat, and with this treatment Moss Roses bloomed freely, and were not long-drawn and naked, as we so often see them when forced. When I was comparing notes the other day with a "brother in the trade," who was a companion 30 years ago, he stated that he too had successfully forced Moss Roses, and it will give our country cousins some idea of London extravagance when they are told that the wholesale price was 5*s.* each; and where high cultivation could raise even four marketable blooms from a pot they would pay for the extra allowance of bottom-heat.

There was at the late exhibition in the Manchester Botanic Garden a stand of coolers by evaporation—large dish covers covered with jackets of bed tick, and when these were put over the dish covers wet, the meat, &c., on the dish was kept cool. Most people have seen butter coolers of porous earthenware on a similar principle. I have named these examples from ideas already reduced to practice, which, if not so brilliant as theory, may yet have more weight with those who would do likewise.

I applied bottom-heat to early Potatos by means of a long earthen flue under them, but without any covering over the plants, and I found the crop forwarded a good deal, and the quality excellent. I also grew tender annuals and forwarded spring flowers by what was called the "Killogie" system—a hotbed made after the fashion of a corn-kiln, where the space under is called the Killogie; and in places where brushwood is plentiful and manure scarce, a good bottom-heat can be got in this way at small cost beyond that of a little earth work.

The use of flued walls in gardens for the ripening of Peaches and Nectarines seems to have gone quite out of fashion, the heat was always irregular, and, moreover, unnatural, for heat applied to the face of the leaf is all right, but not so to the back. Had the same expense been gone to with bottom-heat the result would have been more satisfactory, for the orchard-houses have quite settled the extent of border—small indeed—that wall fruit trees require, and root pruning has clenched this practical lesson. Surely a cubic yard of soil (27 cubic feet) should do something when a cubic foot will grow a dozen Peaches from a plant in a pot.

Heat and cold are relative terms, and when deciduous trees cast their leaves at the first approach of sharp frost, their roots, only 1 foot under the surface, may certainly be said to have, comparatively speaking, bottom-heat; for the temperature in which the roots live will be very little altered by the weather overhead, and that little difference will be exceedingly gradual both as to its rise and fall.

We see in the *Transactions of the Horticultural Society* that the late T. A. Knight was a great experimenter, and made most laughable blunders, as in the case of the Pine-apples on the shelf above mentioned; yet this gentleman, born to wealth, complained that my namesake had got a grant from Government for his experiments with fruit trees. Mr. Knight could see the mote in the gardener's eye, but being his own master he could not see the beam in his own. Mr. Forsyth was as much entitled to his grant, as Marlborough was to Blenheim.

When trees or other plants are grafted, some kind of grafting wax or grafting clay is used to prevent evaporation from the wounds of the scion and the stock; and all other wounds or cuts, whether in root or branch, would, generally speaking, be benefited by "daubing." Hence in transplanting we use puddle to dip the roots in, for evaporation is the "roaring lion" of horticulture, constantly going about devouring. Yet this destroyer can be harnessed to the car of horticulture, for heated vapour is the very soul of indoor culture, and woe to the luckless wight that tries to grow "dry goods." His fortune may be foretold without any witchcraft, and he will see spiders elegantly attired in scarlet arrive in battalions,—

> "As if the mother earth to heaven
> A subterraneous host had given."

In turning over a lining, or in taking a hotbed to pieces, we always see the heat accompanied with vapour. This in one word is bottom-heat as it ought to be; and whether got up by flues, pipes, or the like, it is always questionable, unless accompanied by sweet vapour. In the Melon "hill" we see the beautiful white roots shoot out into the moist medium, and yet live; this is, indeed, a lesson as to what heat roots will bear when there is moisture with it. I was amazed to see the gold fish in a tank at a silk mill enjoying life, and breeding freely in very hot water; and when I tried them with bread-crumbs I found that, though they did not suffer from cold, they might from hunger in such a place. Yet although I have had to keep gold fish for ornament in cold water these 30 years past, they neither increased in size nor in number. There is a limit of course to the heat of the water for fish, as well as to the heat of the vapour for plants above-ground, and for the roots of such as Pines, Melons, &c., under ground; but common sense is no guide in this matter, and it takes years of dearly bought experience to see how far we may go and be quite safe in the affair of bottom-heat. In renovating old Orange trees, Camellias, and the like, the power of bottom-heat must be felt, and a mild heat is but a mockery in such cases. What is the culture of epiphytal Orchids but an affair of well-managed bottom-heat for the pseudobulbs and the roots? In short, the whole plant has little else besides vapour to thank for its existence. When Orchids are in bloom they will live longer in a dry room than any other plant, and suffer nothing, but they never would have got that length but for the hot vapour that puffed out the wrinkled pseudobulb, and made it push its fleshy roots downwards, and its gorgeous flowers on all sides, rising, falling, hanging, trailing, against all rule and pattern in other plants. *Alex. Forsyth, Salford.*

RIVERS' ELIZA STRAWBERRY.

I WAS very much pleased the other day to see a long shelf full of pots of the above Strawberry, in what I call splendid fruiting condition, with Mr. Jefferson, Carlton House, Worksop. It is one of his favourite forcing sorts, both as regards quantity and quality; and without hesitation I may say, although I have never forced it myself, that it is a sure fruiter in his hands. To show its fruitfulness, I may mention that the above was a batch that was forced early this season, and when the fruit was gathered the plants were removed to a sheltered place outside, to harden them off for planting-out in the open ground, but, from pressure of other work, they remained in their summer quarters, with every attention as to watering until the autumn; and the result was a fine show of bloom, and with a little extra attention they remained as they were until there was a good set of fruit. Ultimately the pots were removed to the shelves of a Cucumber-house to finish off their crop of very inviting fruit. *J. Miller, Worksop.*

A NEW SYNOPSIS OF ALL THE KNOWN LILIES.—X.

IN conclusion, I give a revised key to all the species at one view, and an index to all the names of Lilies, book or garden, with which I am acquainted, and another short list of garden names, which I am not able to refer to their proper places.

Sub-genus NOTHOLIRION.—Bulbs tunicated; stigma with three subulate hooked lobes.

- Stem stout, with 20—30 leaves, crowded near the base. 1. L. ROSEUM, Wall. (p. 201).
- Stem slender, with 6—8 leaves, scattered up it. 2. L. HOOKERI, Baker (p. 201).

Sub-genus LILIUM PROPER.—Bulbs squamose; stigma with three short blunt lobes.

Group 1: EULIRION. — Filaments sub-parallel. Flower segments broadest above the middle, turning back only towards the tip.

- Leaves long-stalked cordate-ovate. 3. L. CORDIFOLIUM, Thunb. (p. 479).
- Leaves sessile, linear, or oblanceolate.
  - Leaves always scattered on the stem, irregularly.
    - Flower narrowed suddenly from the throat to the top of a long tube. 4. L. LONGIFLORUM, Thunb. (p. 479).
    - Flower narrowed gradually from the throat to the base.
      - Leaves 12—20; flowers 5—9 inches long, with divisions 1½—2 inches broad. 5. L. JAPONICUM, Thunb. (p. 709).
      - Leaves 30—50; flowers 3—5 inches long, with divisions an inch or less broad. 6. L. NEPALENSE, Don (p. 709).
      - Leaves 60—100; flowers 2—3 inches long, with divisions under an inch broad. 7. L. CANDIDUM, L. (p. 709).
  - Leaves arranged on the stem in regular whorls 8. L. WASHINGTONIANUM, Kellogg (p. 709).

Group 2: ARCHELIRION. — Filaments diverging very much. Flower segments not erect, ovate-lanceolate, turning back from very low down.

- Leaves linear sessile, with bulblets in their axils. 9. L. TIGRINUM, Gawl. (p. 903).
- Leaves lanceolate, short stalked, without bulblets.
  - Lower leaves 1½—2 inches broad, 7—9 ribbed. 10. L. SPECIOSUM, Thunb. (p. 903).
  - Lower leaves 1—1½ inch broad, 5—7 ribbed. 11. L. AURATUM, Lindl. (p. 903).

Group 3: ISOLIRION.—Filaments diverging moderately. Flower segments erect, broadest at the middle, spreading only in the upper half.

- Leaves usually arranged on the stem in regular whorls.
  - Flower 2-3 inches deep, its segments with a very distinct claw. 12. L. PHILADELPHICUM, L. (p. 1034).
  - Flower 1¾ inch deep, its segments not clawed. 13. L. MEDEOLOIDES, A. Gray (p. 1034).
- Leaves never arranged in regular whorls.
  - Flower red-yellow, the segments 2-4 inches long, distinctly clawed.
    - Stem glabrous, leaf-axils never bulbilliferous. 14. L. CATESBÆI, Walt. (p. 1034).
    - Stem cottony, leaf-axils often bearing bulblets. 15. L. BULBIFERUM, L. (p. 1034).
  - Flowers red-yellow, the segments 1—2 inches long, without claws.
    - Leaves glabrous linear. 16. L. PULCHELLUM, F. and M. (p. 1034).
    - Leaves pubescent lanceolate. 17. L. CONCOLOR, Salisb. (p. 1034).
  - Flower white, under an inch long. 18. L. LANCIFOLIUM, Thunb. (p. 1035).

Group 4: MARTAGON.—Filaments diverging very much; flower segments drooping, lanceolate, turning back from very low down.

- Leaves usually arranged on the stem in regular whorls.
  - Flowers dull purplish-red, casually white. 19. L. MARTAGON, L. (p. 1164).
  - Flowers bright red passing into yellow.
    - Style ½ an inch long. 20. L. MACULATUM, Thunb. (p. 1164).
    - Style 1—2 inches long. 21. L. CANADENSE, L. (p. 1164).
- Leaves never arranged on the stem in regular whorls.
  - Leaves ½—1 inch broad, 5—7 nerved.
    - Flower 2½—3 inches long, reflexed only in the upper half. 22. L. MONADELPHUM, Bieb. (p. 1325).
    - Flower 1½—2 inches long, reflexed from near the base.
      - Leaves thick in texture, distinctly ciliated.
        - Flower segments ⅓—⅔ inch broad. 23. L. CARNIOLICUM, Bernh. (p. 1325).
        - Flower-segments about ¼ inch broad. 24. L. PONTICUM, C. Koch. (p. 1325).
      - Leaves thin, not ciliated. 25. L. POLYPHYLLUM, Don (p. 1325).
  - Leaves ⅛—¼ inch broad, 3—5 nerved.
    - Flower-segments ⅓—½ inch broad.
      - Leaves close, 50—80 to a stem.
        - Flowers bright red, not dotted. 26. L. CHALCEDONICUM, L. (p. 1422).
        - Flowers yellow, dotted. 27. L. PYRENAICUM, Gouan (p. 1422).
      - Leaves lax, about 30 to a stem.
        - Flower-segments ¾—1 inch broad. 28. L. CALLOSUM, S. and Z. (p. 1422).
        - Leaves 60—100 to a stem. 29. L. TESTACEUM, Lindl. (p. 1422).
        - Leaves 20—30 to a stem. 30. L. LEICHTLINII, Hook. fil. (p. 1422).
  - Leaves ⅛ inch broad, or less, 1-nerved.
    - Stem 1½—3 feet high, with 80—100 leaves. 31. L. POMPONIUM, L. (p. 1422).
    - Stem a foot high, with 30—50 leaves. 32. L. TENUIFOLIUM, Fisch. (p. 1422).

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Of any of the following, which I do not know where to place, I should be glad to have specimens or drawings sent:—abchasicum, alternans, californicum, Jeffersoni, lilacinum, pinifolium, puniceum, pygmæum, and Sieboldii. *J. G. Baker.*

Home Correspondence.

Cleaning-out Boilers and Hot-water Pipes.—Few suggestions could be more seasonable and important than that of Mr. Duval Campbell at p. 1585. Every hot-water apparatus should be emptied once a year to get rid of sediment, and only soft, clean water should be used for refilling. Fully half the irregularities of circulation and of boilers burnt out arise from sediment or incrustation. And even should these be avoided or mastered, deposits of dirt and carbonate of lime are coal wasters of the most inveterate type. They act like buffers between the fire and the water, and no heat can reach the latter without first passing through these more or less impervious strata. The dirt, too, in many instances has to be driven along the whole length of the line of motion, lifted here, driven round a sharp curve yonder, pushed through a half-shut valve at another place, everywhere and always hindering the free course of the water, and absorbing force that would otherwise have been expended on the diffusion of heat. And yet (it seems hardly credible, still it is true that) very few of the older boilers have any proper means for running off the water. More marvellous still, hardly any of the newer ones have a waste pipe of sufficient capacity to rinse the pipes and boiler clean. Nothing does this so effectually as the rapid outpouring of the water. This carries all before it. In old boilers I have often had the brick setting removed, and the lower part of the boiler pierced to let out the water. The hole can be safely enlarged with a steel augur for iron, and a threaded bolt fitted closely in. It is not safe to plug such boiler with an iron pin, tow, and red lead, like pipe joints. Now the weather is milder it would pay well in the reduction of coal consumed, and the ensuring of greater efficiency of heat, to have this matter attended to at once. There is no danger in the tapping of old boilers. Before doing so, however, see that your drainage is all right, or make provision for the removal of the water. Those without experience in such matters will receive a new lesson on the annoying capacity of long lengths of 4-inch pipes. I remember the first apparatus I ever saw emptied. It was that of a large span-roofed conservatory. A pipe gave way against the boiler, with 20° of frost beating down the temperature. Nothing astonished me through the dreary night, spent in covering the roof with rick-cloths, &c., like the rush of water. It ran all night, filling the stokehole, and engulphing even the top of the furnace and boiler. Next to the difficulty of keeping the frost from the plants was that of getting rid of the water. That lesson was not lost. I have planned many stokeholes since then; deep or shallow, my first care has been to see them thoroughly drained. Prevention in this matter of boilers lessens the need of cure. See that nothing but clean water is used, and there will be little or no sediment, still there will be some; the water rusts the iron, and this should be run out. Above all things beware of hard water; the lime forms a crust on the boiler which no mere rinsing will remove. If spring water must be used for hot-water apparatus it should first be exposed for a week to the air, when most of its mineral constituents will be neutralised or deposited, or a considerable proportion of common washing soda or wood ashes added to hard water will soften it. A weak solution of muriatic acid will also loosen calcareous deposits from boilers, and enable them to be rinsed out with the water. It is safest, however, not to allow them to form, as mechanical scrubbing or scraping, which is impracticable inside most boilers, is needful to get rid of these incrustations after they have grown to any great thickness. One caution more: beware of the frost touching either pipes or boilers; it will at once strain or rust either or both by the expansion of the water in freezing. Either empty unused apparatuses for the winter or keep fire enough to prevent freezing. *D. T. Fish.*

Laxton's Alpha Pea.—This Pea I planted in good loamy soil, 6 inches apart, in single rows, 3½ feet between the rows. Even this sowing was too thick. The crop was enormous, pods well filled, the Peas very large, and of delicious flavour. I cannot speak too highly of it. *R. B. Read, Coogee, New South Wales, October* 12.

Lawn Mowers.—Mr. W. Heale (p. 1619) describes a lawn, in the county of Cork, that had become one mass of Daisies, from using (as is thought) a non-collecting lawn mower. Now, my experience has been just the reverse. Our soil is very dry—a portion of our flower garden occupying what was formerly (generations ago) the site of a part of the old abbey, portions of the foundations of which are frequently found in making alterations. As a consequence the turf in dry summers used to burn very much. Last spring we procured two of the Archimedian lawn mowers, as I was previously thoroughly impressed with their utility in dry situations, and the result has been so far very satisfactory—the turf is much finer and thicker, and if the Daisies are not less numerous, they are certainly less conspicuous. Without wishing to detract from the merits of Green's machines, which I have used many years, I would advise all who have a lawn much subject to burning to give the Archimedian a trial. The advantages may not be so patent in warm genial moist climates like the south of Ireland, but on dry parched lawns I think the result will be satisfactory. We find it necessary sometimes in warm showery weather to mow twice a week, and sometimes to sweep up the grass if it is too thick, but it is astonishing how soon the cut grass disappears. A lawn very full of Daisies, if the time or labour at command will not admit of their eradication, would require to be mown very frequently during the time the Daisies were in full bloom, and it might perhaps be advisable to use a machine with a collecting-box for two or three weeks at that time. One word more as to the most suitable sized machine for manual labour. I think a 12-inch machine is quite large enough for one man. If there is much to do, two men, with a 12-inch machine each, will do more work than the same men with one machine of a larger size; and there is also this advantage about it: a 12-inch machine will run into all the nooks and corners, thus doing away with the necessity for using the scythe. In the case of the lawn in question, I quite agree with Mr. Heale in recommending a trial of Watson's lawn seed. *Edward Hobday, Gr., Ramsey Abbey, Hunts.*

Goniophlebium appendiculatum.—It is well known that many Fern leaves, even when they are matured, will not stand long in water after being cut—one or two days at the most will suffice to finish their beauty. Even the Maidenhair, though quite matured, will not stand more than three days. I may mention one kind which is a very beautiful Fern in any way we choose to look at it, whether in pot, basket, or Fern-case—Goniophlebium appendiculatum, fronds of which will stand three weeks in water in a perfect state. I look on this Fern as a most valuable one at this season of the year. It is a warm greenhouse kind, and like most of the valuable winter decorative Ferns, is most impatient of heat. It should never be allowed to get dry, and a saucer of water at the roots in summer will assist it very much to mature its numerous fronds for the winter months, when they are found really valuable. *H. K.*

Hardiness of Dracæna australis.—This must be the plant Mr. Wildsmith mentioned as enduring 16° of frost. If the dead leaves are allowed to remain around the stem, *i. e.*, allowing Nature to protect herself, it will stand even more cold. Even if the plants should be killed to the ground, they will again sprout up, and form nice plants in the following summer. The practice of pulling off the decayed leaves of Yuccas is often the cause of their death. The frost gets thoroughly through the stem, and when this takes place the plant falls to the ground. In many instances, however, I have found, that if immediately propped up, they will recover. *H. M.*

Cast Metal Flooring.—It is pretty generally acknowledged that there is no kind of greenhouse flooring so neat, clean, and serviceable as the cast-metal grating of different patterns; but the great advantage of this kind of flooring is most seen when crossing an inside Vine or Peach border that requires to be pretty frequently forked over. It is so easily lifted and laid down, and, when down, is no hindrance to the border being equally watered, the water running quickly off, and soon drying again, admitting the heat and air freely to the border. Yet this kind of flooring is not perfection; heat and the daily use of water cause the metal to rust, in spite of the different kinds of outward applications to keep this enemy in check, and few coatings stand for any length of time, owing to the continual treading there must necessarily be upon it. I have tried, with very good results, dipping the gratings after being heated into boiling coal or gas tar, and immediately they are taken out dusting them over thickly with dry lime and sand, previously well mixed in about equal proportions; this dusting not only hardens the surface, but prevents the smell when they are again laid down. The great secret in this permanent coating is the equal and sufficient dusting, which is quickly done with the hand or sieve. Tar applied without this addition soon perishes, and retains its smell for a length of time. *John Taylor, Rose Hill Lodge.*

Weather in Cornwall.—We have had, for us, an early beginning of winter. For nearly a month we have had frost more or less every night, the shifting of the wind causing variations of 5° to 10° of frost in a few hours. It is also remarkable that such difference in the temperature should exist in a distance of a mile or two—often of 8° or 10°. If a situation has no outfall, so to speak, for the cold mist to escape, the cold is the most intense. To-day it has broken up into mild, warm weather. *H. M., December* 14.

Picea nobilis.—Your correspondent "J. B." (p. 1617) says—"Indeed I do not know, and should be obliged to any of your correspondents who would tell me, whether living plants have ever been raised from cones of Picea nobilis grown in England." Your correspondent cannot be a very careful reader of the *Gardeners' Chronicle*, or he would hardly have made such a request. Let me tell him, many thousand Picea nobilis have been for years past, and are yearly, raised in this country from cones ripened in this country. I have two Picea nobilis nearly 20 feet high, raised from seeds ripened in England, I believe at Elvaston Castle. If your correspondent doubts my word, let him inquire of any of our leading nurserymen. Why surely he must have seen the controversies that have been carried on in the *Gardeners' Chronicle* as to whether Picea nobilis, when raised from seeds grown in this country, was as robust as when raised from imported seeds. *C. F. P., The Grange, Kingston, near Taunton.*

Winter Cucumber Growing.—Those cultivators who wish to make the most of a limited space, and to be able to cut fine handsome Cucumbers at Christmas, I would earnestly advise to try a variety called Early Winter Prolific, a Cucumber which averages from 12 to 16 inches in length; it is an abundant bearer, of excellent quality, and of a dark green colour. Having grown it this season with success, I can strongly recommend it before any of the Sion House section, which I had previously grown. The Telegraph is also an excellent Cucumber, but I find it requires more heat than I have at command. It is of the utmost importance to secure an excellent and productive variety for winter work, for it is no easy task to maintain a continuous supply of good Cucumbers through a long dreary winter, except the cultivator has a well constructed and powerfully heated house, in which case there is not much difficulty. My Cucumber-pit is merely a one-light lean-to, or perhaps it would be more correctly described as a division of my fruiting Pine-pit. The inside measurement is 7 feet 8 inches long and 4 feet 6 inches wide. The bed of soil in which the Cucumber plants are growing is 5 feet 3 inches long by 2 feet 9 inches wide, and the depth of soil about 18 inches. I have been cutting Cucumbers from this pit since the end of September, and when the plants show signs of a little exhaustion I mulch with rotten manure, and encourage the shoots to extend inside the Pine-pit, both front and back. They thus become re-invigorated and more productive, proving that extension is better than restriction in the cultivation of the Cucumber. It has often struck me as being remarkable that although the Cucumber has been from time immemorial a cultivated and coveted esculent, I believe it is not known when, nor by whom, it was introduced into England. Probably the Romans may have done so, as they have enriched our gardens with many fruit trees, as the Vine, Apple, Peach, &c. Whether the Cucumber is a native of Egypt or not I do not know, but it appears that the Israelites more than 3000 years ago, when wandering in the Wilderness, remembered with regret the Cucumbers which they enjoyed so abundantly when in Egypt. *Wilson Boardman, Gr. to S. H. Norris, Esq., Altrincham.*

Hardiness of Primula japonica.—Have any of your correspondents proved the hardiness of Primula japonica? In the autumn I had two splendid plants from Mr. Bull, which I repotted and plunged under a north wall; they grew away in fine style, and were pictures of health. When the cold weather came on the plants were covered with a hand-glass as a precaution. When the hard frost was on I examined the plants, and found they were suffering severely, and now the frost has disappeared all the outer leaves are dead, and I am not at all sure the plants will recover. This is a sad disappointment to me. *Jay Aye.*

Periodical Variation of Leaves (pp. 1517, 1552).—There is, doubtless, a great deal of interest attached to this subject; and, as stated in the leading article of November 18, it is a subject upon which we are all very ignorant. The first thing to be done, however, is to collect facts, and to record any circumstances which may tend, in any degree, to throw light upon the matter. But I think there has been some little misunderstanding of the meaning of that article. I take it that it referred exclusively, or, at any rate, especially, to the changes of colour which take place in certain leaves during the time they are growing upon the tree [Yes.], and not to those permanent variations or sports in which the same colour remains unchanged during the whole life of the leaf. Of course there is an intimate connection between the two, and many of the same laws will affect both phenomena; but instances of the former, or what the Editors aptly called "periodical variation," are those that are particularly asked for. As a remarkable case in point, I may draw attention to the following:—Three years ago some variegated seedlings of the common Sycamore were brought to me, which had been found in a small wood under trees of the ordinary colour. To begin with, it was strange that so many variegated seedlings should be found at the same time; scores of them were pulled up, and scores more might have been collected. There were no variegated trees near, and one could only account for the great number of variegated seedlings by supposing that some atmospheric influence had been at work with the flowers the year before. A number were planted out, but they were fully in leaf, and dry weather set in, and many died; but of those that were left one has turned out to be a curiosity. When first the leaves expand they are of a vivid pink colour, marked with white strokes and blotches, and the plant then is exceedingly pretty. In a few weeks one sees that the colour has faded considerably, causing the white to be very much more conspicuous. One also sees that a slight tinge of green has begun to mingle with the red, and this change gradually goes on until green has taken the place of pink. The green is never very brilliant, always a little dirty, so that the plant is not nearly as pretty in summer as in spring. The white, likewise, gradually becomes tinged with green, so that in the autumn, when other green leaves are turning red, or yellow, or brown, this seems to be almost reversing the order of things, by becoming green. The variegation evidently affects the plant in other respects, for it is of a branching habit, and grows very slowly, and appears as if it never meant to be anything but a shrub. I shall be anxious to see whether in a year or two it will become permanently green, like the seedling Horse Chestnut and Sycamore mentioned by "D. T. F." on p. 1583. *Robert Holland.*

Hoya bella.—This beautiful little plant is not met with so frequently as it should be, for it is one of the most charming of small stove plants. The essential points of its treatment are:—A strong moist heat while growing; abundant moisture at the root; and a perfectly open well-drained soil. The latter may consist of a mixture of about equal parts of good fibrous peat, leaf-mould, and sand. When started in spring the temperature should be from 65° to 70°; when ripening in autumn from 55° to 60°,—the plant being then placed on a shelf near the glass and kept drier, though not so much so as to affect the foliage. It is a good stove basket plant. *W. H. O.*

The Introduction of Araucaria imbricata into England.—"The Spaniards, having settlements in the immediate vicinity of the country of the Araucanians, employed Don Francisco Dendariarena, in 1780, to examine the trees, with a view of discovering if any of them were suitable for ship-building. The result of his experiments was to select this species (the Peghuen of the natives), which was accordingly made use of to repair the Spanish squadron, then lying at anchor in the port of Talcaguano. The Abbate Molina, who was then writing his 'Civil and Natural History of Chili' (published at Bologna in 1782), supposed the tree to be a Pinus, and he described it in his work under the name of Pinus araucàna. In 1782 the Spanish Government commissioned Don Joseph Pavon to search for this tree; and he, finding both its flowers and fruit, ascertained that it was a distinct genus, and called it Araucaria imbricata. Don Joseph Pavon (who had previously visited Chili in company with Don Hippolito Ruiz and the French botanist Dombey, in 1777) sent specimens of Araucaria imbricata to France, to the care of Dombey, who showed them to MM. Lamarck and De Jussieu, in Paris—the former of whom called it Dombeya chilensis, while Jussieu retained the name of Araucaria. Don Joseph Pavon, however, complains, in his account of this tree, published in the first volume of the 'Memoirs of the Royal Academy of Sciences at Madrid,' that both Jussieu and Lamarck made several mistakes in their description of the botanical characteristics of the species, which had been avoided by both Molina and himself. In 1795, Captain Vancouver touched at the coast of Chili, and Mr. Menzies, who accompanied the expedition, procured cones, seeds from which he sowed on board ship, and brought home living plants, which he presented to Sir Joseph Banks, who planted one of them in his own garden at Spring Grove, and sent the others to Kew. From this circumstance, the tree was called at first, in England, Sir Joseph Banks' Pine. The tree at Kew was kept in the greenhouse till about 1806 or 1808, when it was planted out where it now stands by Mr. M'Nab [the father of the present superintendent], of the Edinburgh Botanic Garden. After it was planted out, not being considered quite hardy, it was protected during winter with a temporary frame covered with mats, and having become habituated to this mode of treatment it has been considered unsafe to leave it off. The species is, however, now found to be quite hardy at Dropmore and other places, and we have no doubt that as soon as plants can be procured from seed at a reasonable rate it will be as generally planted as the Cedar of Lebanon or the Deodar, and will be found to be quite as hardy as these trees." From vol. 4, second edition, of the "Arboretum Britannicum," pp. 2436-7. The above extract from Mr. Loudon's great work corroborates what "G., Bath," says of the introduction of the Araucaria imbricata into this country, p 1618. *C. F. P., The Grange, Kingston, near Taunton.*

—— Observing a letter in your issue of Saturday, December 16, from "G. Bath," disputing the statement put forth by our esteemed friend, Mr. Barnes, respecting the date of the introduction of the above-named plant to this country, I would beg respectfully to refer him to Loudon's "Encyclopædia of Plants," which is one of the most valuable and correct works extant, and in which he states, at p. 846, that this Conifer was introduced by Sir J. Banks, from Chili, in 1796; this shows only a difference of one year as compared with Mr. Barnes' statement. *E. Wilson Serpell.*

The Odours of Plants.—Mr. Alex. Nesbitt, at p. 1620, referring to the odours of plants, mentions a sweet-scented blue alpine Primula, and the Editors justly remind their readers of the fragrance of blue Violets, yet Mr. Britten, at p. 1583, is not far out about blue flowers generally; and even amongst all the coloured flowers in cultivation there is a paucity of sweet-scented kinds. Nature seems to have bestowed upon the white flowers an extra portion of odour, to compensate for the want of gaudy colouring. I will just dot down a few of the white beauties as they occur to my mind, and I think it will be difficult for any one to quote a better list from any other colour. Well, to take the Lily of the Valley, the Woodruff, the white Violet, the white Hyacinths, the white Clematises, the white Roses, especially Lamarque, the white Verbenas, the white Petunias, the white Magnolias, the white Erica fragrans, odorata, &c.; the white Rhododendron, Gibsoni and others; the white Jasmines, at least six or eight sorts; the Gardenias (several kinds), Bouvardias, Carnations and Pinks, Cratægus, Daphne, Cytisus, Pittosporum, Rondeletia, Swainsona alba, Brugmansia grandiflora, Tuberose, Mock Orange, white Lilac, Phalænopsis, Citrus, Lilium, and the following climbers—Mandevilla suaveolens, Stephanotis floribunda, Rhynchospermum jasminoides, Lapageria alba, Petræa volubilis, Richiea fragrans, Quisqualis volubilis, white inside. The same may be said of Luculia gratissima and Clerodendron fragrans; these have a brownish tinge outside of the petals, but are nearly white within. I am sorry that my time does not allow me to go more minutely into this subject. I have long thought over it, but was led to consider it more closely about a year ago, on being applied to by a gentleman who required sweet-scented climbers for his conservatory. On going into the matter, I found I could furnish very few climbers that had coloured flowers and at the same time were sweet-scented. It would, no doubt, be of considerable service to a great many of your readers if some one of your correspondents (Mr. Britten, for instance) would give a detailed list of odoriferous plants, arranging them in colours and in sections, showing whether they were hardy, greenhouse, or stove kinds. I would do the thing myself, but I have been so long out of harness amongst plants, and memory fails, that I think there are many now more able to perform the task in a satisfactory manner; and I trust that some one who has time and opportunity will take the subject up. *J. Scott, Merriott, Somerset.*

On the Hardiness of Various Ferns.—We have here a specimen of Adiantum cuneatum, planted in the hardy fernery, which has been exposed to 12° of frost without showing the least signs of injury. A Capillus-Veneris planted near to the above, and protected with a mat, has some of its fronds blackened through the sharp weather. Asplenium marinum has not been the least injured. Pteris cretica albo-lineata, also planted with the above, but with a bell-glass placed over it, has been frozen several times without showing any ill effects from it. *G. Warren, Gr., Balcombe Place, Sussex.*

The Price of Potatos.—I hope some of your correspondents, acquainted with the facts, will tell us something of the retail price of Potatos as well as of market produce in general, I find the highest price of best York Regents, in your Saturday's issue, at the Southwark market, was 110*s.* per ton, or 8*s.* 1*d.* per sack of 168 lb., with quantities unsold. The same day, in the Borough market, I could get none under 12*s.* a sack, and they were quoted in the *Times* (retail) 15*s.* per sack, or nearly double the price in the latter case. Can it be explained to the unfortunate consumer? *A. R.*

Plea for Higher Wages.—Many such could be urged at the present time—such as the demand for higher services, and the fact that the same amount of money purchases much less than it used to do. In other words, we do much more work—and better—and get less for it than our fathers. For the value of money is not its absolute amount, but its purchasing capacity, Not what we get, but what we can buy for it, determines our absolute wages: judged thus, the wages of gardeners have retrograded of late years. But it is not such pleas as these that I would now use, but others, more simple, that can be appreciated and understood by all,—such, in fact, as are now being brought before us daily by the would-be pensioners of the Gardeners' Benevolent Institution; heartrending cases of men of spotless character and exemplary ability, toiling through life until disease, old age, or death overtakes them, without any provision for themselves or others dependent upon them. How is it that so many gardeners, of from 30, 40, or even 50 years standing, are left helplessly destitute at last? Making every allowance for other causes which may be called preventible, is it not a fact that the present wages of gardeners will not admit of the rearing, clothing, educating of a family as these primary duties ought to be performed, and as they are expected by employers to be done; and also the making of any provision for the future? To do one of these things strains ingenuity in economical spending to the utmost. To do both honestly with present wages is utterly impossible. There are many crooked ways of doing both, which I am happily ignorant of, and would scorn to learn; but the honest gardener, without other means or extraneous aid to money-making, must perforce leave his wife and family a burden to posterity, pensioners on the Benevolent Institution, or a legacy to the union. And yet surely the workman is worthy of his hire, and reason, and religion, and the well-being of society alike require that that hire should suffice for present needs, and likewise for the making of some provision for the certain necessities of the future. Then if gardeners failed to make provision for their wives and families it would be their own fault; now it is quite otherwise. And it cannot really be to the interest of any class that those who contribute so much to the wealth, happiness, and adornment of this country should be kept struggling for life in a hand-to-hand fight with poverty, and be forced to die and see with their closing eyes the wave of hopeless want engulphing all they held dear on earth. Familiarity with such scenes is apt to beget indifference to their enormity—for enormous evils they are, and the result of great wrong, if not absolute injustice somewhere. A great proportion of these terrible evils of low wages originates from want of thought and reckless competition. Thought can only be called forth by discussion, and somehow it seems looked upon as a crime in most quarters to write of the wages question. And yet all other wrongs are dragged to the light that they may be righted. Why not this? If, for instance, my view of the matter is faulty, surely there are wage-payers that could set the matter right from their point of view. Here is a public case in point, that may help both sides to a just decision. In the *Gardeners' Chronicle* of last Saturday, the Public Parks Committee of Manchester advertise for a head gardener for Alexandra Park, wages 32*s.* a-week, with house, coals, gas, and water, that is, £83 4*s.* a year in money, or say, £100 gross income,—a fair average, but still a low wage for the place. I invite the members of the Corporation of Manchester to try this experiment: supply seven persons with food, clothing, and education out of this income, dressing, teaching, and educating all as they would expect their head gardener and park-keeper to do. Would any of them undertake it, or succeed if they did? It was done, it seems, by the late gardener, Mr. Macmillan, and let no one blame him that he could not do more. That this was impossible is proved by a circular received this day (December 18) from Manchester, from which it appears that his widow and five children (the oldest nine years and the youngest four months) are left destitute; that an influential committee is formed, of which Mr. Bruce Findlay, of the Botanic Garden, is secretary; and that a subscription list is opened, and subscriptions earnestly solicited. While I hope these will flow freely at this festive season of the year, I trust that the more serious question will be pondered—the prevention of such and similar cases for the future. I am positively sick at heart from reading of destitute gardeners, their widows, and orphans. One would need to be made of guineas to meet all the heartrending appeals made to them; and it is by no means creditable that the benevolent should be impoverished that rich corporations, or individuals, may save a few pounds out of the wages of those who serve them so faithfully and well. No one, who seriously looks into the subject, can doubt that higher wages would lessen the number of these wails of distress two-thirds at least, and mitigate the misery of the remainder. Prevention is better than cure, even when the latter is possible. Cure there hardly can be for such cases as I have noted. The fall is irretrievable from a happy home in a public park or garden to the very door of the union workhouse, with nothing to keep one's family out but private or public charity. But this, and thousands of such cases, would be prevented by the addition of a few pounds more a year to gardeners' salaries. They might then not only live and do their duty by their families in the present, but be able to make some provision, however small, for themselves when laid aside by the infirmities of age, and for those they leave behind them when called to a higher service. *D. T. Fish, Dec.* 18.

Scolopendrium vulgare var. crispum-amplum.—In answer to your correspondent, I beg to say that I believe Mr. James, of Vauvert, still retains this variety, and therefore it cannot be procured; there is, however, another variety, which I believe I named "crispum-magnificum," equally beautiful, and having a large tasselled apex, and which is being distributed by Mr. Glave, nurseryman, Scarborough. If your correspondent will write to me I shall be glad to give him all the help in my power. *F. J. Lowe, Highfield House, Nottingham.*

Orchid Cultivation.—I sent you last year some notes upon Dendrobiums, and I purpose to again send you a few jottings by the way of the peculiarities I have noticed during this year. Such a course I think I may call seasonal, as the majority are now at rest, but it is more particularly so for the purpose that I have in view, which is, noticing those that are not at rest. I am quite aware that I am going contrary to many a good garden maxim, by dividing them into three classes, deciduous, evergreen, and some that hardly know to which they belong; but you already know me to be one who does not see why I should be bound by rules I did not assist in making, and therefore cannot be much surprised if I should hesitate to force my Dendrobes to obey rules which I cannot comprehend. I should perhaps again repeat that we have always treated the Orchids that grow in our *omnium gatherum*, the Pine stove, as being interlopers; we did so at first when they were few, and as it suited them we do not see why we should change it now when they are many. Thus our plants had the chance of doing their own way if they wished, and I am not desiring to claim merit for a grand find—I am simply noting, for the benefit of those who while they run can read, what is the practice of certain Dendrobiums that are permitted to do as they like, and there may be nothing new in it after all. We have not found any that will grow during autumn and winter that are injured thereby. Thus it has become our practice to moss them up for a new growth whenever we see them commencing a fresh start, regardless of the time of the year. As far as flowering is concerned, it is of course necessary to make them rest a certain time, to concentrate their strength for the effort; but as it is of advantage to us to lengthen this season as much as possible, the result becomes pretty much this: so many are taken from time to time; if the number wanted can be found among those that are at rest none else go, but if more are required some go with growths unfinished, but we know that such are practically lost. I have often been asked what I would do at the beginning of winter with a plant that had not made up its growths, as if we had a choice that is not what is called Hobson's choice. I know of none other than growing them till they have formed pseudobulbs, or losing them, for an incompletely formed bulb cannot live without leaves. We grow them in an atmosphere largely supplied with moisture all the year round, and when resting to flower some are taken out to a colder house; when resting from actual growth, but still engaged in perfecting bulbs, they remain in the house, the watering being diminished till they are wanted to flower, or they commence to grow again; many never go out of the house, and some even thus inhabit houses that are used to swell the Pines off as they come forward. Neither do I wish to be thought advocating a similar practice to our own. I am jotting down individualities, and not desiring the charge of other men's Orchids. I will begin with nobile, in which we have the most pliable subject of the lot—I mean the nobile intermedium, pendulum, cœrulescens, and Wallichianum. I think they will grow three times a-year, certainly twice, flower either with leaves or without, rest six months if required, delight in the full sunshine; moniliforme grows twice, likes the sunshine, deciduous; lituiflorum, deciduous, grows twice, and makes long pendulous bulbs; heterocarpum, deciduous, as easily forced or retarded as nobile, and as free a grower; albo-sanguineum, if grown in the sun, makes strong bulbs, and is deciduous; crassinode, deciduous, strong grower, either in or out of the sun, will grow twice if started early; luteolum, deciduous, but flowers from the new growth, as also does lasioglossum, they will both grow twice a-year; Falconeri, habit of growth peculiar, as also form of bulb, grows best in autumn and winter, should not be rested long, or grown in the sunshine; nodatum, habit of growth and form of bulb much like the last, but much stronger, enjoys sunshine, should not be rested long grows during winter: chrysotis refuses to grow if shaded, is evergreen, flowering from new growth, and never rests long: what little rest it makes is usually in autumn, its flowering season; taurinum, will, I think, be much like the last, the plants we bought are still growing, and look as if they meant it, —should like to hear of those that have been dried off; Wardianum, deciduous, grows best in autumn and winter, grows twice, does not like the sunshine; Parishii, deciduous, likes the sun, should not be rested long, or too cold or too dry; transparens, a little nobile; Devonianum should not be rested long, does not stand sunshine till very strong, grows late in the year; Bensoniæ and crystallinum, deciduous, can stand a rest better if started early, grow twice, enjoy full sunshine; chrysotoxum and Farmeri delight in sun, grow twice, are evergreen; fimbriatum, oculatum and Paxtoni, like to keep some leaves, enjoy sunshine, grow twice sometimes; Dalhousianum has a similar habit; formosum and infundibulum should be grown in sunshine, flower with their leaves on; Lowii has a similar habit, sometimes grows twice; Pierardi, nearly evergreen, likes sunshine; M'Carthiæ grows in autumn and winter, hardly rests at all, certainly grows twice, and sometimes flowers twice, enjoys the full sunshine; bigibbum flowers in November, should be evergreen, grows twice, enjoys full sunshine. In these remarks I have purposely left out comparative merits for show purposes, quality and quantity of flowers produced, &c. I might also have added many more to the list, but I have given, I think, examples of each type. Who can tell me if these are following their native habit in thus dividing themselves into classes? *G. H.*

Foreign Correspondence.

BOTANIC GARDEN, REUNION.—The following description of the Botanic Garden at Reunion is from the pen of Mr. Horne, Director of the Botanic Gardens, Mauritius.

The garden is situated in the suburbs of St. Denis, the capital and seat of the Government of the island. At the time the garden was laid out the site in the vicinity of the town may have been well chosen, and perhaps the best and only available place. The town has now, I dare say, outgrown the expectations of the founders of the garden, and the consequence is that it is surrounded by buildings; the plants, enveloped in clouds of dust, breathe an impure air, and are badly supplied with water when they require it most. The situation, also, is excessively dry and, at the time of my visit, there was not a plant in the garden that was not suffering from want of water. To irrigate appears out of the question, and shrubs, as well as large trees, are watered by the watering-pot. Several years ago the Government of the colony gave the management of the garden to the Acclimatisation Society of Reunion, and it is now under the charge of M. Poitier, who has two assistants under him.

The entrance to the garden is at the top of the Rue du Paris, a street which leads straight from the landing place to the garden gate. The entrance is well shaded by Tamarind trees, and there is a remarkably fine plant of Ficus elastica on the right of the gate, the curator's house being a little to the left. The house is occupied by the late curator's (M. Ricard) widow. M. Ricard had worthily taken charge of the garden for about 40 years, and died a few years ago at the age of nearly 90, much beloved and respected. He made some 10 or 12 visits to Madagascar and the Comoro Islands, and richly plenished the garden and herbarium with specimens from these seldom visited islands: in fact, to such an extent that I may safely say that the Reunion Botanic Garden contains a greater number of living specimens from the above parts than any other garden in the world. Fronting the entrance is a small museum of natural history, which is fairly kept up. It contains no botanical specimens. Between the museum and the gate there is a wide promenade, well shaded from the sun by four rows of Mango trees; there the band plays on Sundays, and, judging from the number of seats, the garden must be crowded on those days by the inhabitants of St. Denis. To the right of the promenade an attempt at flower-gardening has been made by laying out with flower-beds the bottom of what, at one time, had been a small basin; the beds are raised above the level of the bottom of the basin, their sides turfed, and a Caladium or similar plant planted in the centre of each bed, and edged with a species of Portulaca. The extent of the garden is about 6 or 7 acres; over nearly the half of it the trees, shrubs, &c., are planted in the natural orders to which they belong, Brongniart's system being the one adopted. The plants are planted in rows, which are about 8 to 10 feet apart; between the rows are paths or alleys about 3 feet in width, and the ground arrangement is not unlike beds in a nursery. The plants are very closely planted, and the consequence is that the hardy and fast-growing kinds overtop the weaker and slower growing ones, consequently there is a sort of struggle for existence, not only amongst the plants themselves, but also with the drought. Notwithstanding the crowded state of the plants, there are several noble specimens, especially Palms, which have suffered less from crowding than the others. All the plants have once been named, and zinc labels are still attached to some of them. Many of the plants from Madagascar and the Comoro Islands were new to me.

The other portion of the garden is kept as a nursery, and the ground in this portion is also well covered with trees; not a few of them, from Madagascar, were strangers to me. In the nursery there is a miscellaneous stock of young plants, but notably of Oranges and Coffee.

Notices of Books.

Poems and Songs. By the late John Palmer, Nurseryman, Annan. (Printed for private circulation.)

Mr. Palmer, we are told in the introduction to this volume, began his career as a "herd-laddie," subsequently became a "billyer,"[*] but not liking life in a cotton mill any better than tending cattle, occupied himself as book-canvasser for Messrs. Blackie & Fullarton, and prospered so well in this employment that he was soon enabled to establish a small nursery near Annan. Fortune still smiled, the nurseryman became baillie, then provost, occupied himself much in local affairs and local politics, and took much interest in the progress of agriculture. Almost all these phases of his life are reflected in the poems, to whose composition he devoted his leisure hours. Some of the poems, inspired by all sorts of subjects, are in the English, others in the Scottish dialect; and these latter, are, to our thinking, infinitely the best, and have often a smack of Burns about them. Indeed, Mr. Palmer evidently was an enthusiastic admirer of Burns, and, consciously or unconsciously, has imitated him.

Many of Mr. Palmer's effusions are on agricultural topics, and give evidence that he was a staunch advocate of the "go-a-head-science-with-practice" school of farming. As a good sample we quote the following verses from a "Harvest Song for 1848," set to the tune of "There's nae luck about the house":—

I've heard them say a Spanish Don
A squire once did keep,
Wha pray'd for blessings on the man
That first invented sleep;
But I will bless the cunnin' chiel
That first invented drains;
And did he need our biggest stack
I'd gie't him for his pains.
    The barn-yard's rinnin' o'er, guid-wife,
    The barn-yard's rinnin' o'er;
    A single stack would scarce be miss'd,
    The barn-yard's rinnin' o'er.

Ye ken the field ayont the craft,
It wasna worth a preen;
Rashes were the standing crap,
Wi' taits o' girse atween:
But since we've drain'd it deep an' weel,
And stirr'd wi' Deanston's plough,
Nae mortal een e'er saw sic stooks,—
I'll brag Dumfriesshire through.

It's wounerfu' to think, guid-wife,
How things tak' sic a turn:
Ye mind sin our deep midden hole
Ran black into the burn;
But now we hoard each precious drap,
As misers hoard their store;
It's ae great thing, amang the rest,
That mak's the yard rin o'er.

There's mony things were wasted then
That we think precious noo;
I look around and wonder aft
Hoo our forbears gat through:
Guano, tae, 's an unco help,
And sae is broken banes;
Our turnips stan' alang the grun.
Like raws o' chairnel stanes.
    The barn-yard's rinnin' o'er, guid-wife,
    The barn-yard's rinnin' o'er;
    The bairns they canna count the stacks;
    The barn-yard's rinnin' o'er.

We regret that our limited space does not allow us to quote more of this fresh, spirited, and really valuable song. There are more like it in the little volume before us, which compensate for a good deal of very mediocre versification, of a kind that one might expect to find in the poet's corner of a country newspaper.

The Choice of a Dwelling: *A Practical Handbook of Useful Information on all points connected with the Hiring, Buying, or Building a House, &c.* By Gervase Wheeler. Murray. 8vo, pp. 299.

The illness of the heir-apparent to the British crown has already had one good effect—it has supplied the "one touch of Nature" which, we are told, "makes the whole world kin," and has banded together in one link of sympathy men of all classes, all creeds, all opinions—differing in almost every point save that they were citizens of the British empire and subjects of the British Queen. Such a manifestation of human sympathy, and such a display of patriotism, go far, very far, to counterbalance the evil which called them forth.

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[*] This is explained as the last operation on the cotton before it passes to the spinner.

If the Prince's illness—now, happily, abating—should enforce attention to sundry sanitary defects in ordinary house building, and bring about some practical results, our successors may say, out of evil cometh good.

We own that we are not sanguine in this matter. Our nation has frequent spasms of alarm; tons of chloride of lime and other disinfectants are used, the whitewash brush is in great request for a time, the attack subsides, and nothing is done in the way of prevention. This sort of thing occurs over and over again. People will not realise the fact that diseases, which might be almost entirely banished from our land if proper care were taken, kill annually their thousands and tens of thousands, and pauperise a still larger number. People will not realise the fact that the truest economy, like the best medicine, acts by prevention; but rather than make an immediate outlay they suffer their fellow-creatures to be prostrated with sickness, they paralyse the energies of the breadwinners, and too often force his family to become pensioners on "the rates," and thus ultimately entail an expenditure many times greater than that which would have been necessary in the first instance.

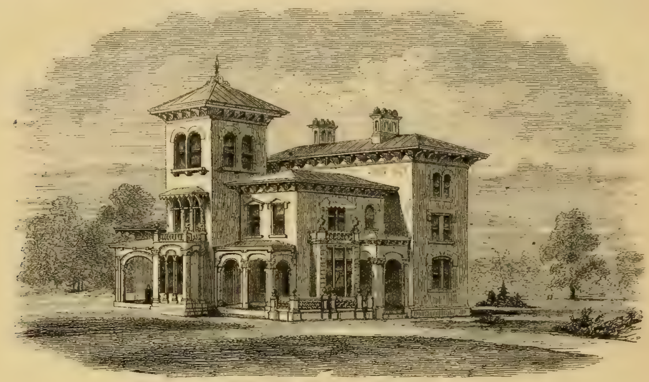

Fig. 349.—SYMMETRICAL VILLA RESIDENCE.

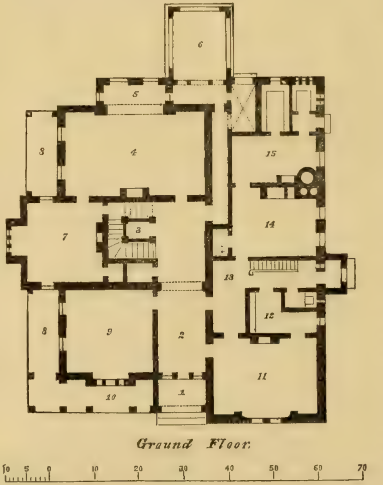

Fig. 350.

Plan.—1, Entrance Porch; 2, Inner Hall; 3, Staircase; 4, Drawing-room; 5, Bay Window, opening into, 6, Conservatory; 7, Library, forming the lower storey of the tower; 8, Verandah, terminating in, 10, Terrace; 9, Morning-room; 11, Dining-room; 12, Butler's Pantry; 13, Servants' Staircase and Closet; 14, Kitchen; 15, Scullery. Above there are six sleeping rooms, closets, bath-room, &c. Entire cost, well-built, with cellars, conservatory, hot-water apparatus, under £3000.

One main reason of this indifference arises from ignorance—ignorance of the mechanism and office of the human body and its component parts—ignorance or only shallow knowledge of the conditions necessary for healthy life—ignorance of the construction and arrangement of the houses we inhabit.

It is strange that, as reasonable beings, having faculties given us to be employed to the best advantage, having organs set apart for the performance of particular duties, the proper carrying on of which is essential to our health and comfort, we should know so little of our own bodies. This is a matter which nine people out of ten are content to leave in the hands of the doctors. This being so, it is not so surprising that the average master of a house is equally ignorant of the construction of the dwelling he inhabits—that, he thinks, is a matter for the builder or the architect. What is the consequence? From motives of trifling economy, often from sheer carelessness, want of supervision, or ignorance on the part of the labourers, a house is built in which the commonest sanitary precautions are deliberately ignored; and sooner or later disastrous results, in the shape of fever, rheumatism, diphtheria occur, while the minor evils of headaches, languor, indigestion, and the like, flourish without the cause of the evil being suspected till some manifestation more than usually striking makes it apparent.

It is of no use preaching a tirade unless we are prepared to suggest some remedy for these evils. We have already indicated what we think are the most potent remedies in the hands of individuals,—first a general knowledge of the structure and functions of the human body, and of the conditions likely to impair its action or to maintain it in a healthy condition. Some knowledge of this kind might be expected in every man and woman in the kingdom who is not absolutely idiotic; next a general acquaintance with the construction of the houses we inhabit, and of the means of rendering them wholesome, and of keeping them so.

If this latter description of knowledge were more general, the tricks of "scamping builders" would not escape detection so often as they do. We should not have leaky drainpipes under our very floors, waste-pipes which are mere conduits for sewer gases, and traps which are deceptive shams; we should have efficient ventilation without draughts, in fine we should have houses built for people to live in, not for builders to be rid of at the first available opportunity. Failing this kind of knowledge we do not think that it would be at all inconsistent with our individual freedom if district surveyors and nuisance-inspectors were compelled to perform their offices with far more rigour than they do now. The law, as we think, should forbid any newly built houses to be occupied till they have being thoroughly inspected and reported as complete in their sanitary arrangements. We do not think it would be going too far, either, to enforce, so far as possible, a periodical inspection by some competent and disinterested person, of all houses, so far as their drains, dust-bins, closets, water supply, and the like are concerned, and to follow up such inspection by practical action whenever required.

We shall have to wait a long time for so revolutionary a programme as this to be carried out. "An Englishman's house is his castle," and therefore he is to be allowed without protest to poison himself, deteriorate the health of his family, and endanger the lives of his neighbours. In the meanwhile *paterfamilias*, just now suffering from one of his spasmodic attacks, will do well to consult the useful and unpretending little work whose title is given at the head of this notice. Existing circumstances have naturally led us to dwell on the construction of a house from a sanitary point of view, but we should be doing Mr. Wheeler an injustice, if we omitted to say that while his directions and explanations on the points we have referred to seem to us very judicious, his remarks on house building in general, or "the house as it should be," and on the various matters relating to buying or renting a house, are equally worthy of attention.

The illustration which we give shows a villa residence of varied elevation and convenient arrangement, permitting elegance without involving the necessity of a large establishment.

In conclusion, let us beg all about to erect houses, and all architects who may be employed for the purpose, to bestow a thought upon the entrance lodges, gardener's cottages, "bothies," and the like. How often do we see in close proximity to some mansion or villa, where comfort and convenience have been made the subject of anxious consideration, some structure erected for the dependents and retainers, absolutely unfit for human habitation, though it may be pictural—designed "to look well from the windows of the house," and so forth. For this evil we believe the architect is more generally to blame than the proprietor, though the latter is the more likely to secure faithful service in proportion to the consideration he manifests for the welfare of his *employés*.

The Young Collector's Handy-Book of Botany. By the Rev. H. P. Dunster, M.A. Small 8vo. Reeve & Co. Pp. 168.

We opened this little volume at an unfortunate page, whereon we are told that "albumen is a gummy substance surrounding certain seeds;" that the "calyx is the flower-cap or external fold of the floral leaves;" that the "capsule is a chest or dry seed vessel, as in the Poppy head;" that the "catkin . . . unisexual blossoms hanging like cats' tails." A little further on and we are told that the embryo is a leaf in an immature state, that a gall is a humour in trees and plants produced by insects. Further experience shows us that the element of vagueness, and too often of incorrectness, is not confined to the explanations of the "hard words," but extends to the descriptions of the plants : for instance :—

> " *Willow Herb.*—The flowers of this plant are curiously formed ; petals ragged, stamens in two series, six long and six short, all within the tube of the calyx. It is a perennial. Its fine purple blossoms are seen on stems 3 or 4 feet high in July and August. It is sometimes called Purple Loose Strife " !

No greater and often no more correct information is given concerning the other plants mentioned in this volume, which is of value only for the clear woodcuts at the end, taken, as we believe, from the illustrated edition of Bentham's "British Flora."

Garden Memoranda.

NORWOOD NURSERY, BEVERLEY, YORKSHIRE.—In the East Riding of the great county of York, out of the usual traffic which seems to connect the midland route of railway communication, one would hardly expect to find anything in the form of a nursery, beyond a rough and half-cultivated place. In fact it is a very striking event for those who are in reality looking out for improvement and progress to find any horticultural and floricultural establishment in the provinces carried out in such a spirit, and in such taste, order, and skill, regardless of labour, cost, and complete detail of finish in every department, as must at once strike any visitor who enters, for inspection, this very remarkable nursery, of which we are about to give a very brief, and it is to be feared imperfect sketch. But where large sums have been expended for the advancement of civilisation and true progress, it is at least right to chronicle the spirit and honour of enterprising men.

In Orchids there is here a large collection, containing many fine plants and varieties of Cattleyas, Lælias, Aerides, Angræcums, Dendrobes, Cypripediums, &c., and in these houses are also probably the finest stock of Anthurium Scherzerianum in the country.

The New Holland house, a large structure, contains a grand collection of half-specimen and full-specimen Heaths, Azaleas, Genetyllis, Pimeleas, and all the best varieties, in robust health. Three large stoves demand attention, containing a choice, extensive, and healthy stock of young, as well as specimen plants of Palms, Crotons, Marantas, Ixoras, Clerodendrons, Alamandas, Dipladenias, Stephanotis, and all the established favourites. Next in order the Fern-house, containing many charming varieties, in all sizes ; here may be seen probably the finest plants of Platycerium grande, Brainea insignis, and the Killarney Trichomanes, which can be found in any nursery. The large conservatory, a spacious building, 50 feet by 40 feet, contains grand specimens of Tree Ferns, magnificent Palms and Cycads, Dracænas, Phormiums tenax variegata and specimen Colensoi variegata, Yuccas, Aloes, Agaves, Camellias, Aucubas full of berries, Chrysanthemums, and others too numerous to particularise.

Besides the above are many smaller houses, filled with bedding-plants, such as young Epacris, Ericas, Bouvardias, Coprosmas, Primulas, Cinerarias, &c.

The grounds are not extensive, but are kept up in first-class condition, and contain a very carefully selected assortment of fruit trees, Roses, ornamental plants, herbaceous plants, &c.

The nursery lies within 10 minutes' walk from the North-Eastern Railway, is easily reached from Hull, York, Scarborough, and will amply repay a visit. *W. P.*

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

DURING THE WEEK ENDING SATURDAY, Dec. 16, 1871.

NAMES OF STATIONS.	TEMPERATURE OF THE AIR.							FALL OF RAIN.
	Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth ..	50.6	25.6	25.0	45.3	32.2	13.1	38.7	0.07
Blackheath ..	47.2	27.2	20.0	43.7	35.6	8.1	39.9	0.10
Bristol	..	..	..	..	..	..	..	..
Birmingham ..	50.9	29.7	21.2	46.9	36.6	10.3	41.8	0 06
Wolverhampton	47.0	27.3	19.7	43.7	35 0	8.7	39.3	0.08
Leicester ..	49 0	24 5	24.5	43 9	33.7	10.2	38.8	0.07
Norwich ..	45.5	23.0	22.5	40.8	32.3	8.5	36.6	0.28
Nottingham ..	48.0	26.1	21.9	43.8	34.1	9 7	38.9	0.06
Sheffield ..	48.0	35.5	12.5	47.0	37.6	9.4	42.3	0.06
Liverpool ..	49.0	30.8	18.2	46.5	39.6	6.9	43 0	0.38
Manchester ..	47.5	31.0	16.5	43.9	33.5	10 4	38.7	0.83
Salford	47.5	29.2	18.3	44.8	32.6	12.8	38.7	0 83
Bradford ..	50.3	33.6	16.7	48.1	39.9	8.2	44.0	0.05
Leeds	50.0	35.0	15.0	46.4	38.4	8.0	42.4	0.13
Hull	48.0	27.0	21.0	43.7	33.0	10.7	38 3	0.16
Newcastle ..	48.0	35.0	13.0	46.5	38.8	7.7	42.6	0.37
Edinburgh ..	49.0	27.0	22.0	..	..	..	38 5	0.50
Glasgow ..	48.8	27.6	21.2	..	..	..	41.2	1.42
Dundee.. ..	48.0	30.0	18.0	..	..	..	39.1	0.50
Aberdeen ..	47.2	32.2	15.0	..	..	..	38.8	0.24
Paisley	40.5	25.0	15.5	..	..	..	33.1	0 60
Greenock ..	49.0	35.0	14.0	..	..	..	43.6	2.05
Leith	48.8	31.6	17.2	..	..	..	42.5	0.52
Perth	49.0	29.0	20.0	..	..	..	39.2	0.69
Dublin	51.2	32.8	18.4	..	..	..	43.7	0.20

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, Dec. 20, 1871.

1871. MONTH AND DAY.	At 9 A.M.					
	Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
December.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.*
14. Thurs. .	30.23	40.9	40.0	38 8	93	2.8
15. Friday .	30.19	42.6	41.6	40.4	92	2.9
16. Satur. .	30.13	44.7	44.0	43.2	94	3.2
17. Sunday.	30.21	37.8	37.8	37.8	100	2.6
18. Monday	29.96	44.9	43 3	41.4	88	3 0
19. Tues. .	29.77	46.7	46.6	46.5	99	3.6
20. Wednes	29.69	41.7	40.7	39.4	93	2.9

1871. MONTH AND DAY.	TEMPERATURE OF THE AIR.					WIND.		RAIN.
December.	Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Direction.	Horizontal Movement.	In Inches.
	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
14. Thurs. .	47.2	39 3	7.9	43.7	+ 3 3	W.	215	0.01
15. Friday .	46.9	38.3	8.6	42.3	+ 2.1	WSW	85	0.02
16. Satur. . .	45.5	39.9	5 6	43.3	+ 3.3	variable	155	0.06
17. Sunday.	42.7	35 6	7.1	39.2	− 0 6	S W.	105	0.02
18. Monday	47.7	41.1	6.6	44.4	+ 4.8	S.W.	445	0.00
19. Tues. . .	48.8	40.5	8.3	44.7	+ 5.3	S.W.	260	0.28
20. Wednes	47.5	36.5	11.0	42.0	+ 2.9	S.W. : N.W.	610	0.17

Dec. 14.—Generally overcast ; thin rain fell occasionally.
— 15.—Overcast till noon ; then variable. Slight fog. A little rain fell in morning.
— 16.—Overcast throughout and very gloomy about noon. Rain fell frequently.
— 17.—Rain fell between 12 and 2 A.M. Fine and cloudless at 9 A.M. Variable in afternoon ; overcast at night.
— 18.—Overcast throughout. A little very thin rain fell occasionally.
— 19.—Generally overcast. Rain fell in the morning, and again very heavily between 10 P.M. and midnight.
— 20.—Generally cloudy till night : then cloudless. Rain fell during the early morning and occasionally during the day. Violent gale.

JAMES GLAISHER.

Miscellaneous.

CHRISTMAS itself has been the occasion of much diversity of opinion, for no less than 136 different days in the year have been fixed on for Christmas Day by Christian sects and learned men. These dates have ranged throughout every month in the year, and may be thus summarised :—The Egyptian Christians said it was in January. Wagenseil thought February or August, and inclined more strongly to the latter. Bochart was for March. Some, mentioned by Clemens Alexandrinus, placed it in April, and others in May. Epiphanius mentions two sects, the former fixing it in June, the latter in July. Wagenseil, we have seen, preferred August. Lightfoot says September 15. Scaliger, Casaubon, and Calvisius are for October. Several others put it in November ; and the Latin Church on December 25, or that day now universally recognised by Christendom. This was decreed by Pope Julius I., and he fixed it on the same day that the ancient Romans celebrated the feast of their goddess Bruma, a festival much honoured by the heathen in the winter solstice, beginning on December 22. *People's Magazine.*

THE COPIQUE (Lapageria rosea). — The plant winds over shrubs and low trees in a very elegant manner, and the flowers, shaped like those of a Lily, are often as much as 3 inches long, of a thick waxy consistence, and of a most splendid deep rose colour, minutely spotted with white in the interior, and marked at the base of each segment with a small blotch of dark purple. A white variety of the flower is also to be met with, but is of much rarer occurrence. The plant is a near ally of the beautiful Philesia buxifolia of the Strait (Magellan), but is much handsomer, and possesses a greatly more limited range, apparently only extending from the north of Valdivia to the north of Conception, a space of between three and four degrees, while Philesia ranges over nearly fifteen. One interesting fact with regard to the Copique is its extreme hardiness, being almost the only plant that can exist in the area covered by the sulphurous smoke of the smelting furnaces. I found specimens in a flourishing condition winding around the skeletons of shrubs killed by the smoke. The Chilians sometimes make use of the flowers for poultices. *Cunningham's Magellan* (p. 364).

THE RED SANDERS WOOD TREE (Pterocarpus Santalinus), which yields a valuable dye-wood, large quantities being annually exported from India, is, with other valuable Indian trees, receiving some attention in its cultivation under the Forest Conservancy of India. In the plantations at Codoor there are 10,000 Red Sanders trees planted out into pits. The seeds are collected in May and sown in June or July ; if soaked in water for 24 hours they take about 25 days to germinate, but if unsoaked 30 to 40 days are required : they should be watered twice daily. The growth of these plants was very slow for the first three or four years, but during the last two years they have taken a great start, and many are now upwards of 20 feet high, with a girth of 12 inches. It is satisfactory to note the cultivation of this tree, for in some parts of India it is most wantonly destroyed, graziers cutting down the young saplings to any extent simply to feed their cattle upon the leaves.

WATERPROOF BOOT SOLES.—If hot tar is applied to boot soles, it will make them waterproof. Let it be as hot as leather will bear without injury, applied with a swab and drying in the fire. The operation may be repeated two or three times during the winter if necessary. It makes the surface of the leather quite hard, so that it wears longer as well as keeps the water out. It is a good plan to provide boots for winter in summer, and prepare the soles by tarring, as they will then become, before they are wanted to wear, almost as firm as horn, and wear twice as long as those unprepared. Ten years ago I met with a direction similar to the above, and with some hesitation I concluded to have it tried on the soles of a pair of field boots. By a piece of supererogance, a pair of thin-soled morocco boots was tarred with the others, the soles being saturated and the seaming too, all round, including the lower rim of the morocco all round the soles. As these boots are doing service yet, and have been much used every summer during the 10 years, I mention the fact because it furnishes what I then wished for, viz., a proof that the tar would not burn or otherwise hurt the leather. The soles remain like horn, and have never required any repair, and even the thin upper, apparently cracked in all directions from the first, has never torn but a little on one boot at the bend on the outer side of the foot. It has been oiled about once each summer, but the soles received only the one thorough tarring. Boot soles will take the tar best after having the grain worn off slightly. It soon dries in if exposed to the sun, and the odour even of gas-tar is quickly overcome by the all-conquering effects of dry earth. A short walk over a fallow field will remove it completely, and make it entirely unnecessary to imitate the eastern custom of taking off the boots at the house entrance, unless there be some other reason for it than fresh tarred soles. *Correspondent of Country Gentleman.*

THE CULTIVATION OF COTTON IN SOUTH AFRICA.—During the past few years this is reported as very successful, so far as the growth and culture of the plants and the production of Cotton are concerned. At a recent Cotton show held at King William's Town upwards of 150 bales, amounting to nearly 70,000 lb., were shown, principally Sea Island Cotton. Some good samples of this variety, as well as of New Orleans, were exhibited and obtained prizes. Though it is clear Cotton can be grown successfully, the question still to be decided is whether it can be made a profitable crop.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

THOUGH *Caladiums* are now for the most part at rest, they must nevertheless have so much attention paid to them as will insure their being wintered safely and with tolerable freedom from losses. I specially allude to this matter because I know that many of those who are not thoroughly versed in their culture invariably lose the larger part of their stock during this period of probation. The two main features to be observed in the treatment of the ginger-like roots of the Caladium when at rest I would mention as follows :—Do not dry them off thoroughly, on the contrary keep a slight amount of latent moisture constantly in the soil which surrounds them ; also, do not keep them in a temperature below 55°, nor in one much above that heat. These remarks apply more especially to tubers of moderate size, and which have grown in moderate-sized pots only. The larger the size of the tubers the higher are their keeping properties, though under any extremes, such as I have endeavoured to warn the grower against, all may succumb to either wet or dry rot—the latter especially being injurious to them. *Gloxinias*, in like manner, cannot be placed in any out-of-the-way corner with impunity, though they may be dried off with immunity from injury, for these also suffer greatly from a too low temperature. During all mild periods in the weather let the utmost possible amount of air be afforded to *Calceolarias*, and especially such of the shrubby kinds as are grown in cool frames or other structures where other important subjects do not exist. It is only by inuring these thoroughly to the weather that thorough success can be looked for in the ensuing summer. Keep all valued subjects, such as *Ixoras*, *Burchellias*, *Boronias*, *Leschenaultias*, &c., in the full uninterrupted light, and well up to the glass. Be careful not to unduly water such plants as the following, even though they may be in flower, viz., *Tapinas*, *Sonerilas*, *Peperomias*, *Gesneras*, *Bertolonias*, &c., which are quickly injured by an excess of moisture at this dull period.

FORCING HOUSES.

Do not advance the night temperature much beyond 55° in connection with forced *Vines* at this time. I last week alluded to the amount of heat which should be afforded to *Pineries*, and would now add, keep them as dry as possible consistently with the requirements of the plants, atmospherically as well as at the root. Do not omit to give air on every favourable opportunity. In regard to the early *Peach* and *Nectarine house*, do not allow the night temperature to exceed 45° to 47°. Keep up as much natural moisture as circumstances will admit, by sprinkling the trees over twice a day or so. Attend now to the thorough cleansing of the glass of the *Cucumber-house*, should any unwholesome greenness have become attached, as is not unfrequently the case. See also that each individual leaf is, if possible, so arranged that it can receive the full benefit of all the light possible. Keep up the bottom-heat to between 77° and 80°, if possible. Maintain a moderate temperature only during very dull days of, say, 75°; but should the sun shine, let the thermometer range upward to 95°, more or less, according to the brightness of the day or otherwise. Bear in mind, besides, that according to the heat—being artificial and extremely arid—so in proportion must be the expenditure of artificial humidity, without which these will not succeed. Do not overcrop the plants at this time, as this tends greatly to decrease their vigorous growth. As the gardener must operate in advance of time, let the necessary succession of *Strawberry plants*, *Asparagus*, *Seakale*, and *Rhubarb*, &c., be prepared.

HARDY FRUIT GARDEN.

Fruit trees, in orchards proper, are perhaps as much neglected in a general way as any trees planted in this country. I have repeatedly urged the need of thinning out the centre branchlets to admit light and air more freely amongst the branches. This done, I would suggest a simple operation, which in the doing will not cost a tithe of the benefit to be derived. Pare up the turf as wide as you think proper, rolling it back under the branches, from the bole; just move the surface soil amongst the upper roots carefully with a fork, place a thick coat of good dung thereon, and put the turf back again as before. As we look for, and value annual crops, so should we by this and similar means aid and induce the trees to bear them, and not leave them to chance.

KITCHEN GARDEN.

Some definite arrangement should now be come to regarding the distribution of the crops in this department in the subsequent spring. If a new *Asparagus bed* is to be formed, the ground should be prepared by thoroughly trenching and manuring it to the necessary extent, some 3 feet deep, breaking up the bottom well, that the pulverising action of the air may exert its beneficial influences. During mild weather remove the glasses or lights entirely off *Cauliflowers*, *Lettuces*, *Endive*, &c., and so afford them all the fresh air possible. Attend to any hedges which may exist around any kitchen garden enclosure by weeding them thoroughly: if a Thorn hedge, cutting it back, &c., and so forward all such work at this season. Dust over the outer unprotected beds of *seedling Lettuces* with soot, lime, &c., to ward off destructive insects, which often commit havoc amongst them during mild periods. Clear all kinds of garden refuse, and convey it to the rubbish heap, and so make even the signs of decay a source of future productiveness. *W. E.*

Notices to Correspondents.

CHRYSANTHEMUMS: *F. L.* Your inquiry is not very definite. If you mean for cut blooms, suitable for staging at exhibitions, you may take—Queen of England, White Queen, Jardin des Plantes, Dr. Brock, Lord Ranelagh, Maréchal Duroc, Prince of Wales, Versailles Defiance, Prince Alfred, Plutus, Mrs. W. Holborn, Campestroni, Lady Harding. If plants for staging, take—Vesta, Christine, Chevalier Domage, Golden Christine, Her Majesty, Sparkler, Alfred Salter, Rifleman, Lord Palmerston, Prince Albert, Julie Lagravère, Lord Clyde. There are many others.

CRATÆGUS COCCINEA MAXIMA. Our correspondent, who lately referred to this fine berried plant, wishes to say that he was in error in stating that the flowers were red: they are white.

GRAPES: *W. W. S.* Some of the finest Black Hamburgh Grapes we have seen were grown under rough plate glass; we should, however, prefer glass of more transparency for White Muscats. We cannot tell exactly what spot you mean without seeing it. Have you kept up sufficient heat? It seems to us that what you speak of is caused through cold and damp.

INSECTICIDE: *J. H. C.* Experiments in progress: so far satisfactory.

NAMES OF PLANTS: *A. B.* 1, One of the forms of Selaginella Martensii; 2 and 5, apparently both Asplenium bulbiferum; 3, Asplenium flaccidum; 4, Pteris serrulata; 6, Adiantum cuneatum—all wretched scraps. —*W. E. G.* 3, Anemidictyon Phyllitides; 4, some Leguminous plant, quite unrecognisable without flowers; 5, Selaginella Martensii.—*J. A.* 1, 3, 5, all forms of Lastrea dilatata; 2, Lastrea Filix-mas; 3, may possibly be Lastrea spinulosa, but you have only sent the tip of a frond, which is insufficient. All hardy and native.

TREE FERNS: *A. B. C.* Re-pot as soon as growth recommences in spring. If you give them plenty of fresh soil well drained, the pot-bound roots will take care of themselves. The Cibotium, if well rooted, may be safely put into a 12-inch pot, and if well cared for should take one still larger before the end of the summer.

TRICOLOR PELARGONIUMS: *W. W. S.* Your Pelargonium shoots die off in the way you describe through sourness of the soil, or a cold atmosphere.

CATALOGUES RECEIVED.—James Carter & Co., Gardener's and Farmer's Vade Mecum for 1872.—Dicksons & Co.'s Catalogue of Forest and Ornamental Trees and Shrubs, Conifers, Rhododendrons, &c., and Descriptive List of Gladioli.—B. S. Williams, Descriptive Catalogue of Flower, Vegetable and Agricultural Seeds, &c.

COMMUNICATIONS RECEIVED:—E. L. (Your letter had no enclosure; the other questions next week.—A. R.—S. H.—T. Green & Son.—E. S. & Sons.—G. Y. (next week).—D. S. G.—A. D.—W. F. C.—J. T. M.—J. May next week).—J. Miller—W. P. A.—W. P. R.—D. T. F.—J. B.

Markets.

COVENT GARDEN.—Dec. 22.

The improvement we anticipated has hardly been realised; a few things have been in a little better demand, but the general tone of the market is not like the week before Christmas. We have a good supply of Pines, hothouse Grapes, and Pears. Apples of English growth continue more scarce, but our stocks have been strengthened by the arrival of Newtown Pippins, Baldwin, and others from the United States.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½ sieve	2 0 to	5 0	Melons, each ..	2 0 to	5 0
Cobs, per 100 lb. ..	60 0 —	65 0	Oranges, per 100 ..	6 0 —	10 0
Filberts, per lb. ..	0 8 —	10	Pears, per dozen ..	2 0 —	4 0
Grapes, per lb. ..	3 0 —	6 0	Pine-apples, per lb.	4 0 —	6 0
Lemons, per 100 ..	7 0 —	10 0	Pomegranates, each	0 4 —	0 8

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, green, ea.	0 6 to	0 8	Herbs, per bunch ..	0 2 to	0 4
Asparagus, per 100	8 0 —	10 0	Horse Radish, p. bun.	3 0 —	5 0
Beet, per doz. ..	1 0 —	2 0	Leeks, per bunch ..	0 2 —	0 4
Broccoli, purple, per bundle	10 —	1 3	Lettuces, per score..	1 6 —	2 0
Brussels Sprouts, p. half sieve.. ..	1 6 —	2 6	Mushrooms, p. pott.	1 0 —	2 6
Cabbages, p. doz. ..	10 —	1 3	Onions, per bunch..	0 4 —	0 9
Capsicums, p. 100..	1 6 —	2 0	Parsley, p. bunch ..	0 2 —	0 4
Carrots, p. bunch ..	0 5 —	0 7	Radishes, per bunch	0 2 —	..
Cauliflowers, p. doz.	2 0 —	6 0	Rhubarb, p. bund. .	1 6 —	2 0
Celery, per bundle .	1 0 —	2 0	Salsafy, p. bun. ..	0 9 —	1 3
Chilies, per 100 ..	1 6 —	2 0	Scorzonera, p. bun.	0 9 —	1 3
Cucumbers, each ..	1 0 —	2 0	Seakale, per punnet	2 6 —	3 6
French Beans, new, per 100	3 0 —	4 0	Shallots, per lb. ..	0 8 —	..
			Spinach, per bushel	3 0 —	4 0
			Tomatos, p. sieve ..	4 0 —	6 0
			Turnips, p. bunch..	0 2 —	0 4

Potatos, Regents, 100*s.* to 130*s.*; Flukes, 120*s.* to 150*s.*; French Shaws, 60*s.* to 70*s.*

BOROUGH MARKET.

WHOLESALE PRICES.

1871.	Savoys.	Greens.	Parsnips.	Red Beet.
	Per doz.	Per doz. bun.	Per score.	Per doz.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
Dec. 16..	0 7 to 0 10	1 3 to 2 0	0 7 to 0 10	....
— 19..	0 6 — 0 10	1 6 — 1 9	0 7 — 0 9	.. — 0 6
— 21..	0 4 — 0 10	1 6 2 0	0 6 — 0 10	.. to 0 6

POTATOS.—Southwark, Dec. 18.

During the past week the arrivals coastwise, by rail, and from France have been considerably in excess of the demand, which continues very languid, and the following quotations have been barely maintained:—Yorkshire Flukes, per ton, 100*s.* to 130*s.*; Yorkshire Regents, 60*s.* to 100*s.*; Dunbar and East Lothian do., 110*s.* to 140*s.*; Perth, Forfar, and Fifeshire do., 90*s.* to 110*s.*; do. Rocks, 85*s.* to 90*s.*; Kent and Essex Regents, 50*s.* to 90*s.*; do. Rocks, 70*s.* to 80*s.*; French Whites, 60*s.* to 80*s.*

PRUSSIAN WOOD GARDEN STICKS and TALLIES, commended by the Royal Horticultural Society.
The above can be had, of all sizes, wholesale of
CHARLES J. BLACKITH AND CO.,
Cox's Quay, Lower Thames Street, London, E.C.
Retail of the principal Seedsmen. Prices on application.

JAMES GARVIE AND SONS, HORTICULTURAL BUILDERS, beg respectfully to intimate that they have now special facilities for the Manufacture and Erection of HORTICULTURAL BUILDINGS of every description, all the departments of the work being executed by experienced workmen in their own employment and under their personal superintendence.

CONSERVATORIES, GREENHOUSES, VINERIES, STOVES, &c., in a great variety of designs, plain and ornamental, and with the latest improvements in VENTILATION and HEATING, at very moderate prices.

SASHES, HOT-BED FRAMES, and every requisite of the kind for the Garden.

HOT-WATER APPARATUS of the most efficient description fitted up in New and Old Houses.

Old Houses Repaired, Painted, and Fitted up with Improved Ventilating Apparatus. Designs and Estimates on application.

STEAM JOINERY WORKS, 60, Huntly Street, Aberdeen.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing. Second sized Archangel, 100*s.*; Petersburg, 60*s.* and 80*s.*; superior close Mat, 45*s.*, 50*s.*, and 55*s.*: packing Mats, 20*s.*, 30*s.*, and 35*s.* per 100; and every other description of Mats at equally low prices, at
J. BLACKBURN AND SONS, Russia Mat and Sack Warehouse, 4 and 5, Wormwood Street, E.C.

HESSIANS and SCRIMS for COVERING.
4-4 Scrim, from 2*d.* to 5*d.* per yard, advancing ¼*d.*
54-inch Hessian and Scrim, 3*d.*, 3¼*d.*, 4*d.*, 4½*d.* and 5½*d.*
72 „ „ „ 4½*d.*, 5½*d.*, 6*d.*, 6½*d.*, and upwards.
J. BLACKBURN AND SONS, Sack and Bag Makers, and Canvas Manufacturers, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mat, forwarded post free on application.
JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London.

E. T. ARCHER'S "FRIGI DOMO."—Patronised and used for Frogmore and Kew Gardens. It is made entirely of prepared wool, and a perfect non-conductor of heat or cold where it is applied.
PROTECTION AGAINST the COLD WINDS and MORNING FROSTS.
WOOL NETTING, 2 yards wide and 1*s.* 6*d.* per yard.
"FRIGI DOMO" CANVAS."
Two yards wide .. .. 1*s.* 10*d.* per yard.
Three yards wide .. .. 2*s.* 10*d.* per yard.
Four yards wide .. .. 3*s.* 10*d.* per yard.
SCRIM CANVAS, 72 inches wide, 70 yards long, 5½*d.* to 8½*d.* p. yard.
HESSIAN CANVAS, do., do., 54 and 72 inches wide, 6¾*d.* and 8¾*d.* per yard.
ELISHA T. ARCHER, Only Maker of "Frigi Domo," 3, Cannon Street, City, E.C.: and of all Seedsmen in London or the Country.
NOTICE.—Removed from 7, Great Trinity Lane.

Indestructible Terra-Cotta Plant Markers.
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens sent post free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c. MAW AND CO., Benthall Works, Broseley.

LABELS, LABELS.—PARCHMENT or CLOTH LABELS.—Tree or Plant Labels, punched parchment, 4 inches long, 4*s.* per 1000, or 10,000 for 35*s.*, cash on delivery. Sample Label sent on receipt of a postage stamp. Orders delivered free in London by JOHN FISHER AND CO., Label Works, Boston, Lincolnshire.

Horticultural and Window Glass Warehouses.
JAMES MILES, 6, High Street, and 12 and 13, Blosson Street, Shoreditch, London, E.
CONSERVATORY and ORCHARD-HOUSE GLASS.
Genuine White Lead, Oils, Colours, Brushes, &c.
GARDEN ENGINES, PUMPS, SYRINGES, INDIA-RUBBER HOSE, TAPS, CONNECTIONS, &c.
Prices upon application.

OSLER'S CRYSTAL GLASS CHANDELIERS,
TABLE GLASS OF ALL KINDS,
CHANDELIERS IN BRONZE AND ORMOLU,
Moderator Lamps, and Lamps for India.
London—Show Rooms, 45, OXFORD STREET, W.
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PARTNER WANTED, in an Established Market-Gardening, Florist, and Seed Business, in a very flourishing locality. To an energetic and persevering Man, with small capital, this is an opportunity of getting into a good business seldom met with.—Apply, by letter only, to B. A., *Gardeners' Chronicle* Office, W.C.

WANTED, an energetic young MAN, who understands the Cultivation and Propagation of Stove and Greenhouse Plants, Ferns, &c. To a deserving industrious Man, liberal wages will be given.—Apply by letter, stating all particulars, to Mr BRUCE FINDLAY, Botanic Gardens, Manchester.

CLERK to the Curator, Royal Gardens, Kew (age 20 to 30).—An Open Competition for this situation will be held in London on JANUARY 16, and following days. Candidates must be familiar with the routine duties of a Garden, and must show that they have had the necessary Technical Training.—Apply, at ONCE, for the Regulations, and for the necessary Form, to The SECRETARY, Civil Service Commission, Cannon Row, S.W.

SECOND ASSISTANT in the Herbarium, Royal Gardens, Kew (age 18 to 30).—An Open Competition for this situation will be held in London, on JANUARY 16, and following days.—Application for the Regulations and for the necessary Form should be made at once to The SECRETARY, Civil Service Commission, Cannon Row, S.W.

Seed Trade.
J. C. WHEELER AND SON, of Gloucester, have an OPENING for a JUNIOR ASSISTANT SHOPMAN.

WANTED, an ASSISTANT SHOPMAN.—Must be experienced, and be able to furnish first-rate references. Situation permanent.—Address, stating where previously employed, and wages required, to Messrs. HENRY CLARKE AND SONS, 39, King Street, Covent Garden, W.C.

Seed Trade.
WANTED, a young Man as SECOND SHOPMAN.—One who has had some experience, and accustomed to counter work.—Address, stating wages required, with references, to Box 61, Post Office, Hull.

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EXPERIENCED GARDENERS (or as GARDENER and BAILIFF), of various qualifications, recommended to Gentlemen.—Further particulars given on application to Messrs. E. G. HENDERSON AND SON, Wellington Nursery, St. John's Wood, N.W.

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WM. CUTBUSH AND SON beg to state that they have at all times on their books MEN of various qualifications, whose characters will bear the strictest inquiry. Any Gentleman making application would save time by clearly stating the duties to be undertaken, wages offered, &c., so that suitable Men may be selected.—Highgate Nurseries, London, N.

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GARDENER (HEAD).—Has a thorough practical knowledge of the profession in every branch. Good character.—B. B., 16, Vernon Terrace, Havelock Road, Great Yarmouth, Norfolk.

GARDENER (HEAD).—Age 40; thoroughly understands the profession in every department of Gardening. Has lived in some of the best Noblemen's and Gentlemen's places. Particularly good at Pines, Vines in pots, Melons and Cucumbers in frames, pits, or houses, Mushrooms, Stove and Greenhouse, and Flower and Kitchen Gardening; also can Draw Plans and Lay-out, if required.—State particulars to A. B. C., Messrs. Rollisson & Sons, The Nurseries, Tooting, Surrey, S.W.

GARDENER (HEAD).—An Englishman, age 40, married, two children (ages 13 and 7), begs to offer his services to any Nobleman or Gentleman who may require a thoroughly practical man in every department of his profession, and having had extensive practice in the Improvement of Grounds, Buildings, &c. Is thoroughly competent to take charge of Tradesmen's Accounts, &c. Has a character of 16 years, that will bear the strictest investigation, from the Nobleman he is about to leave.—G. BECKETT, Shanbally, Clogheen, Ireland.

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PURSER'S BONE TURNIP MANURE.
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PERUVIAN GUANO (as imported by Messrs. Thomson, Bonar, & Co.), NITRATE of SODA, SULPHATE of AMMONIA, &c.
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REES AND CO.'S BIPHOSPHATED PERUVIAN GUANO (Registered Trade Mark, Flying Albatross), is now ready for delivery in quantity and in fine condition. It is believed to be the best Artificial Manure yet produced. Its base is Peruvian Government Guano; it contains 21 per cent. of Soluble Phosphates, 5 to 7 per cent. of Ammonia with Salts of Potash. See reports of Dr. Voelcker, Dr. Anderson, Professor Way, Mr. Ogston, and Mr. Sibson. Delivered in 2 cwt. bags, each of which is secured by a leaden seal, bearing the Company's Trade Mark. The analysis is guaranteed so long as the seals remain unbroken.
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FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
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Catalogues free.

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CHAPMAN'S "ANTI-CLOCHE" VENTILATED MULTUM-IN-PARVO PLANT, FLOWER and SEED PROTECTOR, preserves Plants, &c., from Snails, Slugs, Earwigs, Wind, Rain, and Frost; quite as useful for all purposes as the Hand Glass or Cloche, and at about half their cost. Any Gardener can repair them.

They are made in nests, of different sizes. Cost of Set, with one for protecting Gladiolus or Hollyhocks, Dahlias, Roses, or Chrysanthemums, for exhibition, with stake clip, and all complete, from One Guinea. The Anti-Cloche can be made any size.

Estimates given to Nurserymen, Market Gardeners, &c., for large quantities. When not in use, they pack in a very small compass, without liability to breakage. To be obtained from
W. F. CHAPMAN, Patentee, Bristol Road, Gloucester.
A remittance from unknown Correspondents will have attention.

MR. JAMES FRASER, HORTICULTURAL and AGRICULTURAL VALUER and AUCTIONEER, Mayland's Farm, Romford, Essex: late of the firm of J. & J. Fraser, Lea Bridge Road.

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TO BE LET, on LEASE, or FREEHOLD for SALE, an EIGHT-ROOMED HOUSE, CHAISE-HOUSE, and STABLE.—Large Garden, suitable for Glass; high, open ground, 5 miles from City, S.E.
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Rare Lilies, Seeds and Orchids.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, December 28, at half-past 12 o'Clock precisely, new and rare JAPANESE LILIES and ORCHIDS, collected by Mr. Carl Kramer, in Japan, in the summer of 1871. These plants were visited, inspected, and marked by Mr. Kramer, and drawings made from them while in flower; they may therefore be relied upon as true to their descriptions and drawings; a variety of LILIES from Holland; a quantity of SEED of PRIMULA JAPONICA, in six varieties—Coloured Illustrations, by native artists, will be exhibited at the time of Sale; SEED of LILIUM AURATUM, ABIES FIRMA, PHŒNIX PALUDOSA, &c.
On view the morning of Sale, and Catalogues had.

STEAM PLOUGH for SALE by AUCTION, on JANUARY 5, 1872, at 1 o'Clock P.M.,—FOWLER'S DOUBLE 14-H.P. set.
WILLIAM LAWSON, Blennerhasset, Aspatria, Carlisle.

To Analytical Chemists.
THE COUNCIL of the YORKSHIRE AGRICULTURAL SOCIETY are desirous of APPOINTING a CONSULTING CHEMIST for the Members of the Society. The Chemist must reside in the County of York, and a handsome retaining Fee will be paid to him by the Society. The Scale of Charges for Analysis, which he is to make to Members of the Society, will be fixed by the Chemical Committee in conjunction with the Consulting Chemist to the Society. Applications and Testimonials to be sent to the Secretary on or before January 15 next.
THOMAS PARRINGTON, Secretary.
Croft, Darlington, Dec. 19, 1871.

The Agricultural Gazette.

SATURDAY, DECEMBER 23, 1871.

SOME weeks ago a correspondent asked a question regarding THE COPROLITE BEDS of Cambridgeshire, and having before us the notes of a recent visit to these "diggings," we now proceed to answer it. These deposits are found generally at the bottom of the so-called "green-sand" formation, lying in the last foot or perhaps two feet of it, above the "gault." They are not continuous, except for a few acres together; they are by no means equally full of the greenish-black nodules for which they are worked over; and they are at various depths beneath the surface. Similar beds are occasionally found below the gault, where they lie above the lower green-sand; and coprolites are also found in the "crag" of Suffolk and Norfolk, a much more recent formation. The Cambridgeshire coprolites in the upper green-sand are, however, the most valuable, containing a remarkably uniform (52 to 56) percentage of phosphate of lime, with much less mischievous ferruginous matter than is present in the crag and lower green-sand fossils. A recent Royal Commission has investigated the probable duration of the coal fields of this country. There is a useful field for a similar inquiry regarding coprolites. The beds are being rapidly worked out, and though no doubt the area in which they may be found is large, and new discoveries are constantly being made, and the district is far from having been thoroughly "prospected," yet after all there is but a limited supply, and there are increasing annual demands upon it. Mr. LAWES alone digs 12,000 to 15,000 tons of coprolites each year, corresponding to probably an area of 60 acres, and the quantity dug out in the whole of England must be from eight to ten times as much.

It was to some of Mr. LAWES' workings that we paid a visit last week, and his experience may be quoted for the information of those who may believe that they have coprolites in their land. This belief may have arisen from some of the characteristic fossils having been found within the soil, or having been turned out when digging drains. The first step is to examine the field by borings. There is a tool for the purpose, a sort of taster, by which a 2-inch boring of the subsoil can be brought up from any depth, of 2 or 20 feet. Such borings should be made at 10-yard intervals all over the suspected area, and if the existence of these coprolites is revealed by them, the layer must be uncovered here and there, perhaps in three or four places in a 10-acre field, and the quantity of the coprolites must be ascertained by washing a square yard or two of the layer, taking up its whole thickness for the purpose. But, indeed, if the owner has ascertained the existence of a bed of sufficient richness, all this somewhat expensive process will be done for him by the purchaser. He will thus ascertain how many tons of coprolites he may expect per acre, and the depth from which they have to be dug.

The buyer will offer a price according to these two factors in the valuation. He will make a contract with the tenant also, engaging to complete the work of extraction in three or perhaps four years, undertaking to level the moved subsoil and replace the soil, leaving everything as he found it, and paying a certain sum per acre for the lost profits of the occupation. The contract with the landlord specifies the purchase-money, varying from £60 to £100 or more per acre, according to the ascertained productiveness of the bed, and the estimated cost of working it.

When these particulars are settled, the purchaser proceeds to work the field. He sinks and bores a well, getting through the gault into a water-bearing stratum. He sets up an 8 or 10-horse power engine in a shed near the well, and thence he pumps sufficient—say, 30 or 40 galls. a minute—into a horizontal washing-mill, into which and out of which this water continually pours. The mill itself is a circular ring trough, perhaps of nearly 14 feet outer and 9 feet inner radius, thus providing a circular bed less than 5 feet wide and 3 or 4 feet deep, into which, it may be, 100 trucks of the dug-out coprolite stratum are tilted, one in every five or six minutes, throughout the day. A pair of heavy long tined iron drags within this trough are continually driven round and round, by proper mill gearing, worked by the steam-engine, and the muddy water, laden with the clayey matter thus discharged, is constantly pouring from it, leaving the hard nodules in the bottom of the trough. After 60 or 70 loads have been thus tilted in, the water is allowed to run clean, and the coprolites, roughly tumbled over by the spade, are at length thrown out clean. Three such washings, each of 4 tons weight or thereabouts, may be got out in two days. In one field at Shillington, near Hitchin, there were three such mills at work, and 100 tons a-week were being got—about 170 men and boys being at work. The diggings here are very deep, and the costs in this case probably are largely in excess of the average.

While the mill is being erected a party of men commence digging down to the bed, clearing, it may be, from 6 to 10 feet width, according to the depth of the layer, along one side of the area. We know of no workings more than 18 feet deep. If the stratum is deeper than that it does not pay to lift it, unless indeed it be unusually productive. The "rid" or waste top layer is in the first instance removed to a piece of land hired to receive it, the top soil being kept separate for replacement; but the next slice of land, yard by yard, is thrown forward into the trench dug out, the top soil for a width of perhaps 30 yards being put in barrows and wheeled into a ridge along the top of the first moved slice of subsoil. When 30 yards in width of the field has been dug over and the stratum dug out has accumulated in a heap beside the mill, the next 30 yards is skinned; and, the soil being placed in another ridge parallel with the first along the nearest line of moved subsoil, the interval of roughly turned over subsoil between the two ridges becomes a "pane," on which the washings of the mill can be poured. The washing then commences. Clean water is pumped into the mill, and the muddy stream is pumped from it, and by troughing is conveyed evenly over the surface of this interval until another space is ready, which in its turn receives its share. In this way then the whole field is cleared, dug over perhaps 5 feet, perhaps 15 feet deep. The coprolites, washed out and picked over, are weighed into the nearest railway trucks; the mud washed from them is evenly spread over the intervals between the parallel ridges of moved soil; and the whole, after a summer's drying, is ready to be levelled back again. This may cost from £8 to £14 an acre. The farmer gets his land restored to him with the subsoil deeply stirred, and the soil relaid evenly; the wells are filled up, and the machinery removed to other diggings, and the land is left better than it was before. The landlord has meanwhile had perhaps the double of its agricultural value put in his pocket; an army of labourers—and a capital set of fellows they looked, the Cambridgeshire quarrymen, or navvies, in Mr. WESTON'S employment, under Mr. LAWES, at Shillington—have earned their 15*s.* a-week apiece during the winter months; and the tenant has had an easier earned farm profit (with his rent paid for him) than any other field has given him. Moreover, the land is improved without expense to him. We saw a large stubble field, on which manure was lying here and there on two portions, the rest remaining unmanured. This last was where the coprolites had been dug two or three years ago, and the other portions undug, needed the manure to bring about an even crop over the whole. It is plain that everybody is well served when a coprolite bed is found and worked; and the discovery of Professor HENSLOW has proved most fortunate for landlord, tenant, labourer, alike.

The whole workings at Shillington are conducted on the piece-work plan. The top soil is removed and wheeled into ridges and the first 3 feet deep of subsoil is thrown forward—the whole for, perhaps, 4*d.* a cubic yard. The remainder, thrown forward in great masses, and dug down afterwards to clear away the stratum, costs from 2*d.* to 3*d.* per cubic yard, till you reach the layer. This, which is rarely more than

18 inches thick, soon reveals itself by the rattle of the pickaxe among the nodules, and is thrown up on to the surface and loaded into trucks, which are drawn to the washing mill. The thinner the bed the richer generally it is, and a thin bed near the surface is thus a very valuable property, occasionally yielding upwards of 300 tons of coprolites per acre. Worth 50*s.*, or rather more, per ton at the railway station, they are carried thence for grinding, and thereafter for the sulphuric acid treatment to manufactories over the island. And yielding, after skilful manufacture, a superphosphate rich in soluble phosphoric acid, they thus contribute to the current fertility of the whole island from stores of excrementitious matters deposited long ages before the present configuration of the earth's surface existed.

—— At Mark Lane, on Monday, the trade in English Wheat was dull, at the prices of that day se'nnight; increased depression characterised Wednesday's business.——Butchers having bought largely last week, Monday's trade in beasts at the Metropolitan Cattle Market was very slow. Trade was bad for sheep. Thursday's was nearly a holiday market, purchases being made very sparingly—sheep scarcely inquired after.

—— Mr. W. H. Delano, C.E., the financial secretary of the French Peasant Farmers' Seed Fund, and manager for many years of the Continental business of Messrs. J. & F. Howard, Bedford, has accepted the post of manager to the French Asphalte Paving Company, 59, Rue de la Victoire, Paris. Mr. Delano retains his office at No. 4, Cheapside, E.C., where the agency of the Société des Agriculteurs de France will be carried on under the superintendence of his brothers.

—— The following is an extract from the Message of President Grant to the Congress of the United States of America, having possibly some significance for English politicians and agriculturists:—

"The Report of the Commissioner of Agriculture gives the operations of his department for the year. As agriculture is the groundwork of our prosperity, too much importance cannot be attached to the labours of this department. It is in the hands of an able head, with able assistants, all zealously devoted to introducing into the agricultural productions of the nation all useful products adapted to any of the various climates and soils of our vast territory, and to giving all useful information as to the method of cultivation, the plants, cereals, and other products adapted to particuliar localities. Quietly, but surely the Agricultural Bureau is working a great national good, and, if liberally supported, the more widely its influence will be extended, and the less dependent we shall be upon the products of foreign countries."

—— Mr. Hope, V.C., of Parsloes, contributes a useful letter to the recent discussion in the columns of the *Times* on the subject of Sewer Ventilation, pointing out—1. That the best and cheapest way of ventilating a house drain is to place a loose-hanging shutter, or "tidal valve," outside the wall of the house to permit the sewage to flow out, but to prevent the gas flowing in, and then just outside this to run up to the top of the house a pipe the sectional area of which is equal to not less than half that of the drain. 2. That if sewer gas produced fever as it escapes into the majority of houses, either continuously or intermittently, the cases of enteric fever would be almost indefinitely multiplied, and the country would soon be depopulated. Here the germ theory of disease comes to the aid of common sense and chemistry, and affords a solution of the difficulty. No one ever heard of a chemist catching an infectious disease from experimenting with gaseous compounds in his laboratory. Mr. Hope prefers therefore to believe with Sir Thomas Watson that it is not the gas which produces infectious disease, but specific germs which are occasionally present in the gas, and of the danger of the possible presence of which the gas may always be taken as an indication. The gas is the warning, but the germ is the real danger; and this alone explains how the same arrangements of drains and traps may suddenly produce fever, which have existed harmlessly for years previously, or at most have only produced a little nausea. 3. Mr. Hope adds:—

"I would protest most earnestly for the thousandth time against the notion, still so complacently entertained, that if good sewers are constructed and good ventilators added the sewage difficulty is solved. It is only removed to a little distance and its form changed. The sewage still has to go somewhere. At present, in the case of inland towns, it goes into the drinking water of the next town down the river, and in the case of sea-side towns it goes into the sea in which the invalid visitors bathe. Until it is converted, by its application to land, into plant life, it will continue in obedience to the laws of Nature to produce animal death."

—— The following translation of a letter, reporting the Effects of Steam Cultivation, which lately appeared in the *Wiener Landwirthschaftliche Zeitung*, has been forwarded to us for publication by Messrs. Fowler & Co.:—

"In the following I have the honour of communicating to you the results of experiments with steam-ploughing, which took place near Wieselburg, end of June, 1871. The figures are taken from the official report of the administration of H.I.H. the Archduke Albrecht's estates at Ungarische Altenburg.

"The Administration had orders to take the exact measurements with regard to quantities, and it reports about the effect of steam-ploughing as compared with ploughing by horses, as follows:—

"The plots (in one large field), which were partially ploughed by animal power, partially by steam, employing either plough or grubber, remained as a fallow from 1870-71, and were put into Beetroot in the spring of 1871.

"The harvest gave the following results on the different plots:—

	Cwt. of Beet.
Ordinary deep ploughing, with oxen or horses, 10 to 12 inches deep, gave	143.77 per joch.
By steam cultivation, ploughing 12 inches deep	201.75 " "
Ditto, 15 inches deep	253.45 " "
Cultivating 10 to 12 inches deep	174 51 " "

"This shows an increase of respectively 58, 109 and 30 cwt., or of 40, 76, and 24 per cent. in favour of steam-ploughing, compared with horse labour.

"The trial plots were close to each other. The nature of the alluvial soil was, therefore, of the same quality, and the difference in the results appears to be due solely to the superior quality of the cultivation.

"After the experiments at Altenburg, this steam-plough went to the estates at Bellge; similar experiments have been made on these estates, but the figures are not yet in our hands. By special order of H.I.H. the Archduke Albrecht, two more steam-ploughs were ordered, of which one is destined to work at Altenburg, where agriculturists of that district will be enabled to get personally acquainted with the working and the results ofsteam cultivation.—(Signed) *Jesse, Vienna, December* 1, 1871."

—— We quote from the *Times* portions of a description of the New Market for Imported Live Stock at Deptford which lately appeared in its columns. A visit to the place on Thursday gave one the impression that a great deal remains to be done before the old dockyard will have been completely converted to its new purpose. It is, however, advertised to be opened for use on Thursday next:—

"The dockyard at Deptford, comprising an area of 22 acres, with a river frontage of 1012 feet, included a tidal basin of 1¼ acre in extent, with seven 'slips' or deep excavations in which vessels were built, these being covered by four great sheds, and nearly half the remainder of the area was occupied by ranges of buildings, houses, yards, and gardens. The arrangements for the conversion of these old Government premises into the new market were designed by Mr. Horace Jones, F.R.I.B.A., the City architect. By connecting together the three great sheds around the dock basin, the architect has formed the principal roofed-in area, in ground plan of a pentagonal horse-shoe form, with the basin in the middle and the side next the river left uncovered. From the two ends of this horse-shoe range of lairs two separate piers or landing-stages, 350 feet apart, project into the river; and a third landing-stage, 400 feet farther east, is provided for a long shed, which stands apart from the other lairs. Each pier, consisting of timber work of very strong and superior character, projects 172 feet from the frontage, terminating in a transverse stage 95 feet in length, flanked by dolphin piers; and upper and lower fixed platforms, one 14 feet above the other, are being constructed for unloading at high or low tide. At low tide there is a depth of 12 feet or 13 feet of water, so that steam vessels can lie alongside the pier head to discharge cargo at any state of the river, and three vessels may be unloading simultaneously. Should disease appear in any of the cargoes, one pier or two out of the three may be kept disinfected. Cattle and sheep will walk off the ship along a gangway, just as passengers pass off a river steamboat; and Mr. Philcox, the clerk of the market, has contrived an arrangement of gates and of removable posts and chains for receiving the animals at any part of the stage front and prevent accidents. A traversing steam crane, with a jib projecting 35 feet, will land in a sling any animal unable to make his own exit from the ship. Close by the shore end of each pier is a house for the immediate slaughter and melting down of any animals condemned as unfit for human food; an excellent arrangement being contrived for hoisting each carcase, lowering it into a strong iron cylinder, something like a steam boiler set on end, and digesting it by means of steam at a high pressure. Animals not condemned by the inspectors will pass into the covered lairs or pens; and the horse-shoe range of sheds is divided by two brick walls into four large compartments for the better separation of healthy and suspected cargoes. The shed-roofs of the 'slips,' some 80 feet or 90 feet in height to the ridge, were open at the sides, but these have been converted into houses, by side enclosures of wood-framing, the lower portion boarded, the upper part glazed, with a large aggregate area of opening panes and of glass louvres inserted for ventilation. The pens are paved with brick on edge, and the roadways of 20 feet breadth passing down the centre of each building are of granite pitching. The new roofs uniting together the slip-sheds are of wood and slate, carried upon iron pillars, and are about 15 feet in height. In one place have been fitted up a few iron pens, constructed of iron stanchions and round bars, while some sheep-pens, with opening and shutting hay-racks, testify to the ingenuity of Mr. Rudkin, their designer. But nearly all the cattle and sheep pens are constructed of stout oak posts and bars, two different varieties of headstall for feeding and watering having been contrived according to the practical knowledge of Mr. Rudkin and Mr. Brewster, two active members of the City Markets Committee. Water-troughs of wood, connected together by short lengths of pipe, are fitted in most of the cattle pens, but some have smaller troughs of iron, and water is turned on by a cock at the end of each row of headstalls, the cast-iron water mains being filled by the Kent Waterworks Company from their artesian wells. Iron hay racks are hoisted in the sheep-pens. Each lair is well lighted at night by gas standards. The cattle pens are of 24 feet wide, and 60 feet to 90 feet long, according to the breadth of the building, the pens running transversely from the central roadway to the side wall, while 6-feet broad passages divide pen from pen. Each sheep-pen measures 27 feet in length by 10 feet wide, the fences consisting of wooden uprights, with iron round bar rails, and small iron drinking-troughs are placed upon the ground, and connected by pipes, so that water flows from one to another.—By a rough estimate there must be more than 5½ acres of these lairs under cover; and the exact calculation is that, with an allowance of 30 square feet per beast, there is accommodation for 4000; or, allowing 22 square feet per beast, there is space for 5300. At 5 square feet for sheep, there are pens for 11,500; or at 4 square feet for sheep, there are pens for 14,500. As a test of the sufficiency of this house accommodation, take the *maximum* importation arriving in readiness for a Monday market; this occurred on October 15, 1865, when 4074 beasts, 171 calves, 426 pigs, 14,500 sheep arrived in London from Harwich in the course of a Saturday and Sunday. It would appear, therefore, that the Deptford market is capable of warmly housing, feeding, and watering any number of foreign cargoes likely to arrive for any one market day. The animals will be sold alive in their pens, and then butchered in the abattoir.—These ranges of fine slaughter shops have been formed of the former arsenal and store-rooms, a pile of brick buildings standing midway between the two blocks of lairage shedding, and intended for a very different use when they were erected in the last century, around the remains of an old monastery, which still stands, bearing the date A.D. 1513. The cattle slaughter houses occupy two parallel rows, with a court between, each row being divided into 10 shops, of which the dimensions are 43 feet in length by 23 feet in breadth, and each of these shops is parted into two bays by iron pillars supporting trussed girders. The internal height is about 22 feet. The partitions are of wood, the lower portion closed, the upper part consisting of open upright wood rails. The floor is asphalte, excepting that about one-third next the slaughtering end is paved with large flagstones. A wooden pound outside the entrance receives each beast till his turn comes for the poleaxe. There are six separate slaughter-houses for sheep—namely, three measuring 42 feet by 24 feet each, and three measuring 28 feet by 24 feet each; and as 300 to 450 sheep can be hung up in one house, this amounts to an accommodation for killing 2200 sheep without removal. Hence it appears that ample accommodation for both buying and butchering is provided at the Deptford market; and, indeed, the smaller fittings, such as the 'crutch' and the 'fat-tray,' are now in perfect readiness for use. Every arrangement for drainage, cleansing, and ventilation has been carefully attended to, and a long line of marine barracks and workshops has been furnished as stables and van houses for use by the salesmen and butchers, with stores for hay, offices, &c.; while a tavern and coffee-house, with a limited number of beds, have not been forgotten.

—— At the Brentford Petty Sessions on Saturday last, Mr. Price Jones, a cattle dealer, of Abergele, North Wales, and John Thomas, his drover, were summoned for causing a herd of cattle to be driven along the road at Twickenham while several of the animals were infected with foot-and-mouth disease. Mr. W. Jasper Hinge, the local cattle inspector, stated that on Sunday, November 12 last, he overtook, on Twickenham Common, a drove of 125 Welsh cattle, under the charge of Thomas, and on getting among them he observed that about 50 of them bore symptoms of the foot-and-mouth disease. Thomas said they belonged to Mr. Price Jones, who had gone on to Kingston. Information was sent to the latter and he came back to Twickenham, when witness served him with notice of the declaration of the disease in his herd. As he left Jones at the field his last words were, "Now, mind, Mr. Jones, those things must not be removed." Early next morning witness went to the field to see that the animals were fed and watered, and he then found all missing. He traced them to Kingston fair. Richard Lovell proved that the cattle were removed as soon as the inspector left. For the defence it was argued that none of the beasts had the disease when seized by the inspector, but that several had just recovered from it. The Bench fined Thomas £50, and Jones £100, including costs.

—— The Journal of the Agricultural Society of New South Wales, which is the consistent advocate of Judging by Points, publishes specimens of the award paper on a recent occasion, wherein the whole status of the beasts exhibited is distributed over 15 columns—the thousand marks, to which ideal perfection attains, being divided thus:—40 for colour and hair; 80 for hide and handle; 60 for evenness of flesh and fat; 70 for horn, eye, expression, face, and muzzle; 60 for neck, throat, shoulder, and forearm; 70 for breast, brisket, and chest; 50 for chine and back; 90 for fore and back ribs; 50 for loin; 60 for flank and belly; 110 for rump, hip, quarter, tail, and set-on; 60 for twist and thigh; 40 for bone; 60 for size; and 100 for general symmetry. The estimate is given under each head in reference to any beast passing under judgment, and the totals vary from 220 up to the ideal 1000 in the 60 or 70 instances which are cited. It seems to us that the method is only wanted where there is a very near approach to equality, and that it is just there where it will not safely apply. Take, for example, No. 168 and 171 on the published list: the former had achieved a total of no less than 925 marks, the latter only 915—the one accordingly took the first prize, the other the second. But now, on looking through the lists, we find that the latter of the two is the better in respect of "good symmetry" and of "size," in respect also of superiority in "twist and thigh," and "flank and belly," and "horn, and eye, and expression," and "hide and handle," and "colour and hair." Of these several points the first, third, and sixth, would certainly be accounted very important. Moreover, it was equal to its competitor in "bone," "loin," and "chine and back." The first prize beast, on the other hand, was superior in "evenness of fat and flesh," "neck, throat, &c.," "breast, brisket, &c.," "chine and back," "fore and back ribs," and "rump, hips, quarter, &c." We doubt if arithmetic, to which the task of deciding merit is here remitted, is capable of performing it aright. Better let two such equal animals walk round the ring, and let the impression of vigour, health, and style, qualities of which it is impossible to make a numerical valuation, determine the award.

—— Mr. JEMMETT, of Murrell Hill Farm, Binfield, Berks, tells us, on the subject of FARM ACCOUNTS, that the majority of his correspondents speak of his "Annual Farm Account-Book" as satisfactory, but as requiring in the pocket-book additional space for the labourers' names. Provision is now made for 14 names. To meet, however, the case of larger farms, or for the use of stewards or bailiffs, the pocket-book form is now arranged anew, the object being twofold: 1st, to give the same room in a column of pay list as is given in the "Annual Farm Account-Book" — two columns (recording for a fortnight) meeting the requirements of the 300 to 600 acre farmer. On pp. 2 and 3 there is the same form for recording the work done as is given in the "Annual Farm Account-Book," also for a fortnight. Then follow notes of stock and corn, with cash account for the same period — lastly, a page for memoranda and engagements. In cases where the farmer requires to record the time and employment of 30 to 35 labourers, the second column of pay list must be taken into use. A bailiff can use the first column of pay list to note the time of the labourers employed on the farm proper, second column for those employed on account of gardens, home grounds, woodland, drainage, or any other permanent improvements, as the case may be, the work done being recorded on p. 4,—in these cases making the six pages a full record of one week; whereas the ordinary farmer, employing up to 20 hands, will find space for every entry for two weeks.

—— At an adjourned meeting of the members of the Wisbech Chamber of Agriculture, to continue the discussion on Mr. RUSTON'S paper on FREEDOM of CULTIVATION, Mr. J. H. LITTLE alluded to the experiments of Mr. PROUT, near Sawbridgeworth. He said that the Commissioners of the Royal Agricultural Society, who visited his farm in 1866, were so struck with the absence of all stock on his farm, and the fact that nearly the whole of it is given up to white straw cropping, that they thought it could not go on for long, and asked Mr. PROUT what he intended to do. He answered that as soon as he saw any necessity for keeping a stock of sheep or bullocks on the farm he should not hesitate to do so. Five years, however, have elapsed since then, and he has seen no reason to change his tactics. In 1870 his results were perfectly marvellous. Off 450 acres of strong lands he sold £5310 worth of corn, leaving £1880 as the tenant's profit. The very fact of that kind of cultivation having been carried on for nine or ten years proved that the fertility of the soil, if it was properly used, could not be exhausted. Mr. PROUT was in the habit of applying enormous quantities of artificial manure to the land, at least it would seem enormous to people in his part of the country, although he did not think he exceeded on the average 50*s*. an acre. He thought landlords and agents were in danger of forgetting the different circumstances of agriculture now to what they were 20 years ago. They had now an almost inexhaustible supply of different manures which they did not possess to any extent 40 or 50 years ago; and he thought some consideration should be shown to tenants who were willing to use those manures, and to take advantage of the other improvements in agriculture, and that they should be allowed almost perfect freedom in cultivation.

NOTEWORTHY AGRICULTURISTS.

MR. JAMES HOWARD, M.P.

THE leading member of the great Bedford firm of agricultural machine makers deserves a prominent place in the list of noteworthy agriculturists. The growth of little more than 30 years—not much older than the Royal Agricultural Society of England—this firm is now among the largest manufacturers of implements and machinery for field and fold and barn; and to Mr. James Howard's judgment, pluck, and energy, its prosperity has been largely due. From the day when he personally held a pair-horse plough and won the prizes in the earlier trial-fields of the National Society, till now, when through a long course of public services, still chiefly in the agricultural field, he stands Member of Parliament for his native town, he has lost no step in the clamber upwards for lack of earnest, confident, persistent, and laborious industry. Mr. James Howard was born in 1821. He has been for many years an active member of the Council of the Royal Agricultural Society of England, and of the Central Farmers' Club, of which, also, he has been President, and at meetings of which he has read papers on Continental agriculture and on that of the United States and Canada, full of valuable information, collected by himself during personal travel. Mr. Howard has taken especial interest, both in and out of Parliament, in many other subjects of agricultural interest, *e.g.*, the retention of the patent laws, the purification of our rivers, the promotion of steam cultivation, the utilisation of town sewage, the Sugar-Beet industry, &c. It is probably his work in the promotion of steam cultivation that most of the readers of this note will remember when thinking of his services to agricultural progress.—To him also was owing the origination last year of the Seed Fund for the benefit of French farmers, by which £50,000 worth of seed was sent, chiefly by English farmers, to meet the wants of the districts which had been ravaged by the war.

MR. JAMES HOWARD, M.P.

To this, taken from *Cassell's Farmers' Almanac*, we add further notes from another source:—

Mr. Howard possesses many other claims to the recognition and esteem of the public than those which are due to his connection with the great manufacturing firm at Bedford. For many years he has taken a deep interest in the advancement of agriculture and in the progress of agricultural societies. His management, too, of his own farms has been a useful example of successful strong land culture by steam-power.

Mr. James Howard was born October 16, 1821. He was educated at the great public schools of his native town, Bedford, where he very early distinguished himself. Before the age of 14 he had carried off three of the principal annual prizes, and upon the sudden dismissal of the head master of the lower school, he was placed, at this early age, in charge of it, and for some months discharged the duties of a schoolmaster, much to the satisfaction of the head master, who, to the day of his death, watched the career of his pupil with a lively interest.

For many years Mr. J. Howard's energies were almost entirely devoted to the management and extension of his own business. Naturally fond of mechanical pursuits, he turned his attention, soon after leaving school, to the improvement of the ploughs made by his father. In 1841, with a plough of his own design — the first iron-wheel plough of the present type ever exhibited—he went to the Royal Agricultural meeting, held at Liverpool, and, not finding a man who understood a wheel-plough, and having been accustomed to the handling of a plough, he determined to hold the implement himself, and at the conclusion of the trial found himself rewarded with a first prize. In the following year he went to the Bristol meeting of the Royal Agricultural Society, where he again carried off the chief honours. Having thus and so early gained a reputation in connection with the Royal Agricultural Society, his business rapidly expanded, and at every meeting for many years afterwards he was to be found with ploughs brought nearer and nearer to perfection.

In the spring of 1856 Mr. Howard was invited by Mr. Smith to go to Woolston to see his steam-cultivator at work, and he at once saw that a new era was dawning upon agriculture, and that his vested interest, so to speak, in the plough trade might be in danger. Instead, however, of opposing the new system, he at once offered to join Mr. Smith in bringing his apparatus before the public; accordingly, in the same year, at the Royal Agricultural Society's meeting at Chelmsford, Mr. Smith and the Bedford firm were allied in working the Woolston tackle. For several years afterwards Mr. Howard threw his whole energies into steam cultivation, and took a hilly, strong-land farm, for the purpose of experimenting and improving the apparatus. Finding, from the rapid wear of the rope, that without something more durable than iron wire, steam cultivation would be financially a failure, he had one made of steel wire, which, we believe, was the first steel-rope ever used in ploughing. We have always regarded it as an unfortunate event for the country that the misunderstanding which occurred about 10 years ago should have separated two such energetic, although differently constituted men.

About the time of this separation, Messrs. Howard bought of Lord Ashburnham an estate near Bedford, upon which, on the testimony of the Royal Agricultural Society's Commission, and many others, steam cultivation has been most successfully carried out. Moreover, the records of our agricultural societies show how successful Mr. Howard has also been as an exhibitor of breeding stock. As these farms have been visited by thousands of English and foreign agriculturists, they have contributed in no small degree to the general advancement of agriculture, and particularly of steam cultivation.

Mr. J. Howard's grandfather lived for many years at the ancient Priory at Bedford. He farmed the Priory lands, which are now occupied by Mr. Charles Howard, of Biddenham. They adjoin those belonging to the firm of Messrs. J. & F. Howard; the brothers thus have in hand amongst them some 1600 acres of land, on which to try their implements, and carry on their experiments.

The Britannia Works were built upon a plan prepared by Mr. J. Howard. They are among the best-arranged manufactories in the kingdom: they occupy an area of upwards of 18 acres, and the extent of the business may be judged by the fact that some 600 railway trucks per month, laden with implements, leave or arrive at the private station upon the works.

Notwithstanding the abundant occupation supplied by a rapidly growing business, Mr. Howard found leisure for much public work. In his own locality he was the founder, with a friend now deceased, of a working men's institute, to the members of which he has from time to time lectured on important subjects. His lecture on "Labour, Wages, and Machinery," may be mentioned as proving that he had made political economy the subject of careful study.

Another important institution of which he was the originator is the Bedfordshire Middle-class Schools. About seven years ago, in speaking at the county agricultural meeting, he remarked that although much had been done to raise the standard of education among the labouring classes, no corresponding effort had been made to bring a good liberal education within the reach of the sons of farmers; and he suggested a county school. The idea having been brought before the Duke of Bedford, he at once joined Mr. Howard and others, and the present splendid pile of buildings was erected, at which 300 lads are boarded, and receive a superior education, at a cost of about £30 a year.

Mr. J. Howard was elected Mayor of his native town in 1863, and at the end of the year was unanimously re-elected. In that official position he was enabled to carry into effect many local improvements which he had long advocated. Amongst other subjects, he turned his attention to that of town drainage and sewage utilisation. Before recommending a plan for Bedford, he went a tour through England and Scotland, to ascertain the results obtained in other towns. During his mayoralty, a comprehensive scheme of drainage, water supply, and sewage utilisation, was inagurated; and it is no little to the credit of his sagacity that Bedford was the first place to be sewered on what is now called "the separate system." In his report on the subject to the Corporation of Bedford, he recommended that the rain-water should be discharged separately into the river by the existing sewers. Up to that time, no proposal to separate the rainfall from the sewage had come before the public, although the plan is now advocated by the leading sanitary engineers.

The electors of Bedford had, for some years before Mr. James Howard entered Parliament, urged him to become their representative; but he declined all overtures until the election of 1868, when, in view of the important public questions to be settled, he was prevailed upon to stand, and was returned at the head of the poll. During the first session, Mr. Howard spoke on the Endowed Schools' Bill, and was invited to act on the Select Committee on that Bill. The Cattle Diseases Bill was introduced about the same time by Mr. Forster, to whom Mr. Howard's practical knowledge and judgment on rural affairs were soon apparent, and were of no little service in framing the provisions of that difficult measure.

Mr. Clare Sewell Reed, M.P. for East Norfolk, has borne public testimony to the parliamentary services rendered by Mr. J. Howard to the agricultural interest, in a speech in which, after introducing Mr. Howard as President-elect to the London Farmers' Club, he said:—

> "One evening last session, when there was a debate on the Patent-laws, and that great man, Sir Roundell Palmer, and that other great man, Lord Stanley, had denounced the Patent-laws, up got Mr. Howard and abolished the legal arguments of the one, and the philosophical notions of the other in the most charming and beautiful way. A gentleman who was sitting behind me said 'Well, the Liberal on the other side of the house seems to me to knock those great dons over just as if they were ninepins, and this he does while he is beaming with good nature.'"

After the session of 1869, Mr. Howard went a tour upon the Continent, and on his return read a paper to the London Farmers' Club on "Continental Farms and Peasantry," which was full of interest. Mr. Howard, believing it would counteract much misapprehension on questions connected with land, was subsequently induced to give a more lengthened account, and publish his paper. In this book he was one of the earliest to direct public attention in this country to the question of Beetroot sugar manufacture.

Mr. J. Howard's previous papers read at the Farmers' Club—on the "History of Steam Ploughing," "Things in America," being an account of his tour in that country—contain much valuable information, and had placed him quite in the front rank at the Club, of which he was subsequently elected Chairman. According to Mr. John Coleman's paper on "Cheese Factories," the first account published in this country of associated dairies and cheese factories is to be found in Mr. Howard's "Things in America."

Mr. Howard is also the author of letters and pamphlets on a variety of subjects. Some years ago, on the invitation of the principal agricultural implement manufacturers, he wrote a brief historical sketch of the implement trade, the effect of prizes upon that business, and suggestions for improved arrangements in the trials of agricultural machinery. He was also the author of the scheme for dividing the implement trials of the Royal Agricultural Society into triennial courses, and submitted to the Council a classification showing how the various machines should be arranged in the classes. A few months after the breaking out of the Franco-German war he conceived the idea of aiding the French farmers with seed wherewith to crop the land, and at once put himself in communication with a French friend, His Excellency M. Drouyn de Lhuys. Owing, however, to an attack of illness, and the long continuance of the war, no steps were taken at the time, but subsequently Lord Vernon came to Mr. Howard's assistance, when about £50,000 was raised, and in the spring the seed was distributed among the distressed peasant-farmers of France, Mr. J. Howard acting as treasurer to the Fund.

Mr. Howard's health, already weakened by an attack of sunstroke in Egypt, suffered much from the long hours of the House of Commons, during his first and second session. Owing to this he has not until recently been well enough to resume his numerous duties, and consequently has not taken so prominent a part in Parliament as he probably would have done. It is gratifying to know that a rest for several months has restored his former strength and vigour of mind. For two or three months past he has resumed the management of the Britannia Works, and has been busily engaged with his old pursuits of carrying on experiments in the field.

Prophets are said to be without honour in their own country. In Mr. Howard's this is far from being the case. The Bedfordshire Agricultural Society, which has for seventy years been presided over by a member of the aristocratic or hereditary landowners of the county, this year unanimously elected Mr. J. Howard to the presidency, an office which he fills at the present time. Indeed, it may be affirmed that he not only stands well in his own district, but that his neighbours fully appreciate the laurels he has gained elsewhere.

MODEL FARMS IN IRELAND.

[Mr. Baldwin, of Glasnevin, Principal Inspector of Model Farms and Agricultural Schools under the Commissioners of National Education, lately addressed a meeting of the North-East Ireland Agricultural Society on this subject. The following is his speech, as reported in the *Dublin Farmers' Gazette.*]

Mr. Baldwin said he attended on the invitation of the secretary, and with the sanction of the Commissioners, to afford the members every information they might require. The system of agricultural education now in operation in this country under the direction of the Board of Education consisted of two distinct branches, which were, to a great extent, independent of each other, but which were capable of acting and reacting on each other most beneficially. Much confusion has arisen from not viewing these two branches each on its own merits. The first branch consisted in blending, in ordinary rural national schools, instruction in the elements of agriculture with the ordinary course of literary education. The Commissioners have been pursuing this combined system of literary and agricultural education with varying success for upwards of 30 years. At first it was not well understood; but at last the efforts of the Commissioners were in a fair way of being crowned with success. The number of rural national schools in which agriculture is taught has been steadily increasing of late. In 1862 the number of boys who came within the influence of this species of instruction might be counted by hundreds. They are now more than ten times as many. The disposition of the gentry and clergy of all denominations is more strongly in favour of extending this branch of agricultural education, and the Commissioners were doing all in their power to meet the wants of the country. It was needless for him to dwell on the importance of this branch of education at a meeting of enlightened gentlemen such as he had the privilege of addressing. The present time was favourable for its extension. The farmers evinced an increasing desire to receive it. The Board aimed at affording sound elementary notions of modern agriculture. The knowledge thus imparted would give the tenant-farmers a new power of developing the resources of their farms. The extension of improved implements and machines rendered it an imperative duty to afford elementary knowledge of agricultural mechanism to the rising labourers. He ventured to invite the co-operation of the gentry and clergy, in developing the simple and inexpensive system of agricultural education to which he had just referred.

The second branch or grade of the Board's system of agricultural education was afforded in the model farms, to which the meeting wished that he would, on this occasion, more particularly address himself. Of the model farms, it may be said that their establishment was forced on the Commissioners; that is to say, the results convinced all classes that the state of agriculture which had prevailed should, as far as possible, be superseded by a new system; and many good and wise men advocated a system of model farms, as one of the means of accomplishing that object. The Commissioners yielded to the demands made upon them, and established some twenty of these farms throughout the country. It was not in his province to offer any opinion on the policy of the course pursued; but he could state, for the information of the society and of the public, that the farms, as farms, are now, one with another, paying a satisfactory amount of profit, and exhibiting judicious modes of farming. The soil of the Belfast farm is, unfortunately, very stiff and plastic; but after the application of capital and energy, it has at last been brought to a state in which it will henceforward pay. There is a splendid building in it, capable of accommodating a large number of boarders. There is a first-rate staff—a clever, sensible agriculturist, who manages the farm, and affords systematic instruction to his pupils in the science and practice of agriculture. The literary instruction of the pupils is directed by one of the best masters in the empire, who has also charge of the general discipline. There is adequate assistance; so that at the school you have at present a staff competent to afford a sound, general literary, and agricultural education. They teach the elements of chemistry, of physics, and other branches relating to farming; and the general education includes land surveying and mapping. The day is divided equally between practical agriculture, including outdoor business, and the cultivation of the mind. The head is stored with general knowledge, and the head and hands are turned to skilled practices. With the view of placing this excellent general education and special training in improved ideas and practices within the range of all classes, the fee for paying pupils is only £2 a quarter, including board and education, the Commissioners contributing the additional amount required to provide suitable diet; and in order that young men of intelligence and promise, who evince a decided taste for farming, but whose parents or friends may find it inconvenient or impossible to pay £2 a quarter, the Commissioners take in four pupils without any fee. These free places are given away by competitive examinations. Of young men who seek admission to qualify themselves for farming a high standard of proficiency is not required. If they can read with intelligence, and write a fair hand, and do a little cyphering, they are admitted. A higher standard is required from those who intend to become land stewards, agriculturists, and agricultural teachers. They must be persons who, by their intelligence and aptitude for agricultural pursuits, would, by promoting the public good, render the state an adequate return for the cost of their agricultural training. There is a central Agricultural Training Institution at Glasnevin, near Dublin, and to which the pupils who receive a preliminary agricultural training at the provincial agricultural schools are drafted from time to time. At present the great number of pupils at Glasnevin are free, admission being obtained half-yearly by competitive examination. Well educated persons from all parts of the country are allowed to compete; the most intelligent and promising are selected. It is competent for a boy who fails to obtain a free place to become a pupil on paying a fee of £5 per quarter. Paying pupils are also admitted at all periods of the year. Some of these young men go to farm for themselves or for their parents; a large number seek employment as stewards, agriculturists, and agricultural teachers. For a long time a very well-founded objection was raised to them by the landed gentry on the ground of youth and inexperience. They are sent out as working stewards to the larger model farms, and, as opportunity offers, as assistants to clever stewards and successful farmers. A young man enters the Belfast farm, after his pupilage there he goes to Glasnevin, from Glasnevin he is sent as a working steward to the model farm at Kilkenny, Cork, or Athy. He often undergoes a four or five years' training before he is recommended to a country gentleman. This arrangement has worked admirably. The demand is increasing, in proof of which this one fact may be mentioned, that while the course of training at Glasnevin is two years, there is not at present a pupil of 18 months' standing; and at the present moment nine persons are wanted to fill situations that require a good deal of agricultural knowledge, as well as intelligence and trustworthiness. An admirable arrangement has been commenced by Lord Clancarty, who has been good enough to encourage his steward, Mr. Nesbitt, himself a Glasnevin man, to take six Glasnevin men as apprentice pupils to finish their agricultural training on the home farm at Garbally. All he would say, in conclusion, was that it appeared to him that no man who understood the state of Ireland could for a moment doubt the utility of such a system of agricultural training as he had now endeavoured to explain.

[It was then agreed that the secretary, Mr. Bingham, should open a list of candidates for admission to the Ulster Model Farm and School at Belfast, and place upon it the names of applicants recommended by members of the association, and that from that list vacancies could be filled from time to time, according as they might occur.]

OUR LIVE STOCK.

CATTLE.

THE results of the principal Shorthorn sales given in the accompanying Table show, when compared with those of previous years, the extraordinary increase in value of this kind of stock. We have been accustomed at the close of each year to place before our readers similar tabular summaries, and looking back at these we find the following average results over a large number of Shorthorns disposed of at public sales. The figures are not supposed to represent the entire number of Shorthorns sold, but the general results of the sales recorded in these columns during each year :—

In 1868, 1423 Shorthorns averaged	..	£35	7	0	each.
In 1869, 1585 ,, ,,	..	35	5	0	,,
In 1870, 1430 ,, ,,	..	35	13	5	,,
In 1871, 2254 ,, ,,	..	53	3	6	,,

Name.	Date.	Number Sold.	Highest Price.	Average.			Total.		
			Gs.	£	s.	d.	£	s.	d.
Colonel Kingscote..	March 8	62	330	56	15	4	3519	12	0
Right Hon. Lord Fitzhardinge ..	March 9	33	100	33	18	0	1118	15	6
Mr. R. Stratton	Mar. 15	55	71	33	19	6	1868	9	6
Mr. C. Stubbs ..	Mar. 17	56	81	25	12	8	1435	9	4
Mr. A. J. Robarts .	Mar. 30	36	270	66	13	0	2399	5	0
Mr. C. L Whalley	Feb. 7	44	46	26	16	0	1179	4	0
Mr. W. Bolton, Ireland	Feb. 16	12	57	33	1	9	397	1	0
Mr. T. Robinson ..	March 1	30	51	25	13	6	770	5	0
Mr. R. H. Harris..	Mar. 14	25	40	29	5	6	731	17	6
Mr. W. T. Crosbie	April 4	31	50½	25	6	8	758	8	0
Mr. E. H Cheney	April 5	56	500	91	13	0	5132	8	0
Mr. P. Riall ..	April 15	23	45	27	5	0	626	15	0
Mr. John Wood ..	April 20	32	200	70	10	3	2256	9	0
Mr. D. Nesham ..	April 21	63	140	36	16	8	2320	10	0
Mr. John Peel ..	April 26	19	400	148	8	9	2820	6	0
Mr. R. Eastwood..	April 26	15	400	181	8	9	2721	12	0
Mr. R. Jefferson ..	April 28	53	57	43	13	3	2314	4	0
Right Hon. Lord Penrhyn .. .	May 2	54	200	76	4	10	4117	1	0
Mr. D. McIntosh .	May 3	45	815	68	4	6	3070	4	0
Mr. James Christy	May 4	67	270	40	18	8	2742	12	0
Earl of Aylesford ..	May 9	34	300	84	7	5	2868	12	0
Mr. R. Searson ..	May 11	72	80	34	18	0	2512	13	0
Mr. W. Chalmers ..	May 12	54	45	26	16	0	1447	4	0
Mr. Thomas Barber	May 17	41	150	40	11	10	1664	5	0
Lord Walsingham..	May 18	57	80	40	10	2	2308	19	0
Mr. G. A. Cooper	May 19	18	76	37	18	4	682	10	0
Mr. W Derham ..	May 31	28	110	43	4	4	1210	2	6
Mr. Goode .. .	June 20	46	50	23	3	7	1066	4	10
Messrs. F. Leney & Son	July 5	44	310	74	3	10	3264	9	0
Mr. Fred. Murton .	July 6	36	42	27	4	3	979	13	0
H. M. the Queen	July 19	55	67	33	12	0	1848	0	0
Mr. J. Harward and Mr. J. Downing	July 20	50	355	54	15	9	2739	9	0
Mr. F. H. Fawkes .	Aug. 1	35	150	47	19	5	1678	19	0
Rev. J. D. Jefferson	Aug. 3	36	160	32	10	5	1170	15	0
Earl of Feversham .	Aug. 10	26	56	36	10	11	950	5	0
Mr. Thomas Barnes	Aug. 23	44	750	100	14	1	4431	0	0
Mr. J. G. Grove ..	Aug. 25	44	310	99	9	9	4377	9	0
Duke of Devonshire	Sept. 6	43	1005	240	13	10	10349	17	0
Mr. W. W. Slye ..	Sept. 7	28	500	71	10	3	2002	7	0
Mr. J. P. Foster ..	Sept. 8	56	360	102	1	6	5716	4	0
Mr. Thomas Bell ..	Sept. 12	49	1065	58	13	5	2874	18	0
Duke of Richmond .	Sept. 12	23	50	36	2	0	1805	0	0
Sir Robert Paul ..	Sept. 12	41	101	16	4	0	664	4	0
Messrs. Dudding ..	Sept. 14	82	155	48	3	0	3948	0	0
Sir John Rolt ..	Sept. 19	36	240	41	0	2	1476	6	0
Mr. H. J. Sheldon.	Sept. 21	41	415	86	0	8	3527	8	0
Mr. W. Ashburner .	Sept. 27	30	68	30	1	4	901	19	0
Mr. Ladds	Sept. 28	95	72	43	13	7	4149	12	0
Mr. Angerstein ..	Oct. 3	37	78	31	11	2	1167	13	2
Mr. Elias Clarke ..	Oct. 4	46	50	26	10	0	1219	0	0
Colonel Duncomb..	Oct. 20	72	80	37	10	4	2663	17	0
Mr. R. W. Reynell	Oct. 24	28	80	32	2	0	898	16	0
Sir W. S. Maxwell .	Oct. 26	16	56	37	6	9¾	....		
Average ..	..	..	206	53	3	6¾	119855	8	4

A year ago, Mr. Thornton commented in his Circular (No. 11) upon the "wonderful increase that is taking place" in the value of Shorthorns, and recorded an average increase in value of £2 per head over the sales of the previous year. The most extraordinary increase in average price during the last year may be, partially at least, accounted for by the general encouragement given to British breeders from abroad, and while we hear of such high prices in the colonies and United States for the best strains of English blood, we can hardly expect present prices to lower.

The number of good sales this year has been unprecedentedly large, and the general average has been swollen by such sales as Mr. Cheney's, when 56 animals made £91 13*s.* each; Mr. Jonathan Peel's sale, where 19 animals made £148 8*s.* 9*d.*; the late Mr. Eastwood's, where 15 animals averaged £181 8*s.* 9*d.*; Mr. Barnes' sale (Ireland), where 44 animals made £100 14*s.* 1*d.*; and the Duke of Devonshire's sale, where 43 animals made £240 13*s.* 10*d.* each. Such prices were unknown last season, when the highest average was £96, obtained at Mr. Saunders' sale; or in 1869 and 1868, when Mr. Bowly's average of £72 16*s.* stood unrivalled. The exportations of the season have been very considerable, and indicate the great favour with which the Shorthorn breed is viewed wherever it has been introduced.

CAPITAL AND LABOUR.

I HAVE oftentimes met of late in books or the public prints some expression of regret at the fact of such a vast amount of pauperism existing, side by side with immense wealth; and the writers, although they do not say so, seem to imply that the poverty of one class is attributable to the richness of the other. I am of a totally different opinion. I certainly fail to see that if our capitalists were only half as rich the very poor would be less poor. Now, what is capital? Political economists tell us it is accumulated labour. I agree with them. Money is only the standard by which the value of labour performed is measured, so that when a man takes his sovereign for wages at the end of the week, that represents a week's labour. Now if he contrive to lay up weekly a portion of this labour, in the course of time it becomes accumulated labour or capital, which will set other labour to work. I will try to illustrate this, after a very simple fashion. Tom Thrifty and Sam Spendall are both young men, working in the same shop; they are equally good workmen, and get the same wages, but they are of totally different characters. Tom has both heard of and known men who have risen from low estate to much higher positions, and he is determined to try and do the same. So he is very diligent in business, loses no time, but if a chance offers makes overtime, and every week sets aside a portion of his earnings to go into the saving's bank, and what necessaries and comforts the remainder will not purchase, he wisely resolves to go without. He determines that he will not marry until he can keep a wife and family respectably. In the course of a few years he has saved a nice sum of money, and having made the acquaintance of a decent young woman after his own turn of mind, and with a little money, too, Tom marries, and sets up in business in a small way for himself, and instead of remaining an *employé*, becomes an employer of labour. Such a man is sure to succeed. With perseverance and industry out of the house, and frugality and good management within, success is certain to be achieved.

Sam Spendall, on the contrary, likes to spend his money and enjoy himself as he goes. He spends his evenings chiefly at some place of amusement, or with a jolly set of fellows, like himself, at the public house; saves nothing for a rainy day, and after a while falls in love with, and marries, a little toy in the shape of a woman, and as a consequence soon a little crop of Spendalls appear on the scene. With bad management in the house and carelessness out of it, poverty begins to stare them in the face. Sam finds himself comfortless at home, and returns to his old haunts, goes from bad to worse, until he and his family become numbered among the very poor, for whom so much concern is manifested.

It is idle to ask which of these two men was the better citizen. Each of them had the same opportunities, but made a different use of them. Each of them earned the same wages, and in a free country had a right to dispose of them as he pleased; but the man who wasted his opportunities has no right to turn round on his more prudent companion who has made the most of them, and become a capitalist, and is in this capacity probably employing, or being rated for the support of, the other's children. It is a fact which cannot be too strongly impressed on the minds of all young persons that future ease and comfort mean present self-denial.

Fortunes are generally saved, not made. It is true that the few—and the very few—may grow suddenly rich by successful speculations, but, as a rule, the aggregation of the money which forms the capital of this country has been amassed by small savings, in the same way as the bridge is built brick by brick.

Capital, so far from being antagonistic to labour is, in my opinion, its best ally. It cannot increase while kept idle, and in these days men do not wrap their talents up in napkins, but every nerve is strained to keep them in motion, and it is impossible to do this without the application of labour. Hence it follows that the greater the capital the more labour it requires for its profitable employment, and the greater the demand for labour the better will be its remuneration. It is when capital lies idle or stagnant, owing to there being no profitable field for its use, that labour suffers the most. If there were no capital there would be none to employ, and works of any magnitude could not be attempted.

The late Mr. Brassey is said to have died worth nine millions. Now I will venture to assert that in amassing this great capital he made no man poorer, but a great many richer. It is a positive fact that a man can hardly do anything to directly benefit himself without indirectly benefiting others. If Mr. Brassey could have eaten his gold, or even had he hoarded it, it would have been mere selfish enjoyment, but so long as he kept employing his vast gains on reproductive enterprise he was benefiting the working man, and adding to the wealth of the nation, as well as to his private means.

It seems to me that undue prominence is at present given to what is called the working man, and by a certain party all the results of labour are credited to him. It seems to be fogotten that the horse is a great power, the steam-engine a still greater power, in the drudgery of the world. Surely this is not the property of the working man. Again, the power of brain appears to be utterly ignored, but where is the philosopher who will venture to assert that when the head fails any establishment can flourish. On the contrary, when that bit of brain which governs and directs does not properly fulfil its duty, no matter how skilful or how numerous the workmen, the concern will inevitably collapse.

The working man of the present time, about whom so much fuss is made, and in whose interest the interest of all the other classes is to fall, appears to me to be of a genus who is willing to render very light service for very heavy wages for one half of the week, and to employ the other half in spending them. Will any of our philosopher friends kindly explain how it is that persons who work for wages, no matter whether they be high or low, are so much less thrifty than persons who receive a similar income from any other department of industry. I know of many small village tradesmen or small shopkeepers in towns who would consider they had a princely income if their weekly profits were as great as the wages received by some of the skilled workmen in our factories; and yet they struggle manfully on regardless of the hour system, working all the day and ofttimes into the night, paying rates and taxes, they send out their children to service, live in the most frugal manner, and, in fact, do anything to keep themselves from pauperism, while the highly paid workman or those belonging to him are too often on the verge of it. Yet this is the class that is to be wiped out so that the working man can be supplied by cooperative stores. Surely our country cannot be so gone mad as to uproot the Oak, the growth of centuries, to make way for a Mushroom.

It is no uncommon thing at the Board of Guardians at which I have a seat, for a smartly dressed young widow in weeds to present herself. To the question of "What is your application?" the usual answer is given, "For relief." "Where was your husband employed?" "In the works." "What were his wages?" The answer may be 30*s.*, 35*s.*, 40*s.*, or 45*s.*, as the case may be." "How long has your husband been dead?" "A month." "Well, you received £10 from the club?" (a compulsory one). "Yes, but the funeral expenses and some bills that were due exhausted all the money." And so they have. Relief is given, and the little, comparatively indigent shopkeeper and tradesman have to aid in their support. It would be most unfair to suppose all skilled workmen equally reckless, but where all depends on one life, it seems a pity that something were not in all cases put by for emergency, or life insurance adopted.

Co-operation, we are told, is the grand panacea which is to cure all the ills to which the working man is subject. I don't believe it. A society of this kind was started near me a few years ago, which was to supply its members and customers from a miscellaneous store. A large flour mill was erected, with bakery, &c., and, apparently, private enterprise was to fall before it; but it did not last long. For the last two or three years a large, useful-looking building, fitted with expensive machinery, has remained a profitless heap of bricks and mortar. If the country were studded with these societies for the manufacture of goods as well as their distribution, some would be successes, others would be failures. In the latter case, those interested would be losers. Commend me to private enterprise. I cannot see the wisdom of the industrious man being chained to the lazy one, or the intelligent man to the stupid. In a country like our own, where every man is free, and has fair play, every atom of humanity will fall into its own proper place, and society will in such a case regulate itself far better than it can be done by any number of bricklayers or cobblers, with a few philosophers to boot.

I have seen a great deal of town and country life, but I have never yet met with an industrious, steady man, who could not obtain a tolerably comfortable livelihood if he practised ordinary prudence. I see nothing wrong in any number of young men co-operating and adding their savings together for the purpose of starting a factory, stocking a farm, or, following the example of the building societies, buying an estate and splitting it into small farms, if they choose; but I have a strong objection to their confiscating the savings or property of other people. The political economists tell us that the safety of the nation depends on a small peasant proprietary. I cannot see why, if a man to better his condition leaves the cultivation of the soil, it should make him less patriotic. How has it fared with France and peasant proprietary against Prussia and feudalism. The peasants and small farmers were for peace at any price, so that they could be left quietly to pursue their callings.

The labour with which I am at present concerned is agricultural labour, and the wages of this class vary so much at different seasons, and there are so many advantages in lieu of wages, that it is difficult to institute a fair comparison between that and other unskilled labour. It is a false principle to give a man a cottage and garden worth 2*s.* or 3*s.* a week for 1*s.*, on the ground that the man cannot afford more. The same remark applies to gratuities of beer, milk, cider, &c., and numerous other extras. The correct principle would be to pay the man fuller wages, and make him pay full value for what he receives. Although I could live more comfortably in a labourer's cottage as they are found at present, than in a cellar or attic in a town, I should be right glad if our landlords generally would provide enlarged and more decent homes for the labourers with at least a rood of ground adjoining, or as close as possible to them. Much has already been done in this respect, and it is to be hoped will, in the course of a few years, be generally carried out. *F. W. Bignell, Loughton, Stoney Stratford.*

CONDENSED MILK.

We believe that the credit of first condensing, or rather concentrating milk, is due to a Frenchman, named De Leignac, about 24 years ago, from whom the process was obtained soon afterwards by Mr. E. D. Moore, a medical man attached to the Court, who had manufactories in Staffordshire and Middlesex, making concentrated milk, and also a combination of it with cocoa. In 1857 Mr. House, now of 76, Minories, on the retirement of Mr. Moore, whose manager he had been, took up the business, and, on an "improved patent," has continued it ever since. It was from Mr. House, through a Captain Fletcher, that Mr. Gail Borden, of New York, got his idea of preserved or condensed milk; for, though Mr. House calls his "concentrated" milk, we imagine that the process differs little from that of producing "condensed" milk, the former being obtained by evaporation of the water from the milk in open pans; the latter by evaporation in closed vacuum-pans. We mention these facts to show that primarily to a Frenchman, though mainly to an Englishman, the credit of first producing concentrated or condensed milk is due, and not to Mr. Borden, or any other American who may have perfected the process and developed the trade, and seem inclined to take credit for the organisation of the whole matter. Mr. House has mainly confined his business to the supply of shipping, and has not "pushed" his article for home consumption. Of its merits we can bear witness, having lately tasted a tin of his concentrated milk, which was "put up" in the year 1858, and since then has made a voyage to Calcutta and back. It was the sweetened mixture, and cut and tasted very much like an extra rich blanc mange, but capable of being reduced, or rather expanded, into sweetened milk by the addition of water.

It was with Mr. Borden's process, and, perhaps, some improvement on it, that the originators of the Anglo-Swiss Company established themselves in Switzerland, at Cham, in the Canton of Zug, in 1866. Their works are on the banks of Lake Zug, opposite the Rigi range of mountains, on the lower parts of which, and on the adjacent villages, most of the cows from which the company get their milk are pastured. At their first commencing business they only took the milk of about 350 cows one day a week, for which they paid about 1*d.* per quart. The demand for the condensed milk has so increased that they now take the milk of between 1500 and 2000 cows daily (Sundays included), under contract with the neighbouring farmers, using in the process more than a ton of sugar per day. Preparations are being made for still more extended operations, and it is expected that next year they will be able to turn out about 10,000 tins daily. Of the total manufacture by this company, about one-half is consumed on the Continent, the other in England and its colonies, and other parts of the world.

The Aylesbury Company is an offshoot, or rather secession from the Anglo-Swiss, its manager, Mr. Merriam, having been one of the chief promoters and managers of the latter from its commencement, and other directors of the old company are now associated with its English rival. It was established last year, and begun its business in September, taking the milk of about 400 or 500 cows, producing about 1200 galls. of milk daily, with the exception of Sundays, when the farmers who own the cows use the milk for butter and other purposes. The company have just erected further buildings to meet the increased demand for their milk, and when in full working order, which they will shortly be, they will take the milk of more than 1000 cows, and expect to make from 6000 to 10,000 tins per day, according to the season of the year. The factory, in which about 100 hands, old and young, are employed, is a few minutes walk from the town of Aylesbury, picturesquely situated on the banks of the canal which runs through the famous vale, and having a road on each side, forming the company's premises, which they rent under Baron Rothschild, into the shape of a triangle, pleasantly surrounded by trees, and measuring about 3 acres, including grass lands, yards, and out-buildings.

If for no other reasons, it would have been a happy thought to have fixed on Aylesbury for their *locale*, the very name being redolent, like Canaan, of milk and the good things connected therewith; and the supply of excellent milk from some of the best pastures in England will doubtless commend the choice. Steam is got up in the factory at 6 in the morning, and the farmers, who live within from 1 to 10 miles of it, begin to deliver their milk about 7; but it is nearly 9 o'clock before the last arrives. We were on the scene during the delivery, and remained till the end of the process. The milk is emptied at once from the large tin cans generally used in the trade into a trough, which conducts it through sieves into a large tank holding about 800 galls., in the department where the first part of the process takes place. From this tank it is drawn into large open metal cylinders, which are slung up by a crane, and placed in a hot bath in large tanks, somewhat after the manner of the tins of meat in the preserving process; after remaining in this some time they are again lifted by the cranes and emptied into large open funnel-shaped vats, whence the hot milk is drawn up through a pipe in the centre into the condensing pans on the upper floor; the sugar having been mixed with it solely for the purpose of preserving it. It remains in these, subject to somewhat low heat, for two or three hours, while the evaporation of the water is taking place, and the milk gradually condensing. When this part of the process, which may be seen through the glass window of the condenser, is completed, the milk, then about the consistency of liquid honey, returns by a pipe into the lower room, and is received again into the open cylinders, which are swung into the central tanks; this time being filled with cold water for the purpose of cooling—the regulation of the temperature during the whole process being a matter of the greatest nicety. Thence it is taken to the filling-room and run into the 1 lb. tins, which are soldered up and packed in cases of four dozen each, ready for sale. The greatest care is taken that no tin leaves the establishment unless perfectly air-tight; and to ensure this each one is closely examined by a lad, who, in addition to his regular wages, gets 1*d.* each for every tin he finds imperfect, and the solderer has to take and pay for its contents. The condensed milk in these tins gradually thickens, becoming slightly more consistent up to five or six months; after which it remains of the same consistency, and will continue good for years, perhaps as long as the tins themselves continue sound, and in all climates; and, even when opened, remains sweet for weeks.

It should be mentioned, that the greatest cleanliness is observed throughout the whole process. Even the milk tins which the farmers deliver, immediately on their being emptied are, in the receiving room, placed in warm water and scrubbed inside with brushes. A strong jet of steam is turned into them, searching every chink and cranny; and, finally, another very powerful jet of cold water completes the cleansing process, which is also applied continually to all cylinders and receptacles used in the factory. And, in addition to this, the floor of the lower room is constantly deluged with streams of water supplied by pipes from the Chiltern Hills Water Company's works. The milk received from the farmers, at about 2*d.* per quart, is tested in a variety of ways several times in the week, and some is stood in pans to test the rise of cream, a record of which is carefully kept. The contracts with the farmers are very stringent, and if anything is found wrong with the milk the company reserve to themselves the right of returning it, and at once throwing up the contract. They are careful also to examine the police records of the district, to see if any of the farmers whose milk they take have any cases of diseased cattle on their farms, which they are bound by Act of Parliament, under heavy penalties, to report at once to the police. The sugar used is of the best refined kind, some also from Beetroot, and we need hardly observe that no adulteration takes place at any part of the process; it would be impossible, and if attempted would at once defeat the great object—namely, the preservation of the milk; and as the article is sold only in the Company's tins, hermetically closed and labelled, it is impossible for retailers to tamper with it. The result is, that we have an article which is pure milk, not an article made from milk, with the addition of sugar; all that is taken from the milk being the water, which in milk direct from the cow constitutes as much as 80 parts out of 100. Astounding as this statement may seem, there is no doubt about it, and the stream of colourless water which runs, as we saw it, continuously from the condensers give ocular evidence of it, and its being almost tasteless further shows that by the process the milk loses nothing but its water, and this it does to the extent of about 55 parts out of the 80, leaving in the condensed milk from 20 to 25 parts of water, the rest being the caseine, butter, or fat, and other solid substances which remain intact. This is proved by the fact that when the proper quantity of water is again added to the condensed milk, it will, at a certain temperature, churn into butter. The analyses of the condensed milk produced by the Swiss and English companies made by Baron Liebig and many other eminent chemists leave no room for doubting the above facts.

We may here mention that the Aylesbury process is substantially the same as that used by the Anglo-Swiss Company; by Mr. Borden, in America; and by Mr. Newnham's Irish company, at Mallow; but the last-named brand is not often seen in the English market. There are other companies on the Continent, one near Munich, one in the Canton St. Gall, and another in Holstein; but their business at present is somewhat limited. In America, also, there are several manufactories, but Mr. Borden takes the lead. He also produces the condensed milk without sugar, which will keep good for a week or ten days, and it is this form which a large portion of the population of New York and large American cities have used for some years past. The English company will probably offer some of this kind to the public, and we see no reason why it should not be very extensively used. Each household knows with tolerable exactness its weekly consumption of milk, and by taking a weekly supply in this form will be sure of getting a genuine article. We should not forget to mention that the English company make a preparation of condensed milk and cocoa, which is sold retail, at about 1*s.* for the 1 lb. tin. We witnessed the roasting, grinding, sifting, and general preparation of the cocoa, which is all done at the Aylesbury Works, and a most excellent combination is produced, the cocoa assisting as well as the sugar in the preservation of the milk. Two teaspoonfuls, equalling in value one penny, with boiling water, make as good a cup of cocoa, already sweetened, as can be desidered. They contemplate also bringing out a mixture of the milk with essence of coffee.

But to return to the condensed and sweetened milk. The present retail price of the 1 lb. tin of both companies is about 8*d.*; and as this will bear at the very least as much water added to it as will make it equivalent to 2 quarts of pure milk, we have a genuine article at 4*d.* per quart, with the addition of nearly one pennyworth of sugar to each quart,—no slight consideration when estimating the price. Thus, it is considerably cheaper than any milk sold in towns, even if that could be obtained pure. The condensed milk can be used for any purpose for which ordinary milk and sugar are used—for puddings, custards, and other cooking purposes; less than a teaspoonful is sufficient for a cup of tea, sweetening it at the same time; two or three times the quantity will make a large basin of sweet bread and milk. *The Standard.*

Home Correspondence.

Sugar-Beet.—In consequence of numerous letters on the cultivation of Sugar-Beet, I determined to try some again, although I had not succeeded in doing any good with them some three years ago, being obliged to consume a much smaller crop than I grew of Mangel in the same field. Also the difference in the Wheat crop after was most marked in favour of that part of the field which grew the Mangel. I selected 12 acres of deep friable Turnip land adjoining a railway siding, which I ploughed twice, subsoiling 16 inches deep with a double-furrow plough, one share removed replaced by a subsoiler. Sixteen loads of house-made dung and 6 cwt. phosphate-guano per acre were applied. The plants 12 inches apart made hand hoeing requisite to prevent injuring the roots, and to get them up nearly every root had to be dug. The best seed from Germany was used, at 2*s.* 6*d.* per lb. The year was very favourable, and no frost came, or the crop must have been resown, as frost causes the roots to seed, and renders them useless for sugar-making. No place missed, and the result was 372 loads of what have been allowed to be very superior roots. The account stands:—

2 ploughings and 1 ploughing and subsoiling ..	£2	8	0
2 grubbings, at 3*s.*	0	6	0
2 harrowings, at 2*s.*	0	4	0
1 rolling, at 1*s.*	0	1	0
Planting, 3*s.* 1*d.*	0	3	1
3 horse-hoeings, 6*s.* 2*d.*	0	6	2
Hand hoeing, 25*s.*	1	5	0
Lifting and storing	0	15	0
15 loads of dung, at 5*s.*, two-thirds charged	5	1	4
6 cwt. phospho guano, 12*s.*, two-thirds charged			
8 lb. seed, at 2*s.* 6*d.*	1	0	0
Rail, 1*s.* 6*d.* per ton	1	4	0
Rent, 40*s.*	2	0	0
Cost per acre	£14	13	7

The estimated produce is 16 tons per acre at 20*s.*, which only leaves £1 6*s.* 5*d.* profit in a good year. Now, I can grow 35 tons of Mangel at a cost of £11 11*s.* per acre, and for them I get most years 20*s.*; last year 30*s.*, but only 16*s.* this year, which leaves a profit of £13 6*s.*, against £1 6*s.* 5*d.*, showing a clear gain of £11 19*s.* 7*d.* in favour of Mangel. *Cincinnatus, Nov.* 21.

Utilisation of Sewage, &c.—Very much has lately been written, and spoken, relative to the utilisation of town sewage and all similar sewerage manurial deposits, and family closets, privies, cesspools, &c. Too much cannot be said to induce every family in the kingdom to take especial care to preserve for manurial purposes every kind of "refuse" that can be so utilised. The agriculture of the country requires every attention to be paid to these minor matters. The modern improvements cannot be fully realised, unless from a much larger application of manures for the many supernumerary crops now introduced in modern agriculture, as also the many additional crops introduced in the improved order of farm management, which can not only be carried out, but greatly increased by the liberal application of manures of one order or another. It has become already one of the farmer's great difficulties how to supply himself with suitable manures. The chemical manures now manufactured are too high in price to be made generally applicable, because so much is required to replenish the soil sufficiently to cause that fermentation of soil necessary for the full and rapid progress of the crop. It is now a matter of fact, that a slight dressing is of little avail—even good soils require dressings of from 7 cwt. to

10 cwt. per acre to cause effectual and beneficial results. The best Peruvian guano might prove beneficial in somewhat less quantity, but not so with others. Splendid results have followed from doubling the above applications, which of course would soon become general could such manures be provided at a greatly reduced cost. What surprising benefits would be derived, could all manurial substances and sewage be preserved and applied as a fertilising agency, and there really is no great difficulty in the way. It only requires attention, and the adoption of some of the many schemes and plans for such an object. Moule's earth closets are applicable instead of water-closets. Convenient cesspools might preserve the sewage; indeed, any of the thousand-and-one projects before the public might suffice, if only the requisite care and attention were given to utilise the whole. This could not fail to benefit the whole country greatly, by providing a much larger supply of food for its population. In small towns and country villages this mode of application could not profitably be adopted, but still all might be preserved and means provided for its conversion into home-made guanos, or other very useful manures or "mixens." The great loss of these almost invaluable manures lies with the towns. In the villages most of these deposits are brought into service. It is quite customary in the winter months to empty cesspools, privies, &c., and cart the contents into prepared receptacles in the fields, there to be mixed up with other suitable manures, chemical or otherwise, soil, ashes, &c., by which a cheap and valuable manure for drilling is manufactured. The writer of these lines has practised this course for many years. A large circular vat is prepared by casting up the earth around to about 3 feet in height; into this vat is poured the contents of privies, cesspools from brewers and private families, carted to it in the common scavengers' carts. This is covered up by straw or ditch-roadings for a time. As the season advances fresh substances are added, *i. e.*, good soil-ashes from turf, Twitch, &c., cinder-ashes, road-scrapings, soot, pig manure, and any suitable refuse likely to be beneficial. I avoid lime, and occasionally use superphosphate when mixing for drilling, the whole being previously prepared by repeated turnings till reduced to such a powdery state as to be applicable for drilling. I very confidently recommend this course as one means of obtaining a highly useful and cheap manure for drilling in with Mangel seed, Turnip seed, &c. It is also applicable as a dressing to be sown down ridges or furrows, where Potatos are to be planted. Its great value lies in forcing the young plants. In Turnip or Mangel culture this is important, to prevent injury from fly, &c. *O. F.*

The Six Months' Notice to Quit.—Your correspondent, "Anglo-Saxon," last week, is, I think, perfectly justified in calling "downright robbery" the conduct of a landlord who permits a farmer to improve his land at a great outlay and then raises the rent to either the improving tenant or a successor, without first repaying the man who improved the land. But then this can be done in England according to law. Our Parliament has seen fit to grant justice to Irish tenants, and if farmers would combine and send the right sort of men into the House of Commons, many other just things besides tenant-right might be secured by farmers in England. A neighbour of mine told me a week or two ago, that during the last few years he had spent between £700 and £800 on permanent improvements on his farm. The farm had now just begun to repay him by increased crops when the landlord sold it. It made nearly £1800 more than it was worth before the tenant had it. The tenant's rent has been raised by the new landlord £79 a-year. This increase of rent is about 10 per cent. on the sum spent by the tenant. It is as though the latter, instead of spending his own money, had borrowed it of the landlord, or, as though the landlord had made the improvements. The tenant then asked the former landlord to return him a portion of the money thus spent in improvements, but could not get a farthing; the tenant's money is, therefore, wholly confiscated by the laws of the country. Cannot farmers see what is the remedy for this injustice? It is this: at all elections take care to pledge candidates to vote for a good tenant-right. *H. H. O.*

Sunflower.—I notice some remarks on the above plant in your paper of the 16th inst. Thinking some further particulars may be interesting, I condense a few notes I have on the subject for insertion in the *Agricultural Gazette*. The Government of India made some inquiries in 1869, through Lord Lyons (Ambassador at Paris), as to the effect of the cultivation of the Sunflower plant in neutralising the injurious effect of marshy exhalations. These inquiries did not result in much of a definite nature, however, except that it was understood that Sunflower had been planted in Holland for the above purpose, and that no one had occasion to fear intermittent fever who settled on the reclaimed land of the Lac de Haarlem, if he took care to plant Sunflower. Might not the experimental growth of the plant be tried on some of the irrigation farms? The Sunflower oil is said to be superior to either Olive or Almond oil for table use, and is also useful in the manufacture of soap, candles, and woollen goods. The flowers furnish a brilliant dye, which is said to stand well. I have also heard that the seed is splendid food for poultry, and I know that bees are exceedingly fond of the Sunflower. The leaves are reputed to have a pectoral value when smoked as cigars. The plant would thus seem to be useful in every part, like some Palms. Each bushel of seed yields on an average 1 gall. of oil, the average yield per acre being 50 bush. Lime rubbish is said to be a good dressing for the land, to be sown with this crop. The quantity of seed required is about 6 lb. per acre, and it is the practice, I believe, to leave about 15,000 plants or upwards to the acre of ground, probably a distance of 2½ feet between the rows, and 1½ foot between each plant would be better in this climate, looking to the necessity of a sufficient exposure to the sun. The quantity of seed is said to be increased by "dwarfing," *i. e.*, stopping the plants. I do not know the Continental plan of sowing, nor do I know the value per gallon of the oil. *James MacPherson.*

The Root Show at Islington.—I send you my notes, that you may use them, if you please, as well as your own:—

Roots and seeds are a fine show, but characterised with unusual diversity, a result, no doubt, mainly due to the season.

Thos. Gibbs & Co., Half-moon Street, Piccadilly, have a very uniform selection of roots, not over large but of fine quality; ox Cabbage, large, weighing 60 lb. There is as usual a fine exhibit of seeds, and the whole stand is tastefully laid out.

Wheeler & Son have an excellent stand. Their green Kohl Rabi is very superior, so are their Mangels and Swedes, and, as usual, they have a splendid exhibit of Potatos, grass seeds, &c.

The Messrs. George Gibbs & Co., of Down Street, Piccadilly, have some wonderful Cabbages, one heart weighing 66 lb. They exhibit 100 different sorts of Potatos, and some 26 of Onions. The Mangels and other roots, grown by Wm. Dickenson, Esq., on New Forest, merit special notice, both for weight and quality.

Raynbird, Caldecott, Bawtree, Dowling & Co., also exhibit some of Mr. Dickenson's splendid New Forest roots. They have a fine show of seeds, cake, and manure.

Isaac Wright & Son, Great Bentley, Essex, have a small but select exhibit; so has Mr. Dixon, of Hull. Mr. Hope's sewage produce has already been noticed.

The Messrs. Carter & Co., Holborn and Essex, have a splendid selection from their general show, reported in a previous *Agricultural Gazette*. The roots are large and of unusually fine quality, thus illustrating the high value of the seeds from which they are grown. Cabbage large, and their Potatos and Onions are remarkably fine samples.

J. K. King, Coggeshall, Essex, has a very fine selection of medium-sized roots, finely grown, with single tap-root and small top, the bulbs being well shaped, with clean stem, indicating great hardihood. Samples of 2-year-old roots are shown in proof of their being as fresh and sound as they were last year. Seed fine and well dressed.

Sutton & Sons, Reading, have one of the best shows ever exhibited in the great hall. We do not recollect seeing its equal, and the artistic manner in which the different varieties are arranged displays their great weights, symmetry and quality to the best advantage. The central bed of Potatos is a splendid show of itself. The almost incredible weight of the Mangels was given in previous reports, to which we refer for the particulars.

Alfred Hall, of Westbury Farm, Wilts, has as usual a very fine selection of his "Westbury Swede," Long Red and Globe Mangel, also a peculiar variety of Belgian Carrot that grows some 6 to 7 inches above ground. *W. B.* [A known correspondent.]

Cattle Feeding.—A bullock two and a-half years old is estimated to consume 1½ cwt. of Turnips in the 24 hours. Fed on Turnips, the increase of weight should be 1½ lb. By giving in addition to the above weight of Turnips 4 lb. of oilcake, the increase of weight will be brought up to 1¾ lb. daily. Under the heading "Odds and Ends of Farming Facts," the *Mark Lane Express* contains the above piece of information, upon which, with your permission, I will make a few remarks, with a view of gaining accurate information. If I am right in inferring from the above quotation that it will take 4 lb. of oilcake to produce ¼ lb. of beef, and that the writer of the article is right in his assertion, then it is plain that stall-feeding with oilcake at £12 per ton is not a profitable business, as I now propose to show. 4 lb. of oilcake, at £12 per ton, costs $5\frac{1}{7}$*d.*; its manurial value (taking Mr. Lawes' estimate of £4 12*s.* per ton) is $1\frac{34}{35}$*d.*; to this add, say 2*d.*, the value of ¼ lb. of beef; then by deducting the selling price of the beef, and the manure value of the cake from its cost, there is a loss on the 4 lb. of $1\frac{6}{35}$*d.*; or, upon 1 ton, £2 14*s.* 8*d.* Would you or any of your correspondents give an opinion, based on experience, as to the profitableness of feeding with oilcake? *Short Grass.*

Societies.

HIGHLAND AND AGRICULTURAL.

Dec. 6.—At the monthly meeting of the directors of this Society, the Most Noble the Marquis of Tweeddale, K.T., president—

Chemical Department.—The board agreed, on the suggestion of the chemistry committee, to offer a premium of £50 for a report on "What has chemistry done for agriculture by improving or increasing the produce of the soil?" A suggestion originating from the chemical committee, that the Society should establish a model farm, was remitted to the committee, their proposals not being yet matured.

Transit of Animals.—The report by the committee on the transit of animals by railway was submitted. It narrates the whole proceedings of the Society, from the time the subject was first taken up by the directors in 1867, and proceeds as follows:—"After carefully considering the documents submitted, and the Act to which the Order of Council has reference, the committee beg to recommend that the board should again communicate with the Lords of the Privy Council, through Dr. Alexander Williams, specially pointing out,—1. That the Order of Council (300) called 'The Transit of Animals Order of May, 1870,' for providing trucks with spring buffers, and supplying water to animals carried by railway, is not only systematically evaded, but is defective in respect that provision is not made for supplying animals with food; and that a new Order of Council is urgently called for. In the new Order it should be specially provided—(i.) That animals should be supplied with water when trucked and untrucked, and during the journey with both food and water; the necessary food to be provided by the owner of the animals, the water by the railway company. The Act says that if animals are allowed to be in trucks without water for a period between 12 and 30 hours (to be fixed by the Privy Council), the railway company will be guilty of an offence. A rule of the same kind should be adopted for food against the owners. (ii.) That in addition to the spring buffers stated in the Order of Council (300), it is absolutely necessary to provide covered waggons, closed at the ends, and 18 inches along the sides from each end, with an arrangement of troughs for the proper supply of the animals with water, and racks for supplying hay in the trucks during the journey. 2. That many important railway stations, where animals are trucked and untrucked, are not included in the schedule attached to the order of Council (324), called 'The Transit of Animals (Water) Order of March, 1871.' (Here follow the list of additional stations suggested; but the committee consider that, should the Privy Council issue an Order that water be supplied in the trucks, it will not be necessary to have it at all the stations enumerated.)" The committee further suggest that, should the Privy Council not give effect to the representations proposed to be made to them, an influential deputation should be formed to wait on their lordships. The report was approved of by the directors.

Fisken's System of Steam Cultivating Machinery.—The following report upon the trial of Fisken's steam cultivating machinery, which took place on the Marquis of Tweeddale's home farm of Yester Mains, during the week ending November 11 last, prepared by Mr. Swinton, Holyn Bank, Gifford, was submitted to the board:—

Lord Tweeddale, being desirous to see this system of steam cultivation at work, and to give the agricultural community an opportunity of inspecting it, arranged with the Ravensthorpe Engineering Company of Mirfield, near Leeds, to send the patented part of the machinery to Yester; and hired from Mr. David Roughead, Myreside, a traction engine and balance-plough, made by John Fowler & Co., of Leeds. This engine is stated by Messrs. Fowler & Co. to be of 14-horse power; but several practical engineers who saw the engine at work expressed doubts about the engine being of this power, and the price paid by Mr. Roughead for it (£420) indicates a smaller horse-power, although Mr. Roughead states he got a good bargain of it. Mr. Roughead has used this engine for over three years, in working a set of roundabout tackle on Howard's system. The only alteration which this engine required in order to adapt it to the Fisken tackle was the fixing of a grooved rim on the fly-wheel to receive the driving rope. The plough hired from Mr. Roughead was one of Fowler's ordinary balance 4-furrow ploughs, but with mouldboards made according to a pattern of Mr. Roughead's. This plough was only adapted for a furrow not exceeding 9 inches deep, and had to be considerably altered to enable it to turn a 14-inch furrow. This it did not do very satisfactorily, and a trial was made to fit on mouldboards of the common horse-plough in use at Yester; but as the head of the plough and the mouldboard were not adapted to each other, the furrow was not so well turned as it might have been. The Fisken tackle is not, however, in any way answerable for deficiency in the quality of the ploughing, as this was wholly the fault of the plough.

The field to be ploughed contains 75 acres, and had been under a crop of Oats in 1871, and was wished to be deep ploughed in preparation for a crop of Turnips in 1872. The part of the field operated on consisted of soil of various kinds, from stiff clay to sand and gravel, and a narrow hollow or glen passed through it, into which the plough had to descend and ascend at each turn across the field. This part of the field was chosen in order to test the working of the machinery on uneven land. The field had, during several previous rotations, been ploughed by horses to a depth of from 14 to 16 inches, and all the large stones removed. A full description of the Fisken method of steam cultivation is given in the pamphlets issued by the patentees and makers of the apparatus, and need not be here repeated. The Fisken tackle, consisting of two patent windlasses, six corner anchors, one tension anchor, 30 light rope porters, two claw anchors, two rope porters for steel rope, two wood levers, crowbars and tools, 1200 yards of hemp driving rope, 800 yards steel rope, 100 yards of steel rope for anchors, and weighing in all about 8½ tons, arrived at Haddington station on Saturday, November 4, and required nine horses and two carts to convey it to Yester, 6 miles. The windlasses were set down in the field near their position for work, and a portion of the field, 400 yards long and 200 yards wide, and containing about 16 acres, was marked off, and the anchors and porters for the driving rope were set up round about it. The engine and plough arrived in the field on Monday, November 6, and about three o'clock on that afternoon of that day commenced to plough. Several hours were spent in getting the engine into position, in consequence of the wheels having sunk in the soft headland, which was very wet from the heavy rains on the previous days. Tuesday, November 7, was spent in making sundry alterations on the plough, and adjusting some parts of the Fisken tackle which had not been properly fitted.

Wednesday, November 8 : the tackle was fairly started this morning, and the number of people employed was as follows :—One engine-driver, two windlass men, one ploughmen, one lad at wire rope porters, one man and horse driving water to engine, one man and two horses driving coals (8 miles). Not long after starting the bearing of the pulley of the corner anchor, nearest to the engine on the tight rope, became heated, and the anchor had to be removed and another one substituted. About three hours after starting the small pinion on the first motion of the patent windlass stuck fast on the shaft on which it runs loose when not in gear. The work had to be stopped, and part of the machine had to be sent to the blacksmith's shop to be adjusted, and the shaft ground, thereby causing a delay of three hours. Both of these stoppages occurred through sufficient provision not having been made for lubricating the bearings, and can be very easily remedied. With the above exceptions, no faults or deficiencies were observed in the patent tackle while at work at Yester. It was, however, remarked by several persons conversant with such matters that the bearings of the corner anchors, and also of the patent windlasses, would be improved by being lengthened, so as to spread the pressure over a greater surface ; and that better provision for lubrication was required, as most of the bearings are vertical. Lord Tweeddale having required the land to be ploughed 14 inches deep, which is the depth ploughed by three horses at Yester, the balance-plough was altered accordingly, so as to plough three furrows of the required breadth and depth ; and although the land was not so well turned as was desirable, still the soil was moved to the depth required, except where the land was light and gravelly on the slope of the glen or hollow, where the tendency of the plough was to throw out of the ground. On several occasions, and in order to test the strength of the tackle, the plough was loaded with men, and forced into the stiff clay, so as to stop the engine. No breakages occurred. It was found that with three furrows 14 inches deep, one hour was required to plough an imperial acre, with the steam gauge of the engine showing a pressure of 80 lb. of steam per square inch.

On Saturday, November 11, the work was inspected by the directors of the Highland and Agricultural Society, the steam plough committee of the Society, and several other gentlemen. The registering dynamometer of the Society was in the field, but in consequence of the non-appearance of Mr. Slight till late in the afternoon there was not sufficient light properly to apply the dynamometer. This is much to be regretted, as there is no record of the power expended in dragging the plough, or the driving rope and windlasses without the plough. At the desire of the directors, the tackle was removed and set to work in a different part of the field. The engine moved itself to its new position. Three horses were required to move the windlasses, and two horses and carts to move the anchors, porters, and other apparatus. The time occupied in this removal was 1 hour and 35 minutes from the time of commencing the removal till the plough was again at work. Some delay was caused by the coiling up of the hemp-driving rope on the reel, which, instead of being on the engine (its proper place), was temporarily fixed on a cart. The engine-driver, who has had charge of Mr. Roughead's engine for the last three years, states that the power required from the engine to drive the Fisken tackle is as near as possible the same, and certainly not more than is required to work the "Howard" tackle on Mr. Roughead's farm, and that the consumption of coal and water was also the same. The engine was found to consume 2½ cwt. of coal and 16 cwt. of water per hour, and — of oil per day. The coal was got from Fountainhall colliery, and though not of the best quality of steam coal, is the coal commonly used for engines in this part of the country. The oil and tallow required for the lubrication of the windlasses, anchors, and porters, after these got into proper working order, was 1 imperial pint of sperm oil per day, and about 1 lb. of tallow per week. The working strain on the hemp driving rope is said to be a fourth part of the strain on the wire rope which drags the plough, so that, supposing the strain on the wire rope with the plough turning three 14-inch furrows to be 28 cwt., the strain on the driving rope would be 2 cwt. The driving rope when new will stand a strain of 20 cwt., and the wire rope 14 tons. The working of the Fisken tackle during the week it was employed at Yester was very closely watched, and after the tackle was fairly started notes of everything that occurred were taken. The only defects observed in the tackle were those already mentioned. They were easily remedied, and with a little more care in manufacture would not have occurred. The management of the windlasses is apparently within the capacity of any ordinary working-man, and the facility with which these can be put into and thrown out of gear, and the plough thereby stopped, without communication with the engine-driver, seems to have reduced the danger of any accident almost to a minimum. The use of the friction clutch for setting the windlass in motion is also considered a great advantage, as the risk of breakage from the plough coming in contact with setfast stones is much reduced. The tackle was examined by many practical agriculturists during the week, and they were unanimous in expressing their approbation of the apparent suitability of the tackle to perform the work required of it. It is to be hoped that the eminent consulting and practical engineers of the Highland Society will express their opinion as to the mechanical arrangement adopted on this system, and as to the probable endurance of the windlasses and other parts of the machinery.

No statement of the cost of working the Fisken tackle has been given here, as this must vary much, according to the rate of wages paid in different parts of the country, and the distance from coals and water. Nor has any comparison been made as to the economy or advantage of this system in comparison with any other, as there had not been sufficient experience of it to warrant any such comparison. An attempt was made to have another system of steam cultivation at work in the field in order to contrast this system with another ; but, in consequence of the conditions laid down by the agent of the other system it was found to be beyond the means of a private individual to conduct such a trial as he insisted on, and Lord Tweeddale is of opinion that such a trial could only be carried on in Scotland by the Highland and Agricultural Society.

The board instructed the secretary to convey the thanks of the Society to Mr. Swinton for his able report, and to communicate with Professor Macquorn Rankine and Mr. Slight, with a view of getting a report from them of the mechanical arrangement, and to the probable endurance of the windlasses and other parts of the machinery adopted in Mr. Fisken's system.

Humanity to Animals.—A committee was named to read and report on the papers lodged for Lady Burdett Coutts' prizes for essays on the most efficient method of inculcating in primary schools the duty of humanity to the lower animals. Mr. Menzies reported that forty-three essays had been received.

SCOTTISH CHAMBER OF AGRICULTURE.

The Land Laws.—At a recent special general meeting of this Chamber Mr. M'NEAL CAIRD delivered an address on this subject, from which we make the following extracts :—

1. The first point to which I shall ask attention is that apart from stipulation, and by mere force and presumption of law, an ordinary farm lease cannot be effectually transferred by the tenant unless he can obtain the landlord's consent. The lease is the tenant's property—very often, through his skill and expenditure, a very valuable property. I stand here to claim for the tenant one of the essential rights of property—the right to dispose of it. Consider the case of a tenant-farmer who has his means locked up in the land, and whose health or circumstances disable him to remain in the management, though he may have many years of a valuable lease to run. What is the worth of his valuable property then? He cannot sell it—he cannot sublet it. But the rent is growing, the seasons for cropping are running on. He is unable to wait. He can do nothing but cast himself on the mercy of the landlord. He is constrained to renounce the lease, and the landlord enters to his labours with such compensation, if any, as it is of his mere pleasure to give. Is it a righteous law which puts the tenant-farmer into that predicament? Take the case of a child, a few years old, succeeding to his father's lease. Fortunate, indeed, will he be if he has friends possessed of the courage and the ability and will to undertake the grave risk and responsibility of farming for a minor during 12, 15, or 18 years to come. For if they are not, his rights also must be placed at the landlord's mercy. And then consider what may be the position of the tenant-farmer on his death-bed, with the bulk of his means invested in his farm. The law does not permit him to regulate the succession to his own lease. How is he to secure a home for his widow? His eldest son may be settled abroad, or have no knowledge of farming; he may be a spendthrift or a drunkard, but the unfortunate father has by law no power to leave the lease to any other of his children. That is not the case with other property. Lord President Islay Campbell, when he was outvoted on this question on the bench, indignantly exclaimed, "It is not common sense" for the landlord to control the tenant's succession. I may venture to add, it is not common justice. It is a law expressly for the interest of the landlord ; which can be pleaded by nobody but the landlord ; which is, therefore, not available to the eldest son if the landlord chooses to accept the heir named by the tenant. And here is a climax to the intolerable wrong of this law. It puts both the eldest son and the selected heir at the mercy of the landlord. On the other hand, it would be unjust that the tenant should have the power by disposing of the lease to escape from his obligations to the landlord. I think it reasonable that in any alteration of the law the original tenant should remain responsible to the landlord along with the tenant to whom he transfers the lease.

2. I now come to the great question of tenants' improvements. When a man's lease is approaching its termination, every ton of purchased manure that he puts into the land is a premium to somebody else to offer a higher rent for his farm. Common prudence compels him to hold his hand, and to take out of the farm as much as he can get on a reduced expenditure, and the productive power of the farm is thus diminished at the end of the lease. This is a source of great national loss. It is hurtful also to the landlord, and hurtful to the incoming tenant, who incurs a heavy expenditure at the beginning of his lease to restore the fertility of the farm. The reduced production by which he suffers, and by which the landlord also suffers through him, commonly continues till he has at least gone over a full course of cropping. Neither is it for the advantage of the outgoing tenant if he were protected against the loss of his unexhausted manures and tillages. The true interest of all concerned is that he should have a right, by law, to have their value ascertained and allowed to him on his removal. You might then expect that farms in general would be kept in full fertility till the end of the lease, and the whole country would benefit by it. Reflect for a moment on the amount of wealth which is lost to the country through the want of reasonable arrangements on this subject. Have we any means of roughly estimating it? On a seven-course farm held on a 19 years' lease you may reckon that the last five years will be a period of reduced expenditure by the outgoing tenant, and of exhaustive cropping. Then the first seven years of the new lease will be a period of liberal expenditure and gradual restoration of productive power. In the next seven years you may expect the farm to be in full fertility ; and then begins again the evil cycle of exhaustion. You will have on the individual farm seven years of Egyptian fatness alternating with periods of comparative leanness ; but the lean years will be in the proportion of 12 to 7. Where there are no leases and no compensations on removal—judging by the motives by which men are commonly influenced—the leanness will be apt to become chronic, unless in exceptional cases, or where the character of the landlord gives a tenant all the security which he could have from a lease. Then consider that this kind of thing is in constant action all over the country. And when you remember the enormous value of agricultural produce in Great Britain, even as things are, you may form some conception of the untold millions of wealth which might be poured into the coffers of the country through the pockets of farmers, if by wise legislation on the subject, based on the motives by which men are acted on, you could sustain the land in full fertility during the whole 19 years of a lease, instead of seven out of 19. I need hardly suggest that when the value of all that additional produce finds its way into the tenant's pocket, it is according to all experience that no inconsiderable share of it will soon pass into the rent-roll of the landlord. If we could raise the average rate of acreable produce in Great Britain by only one-fourth, which is not an unreasonable expectation, the result in money could probably not be less than 40 millions a year. Again, if an enterprising farmer erects farm buildings or labourers' cottages, or executes drainage or other permanent improvements, the law is prompt to punish him for his rashness. The house is no sooner built—the moment the improvement is executed, the law takes the ownership of it from the man who built it, and transfers it without compensation to the landlord. The high priests of the law pronounce the formula, *inædificatum solo, solo cedit*, and every tenant must bow his head and submit, so potent is this mystic phrase to juggle away the just interest that every man has in the work of his own hands. It contains a dogma of the legal creed which lawyers generally accept with unquestioning reverence. In plain English it just means, "What is built on the land belongs to the land." It is an assertion, not a principle or even an argument—an assertion not always supported by fact or reason. We are told in God's law, "The sea is His for He made it," but in man's law the reading is reversed ; the house is the landlord's though he did not make it. That is the law of Scotland. Is it reasonable? Is it just? Is the law to cast the balance always, and irreversibly, against the tenant? Our Yankee brothers have adopted the opposite principle for their unoccupied lands in the West. They call it the homestead law, and it is one main secret of the amazing growth of that great country. Its principle is, "Where a man builds his house and settles, the land shall be his." It is a wise and noble law for an unappropriated country. So, you see, the rules of law are capable of being adapted, as they ought to be adapted, to the circumstances and wants of society. We of this country had once vast, almost illimitable, tracts of unappropriated land in the colonies. And there never was a more gigantic blunder than was committed by our statesmen when they failed to establish a homestead law, available to every subject of the empire, before they abandoned the control of these lands. We have still large tracts of public land in this island—great commons, the birthright and property of the people, which are being encroached on and frittered away and enclosed year after year by the pressure of neighbouring proprietors. Their extent is immensely greater than is generally known. I would just ask, in a parenthesis, might it not be an appreciable relief to our crowded population if we had a wise and well-considered homestead law for these immense common lands, giving all reasonable priority to adjoining commoners? I hope to see Parliament establish some such rule as this—What a tenant builds shall be his, and he may take it away unless he is paid for it.

3. I now pass from these great grievances to others which, though of less capital importance, are sufficiently galling. The legal warning of 40 days to leave a farm is quite inadequate. The exigencies of

modern agriculture require a farmer to look a long way ahead. When he manures his green crop, or folds sheep on his Turnips, it is in preparation for the grass crop which is to grow, not in that year, nor the next year, but the year after that. He prepares in summer the cattle that are to be fatted in winter. Whenever the corn is off the ground, the tillage for next year's crop should begin. He can hardly get his winter crops in too soon. Yet he may be kept in the most painful uncertainty whether he is to remove or not till he reaches the 40 days before Martinmas. The old law was more reasonable. It made a difference between removals in May and removals in November, in the very month of winter. Till 1853 a tenant could not be removed at the winter term without notice 40 days before May 15. That gave him six months besides the 40 days. But in 1853 there was a Bill in Parliament, a technical Bill, to regulate the business of Sheriff Courts. A clause was slipped into it that there should be no longer a distinction as to removings between one term and another—that 40 days before the actual term of removing should be sufficient in all cases. Away went the six months at a blow. That at least must be reversed. But since it brings under discussion the whole subject of warning to remove, I venture to say that, having regard to the expenditure which a man has now to make on his farm, and the necessity he is under of farming on plans which contemplate the future, no agricultural tenant ought to be removable on less than 12 months' notice at least.

Farmers' Clubs.

EAST LOTHIAN.

Double Ploughs.—The following paper was lately read before the East Lothian Farmers' Club, by Mr. James WYLLIE, Innerwick :—

With regard to the comparative draughts of double-furrow and common ploughs, a great many trials at pubic competitions and elsewhere have been made, and the general result has been to show that the double-furrow is about one-half heavier to draw than the common single plough. I have, for my own satisfaction, tested the draught of both implements in various kinds of work, with very much the same results. As I carefully noted the results of the last trial, I will now, with your permission, give particulars. The land we were ploughing at the time was after Potatos, and had been harrowed and grubbed, so that it was loose for 3 or 4 inches on the surface and firm below. The furrows turned by both ploughs measured 7 inches deep by 9 wide. On applying the dynamometer to the common plough, I found it drawing, as nearly as I could judge, considering the variations of the instrument, about 31 stones. On trying the same plough without a furrow, I found it drew quite 10 stones, so that about one-third of the horse-power was exerted in moving the mere implement. On bringing the double-furrow plough to the same ground, and fixing it to the same size of furrow, I found it drew 43 stones. When trying the draught of the empty implement, we found the slight incline of the field made a great difference on the draught—much greater than that noted when testing the common plough without a furrow. Though very little uphill it drew 13 stones, while downhill it only drew 7 stones. The common plough was tested empty, both in the open furrow and on the surface. The double-furrow was, of course, only tested on the surface, which, as I mentioned before, was loose from being grubbed, so that the wheels sank somewhat into it. The average weight, then, of the empty double-furrow I put at 10 stones, being the same as that of the common single plough. From these results we find that to turn two furrows by the common single plough the total draught required of four horses amounted to 62 stones, or 15½ stones to each, while by the double-furrow the same amount of work was done at an exertion on the part of three horses of 43 stones, or 14⅓ stones to each ; so that three horses, in the double-furrow, did the work of four in the single plough without being harder wrought. In this case three horses were somewhat easier in the double-furrow than two in the single ; but in other cases I have found the draught about equal, and in one case somewhat in favour of the two in the single plough.

In trying to account for the evident saving of power effected by the use of the double-furrow, we find, on comparing the draughts of the empty implements, that to turn two furrows by the single plough 20 stones were required merely to move the empty implement, while in the case of the double-furrow under the same circumstances only 10 stones were required. This apparently gives us at once a saving of 10 stones in favour of the double-furrow ; but, as to turn two furrows by the single plough required 62 stones, and by the double-furrow only 43, we have still 9 stones of evident saving to account for, or 4½ stones for each furrow. As I cannot show from actual experiment how this is effected, I can only state how I suppose it may be. In the first place, I believe part of this saving of draught is due to the great attention which has been paid to the construction and shape of the working parts of the double-furrow plough, and to the substituting of steel for cast-iron mouldboards. Then, I have already shown that to perform an equal amount of work, the double-furrow, on wheels, requires one-half the amount of draught to move the unloaded implement that the single plough, without wheels, requires. Although it did not occur to me at the time to try, we can easily suppose that had the implements been loaded with any equal weight, the implement on wheels would have shown to a still greater advantage. Now, when at work, a plough has to raise the furrow, turn it, and place it in another position. This lifting, and perhaps partly the turnings, will cause a certain amount of downward pressure, or, in fact, form a load on the implement, to what an extent I am unable to say ; but at all events we may suppose the load to be equal in either case, and no one, I think, will doubt that a given load, whatever it may be, will be easier drawn upon wheels than without them, so that we may safely conclude that some part of the 4½ stones of saving to be accounted for is effected in consequence of the weight of the turning furrow being borne upon wheels. Still, another part of the saving may be effected by the side, or lateral pressure, being, in the case of the double-furrow, provided against by wheels set at an angle for this purpose, here again substituting a rolling for a sliding motion. I hold, however, that the front, or pilot wheel of the double-furrow plough, effects no saving in this respect, as the adjustment of the line of draught, or, rather, the proper adjustment of the plough to the line of draught, counterbalances this ; and I cannot but think that had the eminent engineers who, in the late patent case, laid so much stress upon lateral thrust in front, been at the trouble of experimenting with a plough actually at work, they would have modified their opinions considerably upon this point. I cannot see how a case of lateral thrust in front can be made good, when it can be shown that a double-furrow plough which has no side or sole-plate to sustain such will work perfectly with the pilot-wheel moving several inches away from the angle of the furrow ; indeed, were it a fact that lateral thrust could not be overcome in front by the adjustment of the implement to the line of draught, then the common swing-plough would be useless without some appliance for preventing it from being pressed to an ever increasing width. But while holding that the proper adjustment of the plough to the line of draught overcomes the lateral pressure which might be worth providing against in front, were the implement pushed from behind, I believe the angular set trailing wheel of the double-furrow plough effects a considerable saving in this respect. It is a very common practice on the part of ploughmen, when setting double-furrow ploughs, to place the draught-chain too much on the right-hand side of the plough-bridle, thereby causing an undue pressure of the pilot-wheel against the edge of the unturned land ; but this, instead of lateral thrust might be called lateral draught, as they virtually cause the horses to drag the wheel against the land, and I know from actual trial that when this is done to excess it adds considerably to the draught of the implement. When a double-furrow plough is properly set, the pilot-wheel should move easily on the angle of the furrow, neither pressing to, nor seeking away from, the unturned land, so that it may be either easily steered away, when a narrower furrow may be needed to straighten, or pressed somewhat closer to when a slightly wider furrow is wanted ; this latter may be done by merely drawing the horses a little more apart than ordinary : indeed, a good ploughman can, when once his work is properly begun, keep it quite straight and equal solely by the skilful management of his horses, at least where the soil is of uniform quality.

The advantages arising from the use of double-furrow ploughs, granting that they are only about one-half heavier to draw than the common single plough, are manifest. On an ordinary-sized farm the saving effected by them in horse-power must be very considerable, and I have no doubt that in some cases from their use a pair of horses might be altogether dispensed with, in which case a direct saving of about £100 a year would at once be effected. I would not, however, generally build much upon this idea, as ploughing is by no means the only operation requiring horses on the farm, otherwise steam ploughing would have been more general ere this time. At the same time I am aware that in some cases a reduction of the number of horses has been effected. One of the chief advantages arising from their use is found in having work well forward at all times and so being able to get everything done in proper tid and season. This alone in many cases might be estimated at as much or even more than the saving of the keep of a horse or two. When working well, no common plough can compete against them, so far as equality of the work goes, and land ploughed by them in spring, where perhaps Turnips have been eaten on, will be found much more friable and easily harrowed down than when done by the common plough. This is caused, I think, by the hard surface cracking into comparatively small pieces, as it begins to rise, because of the wheels keeping the implement at an uncompromising depth ; whereas by the common plough the ploughman is constantly using the stilts by way of a lever, and by this up-and-down motion breaking up great solid clods which often afterwards require a tiresome amount of horse-power to reduce.

It is sometimes urged as an argument in favour of double-furrow ploughs that boys, or second-rate hands, will by them be able to make as good work as skilled ploughmen, but this is a mistake. Indeed, so far as my experience goes, I have reason to believe that we have more need than ever of clever, intelligent men. It often happens that, in changing from one sort of work to another, some difficulty is experienced in setting the plough to the best advantage, and it is often, especially until considerable experience is gained, only after an amount of trouble and patient thought that both furrows are got quite equal, and the implement to work otherwise in every way well. I have sometimes seen a very slight alteration effect all that was wanted after having been long puzzled. Should any one be thinking of investing in double-furrow ploughs, and not have his mind made up to bear with some petty annoyances, or not have one in authority under him who has energy and determination enough to make them succeed, I would caution him that he is not yet in a proper frame of mind to go in for them, as there is no denying the fact that a prejudice exists against them amongst many farm servants, who, if listened to, will soon find lots of excuses for throwing them aside. This same prejudice has already, I think, been a great means of consigning the double-furrow to oblivion, and, but for the greater perfection to which the implement is now brought, and the smart rents that farms are now fetching, might again succeed in accomplishing the same end.

DISCUSSION.

Mr. GAUKROGER, Southfield, said he had used double-furrow ploughs for two years with the greatest satisfaction. When he first introduced them on his farm he had to put up with the objection that Mr. Wyllie stated, that farm servants had a prejudice against them. Now, however, the men who use them were highly pleased with them, and agreed with him entirely that they did the work very much better than the old single plough.

The CHAIRMAN said that the work done at the recent double-furrow trials at Hallow fair was very commonplace.

Mr. WILSON, Crachil, noticed a double-furrow with a couple of handles, which he thought were very necessary, if it was for nothing else than keeping the ploughman in his place. The plough referred to possessed an apparatus which enabled the ploughman to lift the plough 3 or 4 inches out of the ground and run it along. Double-furrow ploughs were very suitable for ordinary soils, but they were not adapted for stiff lands.

Mr. SMITH, Stevenson Mains, was convinced of the utility of the double-furrow plough, and of the saving of horse-power. Since introducing that implement on his farm he had reduced the number of his horses, and now wrought 350 Scotch acres with 4½ pair of horses.

Mr. ROBERTSON said double-furrow ploughs were yet in their infancy. He had used one for two months, and he was not very strong in its favour. In regard to Mr. Wyllie's remarks, as to saving £16 a-year by the use of double-furrow ploughs, his (Mr. Robertson's) experience was that on a farm of 300 acres the saving might be set down at from £30 to £40 a-year.

Mr. WYLLIE, Bolton, said it was two years past since he got a double-furrow plough. It was not long before he got another, and recently he had procured other two. He ploughed the bulk of his land with double-furrow ploughs, and calculated the saving at 5*s.* a-day by every one used. Moreover, the work was done better and quicker than any common swing-plough.

KINGSCOTE.

Farm Capital.—An excellent paper, on this subject, was lately read before the Kingscote (Gloucestershire) Farmers' Club, by Mr. F. BURNETT, who said :—

First, Is it advisable to increase the working capital on the farm? We will confine the question to this immediate neighbourhood. The answer to the question would be No ; and a very proper answer, too, under the present system of holding. There is no doubt but that the produce of the land can be much increased by an extra outlay of capital, especially in those parts where the soil is deep and wet. Few of us are in this position. But who would think of building a house under the best of landlords under a yearly tenancy? This being a rule and not an exception—not only in this neighbourhood, but throughout England—it is quite time it should be altered. I feel I cannot do better than quote the words of the Earl of Derby at the Liverpool meeting. The noble earl said :—

> "Security is the first requisite, and I hold that any tenant good enough to be kept permanently, ought to have a lease if he wants one."

The Earl of Leicester at Docking said :—

> "I will ask you whether we have in this description of soil, and in a favourable season, grown all that is possible to grow with profit? and is our grain crop and our root crop all that could be desired? I fear that these questions can hardly be answered in the affirmative ; and as long as we are so cautious in deviating from the beaten track, and so slow in adopting the knowledge that is extending itself throughout the country, we shall be more dependent upon the seasons than we ought to be, and we shall obtain that success for our efforts which we otherwise should do. Since I last met you I have travelled much through England and through parts of Scotland, and taking into consideration the whole of the land that I have seen under cultivation, I think I may safely state that the produce of the land might be nearly doubled under a perfect system of agriculture."

This is strong language, remembering the quarter from which it comes. Here we have, not Mr. Mechi, but Lord Leicester, the best landlord, in one of the best cultivated counties in England, saying in so many words that the land was scarcely half as well farmed as it should be—the produce might be doubled. But Lord Leicester went further, as he went practically into the merits of deep and shallow cultivation; and fortunately he went still further. Why is the land but half cultivated? Why do we not see more capital, skill, and energy brought to bear upon the business of farming? "Because," says Lord Leicester, "there is a want of proper security."

> "Because," said Mr. James Howard, at the Leeds Congress, "what was needed was security of tenure. He had known many a man of capital and intelligence brought up to farming who, rather than embark his money in the cultivation and improvement of the land of another, without a title to compensation for improvements, had carried his capital and intelligence into other pursuits."

It is thus that we drive the best men away, and it is thus that Lord Leicester would bring them back again:—

> "I have found that in the leases in use on my estate there were many restrictions, such restrictions as I should not like to be bound by were I a tenant of a farm. I have, therefore, with the assistance of my agent and my tenants, deviated from the beaten track, and endeavoured to frame a lease more in accordance with the spirit of the age, avoiding all interference with the capital of the tenant, removing all clauses that dictated as to the cropping of the soil or as to the sale of produce, and, as far as I can, giving him security for the capital invested. I have endeavoured to place my tenants in that position which I should like to hold as an occupier of land, and in doing so I am satisfied I have studied my own interest as well. That lease will be printed, and with as few legal phrases as is practicable, and I shall be happy to submit a copy of that lease to any of my friends who may like to see it, because I believe, with certain modifications, it may be adapted to many estates of this country, both for the advantage of the landlord and the tenant."

Let us believe that the good time is coming when every tenant-farmer will have in his possession a lease that will give him security of tenure, with fair and just protection for the interest of the community at large.

2. Comfortable accommodation for man, beast, and machinery. This is also a landlord's question; not that we would call upon the landlord for increased accommodation, without repaying him interest for his capital invested. Before the farmer can lay out extra capital, he must have a prospect of doing it advantangeously, which cannot be done in agriculture more than in any other branch of business without sufficient strength to carry it out; therefore, it must be of the greatest importance that there is sufficient house accommodation for his labourers—they must be comfortably housed and well fed. As with man so it is with beasts. We are all agreed that animals will do with much less food throughout the winter months if they have dry and comfortable lodgings—the less exposed to the weather the better; indeed, I believe that, on this high elevation on which we are situated, it would pay to have large covered-in sheds. Warmth and cleanliness are indispensable requisites to the well-being of all animals, and will repay any extra care and attention. If the farmer is to increase his machinery, this must also entail an extra expenditure on the part of the landlord, as efficient covering ought to be provided for them when not out in the fields at work, else the machinery will depreciate more in value than any reasonable percentage for a covering. I fear we must not ask the landlord for much more; indeed, situate as most of you are, there is no need for more requests, although that is not one-tenth of the many needfuls absolutely necessary in the greater part of this country, such as draining, road-making, grubbing up hedges, and cutting down trees, and that never-failing annoyance, superabundance of game. I feel sure that all these requirements must be met before any great progressive revolution can take place in agriculture.

3. We will now fancy ourselves in the position of all our needs supplied so far as the landlord is concerned. In what way are we to set about increasing the capital per acre advantageously? Mr. Mechi tells us to break up the old pastures. Another tells us there is a mine of wealth in our old pastures if well manured, the moss dragged out, and where required fresh seed sown. Another says deep cultivation, and grow Wheat year after year, sell all the produce and keep no stock, but use a little artificial manure. Others are day after day saying, "Why think of growing any other root than Sugar-Beet?—sell it for distilling purposes, and have it back after the juice is taken out to mix with chaff for feeding purposes;" and many are the wonderful accounts we hear of cooked food, straw being made as good as hay by steam passing through it; and it is only to try any of the many cattle foods and condiments and your fortune is made. Then there are steam-engines—fixed, portable, and traction—from 40 to 1-horse power, the makers of which can supply any testimonials as to their efficiency. One thinks over these and many other systems of money-making by farming, but when one thinks thoroughly over any one of them we find great difficulty in applying them to our circumstances. So to arrive at anything beneficial to us we must come home. Let us take our pastures in this district—Is it advisable to increase the capital in their restoration? I use this word because I believe that our pastures have not been fairly treated, and they are no better, if as good, as they were 20 years ago. The peculiar seasons we have had for some years past may have been the means of bringing me to this conclusion; but I fear all must not be laid to that. We all know that, however full our granary may be, if we were to take a peck a day it would get less; this is in a great measure how we treat our grass land. Mow and carry away, or graze and take away in milk, beef, mutton, &c. The more my agricultural experience is, the more I am convinced that close and continual feeding with sheep and horses will ruin any pasture, however good, and make it like a Wiltshire or Hampshire down. Sometimes we put a little on, but I believe it would repay far more liberal treatment. Worn-out pastures, which more properly might be called sheep-slight, would pay for an extra outlay in breaking it up, if only for a few years; but I should not advise cropping it year after year without applying manure, but treat it as the rest of the arable land.

4. What is to be done with our arable land to increase the produce, so as to give a higher percentage if an extra capital is expended? Go 50 miles from home and ask the question, and nine out of ten you ask will tell you, deep cultivation. You may say, "I go near the rock now." The reply will be, "Go to the rock, and take a little of it, so as to increase your soil." Practical experience does not agree with this, and it would not be advisable to increase our capital in turning up the rock which lies near the surface of the greater portion of the Cotswold hills. Where there is depth of soil, even if that soil is only what we call a cold or dead sand, an increase of capital would repay the outlay of subsoiling. This involves another question: whether it is more advantageous to use horses or steam? The answer would be horses, if this is the only cultivation that steam could be applied to; but I am of opinion there are many other uses, such as cultivating stubbles after harvest, cultivating across the fallows in the spring, and I am not sure whether it would not be advisable to have a traction engine to perform all our stationary operations on the farm, and also road work, such as hauling dung a long distance, taking out corn, bringing home coals and feed from the station; this would be increasing the capital. Now let us see whether we can make it anything like advisable to do so. Let us take a 10-horse portable engine and set of tackle I saw working on Mr. Peacey's farm a short time ago, known by the name of Howard's roundabout system. The engine, Brown & May's double cylinder (which is preferable to a single cylinder), cultivator and windlass made by Howard. It was working on a stiff clay Pea stubble, 6 inches deep, and at the rate of 7 acres per day, which, in comparison with reports we hear of quantities done, is very small; but an average of 7 acres per day, we believe, is nearer the truth than 13 or 14. The work was done in a first-rate manner, much better than it would be possible to do it with any amount of horse-power, the cost 7*s.* per acre, including every expense. Price of engine, cultivator, drags, rope-porters, pulleys, carriage, and a lot of extras, £556. Mr. Peacey said he was perfectly satisfied with the manner in which he had increased his capital. When he purchased it he sold off his 14 working oxen, and believed the exchange was much to his advantage. This is his third year of working it, and had he to buy another set he would have the same sort, with the exception of a Smith's windlass instead of a Howard's. I said that I believed a double cylinder engine was preferable, but Messrs. Howard worked a 10-horse single cylinder portable engine and 5-tined cultivator at Wolverhampton, on a Clover lea, 7½ inches deep, and cultivated 3 acres in 2 hours 14 minutes, which in a day of 10 hours would be 13¼ acres. Then there are Smith and Fowler, pioneers of steam cultivation; their doings are continually before the public, the latter as prize-takers, and the former, according to his own account and many others, is a practical steam agriculturist, and weekly—I may say daily—gives us account of all his operations. Therefore I need not allude to the system of working or cost, as most of you must be well acquainted with it. I must not forget to mention the Fisken system, which I rather like the idea of, brought out by the Ravensthorpe Company, and which obtained a prize of £25 from the Royal Agricultural Society at Wolverhampton, and since the 1st prize of £150 at Breslau, in Germany. It has the advantage over all their roundabout sets of cultivating fields of extra size without moving the tackle. You may work to or from the engine, and it is of no consequence whether the man with the cultivator is in sight of the man with the engine or not. As it is not necessary to take the engine into the field that is to be cultivated, it can be placed at the side of a pond or stream, where it will supply itself with water. The cost of tackle is about £120 more than that of Mr. Peacey's mentioned, and I am doubtful whether to keep in repair so much Manilla rope would not be more than the maker's calculation, which is 6*d.* per acre. It would be too much to expect you to listen to a very minute detail of this or any other system of cultivation. They are not very different in their performances or price, when the quantity done per day is taken into consideration. Their minor details or merits is not so much our question as is it advisable to have them? We have heard much of late about traction engines, and after what we saw of them at Wolverhampton they must be worthy of our consideration. To quote the words of the Royal Agricultural Society's Journal, "Whether considered in point of economy of fuel as a driver of machinery, or of efficiency for traction purposes upon a farm, Messrs. Aveling a Porter's 10-horse power engine was far ahead of any of its competitors." As regards using them as traction, drawing cultivator ploughs, &c., or any other agricultural implement behind them, I do not believe they will ever become general; the weight must be too great a pressure on the land, even with india-rubber tires, but it must be a great advantage to move of themselves and take the needful implements or machinery to accomplish their work without the aid of horses. I have often thought when we have a dry time after harvest how I should like a 10-horse traction-engine to draw a cultivator and drags behind it; if it even pressed the soil a little tight, and cracked the rock a little under, it could not do much harm. I doubt not the time is not far distant when the greater portion of the heavy road work will be performed by them. The expense of working a traction-engine for stationary purposes is no greater than a portable, with the exception of the first cost, which, for a 10-horse engine, is £320. I saw an account the other day of a traction-engine made by Messrs. Ransome, Sims & Head, of Ipswich, under R. Thompson's patent, built for the Indian Government, which ran from Ipswich to Edinburgh, a distance of 450 miles, in 77 hours. Having thus brought the subject of steam cultivation before you, giving my opinion of quantity and quality of work done, cost of operation, and first cost of implements, I will leave it for you to draw comparisons, so that you may arrive at a most decided conclusion, whether it would be most advantageous to invest an extra capital in steam cultivation. I need hardly state that it is an acknowledged fact that steam can be, and is, used most advantageously in threshing, grinding, chaff-cutting, and even root-pulping.

5. According to the heading of our subject, the next question for our consideration is machinery. I am sure you will all agree that there is no class of men more deserving of our thanks than the mechanic, for the perfection machinery is in at the present moment. The landlord, tenant-farmer, and labourer, all must hail machinery as a great boon. I know what it is to swing a flail, wield a scythe, and use a reaping-hook, and I can from the bottom of my heart welcome such machinery as will do these most laborious operations at less expense than they can be done by manual labour. To become the owner of a threshing, mowing, and reaping machine will increase the capital invested, but there can be no doubt that it will be an advantage. Then there are ploughs of a great variety. I doubt not all of you are in possession of sufficient ploughs now, but we are told by many that it would be a very wise investment to have double-furrow ploughs instead of single. Mr. James Ransome, one of the firm of Ransome, Sims & Head, at Norfolk ploughing match made a very interesting speech, and showed a very decided advantage in the use of double ploughs, but we must remember that they are the great firm which make them. I was anxious to have a thorough trial of them, and knowing there was one of Messrs. Ransome's at Boxwell, I asked Mr. Drew to lend it to me for a few days. I also borrowed one of Mr. Nicholls, which had been worked on Symondshall Farm for many years, and of course is of very old construction. The quality of the work done by the Messrs. Ransome's plough was quite in accordance with representation. I wish I could say as much regarding the draught. After working it several days I came to the conclusion that single ploughs can do as much work with the same horse-power. I believe if ever they are to come into general use in this neighbourhood, they must be made much lighter, although it does not hold in all cases that the lighter the plough the easier the draught; yet, from experience, I can say the Messrs. Ransome's R.N.D. plough goes much lighter than the R.N.E., the lighter plough doing its work equally as efficient for all practical purposes as the other. Mr. Nicholls' plough had not been doing much work of late, and was very rusty, therefore did not make anything like such good work as the other, and the draught was as great. There is an American invention of a revolving mouldboard-plough, which I have often been asked to purchase as a safe investment of extra capital. One of them being in the neighbourhood, I thought it would be well to try it, and the owner kindly allowed me to have it for a few days; but not being made expressly for our soil, it only went a few furrows when the share broke. But I could not see any real advantage in its work. It broke the furrow to pieces much more than our improved ploughs, but not more than our old wooden ploughs, with the short turn-furrows, would have done.

6. The next thing I will mention for your consideration—"Can we change our system of rotation with advantage, and, by an extra expenditure of capital, increase our profits proportionately?" From my own experience, that on our light soil, the five-field system is the most advantageous. I have often tried what may be called catch crops, and the conclusion I have arrived at is, the less it is tried the better it is for one's pocket and the land. I do not wish you to understand by this that I would not sow Vetches on the Wheat stubbles, sufficient to have a good supply from May to the end of July, for the greater portion of the sheep and the

cart horses. As you are all aware, in most seasons, with a liberal supply of manure, a good crop of Turnips can be grown afterwards. If it is not advisable to change our system of rotation, can we expect a greater produce than the land now produces? Certainly not, unless there is a change in our system of cultivation. Let us try and find out what this change is to be. It is an acknowledged fact that on the Cotswold Hills deep cultivation does not produce beneficial results; therefore, so far as I can see, the only choice we have got with anything like a prospect of remuneration for an extra outlay is to increase the quantity of manure per acre. Grow larger breadths of green crops, so that we may increase our produce in beef and mutton, which, at present prices, must be more profitable than corn growing. Indeed, I believe if the capital on the farm is to be increased to any very great extent in this neighbourhood, the farmer must look to his stock in a great measure for his return, not only as producing beef and mutton for the market, but as manure manufacturers. I said the land must have a more liberal supply of manure, but should not for a moment advise the farmer to spend his capital in buying many of the worthless stuffs that are now sold as manure, for it is only good manure that will produce good effects. The best of all manures can be manufactured by the farmer himself. I do not believe my ideas extravagant when I say that an extra capital can be employed to advantage, even on our thin soil of this neighbourhood, for although poor, it is very grateful for what is done for it; and if the greater portion of the farm produce was consumed by cattle and sheep, the amount of sales would be much greater than they now are, the artificial manure bill would be saved, the land find the advantage of good manure, and the increase of crops would be much larger.

Lastly. The soiling system would add very much to an increase of expenditure, but I am not sure that if it was carried out in a proper manner it would not pay. I will quote the words used by Mr. Mechi the other day. I look up to him as an authority on many agricultural subjects, but when he lets us know about all his doings at Tiptree, and tells us to go and do likewise, regardless of soil and situation, it lowers one's estimation of his excellencies. He says:—

> "The longer I farm the more I am convinced that the turning out and roaming-at-large system will come to an end, especially as land gets scarcer and dearer. It is cheaper and better to bring the food to the animal than the animal to the food; because in the latter case he is allowed to trample upon it, excrete upon it, and lie upon it. One of the largest and most successful farmers that I know has always folded his sheep and cut the grass for them—one man, a lad and a horse chaff-cutter being on the field there, feeding the sheep with green grass, chaff mixed with cake, &c. Although 77, he is, and always has been, among the very best root and corn growers among my acquaintances, on an area of 1500 acres. Green Tares, Clover, &c., are all passed through the chaff-cutter for my horses and cattle, the corn ground, and the roots pulped. One trial will prove the fact, and put money into the pockets of my agricultural friends."

Although this system must be more advantageous on heavy soils than on light ones, where the treading is an acknowledged benefit, yet I know animals, even sheep, do much better in yards or sheds than out on the ground, exposed to the inclemency of the weather; and, although the expense is very much increased by haulage, yet I believe much more could be done profitably. We are aware that thousands of cattle are brought into market by people who have very little land; if they can be brought out by such men to advantage, how much more so by the farmer, who can grow the greater part of their food; and the manure, instead of being a nuisance in their way, is just what the farmer wants. Mr. Leeds' farm at Castle Acre, Norfolk, consisting of 1200 acres, is nearly all under cultivation, and as much done by steam-power as possible:—

> "Enriching the soil is an important part of the farm economy; everything that will help to increase the manure-heap or increase its quality is most carefully done. The manure is kept under shelter; enormous quantities of feed for sheep and cattle are bought; artificial fertilisers are used largely; and only the sheep, cattle, Wheat, and Barley, are sold off the farm."

Mr. Leeds keeps 300 ewes, and feeds and fattens about 2000 sheep and 250 bullocks yearly. They are all Shorthorns, mostly 3-year-olds, but a few are 4-year-olds. They are bought at the markets, and are intended to be fattened in the shortest time possible. A judicious selection of these cattle, so as to get those which will make the most growth for the time and feed consumed, is the first element of success in this business. They are bought at prices from £20 to £30, and sold at from £28 to £48. The average increase in value while fattening is about £10 each. These bullocks are all kept in yards or boxes, and never turned out to graze. At each of the four sets of sheds there are boxes for 20 or 30 cattle, and these are occupied by the fattest animals; and the remaining ones are kept in the yards waiting their turns to enter those little boxes, from which they are never turned out till ready for the butcher. The boxes are not cleaned out from day to day, but are kept dry by throwing in a little straw; and as they fill up the feeding-troughs have to be raised. The manure accumulates in the boxes until they contain 8 or 9 tons each. The daily feed averages 2 bush. of roots, from 12 to 14 lb. of oilcake, and as much cut straw as they can eat. He fed out 300 tons of oilcake last year to his cattle and sheep. The expense for labour on the farm is usually said to be equal to the rent. The amount paid for labour was not far short of £1800. To carry out a system like this would much increase the capital; so much the better, if the farmer gets an equivalent for his money, it must be better for the community at large. I do not wish you to understand that I mention the soiling system as only applicable to fattening animals, but I believe farm horses and working oxen would be kept in to advantage till after Turnip sowing, and if calves were kept in all the summer the same food they consume would keep them in better condition, and there would be no loss from hausk, and not so susceptible to quarter evil. I believe the day is at hand when the land will be enriched by a better and more lasting quality of manure, and a much larger amount of capital pass through the farmer's hands in the course of the year with increased profit.

DISCUSSION.

Mr. H. HOLBOROW thought that as long as farms were let with a yearly tenancy the farmer would not be justified in laying out any extra capital. He had heard it said that if you had a bad farmer, raising his rent would make him farm better, but this was an exception and not a rule; and if a landlord tries to get what is called "rack" rent, the farmer must also rack his farm to enable him to pay it. As regarded superabundance of game, he did not believe anything could be done with it till all classes were brought to see that they were losers by it, for it was not only the farmer who lost the corn, but the community at large.

Mr. J. NICHOLLS thought a farmer ought to have compensation for unexhausted improvements—not but that there were good landlords, but for every good one there were two bad ones. He thought the only thing that could be done would be to have an Act of Parliament to draw a line between the landlord and tenant. As regards sufficient buildings on the farm, many landlords would not put them up, and others were not in a position to do so. The way he had his put up was for the landlord and himself to share the expense equally. He thought it was a mistake for the law to acknowledge rabbits as game; he had no objection to hares and pheasants, but it was a shame that rabbits should be allowed to destroy the wealth of the country.

Col. KINGSCOTE did not agree with Mr. Nicholls in having a law to compel the landlords to let their land on a certain condition. It would do away with the fine feeling which now existed, and he hoped ever would exist, between landlord and tenant. He was quite ready to give any of his tenants security of tenure. He did not hold with long leases, and thought seven or fourteen years was more desirable than longer ones, owing to the times in which we live being very changeable. He had a horror of what is called over-preservation of game, and agreed with Mr. Nicholls that rabbits ought to be designated as vermin. He did not hold with doing away with the game laws; if they were done away with there would be an outcry for a more stringent Trespass Act; and were there no game, he thought many gentlemen would not care about stopping in the neighbourhood and have nothing to shoot at but sparrows.

Mr. B. DREW said he did not agree with Mr. Nicholls in the tenant putting up the buildings, for if the landlord was a rogue he would get the tenant to put up half, as Mr. Nicholls said, and then he would give him six months' notice to quit.

Mr. HAYWARD objected to long leases and did not see any necessity for them. He did not believe they were a means of extending the tenure. As a rule farmers lived longer on estates without leases than with them. As regards game, whether the game laws were done away with or not, it must always be a matter between the landlord and tenant whether the game was preserved or not.

The discussion on the remainder of the subject was postponed until the next meeting.

Mr. BURNETT said nothing had been brought forward to alter his mind regarding leases. Mr. Hayward said he did not see any necessity for them, neither did he if farming was to be carried on as it had been and was at the present time, but if an extra capital was to be invested and any great revolution to take place there must be a security. Referring to what Mr. Nicholls had said respecting compensation, it was very well in its place, but after a man had spent an extra amount of capital in the improvement of his farm and comfort of his home, no amount of compensation would be equivalent with six months' notice to quit. Much has been said respecting buildings; he still believed that it was his landlord's duty to erect sufficient accommodation for man and beast, the tenant paying a reasonable percentage for the landlord's outlay.

A vote of thanks was passed to Mr. Burnett.

Notices of Books.

The Farmers' Almanac and Calendar for 1872. By C. W. Johnson, Esq., F.R.S., and W. Shaw, Esq. W. Ridgway, 169, Piccadilly.

Morton's Almanac for Farmers and Landowners. 1872. Cassell, Petter & Galpin.

Our old friend in the green dress, which has now for so many years been annually published, reappears with all the old proofs of careful, useful, and ornamental editorship. The sprightly poetry by which its solid matter is so tastefully garnished, the good wishes with which its Editor gracefully makes his temporary adieu, the well-selected paragraphs on points of immediate, practical, and professional interest to the farmer, all testify to the kindly, clever, sensible editorship to which we have been so long accustomed.

The companion, we will not call it rival, almanac, named below that of Mr. Cuthbert Johnson, is this year characterised by a series of portraits of noteworthy agriculturists, some of which have already appeared in these columns, and others will appear. One is given to-day. This annual contains, among many other useful paragraphs and tables, a capital illustrated essay, by Mr. Bailey Denton, jun., on Cottage Buildings, which we also hope hereafter to lay before our readers.

Farm Memoranda.

MERSE OF BERWICKSHIRE: *Dec.* 14.—It is well for farmers and their land that they seldom have to encounter such a season as the present. We have a general impression that in 1852 it rained constantly from October 18, and certainly there was no Wheat sown (except on bare fallow) before Candlemas day. But we question whether any of the Potato crop of that year remained unlifted until near Christmas. Keeping in mind the black frosts of last year, we were at Turnip storing betimes; but winter came on us a full month earlier than last year, though not with destructive frosts.

More than one considerable fall of snow, with moderate frost, has given temporary relief from a general state of mud, but 6 inches of rain are not to be desired, and several times we have had to remove the sheep to lea fields, and haul the Turnips to them with much plunging. Great mortality among hoggs is reported from some quarters. Cattle seem to be doing well enough where the store was good and clean. What little Wheat is threshed points to a bad crop. Barley is no better than we always expected it to be—quite inferior to last year's crop, both in quantity and quality. Unless where very rough of straw, Oats are turning out fully as well as was expected. There is scarcely any Wheat sown yet—none on Wheat soils. *J. T.*

DRUMLARGAN (CO. MEATH) is a grazing farm, and a considerable proportion of it will fatten a bullock to the Irish acre. The second quality of pasture in the farm is stocked in May nearly as heavily as the best, but the cattle are finished on the latter. Mr. Bomford has broken up several fields, the grass of which was not satisfactory, and is laying them down, after putting them through a course of cleaning cropping, with full manuring. Owing to this treatment, and using suitable mixtures of seeds, the land recently laid down is full of grass; so that when down for two or three years, it looks as well as any part of the farm. The soil, however, being stiff, is not easily cultivated, and is very difficult to handle, either when wet or when very dry. Hence the extent under tillage will ultimately be restricted to such an extent as will be sufficient merely to meet the requirements of the place.

When Mr. Bomford got possession of Drumlargan, a considerable proportion of the farm was wet, and many low-lying spots were always flooded after heavy rains. On this account draining was the first point to which he turned his attention. Last year the judges of draining appointed by the Royal Agricultural Society of Ireland to inspect and report upon the several drainage works entered in competition visited Drumlargan, and were so favourably impressed with the ability and care with which Mr. Bomford had carried out the drainage of his farm, that they recommended the Society to award him a special gold medal for it. The judges reported that:—

> "The increased value obtained by the very moderate outlay of £4 2*s.* 10*d.* per statute acre on an average will be £1 to £1 5*s.* or £1 10*s.*, it being understood that the drainage, where the most valuable land is, and where the returns are highest, costs a proportionably larger sum, the drains being in some cases 40 feet apart, in others 60 feet, but in all cases 4 feet deep, at which depth and distances the lands have been rendered perfectly dry; so much so, that cattle are now foddered in the winter on the drained lands in preference to the higher grounds. The materials used are well-burned pipes, and great care has been taken in laying and covering them, and to put in pipes of sufficient size, according to the quantity of water to be discharged. One and a-half inch pipes have been chiefly used in the minor drains, but in some places 2, 3, or 4-inch pipes have been used. Great care has been taken that no two minor drains should discharge into the submain opposite each other. The outfalls are well protected by good masonry, always up to the level of the field, and generally running about 4 feet wide on each side of the mouth. Altogether, the drainage is of a very well-arranged and well-executed character, quite adequate to perform the work required of it."

The total extent which Mr. Bomford has drained at Drumlargan is 360 statute acres, and the result is, that many parts which only grew coarse grasses, which cattle never touched until compelled to do so, are now more closely eaten than other parts of the land. Mr. Bomford looks strictly after all water-courses on the grounds, having them regularly scoured, which had not been done before he got the farm, so that the open ditches were all grown up, making the adjoining land even wetter than it would otherwise have been.

Another important improvement he has effected consists in the removal of many old fences, and this has added, by measurement, about 30 statute acres to the productive area of the farm. The fields are now generally about 40 Irish acres in extent, or 65 statute measure.

Next to getting rid of superabundant water in a farm, providing suitable places for supplying cattle grazed on the farm with pure and wholesame water to drink is a matter of great importance. It is much to be regretted that this is not attended to as it ought to be; and hence we frequently find that the drinking pools become in summer mere receptacles of liquid filth and fruitful sources of disease. We have no doubt whatever that many cases of disease which appear among cattle on grass, and seem very mysterious, are owing solely to the horrible liquid the animals are compelled to drink.

Mr. Bomford has formed his watering places upon a plan which effectually prevents the evil of which we complain. An opening is left in the course of a main drain, one side of which is built up perpendicular, to above the level of the ground. The ground is sloped on the other side, and the slope is paved; but instead of allowing the water to flow back on the slope, it is confined into a channel running along the foot of the perpendicular wall. This channel is 16 inches wide, and 12 inches deep. The bottom is paved with flags, and the paving is kept in its place by kerbstones, which rise 3 inches over the level of the lower part of the slope, and this prevents the cattle from slipping into the channel. The paving of the slope curves slightly downwards behind the kerbstones, by which arrangement urine, &c., does not flow into the channel, but escapes at a separate opening on the lower side, and is carried off into the drain below the drinking place. The watering place is about 16 feet wide, and a retaining wall at each end prevents the cattle from getting into it by any other way than the right way. A slate or wooden sluice, placed at the lower end of the channel, raises the water, so that it is always a foot in depth. This is an excellent plan to adopt, especially when there exists any necessity for economising water, and keeping it clean at the same time.

In one part of the farm we noticed a very handy place for washing sheep, previous to their being shorn. The stream is dammed back by a sluice, and when the water rises to the top it runs over a spout into a lower division, the sides of which are lined with brick up to the level of the ground, except at the upper end, on one side, where there is an opening left to allow egress to the sheep which have been washed. A sluice raises the water also in this lower basin, which looks like the lock of a canal on a small scale. The sheep are penned on the brink of the lower division, and when put into the water, one man guides them upwards with his crook to a point where two men, one on each side, are stationed, in water-tight wooden boxes, which extend downwards to the bottom of the pool. These men swill the sheep about, and then pass it under the spout from which the water is discharged in a broad, thin sheet, and this finishes the operation in a most satisfactory manner. The use of the water-tight boxes is to keep the men dry, so that they do not require to be dosed with whisky to "keep the cold out of their hearts."

The gates used by Mr. Bomford at Drumlargan, and also at Oakley Park, are constructed of larch, and in order to prevent them from falling down at the lower point of the headpost, as is usually the case, he has adopted the following plan:—The upper hinge is prolonged so that it comes through the heel-post, and is there made into a screw having a large swivel on it. A piece of stout fencing wire is firmly tied round the lower part of the head-post—that part of the gate which usually drags on the ground—and is brought up in a diagonal line, and attached to the hook of the swivel. The wire is then brought a little under the upper horizontal bar to the upper part of the head-post, where it is also firmly tied. The swivel is then screwed home, and thus tightens the wire and braces up the front part of the gate, so as entirely to prevent it from dragging.

The cattle kept at Drumlargan are, of course, chiefly purchased at different fairs; and, if any heifers, procured in this way, prove in calf, they are allowed to run on, and, after suckling their calves, are stall-fed. The calves are well fed during winter, and thus show, when two years old, as much growth as many do when 12 months old. Mr. Bomford also keeps a Westland bull at Drumlargan, and the produce of such sires with common cows shows very clearly the improvement which good blood effects. He has also some pure-bred Shorthorn cows and heifers, bought at the Westland and Killynon sales. A number of cattle are fattening in the stalls on Turnips, cake, and crushed Oats, and will soon be ready for market. The flock consists of Leicester ewes, bred for several years from Mr. Torr's blood, and crossed latterly with Mr. Turner's rams. Flocks of breeding sheep are not, however, generally kept on grass farms in Meath which are capable of fattening cattle. In such cases Ballinasloe wethers are usually preferred.

Mr. Bomford's pigs are Berkshire, and crosses of Berkshire and Essex. He has gone somewhat zealously into poultry, particularly in Dorking and Spanish fowl, and Cambridge turkeys.

The drainage operations at Drumlargan gave a great deal of employment while they lasted, and there are still a number of persons kept regularly at work about the place; but in the district generally there is very little employment for labourers during winter. When men are employed, wages run about 9*s.* per week, and in summer and autumn from 10*s.* to 12*s.*, without food, &c. Irregular employment is a necessary consequence of almost universal grazing; but, although such is the case, it has become a common complaint that labourers are now not easily dealt with or managed, when employment is given to them.

Grazing farms let at from £2 to £3 12*s.* 6*d.* an Irish acre; and land held by small farmers, without leases, from 30*s.* to 35*s.* an acre. Among the last named class of farmers there is no improvement, nor any desire apparently to improve. The land is usually cropped by them until exhausted; but many of them are getting their farms into grass, not, however, as dairy farms, as might be supposed, but for grazing dry cattle. It is often difficult to get a pound of butter in the district. In a few instances, where land is let to small farmers, and a course of cropping laid down in their leases, and where some encouragement is given, there are some signs of improvement; but it is a generally received opinion that the Land Act will ultimately have the effect of extinguishing this class of farmers. Most likely this was not anticipated by the framers of the Act; but such, there seems little reason to doubt, will ultimately be the result. *Dublin Farmers' Gazette.*

Miscellaneous.

EFFECT OF SCAMPED THATCHING.—A story of this kind appears in the *Chelmsford Chronicle*, which reports an action by a thatcher against a farmer, before the Maldon County Court. The action was brought by a thatcher named Appleton to recover the sum of £7 6*s.* 6*d.*, balance of wages for work done for Mr. J. F. Hutley, farmer, of Little Braxted, during last harvest.

Plaintiff said: I thatched "273 square" for the defendant, and the price agreed upon was £15 18*s.* The Wheat came from three farms, and there were about 25 stacks; it took me nearly five weeks; it was my harvest work; Mr. Hutley's own straw was used; some of the stacks were not properly "topped up;" it is the duty of the stackers to see to that; there were six Wheat stacks and one Barley stack not properly topped up; rain fell before all the stacks were thatched—about a fortnight after I entered upon the work; of the stacks not properly topped up there were one Barley and two Wheat stacks at Isham's, two Wheat at Shewell's, three Wheat at the home farm; the stackers were at work while I was thatching; I complained to them that the stacks were not properly topped up; Mr. Hutley came and looked on, and I also complained of the same thing to him and pointed out one stack in particular; he replied, "I cannot say much to it;" the defendant's looker saw the work, and I complained to him often of the stacking; if a stack is improperly topped up the rain will go through the thatching and into the grain; the weather was very dry, on the whole, during the time I was thatching; rain came on heavily afterwards; under these circumstances, whether the stacking is properly done or not, rain will go right through; this autumn stacks generally have got wet; I have seen nearly 20 different stacks wet; I cannot go anywhere without seeing them; the defendant complained to me about a stack being wet; I told him I had done my best and I could not help it; I am a skilled thatcher, and did the work to the best of my ability; I took proper time to do the work. In cross-examination plaintiff said, I had plenty of straw; I also had plenty of water, and used it; Mr. Smith was the looker; he is a witness for me to-day; I have seen Mr. Smith about the case three times; Smith was a sort of labourer bailiff; he was discharged from Mr. Hutley's service; I left of my own accord; I told Mr. Hanse the water got into the stacks because the stacks were not properly topped up, and because of the previous drought; when the first rain came I had finished all but one Wheat stack and a half, and one Barley stack; when I thatched these three stacks they were wet at the top; I told Mr. Hutley about one of them; they were unfit to be thatched, but I thatched them, and did not tell Mr. Hutley about two of them; there was a good deal of Wheat saturated in the stack Mr. Hutley spoke to me about; I told him the wind blew very hard during the time I was thatching that stack; I never told Mr. Hutley that particular stack was not properly topped up; as a fact it was not; Mr. Overall, bailiff, did not find fault with my work, but said the stacks were wet; the top of one stack, which was wet before I thatched it, was blown off.—Michael Smith deposed: I was looker at defendant's farm during last harvest; plaintiff complained to me of the topping up; he said some of the roofs were bad; some of the stacks certainly were topped up badly—a Barley stack or two in particular; I believe I told Mr. Hutley of this once or twice; I believe the plaintiff tried to do his work as well as he could; he took proper time to do it; the weather was very dry during harvest, and heavy rain followed; the water will get through if the thatching is not properly done, or if the roofing is flat.—James Newcombe, of Tolleshunt, a thatcher of 30 years' experience, said the last harvest was a bad one for thatching; he thatched many stacks himself; it rained heavily, almost night and day, for a week, after harvest; in such a season stacks would get wet, however well thatched; several of his own stacks were wet; he did not know either plaintiff or defendant, and had been summoned to give evidence.—Ephraim Young, of Great Totham, attendant on a threshing-machine, said he had threshed many stacks this season; they were frequently very wet.—Defendent said: The first stack threshed was one topped up by Smith; it was in a shocking state, and 14½ qr. were damaged by wet; I shall lose 15*s.* or 16*s.* per quarter upon it; I had six or seven stacks completely re-thatched, and all had to be looked over within a month of being thatched. Two Barley stacks and one other Wheat stack were also damaged. On other farms of mine, where the plaintiff has not thatched, the stacks are in a good state.—James Overall, bailiff in the employ of the plaintiff, at Cressing farm, said he had measured the stacks thatched by the plaintiff; there was not half enough straw used; some of the stacks required to be entirely re-thatched; at Cressing farm they had 24 stacks, and they were all right.—Philip Cheek said he re-thatched five stacks at Isham's farm; they were very fairly set up, but thatched very badly indeed; it was quite necessary to do the re-thatching.—Peter Cheek said he had been a thatcher 35 years; some of the stacks in question were set up very well, and some were a little flat; in the thatching neither labour nor material enough was bestowed; he and his nephew re-thatched "166 square" altogether, and had received £8 6*s.* for doing it.—John Dorking saw a good many of the stacks made up, and they were made up properly; Appleton only complained to him about one stack, which was not wet when threshed; Appleton did his work badly.—Alfred Overall, bailiff for the defendant, described the state of the first stack threshed; there were 14½ qr. of the Wheat damaged by the wet so as not to be saleable; he "didn't call it no thatching at all."—His Honour summed up, and the jury found a verdict for the defendant.

THE ROAD-STEAMER "RAVEE," was in all other respects a sister engine to the "Chenab," except in regard to the boiler, the "Chenab" being fitted with one of Thomson's pot-boilers, whereas the "Ravee" was fitted with one of Field's patent boilers, which, according to Lieutenant Crampton's report, gave excellent results when put through a series of trials with wood fuel on Ipswich racecourse. This boiler was specially designed for burning wood, by Mr. Lewis Olrick, of 27, Leadenhall Street. The boiler is 3 feet 3 inches diameter at the top, and 4 feet 3 inches diameter at the bottom, 7 feet 8½ inches high. It has 50 square feet of heating surface in the fire-box and 127 square feet of heating surface in the Field tubes, making a total of 177 square feet; the greatest surface is 11.25 square feet. The weight of the boiler is 2 tons, and it contains 13 cwt. of water. The "Ravee," when loaded with 1 ton of coals and 375 galls. of water in the tank, weighs about 14 tons; the driving wheels are 6 feet diameter; the cylinders 8 inches diameter and 10 inches stroke; geared, fast speed 3¾ to 1; slow speed, 12 to 1. When the "Ravee" ascended Lootray Hill, an incline of 3½ miles in length, varying from 1 in 25 to 1 in 17, at the rate of 4 miles an hour, the steam rising from 75 lb. pressure at the bottom of the hill to 140 lb. at the top, and the water rising from 2 inches in the glass to 3½ inches, she exerted 64 dynamometrical or actual horse-power, or at least 80 indicated horse-power, and the boiler evaporated upwards of 40 cubic feet of water per hour, which means that 1 cubic foot of water per hour was evaporated for each 4½ square feet of total heating surface—a most excellent performance, which has never been equalled by any other boiler up to the present moment. As a sample of the performance of the "Ravee" on her trip from Edinburgh to Ipswich, is appended a Table of what she did from Wansford to Ipswich, the last 95 miles of her journey:—

Total fuel consumed, in pounds	3,696
Total water evaporated, in pounds	24,150
Total distance travelled, in miles	95½
Time actually travelling	9 h. 51 m.
Engine standing under steam	7 h. 24 m.
Average speed in miles, per hour	9.69
Gross load, in tons	20.5
Mile tons	1,957.75
Pounds of coal per ton per mile	1.88
Water per ton per mile	12.33
Pounds of water evaporated by 1 lb. of coal	6.53

Journal of Society of Arts.

The Week's Work.

DECEMBER 23: *Fences.*—Straightening headlands and enlarging fields for profitable steam culture gives rise to the removal of old hedges and the planting of new ones. Those that remain, when full of gaps, may be pleached, and the gaps filled up with plants from the old hedges, and in stubbing them up the more healthy Thorns should be carefully topped and taken up for transplanting. In stubbing up an old hedge it is best to undermine it on one or both sides, as the roots are smaller and more easily cut the deeper you go. Thus, if there is no ditch, begin at one end by opening a trench 2 or 3 feet deep, or, practically speaking, down to a depth so that you can take plant after plant and pull them up by the hand. But if there is one or two ditches, put a drain-pipe in one or a drain in each ditch should the land so require. Then, in covering the drain, undermine the hedge on one or both sides as the case may be. In this way an experienced hand will soon stub up an old hedge, taking care of all plants required for transplanting. In filling up gaps with old plants the gaps should be deeply trenched, and the ground manured with lime compost; and if gaps have arisen from the ground being too shallow, either on rock or moorband, the latter should be removed to let the roots down, and earth carted on to deepen the former. In some cases the rock may be removed before the earth is carted on. For planting young hedges the land should be trenched, &c., as will be shown next week.

Farm Horses keep in active working order, as directed last month. There is something in the dulness of the season, so to speak, that is peculiarly depressing upon their physical energies, which, if not counteracted by the proper means, will lower them in condition.

Much of this is owing, doubtless, to natural causes, but more, perhaps, to the manner this noble animal is tied up to the manger in a narrow sloping stall in a dark and badly ventilated stable during the long nights of December—treatment diametrically at variance with his natural requirements. The day, it is to be hoped, is not far distant when a roomy loose-box will be considered as absolutely necessary for the hardworking farm-horse as for any of his race. The normal habits of the horse require to be thoroughly understood in order to provide for his artificial position as to housing, food, and grooming at this season.

Milch Cows timed to calve about this time require careful attendance, both as to dietary and household management. A milch cow stands tenfold more in need of a loose box than a fattening bullock, and were milch cows thus housed and fed on wholesome food fewer mishaps would be experienced at calving time than are now complained of when tied up each to a stake in a narrow sloping stall. Cow-boxes should be cleaned out daily, the same as horse-boxes, and kept every bit as clean. They should also be roomy, well lighted and ventilated, and kept as nearly at a temperature of 60° as can be. The cold raw atmosphere of a damp house is as bad and unhealthy for a milch cow as it is for her owner, so that artificial heat is just as needful for the one as for the other; and few things will pay better, all things considered, than a small stove in the cow-house, whether the herd is kept for nursing or the pail, for it is now an established fact that a milch cow thus kept gives richer milk, and rich milk is just as good for the calf as for the butter and cheese manufactory, assuming the cows are properly fed. The influence of diet on milk must never be lost sight of, for although the best food will not compensate for cold, improper ventilation, &c., yet, however comfortable the cow may be kept in a roomy box, bad food will make bad milk, and bad milk unhealthy calves, bad cream, and worse butter and cheese. If it is found impossible to keep farmhouses and labourers' cottages at a proper temperature, and free from damp and a polluted atmosphere, without artificial heat, how can it be otherwise with cow-houses and dairies in moist northern climates, where success depends so much upon a pure atmosphere of a proper temperature; and just now, when the health of live stock is the leading topic of the day, it becomes farmers to consider how far the treatment of milch cows with bad milk to calves is not laying the foundation of the predisposing cause of disease.

Notices to Correspondents.

BREEDS OF CATTLE, SHEEP, AND PIGS FOR EXPORTATION. *A Farmer* should consult Mr. Strafford, of 13, Euston Square, or Mr. Thornton, of 15, Langham Place. As to the characteristics of Booth and Bates cattle, we may in a week or two be able to give a fuller answer to your question.

Markets.

SEED MARKET.

The close of the year being so near at hand, our markets are now very quiet. All descriptions of seeds are, however, held with considerable firmness, and a brisk business is anticipated at the opening of the new year. English red Clover commands extreme currencies. Cable advices just to hand from New York describe the trade there as very firm. Alsike and white Clover are steady. Foreign Italian continues to advance in price. Feeding Linseed meets with fair inquiry. Other articles offer no subject for remark. JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

MARK LANE.

MONDAY, Dec. 18.

There was a moderate supply of English Wheat to this morning's market, and the trade was dull, at the prices of this day se'nnight. The attendance was poor, and there was but little inquiry for foreign; prices remain as last week. Barley was unchanged in value; Beans and Peas were 1*s*. per qr. cheaper. The Oat trade was dull, at a decline of 6*d*. per qr. Maize was rather easier. There was no change in the value of Flour.

PRICE PER IMPERIAL QUARTER.	*s.* *s.*		*s.* *s.*
WHEAT, Essex, Kent, Suffolk..White	54—59	Red......	54—57
— fine selected runs ....do.	57—61	Red......	56—58
— Talavera	59—63		
— Norfolk	—	Red......	—
— Foreign	51—69		
BARLEY, grind. & dist., 26*s* to 31*s*..Chev.	38—40	Malting ..	33—38
— Foreign .. grinding and distilling	28—31	Malting ..	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire..Potato	25—27	Feed	—
— Irish ....Potato	24—26	Feed	20—22
— Foreign ......Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign ..	—
RYE-MEAL, Foreign..................			
BEANS, Mazagan.... 33*s*. to 35*s*...Tick	35—50	Harrow ..	35—50
— Pigeon ....38*s*. to 59*s*...Winds	—	Longpod .	—
— Foreign ....Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent..Boilers	40—42	Suffolk ..	42—45
— Maple, —*s*. to —*s*. ....Grey	—	Foreign ..	36—44
MAIZE	—	Foreign ..	32—35
FLOUR, best marks, delivered..per sack	44—50		
— 2d ditto ....ditto	40—42	Country ..	40—42
— Foreign ....per barrel	24—28	Per sack ..	38—60

WEDNESDAY, Dec. 20.

An increased amount of depression was observable in the grain trade here to-day. There was a small show of English Wheat on offer, but from abroad a large quantity came to hand. Trade was inactive, and to effect sales lower rates had to be accepted. Barley sold slowly at drooping prices. Malt was dull, and occasionally easier. Oats, the supply of which was good, experienced a quiet sale, at barely Monday's currencies. Beans and Peas were difficult to sell, although a slight reduction was in some instances offered. Flour changed hands cautiously at about late rates.

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch..	360	230	30	—
Irish ..	—	—	—	—
Foreign ..	28,110	4980	25,150	— 11,110brls.
	28,470	5210	25,180	

LIVERPOOL, Dec. 19.—There was a fuller attendance, and Wheat was in improved demand, but the quotations of Friday last are unaltered. Flour slow, and 6*d*. per barrel and 1*s*. per sack lower on the week. Beans quiet, at a reduction of 3*d*. to 6*d*.; and Peas 6*d*. per qr. cheaper than on Tuesday last. Oats and Oatmeal quite neglected.

AVERAGES.

	Wheat.	Barley.	Oats.
Nov. 11	56*s* 5*d*	37*s* 4*d*	23*s* 5*d*
— 18	55 11	36 9	23 0
— 25	55 10	36 8	23 8
Dec. 2	56 7	36 10	23 8
— 9	56 10	37 1	24 2
— 16	56 5	37 1	22 10
Average ..	56 4	36 11	23 5

METROPOLITAN CATTLE MARKET.

MONDAY, Dec. 18.

The number of Beasts is small, but the butchers have bought largely in the past week, and consequently trade is slow to-day; prices are lower, and a clearance is with difficulty effected. The supply of Sheep is also small—about the same as the corresponding day last year; there are several of a prize character, but the trade is bad for them. Choice sizeable half-breds are in request, at not much lower rates. Choice Calves are scarce and dear. Our foreign supply consists of 600 Beasts, 3900 Sheep, and 116 Calves; from Scotland there are 130 Beasts; from Ireland, 500; from Norfolk and Suffolk, 370; and 1060 from the Midland and Home Counties.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 6to5 8	Best Long-wools	6 4to6 6
Best Shorthorns..	5 4—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 8	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 6—6 8	Do. Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 8—6 8
		Pigs	3 8—5 0

Beasts, 2660; Sheep and Lambs, 12,640; Calves, 123; Pigs, 50.

THURSDAY, Dec. 21.

This is very nearly a holiday market, both as regards supply and demand; a few of the choicest beasts have been sold at Monday's rates, but the butchers having for the most part supplied their wants for Christmas, are buying very sparingly to-day. Sheep are scarcely asked for. The few Calves on offer make a good price. Our foreign supply consists of 95 Beasts, 990 Sheep, and 45 Calves.

	s. d. s. d.		*s. d. s. d.*
Best Scots, Herefords, &c. ..	5 6to5 8	Best Long-wools	6 4to6 6
Best Shorthorns ..	5 4—5 6	Do. Shorn ..	.. — ..
2d quality Beasts	4 0—4 8	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds ..	6 6—6 8	Do Shorn ..	.. — ..
Do. Shorn ..	.. — ..	Lambs	.. — ..
		Calves	4 8—6 8
		Pigs	3 8—5 0

Beasts, 520; Sheep and Lambs, 2620; Calves, 72; Pigs, 5.

METROPOLITAN MEAT MARKET, Dec. 21.

Best Fresh Butter	19*s*. per dozen lb.
Second do. do.	17*s*. ,,

Small Pork, 4*s*. 4*d*. to 4*s*. 8*d*.; Large Pork, 3*s*. 8*d*. to 4*s*. 2*d*. per 8 lb.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Dec. 21.

PrimeMeadowHay,	85*s*. to	95*s*.	Clover, old	118*s*.	130*s*.
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. ..	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	40			

CUMBERLAND MARKET, Thursday, Dec. 21.

Sup. Meadow Hay	92*s*. to	100*s*.	Inferior Clover ..	84*s*. to	105*s*.
Inferior do.	70	84	Prime 2d cut do. ..	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	40	45
Superior Clover ..	120	132			

JOSHUA BAKER.

ENGLISH WOOL.

For English wool there has been a good demand during the last week, and an almost general advance has been realised. Buyers begin to see that there is no chance of manufactured goods going cheaper, and consequently place their orders more freely.

HOPS.

BOROUGH MARKET, Dec. 21.

Messrs. Pattenden & Smith report but little business doing, as is usually the case at this time of year; still in all cases where sales are effected, prices are well sustained. Continental markets continue to rule very firm, owing to the limited supplies.

COALS.—Dec. 20.

Walls End Russel's Heton, 22*s*.; Walls End South Hetton, 23*s*.; Walls End Original Hartlepool, 23*s*. 3*d*.; Walls End Tees, 23*s*.; Brancepeth Cannel, 19*s*. 6*d*.—Ships at market, 16; sold, 16; at sea, 25.

Smokeless Stoves.—No Flues.

NASH AND JOYCE'S PATENT PORTABLE STOVES, for drying and warming require no attention; with one supply of fuel burn 12 hours.

The new REGISTERED PATTERN STOVE for Greenhouses, with ash receiver, may be kept burning all winter by filling up with fuel every 12 hours, and can be regulated to any required degree. Price 12*s*. 6*d*. to Six guineas. PATENT FUEL, 18*s*. per 120 lb.; in sacks and bags of 30 lb. and 60 lb. at 4*s*. 6*d*. and 9*s*.

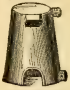
AMERICAN CHARCOAL BOX IRONS.
Price 5*s*., 6*s*., and 7*s*.

PORTABLE VAPOUR and HOT AIR BATH, with large Cloak, 21*s*. and 10*s*. 6*d*. Medical Testimonials and Prospectus Free on application.

SWAN NASH, Ironmonger, 253, Oxford Street; and JOYCE'S STOVE DEPOT, 119, Newgate Street.

HOT-WATER APPARATUS erected Complete, or the Materials supplied for Heating

Improved Conical.



Tubular Boiler.

GREENHOUSES,
HOTHOUSES,
CONSERVATORIES,
CHURCHES,
PUBLIC BUILDINGS, &c.

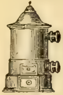
HOT-WATER PIPES at wholesale prices; Elbows, T Pieces, Syphons, and every other connection kept in stock.

WROUGHT and CAST-IRON CONICAL, SADDLE, and IMPROVED CONICAL, also Elliptic, Boilers, from 24*s*. each

Improved and extra strong CAST-IRON TUBULAR BOILERS, with or without Water Bars, from 52*s*. 6*d*. each.

CAST and WROUGHT-IRON PORTABLE BOILERS, on Stand, for use without brickwork, from 60*s*. each.

Portable Boiler.



Elliptic Boiler.

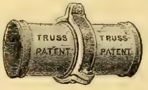
Patent THROTTLE and other VALVES, FURNACE DOORS, BARS, and FURNACE WORK of every description and size.

INDIA-RUBBER RINGS for Pipe Joints; Sockets require no other packing, and are perfectly water-tight.

Goods, of the very best manufacture, delivered at Railway or Wharf in London.

LYNCH WHITE,
Old Barge Iron Wharf, Upper Ground Street, London, S.E. (Surrey side Blackfriars Bridge). Price List on application.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
&c.

TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

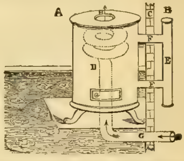
T. S. TRUSS begs to state that the immense number of APPARATUS annually Designed and Erected by him in all parts of the Kingdom, and for the Royal Horticultural Society at South Kensington and Chiswick, with unrivalled satisfaction, is a guarantee for skill of design, superior materials, and good workmanship; while the great advantage obtained by his Improved System cannot be over-estimated, consisting of perfectly tight joints with neatness of appearance; effects a saving of 25 per cent. on cost of Apparatus erected compared with other systems; facility for extensions, alterations or removals without injury to Pipes or Joints; easily and expeditiously erected; and perfectness of design supplied, insuring no extras.

BATH and GAS WORK ERECTED in TOWN or COUNTRY.
The Trade supplied.

Price Lists, Plans, and Estimates forwarded on application to
T. S. TRUSS, C.E., Sole Manufacturer,
Consulting Horticultural Engineer, Iron Merchant, Hot-water and Steam Apparatus Manufacturer,

GEORGE'S PATENT CALORIGEN,
For WARMING and VENTILATING.

PRICES: –
COAL CALORIGEN, £6 6*s*. | GAS CALORIGEN, £3 3*s*.



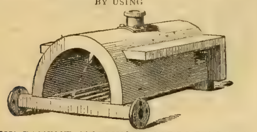
A—the interior of the Room; B—exterior of the Building; C—wall; D—the Calorigen; E—a Cylinder; F—pipes communicating to supply air for combustion, and carry off product; G—pipe for passage of Cold Air to Calorigen; H—outlet for ditto after being made warm.

The only Gas Stove which retains the whole of the Heat given off by the Gas without vitiating the atmosphere.

It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Shops, Conservatories, Offices, &c. Exhibited in the Exhibition of 1871 (Department of Scientific Inventions). May be inspected at the Sole Manufacturers,

J. F. FARWIG AND CO.,
36, Queen Street, Cheapside, London, E.C.

Simplicity, Efficiency, and Economy is Secured
BY USING



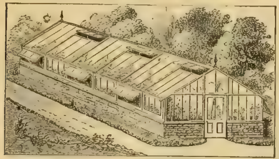
THE PATENT TERMINAL SADDLE BOILER. It is easily set, and very powerful Illustrated Circulars post free. J. IRELAND, Edward Street, Broughton Lane, Manchester.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong GREENHOUSE LIGHTS, 6 feet by 4 feet, 5*s.* each. GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C. W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included:—

20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3*s.* each
" " glazed, 16-oz. good sheet glass	6*s.* "
6 ft. " " 2 in. thick, unglazed	5*s.* "
" " glazed, 16 oz. good sheet glass ..	11*s.* "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30*s.* "
Portable box containing two ditto, 6 ft. by 8 ft.	55*s.* "

Estimates given for Conservatories or Greenhouses to any Design.

SIR J. PAXTON'S HOTHOUSES for the MILLION. Reduced Price Lists free. A Pamphlet, with Views of these and other Glass Roofs, for three stamps.—HEREMAN AND MORTON, 14, Tichborne Street, Regent Quadrant, London, W.

The Patent Imperishable Hothouse.

AYRES'S PATENT.
GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the
IMPERISHABLE HOTHOUSE COMPANY,
Newark-on-Trent, Notts.
MANAGER—W. P. AYRES, C.M.R.H.S.,
Imperishable Hothouse Company, Newark-on-Trent.
Plans, Specifications and Estimates supplied upon the shortest notice.

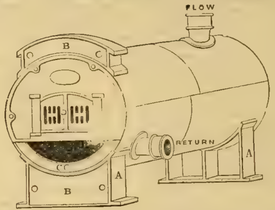
Greenhouses.

H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 106, Mare Street, Hackney, E. Good substantial-made GREENHOUSES, Glazed, ready for fixing, 42 feet long by 13 wide, price £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. A handsome CONSERVATORY in stock, 36 feet long, 18 feet wide, £110.
Estimates given for any branch in the above line in Wood or Iron.

Save your Plants from the Frost.

MARRATT'S SELF-REGISTERING THERMOMETER, for Marking how Cold it has been, and telling the Present Temperature. No Gardener should be without it. Price 1*s.*, or by post, 1*s.* 4*d.*
MARRATT, Optician, 63, King William Street, London Bridge, E.C

STEVENS'
"TRENTHAM" IMPROVED CORNISH BOILER.



The Advertisers have great pleasure in calling the attention of Gardeners, and all interested in Horticulture, to the above excellent Boilers. Being of the most simple construction, and in wrought iron, they are very durable, economical, and powerful; and, in the opinion of many competent judges, are superior to all other Boilers, even to the most approved form of Tubulars.

Appended are a few Testimonials:—

"Royal Exotic Nursery, Chelsea, S.W.

"DEAR SIR,—Having now had your Boilers at work here for some months, we are very pleased to be able to report most favourably of them. They are certainly more powerful than the Tubulars they have replaced here, more economical as regards consumption of fuel, and they do not require so deep a stokehole.

"We shall be pleased for you to refer any one here who may wish to see the Boilers at work, and examine them. We have already recommended them to many people, and we are sure they will by degrees become largely used.—We are, dear Sir, yours, very truly,

"JAMES VEITCH & SONS."

"Combe Abbey Gardens, near Coventry.

"I feel that anything I can say in favour of Mr. Stevens' Boiler will come very far short of its real merits. The dilemma of choosing a Boiler has now been set at rest, by the advent of Mr. Stevens' Improved Cornish. Its introduction has made our heating a masterpiece, one Boiler heating 4000 feet of 4-inch pipe. It saves considerably both in time and labour, by comparison with the now discarded Tubular Boiler. "WM. MILLER."

"Ingestre Hall, Stafford."

"DEAR SIR,—I am delighted with your Improved Cornish Boiler It is by far the simplest and most powerful Boiler I ever used, and economises my fuel and labour to an extent that I could not have believed possible, unless I had had ocular demonstration of the fact.

"W. PHIPPS."

"Huntroyde Park, Burnley.

"DEAR SIR,—We have had your Improved Cornish Boiler upwards of two years, heating more than 2000 feet of 4-inch piping, and I feel that I cannot speak too highly in its praise.

"I have worked a good many kinds of Boilers, but not one that requires so little fuel and labour to do so great an amount of work as yours, and when the Boiler becomes known it will be very generally used. "H. LINDSAY."

"Atherstone Grapery.

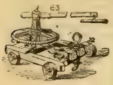
"DEAR SIR,—Your Boiler is the simplest and most powerful that I ever used, and I would back it to beat any boiler now in use, for economy of fuel and labour with thorough efficiency.

"It is a real *Gardeners'* Boiler, and will be as commonly used as the Old Saddle has been when it becomes known. "G. SAGE.

SOLE MAKERS—THE NORTH STAFFORDSHIRE ENGINEERING CO., LIMITED, FENTON, STOKE-ON-TRENT.

LONDON AGENT—JAMES GRAY, HORTICULTURAL WORKS, DANVERS STREET, CHELSEA, S.W.

From either of whom full Particulars, with Sizes and Prices, and Testimonials, can be obtained.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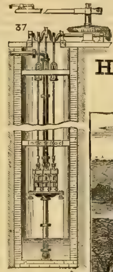
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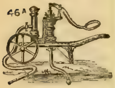
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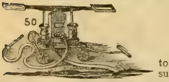
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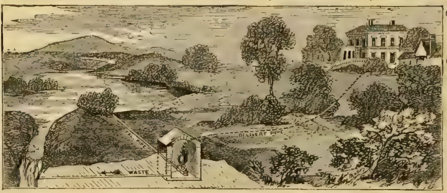
S. OWENS & Co.,
HYDRAULIC ENGINEERS,
WHITEFRIARS STREET, LONDON, E.C.



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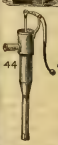
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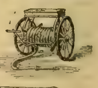

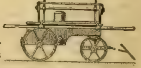
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THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
No. 63. PORTABLE IRRIGATORS with Double or Treble Barrels for Horse or Steam Power.
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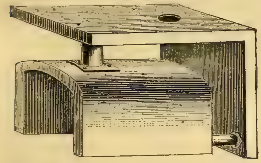

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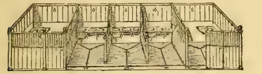

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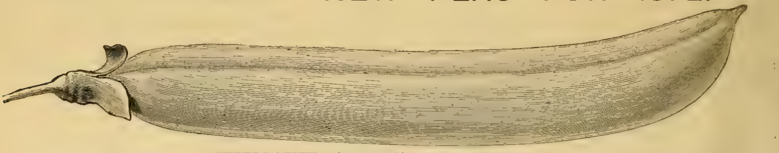

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, December 23, 1871.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

No. 52.—1871.] SATURDAY, DECEMBER 30. { Registered at the General Post Office as a Newspaper. } Price 5d. POST FREE, 5½d.

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Giant Emperor ASTER, 6 varieties	1	6
Globe ASTER, 18 varieties	5	0
Reid's Globe-flowered Pipe ASTER, 12 varieties	4	0
Small-flowered Pyramidal ASTER, 5 varieties	2	0
High Chrysanthemum-flowered ASTER, 12 varieties for.. ..	3	0
Dwarf Turban ASTER, dark red with white, per packet.. ..	1	0
Dwarf Bouquet Pyramidal ASTER, 17 varieties for	5	0

German or Ten-Week STOCKS, and all other kinds of FLOWER SEEDS, to be had on application to

HOCK AND CO., The Rhine Nursery, Castel, opposite Mainz, Germany.

Fruit Trees, Fruit Trees.

JOHN PERKINS, SEN., begs to offer the following :—

Standard PEARS of all the leading sorts, 5 to 6 feet stems, 60s. per 100.
Dwarf-Trained MOORPARK APRICOTS, 24s per dozen.
,, PEACHES, 24s. per dozen
,, MAYDUKE CHERRIES, &c., 18s per dozen.

52, Market Square, Northampton

The Fairy Apple.

JOHN JENNINGS has fine PYRAMIDAL TREES, with bloom buds, of the above beautiful dessert Fruit to DISPOSE OF, at 5s. each. The fruit is in season from December to April.

"Destined and worthy to take its place amongst the worthiest of its kind" Nurseries, Shipston-on Stour.

CROYDON.
A. HENDERSON
EAST·SURREY·SEED·WAREHOUSE
ESTABLISHED 1828

Dutch Flower Roots.

ARCHD. HENDERSON begs to announce that he has received a large Consignment of DUTCH and other BULBOUS ROOTS, carefully selected from the most celebrated growers.

Descriptive and Priced CATALOGUES are now ready, containing practical directions for their successful cultivation on all the various systems now adopted.

Also, a choice and select LIST of VEGETABLE and HARDY FLOWER SEEDS for Autumn Sowing.

LIST of general NURSERY STOCK, containing a superb collection.

CATALOGUES gratis and post free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, North End, Croydon

Planting Season.

DICKSONS AND CO., NURSERYMEN and SEEDSMEN, 1, Waterloo Place, Edinburgh, beg to call the attention of those about to plant to their very large and healthy Stock of FOREST TREES, FRUIT TREES, ORNAMENTAL TREES and SHRUBS, which are now in fine condition for transplanting. They are growing on very exposed ground, are finely rooted, and their wood is thoroughly ripened. Samples and Catalogues on application. Special prices will be quoted where large quantities are taken. (Established 1770.)

Experienced FORESTERS, GARDENERS, and LAND STEWARDS recommended.

W. HANDSCOMB, The Nurseries, Aspley Guise, Woburn, Beds

(All twice and three times transplanted)

3,000 Lombardy, Italian, and Balsam POPLARS, 7 to 9 feet
5,000 SPRUCE FIRS, 2½ feet | 5,000 Evergreen PRIVET, 2 to 3 ft.
5,000 Common LAURELS, 2½ to 3 feet, and 2,000 bushy, 4 to 5 feet
200,000 Quicks, very strong | 10,000 Oak, 4 to 5 feet
10,000 Green Hollies, 6 to 9 inches | 2,000 Berberis aquifolia
50 Variegated ,, 2 to 2½ feet | 100 Red Cedar, 2½ to 3 feet
2,000 Birch, 4 to 6 ft. 2,000 Beech, 4 to 5 ft; 2,000 Tree Box, 2½ to 3 ft.
1,000 Horse Chestnuts, 4 to 5 ft. | 20 Evergreen Oak, 4 to 6 feet
4,000 Beech, 3-yr. old | 400 Red-twigged Limes, 8 to 10 feet
100 Pinus austriaca, 4 to 5 ft., good
100,000 Ash, in drills, 9 to 15 inches.
5,000 Ash, 3 to 4 feet | 10,000 Green Hollies, 10 to 15 inches high.

FINE HEALTHY NURSERY STOCK.

		s.	d.
	Per dozen.—	s.	d.
ABIES DOUGLASII, 4 to 5 feet, clean and well grown, dark green colour	per 100, 75s.	12	0
BERBERIS DARWINII, 2 to 3 feet, bushy, fine	,, 20s.	4	0
PINUS AUSTRIACA, 2 to 3 feet	,, 20s.	4	0
,, ,, 3 to 4 feet, well transplanted ..	..	9	0
THUJA LOBBII, 3 to 4 feet	..	12	0
COTONEASTER SIMMONSII, 2 to 3 feet	..	6	0
AMERICAN ARBOR-VITÆ, 3 to 4 feet	..	9	0
PORTUGAL LAURELS, 2 to 3 feet, bushy	..	9	0
Paul's New Double Scarlet THORN, 5 to 6 feet ..	per 100, 75s.	12	0
RIBES SANGUINEA, 2 to 3 feet	,, 20s.	3	0
RHODODENDRONS, fine hybrids, various colours, fine bushy healthy plants, 2 feet..	per 100, 35s.	6	0
,, 3 feet	,, 60s.	9	0
10,000 fine named Hybrid Perpetual ROSES, on Manetti Stock, fine plants	per 100, 50s.	9	0

HENRY MAY, The Hope Nurseries, Bedale, Yorkshire.

EWING AND CO., The Royal Norfolk Nurseries, will be happy to furnish prices to the Trade of the following :—

Dwarf-trained Kirke's, Coe's Seedling, Victoria, and other PLUMS.
Dwarf-trained Morello, Mayduke, and other CHERRIES.
Standard red-twigged LIMES, fine.
PURPLE BEECH, of the best dark variety, worked, and furnished from the ground, 6 to 8 feet.
Standard CERASUS MAHALEB VARIEGATA
HEREFORDSHIRE ELMS, fine, 6 to 8 feet.
CHICHESTER ELMS, fine, 6 to 10 feet.
HORSE CHESTNUTS, 6 to 8 feet, very stout.
COMMON LAUREL, 2 to 3 feet, bushy.
EVERGREEN PRIVET, 2 to 3 feet.
JAPAN PRIVET, fine, transplanted.
PINUS AUSTRIACA, transplanted, 1 to 2 feet.
PICEA PINSAPO, nice specimens, 2 to 3 feet.
THUJA WARREANA, ex. transplanted, 2 to 4 feet.
MAHONIA AQUIFOLIUM, transplanted.

Planters of Large Trees for Blinds and Immediate

EFFECT may be glad to know they can be SUPPLIED by

WILLIAM MAULE AND SONS, from their Nurseries, Bristol, in large quantities, at moderate prices.

EVERGREEN TREES.

HOLLIES, Green, on stems, 10 to 12 feet
PINUS EXCELSA, 8 to 10 feet
NORWAY SPRUCE, 8 to 10 feet
CEDRUS DEODARA, 8 to 10 feet
CHINESE ARBOR-VITÆ, 8 to 10 feet
ABIES DOUGLASII, 5 to 6 feet
ARAUCARIA IMBRICATA, 4 to 5 feet
MOUNT ATLAS CEDAR, 6 to 7 feet
CEDAR of LEBANON, 7 to 8 feet
CHINESE JUNIPERS, THUJOPSIS, and a great variety of choice EVERGREENS, 7 to 8 feet
PINUS AUSTRIACA, 4 to 5 feet
PORTUGAL LAURELS, 4 to 5 feet
CUPRESSUS LAWSONIANA, 4 to 5 feet
ENGLISH YEWS, 5 to 6 feet
RHODODENDRONS, bushy, 4 to 5 feet

DECIDUOUS TREES.

POPLAR, BLACK ITALIAN, 10 to 12 feet
BIRCH, 10 to 12 feet
TURKEY OAK, 10 to 12 feet
ACACIA, BEECH, ELM, MOUNTAIN ASH, ONTARIO POPLAR, LABURNUMS, CHESTNUTS—10 to 12 feet

Prices on application.

Notice.—Calne Nursery.

MESSRS. HEALE AND CO., in thanking the Nobility, Gentry, and the Public in general for the support which for upwards of half a century has been so liberally accorded to their Establishment, beg to intimate that they have DISPOSED OF the entire GOODWILL and STOCK of the above NURSERY and SEED BUSINESS to Mr. J. C. DUNCAN, whom they have much pleasure in recommending as their Successor, and for whom they solicit a continuance of patronage.

(Signed) HEALE AND CO.

With reference to the above Notice, the Undersigned respectfully intimates, that having succeeded by purchase to the Old Established Nursery and Seed Business at Calne, so long and so successfully carried on by Messrs. HEALE & Co., he hopes, by moderate charges, unremitting attention, and his own personal superintendence in every department of the Business, to secure a continuance of the support hitherto so liberally accorded to the Establishment.

(Signed) J. C. DUNCAN.

Lycopodium denticulatum.

WANTED, 100 dozen strong plants, in 48-sized pots; also large PALMS, such as Seaforthia elegans, from 8 to 20 feet high; also handsome TREE FERNS, with 8 feet stems; also strong GREENHOUSE CREEPERS, established in large pots. Send full particulars as to size, price, &c., to

JOHN WILLS, Royal Exotic Nursery, Sussex Place, Old Brompton, London, S.W.

Lord Mayor's Banquet.

"THE FLORAL ORNAMENTATION was by Mr. JOHN WILLS, of Old Brompton, whose taste was generally commented on in terms of eulogy."—*Vide City Press, Nov. 11, 1871.*

All kinds of FLORAL DECORATIONS, WEDDING, OPERA, and other BOUQUETS.

JOHN WILLS, Royal Exotic Nursery and Floral Depôt, Sussex Place, Old Brompton, London, S.W.

Forest and Ornamental Planting.

PETER LAWSON AND SON respectfully solicit early orders for FOREST TREES and ORNAMENTAL TREES and SHRUBS, which they can supply to great extent.

The large breadths of LARCHES, from 1 to 3½ feet, SCOTCH FIR, NORWAY SPRUCE, AUSTRIAN PINES, and other leading sorts of FOREST TREES, are unusually fine, and worthy of inspection. CATALOGUES and special offers will be furnished upon application.

Edinburgh and London.—December, 1871.

RICHARD SMITH'S LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their generic, specific, and English names, native country, height, time of flowering, colour, &c., and general remarks, free by post

RICHARD SMITH, Nurseryman and Seedsman, Worcester.

Cheap Offer of Thorn Quicks, 2-yr. Seedling.

THORN QUICKS, 2-yr. seedling, from 4 to 8 inches, very good to transplant, £7 10s. per 100,000.

PORTUGAL LAUREL, good roots, 1½ to 2 feet, bushy and fine, 10s. per 100; 2 to 2½ feet, 12s. per 100.

AMERICAN ARBOR-VITÆ, transplanted spring, 1871, 2½ to 3 feet, 10s. per 100.

Delivered free in Liverpool. Terms cash. Cultivated and grown for sale by

MICHAEL GRANT, Nurseryman, Newry, Ireland.

ROBERT NEAL, NURSERYMAN, Wandsworth Common, Surrey, S.W., begs to offer to Gentlemen who intend planting this season his large and varied stock of FRUIT, FOREST, and ORNAMENTAL TREES, Standard and Dwarf ROSES, RHODODENDRONS, CONIFERÆ, SHRUBS, &c., which are now in fine condition for removal. CATALOGUES may be had free on application.

The Nurseries are within a few minutes' walk of the Clapham Junction, and Wandsworth Common Railway Stations.

Forest Trees, Ornamental Trees, Shrubs, Fruit Trees,

ROSES, &c.

LITTLE AND BALLANTYNE'S Priced LIST of the above is now ready, and will be sent free on application. They are prepared to supply well-rooted, hardy plants, and their stock is large and varied.

The Carlisle Nurseries, Knowefield

Office and Seed Warehouses, 44, English Street, and Blackfriars Street, Carlisle.

Forest Trees.

WOOD AND INGRAM offer as follows, very fine stuff :—

		Per 1000.—s.	d.
OAKS, 3-yr. Seedlings		7	6
,, 3 to 4 feet		30	0
,, 4 to 5 feet		35	0
ELM, English, 1-yr. Seedlings		5	0
,, ,, 2-yr. Seedlings		7	6
,, Huntingdon, 8 to 10 feet	per 100	50	0
HORSE CHESTNUTS, 3-yr. Seedlings		8	0
,, ,, 2 to 3 feet		12	0
OAK, Evergreen, 1-yr. Seedlings		10	0
,, ,, 3-yr. Seedlings		15	0

Samples sent on application.

The Nurseries, Huntingdon.

MILFORD NURSERIES,
near Godalming.

For NEW and RARE HARDY PLANTS and CONIFERÆ, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For HARDY ORNAMENTAL TREES and SHRUBS, EVERGREENS, &c., see MAURICE YOUNG'S New Descriptive CATALOGUE.

For RHODODENDRONS and other AMERICAN PLANTS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For STANDARD and HALF STANDARD ROSES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For NEW JAPANESE AUCUBAS, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For JAPANESE NOVELTIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For Cheap EVERGREENS and SHRUBS for COVER PLANTING or SHRUBBERIES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For PLANTS suitable for WINTER BEDDING, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For TRANSPLANTED FOREST TREES, see MAURICE YOUNG'S New Descriptive CATALOGUE.

For EXTRA TRANSPLANTED or QUARTERED FOREST TREES for Planting Belts or Shrubberies, see MAURICE YOUNG'S New Descriptive Catalogue.

Forwarded on application enclosing stamp.

Milford Nurseries, near Godalming.

1871.—Planting Season.—1871.

THOMAS KENNEDY AND CO. offer the following Transplanted TREES, &c., which are healthy, well grown, well rooted, and in excellent condition for removal. Prices on application.

100,000 ASH, Common, from 1 to 1½, 1½ to 2, 2 to 3, and 3 to 5 feet.
100,000 ASH, Mountain, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000 ALDER, Common, 1½ to 2, 2 to 2½, and 3 to 5 feet.
150,000 BEECH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
200,000 BIRCH, 1 to 1½, 1½ to 2, 2 to 2½, and 3 to 4 feet.
30,000 BLACKTHORN or SLOE, 1½ to 2, 2 to 2½, and 2½ to 3 ft.
100,000 HAZEL, Common, 1 to 1½, 1½ to 2, and 2 to 3 feet.
50,000 HORNBEAM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
LIMES.—An immense stock of fine handsome Trees, 2 to 3, 3 to 4, 5 to 6, and 8 to 10 feet.
200,000 LARCH FIR, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
1,000,000 SCOTCH FIR, grown from true native saved seed, the plants twice and three times transplanted, 9 to 12 inches, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
500,000 SPRUCE FIR, Norway, all three times transplanted, 9 to 12, 12 to 15, 15 to 18 inches, and 1½ to 2 feet.
50,000 SILVER FIR, 6 to 9, and 9 to 12 inches.
100,000 PINUS AUSTRIACA, 9 to 15, and 15 to 18 inches.
100,000 PINUS LARICIO, true Corsican, 6 to 9, 9 to 12, and 12 to 15 inches.
150,000 OAK, English, 1 to 1½, 1½ to 2, 2 to 2½, 2½ to 3, 3 to 4, and 4 to 5 feet.
200,000 PRIVET, Evergreen, 1½ to 2, 2 to 2½, and 3 feet.
50,000 SYCAMORE or PLANE, 1½ to 2, and 2 to 3 feet.
1,000,000 THORNS or QUICKS, of all sizes.
50,000 WILLOWS, Huntingdon, 2 to 3, 3 to 4, and 4 to 5 feet.
50,000 WHIN or GORSE, 1½ to 2 feet.

Besides the above, they have an extensive general stock of FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., which they are selling at moderate prices.

Railway Station Nurseries, &c., Dumfries.—November, 1871.

Seeds Direct from the Growers

The BEST MEANS of PREVENTING DISAPPOINTMENT.

SUTTONS' £3 3*s*. COLLECTION of GARDEN SEEDS, for a Large Garden, carriage free.

SUTTONS' £2 2*s*. COLLECTION of GARDEN SEEDS, for a Medium-sized Garden, carriage free.

SUTTONS' £1 1*s*. COLLECTION of GARDEN SEEDS, for a Small Garden, carriage free.

SUTTONS' £2 2*s*. COLLECTION of FLOWER SEEDS, for a Large Garden, carriage free.

SUTTONS' £1 1*s*. COLLECTION of FLOWER SEEDS, for a Medium-sized Garden, carriage free.

SUTTONS' 12*s*. 6*d*. COLLECTION OF FLOWER SEEDS, for a Small Garden, carriage free.

SUTTON AND SONS, Seedsmen by Special Appointment to the Queen and H.R.H. the Prince of Wales, Reading,

---

RICHARD SMITH'S LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country and size there, situation, soil, and other information, with copious index of their synonyms. Free by post for six stamps.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Beech—Extra Strong, Transplanted.

FRANCIS & ARTHUR DICKSON & SONS, The "UPTON" Nurseries, Chester, have to offer large quantities of strong, extra transplanted, well rooted BEECH, 3 to 4 feet and 4 to 5 feet; also a large and well grown stock of FOREST, FRUIT, ROSE and other TREES, SHRUBS, &c. Priced CATALOGUES forwarded on application.

Elvaston Nurseries.

WILLIAM BARRON AND SON'S Priced Descriptive CATALOGUE of CONIFERÆ and other ORNAMENTAL PLANTS, ROSES, RHODODENDRONS, FRUIT TREES, &c., is now ready, and may be had, post free, on application.

A visit to the Nurseries from intending purchasers is respectfully solicited. Elvaston Nurseries, Borrowash, near Derby.

WILLIAM POTTEN'S CATALOGUE of choice VEGETABLE and FLOWER SEEDS, all selected from the best stocks, is now ready; also his CATALOGUE of BEDDING PLANTS, containing over 300 sorts of the best GERANIUMS in cultivation. To be had post free on application to

WM. POTTEN, Seedsman and Florist, Sissinghurst, Staplehurst Kent.

Planting Season.

JAMES DICKSON AND SONS beg to draw attention to, and to solicit an inspection of, their almost unlimited stock of FOREST, FRUIT, and ORNAMENTAL TREES, SHRUBS, ROSES, and all other NURSERY STOCK.

The "Newton" Nurseries can now be reached on foot in 8 minutes from the Chester Passenger Station.

Priced LISTS post free.

JAMES DICKSON AND SONS, "NEWTON" Nurseries, Chester.

The Cheapest and Best Insecticide.

POOLEY'S TOBACCO POWDER.

Of all Nurserymen and Seedsmen.

TOBACCO TISSUE, for FUMIGATING GREENHOUSES.—Will destroy Thrip, Red Spider, Green and Black Fly, and Mealy Bug, and burns without the assistance of blowing, and is entirely free from paper or rags. Price 3*s*. 6*d*. per lb., carriage free. A reduction in price for large quantities.

To be had of Messrs. ROBERTS AND SONS, Tobacco Manufacturers, 112, St. John Street, Clerkenwell, E.C., of whom Copies of Testimonials may be obtained; and of all Seedsmen and Nurserymen.

STEVENSON'S ABYSSINIAN MIXTURE,

For the Destruction of all Insects Infesting Plants.

TRADE MARK.

Entered at Stationers' Hall.

Surpasses all other remedies for—

1. EFFECTIVENESS. Killing easily Mealy Bug, Brown and White Scale, Thrips, &c.
2. EASE OF APPLICATION. To be used with a Syringe, or in any other convenient way.
3. CLEANLINESS. Leaving the foliage as though it had been polished.

Sold by all Nurserymen and Seedsmen in the United Kingdom, in bottles, 1*s*. 6*d*., 3*s*., 4*s*. 6*d*., and 5*s*. 6*d*. each, with full directions for use.

Sole Manufacturer, F. STEVENSON, Lark Hill, Timperley, Cheshire.

Red Spider. Magnified.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Green Fly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a Winter Dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen, in boxes, 1*s*., 3*s*., and 10*s*. 6*d*.

Wholesale by
PRICE'S PATENT CANDLE COMPANY
(Limited),
Battersea, London, S.W.

SELECT SEED POTATOS.

Gooderich, very early white
Dalmahoy, fine early White | Red Bog, fine early White
Gryffe Castle, splendid second early White
Walker's Early Regent, for main crop
Paterson's Victoria, for late crop.

We offer the above leading kinds, all carefully selected and grown specially for seed, in wholesale quantities, at moderate prices, to be had on application.

SMITH AND SIMONS, 36 and 38, Howard Street, Glasgow.

MR. LAXTON'S NEW PEAS for 1872.—The following latest and remarkable NOVELTIES in GARDEN PEAS will be found to be great advances in their respective classes:—

WILLIAM THE FIRST.—The finest Pea yet sent out for earliness, flavour, and appearance combined. Height 3 feet.

GRIFFIN.—A remarkable fine flavoured variety, having bright green seeds when ripe. Height 2 feet 6 inches.

POPULAR.—A Blue Wrinkled Marrow, earlier than, and an improvement on, Champion of England. Height 4 feet.

SUPERLATIVE.—The largest and finest podded variety yet raised. Indispensable for exhibition. Pods 7 inches in length. Height 7 feet.

OMEGA, a dwarfish Ne Plus Ultra; a first-class late Pea. Height 2 feet 6 inches.

For further particulars, see larger Advertisements, and "Hogg's Gardeners' Year Books" for 1871 and 1872.

In order to show the true characters of these Peas, early sowing is recommended.

Fifteen Pounds will be offered in Five Prizes for Fifty Pods of Superlative, at the Royal Horticultural Society's forthcoming Exhibition at Birmingham.

To be had only in sealed Collections of trial packets, price £1 1*s*., of the principal Seedsmen in the United Kingdom; and wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C.

THE NEW PEA OF THE SEASON.

B. S. WILLIAMS

Has much pleasure in offering the undersigned genuine first-class PEA to the Public, as a decided acquisition to our List of Vegetables.

WILLIAMS' EMPEROR of the MARROWS.

A Blue Wrinkled Marrow Pea, coming in about the same time as Veitch's Perfection, but more prolific and far superior in flavour to that variety, or any other yet introduced. It produces pods the whole length of the haulm, and requires to be planted 2 inches apart in the rows; it is of branching habit, producing from 2 to 5 stems close to the ground, and again branching about 18 inches or 2 feet higher up. The pods and Peas are of a large size, the latter of exquisite flavour, and it is undoubtedly the most prolific variety ever brought out.

It has been pronounced by some of the best judges to be the very best Pea they have ever tasted, and in every way a Pea of sterling merit. It is very hardy, and continues bearing until late in the autumn. Height 6 feet. Retail price, 5*s*. per quart.

Trade price on application.

The undermentioned Seedsmen have obtained their supplies from us:—

Messrs. Austin & McAslan	Glasgow
,, Barr & Sugden	12, King Street, Covent Garden
,, Bolton & Co.	Wood Green, N.
,, Carter, Dunnett & Beale	237 & 238, High Holborn, W.C.
,, James Dickson & Sons	Chester
,, Fisher, Holmes & Co.	Sheffield
,, J. Garaway & Co.	Bristol
,, Heydon & Sons	Stourbridge
,, Hurst & Son	6, Leadenhall Street, E.C.
,, Peter Lawson & Sons	20, Budge Row, E.C.
,, J. & C. Lee	Hammersmith, W.
,, Little & Ballantyne	Carlisle
,, Minier, Nash & Nash	60, Strand, W.C.
,, Mitchell & Co.	Edinburgh
,, Osborn & Son	Fulham, S.W.
,, Smith & Simons	Glasgow
,, J. Stewart & Sons	Dundee
,, Sutton & Sons	Reading
,, James Veitch & Sons	Chelsea
,, Vilmorin, Andrieux & Co.	Paris
The Pine-apple Nursery Company	Maida Vale, N.W.
Mr. Thomas Ballard	Leamington
,, E. Cooling	Derby
,, Robert Cooper	152, Fleet Street, E.C.
,, Charles H. Dickson	Market Place, Manchester
,, J. Fraser	Leighton Buzzard
,, Frederick Gee	Biggleswade
,, E. Holmes	Lichfield
,, J. Scott	Yeovil
,, John Shaw	Oxford Street, Manchester
,, J. Tynan	Liverpool
,, R. T. Veitch	Exeter
,, H. Watkinson	Market Place, Manchester
,, W. Wilson	Lindley, Huddersfield

VICTORIA and PARADISE NURSERIES,
Upper Holloway, London, N.

TO WILLOW GROWERS.—The Planting Season having commenced, WILLIAM SCALING, WILLOW NURSERYMAN, Basford, Notts, is now ready to execute orders for

WILLOW PLANTS and CUTTINGS for Timber Trees and Coppice Wood.
WILLOW PLANTS and CUTTINGS for Onamental Trees and Shrubs.
WILLOW CUTTINGS for Basket Makers' purposes.
BITTER WILLOW PLANTS and CUTTINGS for Hedges and Game Coverts.
WILLOW STOCKS for Budding and Grafting.

Descriptive CATALOGUES free upon application as above.

"THE SALIX, OR WILLOW," second edition, post free, 1*s*.; or of SIMPKIN, MARSHALL AND CO., London.

To Nurserymen and Seedsmen.

The OLDEST ESTABLISHED WAREHOUSE in LONDON for GENUINE ROLLED TOBACCO-PAPER, CLOTH, or CORD, is

H. PERKINS, 16, Cambridge Circus, Hackney Road, N.E., who has a large STOCK of the best quality on hand for the ensuing season.

Orders by Post promptly attended to.

ALEX. WILKIE'S

"CONDENSED" COMPOSITION

Is allowed to be the CHEAPEST and only EFFECTUAL MEALY BUG, SCALE, and THRIP DESTROYER.

Sold in bottles, containing ½ pint, 2*s*.; 1 pint, 3*s*. 6*d*.; 1 quart, 6*s*.

Can be obtained from any of the undermentioned Nurserymen and Seedsmen, who will also be pleased to furnish a printed Copy of Testimonials on application:—

Messrs. Backhouse & Son, York
,, Barr & Sugden, King Street, Covent Garden, W.C.
,, Cutbush & Son, Highgate, N.
,, F. & A. Dickson & Sons, Chester
,, Jas. Dickson & Sons, Chester
,, Dickson & Turnbull, Perth
,, Downie, Laird & Laing, Edinburgh
,, Downie, Laird & Laing, Forest Hill, S.E.
,, Drummond & Sons, Stirling
,, Drummond & Sons, Dawson Street, Dublin
,, Garaway & Co., Bristol.
,, Harrison & Sons, Leicester
,, E. G. Henderson & Son, Wellington Nursery, St. John's Wood, N.W.
,, Hogg & Robertson, 22, Mary Street, Dublin
,, Hurst & Son, 6, Leadenhall Street, London, E.C.
,, Kennedy & Co., Dumfries
,, Laird & Sinclair, Dundee
,, J. & C. Lee, Hammersmith
,, Little & Ballantyne, Carlisle
Messrs. Lowe & Co., Wolverhampton
,, Osborn & Sons, Fulham, S.W.
,, Dick Radclyffe & Co., 129, High Holborn, London, W.C.
,, Rollisson & Sons, Tooting
,, Smith & Son, Market Street, Aberdeen
,, Stuart & Mein, Kelso
,, Sutton & Sons, Reading
,, Veitch & Sons, Chelsea
,, Wood & Ingram, Huntingdon
Mr. Benj. Bracher, Halifax
,, E. Cooling, Derby
,, G. Cooper, Derby
,, William Cutbush, Barnet
,, C. H. Dickson, 23, Market Place, Manchester
,, John Fraser, Lea Bridge Road, London
,, John Harrison, Darlington
,, F. Kinghorn, Richmond, S.W.
,, T. J. Perry, Banbury
,, T. B. Thomson, 20, High Street, Birmingham.
,, B. S. Williams, Upper Holloway, N.
,, George Wheeler, Warminster. [Wilts

JAMES PHILLIPS AND CO.

beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated

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12 by 10	13 by 10	14 by 10	15 by 10				
13 by 11	14 by 11	..	..				
14 by 12	15 by 12	15 by 11	16 by 11	15 0	18 0	20 0	22 0
18 by 12	19 by 12	16 by 12	17 by 12				
16 by 13	17 by 13	20 by 12	..				
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17 by 14	18 by 14	20 by 14	..				

SMALL SHEET SQUARES (in 100 feet Boxes).

by 4	6½ by 4½	7 by 5	7½ by 5½	12*s*. 6*d*.
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FRENCH HORTICULTURISTS' RELIEF FUND.—As the Accounts are now about to be closed, it is requested that any Nurserymen or Seedsmen who undertook to receive Subscriptions will be kind enough, if they have received any, to forward them to the Treasurer, GEO. F. WILSON, Esq., care of J. Richards, Esq., Royal Horticultural Society, South Kensington, or to the Hon. Sec., the Rev. H. HONYWOOD DOMBRAIN, Westwell Vicarage, Ashford, Kent.
Sum not previously acknowledged:—
Collected by the Rev. W. Middleton, Huybridge, Devon, £2 6s.

Noteworthy Horticulturists and Botanists.

NOTICE.—A SERIES of PORTRAITS of NOTEWORTHY HORTICULTURISTS and BOTANISTS is being published in the "GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE." The following have already appeared, and copies may be had on application to the Publisher, viz.:—
Dr. HOOKER, C.B., F.R.S.
W. WILSON SAUNDERS, F.R.S.
Rev. M. J. BERKELEY, F.L.S.
M. DECAISNE
G. F. WILSON, F.R.S.
Dr. MOORE, of Glasnevin
Prof. REICHENBACH, Hamburgh
Rev. S. R. HOLE, M.A.
E. J. LOWE, F.R.S.
JAMES MCNAB, of Edinburgh.
ROBERT HOGG, LL.D.
JAMES BATEMAN, F.R.S.
Published by WILLIAM RICHARDS, 41, Wellington Street, Covent Garden, W.C.

The Gardeners' Chronicle

SATURDAY, DECEMBER 30, 1871.

"NINE hours' movement for gardeners"—"Observance of Saturday to Monday"—of "Boxing Day"—of the "Bank Holidays." How many of the people who make an outcry for these and similar concessions, some times reasonably at other times unreasonably, take into consideration the numbers of people, the due performance of whose avocations is quite inconsistent with such amenities as those above alluded to.

To be sure we have heard of the "frozen-out gardeners," and we have too often seen the labourers in a nursery chopping wood, or doing nothing, owing to a lock-out on the part of King Frost, but speaking generally, winter brings the gardener comparatively little cessation from toil, and if he have much glass to look after, or much forcing to manage, to say the least, his anxious forethought is not less at this season than at any other, and his enjoyment of short time and statute holidays pretty much a matter of observance in the breach rather than in the custom.

A retrospect of the work of the year has forcibly brought this subject to our notice, and the recollection of what happened last year in France calls attention to another cause which may—GOD forbid that it ever should—put a forcible stop here, as it did across the Channel, to all the pursuits of peace. It is as well now and then to remember, that in case of disaster, the evil time will make itself felt first in the garden. As we have seen in France, not alone those branches of horticulture which minister to the luxuries of mankind, but even those which supply his absolute needs, alike suffered. This remembrance may serve as a useful lesson now and then, and, at any rate, it may make one and all rejoice that this year we have not to point with a shudder to a fearful struggle, such as was then raging.

If we except the International Exhibition and its association with horticulture, there is little worthy of special comment in the progress of the craft during the year that is just closing. The period has been one of quiet progress. The exhibitions, already too numerous, have been increased in number; their general quality has been good, and some few objects of sterling merit, to which we shall hereafter allude, have made their appearance.

The horticultural department of the International Exhibition was not so successful as it might have been, owing, in the first instance, to the war, and next, to the difficulty of securing so frequently as every fortnight an adequate representation of Continental products. Next year, we believe, while it will be open to foreign horticulturists to compete at any or all of the fortnightly exhibitions, a special effort will be made to secure a more important international contest at the great June show. We trust also that some effort will be made to illustrate more fully the practical bearing of gardening on the daily concerns of life, not as a mere luxury, but in relation to its food-producing importance, and its association with manufacturing interests, such as those devoted to cotton and paper. It would also add greatly to the educational value of the exhibition, if such of the gardening processes as are capable of being shown, were illustrated—such as the various modes of grafting, training, pruning, and so forth.

Among matters of public importance during the year that is passing away, the abolition of the sample post nuisance may be mentioned. It ought not to be forgotten, that the horticulturists and members of the seed trade took an active part in bringing about this reform, and no more perfect illustration of the absurdity of attempting to lay down a definition of what was and what was not a sample, was offered than that put forth by the seedsmen.

In our own columns we have endeavoured, as heretofore, to keep our readers well abreast of the times in all matters relating to gardening, whether in its practical, scientific, or social aspect. We have endeavoured to bring merit to the fore, and have not flinched from pointing out defects. At the same time, while not concealing our own opinions, we have tried to avoid dogmatism, and to allow all sides of a question to be fairly discussed.

We have largely increased the number of our illustrations during the past year, and have done our best, as chroniclers, to record matters of interest to horticulturists, not only in our own country, but also abroad. Our correspondents have kept us well furnished with garden gossip, or notes of travel, and botanical memoranda from the Continent, from our colonies, from India, and even from the recesses of Utah, and the still more unexplored districts of Morocco.

It has been our duty also—always a painful one—to record the loss from among our ranks of many votaries of gardening and kindred pursuits, among others, of LEMAIRE, the scholar and the botanist, unrivalled in his knowledge of Cacteæ; of HARTWEG, a name known in all gardens; of WILSON, our foremost authority in Mosses; of DIX, the genial Chairman of the Floral Committee; of BELLENDEN KER, once so active in the horticultural world; of the veteran BAXTER; and, only the other day, of SEEMANN, to whose life and labours we devote an article in another column. What we have done in the past will be the best promise we can make for the future.

—— WE extract the following additional remarks relating to our LONDON PARKS from M. TAINE'S "Notes on England," published in the *Daily News*:—

"The things which please me most are the trees. Every day, after leaving the Athenæum, I go and sit for an hour in St. James's Park; the lake shines softly beneath its misty covering, while the dense foliage bends over the still waters. The rounded trees, the great green domes, make a kind of architecture far more delicate than the other. The eye reposes itself upon these softened forms, upon these subdued tones. These are beauties, but tender and touching, those of foggy countries, of Holland. Yesterday, at 8 o'clock in the evening, although the weather was fine, everything seen from the Suspension Bridge appeared vapoury; the last rays disappeared in whitish smoke; on the right, the remains of redness; over the Thames, and in the rest of the sky a pale slate tint. There are tones like these in the landscapes of REMBRANDT, in the twilights of VAN DER NEER; the bathed light, the air charged with vapour, the insensible and continuous changes of the vast exhalations which soften, imparts a bluish tint to, and dims the contours, the whole producing the impression of a great life, vague, diffused, and melancholy—the life of a humid country.

"At Richmond, I felt this still better. From the terrace can be discerned several leagues of country; the Thames, which [here] is not larger than the Seine, winds through meadows, between clumps of large trees. All is green, of a soft green, almost effaced by the distance; one feels the freshness and the peace of the infinite vegetation; the grey sky extends over it a low and heavy dome; at the horizon are whitish mists in floating layers, here and there a darkened cloud, or the violet patch of a shower. From all the ground rises a sluggish mist; one watches it as if it were a piece of muslin drawn between the interstices of the trees, and gradually the floating gauze of the earth reunites with the uniform veil of the sky. How still is the park! Troops of deer feed in the moist brake; the hinds approach the fence, and gaze on the passer by without fear. Can a tract of country be better arranged for relaxing the nerves of the man who struggles and toils? The Oaks, the Lime trees, the spreading and huge Chestnut trees, are noble creatures which seem to speak in low tones with majesty and security; at their feet is thick and tall grass; the blades of grass, whereon the rain has left its tears, smile with a tender and sad grace. A sort of fond quietude emanates from the air, the sky, and all things; Nature welcomes the soul, weary and worn with striving. How one feels that their landscape suits them, and why they love it! Without doubt their climate befits trees, and, besides, they have had no invasion or popular rising to mutilate or cut them down; the national taste has favoured their preservation; olden things have been more respected and better preserved than in France, and among them must be numbered the trees.

"Those of Windsor and of Hampton Court are as beautiful. From Kew Gardens to Hampton Court [in Bushey Park] extends an alley of gigantic Horse Chestnut trees, of which the large pink and white bunches resemble girandoles. The foliage is so thick that underneath it is cool in the height of the sun. Upon the velvet of the grass [in Kew Gardens] constellated with flowers and bordered by Nasturtiums, stand forth clusters of Rhododendrons, as tall as two men, entirely covered with rose-coloured flowers, amid which bees are humming. There are so many of them, they are so magnificent, of so tender a tissue and of so fine a tone, they are grouped with such profusion in a single clump wholly impregnated with light, that one remains dazzled; it is delicious, intoxicating; almost beyond Nature. A little way farther, in an enormous hothouse, Palms, as large as Oaks, spread their curious vegetation, and Bananas unfold leaves which would cover a child 12 years old. This is one of their talents; they admirably understand the architecture of trees, of grass, and of flowers; I have not seen even a classical palace or even a poor cottage where it was un comprehended. Sometimes, indeed, the effect is too strong; in the sun, it is overpowering; the incomparable verdure then assumes tones so rich and intense that they cannot be transferred to canvas; they would offend, they would be too raw; it is necessary to enjoy them with the mind, not with the eyes; they are a feast, and, as it were, an outburst of delight; in order to prepare and maintain them, swell and expand the tissues, moisture was required, excessive moisture, the caress and the guardianship of soft vapour; beneath a warmer sky such flowers would be stiffened and dried; they are not accustomed to bear the full sun; hence it is that they break forth to-day under his blaze. They have the tint of a beautiful lady; they, too, are patricians developed, preserved, embellished by all the refinements of art and of luxury; I have had the same impression at a full-dress morning party, before a staircase filled from top to bottom with young laughing ladies in swelling and sweeping dresses of tulle, of silk, the head covered with diamonds, the shoulders bare. This was a unique sensation, that of splendour and brilliancy carried to the highest pitch—all the flowers of civilisation and of Nature in a single bouquet and in a single perfume.

"Hampton Court is a large garden in the French style, laid out in the time of William III. Our style was then the reigning one in Europe. Yet English taste is discoverable here also: the borders have been planted with standard Rose bushes, and these, closely trained along the slight espaliers, form columns of flowers. Ducks, swans swim in all the pieces of water; Water Lilies unfold their velvet stars. The old trees are propped up by iron rods. When they die, in order that they may not be wholly lost, the remainders of their trunks are converted into a kind of huge urn. Clearly, they are cared for, and they are loved. There are no fences. I noticed young boarding-school girls walking and playing on the grass, but they never pluck a flower. The following notice suffices to protect the garden:—'It is hoped that the public will abstain from destroying that which is cultivated for the public gratification.' I have seen families of common people taking their dinners on the green sward of Hyde Park; they neither tore up nor spoilt anything. This is perfect; the aim of every society is that each one should be always his own constable, and end by not having any other."

—— Mr. W. F. CHAPMAN, of Gloucester, has recently invented an ingenious contrivance for PROTECTING PLANTS AND FLOWERS from the inroads of snail, slug, earwig, frost, wind, and rain. These boxes are said to be so arranged that they answer the purpose of hand-glasses, one of their chief recommendations being that they are much cheaper, not so liable to breakage, and can be repaired by any gardener. The boxes are ventilated to prevent damping off; and they are so compact, they can be stowed away in a very small space when not in use. They are provided with excellently contrived slides, which enables them to be used to great advantage in preserving blooms on tall stems, such as Hollyhocks, &c., whilst growing, and intended for exhibition purposes. A contrivance of indiarubber is also provided, which makes the boxes impervious to insects, and does not injure the stem.

—— The ASTROCARYUM AYRI, a fine pinnate-leaved Palm, growing some 20 to 30 feet high, and remarkable for its numerous long black spines, has proved to be relatively hardy in the Palm-house of the *Fleuriste*, in Paris, it being the only one of numerous spiny species which bore the low temperature to which, in consequence of the want of fuel, it was exposed during the winter of 1870-71. This Palm has also fructified in the greenhouses of the same establishment.

—— Among the more remarkable features of YUCATAN may be mentioned the CENOTES, or WATER CAVERNS. These are in some places entirely subterranean, and are then without vegetation; in others more or less uncovered, in which case they become what may be styled subterranean oases, often of surpassing and singular beauty on account of the gorgeous development of vegetable life. Spots of this character abound especially through the southern and eastern portions of the peninsula, and to them the few Ferns belonging to Yucatan are almost exclusively confined. Among the more remarkable Phanerogams which are almost peculiar to the Cenotes may be mentioned a species of Vanilla, the pod of which is brought to the market of Valladolid, where it may be bought for an almost nominal price.

—— The Maximum Temperatures of the Air during the week ending December 23 ranged from 56° at Perth to 43° at Paisley, with a mean for the several English stations of 50°.9, and for the Scottish of 52°.8. The Minimum Temperatures of the Air ranged from 35°.3 at Blackheath to 16° at Perth. The mean for the several places in England being 30°.2, and for those in Scotland 25°. The highest Mean Temperature, 42°.7, was recorded at Liverpool, and the lowest, 33°.7, at Paisley. The mean value for the English stations was 40°.7, and for the Scottish 39°. As a rule, the weather has been warm over the country, but at several places in Scotland low night temperatures have been experienced. On the 20th a heavy S.W. gale swept over the country, doing much damage at places. At Blackheath, pressures exceeding 30 lb. on the square foot were recorded. Rain fell at each of the several stations, and at Greenock as much as 3.15 inches was registered. The mean fall for the English stations was 0.60 inch, but for the Scottish, 1.19 inch. (See Mr. Glaisher's Tables, p. 1683.)

—— We cull the following from a monthly magazine published in Cape Town; it is interesting as affording a comparison of the Floral Seasons in widely Different Latitudes:—

"During September gardens begin to appear gay with flowers—Anemones, Ranunculuses, Stocks, Pansies, Azaleas, Petunias, and an innumerable host of annuals, are in flower during the month. Hyacinths, Crocuses, &c., are just going out. The greenhouses at the Botanical Gardens are gay with Azaleas, Chorozemas, Cyclamens, Cinerarias, Begonias, Correas, Chinese Primroses: of these a very fine display, &c. A very curious and beautiful epiphytal Orchid, Angræcum sesquipedale, may be seen in one of the houses; it has been in flower for four or five weeks, and is now rather past its best."

—— We are happy to hear that Mr. Leighton is bringing out a Conspectus of all the Lichens hitherto discovered throughout the world, with diagnoses. His work on the Lichen Flora of Great Britain, Ireland, and the Channel Islands, will be a guarantee to all Lichenologists that the work will be worthy of the subject. Of this he is preparing a second edition, which will comprise an introduction, glossary, and index, which it is hoped will be ready for the press early in 1872. The glossary will be printed separately, so as to enable possessors of the first edition to purchase separately.

New Garden Plants.

Epidendrum turialvæ, *n. sp.*

(Amphiglottium.) Caule erecto, polyphyllo; foliis papyraceis linearibus acutis basi cuneatis usque spathamæis vaginis pedunculi superioris arctis acutis, inflorescentia racemosa, nunc subpaniculata; bracteis squamæformibus minutis; sepalis a basi lineari-oblongis acutis; tepalis linearibus acutis apice dilatatis; labelli laciniis posticis alte cordatis antice obtusangulis, isthmo lato, lacinia antica bicruri, cruribus omnino divaricatis linearibus extus retusis; carinis geminis a basi in apicem; callo utrinque in basi obtusangulo.—*Epidendrum*, n. sp.? Rchb. fil., Beitr. Cent. Am. p. 85.

When I wrote the above-cited pamphlet, I did not dare to propose this as a new species, since the flowers and the interior part of the plant were not consistent. And yet they had been given me by that most honest observer, Hermann Wendland. I am not at all surprised to find that he was completely justified for having put the fragments together, since the plant has now reappeared in the Saundersian collection (N. 2124). Mr. W. Saunders also introduced it from Costa Rica. *H. G. Rchb. fil.*

Maxillaria Reichenheimiana, *Endr.*, *Rchb. f.*

Affinis Maxillariæ croceæ. Pseudobulbis ellipticis ancipitibus, foliis cuneato-oblongis obtuse acutis more Phalænopsidis Schillerianæ pallide pictis; pedunculis plurivaginatis, mento extinctoriiformi; sepalis a basi triangula acuminatis; tepalis subæqualibus ima basi et ante basin inferne obtusangulis; labello cuneato dilatato apice trilobo, lobis lateralibus antice lobulatis, lobo medio ligulato antice valde carnoso inferne carinato; callo lineari apice acuto a basi usque ante basin laciniæ mediæ, papillis quibusdam filiformibus brevibus circumspersis; columna brevi circa androclinium fimbriata, limbo stigmatico angulato porrecto.

Imagine a small Maxillaria with minute bulbs not larger than a threepenny piece, leaves just as long as one's middle finger, painted in the way of those of Phalænopsis Schilleriana, with pallid colour on dark green and then yellowish flowers, not much over an inch and a-half in length, on stalks 3 to 4 inches long. The lip is very remarkable, having a very thick, nearly triangular, anterior lobe, and bears some violet and purplish spots.

It was discovered by M. Endres, in 1867, at an altitude of 5500 feet, in Costa Rica, and was gathered later by Mr. Zahn, when one of the Centro-American collectors of Messrs. Veitch. M. Endres proposed its being named in honour of M. Moritz Reichenheim, of Berlin, now the possessor of one of the very best collections of showy Orchids in Germany.

Poor lovely plant! If it were an Anecochilus, a Hæmaria, a Vanda, a Renanthera, every Orchidophilist would be in ecstacies on account of its singular beauty. But since it happens to be a Maxillaria, what avails it that it possesses so much beauty and excellence? Is it not just the same with plants as with men? *H. G. Rchb. fil.*

Oncidium globuliferum, *H. B. K.*

Rhizomate scandente filiformi; pseudobulbis longe distantibus, lenticularibus seu oblongis prasinis; foliis ligulatis obtuse acutis; inflorescentiæ longiarticulatæ ramulis abbreviatis unifloris grandifloris; sepalis cuneato-oblongis acutis, lateralibus divaricatis; tepalis sublatioribus obtuse acutis supra basin hastatis; labello basi sagittato dein in isthmum angustum constricto, antice latissime reniforme bilobo; callo baso triangulo utrinque triserrato, dente adventitio solitario majusculo extrorso utrinque in basi, parvulo utrinque antica; columnæ alis dolabriformibus crenulatis; tabula infrastigmatica utrinque basi constricta.—*Oncidium scansor*, Rchb. f., Linnæa, xxii. 844! Lindl. Folia Oncidium, N. 83. *Oncidium convolvulaceum*, Lindl. in Paxton's Fl. Garden, i., under tab. 21.

β. costaricense: gracilior, floribus minoribus, tepalis minus hastatis.

This has a peculiar manner of growth. The slender creeping filiform rhizome bears at long intervals little bulbs of a glaucous colour, and small oblong leaves. There are long or short axillary peduncles with showy golden-yellow flowers equalling those of Oncidium bicallosum, showing red spots at the bases of sepals and petals and lip. Heretofore we only knew that the plant grew in New Grenada, where it was gathered by Humboldt and Bonpland! Schlim! Funck and Schlim! Warscewicz! and Karsten! It is a new discovery that it occurs also in Costa Rica, where it has been found both by Endres and by the late M. Zahn, who sent it to Messrs. Veitch, with whom it has just flowered. There is, indeed, a slight difference, but I can only think it a local variety.

For a long time nobody knew what the Oncidium globuliferum of Humboldt was, and decidedly it could not be recognised from Kunth's description. Hence we are not to be blamed that we did not understand it. There is no vestige of it in the Berlin Museum, so rich in Humboldtian types. I was at length so fortunate as to find it in the Jardin des Plantes, at Paris, and I like to re-establish the oldest names since Kunth must be forgiven for his valueless description. It is by a *lapsus calami* that Lindley indicated "flowers red" (see Oncidium, fig. 58). Kunth says—"flores flavi, rubro maculati. *H. G. Rchb. fil.*

THE LATE DR. SEEMANN.

We mentioned in our issue of the 16th inst. the untimely decease of this distinguished naturalist, and we now redeem the promise then made of laying before our readers a biographical notice, and a portrait of our lamented friend. For the portrait we have availed ourselves of the photograph published by E. Edwards, B.A., in the series published some two or three years since under the title of "Photographic Portraits of Men of Eminence." We have also availed ourselves very largely of the accompanying biographical memoir, the facts for which were, we believe, furnished by Dr. Seemann himself. From this account we learn that Dr. Seemann was born at Hanover, on February 28, 1825; he received his education at the Lyceum of his native town, the head master at that time being the celebrated Grotefend, one of the earliest decipherers of cuneate writing; and that he graduated as Master of Arts and Doctor of Philosophy at the University of Göttingen.

The most ardent wish of Dr. Seemann, from his youth, was to see foreign countries, and he early commenced preparing himself, devoting much of his time to the study of the natural sciences, especially botany and anthropology. To this end he came to Kew in 1844 to prepare himself for the work of a botanical collector, and there attracted the notice of the then curator, Mr. Smith, and of the late Sir W. Hooker, the Director of the Royal Gardens, who quickly recognised the talents of the young botanist, and in 1846 recommended him to the Admiralty as naturalist to H.M.S. Herald, at that time employed on a surveying expedition in the Pacific, the appointment having become vacant by the untimely death of Mr. Thomas Edmonston. Leaving England in August, 1846, he went to the Pacific, by way of Madeira and the West Indies, touching at several islands, and disembarking at Chagres, to cross the Isthmus of Panama, at that time not a journey of hours, but of days. When, in September, he reached the city of Panama, the surveying expedition, consisting of H.M. ships Herald and Pandora, had not yet returned from Vancouver's Island. Dr. Seemann profited by the delay to explore the greater part of the Isthmus of Panama, and collect the materials (augmented during subsequent visits), which enabled him to produce the most complete general description of that country ever published. His observations extended to almost every branch of science, and he discovered not only a large number of new plants and animals, but also some curious hieroglyphics in Veraguas, on which he afterwards read a paper before the Archæological Institute of Great Britain.

When, in the beginning of 1847, H.M.S. Herald returned from the North, Dr. Seemann joined her, and remained with her until the completion of her voyage round the world, during which three cruises to the Arctic regions, *viâ* Behring's Strait, were made. Dr. Seemann at this time had the opportunity of exploring nearly the whole west coast of America, frequently making long journeys inland. His explorations in Peru and Ecuador, when he was accompanied by Mr. (now Captain) Bedford Pim, R.N., led him from Payta through the Peruvian deserts, and across the Cordillera of the Andes to Loja, Cuenca, and Guayaquil, and familiarised him with the magnificent scenery, vegetation, and population of a large section of the former empire of the Incas. Subsequently, he traversed several of the western States of Mexico.

At that time the Comanche and Alpache Indians were very troublesome, and Dr. Seemann narrowly escaped with his life. In 1848, the fate of Sir John Franklin began to excite apprehension in England, and H.M.S. Herald, accompanied by the Plover, was directed to proceed to the Arctic regions, by way of Behring's Strait, to search for the missing voyagers. This gave an entirely new character to the surveying expedition under Captain Kellet, which, up to this time, had been used simply for making hydrographical studies of the west coast of America. Three times did the Herald proceed to the Arctic regions, the second year joined by the Enterprise and Investigator, making valuable discoveries at each visit; a new island was discovered between Asia and America, and the vessel attained a higher latitude than any other had previously accomplished on that side of America. Dr. Seemann availed himself of these opportunities to collect materials for a very complete Flora of the extreme north-west of Arctic America, and for the anthropology of the Eskimos. In her various voyages, the Herald visited repeatedly Kamchatka and the Sandwich or Hawaiian Islands; and in 1850 she began her homeward course, touching and remaining for some time at Hong Kong, Singapore, Cape of Good Hope, St. Helena, and Ascension, and reaching England in June, 1851. Dr. Seemann was requested by the Admiralty to publish the result of this remarkable voyage, and he accordingly produced the "Narrative of the Voyage of H.M.S. Herald," being a circumnavigation of the globe, and "Three Cruises to the Arctic Regions, in Search of Sir John Franklin," in two volumes, octavo, published by Messrs. Reeve & Co.—translated into German, partly by the late Edward Vogel, the celebrated African traveller; it passed rapidly through two editions on the Continent. The botany of the voyage, written by Dr. Seemann himself, appeared in a quarto form, with a hundred plates by Fitch, and comprises an account of the floras of Western Eskimo-land, north-western Mexico, the Isthmus of Panama, and the island of Hong Kong. About this time Dr. Seemann's scientific labours attracted the attention of the Imperial German Academy of Naturalists, and soon after he was made a member of the Academy, under the name of "Bonpland,"—the ancient usage of scientific men changing names, on coming prominently before the public, being still upheld. A few years later, after rendering some important services to the Academy, he was elected Adjunct or Vice-President for life.

In 1859 the Viti or Fiji Islands in the South Pacific Ocean were formally ceded by their king and chiefs to Great Britain; but before accepting the proffered cession, Colonel Smythe, R.A., and Dr. Seemann—the latter at the instance of Sir W. Hooker—were commissioned by our Government to draw up official reports on the state and condition of these islands. Leaving England in February, 1860, Dr. Seemann went, by way of Egypt and Mauritius, to Sydney, touching at King George's Sound and Melbourne, and thence proceeding, in the John Wesley missionary vessel, to Viti, where he arrived some months before Colonel Smythe, and at once commenced exploring this little-known group of islands, collecting information on all points of interest, and accumulating large collections of plants and other objects of natural history. During his stay of eight months he became familiar with the whole of the islands, and addressed a series of letters to the *Athenæum* and to the *Gardeners' Chronicle* regarding them. They gave a vivid picture of Dr. Seemann's dealings and intercourse with the natives; his efforts, combined with those of Mr. W. T. Pritchard, in saving the lives of 500 people, who had been doomed to death, to commemorate the coming of age of the son of the Chief Kuruduadua; his ascent of Vorua and Buku Levu, two peaks never before climbed by any white man; of the scenery and vegetation, and also the customs and manners of the cannibal tribes amongst whom he found himself.

The letters in our own columns contain accounts of the vegetation of Malta, Egypt, Mauritius, parts of Australia, and the Fiji Isles. The substance of these letters, together with much fresh matter, and Dr. Seemann's official report on Fiji, was afterwards incorporated by their author in a separate work, published by Macmillan & Co., under the title of "Viti, an Account of a Government Mission to the Vitian or Fijian Islands." After doing full justice to the popular side of this subject, Dr. Seemann commenced a scientific quarto work, in Latin and English, on the vegetable products of Fiji—"Flora Vitiensis." This work is published by Messrs. Reeve & Co., and is now nearly completed—the final revision, index, as well as the elaboration of the Ferns, having been entrusted to Mr. Carruthers.

The "Flora of Viti" comprises not only the results of Dr. Seemann's own labours, but also all materials accumulated by other British expeditions to the South Seas, some of which have now been in the country for nearly a century without having been rendered useful to science. It comprises not only the scientific history of the plants observed, but also pleasantly written details as to their uses, &c. The articles on Cotton, Kava, Sandal-wood, and many others may be referred to in illustration.

In 1864, some French and Dutch capitalists availed themselves of Dr. Seemann's practical experience and intimate knowledge of tropical countries, to report on the resources and capabilities of a portion of the territory of Venezuela. He left Southampton on February 2, and reached Caracas towards the end of the same month; thence proceeded to Porto Cabello, Chichirividei, and Tocuyo, and returned to Europe, *viâ* Curaçoa and St. Thomas. During this expedition he had the good fortune to discover, on the banks of the Tocuyo, extensive coal-beds, the coal being smokeless, closely resembling Welsh steam coal in appearance, and being valued in London at 30*s*. per ton.

Dr. Seemann wrote English, German, and several other languages idiomatically, and with considerable power, and he published his first article when he was 17 years of age. Since then his pen has ever been busy, and his articles, literary, scientific, or political. Fifty-eight scientific papers relating to natural history and botany are catalogued in the Royal Society's Catalogue of Memoirs, the greater number being contributed to Hooker's "Journal of Botany," or the "Annals of Natural History." In 1853 he started the "Bonplandia," which, though published at Hanover, he edited in London, and to which many of the leading botanists of all nations contributed. The "Bonplandia," after the completion of the tenth volume, was metamorphosed into the "Journal of Botany, British and Foreign," Dr. Seemann retaining the editorship, but latterly delegating the chief portion of the task to Dr. Trimen and Mr. Baker. This continues to be the only journal devoted exclusively to botany in this country.

Besides the works incidentally mentioned in the foregoing account, Dr. Seemann has published several other independent ones, the principal being his "Popular History of Palms," and which, translated by Dr. Bolle into German, has already passed through two editions; "Paradisus Vindobonensis," a large folio work on botany, in Latin, English, and German, and illustrated by 84 plates, printed in colours; "The Popular Nomenclature of the America Flora," an attempt to collect all the native names of the American plants, arrange them alphabetically, and give their scientific equivalent, so that any practical man may at once know to what plant any given produce belongs, when the native name is mentioned; "An Enumeration of all the Acacias cultivated in our gardens," and "Hanoverian Customs and Manners, in their Relation to the Vegetable Kingdom." Amongst Dr. Seemann's literary labours should also be mentioned his translation of Kitlitz's "Twenty-four Views of the Coasts and Islands of the Pacific," and his introduction to Lindley and Moore's "Treasury of Botany," a companion volume to "Maunders' Treasuries," and his "Dottings on the Roadside in Panama," written in conjunction with Captain Bedford Pim.

Dr. Seemann was a frequent contributor to the pages of this journal, and in addition to the letters relating to Fiji, already referred to, contributed quite recently a series of articles on Palms, in which he reviewed all the genera of the order which have representatives in our gardens. In his recent frequent journeys to Nicaragua Dr. Seemann discovered many new and interesting plants, several of which were described for the first time in our columns, and many of which he introduced at various times to our gardens through the mediation of Mr. W. Bull. Among these plants may be mentioned the Cannibal Tomato, formerly eaten with human flesh by the natives of Viti, of which we gave a figure in 1864, copied from the "Botanical Magazine;" the colossal Arad, Godwinia gigas; Maranta Seemanni; the elegant creeper, Antigonon leptopus; the singular Parmentiera cerifera, the Candle Tree; Psychotria cyanococca; Vitis chontalensis; Agave Seemanni; Campsidium chilense (*Gard. Chron.* 1870, 1182, fig. 228); Bomarea chontalensis (*Gard. Chron.* 1871, 1387, fig. 305); and some good Palms, including Gulielma utilis, and Malorteia lacerata. Among his more strictly botanical papers, in addition to the separate works already mentioned, Dr. Seemann paid great attention to the Bignoniaceæ, Crescentiaceæ, Ternstromiaceæ, Hederaceæ, and other orders. His monograph on the last named order has been published separately.

In 1865 Dr. Seemann was elected honorary secretary of the "International Botanical Congress," projected to meet in London, under the presidency of M. Alphonse de Candolle, in conjunction with the great International Horticultural Exhibition. But after devoting himself for a short time to the duties of this office he was reluctantly compelled to tender his resignation, in order to carry out an engagement made with his old fellow-traveller, Captain Bedford Pim, R.N., to explore New Segovia and other parts of Nicaragua, for the Central American Association. This led him a third time to the West Indies, and brought him once more to Panama, and other places and scenes with which his writings have made the public familiar.

Dr. Seemann was a Fellow of many of the botanical and horticultural societies of this country and the Continent, and took much interest in the Anthropological Society. Of late years he became connected as managing director with a gold mining company in Chontales, Nicaragua, and in its service made many voyages to that country. He died at his residence at the Javali mine, on October 10 last, after a short illness.

BERTHOLD SEEMANN, PH.D.

THE FOXGLOVE.

ONE of the most beautiful features about some of the French woods, especially in those connected with many of the old Royal residences, is the masses of gorgeous-coloured Foxgloves in all their natural beauty, associated with Bracken and Heather. One spot particularly calls for especial notice in the Versailles wood, through which the Chemin de Fer de l'Ouest passes to Rambouillet and on to Brest. This spot, I venture to say, is unequalled anywhere for such masses of this splendid, uncultivated flower. There may be places in this country where Foxgloves look and thrive as well, and, no doubt, there are hundreds of places where they would grow and flower in perfection were a few hundred plants planted in favourable spots at first, since it would perpetuate itself easily. This was done at one or two private places, to my knowledge, and was brought about by the sight of those above mentioned. I could mention a few places in France where the proprietors introduced them with effect near the flower gardens, in large masses, alongside the avenues that in all French châteaux run away right and left into the uncared-for woods. Foxgloves among masses of green, whether Bracken, or what not, have a grand and majestic look, such as is not easily forgotten when once seen; and I think, in places where we too often see such masses of Nettles, with a very small amount of trouble we might see in their stead the beautiful Foxgloves, as a rule, in perfection.

I purpose planting some hundreds next year about, here and there, among Rhododendrons—newly planted Rhododendrons, for where these thrive in the natural soil I have invariably seen the Foxglove do well. Many hundreds of plants can be raised from a good packet of seed, and, now-a-days, when we have such fine, spotted, improved strains, I think we may look forward to the time when all our woods, and shaded, frequented nooks, will be beautified with this fine wild flower. To those who have had no experience with this plant I would further remark—procure a packet of seed and sow it in a pan, in a moist heat, in February. As soon as large enough to handle, prick out an inch apart or so in a frame or under a hand-light where there is a slight heat, and where no frost can enter. A month or so after they will be large enough to plant out into borders, to be lifted again in autumn to plant in permanent places anywhere and everywhere where suitable, to flower the following summer. They must be nearly two years old, and strong, ere they flower profusely. We had spikes of flower last year fully 4 feet long, from two year old plants. These were planted, however, in garden soil among large Rhododendrons, and had a fine effect. They continued to throw up spikes all the summer, and being a moist year, they, moreover, being situated on an east aspect shaded by a high wall, they continued to flower till September.

I can't say they are as brilliant as the Gladiolus, but one thing in their favour is, they can be grown among large evergreens in a dressed and formal way as well as in the shady woods. At the Château de Dampierre, the residence of the young Duc de Luyne—who was killed during the late war, under melancholy circumstances—about 20 miles from Versailles, I remember seeing, some years ago, on its being pointed out to me by M. Cide (the gardener there) an improved spotted form of Foxglove. It was amongst a lot, growing wild; and he kindly gave me a pod or two of seed, from which I have grown the sort here and elsewhere. It is among Foxgloves, what the new spotted form of Gloxinia that came out at the French Exhibition in 1867, is among Gloxinias, and it varies in colour from pure white to dark pink and purple. The one I speak of as growing in the Versailles wood is a much darker variety, and shows at a distance, but is not spotted as is the sort which I grow. *H. K.*

NEW FRUITS, VEGETABLES, &c.,

CERTIFICATED AT THE ROYAL HORTICULTURAL SOCIETY'S MEETINGS, 1870—71.

First-class Certificates were awarded to the following:—

Apple, Galloway Pippin ..	J. Backhouse & Son, Feb. 15, 1871
Broccoli, Matchless	G. Cooling, April 20, 1870.
Cauliflower, Veitch's Giant Autumn	Veitch & Sons, Nov. 2, 1870.
Cherry, Bigarreau Noir de Schmidt	T. Rivers & Son, July 19, 1871.
,, Burghley Park ..	R. Gilbert, July 20, 1870.
Cucumber, Luton Hoo ..	J. Cadger, April 19, 1871.
,, Tender and True ..	J. Douglas, May 3, 1871.
Fruit-gatherer, Bouckart's Patent	M. Verhulpen, Sept. 21, 1870.
Grape, Ascot Citronelle ..	J. Standish, July 19, 1871.
,, Dr. Hogg	J. R. Pearson, Sept. 6, 1871.
,, Early Ascot Frontignan	J. Standish, May 17, 1871.
,, Ferdinand de Lesseps	J. R. Pearson, Aug. 17, 1870.
,, Waltham Cross ..	W. Paul, Dec. 7, 1870.
Melon, Victory of Bath ..	R. Gilbert, June 29, 1870.
Parsley, Covent Garden Garnishing	Carter & Co., Aug. 3, 1870.
Pear, Brockworth Park ..	J. G. Wheeler, Sept. 21, 1870.
Plum, Duke of Edinburgh ..	Dry & Son, Aug. 17, 1870.
Radish, Californian Winter	W. Robinson, Dec. 6, 1871.
Roiffea, or Reed-grass (for tying)	R. Wrench & Sons, July 5, 1871.
Strawberry, The Amateur ..	S. Bradley, July 19, 1871.
,, Royalty	J. Trotman, June 29, 1870.

FOREST CULTURE.

[Extracts from a lecture delivered by Baron Ferd. von Mueller, C.M.G., M.D., Ph.D., F.R.S., Government Botanist for Victoria, and Director of the Botanic Gardens of Melbourne, on June 22, 1871.]

HOW to provide, in time, the wood necessary for our mines, railways, buildings, fences, as well as for the ordinary domestic and other purposes, becomes a question which from year to year presses with increased urgency on our attention, the consideration of which we have already far too long deferred. It may certainly be argued that in the eastern portion, and some of the southern parts of the Victorian territory, abundance of forests still exist, enough to supply all wants for many years to come. This is perfectly true in the abstract; but how does this argument apply, when we well know that such timber occurs in secluded places, mostly on high and broken ranges, without roads? And even if the latter were constructed, which certainly will be required gradually, at what price can such timber be conveyed the required distance? Suppose, however, that all these difficulties are overcome, whence are we to obtain the deals of northern Pines, the boards of the red Cedar, and the almost endless kinds of other woods, which future artisans will require? For, assuredly, neither Europe nor North America can sustain the heavy call on their indigenous and even planted forests for an indefinite period to come. Tropical woods might for a time be brought from the jungles of three continents, but certainly not at a small cost. Besides, tropical trees, as a rule, are not gregarious; we cannot judge before hand in every instance of their durability and other qualities; we cannot recognise their extraordinary variety of sorts specifically from mere inspection of the logs, and we should find ourselves soon surrounded by endless difficulties and perplexities were we to depend on such resources alone. Would it not be far wiser timely to create independent resources of our own, for which we have really such great facility? With equal earnestness another aspect of the timber question, as concerning our national economy, forces itself on our reflection. The inhabitable space of the globe is not likely to increase, except through forests which would initiate a new organic creation, or at all events bring the present phase in the world's history to a close; but while the area of land does not increase, mankind, in spite of deadly plagues, of the horrors of warfare, and of unaccountable oppressions and miseries, which more extended education and the highest standard of morals can only reduce or subdue—mankind, in spite of all this, increases numerically so rapidly, that before long more space must be gained for its very existence. Where can we look for the needful space? Is it in the tropic zones, with their humid heat and depressing action on our energies? Or is it in the frigid zone, which sustains but a limited number of forms of organism? Or is it rather in the temperate and particularly our warm temperate zone, that we have to offer the means of subsistence to our fellow-men, closely located as they in future must be? But this formation of dense and at the same time also thriving settlements, how is it to be carried out, unless indeed we place not merely our soil at the disposal of our coming brethren, but offer with this soil also the indispensable requisities of a vigorous industrial life, among which requisites the easy and inexpensive access to a sufficiency of wood stands well-nigh foremost.

I may be met with the reply, that the singular rapidity of the growth of Australian trees is such as to bring within the scope of each generation all that is required, as far as wood is concerned; and as a corollary it would follow that each generation should take advantage of the facility thus brought locally within its reach. I can assure this audience that enlightened nations abroad do far more than this, and would not rest satisfied with the greater facilities here enjoyed; they provide, with keen forethought and high appreciation of their duty for their followers, that beforehand which cannot be called forth at any time at will. If we examine this part of the question more closely, we shall find much to think about, much to act upon. Not even all our Eucalypts are of rapid growth; they further belong to a tribe of trees with a hard kind of wood, which, though so valuable for a multitude of purposes, cannot supply all that the needs of life daily demand from us for our industrial work.

The quick-growing Eucalypts, among which the blue-gum tree of this colony and Tasmania stands preeminent, are comparatively few in number, nor are these few all of gigantic size. They are, moreover, restricted in their natural occurrence to limited tracts of country, from which they must be established by the hand of man in other soil for the necessities of other communities—for the gratitude of other populations. Then, again, the Pines of foreign lands, often impressing a splendour on their landscapes, must be brought to our shores—to our Alps—with an intention of utilising every square mile of ground, however unpromising in its sterility; for, after all, that square mile represents a portion, albeit so small, of the land surface of the globe. See how the Norway Spruce (which gives us so much of our deals and tar) insinuates its massive roots through the fissures of disintegrating rocks, or, failing to penetrate the stony structure, sends its trailing roots over the surface and down the sides of the barest rocks until they have found a genial soil, however scanty, on the edge of a precipice.

I have endeavoured to arrive at some idea of the real age of the larger trees, which are sinking daily under our axes, often sacrificed unnecessarily. On this occasion, as an apt one, I may then explain, that a period of a quarter or even half a century must elapse before a solid plank, hardened by age, can be obtained from even a rapid-growing Eucalyptus tree. It is estimated to require 20 to 25 years before even a sleeper of blue-gum wood can be obtained from a tree planted in ordinary soil; and that double the time will elapse before a sown tree of the still more durable red-gum Eucalyptus will furnish sleepers, such as hitherto have been in use for our railway works. But a supply of fuel from these trees may be obtained much earlier. Mr. Adam Anderson, a timber merchant of this city, concurs in this estimate.

Yet for forest operations we enjoy here advantages of a twofold kind, for which in Middle Europe we are justly envied. We can disseminate quickly-growing Eucalyptus trees in the most arid districts; we can add to them, as a first shelter, many of the native Casuarinas and Acacias, and thus gain cover for less hardy trees of other countries. On the other hand, we find in the moist and rich valleys of our ranges a vast extent of space, where, under the mild influence of the clime, sub-tropic trees could be reared million-fold; where, for instance, whole forests of the red Cedar might be originated. Besides, we do not stand at any disadvantage if we want to raise a belt of sea-coast Pines all along the shores, or if we wish to rear the Norway Spruce, or Silver Fir, or Larch, or Weymouth Fir, or the Douglas Pine, or any of the Pitch Pines of North America; because we can call forth, if we like, whole forests of them on sub-alpine heights never yet thus utilised.

Suppose we reckon that 100 forest trees would be required to be planted on an acre, allowing for periodic thinning-out; and assuming that for climatic and hygienic considerations, as well as for the maintenance of wood supply, we should require finally one-fourth of our Victorian territory kept as a forest-area, we would expect to possess 1,568,000,000 trees, and to provide for their timely restoration in proportion to their removal or natural loss.

Most of us are lulled into security by seeing that we receive as yet our foreign woods in the course of ordinary traffic, and we are not easily inclined to think that the supply may cease suddenly, or be obtainable only at an exorbitant expense. Even in the United States of America there are places where the price of fuel and timber has already risen fourfold. We are told that recently, in the States of Wisconsin and Michigan alone, during one single year, 2,000,000 of Pine trees were cut for lumber; and it is estimated that at the present rate of destruction no timber trees will be left in those States after 50 years, while it will take a century to replace them, if even this be possible. Quebec exported in 1860 not less than 70,000,000 cubic feet of squared or sawn timber, equal to about a million tons of wood—a large share yielded by the Weymouth Pine (Pinus Strobus)—not taking into account the current local consumption. This tree, yielding the white American pine-wood, requires fully 60 years of growth before it can be sawn into timber of any good size. During the first two years of the recent civil war in North America, 28,000 Walnut trees were felled to supply one single European factory with the material for gun-stocks, demanded for that fratricidal war. Is it not right to reflect in due time on the vast extensions of railroads, manufactures, mines, ship-building, dwellings, and so forth, and then to ask, where is the wood supply to come from? The requirements in this direction must necessarily rise with the increase of the population and the augmented refinements of civilisation, yet the area of supply we see constantly decreasing. The loss on Wheat crops during four of the more recent years in the State of Michigan alone, for want of shelter against cutting winds, was estimated at £5,000,000, and this is regarded as the mere sequence of the removal of the forests, and not traceable to exhaustive culture. Cereal crops and Vines were destroyed in many parts of South Europe also, through the complete want of shelter.

To give some idea how long a time will elapse before actual timber, not merely firewood, is obtained from planted trees, I subjoin a brief list of the more common Middle European forest trees, together with notes of their age when eligible for various timber purposes:—

Beech	60—110	years.
Hornbeam	70—100	,,
Oak	70—120	,,
Alder	30—80	,,
Birch	40—70	,,
Silver Fir	60—150	,,
Norway Spruce	60—150	,,
Scotch Fir	30—60	,,
Larch	30—80	,,[*]

That, however, in our winterless zone, such of these trees as will endure a warmer clime would advance with more quickness to maturity, must be readily manifest. The accurate Customs returns for the last year show an importation of foreign woods to the value of £223,769; there was scarcely any export. This very month the imported building wood sent to Sandhurst alone has cost £58,000. Some countries have not been altogether unmindful of the conservation of their forests. Germany, already much devastated at the time of the Romans, received its first forest laws as far back as the reign of Charlemagne—indeed with the commencement of agriculture and the settling of the nomadic hunter on fixed habitations. The forests thus discontinued to be common property, and in the 14th century there had commenced a forest economy. Full legislation, regular management and actual cultivation of trees on an extensive scale, date back 150 years. Venice formed its forest laws in the 15th century. Although the desire for ample hunting territory gave a great impulse to the restrictions placed on the encroachment of the Middle European forests, this at the same time saved them to the country.

Within the operations of wood culture may also be included that of subduing drift-sand, and solidifying the latter finally by plantations. For this purpose can be chosen the Aleppo Pine, Cluster Pine, Scotch Fir, or our own less arboreous so-called seashore Tea trees (Melaleuca parviflora and Leptospermum lævigatum); further, the drooping She-oak (Casuarina quadrivalvis), the coast Honeysuckle (Banksia integrifolia), and also our desert Cypress, or so-called Murray Pine. As not only in close vicinity to our fine city one wilderness of shifting sand exists, but as also in other places of our shores the sand is invading villages, towns, and perhaps harbours, and as, moreover, many a desert spot inland may be reclaimed, I would remark, that to arrest the waves of the sand some wickerwork or cover of brush is needed on the storm side. Large seaweeds help to form such covering. Sods of Mesembryanthemum, to which the unpoetic name of "pigfaces" is here given, and which abounds on our coast, should copiously be scattered over the sand ridges; wild Cabbage, Celery, Seakale, Samphire, New Zealand Spinach (Tetragonia), Chamomile and various Clovers and Broom plants should be sown, and creeping Sand-grass (Festuca littoralis, Triticum junceum), Buffalo-grass (Agrostis stolonifera), &c., should be planted, particularly also sand Sedges and sand Rushes, among the best of which are Carex arenaria, and here the Sword Rush (Lepidosperma gladiatum). Psoralea pinnata and Rhus typhinum, Prunus maritima (the Canadian sea-coast Plum), and Ailantus glandulosa, prove also valuable in this respect. As eligible, I may add also the native Couch-grass (Cynodon Dactylon), the South African Ehrhartia gigantea, the European Psamma arenaria, Elymus arenarius (or Lyme), even the Live Oak (Quercus virens), as also another American Oak (Quercus obtusiloba), and the Turkey Oak (Quercus Cerris), and perhaps Poplars, some Willows, and, among Firs, the Pinus insignis, Pinus edulis, P. rigida, P. australis. The common Brake Fern helps also much to conquer the sand. The New Zealand Flax covers coast sand naturally, within the very exposure of the spray.[†] It is needless to remark that exclusion of traffic from the sand is imperative, as also security against ingress of goats and domestic animals of any kind, otherwise the effort is hopeless. Fencing of the area and stringent municipal laws will make, however, any operations of this kind, even without great expense, a success, as, in consequence of my advice, has been shown at Queenscliff. Wood culture on drift-sand carries with it also the recommendation of providing the needful belt of shelter which each coast should possess. There are a few other Pines—for instance, Pinus Tæda, the Loblolly Pine of North America, and several other trees which grow fast in sand whenever it is no longer moving; they endure the sea storms, gradually consolidate the soil, and render it in course of time arable. In South Africa some Proteas and Leucospermums, the Virgilia, also Myrica, grow in coast sand. All these planting operations must be performed very early, and in the cool season. The grasses and herbs must precede the Pines and other trees. Technical industries will gain from these Pines in due time.

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[*] It should be remembered that most of our forest ranges are naturally devoid of pine-wood, only one species of Callitris occurring in a few limited mountain districts, while our second Callitris is a desert species. Without coniferous trees of our own we shall finally experience difficulty of obtaining the required supply of deals, pitch, turpentine, and pine-resin. Doubtless for many wood structures iron is now substituted, but even a ship or a house cannot be built entirely of iron, and the very production of the iron is dependent on fuel. In the absence of coal, the use of iron, involving here an expenditure for heavy freight, must necessarily be limited.

[†] Dr. Jam. Hector calculated that in New Zealand an acre of good Flax land contained about 100,000 leaves of the Phormium tenax, and yields about 10 tons weight of dry leaves; or, if only the outer leaves are taken, 4 tons. The yield of clean fibre is about 23 per 100 of the green leaf.

On the modes of raising or renovating forests not much can be said on this occasion. For natural upgrowth, perfect clearing and fencing is recommendable. Subsequently, the removal of young crooked trees and the surplus of saplings is needed. Seedlings may be transferred from spots where they stand too densely, to more open or bare places. Suckers should be destroyed where the gain of good timber is an object. Periodic clearing of young trees is effected according to the rate of growth of the particular species; lopping of branches is advisable should they densely meet. For broadcast sowing, the ground should be completely cleared and burnt. By breaking the ground a great acceleration of growth of the trees is attained, even to a tenfold degree. Planting in rows affords the best access for subsequent thinning and successive removal of the timber; the quincunx system will give approach in three directions. Pines are planted in Germany only about 7 feet apart, as they require least room of all trees; but 15 feet is a fair distance at an age of 40 years. The New Hampshire Pine stands only 5 to 6 feet apart at an age of 50 years, and yet is not prevented by this crowded growth from being then 100 feet high, with the stems very straight, and 18 inches in diameter at the base. If Pines and Oaks are promiscuously planted, then the former, which act as nurse-trees, are removed in 10 or 20 years, and the ground is left to the Oak, or any other deciduous tree, at distances at first 10 or 12 feet apart, and subsequently wider still. No decayed wood is left in planted forests, as it would harbour boring insects. Pines are considered not to increase much in value after 80 years, when most of them have attained full maturity; afterwards they grow but slowly. Sometimes as many as 1200 Pine trees are set out on an acre, with a view of early utilisation of a portion of the young trees. The rate of growth may be much accelerated in most trees by irrigation, hence mountain streamlets should be diverted into horizontal ditches where forests are occupying hill-sides. The best cultivated forests of Germany are worth from three to five times as much as native woods.

For shelter plantations, intended to yield ultimately also timber and fuel to farming populations, it is recommendable to adopt the American method, according to which belts of trees are regularly planted at about quarter-mile distance, the belts, according to circumstances, to be from 4 to 10 rods wide, and to be formed in such direction as to front the prevailing winds. These timber-belts are usually fenced. Such shelter-trees are likely to rise to 30 feet in 10 years, and have proved so advantageous as to double the farm crop, while judicious management of these tree-belts will supply the wood necessary for the farm. There are 1,400,000 square miles of treeless plains in the United States, which in due course of time will necessarily be converted to a great extent into agricultural areas on account of the generally excellent soil. The Locust tree is much chosen for shelter purposes. Denuded woodland of poor soil, left undisturbed to natural renovation, has become in some populous localities five times as valuable as the adjoining inferior tillage or pasture land. For the greatest profit in fuel the trees in some parts of North America are cut about every 16 years. We here, commanding Eucalypts, Acacias, and Casuarinas, would gain wood-harvests still sooner. The increased value of less fertile lands through spontaneous upgrowth of timber is estimated at $\frac{16}{100}$ths of simple interest annually in woodless localities, no labour being expended on this method of wood-culture. Judicious management in thinning-out enhances the value of such forest land still more. Wet and undrained grounds can be made to yield a return in Elms, Willows, Cottonwood, swamp Cypresses and other swamp trees, or stony declivities in Pines and Eucalypts, at a trifling cost. For details, the forest literature, which is in Germany particularly rich, should be studied. Capitalists would likely find it safer and more profitable to secure land for timber growth, than to invest in many another speculation. After the example set at Massachusetts, our agricultural societies might award premiums and medals for the best timber plantations raised in their districts. We have societies for the protection of domestic animals, native or introduced birds, young fish, &c.: why could not a strong and widely-spreading league be organised for the saving of the native forests? Might not every child in a school plant a memorial tree, to be entrusted to its care, to awaken thus an interest in objects of this kinds at an early age?

Reverting to the importance of shelter, let me remark that 50 years ago the Peach flourished in North Pennsylvania, in Ohio and New York, where it cannot any longer now be grown, in consequence of the now colder and far more changeable climate, since the forests have been extensively removed. Even ordinary orchards and cereal fields suffer there now. Yet poor land will yield a better return in wood than in corn crops, and it is not too much to say, that the favourable effect of a young forest on climate may be felt already after a dozen years. Even on ordinary sheep runs trees are of the greatest importance, both for shelter and shade.

(*To be Continued.*)

NYMPHÆA ODORATA.

In Nymphæa odorata we have a perfect miniature of the N. alba. Its flowers are white, about the size of a florin, and highly fragrant, and they usually appear about July or August. When cultivated in the open air the leaves average about 2 inches across, but when grown in the stove or greenhouse (as it often is, though perfectly hardy) the flowers will be 2 inches and the leaves 4 inches across, the latter generally of a reddish-purple underneath.

It is of all others the plant for small tanks or basins, requiring only a depth of from 6 inches to 9 inches of water for its perfect development. If planted in a pond, it should be near the margin, and must not be planted more than a foot below the surface. It will also be advisable to introduce a few rough pieces of rock, so placed that the water can flow in and out, to separate it from the rest of the pond; and also to lay a few smooth pebbles over the surface of the soil, to keep it in its place.

The native habitat of this desirable aquatic is in ponds and slow-flowing streams from "Canada to Carolina." It is the most lovely of all the small-growing water plants, save and except that it has a rosy-cheeked cousin across the Atlantic, which, when introduced from the Canadian lakes, will become a formidable rival to it. Be it known, therefore, unto "Ye Englysshe" that the Nymphæa odorata rosea does exist in those lakes, and when we get the two to flower side by side, one rose and the other white, both equally fragrant withal, and corresponding in size, it will be a sight to see, and would almost justify us if we were to adopt the old name for these flowers, viz., Water Roses, for thus they were termed in this country about the time, now nearly three centuries ago, that Prosper Alpinus wrote his work on "Egyptian Plants," the 136 plates of which, containing the Nelumbium, Papyrus, &c., were cut in "brasse." The N. odorata occasionally ripens seed in the open air in this country, and young plants have been raised therefrom; still it is slow to increase, and is therefore comparatively rare. *W. Buckley, in Florist and Pomologist.*

Home Correspondence.

Holly Stealing.—For more than twenty years I have been a regular subscriber to and constant reader of your paper, and have learned to look upon it as the authority on all gardening matters, but notwithstanding this and the awful threats held out in the carol quoted in the article upon Holly in your last publication, I must cry out, and if I were musical would sing too against Holly, for the following reason. About 20 years ago when I took possession of my present residence, the orchard was divided from the private road, leading only to my residence and the adjoining farm, by an old shabby quickset hedge, which I grubbed up and replaced with young Hollies from a nursery, for which I was ridiculed by my neighbours and pronounced a thorough Cockney for expecting them to grow in our soil and situation; but, to their great surprise, they flourished to perfection, and with fair play would now be an object of perfect beauty: instead of which they are a perfect nuisance to me from the manner in which they are treated by passers-by of all classes at this period of the year. Notwithstanding the unfavourable weather of the past summer for most trees and shrubs, my hedge was fuller than ever of berries, but the consequence is that it is torn and cut to pieces by people of all classes. As there must be many other persons suffering from the same cause I think you could help us greatly by publishing in your widely circulated journal the risk such depredators run, which I think very few of them are at all aware of; for which purpose I enclose an extract of the Act of Parliament. *A Crier-out against Holly.*

Extract:—"An Act to consolidate and amend the Statute Law of England and Ireland relating to Malicious Injuries to Property. 24 & 25 Vict., cap. 97, August 6, 1861.—Sec. 20. Whosoever shall unlawfully and maliciously cut, break, bark, root up, or otherwise destroy or damage the whole or any part of any tree, sapling, or shrub, or any underwood growing in any park, pleasure-ground, garden, orchard, or avenue, or in any ground adjoining or belonging to any dwelling-house (in case the amount of the injury done shall exceed the sum of £1), shall be guilty of felony, and being convicted thereof, shall be liable, at the discretion of the court, to be kept in penal servitude for the term of three years, or to be imprisoned for any term not exceeding two years, with or without hard labour, and with or without solitary confinement, and, if a male under the age of 16 years, with or without whipping."

[We think our correspondent should rather call police than cry out against Holly, as it is clearly the marauders—may their hands be well scratched!—that are to blame. Perhaps an announcement that any one found in the act would be held guilty of purloining "Ilex Aquifolium medio-picta-aurea-pallida-heterophylla," might create a wholesome terror. Seriously, we fully sympathise with our correspondent, and we cherish the same feelings of wrath against Holly stealers as against those who burden the poor bush with such appellations as the above. Eds.]

Practical Sympathy.—I have recently witnessed the sad destruction of the property of French horticulturists in various parts of France, and have seen with how much care they nursed what still remained to them out of the wreck of what only a short time ago was the means of keeping them and their families, if not in a state of affluence, at least in competence sufficient for their modest wants; but now all is changed, and nothing but desolation is seen. No day seems too long for the humble French horticulturist; at break of day you may see him, his wife, and children, commencing their daily toil—no nine hours' movement affecting in any way the aim and purpose of their lives—they work as much for the love of horticulture as for the profits derived from it. It was very distressing to see a class of people, who, from the nature of their profession, must be considered intelligent and who had no voice in bringing about or in preventing the folly which has desolated their homes, starved their children, reduced their horticultural buildings to heaps of ruins, and turned their own beautiful gardens into wildernesses of tangled weeds and rubbish. Your appeal to our human sympathy will not, I hope, be made in vain, and, for my own part, I have much pleasure in handing you a cheque for three guineas for the fund, and earnestly hope all horticulturists, whether amateur or professional, will aid a cause which has so great a claim upon their generosity. *John Wills, F.R.H.S., December* 25, 1871.

French Horticulturists' Relief Fund.—I have read with much pleasure your appeal to the nation on behalf of the French horticulturists. Depend on it, there is no Communistic sympathy among them. Their occupation makes them a quiet, peace-loving people, content to live by the labour of their brains and hands, and never dreaming of snatching from others what they or their forefathers have for the most part acquired in the same way. I know by long intercourse with them that their instincts and interests are alike opposed to revolution in every shape. They know full well that their business thrives in time of peace, and fails in war, and they are too practical and thoughtful to indulge in any wild vagaries. Thus it would be hard if they should be made to suffer for the mad escapades and sins of their fellows. Last year's destruction of the stock of many, and the limited sales of all, have been a heavy blow to many an industrious and thriving family, and the early and severe frost of this autumn has further seriously reduced the value of their small properties. In a letter now before me, from one of my regular correspondents in the south of France, he says:—"We have just had a very severe winter at Lyons, the thermometer has shown 24° and 26° of frost. The Roses are much injured, the wood of the Tea-scented is already cut down to the ground, and the hybrid perpetuals will, I expect, be the same. We have had scarcely any snow, and this helped to cause a great deal of the mischief done. Standard Roses and Grape Vines will be as much damaged as they were last year." Let us then push on this movement, for I judge that by so doing we shall not be countenancing revolution, but rather discountenancing it, by holding out the hand of fellowship to those of our fellow labourers who are earnest, rational, and industrious. The desperadoes of the dark alleys and back slums of the large towns, if our efforts should reach their eyes or ears, will know well why Englishmen sympathise with and help those who labour industriously and orderly in the full free light of a cultivated garden. *William Paul, Waltham Cross, N.*

Manure for Conifers.—A few days ago a friend brought me a handful of one-year seedling Larch, the finest I have ever seen in Scotland; the smallest measures $4\frac{1}{2}$ inches, the longest $8\frac{3}{4}$ inches in length, the strongest branched like two-year seedlings. The sample was pulled "without selection" from a breadth of about 2 acres, all of the same quality, in Messrs. Lawson & Sons nurseries, near Granton; and what makes this crop the more interesting is the fact that while the Larch crop is but very middling in general about Edinburgh, this lot is in all respects first-rate. The man who gave my friend the sample said the reason of their being so very fine was, that there was a large quantity of guano used when sowing. Now as I have grave doubts about using guano for Conifer seedlings, I venture to hope that some of the readers of the *Gardeners' Chronicle* will give their experience in this matter. In the course of last summer I had a conversation with Mr. Coates, Messrs. Lawson & Son's late foreman, and he was then against the practice of using guano for such purposes, and preferred well rotted manure; but whatever manure he used or whatever system he followed with his Conifer seed, the Larch referred to does him great credit. I am much interested in the cultivation of the Larch and Scotch

Pine, and would like to see this subject handled by those able to do so. *J. M. B.*

Fuchsia Riccartoni.—I observe that attention has been called to this fine autumn shrub by Mr. Tillery. Too much can hardly be said in its praise. It has stood unprotected here for ten years; sometimes when the old wood escapes the frost, it flowers early, from June to November. When cut down to the ground, either by frost or by the knife, it pushes strong shoots from below, and makes a bolder shrub, but does not flower so early. In either case the mass of rich crimson flowers it produces, which you have only to turn to see the purple gems within, are gorgeous in autumn. I know of no shrub, unless it is the Hibiscus (Althæa frutex), at all comparable to it at that season. *William Paul, Waltham Cross, N.*

Picea nobilis.—We have a number of healthy plants of different sizes, both of Picea nobilis and Abies Douglasii, raised from seed ripened north of the Grampians. So well does the Douglas Fir succeed, that there is some annual growth on the leaders of upwards of 3 feet in length. The Picea nobilis we have were raised from seeds grown in two different places in the North, both of which vegetated freely, and are growing healthy and strong, but none of them partake of the beautiful glaucous green of the parents. Their vigorous growth, however, thoroughly proves that the cones were perfectly ripened. I may here remark that I saw in Ross-shire, about the end of June last, a fine healthy tree of Picea nobilis, somewhere about 50 feet in height, with its top branches well covered with large cones. This interesting specimen was growing in a sheltered situation in the pleasure-grounds and near the mansion house of Coull, the property of Sir Robert McKenzie, Bart., and is close to the south-west base of Ben Wyves, "the windy hill," or "hill of the storm." There was also growing in the same grounds a much larger specimen of Abies Douglasii, but unfortunately it had lost its top some years ago by the wind: it has now got a divided top of several leaders. These facts will serve to show that the climate of the far North is, after all, really not what those who have never frequented these parts suppose it to be, as may be readily seen by referring to Mr. Glaisher's interesting weather tables, weekly recorded in these pages. It will have been observed that for three weeks' readings previous to the date of December 9, the average temperature of both day and night was higher in Scotland. It is also worthy of remark that at Norwich the temperature was 8° lower than any recorded station, thermometer being at 9°, or 23° of frost, while at this place the lowest temperature up to December 21 has only been 25°, or 7° of frost. Although it is not usual to have such a disparity, still as a rule we have less frost and a higher summer temperature along the southern shores of the Moray Frith and in Easter Ross than is to be found in many other places in Scotland and north of England. This is no doubt owing to the influence of the Gulf Stream washing our northern shores, and the narrow breadth of land between the Atlantic and German Oceans. I think Mr. Glaisher would do science some good by having another station somewhere along the Moray Frith. *J. Webster, Gordon Castle.*

Carrot Grubs.—Can any of your readers tell me of a preventive for the Carrot grub? I say preventive, because I am afraid nothing will destroy it. I have put some of the larvæ into quicklime and soot, and they seem to exist for days, and ultimately perish from want of sustenance more than from the ill effects of the lime or soot. I have dug these into the ground until it has been black with the latter. Though our ground is not what is considered favourable for Carrots, we seldom fail to have good-sized ones—indeed, I think they have increased in size for the last three years; but our crops are of very little use to us after Christmas. Perhaps some of your entomological readers would give the history of this formidable enemy, and, if possible, drawings of it, with any hints as to the best means of getting rid of it. *W. P. R.* [Which of the several larvæ that attack the Carrot does "W. P. R." refer to? Eds.]

Orange Culture.—I am glad to see that Mr. Rivers is making such satisfactory progress in Orange growing; but, before he equals the culture of half a century ago, he will have to step considerably ahead of the pot system of growth. The following extract from a paper writen by my late father, and read before the Horticultural Society, March 13, 1820, will show what was thought of Orange culture in those days. He says:—

> "The fruit which I exhibited before the Society was part of the produce of 1818, which was particularly great in that year, 19 of the older trees yielding 298 dozen of fruit, being an average of nearly 15 dozen to each tree. This quantity was thus produced:—The Citron tree in the greenhouse produced eight dozen of fruit, each Citron measuring from 14½ inches to 16½ inches in circumference; three China Orange trees, one in the greenhouse and two in the conservatory, had 60 dozen of fruit, some of which measured 13 inches round; six Seville Orange trees, one in the greenhouse, three in the conservatory, and two in tubs, bore 140 dozen of fruit; seven Lemon trees, three in the conservatory, three in the greenhouse, and one in a tub, had 50 dozen of fruit; and from two Lime trees, 20 dozen of fruit were produced."

I may mention that, for the growth of this crop, which was specially visited by Sir John Sinclair, Sir Abraham Hume, and Mr. Sabine, my father was made a practical Fellow of the Horticultural Society; and Mr. Donald Munro but a short time before his death stated in public company that the collection referred to was the best ever exhibited before the Society. Oranges at Shipley, where my father was gardener, were regarded as a specialty, a supply being required for the dessert just the same as of Peaches, Grapes, or Pine-apples. An Orange fully matured upon the tree is something very superior to those which we purchase, the best flavoured fruit being those which drop dead ripe from the tree. *W. P. Ayres, Newark-on-Trent.*

The Visit of the Royal Horticultural Society to Birmingham.—I witnessed some of the shortcomings at Nottingham. I think an arrangement may be made by which all articles relating to horticulture or floriculture should be concentrated, even from a watering-pot up to the most costly conservatory. The bazaar part should be distinct. The hints thrown out by Mr. Thorpe are worth consideration. I am also of his opinion, that there is very great improvement needed in the exhibition of vegetables, the most useful products of the garden. I can also bear testimony to the necessity of protecting choice fruit when staged. Some few weeks back I attended a three days' show in the West of England, held in a building the floor of which was paved with wood. The dust from it, I can assure you, did not improve the appearance of the fruit by the end of the third day, and there were instances of pilfering also. Now if the fruit had been protected by a case similar to those placed on shop counters, but made in a more portable and economical manner, both would have been prevented. Surely the Royal Horticultural Society has power to allow exhibits to be thus protected. I would suggest that all exhibitors should be allowed to cover their fruit after the judges have made their awards. Exhibitors would then be enabled to leave their exhibits for two or three days without fear of injury or pilfering. I enclose you a sketch (fig. 354) of what I would suggest; they can be made in pine or mahogany, varnished, and could be used for other purposes, which would be useful to gardeners. These fruit protectors can also be made continuous, or rather in sections, which fasten together in different compartments, to cover show tables of any length, and may be made with or without bottoms. *W. F. Chapman, Bristol Road, Gloucester.*

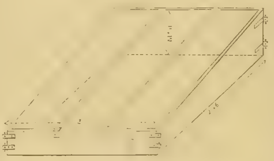

FIG. 353.—FRUIT AND VEGETABLE PROTECTOR.

Plants in Bloom at Knowsley Garden, December 14, 1871.—In the stove: Poinsettia pulcherrima and its variety, albida; Pentas carnea, Plumbago rosea, Vinca rosea and alba; Epiphyllum truncatum, violaceum, and aurantiacum; Gesnera zebrina, Panicum variegatum, Begonia Ingramii, fuchsioides, rosea, odorata, hydrocotylifolia, and a free blooming white one, not known here; Eucharis amazonica, Sericographis Ghiesbreghtiana, Ardisia crenata (well berried), Orange, Gardenia citriodora. Cool house: Chrysanthemums of kinds, Primula chinensis of kinds, double Polyanthus Narcissus, Roman Hyacinth, Erica hiemalis, Lapageria rosea, Luculia gratissima, Tree Mignonette, Camellias of kinds, Azaleas splendens and amœna, Heliotropium peruvianum, Abutilon striatum, Pelargonium Rollisson's Unique. The Abutilons, Luculia, Lapageria and Heliotropium, are planted out. Foliage plants that look well to mix with stove plants named above: Dracæna terminalis, Cooperi, and ferrea; Croton pictum, variegatum, and angustifolium; Pandanus utilis, Sanchezia nobilis variegata, Maranta Veitchii, Cyanophyllum magnificum, Dieffenbachia picta, Alocasia metallica, Peperomia argyrea, Fittonia Pearcei and Verschaffeltii, Pothos argyrea, and Tradescantia discolor. *A. Z.*

Tomatos.—The Trophy Tomato I put as No. 1, for this reason, that among Tomatos it is as superior as is the Rock Potato coarse among Potatos. It is a round, smooth, large, handsome Tomato, entirely void of ridges and furrows, as in all other large sorts of Tomatos, and hence more useful in the kitchen, and less liable to damp and rot at this season. We have some very fine specimens just now, that were gathered partially green and ripened on shelves in the pineries. As the taste for Tomatos is gradually increasing in this country—now that it is pretty well known they are in any way a remedy for dyspepsia and indigestion—to know what sort is best to grow is not a small matter, and void of interest, but quite the contrary. We grow our Tomatos in pots (9-inch ones), under glass of course, and we have them from May to December. Amateurs, I have no doubt, would find they could get ripe fruit sooner by growing them in pots and training them against a wall than by planting them out and allowing the roots to go everywhere, the shoots also, and void of fruit—9-inch pots half plunged during the early season, and the roots wandering out of the bottom for a time, and severed by lifting the pot when the fruit was half-grown, would insure more ripe fruit than the ordinary common way of planting-out entirely. I was not aware till this year that the Currant Tomato was of much use in the kitchen. I have grown it as a pillar fruiting plant, and on trellises for ornament, and for the first time it has been used this autumn in many ways by our *chef de cuisine*. I have a notion it could be used as a winter fruit preserved in sugar syrup, as is done with all other ripe fruits so cleverly, by the French chiefly. It would form a very beautiful dish if the colour and the entire *grappe* could be preserved. The variety I allude to is the Solanum racemigerum, which must not be confounded with a variety sometimes called the Currant, of the size of a Cherry. This one is as small as a Black Currant, and with *grappes* a foot and more long. *H. K.*

Habits of Ants.—On the Riviera there are certain species of ants which habitually collect very large supplies of seeds of various kinds, those of wild species of grasses, leguminous plants, Amaranth, &c., forming the bulk of these collections; but cultivated plants are also put under contribution, and beds of Parsley and borders of dwarf Campion are not unfrequently robbed. Now I am aware that Huber, Gould, Kirby, and Spence have all stated that their experience of the habits of European ants was entirely opposed to the statements previously made as to their systematic harvesting of seed; but still the fact remains, that in Southern Europe, India, and Texas ants do amass large quantities of grain; and I have met with a few intelligent, though not trained, observers who assert that they have repeatedly seen ants carrying away grains of Wheat at harvest time, even in Northern Europe. I shall feel much obliged to any person who is in the habit of cultivating plants for seed in England or on the Continent if he would furnish me with any reliable data as to robberies committed by ants upon the produce of his crops of grain or seed. *J. Traherne Moggridge.*

Outdoor Fig Culture.—Pruning the Fig or using too much of the knife has acted on our best cultivators rather like the paring of corns. Now all, I think, will agree with me that neither will Figs do long nor corns feel comfortable without a certain amount of the knife. The only difference between pruning corns and Figs is this—the corn you can prune until it nearly comes to the bleeding point; the Fig requires to be well thinned out with the knife in order to prevent the over-crowding of the shoots from the great exuberance of its foliage, and if not duly attended to in proper time to give the wood a chance of ripening, it is needless for me to say the crop will in general be a failure, unless in very favoured localities. Unless the trees are kept thin of wood, whether trained horizontally or fan fashion, the chances of good crops will be indifferent. I have mentioned before in your columns that summer thinning is of the most importance to the well ripening of the wood of the Fig out-of-doors. I must admit that I never gained much by pinching the Fig cultivated in the open air. As your able correspondent, Mr. Fish, truly observes, "except in the sunny South, only one crop can be ripened in the year out-of-doors;" and, as he further and justly observes, respecting his so-called Figlets, I thoroughly believe in a good show of them; thin, weakly wood will not produce them, neither under inside nor outside cultivation; so that, whatever system the cultivator may adopt, success will, as a general rule, follow the strong, short-jointed wood, and with plenty of feeding at the proper time they will produce plenty of Figs. *J. Miller, Worksop Manor.*

American Early Rose Potato.—At p. 1619 "Amateur" ask for information on the above Potato in different soils, &c. In 1870 I planted a small quantity—1 lb. of seed—and had 33 lb. of good-sized tubers from it, and, owing, as I think, to the very dry summer, they were of very fair quality when cooked (boiled), but not equal by a long way to our best English varieties; when baked with their skins on in a brisk oven, they were very good, and looked very nice when dressed for table. In 1871 I planted a considerable quantity, thinking it might improve in quality, but was greatly disappointed, as it turned out to be one of the very worst in our whole collection, owing, probably, to some extent, to the wet summer we have had. They were planted in rows 2 feet 3 inches apart, and 15 inches from set to set, all planted whole, with all eyes but one cut out, on very heavy loam: the yield was very heavy, and fine, large, handsome Potatos, but of so little value, that I have for ever discarded it—and this is the verdict of nearly every one who has tried it in this neighbourhood. The same, to some extent, may be said of qualities of all the American varieties of which I have any experience. I have great pleasure in drawing attention to a Potato of real sterling merit, namely, Veitch's Improved Ashleaf. Although not exactly a new one, it is not sufficiently known, or it would be much more extensively cultivated. It is quite a week earlier than Myatt's Ashleaf, Improved Walnutleaf, or Mona's Pride, and produces much larger and more even-sized Potatos than any of them. This for earliest, with White Blossom Kidney second, Webb's Imperial third, Fluke fourth, and Paterson's Victoria latest, will give "Amateur" much more satisfaction than any of the American varieties yet offered, notwithstanding the extraordinary price asked for some of them. *John May, The Gardens, Westfield, Hayling's Island, Hants.*

Cucumbers.—At p. 1618, your correspondent, "H. K.," in speaking of Cucumbers, says, "I look upon Blue Gown as the handsomest and finest of all Cucumbers, also as prolific." Would he kindly inform us if he grows Rollisson's Telegraph (true)?—the general opinion being that this is by far the most prolific, although I have no desire whatever to deny the handsome appearance of the Blue Gown. *G. Simmonds, Sydenham.*

Notices of Books.

Elementary Treatise on Physics, etc. *Translated and Edited from Ganot's Elements de Physique.* By G. Atkinson, Ph.D. Fifth Edition. Longmans. 1872. Pp. 828; fig. 726.

This is an admirable text-book, clearly and accurately written and well illustrated. It occupies a middle place between rudimentary outlines and the more elaborate and complex works or monographs on particular subjects. The editor has evidently been careful in this new edition to incorporate the results of the most recent researches of Tyndal and other physicists. It might have been expected, perhaps, that the application of physics to vegetable and animal physiology would have received more attention at the hands of the author and editor than it has done, and we can but regret that the subject is passed over with such scanty reference. English literature is singularly deficient in this respect as compared with German, and we believe that one reason for the neglect on the part of our teachers and pupils of this most important subject, is the absence of a good text-book, setting forth clearly the agency of light, heat, gravity, and electricity on plant-life. That the author and editor of the present work are not disqualified for such a task, is shown by the following citation, which may serve as an illustration of the method employed in the work before us:—

"*Cold Produced by Nocturnal Radiation.*—During the day the ground receives from the sun more heat than radiates into space, and the temperature rises. The reverse is the case during night. The heat which the earth loses by radiation is no longer compensated for, and consequently a fall of temperature takes place, which is greater according as the sky is clearer, for clouds send towards the earth rays of greater intensity than those which come from the celestial spaces. In some winters it has been found that rivers have not frozen, the sky having been cloudy, although the thermometer has been for several days below 4°: while in other less severe winters the rivers freeze when the sky is clear. The emissive power exercises a great influence on the cold produced by radiation: the greater it is the greater is the cold. In Bengal, the nocturnal cooling is used in manufacturing ice. Large flat vessels containing water are placed on non-conducting substances, such as straw or dry leaves. In consequence of the radiation the water freezes, even when the temperature of the air is 10° C. The same method can be applied in all cases with a clear sky.

"It is said that the Peruvians, in order to preserve the shoots of young plants from freezing, light great fires in their neighbourhood, the smoke of which, producing an artificial cloud, hinders the cooling produced by radiation."

Character. By Samuel Smiles. Murray. Small 8vo. Pp. 388.

Encouraged probably by the success of his former works, Mr. Smiles has here given us a long series of extracts from his common-place book, tiresome to read from their multiplicity, and deficiency in cohesion. Each individual anecdote has its interest and its value, no doubt, but the reader becomes wearied by the incessant passage from one subject to another, with only an imperfect link to connect them together. In truth, Mr. Smiles has here accumulated materials for a dozen books, and has used them with much less literary skill than did Isaac Disraeli in his famous "Curiosities of Literature," and other works.

Nevertheless, Mr. Smiles' book may, with all confidence, be recommended to those who at this season are in search of a "nice book" for their elder children. As an illustration of Mr. Smiles' method of treating his subject, we may quote some of his remarks as to the cheerful frame of mind with which many naturalists have been blessed:—

"The study of natural history, more than that of any other branch of science, seems to me accompanied by unusual cheerfulness and equanimity of temper on the part of its votaries; the result of which is, that the life of naturalists is, on the whole, more prolonged than that of any other class of men of science. A member of the Linnean Society has informed us that of 14 members who died in 1870, two were over 90, five were over 80, and two were over 70. The average age of all the members who died in that year was 75.

"Adanson, the French botanist, was about 70 years old when the Revolution broke out, and amidst the shock he lost everything—his fortune, his places, and his gardens. But his patience, courage, and resignation never forsook him. He became reduced to the greatest straits, and even wanted food and clothing; yet his ardour of investigation remained the same. Once, when the Institute invited him, as being one of its oldest members, to assist at a *séance*, his answer was that he regretted he could not attend for want of shoes. 'It was a touching sight,' says Cuvier, 'to see the poor old man, bent over the embers of a decaying fire, trying to trace characters with a feeble hand on the little bit of paper which he held, forgetting all the pains of life in some new idea in natural history, which came to him like some beneficent fairy to cheer him in his loneliness.' The Directory eventually gave him a small pension, which Napoleon doubled; and at length easeful death came to his relief in his 79th year. A clause in his will, as to the manner of his funeral, illustrates the character of the man. He directed that a garland of flowers, provided by 58 families whom he had established in life, should be the only decoration of his coffin—a slight but touching image of the more durable monument which he had erected for himself in his works."

—— We have received from Messrs. J. Weeks & Co. a specimen of their annual *Pocket Book and Diary*, which contains, in addition to the diary, which can be removed to make way for fresh paper, a quantity of useful information, including a short account of the early history and development of the hot-water apparatus. It is well got up and nicely finished off, in good materials.

THE WEATHER.

TEMPERATURE OF THE AIR AND FALL OF RAIN AT DIFFERENT STATIONS,

During the Week ending Saturday, Dec. 23, 1871.

Names of Stations.	Temperature of the Air. Highest.	Lowest.	Range of Week.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean.	Fall of Rain.
	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	In.
Portsmouth	49.8	28.0	21.8	47.3	34.5	12.8	40.9	0.91
Blackheath	48.8	35.3	13.5	45.1	37.8	7.3	41.0	0.51
Bristol	..	..	..	..	..	..	..	..
Birmingham	50.2	31.0	19.2	46.1	36.4	9.6	40.8	0.53
Wolverhampton	49.7	29.5	20.2	45.3	35.0	10.3	40.1	0.63
Leicester	49.7	29.5	20.2	44.6	35.2	9.4	39.8	0.45
Norwich	48.5	33.0	15.5	44.2	36.0	8.2	40.1	0.35
Nottingham	49.4	28.2	21.2	45.6	34.0	11.6	39.8	0.63
Sheffield	52.5	27.2	25.3	45.3	35.0	10.3	40.1	0.77
Liverpool	53.6	32.1	21.5	47.5	37.8	9.7	42.7	0.34
Manchester	51.3	31.0	20.2	46.1	34.6	11.5	40.7	0.73
Salford	53.0	30.8	22.2	46.5	34.5	12.0	40.8	0.79
Bradford	53.7	31.4	22.3	48.0	36.0	11.1	42.4	0.33
Leeds	53.0	30.0	23.0	47.0	37.0	10.0	42.0	0.70
Hull	49.0	26.0	23.0	42.3	33.7	8.6	38.0	0.70
Newcastle	..	..	..	..	..	..	..	..
Edinburgh	54.0	24.0	30.0	..	..	..	39.7	0.00
Glasgow	53.6	26.8	26.8	..	..	..	40.1	1.80
Dundee	53.0	24.0	29.0	..	..	..	38.3	0.25
Aberdeen	54.6	27.4	27.2	..	..	..	38.3	0.03
Paisley	43.0	23.0	20.0	..	..	..	33.7	1.95
Greenock	53.0	31.0	22.0	..	..	..	42.2	3.15
Leith	55.0	28.1	26.9	..	..	..	40.4	0.56
Perth	56.0	16.0	40.0	..	..	..	39.7	0.85
Dublin	..	..	..	..	..	..	..	..

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, Dec. 27, 1871.

1871. Month and Day.	At 9 A.M. Reading of			Hygrometrical Deduction from Glaisher's Tables, 5th edition.		
December.	Barometer reduced to 32° Fahr.	Dry Thermometer.	Wet Thermometer.	Dew Point.	Degree of Humidity	Weight of Vapour in a Cubic Foot of Air.
	Ins.	Deg.	Deg.	Deg.		Gr.
21. Thurs.	29.79	37.1	35.9	34.2	90	2.3
22. Friday	29.66	37.3	37.3	37.3	100	2.0
23. Satur.	29.95	39.8	39.8	39.8	100	2.9
24. Sunday	29.99	41.0	40.4	39.6	89	2.8
25. Monday	29.81	39.5	38.0	36.0	88	2.4
26. Tues.	29.62	44.3	44.2	44.1	99	3.4
27. Wednes	20.42	45.6	44.5	13.3	92	3.2

1871. Month and Day.	Temperature of the Air. Highest.	Lowest.	Range in Day.	Mean.	Departure of Mean from Average of 50 Years.	Wind. Direction.	Horizontal Movement.	Rain. In Inches.
December.	Deg.	Deg.	Deg.	Deg.	Deg.		Miles	
21. Thurs.	41.0	35.5	8.5	40.5	+ 1.7	WSW: S.S.W.	342	0.00
22. Friday	42.8	35.3	7.5	38.7	+ 0.2	S.E.: N.E.	116	0.03
23. Satur.	41.7	39.0	2.7	10.2	+ 2.1	Calm: S.W.	114	0.00
24. Sunday	44.7	37.8	6.9	41.3	+ 3.5	S.S.W.	337	0.00
25. Monday	43.7	37.6	6.1	40.6	+ 3.0	S.W.	399	0.04
26. Tues.	47.1	41.0	6.1	44.0	+ 6.6	S.W.	269	0.38
27. Wednes	48.3	41.7	6.6	45.0	+ 7.7	S.W.	405	0.04

Dec. 21.—Fine hoar-frost in morning; overcast afterwards, and a little thin rain fell.
— 22.—Very fine till about 8 30 A.M., after which time the sky became overcast; fog.
— 23.—Overcast throughout; very dense gloom prevailed; fog
— 24.—A few light clouds prevalent; a fine day. Lunar corona and halo at night.
— 25.—The amount of cloud was variable during the morning, overcast afterwards; rain fell throughout the evening.
— 26.—Overcast throughout; heavy rain fell in the morning, thin rain occasionally afterwards.
— 27.—Variable and showery during the morning; generally cloudless during the afternoon and evening.

JAMES GLAISHER.

Garden Operations.

(FOR THE ENSUING WEEK.)

PLANT HOUSES.

CAMELLIAS, though they do not at this season give much outward indication of growth, are nevertheless very busily at work. As the development of the flower is being carried on very rapidly, to permit them to suffer from root drought at this particular time is to induce certain injury to the blooms, either by causing the buds to drop off, or to render the future blossoms of poor quality. The whole plant also suffers to a great extent. We must, therefore, give every possible attention to these plants, and more particularly to those that are planted out into open borders. We may easily learn what state the lower soil of such borders is actually in, and act accordingly. A good root-watering is, however, likely to aid them all at this time. These remarks are applicable to *Indian Azaleas*, and some other similar plants which we intend to force at an early date, that they also may have an opportunity of making some advance before we begin to force. It is not only advisable but also necessary at this dull, damp period of the year to look over all kinds of plants periodically, and to remove at the earliest possible moment all dead leaves or other symptoms of decay that exist. This cannot be too much insisted on, as the symptoms increase with great rapidity. Amongst the many more or less hardy kinds of Orchids there may be some which are showing flower at this season, such as *Phaius grandifolius*, *Dendrobium nobile*, *D. chrysanthum*, *Cymbidium*, &c.; these must be encouraged by an occasional supply of tepid water at the root, and by being maintained in a light moderately warm situation. The larger, later batch of *Cinerarias*, which it is necessary to keep growing on, will in all probability be much benefited by a shift at this time into pots one size larger, and into a good rich compost, somewhat more consistent than that in which they have previously been grown. The number and quality of their blooms will by this means be increased. Press the soil somewhat more firmly into the pots than before for a like purpose. These plants must still be kept in a cool temperature, and where a steady strong growth can be made. Others which are about to flower may be kept in a somewhat warmer temperature, which will aid them greatly at this dull season in the development of their flowers. Be very careful not to over-water any kind of pot plants, bearing in mind the fact that we only should wish to keep the plants in as perfect health as possible, and to induce as little real growth as may be practicable.

FORCING HOUSES,

In regard to forcing operations generally, it may be said, now, when a certain though only moderate increase of daylight occurs, that the change is in favour of the forcing practitioner, and his operations may be carried on with greater success than heretofore. We must not, however, permit these facts to induce us to increase the artificial heat incautiously, as no amount of after care will retrieve the loss of vigour occasioned by over-forcing just now, whilst by "holding back" at this period such an amount of vigour will be retained for the benefit of the forced subjects, as will admit of a very high temperature being used by-and-by when a very rapid and safe advance will be possible. In regard to *Fruiting Pines*, permit the bottom-heat to range up to 82° or 84° with unbroken constancy; in view of which have fresh tan ready, scatter a goodly thickness of it on to the surface of the beds, and so stir the whole with a stiff stick as to mix them together without upsetting the pots. In all instances where, owing to the vicinity of pipes or flues, the old tan has become dry, endeavour to moisten it by the usual means. Do not by any means excite the successional plants to make any unnecessary growth at this season. Those *Forced Vines* which started in November, exhibit signs of "breaking" freely and uniformly, should now be tied up permanently in cases where the rods have been loosened and bent down to aid them in making a start. Keep up the slight sprinklings, and afford on every possible occasion a nice amount of fresh air, taking care to avoid draught. Proceed with the dressing of successional houses with the usual mixture of soft soap, lime, and sulphur. In very early *Peach* and *Nectarine houses* increase the heat a little when the blooms show signs of final development previous to expanding. Do this by affording additional heat as gradually as possible, so that nothing like a fluctuation of temperature be experienced. Water the earliest *Figs* copiously at the root, and syringe them freely overhead as a preliminary to starting them into activity. Sow seeds of desirable sorts of *Cucumbers*, keeping the pots reared well up to the glass at the time germination takes place, and during the earlier stages of growth. The same remarks apply to *Melons* in cases where very early fruit is in demand. Bring another batch of *Strawberry* plants into a cool house; make also a sowing of *Dwarf French Beans* toward the end of the incoming week, placing them in a moderate temperature only, that the process of germination be not hurried. Sow in 60-sized pots.

HARDY FLOWER GARDEN.

At this period, when great vicissitudes often occur in the weather at short intervals, it will be necessary to attend more particularly to *Auriculas*, *Polyanthuses Pansies*, &c., in cold frames than is necessary in settled weather. In regard to such subjects as the above, and indeed the general stock wintered in this place, it will be necessary to allow air with great freedom during all mild periods following a frost, as the condensed vapour bathes all internal surfaces in such a place with dripping moisture.

FRUIT ROOMS.

Look over and sort out Pears and Apples in the fruit room, and where it is possible to do so light a very moderate fire to move the stagnant air, and dispel its clammy dampness. Lay the fruit out singly if possible, removing all straw or other material which has ceased to be of use, and only tends to increase the injurious internal dampness.

KITCHEN GARDEN.

Beds of fermenting materials should now be made up to sow *Radishes*, *Onions*, and similar salads, where a great demand exists. During a mild period take up also such plants of *Endive* as still exist under temporary shelter out-of-doors, and remove them to frames or other suitable situations, where a moderate growth can be made and the necessary blanching carried out. Another batch of *Chicory* should also be placed in the Mushroom-house or other similar position, to furnish the successional supply of blanched leaves. As the success of outdoor-sown *Peas* and *Broad Beans* already in the ground is somewhat questionable, owing to the early and untoward frosts, it will be advisable immediately they show through the ground, to place a layer of decomposed leaf-mould, or some similar light subject, not over retentive of moisture, over them. This will aid them whilst they are establishing their roots more permanently in the ground, especially should another harsh, cold period follow quickly. *W. E.*

Notices to Correspondents.

A SELECTION OF PEAS : *George Yardley.* Earliest Crop : Little Gem, Invicta, Advancer. Second or Main Crop : Premier, Veitch's Perfection. Late Crop : Advancer, Premier, Veitch's Perfection. These, sown at the proper seasons, and grown well, will give you all you can desire in the way of dwarf Peas with quality.

ASPARAGUS AND ARTICHOKES : *E. L.* Your letter did not contain an inclosure. Asparagus you may plant at any time now, when the ground is in good condition. Artichokes should be planted in March.

BOOKS : *M. G., Brixton.* Thompson's "Gardener's Assistant" (Blackwood).—*A Constant Reader.* "Bréhaut on the Peach," "McEwen on the Strawberry."—*T. W.* Mrs. Loudon's "Amateur Gardener's Calendar" (Warne & Co.), will suit you admirably. Reply to other question next week.

LICHEN : *W. P., Shrewsbury.* The plant which persistently appears year after year, though a thick coat of paint on a garden rail, and referred by you to Peziza, is a Lichen, either Lecidea æruginosa, or very near to it.

PEACHES, &c. : *A Subscriber. Six Best Peaches :* Early York, Grosse Mignonne, Bellegarde, Noblesse, Barrington, Walburton Admirable. *Two Nectarines :* Elruge, Victoria. *Three other Peaches :* Royal George, Lord Palmerston, Belle Beauce. *One Nectarine :* Pitmaston Orange.

CATALOGUES RECEIVED :—Wheeler & Son's Little Book, or Select Seed List for 1872.—James Cocker's Descriptive Catalogue of Gladioli and Pansies.—Sutton's Amateur's Guide and Spring Catalogue for 1872.

ERRATA.—In Mr. Baker's analytical key to the species of Lily, at p. 1650, owing to an oversight, the meaning of a portion of the Table is rendered obscure. The portion of the key referred to, is correctly set up as follows :—

Leaves ⅛—¼ inch broad, 3—5 nerved.
  Flower-segments ½—¾ inch broad.
    Leaves close, 50—80 to a stem.
      Flowers bright red, not dotted. { 26. L. CHALCEDONICUM, L.
      Flowers yellow, not dotted. { 27. L. PYRENAICUM, Gouan.
    Leaves lax, about 30 to a stem. { 28. L. CALLOSUM, S. and Z.
  Flower-segments ¾—1 inch broad.
    Leaves 60—100 to a stem. { 29. L. TESTACEUM, Lindl.
    Leaves 20—30 to a stem. { 30. L. LEICHTLINII, Hook. fil.

At. p. 1651, col. *b.*, near to the end of first paragraph, for "rust," read "burst."

COMMUNICATIONS RECEIVED.—G. W.—H. K.—W. S.—A. F.—A. F. B.—D. L.—R. D.—J. C.—R. G.—T. L.—T. B.—S., Whitland.—W. P.—F. H.—A. M.—H. Weddell.—J. B. A. P.—J. A. Z. S. J. W. E. B.—G. B.—G. W.—W. S. D. L.—R. H. P.—A. I.—M. S. I. R. P.—P. F.—W. D.—D. J.—W. M. W. E. D.—H. M. A. H.—T. P.—J. L.

Markets.

COVENT GARDEN.—Dec. 29.

The markets have been very languid and dull since last week, the holidays intervening having a marked influence as usual. Supplies, however, have been well kept up, and the northern markets have much assisted us, in taking large quantities of rough produce. Asparagus and Seakale have much improved with the open weather, and Broccoli is excellent, though not large. A few new Peas are also to hand from France.

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, per ½ sieve	2 0 to 5 0	Melons, each ..	2 0 to 5 0
Cobs, per 100 lb. ..	60 0 — 65 0	Oranges, per 100 ..	6 0 — 10 0
Filberts, per lb. ..	0 8 — 10	Pears, per dozen ..	3 0 — 6 0
Grapes, per lb. ..	3 0 — 6 0	Pine-apples, per lb.	4 0 — 6 0
Lemons, per 100 ..	7 0 — 10 0	Pomegranates, each	0 4 — 0 8

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, green, ea.	0 6 to 0 8	Herbs, per bunch ..	0 2 to 0 4
Asparagus, per 100	8 0 — 10 0	Horse Radish, p. bun.	3 0 — 5 0
Beet, per doz. ..	1 0 — 2 0	Leeks, per bunch ..	0 2 — 0 4
Broccoli, purple, per bundle	10 — 1 3	Lettuces, per score ..	1 6 — 2 0
Brussels Sprouts, p. half sieve	1 6 — 2 6	Mushrooms, p. pott.	1 0 — 2 6
Cabbages, p. doz. ..	10 — 1 3	Onions, per bunch ..	0 4 — 0 9
Capsicums, p. 100 ..	1 6 — 2 0	Parsley, p. bunch ..	0 2 — 0 4
Carrots, p. bunch ..	0 5 — 0 7	Peas, new, per pun.	— — 3 0
Cauliflowers, p. doz.	2 0 — 6 0	Radishes, per bunch	0 2 — ..
Celery, per bundle .	1 0 — 2 0	Rhubarb, p. bund. .	1 6 — 2 0
Chilies, per 100 ..	1 6 — 2 0	Salsafy, p. bun. ..	0 9 — 1 3
Cucumbers, each ..	1 0 — 2 0	Scorzonera, p. bun.	0 9 — 1 3
French Beans, new, per 100	3 0 — 4 0	Seakale, per punnet	1 6 — 2 6
		Shallots, per lb. ..	0 8 — ..
		Spinach, per bushel	3 0 — 4 0
		Turnips, p. bunch ..	0 2 — 0 4

Potatos, Regents, 100*s.* to 130*s.* ; Flukes, 120*s.* to 150*s.* ; French Shaws, 60*s.* to 70*s.*

POTATOS.—Southwark, Dec. 27.

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116, Fenchurch Street. EDWARD PURSER, Secretary.

The Agricultural Gazette.

SATURDAY, DECEMBER 30, 1871.

THE letter on SEWAGE IRRIGATION, by Mr. BLACKBURN, which we have given in another page, states the conclusions of an experienced and trustworthy man. We entirely agree with him in deprecating the destructive method of dealing with a valuable property, which is inevitable when the drainage of one or more thousand people is poured over a single acre of land. There is an immense destruction of fertilising matter under the most economical system of sewage irrigation yet in practice, and to convert land into a mere filter-bed—which is nearly all that we can expect it to be when it has to deal with so much filth per acre as is contained in the drainage of a thousand people per acre—is still more to aggravate this loss.

The drainage water of many a sewage farm is well worth redistributing for the use of another, and yet another, set of plants before it is finally dismissed. That of the Methyr filter-beds, and that of the Lodge Farm, Barking, alike show that two-thirds of the fertilising matter in the sewage has remained unused. It has been all completely defecated, and is admissible into running streams without risk of polluting them; but it still contains, though in an altered condition, more than half of the nitrogenous matter to which its original value as a manure is due. It is very desirable, therefore, that the urgency with which the "intermittent filtration" mode of dealing with the sewage difficulty is being advocated, be moderated, and that it be recommended only as a last resource, when the difficulties of adopting irrigation appear to be insuperable.

Let us, however, cordially acknowledge here the great services which Mr. BAILEY DENTON has rendered by his courageous adoption of the intermittent filter to meet the difficulties in which Merthyr found itself. Our remarks the other day upon this subject entirely failed to convey our meaning if any one has gathered from them that great credit is not due to the engineer to whom we owe the perfect success which has there attended the adoption on the great scale of a method which till then had depended for its justification upon mere laboratory experiments. Nor must we omit to acknowledge that in carrying out the works at Merthyr, to which this successful result is due, great care has been taken to ensure a perfectly even division of the stream of sewage over the several plots, to which it is directed in exact proportion to the extent of their several areas. The uneven distribution to which we referred (p. 1625), as occurring in spite of this perfectly proportionate apportionment of the sewage to the land, occurs when each particular bed has to deal with its separate share. That, as we said, sinks away in some places in fourfold quantity as compared with others; and we do not see how the difficulty can be avoided, except the sewage be made to fall as rain does, on each square foot alike. Wherever sewage flows from a carrier over land, finding its way ultimately to a drain either on the surface, in which case it may be redistributed, or in the subsoil, from which it flows direct to the river, that portion of the land nearest to the carrier gets more than its share of fertilising matter—gets more, indeed, than its share of work to do. The reason why the crop is uniform in spite of this unevenness of distribution, is because the land which gets the least gets more than its plants can use, and thus the water which finally leaves the field is still full of manure. And the reason why the work of sewage defecation is complete, in spite of this uneven distribution, no doubt is that this method of destroying organic matter in water which we owe to Dr. FRANKLAND'S ingenuity and research, is of even greater power and effectiveness than has been imagined.

There is still a great deal to say on this subject before the discussion of it is exhausted; and we shall probably return to it, in order that the personal as well as the public sides of it may be properly presented; but these remarks will suffice for the present, both as an introduction to Mr. BLACKBURN'S useful letter, and as an addendum to the short memoir in another page, which we are very glad to give of the distinguished agricultural career of our friend, Mr. BAILEY DENTON.

IT is a very old saying, and there is a certain amount of truth in it, that "Experience holds the torch to Theory." We think that in the case of CLIMATE IN RELATION TO CROPS this saying may be applied with force. In Scotland, as in England and Ireland, the question where to grow Wheat has been settled by experience—that is to say, repeated failures have defined the exact situation of favourable localities, and of those to be avoided. Meteorologists have come to the assistance of agriculturists, and now we have mapped out for us the various climatal zones, and the "why and the wherefore" are thus jotted down. Perhaps no man has done better service to his generation in this respect than the President for the year of the Edinburgh Botanical Society, Mr. ALEXANDER BUCHAN, M.A., well known for his explorations in the field of meteorology. In his inaugural address for the session 1871-2, he referred to the subject of climate and weather, in relation to the geographical distribution of plants; and, from this address, we now give a few extracts, confirmatory of the experience of agriculturists, and therefore of value to them. He says:—

> "In 1847 DE CANDOLLE made some researches into the causes which limit vegetative species towards the North in Europe and similar regions, and arrived at the conclusion [already determined by Experience] that every species having its limit in Central or Northern Europe advances as far as it finds a certain fixed amount of heat, calculated from that day of the year when a certain mean temperature commences, to the day when that mean terminates. . . . It is evident that this law can be tested by applying it to the limits of Wheat or Barley. . . . since, owing to the care taken of them by man in their cultivation, it may be considered that it is climatic conditions alone which set the limits to their destination. According to BOUSSINGAULT, Wheat requires 8248° Fahr. from the time it begins to grow in spring for the proper ripening of the crop: and, moreover, this heat must be so distributed as to secure an average temperature of 58° during the period when the seed is ripening. This statement referred to the continent of Europe, to which his researches were confined; but we have found in Scotland that a mean temperature of 56°, with our average amount of rain and sunshine, is sufficient to ripen grain properly. Not only so, but the crops of 1864 ripened well with a temperature as low as 54°.4. In that year, however, the sunshine was much above the average, and the mean temperature of the day was high. Now, whatever be the cause, whether the longer day in Scotland, or the clear sky, or both combined, which brings about the above results, it is clear that in considering the influence of temperature on the ripening of plants, it is not merely mean temperature, but the manner in which this vital element is partitioned during the 24 hours, which must be taken into account."

It will be seen that the "old saying" alluded to, is of some force here. Doubtless, DE CANDOLLE and BOUSSINGAULT had their ears, as well as their eyes, open during the term over which their observations extended; but their recorded observations and deductions therefrom, are as much the property of the observant and experienced agriculturist, if not more. The farmer's facts, however, derive greater force and authority from being recorded by such learned men as those named. To return to that very acute observer, Mr. BUCHAN:—

> "What most influences the mode in which temperature is distributed during the day, is the amount of cloud and moisture in the atmosphere [more especially in the western islands of Scotland, where a Macintosh and an umbrella were, or now are, indispensable travelling companions], to a knowledge of which the rainfall through the months of the year may be regarded as furnishing the best available key. Indeed so great is the direct and indirect influence of moisture on plants, that we shall not be far wrong in supposing it to be co-ordinate with that of temperature."

There is a nice distinction drawn here, which the practical farmer may fail to observe; but it is fitting that he should. Therefore, we append the following paragraphs:—

> "As to the two conditions, heat and moisture, we have in the distribution of rain a body of facts which will lead to a knowledge of the laws which regulate the distribution of temperature. It is not merely the daily and annual fluctuations of the temperature which may be inferred from the humidity; it is not merely the greater immediate

results which accrue to plants arising from a change in the humidity than arises from a change of temperature; but what especially concerns the question is this vital distinction between the two, viz., that climates merge into each other by comparatively nice gradations, as regards temperature, whereas, on the contrary, the most diverse climates, as repects moisture or dryness, are frequently placed sharply side by side.

"I have long been impressed with the importance of a knowledge of the rainfall viewed in these aspects, and have recently constructed 13 maps, showing for each of the months, and for the year, the rainfall over the greater part of the land of the northern hemisphere. The result of the whole discussion, in its relation to climate, is very striking. Everywhere the rainfall is dependent on the prevailing winds, and on the configuration of the earth's surface; and since the prevailing winds depend on the distribution of land and water over the globe with respect to the heat of the sun, it follows that the present climates are determined by the relative distribution of land and water."

There are laws general and laws particular—those adverted to by Mr. BUCHAN, and those modified by the absence or presence of woodlands. That these exert an immense influence on land, and therefore on crops, in their immediate vicinity no one can doubt—no one does doubt; and that thorough drainage and deep cultivation exercise a beneficent influence is also a proven fact. Drainage means to some extent a raising of the temperature of the soil. It is astonishing how much cold the head will stand, so long as the feet are kept warm; and no better proof of this can be found than in the experience of the agriculturist. Deep stirring of the soil is a wonderful aid to drainage, and where the two are co-existent, it is almost safe to say that they can afford to give away one or two degrees of temperature in the game of life, and still go in and win.

It would be interesting to all, when Mr. BUCHAN publishes the next edition of his Tables, if they could find notes appended giving localities where draining and deep ploughing are the rule, and the crop results compared with others in the same "zone," where neither draining nor deep stirring of the soil are the rule. *E.*

—— THERE was no Corn Market on Christmas day. On Wednesday in Mark Lane the grain trade ruled heavy, sales being effected with difficulty at previous rates.——The Metropolitan Cattle Market has been this week of an unimportant character; the very short supplies have, however, failed quite to supply the demand, and prices of both beef and mutton are higher than those of last week.

—— Mr. BLACKBURN, of the Aldershot sewage farm, has written a capital letter on SEWAGE IRRIGATION in the *Times*; and we make the following extracts from it:—

"The last new process which the authorities of towns have been asked to sanction is intermittent filtration, originally invented and suggested by Dr. Frankland, as worthy of trial under certain conditions only, but now energetically recommended by some few engineers and others; nevertheless, I must say that if it is adopted in any locality where irrigation is practically available, it can but be viewed as so much loss in the shape of food to the country. We are told, from the experience, be it remembered, of a few months only, that the sewage of 3000 person can be filtered of its impurities through one acre of land, and also that edible vegetables can be produced on this intermittent filter at the same time; but any reliance which may be placed on the appropriating or scavengering power of such an infinitesimal amount of vegetable growth as can be raised under such conditions must be futile in the extreme; in fact, about as hopeless a task as two men attempting to scavenge the streets of London. Therefore, purification in this case must depend almost solely on the unaided resources of the soil itself; and my conviction is, that such vast accumulations of manure, coupled with the action caused by the solvent powers of sewage, will in time absolutely choke up its pores. I may say this opinion is based on many years' experienee of the treatment of land under sewage, combining a variety of sources.

"Some of the advocates of intermittent filtration attempt to create what is purely an imaginary difference between irrigation and filtration, which, so far as the soil is concerned, really does not exist; irrigation—that is, utilisation—embraces filtration, the principle in both cases is the same; but the application of that principle involves the question of the production of food in the one case and waste in the other—in fact, irrigation does all that intermittent filtration is said to accomplish, with the valuable recommendation of producing food in addition, besides which the cleansing process of vegetable growth involves a constant abstraction of the fertilising matter deposited in the soil, and the almost continued conversion of the same into food maintains its filtering powers unimpaired. Sewage utilisation and purification must go hand in hand, and it will be a great national loss if the latter only is considered and rendered subservient to the former. I have myself made a filter of all parts of my farm since the year 1854, the extreme poverty of the land rendering it necessary that it should be supplied with large quantities of sewage matter before any vegetable growth could be obtained. This was accomplished by deep cultivation, with thorough soaking at short intervals for about a year, a few deep drains having been put into the land where found necessary. It has also been asserted as one of the drawbacks to sewage farming, that the experience said to be gained in the cultivation of Italian Rye-grass is that it may readily be grown in excess of the demand in a green state. But there can be no necessity to limit the culture of so valuable a plant on that account, and it is admirably adapted for the profitable conversion into that which is in ample and ever-increasing demand—viz., dairy produce or meat. As to the large quantity of sewage it is said to appropriate, I find that depends a good deal on the cultivation pursued. Under this management it yields a higher return per acre than most other crops, with the manure resulting from its consumption in addition. In support of this I know instances where cowfeeders pay from £25 to £40 per acre for the grass, which means a gross return in milk or butter of something like from £80 to £100.—The late glut of vegetables in the market has to some suggested the idea of growing cereals, and it has been seriously proposed that farmers having the command of sewage, with all its advantages, should grow that which can be obtained of much better quality and cheaper from America, Russia, and elsewhere. Moreover, there is no doubt that, under ordinary agriculture, the rest of the country could successfully compete with sewage farms in the growth of grain crops. A deeply-cultivated, well-manured soil will retain in this climate a sufficiency of moisture for the perfecting of their growth without any additional supply from sewage or other artificial sources. All our leading men have long since agreed that the future success of our home agriculture must depend largely on dairy produce and meat, and I think it would show a want of sagacity in any sewage farmer to adopt so retrograde a step as a dependence on corn growing when he possesses such extraordinary facilities for raising green crops.

"A sewage farm should, I maintain, consist of such an area of land as will convert on the smallest space of ground the largest amount of sewage into vegetable growth without waste, thus recognising the economy of intensive as opposed to extensive farming, and to do this such plants must be grown as can build up the greatest quantity of fertilising matter into food in the shortest time.

"By all means put a stop to the nuisance arising from the pollution of our rivers; but instead of destroying that which occasions it as an enemy in an intermittent filter, convert it into a friend that will help to feed the British subject.

"The labouring class, and especially the children, are not much more than half nourished, and yet we find men recommending the waste of that which, if properly managed, should go some way towards feeding them; a plentiful supply of milk placed within reach of the rising generation of the poorer classes would improve them both mentally and physically. But, granting for a moment that intermittent filtration is to prove a success so far as purification is concerned, its general adoption would be a deplorable misfortune for this country."

—— At the close of the sessional examination at the ROYAL AGRICULTURAL COLLEGE last week, the Rev. JOHN CONSTABLE, the Principal, said it gave him great pleasure to present a satisfactory report of the intellectual condition of the College. There were now six diplomas and a number of certificates and prizes to be distributed. It was the wish of the Council that the College should maintain its place among the educational institutions of the country, and he was sure that when they came to hear the report he was now making they would be satisfied. With regard to the moral tone of the College he could conscientiously remark that it would favourably compare with any college or institution in the country. Lord BATHURST presented the prizes to the successful students. Diplomas were awarded to—John Player Sturge, Tyndall's Park, Clifton, Bristol; Francis Wright Bourdillon, 2, St. John's Park, Blackheath, Kent, S.E.; John Dodson, Sheinton, Much Wenlock, Shropshire; Hugh Parker Holme, Mardale, Haweswater, Westmoreland; William Read Erskine, 39, Nottingham Place, London, W.; Charles Jones Monnington, Bitteswell Vicarage, Lutterworth, Leicestershire.

—— At a recent meeting of the CAMBRIDGESHIRE CHAMBER of AGRICULTURE, assembled to discuss the policy of establishing a county school, available for the sons of farmers, the Rev. J. L. BRERETON gave the following account of the Devonshire County School:—

"This school has for several years been a centre of examination for Oxford as well as Cambridge, and it has, I believe, obtained more certificates and honours than any other school in the country. I do not mean that higher honours have not been obtained by other schools which have sent in a smaller number of candidates, but then it should be remembered that in the Devon County School no boys take up Greek, and only a small number Latin, while it has more than once been the good fortune of a pupil of this school to be in the English section of the examination—the first in all England. My object, however, is not to boast of their performances, but to give this Chamber some real assurance that the teaching which the Devonshire boys receive is, of its kind, 'excellent.' And now, what is the cost? 1. To the parents. 2. To the shareholders. Last year there were 111 boarders (on the average) in the school, and four day-boys. The total charges were—for board and tuition, £3033 7*s.* 8*d.*; for books, stationery and use of library, £229 6*s.* 4*d.*; for extra tuition in Latin, drawing, or music (an optional charge), £365 4*s.* 1*d.*; for examination fees to Oxford or Cambridge, £98 10*s.*; giving a gross average of £33 6*s.* per boy; and for necessary charges an average of £29 4*s.*—that is, for board and tuition £27 3*s.*, and for books and stationary £2 1*s.* Now these payments of the parents, added to some profit from garden, enabled the school to discharge all claims for salaries, for board, for rates and taxes, for books, advertisements, and sundries, and to hand over to the shareholders a balance of £725. Out of this balance the shareholders paid £90 interest for money borrowed on mortgage or advanced by the bank; they set £78 apart for doubtful debts, £97 for depreciation of furniture, £92 for depreciation of buildings, £63 for liquidation of preliminary expenses, and the remainder (£325) gave them a dividend of 4½ per cent. upon their shares. The shareholders are protected by limited liability, the nominal capital is £7500, in 300 shares of £25. Of these 277 have been taken up, and 100 of them (£2500) have been presented by the subscribers to the school, and the dividend upon these is awarded in scholarships to the most deserving boy. Thus, last year, a sum of £112 10*s.* was placed at the head master's disposal, under certain regulations, for distribution in scholarships. I hope I have satisfied you by these figures that an 'excellent' education is being given in the Devon County School at a 'moderate' cost, and without loss or great risk to the shareholders."

—— The following extract, from a recent address of Mr. JUSTICE LAWSON, at the opening meeting of the 25th session of the Statistical and Social Inquiry Society of Ireland, supplies a satisfactory index to the PROGRESS of IRISH AGRICULTURE of late years:—

"The population attained its maximum of 8,000,000 in 1841. In 1851 it had fallen to 6,552,385, being a decrease of 20.5 per cent.; falling in the next decade to 10.30; and in the last to 6.83 per cent. The decrease of population in towns has been chiefly in west coast and central towns, which have been affected by railways. The rate of decrease of the population has been thus gradually diminishing, and caused by emigration. If the population had increased by the usual number of births above deaths at the same rate as in the former census, viz., .92 per cent., and if there had been no emigration, our popluation should have been 6,297,275, and, deducting from this the estimated number of emigrants, 846,957, it would give a present population of 5,450,318, very nearly agreeing with the number ascertained by the census, 5,402,759, showing that there has been no extraordinary decline of population, but that it has maintained an equable rate. In connection with this subject of population and emigration, it is very interesting to observe the great increase in the use of agricultural machinery. I have not been able to procure any statistics on this subject which I could lay before the meeting; but it is highly interesting to notice the part which these machines play in our social economy. They do not tend to reduce population or throw hands out of employment, which is the stock argument generally used against machinery. They did not with us precede, but followed, a decrease of population. Their use benefits the farmers, by making them much less dependent upon the caprice of the seasons; because the operations can be performed so rapidly as to enable them, to some extent, to defy the weather in saving the crops. They render it unnecessary for a portion of the labouring population to be idle during the dead season, as they used to be with us. The farming classes have now security of tenure. It is not the interest of their landlord to evict them as long as they pay their rent and use the land well. He suffers heavy penalties if he does so. I believe, never in the history of this country, were farmers so prosperous and well to do. Rents are well paid, land better tilled, houses and offices improved; food and dress have undergone a marvellous change, even within recent memory; and when lands are set up in lots to suit tenants, there is no lack of purchasers."

OUR LIVE STOCK.

"A FARMER" inquires "what would be the best breeds of sheep and pigs to take out to America?" This is a wide question, and difficult to answer. In the colder regions of North America, probably long-woolled sheep, such as Cotswolds and Lincolns, would prove the most profitable, and a considerable number of such sheep have already found their way into the States and Canada. That they are appreciated there is sufficiently indicated by the high prices very recently given at Mr. Cochrane's sale, on October 26, at Montreal, Canada, for Cotswold ewes. "The two first were knocked down for 75 dols. (£12 12*s.* 6*d.*) each; two more same price; two at 50 dols. (£10 8*s.* 4*d.*); the next two were shearlings, and fetched the top price of 100 dols. (£20 16*s.* 8*d.*) each." With reference to the best kind of pig for the States and Canada, we have no wish to place one variety before another, but no breed has lately been so much spoken of in connection with export trade as the Berkshire, and the high prices given for breeding animals fully attests the estimation in which they are held. Reverting to Mr. Cochrane's sale we find that:—

"Twelve Berkshire sows were very strongly competed for, though they all fell to the same purchaser, who seemed determined to have them, though they stood him in 103 dols. a-piece (£21 9*s.* 5*d.*). The lowest price was 75 dols. (£15 12*s.* 6*d.*); the highest, 185 dols. (£38 10*s.* 10*d.*)."

—— A correspondent wishes to know "the characteristic traits of the Booth and Bates' strains of Shorthorns." Judging from the extreme expressions made use of by some interested persons, an outsider would be led to believe that one section of the Shorthorn race was utterly worthless, while the other included every good quality. We must, however, remember that Booth and Bates blood maintain a very equal competition for public favour, and that Warlaby and Wetherby have been equally successful in producing notable animals. Pedigree is sufficiently important to demand a first place. Mr. Bates laid great stress upon the importation of Hubback blood. "No other breed of Shorthorns," he writes, "shows a family likeness except my own. Nor has any other breed of Shorthorns the same hair and handling as mine have; nor can it be obtained but through my strain of blood; for it runs in the blood, and none now can be found that have the old Hubback blood and that of his predecessors, and of Mr. James Brown's old Red Bull: and these two bulls were the last remains of those breeds which had been so long eminent as Shorthorns before the time when the Messrs. Colling began breeding." Hubback, Kelton, The Earl (646), 2d Hubback, Belvedere, were the first bulls used in bringing out the Bates herd, and on the female side Mr. Bates informs us that it is to the union of Duchess tribe, Yarborough's dam, and *Princess* tribe that his cattle owed their superior excellence. Down to the present time breeders of Bates cattle have followed out the principles of in-breeding, and purity of blood is looked upon by them as all-important. Booth cattle, on the other hand, are sprung from stock contemporary with that of the Collings, and have been bred with a less slavish adherence to particular lines of blood. We venture to state our conviction, that while allowing due weight to pedigree, the Booth cattle breeders have bred with a greater regard to personal merit. These cattle are in the hands of a less wealthy but more thrifty class of men, and while, as a rule, commanding a lower price in the sale-ring, are more fortunate in the show-yard. The Bates cattle are unrivalled in "touch" or quality; the bulls have grand "Bates character" heads, noble necks, and upright shoulders, rather hollow behind. Mr. Carr, in speaking of Booth cattle, says:—"The late Mr. Booth succeeded in imparting a length of quarter such as no other herd can boast, a marvellous fulness and depth of thigh, and of the twist, or junction of the inside of the thighs, and a perfectly parallel and almost perpendicular position of the hind legs. It was, however, to the ample and symmetrical development of the fore-quarters that Mr. Booth's especial attention was directed. He increased the obliquity or backward inclination of the shoulder blades, thereby preserving the level line of the back, and promoting the free and graceful carriage of the animal. It was also his aim to improve the form and enlarge the capacity of the chest, which he did by augmenting the prominence or circularity of the fore-rib, and the width of the sternum or floor of the chest. It is to the success of Mr. Booth's efforts in this direction that we are indebted for those valuable and almost peculiar characteristics of the Warlaby cattle—the perpendicular fore-flank, which drops even with the arm, the roundness of the barrel-shaped crops, and the width and massiveness of the projecting bosom. To this conformation also may probably be due the very remarkable immunity from pleuro-pneumonia and other chest affections which the Warlaby and its kindred herds have hitherto enjoyed. It may be observed that this development of the fore-quarters was mainly effected by the use of the male descendants of *Isabella* by Pilot. The necks of the Booth Shorthorns are remarkable for the bulky, yet symmetrical development into which they gradually swell as they approach and blend with the shoulders and breast, completely hiding, even in the unforced animal, the shoulder-points."

NOTEWORTHY AGRICULTURISTS.

Mr. Bailey Denton, C.E.

His name has long been familiar to agricultural readers as that of one of our most energetic agricultural engineers and most active agricultural writers. Mr. Denton was born in London in November, 1814. He was articled to the agent of the late Lord Dacre, in 1830, and for many years thereafter was engaged in the enclosure of open fields and in the valuation of parishes for tithe commutation and rating purposes.

Mr. Bailey Denton, C.E.

In 1842 he published a letter to Mr. Philip Pusey, entitled, "What can be done for British Agriculture?" advocating systematic under-drainage, the formation of the country into districts for the improvement of outfalls, and the utilisation of the liquid refuse of towns. This pamphlet was followed by an article on "Drainage," published in the "Westminster Review," which was devoted to the same objects as the letters, and attracted much attention at the time. In 1844 Mr. Denton placed in Mr. Pusey's hands a Bill for the amendment of his Act relating to owners of entailed estates; and on reference to the article entitled "Land Improvements by Loans from Government or Public Companies" (written by Mr. Denton in one of the second series of the volumes of the "Journal of the Royal Agricultural Society of England") it will be seen that this proceeding was the immediate forerunner of "The Public Money Drainage Act" (9 and 10 Vict., cap. ci.), which was the first of a series of Acts having for their object the improvement of land by means of borrowed capital repayable by instalments. From that time to the present, Mr. Denton has been, as our readers know, extensively engaged in the conduct of works which those Acts were intended to promote.

In 1849 Mr. Denton sent in a design for the "main drainage of the metropolis," which was placed second in the list of 150 designs; that of Mr. McClean, M.P., and past President of the Institution of Civil Engineers, was placed first. But this design, in common with the rest of plans submitted to the Commissioners of Sewers in 1849, was shelved, although the Government referees (Messrs. Simpson, Blackwell, and Captain Douglas Galton, C.B.) stated in 1857, "that the principles upon which Mr. Denton's plan of 1849 was based are, in the main, those adopted by the Metropolitan Board of Works."

Mr. Denton has written many agricultural papers (including lectures delivered at the Royal Agricultural College, Cirencester) on land drainage, water supply, village sanitary economy, road-making, &c., but his principal work is the superb quarto volume entitled "The Farm Homesteads of England," which is quite our standard work on farm architecture. It has passed through two editions, and is now out of print.

A subject upon which Mr. Bailey Denton has shown by his writings that he feels the utmost interest, is the condition of the agricultural labourer — his conviction being that the best means to effect an improvement beneficial alike to employer and employed, will be by technical, *i.e.*, farm teaching, combined with the ordinary education, believing that thereby the farmer will get better work, and the labourer better wages. He read a paper on this subject before the Society of Arts in 1868, and another before the meeting of the British Association at Exeter in the following year.

Mr. Denton's views on the advantages to be gained by the storage of water, especially for rural populations and for villages, and his opinions upon the great questions of town sewerage and sewage utilisation, have been too recently expressed to require mention here.

It will be seen from this very bald enumeration of Mr. Denton's agricultural services, that a considerable share in the origination of some of the most important departments of modern agricultural progress must be attributed to him. To have advocated 30 years ago the under-drainage of land by borrowed capital repaid by instalments, the formation of districts for joint outfall drainage, and the utilisation of town sewage—all of which are now acknowledged fields of useful work—is a fact on which he no doubt now looks back with satisfaction; and to be at present the leading advocate of technical education for the agricultural labourer is a position which cannot fail to bring him even greater credit when his labours in this respect have also borne their fruit.

Mr. Denton is an honorary member of the Agricultural Societies of Norway, Sweden, and Hanover; he has been consulted on works of magnitude in France and Italy, and has advised nearly every European Government on the details of drainage legislation.

A FRIENDLY DISCUSSION.

Steam Cultivation: Leases: Tenant-Right.

[The annual meetings of the Coggeshall Agricultural Society are always signalised by good speeches from Mr. Mechi and others, in which frank criticism takes the form, sometimes of remonstrance and exhortation, sometimes of banter or even "chaff," never, however, angry or ill-natured; and last week's example is no exception to the rule.]

Mr. F. U. Pattison presided, and in the course of the evening gave the health of Mr. Mechi, saying: I am sure you will now join with me in drinking most heartily the health of a gentleman on my left who has always favoured us with his company on this occasion, whose presence always gladdens us, and who always has a cheerful face, be the circumstances what they may. Even if you oppose him he doesn't mind it, but seizes the occasion to display his good and genial nature. I have been surprised, indeed, that Mr. Mechi, for it is to that gentleman I allude, has stood the blows he has. However, he does stand them, and no doubt he has gained a vast deal of influence by maintaining so amiable a disposition. We are always pleased to see him here whenever we have a meeting of this character, and I have the utmost pleasure in submitting, this evening, the toast of his health.

Mr. MECHI : I am much obliged to your excellent chairman, whom I am glad to see looking so well, for proposing my health, and also to you for the very kind manner in which you have received the toast. I have always had a great affection for Coggeshall, and for this institution in particular, because I have always received from the members of it, under every circumstance, the most marked indulgence, and when opposition, perhaps, might be expected, it has always been qualified by an excellent personal and kindly feeling ; and I look upon that as a very wise course of conduct, because if you exclude personalities from such institutions as this you are sure to prolong their existence. You cannot destroy an institution of this kind more quickly than by permitting personalities to be indulged in. We are met for a great and a good object. It is to encourage the labourer in good habits and in proficiency in his occupation, and altogether we must look upon these assemblages as tending very much to improve British agriculture. You know I am getting an old man. [No, no.] Well, I am 70 next May.

A VOICE : You are only a chicken, sir.

Mr. MECHI : In my early days there were no Farmers' Clubs and no institutions of this character. But I believe I have had the pleasure of attending this meeting now for more than a quarter of a century, and I recollect perfectly well, when employment for the labourer was very difficult to obtain, I saw your prize given for digging. I estimated the time by my watch that it took to dig a rod of ground, and I went back to my farm and had 50 acres of land dug, as a means of employing the people and making profit for myself, at the small charge of £1 6*s.* 8*d.* per acre, or 2*d.* per rod. I found that the men, instead of going to the union-house in the months of November and December, were willing to earn those wages. Times have improved since then, or money has got cheaper. At all events I could not have that work done now for less than 50 per cent. increase. That was one good that was derived partially and principally from my visiting this institution. Now we come to a very important question—how can we make farming more profitable, more profitable for the tenant-farmer, for the labourer, for the landowner—because they must all go together—and more beneficial and profitable for the country at large. That question is receiving a solution, for the great and interesting feature of this year, agriculturally, has been the trial at Wolverhampton of the steam-ploughing engines ; and if you would all read attentively the voluminous report of the judges at those trials, it would convince you, as it has convinced me—if I had any doubt about it—that we must look to the employment of steam-power for the future increase and profit of agriculture. There are great impediments to that in the county of Essex. One of the first is that farmers don't understand steam, and don't like to face the trouble of having it on their farms. I do not refer to threshing machines, brought to them to be hired, but to the very advantageous condition of having a fixed engine on the farm for the ordinary purposes of the farm, irrespective of cultivation. I have had one for 24 years, and our people on my little farm of 170 acres would say they would not know how to get on without it. What strikes me as very extraordinary is, that plenty of rich farmers—for there is plenty of money in Essex—Mr. Beaumont and Mr. Barnes, and other gentlemen of the law, know that —what strikes me as extraordinary is, that these rich farmers don't try the experiment. But the explanation, I suppose, is, that the having a fixed steam-engine on the farm is a new event, because it entails a new arrangement of ideas—it is different from the shoeing your horses and having your harness mended, and different from the ordinary work of a farm as it has been hitherto carried out. I believe that is the reason that it is not more generally adopted. It ought to be adopted. I see farms of 400, 500, and 600 acres which ought not to be without their fixed steam-engine —that is, quite irrespective of steam cultivation.

Well, now we come to steam cultivation. Among the impediments are, the size of the fields, the incumbrance of trees, and the incumbrance of fences. It is impossible to come from London on this line of railway without being struck by this fact, that small as the fields were originally a vast number of them have been intersected by the railway and cut into halves or into thirds, what was a great evil before being thus rendered still greater. That is a question for the landowner principally; and next for the landowner and tenant combined. I hope and believe that the landlord will find it will be for his interest to give permission to abolish those fences, to do away with those trees, and put the land into such a condition that steam cultivation can be brought to bear upon it. Another thing too must be done—if the land be heavy and wet it must be drained before you attempt to steam cultivate it. There are some very interesting facts in connection with steam cultivation. Some companies have been formed in Yorkshire, in Northumberland, and in other parts, with capitals of from £20,000 to £40,000 invested in steam cultivation, to do the work by contract for the farmers. But you must bear in mind, gentlemen, that in the district in which they are working the fields are 20, 30, or 40 acres each. They could not profitably do it in certain parts of Essex on the same terms. But there is another very great obstruction in Essex—the engines could not cross your rivers, for on every bridge a notice is stuck up that no heavy machine is to go over it. No doubt that is proper, because, as was the case at Battles Bridge, the structure would fall in, and so would the engine ; and when I wrote to Mr. Eddington to say that I wanted some steam cultivation, he replied, "My machines are in Cambridgeshire. I should be willing to come to you, but I cannot. The bridges will not carry our engines." I must here appeal to our magistrates to feel the pulse of the county, and see whether it will be much longer permitted that one of the most interesting and profitable operations of a farm is to be rendered unavailable, simply because the bridges are not put in suitable order. I have that opinion of Essex, that a rate would not be objected to, and that the magistrates will find they can freely make the necessary alteration.

But, gentlemen, do you know what is doing in regard to steam cultivation ? I have taken great interest in this question. It is now 15 years ago—for it was in the year 1856—that Fowler's steam-plough was first brought on to my farm to plough the subsoil, and some of you gentlemen, I suppose, must have seen it. But look at what is taking place now. An acquaintance of mine in Berkshire has four steam-engines of 30-horse power each. Last year he succeeded in cultivating to a depth of 30 inches, but this year his cultivation is a yard deep. That is a very serious question. He is not a small farmer, for he has 4600 acres of land of his own which he farms. I believe he has been wise not suddenly to bring the bad soil to the top, but when I tell you that last year he grew 1600 acres of Sugar Beetroot for the purpose of making brandy, it shows you, I think, that there is something going on in British agriculture. It is very clear from the facts that come before me that the cheaper class of engines are the most costly and the least powerful. I mean the work can be done cheaper by a 20-horse engine than by a 10-horse engine, although the price may be so much larger at first. I was told the other day that one of Mr. Fowler's first customers who bought an engine of him for £1500 some 14 years ago, as a practical farmer has now bought another for £1500, and it is not an uncommon thing for a man to buy two engines at a thousand pounds each as the cheapest way of cultivating his land. I will give you an instance. The evidence we had in the course of the Wolverhampton trials showed that 1 lb. of coal in an engine moved 9 tons of earth. That alone ought to teach us that steam as a power is infinitely cheaper than horse-flesh. A horse can lift another horse, or perhaps two, but a pound of coal will lift 9 tons of earth, or put in a pumping engine it will lift a million pounds weight of water and lift it a foot high. I say that if we as farmers do not take the cheapest power, if we do not give up our prejudices in favour of our old customs, we are not quite sensible men of business. I am not quite so sanguine as to suppose the changes are to be very sudden. We know that in the Rochford country, where fields are large, Mr. Carey has several sets of machines, involving an expenditure of several thousand pounds, and lets them out to the farmers.

But there is one point I would call the attention of our landowners to. Three years ago the Duke of Northumberland had a conference with his tenantry, through his steward, with the view of getting to know whether they would like to join in a steam-ploughing machine on certain conditions. These conditions were that his lordship was to buy a 12-horse power engine of Fowler's, at £1500 ; they then calculated how much would be the wear and tear, and how much could be charged to each for the use of the machine. The agreement was made and this was the result, that the tenants had their land ploughed at 10*s.* an acre, it was then cultivated very deeply the next time at 5*s.* an acre. If it was cultivated a second time after the first cultivation and the ploughing the charge was 2*s.* 6*d.* an acre, and the harrowings were 1*s.* 6*d.* per acre —not such harrowings as we have with 3-inch teeth — but with machines of 12 and 15-inch teeth. That has been satisfactorily at work for three years. The Duke of Northumberland receives 5 per cent. interest on the money invested ; the machine is kept in perfect order, with a reserve to buy a new one. There was a little difficulty as to who should have it first, and a very wise arrangement was come to : that was that the man who first cleared his 30-acre field and gave notice was to have it, and the next in rotation, and when it became an even question they should draw lots. In that way it has worked extremely satisfactorily ; it has been the means of largely increasing the farmers' profits, and I need not tell you has been a great benefit to the country at large. I am told there are in this country 10,000 locomotive engines running and 200,000 steam engines employed in making our clothes and other necessaries of life. I say that agriculture must take the lead a little more than it has done. We are all inclined to get a little more profit. I don't know a better farmer than our excellent friend, Mr. Catchpool. He has laid his fields open, and what I want to see is that his landlord should make him a covered yard in which to feed his cattle and charge him 5 per cent., and that he should have also a fixed engine for doing his work. I look upon Mr. Catchpool as one of our best farmers, for the reason that he maintains the fertility of the soil. Cow farming generally is a robber of the soil, but the way in which Mr. Catchpool treats his cows enables him while he is milking them to be also fattening them. He feeds them with cake and grains, and at one and the same time is finding milk and meat for the people, besides making the land grow plenty of corn. I have to apologise for taking up so much of your time. I can only say if every one of you gentlemen should procure a fixed engine, the comfort and the profit would be such that having once got it there would not be a man upon your farms who would say you ought to do without it. I thank you for drinking my health. I shall go on as long as it pleases God to spare me to point out our weaknesses. I believe we effect good by doing so, and it is therefore that I do it.

Mr. CATCHPOOL said Mr. Mechi had spoken on the topic of steam cultivation. He, as a farmer, wished that gentleman could have said something about tenant-right ; for he held that it was of no use a man improving the land he occupied to a great extent if, at the expiration, perhaps, of a 14 years' lease, the landowner was to come down upon him and say, "Your land is of very much more value, and you must pay an advanced rent." The tenant, in that case, not only had to find the money for the improvements, but had also to pay a large interest upon it in the shape of increased rent. He quite agreed with Mr. Mechi, generally, that keeping a large number of cows impoverished land, but at the same time they must remember that from March to November people's yards were empty. Many of his friends were in the habit of feeding their 50 qr. of grains per fortnight, which were imported on the farm, and he could not but think it must increase the value of the farm to some extent.

Mr. DENNIS, the vice-chairman, quite agreed with Mr. Catchpool that the terms on which farmers held their leases did prevent them in a great measure from laying out so large a capital on the land as they otherwise would do. There was great insecurity of tenure even upon good estates, because life was very uncertain, and there were not always children to inherit the farms of their fathers. Farmers were never paid for what they laid out, and their children did not reap the benefit, and it was not altogether a matter of surprise, therefore, that there was not the money laid out in agriculture there ought to be. He felt convinced that if they farmed lands which they could occupy for a long series of years they could make them produce nearly double what they did at the present time. He was not going to bring any charge against landowners, because they had their interests and farmers had theirs. [A VOICE : They ought to be identical.] He could not help thinking that farmers were very badly represented in the House of Commons. They had very good representatives so far as landlords were concerned, but what had been done for farmers in the House of Commons for many years past? He was only aware of two important measures—one was to make rabbits game, and the other to do away with the last shilling on the corn, throwing a million of money away which might as well have been in their pockets now. The tendency of Parliament seemed to be to impose no duties on foreigners, and put them all on the farms of the country. With regard to the malt duty, he was not an advocate of doing away with it, because he believed the Government could not afford to give it up ; but whenever the malt duty had been brought forward, Parliament had always beat about the bush instead of going right to the heart of the question as they ought. Why did not Government reduce the malt duty, as they reduced the tea duty, in such a way that they could recoup themselves by increased consumption ? In reference to the insecurity of tenure, Mr. Gladstone gave Ireland a Land Bill. Why did he not give the farmers of England a Land Bill? Had they not been as faithful to the throne, and as anxious for the welfare of this country? He did not care what government we had, Mr. Disraeli's or Mr. Gladstone's. He was for doing justice to everybody, and he meant to say that the lands of this country would never be farmed in the way they ought until measures were passed to make the farmer's capital more secure on the land than it now is.

Mr. MECHI having added to his original observations a remark in favour of deep draining,

Mr. BARNES, referring to the observations of Mr. Dennis, said that, coming from a practical man, they had convinced him of what he had always thought was the case, that the land of this country had not been made to produce what it ought to produce. In that case the farmers surely had, to a considerable extent, the remedy in their own hands, for if they could convince the landowners that by better cultivation they could make the land grow double what it now did, and were willing to increase the benefit of the owner to a fair extent, they would have no difficulty in getting long leases.

Mr. Hills said if Mr. Barnes would be kind enough to tell them how to lay their capital out it might be of some use. They knew the land would yield more, but Mr. Barnes' theory seemed to be that the tenant was to get the land in order, and then who was to have the benefit of it? If the country was to produce more that production must come from the tenants, and if the landlords declined to take advantage of the improvement in the land by the tenants, by raising their rent, &c., it would be done. But everybody was afraid to go on—they had to do it gently, and see if any move was made on the part of the landlords. As Mr. Catchpool had said, whenever a farmer got his land into a high state of cultivation the landlord took the benefit of it, and did not consider that the tenant had done it. It was well known that such was the case in this neighbourhood as well as in other parts. [Applause, and a voice, "Quite right."] What they wanted was combination, so that they could have some influence on their landlords, and say to them "You shall do it."

Mr. Beaumont: If you could see the landlords at this end of the table you would be quite astonished.

Mr. Barnes was sorry Mr. Hills had mistaken him. What he intended to convey was this: Mr. Dennis had argued that if a tenant could have a longer lease and could be better protected, the land was capable of producing considerably more. He gathered from that if the tenant, by being secured in his tenancy, could produce more, he would be prepared to give a rent in proportion to the yield.

Mr. Surridge: On whose capital?

Mr. Barnes said it might be on the tenant's capital, but they must bear in mind that land in this country would never decline in value, but would increase; and if they supposed for a moment that they were going to hire their farms at less rent than they now paid they were mistaken. He was not so stupid as to suppose that a farmer was going to lay out his capital unless he was guaranteed a fair return; but the landlord had his right—he had a right to an increase from the value of his land commensurate with the value of the capital of the country. He knew he might be laughed at and told that he was speaking on the part of the landlords, but he was not, but on the part of that which this great country showed must be the result of wealth and the accumulation of it. They had a right to some guarantee of a fair return upon the capital they expended, but they must not expect that if they asked for a 28 instead of a 14 years' lease that they were to have it for the longer period at the same rent as they had for the shorter. The landlord would be justified in asking more, and they must be prepared to pay more. The value of the land would go up considerably in that 28 years, and they must, therefore, give the landlords some inducement for the fixture which they asked. There must be reciprocity in this respect. He was glad to hear what fell from Mr. Dennis as to farmers not being represented in the House of Commons. He wished every class in the country was represented, because then they should get better laws, the interests of all classes would be cared for and thought over, and they should not have the stupid and absurd Acts that were sometimes passed. As to Mr. Dennis' complaint that the farmers were not represented in the House, it was their own fault; they had sufficient power, and if they used it legitimately they might be represented, but if they stood still, and did not do that which all great classes were doing, they must not blame any one but themselves. Only let them show to their landlords that by having fixity of tenure they could improve the land, and afford to pay an extra 5*s.* an acre for it, and the landlords would be only too glad to grant it, for they desired to make as much of their land as they could; but, considering the accumulation of wealth in this country, they could not expect the landlords to tie down their land for a large number of years unless they had some inducement to do so.

Mr. Catchpool referred to the observation of Mr. Barnes as to the wealth of this country, and asked by whom it was brought about—the landlords or the tenant-farmers?

Mr. Barnes admitted that it was done by the tenant-farmers to a great extent; but they must consider also that the wealth of the tenant-farmer of the present day was very different to what it was some years ago. There were more agriculturists now who knew when the Three per Cents. became due. After some further observations, Mr. Barnes again urged upon the farmers the importance of their looking about them, and seeing after their own interests, and concluded with some exceedingly loyal sentiments with reference to the Queen and Constitution of the country, remarking that he did not think they could possibly have a better form of Government than "Queen, Lords, and Commons."

Mr. Mechi believed that the feeling of the meeting was that there should be a valuation of, and compensation for, unexhausted improvements made by the tenant.

The discussion, throughout carried on in a most friendly manner, having been continued by Mr. Mechi, Mr. Catchpool, and other gentlemen, was eventually diverted by

Mr. Beaumont, who proposed "The Town and Trade of Coggeshall," coupling with it the name of Mr. King, whom he congratulated on having this year established a root show in the town.

Mr. King suitably returned thanks, remarking that he hoped the establishment of his root show would have the effect of leading farmers to endeavour to improve their root crops. He argued against growing roots too large, and said it was much better to grow six moderate sized ones than two large ones. By adopting this plan they got a better quality and more weight per acre.

Home Correspondence.

Milk as a Necessary Article of Food, &c.—If the opinions which I ventured to express in your paper of December 9 fail to commend themselves to the consideration of employers of farm labour, the report of the Brampton Bryan meeting (with a Member of Parliament in the chair) in your last will probably help to convince them that the subject has not been introduced too soon—that its importance is already felt by the labouring class themselves, and that unless some reasonable concessions are made to them on the point, they will soon be knocking at the door, and that loudly and persistently, with demands for concessions which many of us will think far from reasonable. Imagine the horror of many a farmer at having six or eight labourers, each demanding the keep of a cow, and not only demanding, but holding the power to enforce their demands. Let me ask, is it for a moment to be supposed that this class, who (in spite of much belief to the contrary, and, indeed, occasionally, appearances to support it) are really intelligent and reasoning beings, will long go on submitting to the privation entailed on their families by the want of this most useful, nay, invaluable article of food—necessary of life? Were it not so already, their eyes must soon become opened to its value as an article of diet. Seeing by the light of a superior intelligence and education, one of their first lessons will be the importance of a well arranged and economical diet, with those general principles of health preservation which are now "familiar as household words" in the mouths and minds of the educated and enlightened upper and middle classes; while the public press, teeming with its daily incidents of labour and capital conflicts, will teach them surely how to obtain what they demand. A real grievance is a standing danger; its redress is sure to come, and will probably be made the wedge wherewith to press home the demand for redress of a score more imaginary ones. Two quarts or so of once skimmed milk per day would not be a heavy payment in kind to each labourer; quantity may be regulated by number of family. I am aware that in many cases such a plan of selling milk to the labourers would be distasteful. The modern gentleman farmer of 500 or 1000 acres, in the magnitude of his capital, investments and returns, and his lady wife, who is, perhaps, ignorant of dairy work, would find the profits of a small dairy insignificant, and not at all worth the trouble it would entail. Such considerations, however, would not prevail universally. I know a clergyman who is not given to the habit of indiscriminate charity so much in vogue, but who keeps four or five cows, the milk of which, once skimmed, he has sold to the poor around him at a halfpenny per quart. I have seen it myself with a rich cream still on it—better than much of the new ordinarily sold in towns. Truly this is the essence of practical philanthropy, as compared with much of the dreamy beneficence that confines itself to preaching to the poor as to what they ought to do, and lamenting over them that they will not be wise and well off. Most employers would, I think, willingly substitute the shilling a week which some already give for the usual 2 quarts of beer a day. If the milk is not given in kind, but sold, let the labourer spend his shilling a week in milk, and contrast the result. At even double the Vicar's price, contrast 2 quarts of good skimmed milk with 2 quarts of such wash as is usually given and called beer. The one is the best of food and the other worth nothing. This is heresy, doubtless; but let us hear what an authority says whom few agriculturists will disregard, Liebig—"Supposing a man to consume daily 8 or 10 quarts of the best Bavarian beer, he will obtain from it in the course of 12 months no more than the same quantity of nutritive constituents contained in a 5 lb. loaf." If this is said of the "best Bavarian," what can be said of the beer usually given throughout the year (excluding the stronger harvest ale)? It is absolutely valueless. But let the substitute—2, or perhaps 3 quarts of milk (and here I would observe that once skimmed milk is not so much less in value than new as is generally imagined—the price of the two presents no fair criterion of their value)—be boiled up with just oatmeal enough to thicken it, and then poured scalding over a good proportion of "whole meal," or entire wheaten bread, and the hearts of the poor bread-winning couple would be much more frequently gladdened than they now are by the sight of the "attack" of the young troop, ending in "defeat," the cheeks in the meantime becoming gradually broader, and the ribs less distinct, while the foundation would be laid of a sturdy lot of workmen, who, by their greater power and better constitution, would be well able to earn the extra money that they are even now beginning to claim, and which they will inevitably ere long have to be paid. *J. W. Procter.*

An Old Controversy Revived.—Your notice of "Mr. James Howard" at p. 1659 calls for a few words from me. I read thus:—"In the spring of 1856 Mr. Howard was invited by Mr. Smith to go to Woolston to see his steam cultivator at work." In the spring of 1856 Mr. Howard, having heard what I was at, asked by letter (I have the letter by me) to be permitted to see my cultivator at work. I used him the same as I have done every other man, by permitting him to do so. He then offered to render me any assistance that he could give. I did not need any then, for at that time my implements, &c., were all made. I then read on thus:—"He at once offered to join Mr. Smith in bringing his apparatus before the public. Accordingly, in the same year, at the Royal Agricultural Society's meeting at Chelmsford, Mr. Smith and the Bedford firm were allied in working the Woolston tackle." This is not correct, for I showed my tackle at Chelmsford on my own account, strictly by myself; p. 281, stand No. 131, of the Royal Agricultural Society's catalogue for 1856, will prove it. It is true that he stood by, and that I tried in the presence of Mr. Amos a bit of his machinery for him, and that is all he had to do with me at Chelmsford. It was in the autumn following that I procured his aid as a maker of implements, to carry out an order that I had received from Lord Hatherton. Here is another extract:—"Finding, from the rapid wear of the rope, that without something more durable than iron wire steam cultivation would be financially a failure, he had one made of steel wire, which, we believe, was the first steel rope ever used in ploughing." This is giving to Mr. Howard more than is his due, for we had steel ropes before he ever made them; besides all that, the credit for the introduction of the steel rope is due to the man who made the steel wire, the mere twisting the rope is but a secondary part of the matter. And here is another extract:—"We have always regarded it as an unfortunate event for the country, that the misunderstanding, which occurred about 10 years ago, should have separated two such energetic, though differently constituted, men." For my own part I have no reason whatever to regret our separation; for I now see clearly—&c., &c. William Smith would not stand it, so he cut, and for a time was in the shade; since then Howard has stood upon his own merits—&c., &c. I have done without him, and my light shines clearer without his aid than it ever did with it, for now there is no mixed matter. My operations, costs, and results are known, and clearly before you, and there is no hint over the whole matter as to who aided me. I stand ready to farm 100 acres of clay land against him or anybody else, except those who use my implements, for £1000. *William Smith, Woolston, Bletchley Station, Bucks, Dec.* 23.

Farmers' Clubs.

HEXHAM.

The Relative Interests of the Landlord, the Tenant, and the People in the Soil.—A paper was lately read before this Club on this subject by Mr. Thomas Bell, of Hedley Hall, near Marley Hill, from which we make the following extracts:—The broad subject proposed for discussion is "The interest of the people in the soil." The people we propose to divide into three classes—1, landlords; 2, tenants; 3, the people who are neither proprietors nor cultivators of the soil.

Starting on the premise that all are interested in the soil to the extent of having food and raiment, it naturally follows that we are all deeply concerned whether the supplies of these products be scarce or abundant. Scarcity implies low rents to the landlord, empty pockets to the tenant, and dear food for everybody. It may therefore be safely assumed that the prosperity of any populous country will depend to a great extent on the products of its own soil. The country that imports these commodities must pay for them out of its own resources, and if able to produce them, must be impoverished unnecessarily to the extent that it imports. It must follow, that until a country has fully developed its agricultural resources it has never attained to its highest possible condition. Taking this, then, as the *summum bonum* of the nation, how can it be best brought about without interfering with vested interests? We may now proceed to consider the interests of the three classes separately.

1. *The Landlord's Interest.*—To a landlord who lets his land, the main point of interest must be its capital value. The proprietor has been aptly compared to a banker who lends out his capital to a customer at its market value. The land representing the capital, the tenant the customer, and the rent the interest. To this capital value all landlords in legal possession have an undoubted right, morally and legally. So long as the rights of any sort of private property whatever are mutually upheld and respected, so long will the right of the landlord to the capital value of his land be established. I must confess here that I have failed

to find any other interest in the soil to which the landlord can lay claim as an inalienable right, save this capital value, judging by precedent. Whatever portion of the soil can be proved to be absolutely required for certain public purposes—notably railways—the nation demands through Parliament that on payment of market value the owner must part with all interest in the portion required. The question not so easily settled is, for what public purposes may the nation demand a compulsory sale? Let us shortly glance at a few of the landlord's particular interests in the soil.

Mr. Bell proceeded to refer to the patriotic, political, and sporting interest of the landlord in his land. On the first he said:—Many of our old and noble families owe the possession of their estates to the prowess of their forefathers, who gained these estates either as a reward for gallant service in defence of king and country, or on condition that they would be ever ready when called upon to march at the head of an force they themselves should provide in the face of any enemy. This, as you all know, was part of the constitution of the old feudal system. It is unnecessary to say that the conditions under which these latter estates were held have vanished, leaving the descendants of these brave old warriors in possession, while they are only called upon to render such service as the State demands from all their fellow-countrymen. I am not here to justify this state of things, but we will do well to keep the fact before us as we go along.

On the political interest of the landlord he said:—The passing of the Ballot Bill by the House of Commons proves that this power is held by a very uncertain tenure, and also goes to show that some of the other conventional interests at present possessed by the landlords in the soil will only exist so long as the classes under discussion mutually agree as to their possession.

On the sporting interest:—This interest cannot now be classed amongst the undisputed privileges of a landed estate let out to tenantry. No landowner has the moral right to destroy the food of the nation without the consent of the people. It would easily be understood that were every landlord to convert his estate into a game preserve, the nation would have a perfect right to interfere.

Lastly, on the landlord's monopoly:—The present law for distraint for rent is one of the effects of this monopoly. What is know as the law of hypothec in Scotland has of late years been the subject of much discussion and inquiry. The Scotch law gives the landlord a much greater claim over the effects of a bankrupt tenant. In certain instances it empowers him to lay claim to the produce of the land after it has left the farm and been bought and paid for by other parties. So long as there was a difficulty in finding capital in the country this law might be advantageous. But now, when capital is everywhere seeking profitable employment, there can be no excuse for protecting the interests of one class at the expense of another.

2. *The Tenant's Interest.*—Assuming that the tenant is the customer of the landlord for his capital, the land, and the yearly rent the interest paid for such capital, this places us on the purely business relationship which exists between the two parties. Unfortunately this too often explains the whole relationship, it is a matter of money-getting. Although the mercantile aspect of the contract should be always definitely kept in view, yet the landlord and tenant ought to have a mutual interest in each other on account of the great interest they each have in the present and future treatment of the soil. It is only where this mutual interest exists that the highest fertility and greatest productiveness will be found.

The tenant-farmer's annual interest in the cultivated soil of Great Britain is much larger than the landlord's annual interest. We may suppose the average rent of arable land to be about 30*s.* per acre, but look over a highly cultivated farm about Midsummer and consider the interest of the tenant bound up in the soil at that time. It will be found to be from 5 to 10 times greater than the money value of the landlord's annual interest. Indeed, the products now raised cannot be said to be the natural produce of the soil. The old system of farming might be compared to a manufacturer with a natural water-power capable of enabling him to set up a certain power of machinery, and produce a limited quantity of goods. The modern system might be likened to the same factory, having added to its natural water-power an additional imported power, multiplying almost indefinitely its capabilities of production. It seems to me that it is this additional power brought to bear upon agriculture by the farmer, that needs the special attention of the nation. Is it desirable that it should be developed and extended? If so, what means would be likely to produce this effect? I would suggest, give the tenant security for his interest in the soil. The interest of the tenant in the soil is at present such that he would not be justified under any but the most favourable and exceptionable circumstances in maintaining the maximum fertility of the soil. Take a farm of 400 acres at a rent of 30*s.* per acre, fair market value, entered upon by an intelligent, practical farmer. It will be above the average of farms if it is not capable of improvement. What Dr. Chalmers has aptly described "The Margin of Cultivation," will not yield a rent if cultivated. It will not produce enough to pay its way. But by putting on additional capital much of the land outside this margin would pay the interest on such capital, yield a rent, leave a profit to the tenant, and a good produce to the nation. Suppose 100 acres of this farm to be lying in poor grass, wet, and valued at 7*s.* 6*d.* per acre. Suppose the proprietor judiciously expends £1000 in draining, fencing, clearing, &c.; this at 5 per cent. increases the rent to 17*s.* 6*d.* per acre. The production of this additional rent oftentimes requires considerable enterprise and energy on the part of the tenant. Such land left to Nature would be really worth little more for the draining for a few years, as a considerable amount of the grasses natural to wet land would die out, and not until the lapse of some years would the finer grasses fill the vacancies. The calculating tenant would say, "This land would pay for cultivation, but it would take a stiff outlay to do it justice. I am not sure of much return for the first few years, but it has a good subsoil, and I am sure it would pay eventually; but who knows whether either I or mine would reap the benefit of this outlay? I could perfectly trust my landlord and his agent. I am sure they would do me justice, but they are mortal. So a king may arise that knows not Joseph, and I may be turned out after I have put all this land into good condition. I certainly have an agreement for a proportion of the lime being repaid, and so much for cake, bones, &c., for the last year or so, and some other items, but that would be a poor return for all my outlay, labour, and anxiety. Why, I am sure in ten years I could make that land worth 27*s.* 6d. per acre; it is now dear at 17*s.* 6*d.* My cultivation would, therefore, increase its value 10*s.* per acre, which, on 100 acres, is £50 per annum I or somebody will receive as the result of my attention. £50 per annum capitalised is worth to me £1000. If I had to leave I probably would not get £100." If the tenant acts on commercial principles, he would here say, "There is here no security for investment, I must put no more in than I can take out." The consequence is, the land may never be worth more than 17*s.* 6*d.* per acre. The simple want of security here is permanent loss to all three classes. Suppose the tenant goes to work trusting to the future, improves his farm, and at the end of 10 years he has raised the annual value £100 per annum real value (making due allowance for any change in the value of money), which sum capitalised amounts to £2000. Owing to some combination of circumstances the tenant must quit. Now arises the all-important question, whose shall be the £2000? The law would say "the landlord's, of course!" Justice would ask who made it? and equity would reply "the tenant." It will be said here, a lease under ordinary circumstances, gives a farmer security that he will be repaid any judicious investmeuts. But we may fairly ask, does farming pay such a large percentage on capital, that the farmer can afford to give up a large proportion of its produce? Assuredly not! Yet that is what is yearly going on is apparent to every observant eye. If a tenant during his lease has increased the real value of his farm, at the end of the lease he finds he has improved against himself, he is placed on the horns of a dilemma, for he must either buy over again what his own capital has produced, or part with it to another without payment. According to the present law, the tenant-farmer's interest in the soil is not equal to the miller's interest in the corn that it produces, or the manufacturer's in that of its fleecy flocks. They are sure of obtaining their raw material at market value, and no matter how they invest their capital for producing food and clothing for the people, they can always command the market value for that capital. Not so with the producer of corn and wool. He may invest his capital to increase the production of food and wool, but what he invests in the soil has no market value to him. What he brings out he gets market value for, what he leaves he has no market for, therefore he is not justified in putting more in than he can take out. The tenantry of Great Britain may be fairly allowed to ask the question, Why do you grant a tenant-right to Irish farmers and leave us out in the cold? This Irish story may help to illustrate the case. An Irish gentleman was residing with a friend, and on a certain day a number of visitors arrived to stay overnight: there was a difficulty about accommodation. The good lady of the house said to her resident friend, "We'll have to do our best to make these strangers comfortable, so you, dear old friend, will just take the bed in the garret." "Shure and it's a mighty quare way you have of showing your friendship," said the friend; "better be a stranger than a friend here."

Granted that the Irish tenantry needed a tenant-right a little more, it cannot be said they deserved it better. Mr. Gladstone's definition of an unexhausted improvement was happy, and the correct one: "whatever increases the lettable value." No details or scales of lime, bones, cakes, &c., used will ever do an enterprising, energetic tenant justice. They take no account of how a man uses his brains in their application. If farmers participated in the permanent improvement of the soil they create, it would give such an impetus to agriculture in England as would surprise the most sanguine. Capital would flow into the soil from the tenantry, when they knew security was given that they should have their share of what it produced. Landlords would have their estates improved with that capital, and participate in the increased value. The landlord's interest must increase with the tenant's improvements, therefore a definite proportion only of the permanent increase of value must be allotted to the tenant. The labour market would be greatly benefited. The produce of the soil would be immensely augmented. Importation of food would be proportionately lessened. Capital that must have left the country as payment of that importation will be left for trade purposes. In short it is capable of demonstration that it would be greatly to the benefit of all classes of society to bestow on the tenantry of Great Britain that interest in the soil which justice demands and an equitable tenant-right would bestow.

3. *The People's Interest.*—Mr. Bell proceeded to discuss this subject, observing in the course of his remarks, on the relations between agricultural and commercial industry:—Unfortunately the tides of commerce and trade have their ebb and flow. So long as they continue to flow all is well, but when the ebb comes then is the fiery ordeal experienced by a thickly populated country, and more especially by that portion who have left the slow but moderately sure pursuits of agriculture for the "glorious uncertainties" of trade and commerce. This tendency to leave agriculture and join the hives of industry is thought by many people to be a source of great evil to us as a nation. We believe we are pointed to the Swiss and French peasant proprietors with their small holdings as models of thrift, industry, and comfort. So far as I can make out it is not that the provinces of Switzerland and France offer greater returns to the agriculturist than the soil of England, but because manufactures and commerce do not there offer sufficient inducements to cause the peasantry to leave the soil and enter their ranks. It would not be difficult to show that in any country where manufactures and trade flourish, and where there is free trade in food supplies, that land must inevitably fall into the hands of the wealthy, and those who make it their business to add field to field. Banish the love of money from the hearts of men, and things might be different. Suppose a man to be the owner of 50 acres, worth a rent of £75 per annum; suppose him to be further possessed of additional capital to cultivate it, he would, according to the Government mode of calculating a farmer's profits, add £32 10*s.* to his income by devoting his time and attention to the farming of his own land. A capitalist makes him an offer for his freehold at the rate of 30 years' purchase, which, with the stock in trade, would realise somewhere about £2700. An investment turns up for the money, offering 5 per cent. with good security. Here is a much larger income offered, with the additional value of whatever his time and talents might realize devoted to other pursuits. Trade or commerce might possibly hold out to him a prospect of 10 or 20 or even 30 per cent. for his capital. No man who aspires after an increase of income would be content with little over £100 a year from his land, when its capital value dangles constantly before him an income of, it may be, several hundreds. This may account for the sad fact that the sturdy yeomanry of England are gradually disappearing. The calculating, intelligent, small freeholder sells his land, the indolent and dissipated squander it. Under present circumstances the possession of the soil of England to any extent by small freeholders is, to say the least, highly improbable.

A tenant-right, such as we have proposed, would have a powerful tendency to increase the number of tenant-farmers in England. It is too much the custom of the tenantry of the present day to spread their capital over the greatest number of acres they can possibly stretch it, and they are consequently obliged to allow Nature to be their principal agent. The experience of farmers urges them in this direction. They find that the men who best develope the resources of the soil do not always make most money, and the reason is not far to seek. Such men permanently improve their holdings with a large outlay, and nothing but the value of a permanent interest in such improvements will adequately repay them. It will be seen at a glance that if compensation were secured to the improving tenant, improvements would rapidly multiply, and instead of capital being spread over too many acres, as it is now, it would be concentrated on what is capable of improvement.

We may inquire if any plan can be devised to bring back to the healthy influences of agricultural labour that portion of society who, though able-bodied, seem either unable or unwilling to earn an honest livelihood. Let us take two facts and place them side by side. Thousands of acres of uncultivated land in England, capable of profitable cultivation, and 200,000 men and women and their families, able to work, yet professing to be out of sufficiently remunerative employment to keep body and soul together. The question is, Can there be no way devised to bring together these two material substances that seem naturally made for each other? Intimately connected with this part of the subject is the question of waste lands and how to deal with them. It is pretty confidently affirmed by many profound thinkers that in the enclosure and appropriation of common lands that have been going on these last 50 years a large proportion of the poor of the several districts have been robbed of their inheritance. It looks, to say the least, suspicious that 3000 or 4000 acres should be parcelled out amongst existing proprietors, and perhaps 2 acres allotted to the poor. At the same time, the enclosure of commons and making them real property, either individual or corporate, is an undoubted benefit to the country. My experience in connection with an extensive unenclosed common led me to the conclusion that commons are one of the best nurseries for producing a thriftless, indolent, dishonest population —the most certain way of keeping land in its primitive condition, or of having its cultivated portions thoroughly impoverished. Some of that land which before the enclosure was not worth a rent of 5*s.* per acre has since been let for £3 per acre, and hills and valleys that were literally deserts have been converted into fruitful fields. Where they are conveniently situated, might not land and institutions be provided where destitute persons might be able to earn money, and where vagrants would find that food, lodgings, and clothing could be had for working, but under no other conditions? The town of Hexham seems to have, at present, a peculiarly favourable opportunity for trying an experiment on a small scale. I see, from the papers, it is proposed to provide a scheme for disposing of Tyne Green for some public purpose for the advantage of the inhabitants of the town of Hexham. Now, what could be more to the advantage or credit of the inhabitants than their Local Board providing employment on Tyne Green for their destitute able-bodied poor, thereby giving those a chance who were willing to earn an honest wage, and would assuredly keep the town rid of those notorious scoundrels known as professional vagrants.

The North-Eastern Reformatory at Netherton, near Morpeth, affords a striking example of how productive employment may be found on poor land for one class of society that needs to be taken in charge by the nation, viz., juvenile criminals. There 150 lads may be seen, drawn from the very scum of society, learning what in their class may be called the art of honest, productive labour. A large proportion of them wear the hue of health on their cheeks, and show well-developed muscles, affording a striking contrast to the pallid cheeks and flabby appearance of the corresponding class to be seen in our workhouses. The institution commenced with 40 acres of land, but a short experience warranted the committee in making considerable extensions, and two years ago they further enlarged their borders, and now farm 486 acres. It is no libel on a certain portion of this recently acquired land now in process of being broken up to say, that for agricultural purposes it is in its present condition valueless. No manipulation will make it produce a crop that will repay cultivation until the infusion of some powerful fertilising agency. The annual application of about £200 worth of town manure which the farm receives, in addition to the quantity made upon the farm by the extended system of feeding (38 head of cattle were at the time of our visit upon full feed, Turnips, cake, and meal), together with the trenching and system of spade husbandry carried out, is rapidly changing the whole aspect of the place. The farm accounts for the last year show a balance in favour of the institution. About 71 per cent. of the lads discharged are known to be doing well, which fact affords the best proof of the practical benefit the institution confers upon society. It is devoutly to be wished that the Reformatory at Netherton will prove the pioneer of many similar institutions. There the problem has been solved how to provide honest, productive labour on the soil for a class who would never either seek or find it anywhere but under compulsion. Society would rid itself of a great burden by extending this provision to other classes whose liberty of action has furnished proof that they mean to live by preying on their fellow-creatures. It is not beyond the bounds of probability that schemes will be hereafter carried out on a very extensive scale for the cultivation of unreclaimed lands by public companies, who, with Parliamentary powers and Government aid, will buy up such lands, build, plant, and cultivate, not solely for aggrandisement, but from commercial and philanthropic motives combined, composed of persons who will endeavour to make it impossible for any one to say in their hearing or district that they cannot find employment.

Notices of Books.

Elements of Agricultural Chemistry and Geology. By James F. W. Johnston, M.A., F.R.SS.L. and E. Ninth Edition. Revised and Edited by G. T. Atkinson, B.A., F.C.S. W. Blackwood & Sons.

This little book is, as regards the main bulk of it, as it was when Professor Johnston left it. Of the corrections and additions which seemed necessary, some are taken from notes left by the late Professor Johnston, others from various sources. An index has been added, and two or three woodcuts have been replaced by new ones.

It is hardly-necessary that we take any pains to describe and characterise a work of which more than 10,000 copies have been already sold. That, perhaps, is best done by taking an extract from its pages, and we shall select one on a subject connected with which some controversy has already taken place, both as to the true theory involved, and as to the credit for originality due to the various writers, of whom Prof. Johnston was one of the earliest who wrote on this subject a quarter of a century ago :—

Land Drainage.—"The first step to be taken in order to increase the fertility of nearly all the improvable lands of Great Britain, is to drain them. The advantages that result from draining are manifold.

"1°. The presence of too much water in the soil keeps it constantly cold. The heat of the sun's rays, which is intended by Nature to warm the land, is expended in evaporating the water from its surface; and thus the plants never experience that genial warmth about their roots which so much favours their rapid growth.

"The temperature which a dry soil will attain in the summer-time is often very great. Sir John Herschel observed, that at the Cape of Good Hope the soil attained a temperature of 150° Fahrenheit, when that of the air was only 120°; and Humboldt says that the warmth of the soil between the tropics often rises to from 124° to 136°.

When the land is full of water, it is only after long droughts, and when it has been thoroughly baked by the sun, that it begins to attain the temperature which dry land under the same sun may have reached, day after day probably for weeks before.

"2°. Where too much water is present in the soil, also, that portion of the food of the plant which the soil supplies is so much diluted, that either a much greater quantity of fluid must be taken in by the roots—much more work done by them, that is—or the plant will be scantily nourished. The presence of so much water in the stem and leaves keeps down their temperature also, when the sunshine appears—an increased evaporation takes place from their surfaces—a lower natural heat, in consequence, prevails in the interior of the plant, and the chemical changes, on which its growth depends, proceed with less rapidity.

"3°. By the removal of the water, the physical properties of the soil, also, are in a remarkable degree improved. Dry pipe-clay can be easily reduced to a fine powder, but it naturally, and of its own accord, runs together when water is poured upon it. So it is with the clays in the field. When wet, they are close, compact, and adhesive, and exclude the air from the roots of the growing plant. But remove the water and they gradually contract and crack in every direction, become thus open, friable, and mellow, more easily and cheaply worked, and pervious to the air in every direction.

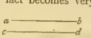
4°. The access of this air is essential to the fertility of the soil, and to the healthy growth of most of our cultivated crops. The insertion of drains not only makes room for the air to enter by removing the water, but actually compels the air to penetrate into the under parts of the soil, and renews it at every successive fall of rain. Open such outlets for the water below, and as this water sinks and trickles away, it will suck the air after it, and draw it into the pores of the soil wherever itself has been.

"Vegetable matter becomes of double value in a soil thus dried and filled with atmospheric air. When drenched with water, this vegetable matter either decomposes very slowly, or produces acid compounds more or less unwholesome to the plant, and even exerts injurious chemical reactions upon the earthy and saline constituents of the soil. In the presence of air, on the contrary, this vegetable matter decomposes rapidly, produces carbonic acid in large quantity as well as other compounds on which the plant can live, and even renders the inorganic constituents of the soil more fitted to enter the roots, and thus to supply more rapidly what the several parts of the plant require. Hence, on dry land, manures containing organic matters (farmyard manure, &c.) go farther or are more profitable to the farmer.

"5°. Nor is it only stiff and clayey soils to which draining can with advantage be applied. It will be obvious to every one, that when springs rise to the surface in sandy soils, a drain must be made to carry off the water; it will also readily occur, that where a sandy soil rests upon a hard or clayey bottom, drains may likewise be necessary; but it is not unfrequently supposed, that where the subsoil is sand or gravel, thorough draining can seldom be required.

"Every one, however, is familiar with the fact, that when water is applied to the bottom of a flower-pot full of soil, it will gradually find its way towards the surface, however light the soil may be. So it is in sandy soils or subsoils in the open field—all possess a certain power of sucking up water from beneath. If water abounds at the depth of a few feet, or if it so abound at certain seasons of the year, that water will rise towards the surface; and as the sun's heat dries it off by evaporation, more water will follow to supply its place. This attraction from beneath will always go on when the air is dry and warm, and thus a double evil will ensue—the soil will be kept moist and cold, and instead of a constant circulation of air downwards, there will be a constant current of water upwards. Thus will the roots, the under soil, and the organic matter it contains, be all deprived of the benefits which the access of the air is fitted to confer, and both the crops and the farmer will suffer in consequence.* The remedy for these evils is to be found in an efficient system of drainage.

"6°. It is a curious and apparently a paradoxical observation, that draining often improves soils on which the crops are liable to be burned up in seasons of drought. Yet, upon a little consideration, the fact becomes very intelligible. Let *a b* be the surface of the soil, and *c d* the level at which the water stagnates, or below which there is no outlet by drains or natural openings. The roots will readily penetrate to *c d*; but they will in general refuse to descend farther, because of the unwholesome substances which usually collect in water that is stagnant. Let a dry season come, and their roots having little depth, the plants will be more or less speedily burnt up. And if water ascend from beneath the line *c d*, to moisten the upper soil, it will bring with it those noxious substances into which the roots have already refused to penetrate, and will cause the crop to droop and wither. But put in a drain, and lower the level of the water to *e f*, and the rains will wash out the noxious water from the subsoil, and the roots will descend deep into it; so that it a drought again come, it may parch the soil above *c d*, as before, without injuring the plants, since now they are watered and fed by the soil beneath, into which the roots have descended.



"7°. In many parts of the country, and especially in the red-sandstone districts, the oxide or rust of iron abounds so much in the soil, or in the springs which ascend into it, as gradually to collect in the subsoil, and form a more or less impervious layer or pan, into which the roots cannot penetrate, and through which the surface-water refuses to pass. Such soils are benefited for a time by breaking up the pan where the plough can reach it; but the pan gradually forms again at a greater depth, and the evils again recur. In such cases, the insertion of drains below the level of the pan is the most certain mode of permanently improving the soil. If the pan be now broken up, the rains sink through into the drains, and gradually wash out of the soil the iron which would otherwise have only sunk to a lower level, and have again formed itself into a solid cake.

"8°. It is not less common, even in rich and fertile districts, to see crops of Beans, or Oats, or Barley, come up strong and healthy, and shoot up even to the time of flowering, and then begin to droop and wither, till at last they more or less completely die away. So it is rare in many places to see a second year's Clover crop come up strong and healthy. These facts indicate, in general, the presence of noxious matters in the subsoil, which are reached by the roots at an advanced stage of their growth, but into which they cannot penetrate without injury to the plant. The drain calls in the aid of the rains of heaven to wash away these noxious substances from the soil, and of the air to change their nature, and this is the most likely, as well as the cheapest, means by which these evils can be prevented.

"9°. Another evil in some countries presents itself to the practical farmer. Saline substances are in certain quantity beneficial, nay, even necessary to the growth of plants. In excess, however, they are injurious, and kill many valuable crops. I have already adverted to the existence of such saline substances in the soil, and to the fact of their rising in incrustations to the surface when droughts prevail.

In some countries, as in the plains of Athens, and near the city of Mexico, they come to the surface in such quantity as actually to kill the more tender herbage, and to permit only the stronger plants to grow. In the plains of Athens, when the rainy season ends, a rapid evaporation of water from the surface begins. The water, as it rises from beneath, brings much saline matter with it. This it leaves behind as it ascends in vapour, and thus at length so overloads the surface-soil that tender grass refuses to grow, though the stronger Wheat plant thrives well and comes to maturity.

"This result could scarcely happen if an outlet beneath were provided for the waters which fall during the rainy season. These would wash out and carry away the excess of saline matter which exists in the under soil, and would thus, when the dry weather comes, prevent it from ascending in such quantities as to injure the more tender herbage.

"It may be objected to this suggestion, that drains in such countries would render more dry a soil already too much parched by the hot suns of summer. It is doubtful, however, if this would really be the case. Deep drains, as in the case above explained (6°), would enable the roots to penetrate deeper, and would thus render them more independent of the moisture of the surface-soil.

"10°. On this subject I shall add one important practical remark, which will readily suggest itself to the geologist who has studied the action of air and water on the various clay-beds that occur here and there, as members of the series of stratified rocks. There are no clays which do not gradually soften under the united influence of air, of frost, and of running water. It is false economy, therefore, to lay down tiles of the common horse-shoe form without soles, however hard and stiff the clay subsoil may appear to be. In the course of ten or fifteen years, the stiffest clays will generally soften so much as to allow the tile to sink to some extent—and many very much sooner. The passage for the water is thus gradually narrowed; and when the tile has sunk a couple of inches, the whole may have to be taken up. Thousands of miles of drains have been thus laid down, both in the low country of Scotland and in the southern counties of England, which have now become nearly useless. The extending use of the pipe-tile will, it is to be hoped, gradually lessen the chances of pecuniary loss which the above practice involves."

Farm Memoranda.

West Sussex: *December* 16.—We have now got to the dullest time of the year for the farm. Wheat is all sown, and coming up very slowly. The weather has been very sharp for some time: we have not had much snow, but a long continued dry frost, which has now given place to dull, mild weather. Our fat stock and root show has passed, and as usual is going down; there were only eight or ten beasts, four or five pens of sheep, with two of pigs, but they were all good. It is remarked by the local papers as a strange thing that there should be one of the smallest shows connected with one of the largest markets in the south of England, but West Sussex is not over lively in any public matter. There is plenty of good land, and, as a rule, it is well farmed, but everybody appears to mind their own business and leave national affairs to shift for themselves. Work is all well forward, and perhaps the labourer will not be so fully employed as he sometimes is.

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* A few miles south of the town of Elgin, in Morayshire, I was shown a tract of land on which the crops were usually three weeks later than on another tract, separated from it by a small stream. Beneath the former was a pan at a depth of 3 feet, which prevented the surface-water from sinking beyond that level, and thus retarded the growth of the crop.

By-the-by at this time we hear a good deal of talk about treating the agricultural labourer better in every way than he is at present. One party says give him a better cottage, a bit of land, a cow, and a pig. Well that is all right, and it is well that the labourer is so well cared for, but some of our advisers might turn their attention a little nearer home: some of them may have property in towns, and how about the accommodation there? Why, by the side of a hedge, without a cover, in the country, seems to be better than the homes of many in towns. Now we have had plenty of advice from "men who live far off in large towns," and perhaps we needed it, but now it is time to say "Physician, heal thyself." Surely it is somebody's business to look after the habitations (?) in towns, and might we not recommend them not to waste as they do, and to see that their cottagers are properly housed, and have three bedrooms and two or three downstairs for each family? Would not this be a revolution? And if not, why not?

But this is hardly a report of West Sussex farming, only, as there is not much at this season to report, and as it is the time for wishing well to all, and as cottagers in West Sussex are pretty well provided for in the way of room, we can only wish everybody as well off in this respect.

When we are advised to farm better, we become debtors to that; but when it is pay and house your labourers better, we can return that advice, and pay off our score. Of course, "Our Own Correspondent" may come among us, and find many things not as they ought to be, and he can get about among us without fear; but he hardly dares enter the locality where the city cottages are built, certainly not unless the pair of policemen are near. And now we will promise to attend to the gratis advice that we have so often received for the next year, and let all our aristocratic and city monitors turn their attention to their own more urgent cases. *G. S.*

BANFFSHIRE, BOYNE DISTRICT: *December* 25.—We are enjoying excellent weather for the season of the year, consequently farm work is well forward. Lea-ploughing is almost finished, and during last week many of the farmers having clay land in Turnips have ploughed all that was clear, as it was in excellent condition, and will get a chance of the frost to pulverise it before sowing time.

We can now boast of a steam-plough in Banffshire, and in the "Boyne," too. Tochineal, a farm once famous for its whisky distillery, is now famous for its being the first in this county to have a steam-plough. The soil is a very stiff clay, but the fields are large and open, having water at almost every corner of them. The tackle was supplied by Amies & Barford, and is doing its work in good style, and is being visited daily by farmers from a great distance, who pronounce the work done to be very satisfactory; besides the plough there is a Smith's cultivator and harrows. Our neighbours, the Aberdonians, have taken the hint, and are taking the subject under consideration, and we believe, before another year passes, five or six sets will be in operation in that county. Two or three are ordered from the makers already; one, the same as the Tochineal set, is ordered for the farm of Mains of Towie, in Auchterless parish, and is to be forwarded for spring work. "The canny Scots are slow but sure."

The past two frosty winters have taught a useful lesson on the Turnip crop. The greater part of the crop in this district is all secured in many different ways. Like other counties we have a great many cases of foot-and-mouth disease, otherwise our live stock is doing well and paying; and although prices are now somewhat down, if not rack-rented, with beef and grain as it is, a living can be made. Draining is the principal improvement which is going on in this district, which creates a great deal of labour for the working class, who have been very fortunate, having had scarcely a broken day since harvest, and good wages. So on this excellent Christmas day I wish you, Mr. Editor, and all the readers of the *Gardeners' Chronicle and Agricultural Gazette*, a Happy New Year. *William Joss.*

SANDRINGHAM.—[We abridge the following report by the Special Correspondent of the *Times*, which appeared in that journal of Wednesday last.]

The Sandringham estate consists of about 8000 acres, and includes the parishes of Babingley, West Newton, and Wolferton, with part of Deringham. It is rich marsh land where it joins the sea near Wolferton; black sand upon car-stone towards the middle of the estate, and light loam upon chalk, adapted for Barley and roots, at the east end, towards Anmer. The estate was purchased by the Prince in 1862.

At Sandringham and West Newton, we find about 7 or 8 feet usually of the black sand upon car-stone. In 1861 this village contained, according to the *Diocesan Calendar*, a population of 300. The census of April, 1871, shows a population of 330, but an enumeration of the population which I was enabled to take on Saturday, the 23d current, showed a population on that day of 295. This points at once to what has evidently been a source of some of the troubles of the village—an influx of lodgers into a village not fitted to receive them, although it has since the Prince came into possession of the estate rapidly grown into more favourable residential conditions.

Attention has been prominently drawn to some ill-built and badly-arranged cottages. They do not present a fair sample of the present state of the village, nor, unless the whole facts are known, is it possible to draw a just deduction from that which has been said concerning them. The number of inhabited houses this day in West Newton is 62. In this village, however, there are two small freeholds belonging to small proprietors, and on which are erected in all 16 cottages, so that the Prince's property in West Newton includes 46 cottages. Of these 26 are entirely new erections since he came into possession. Prior to that time the village consisted of a number of cottages which are described to me by the rector and others as having been miserable huts like Irish hovels, most of them with one living room and one sleeping room only, many of them destitute of the most necessary sanitary conveniences, and not three in the whole parish having two bedrooms. Of these cottages 17 have been pulled down during the last six years, and 26 new cottages built. Three more are to be pulled down. Of the increase of the amount of accommodation thus afforded an opinion may be formed from the fact that for a population of the same number the number of bedrooms in the cottages of the old property was 25, in place of which there have now been provided 67, an increase of 175 per cent. in the amount of sleeping room. The improvement in quality is even more marked than the increase in quantity. Of the new cottages in the village there is a row of eight, called the Alexandra Cottages, a group of nine called the Louise Cottages, four cottages designed for old people, and a group of four cottages not yet named.

Of these the Alexandra Cottages were first built, and a brief sketch of these will answer also for the Louise Cottages, which very much resemble them. They are all two-storied cottages, built in the rustic Gothic style, of pleasing elevation, provided with a porch and ample accommodation, built of car-stone, with white and red brick facings, having 14-inch walls, with concreted foundation. Each cottage has on the ground floor a front living room, about 12 by 14 feet, and 9 feet high, well lighted; a back kitchen provided with an excellent cooking stove, oven, and copper, a pantry, and coal-house; above are three good bedrooms, two with fire-places. Detached from the house is a brick out-house, with kindling shed and sanitary conveniences. Each cottage has 30 perches of garden ground, and some of them have as much field allotment.

The water supply—and here we come to the weak place in the arrangements—is from a well 16 feet deep, cut through about 8 feet of sand, and then on the car-stone; it is brick built, and within 20 feet of the cesspool, and was within 7 feet of a midden or kitchen heap. The purity of this water has been impugned; and, from the analysis which has been published, it would appear, not without good reason. The Louise cottages are built precisely on the same plan, except that they have the further advantage of having well-spouted roofs, which collect the rain-water, and that each house is furnished with a pump connected with the sunken and covered rain-water tank. The well here is 23 feet deep, and on Saturday contained 7 feet of water. The garden houses are 100 feet away at the bottom of the garden, and so are better placed than at the Alexandra Cottages, where they are too near the houses. The cottages for old folks have the bedroom on the same floor as the living-room, and are altogether arranged for the comfort of the old people who are placed in residence. They afford evidence of the characteristic kindness and liberality which preside over all the arrangements of the estate. The rents of the Alexandra and Louise Cottages, with all their comforts and conveniences, and with their five rooms, garden ground and allotments, are not higher than were those of the two-roomed huts which they have replaced, or the poor and scanty tenements still existing in the village on the small freeholds to which I have referred.

In going through these new cottages it was pleasant to find them for the most part clean and well kept, and sometimes singularly neat. Many of the garden grounds, also, were evidently properly valued and carefully cultivated. But not all, and it is evident that some of the cottagers do not appreciate at its worth all that is done to help them and to enable them to help themselves. I was told, however, that a considerable improvement in this respect has been effected all over the estate by the influence of a Cottager's Garden and Flower Show for the estate, which is annually held in the Park in September, under the auspices of the Prince and Princess and the clergymen and leading tenantry. Prizes are given to the value of £10 for the three cleanest and neatest cottages and gardens in each parish on the estate.

The report then proceeds to discuss the vital statistics of the village. It appears that there has been no fewer than 10 deaths from typhoid and scarlet fever in 1871. I find that in 1869 there was only one death in the parish, and that from an accident. In 1868 there were eight deaths, of which three were from diphtheria. Moreover, there has not been any death either from typhoid or scarlet fever in any of the 25 new cottages which the Prince has built. No case of typhoid has occurred in them at all, and this is especially significant of good residential and sanitary conditions, although, unless the quality of the drinking water be carefully examined, no one can say that it might not occur. What is still more significant is, that although scarlatina was imported into the village and ran through all the Alexandra Cottages, no death occurred. The most excellent residential conditions and purity of air, soil, and water, will not afford immunity from "catching" diseases such as scarlatina, which can only be successfully dealt with by isolation; but cleanliness, ventilation, and sound hygienic conditions greatly lessen their mortality, and this is the moral which may be drawn from the comparative immunity from death of the Prince's tenants in these cottages.

The black spots of the village are in the cramped and sometimes over-crowded portions, over the greater part of which the Prince's agent has no control. Thus one of these small properties consists of two blocks, one containing four and the other three cottages. Three out of the first four have only a single bedroom. In one of these cottages there have been living father and mother, an adult daughter with her two illegitimate children, and five of her brothers and sisters, from a lad aged 16 to a child aged five—in all ten. In a double cottage on this freehold—or, rather a cottage divided in two—there lived in one half-cottage, having a living room about 12 feet square, and a sleeping room over it, a family consisting of father and mother, eldest son of 21, married daughter and son-in-law, and five little children—in all five adults and five children. The two rooms thus crowded appear to have been poisoned with contiguous filthy nuisances, and in January, 1871, the eldest son, aged 21, was attacked with typhoid fever, and died; in March the mother, aged 43, and in April the married daughter, aged 20, died of the same disease—filth fever, as it is emphatically named by Dr. Murchison and Mr. Simon.

Experience teaches us to look for pollution of the wells and water supply in every outbreak of typhoid fever as the most common cause of the disease. Mr. Barrett, of Grimston, the Poor-law medical officer of the district, makes the following valuable observations on this subject:—

> "As to the depth of the wells, there are at least two water-bearing strata, besides that supplying the surface water; for at the top of the hill the water is 15½ feet from the surface, while near the bottom of the hill it is 32 feet from the surface. Lower still, the water is only 2 feet from the surface. So the wells are not all shallow.
>
> "There have been two epidemics of typhoid in the village, one beginning in 1860, the other in 1870, each in the month of September. In each outbreak of fever there were two different centres of the disease, each centre using a separate well. There were, therefore, four different wells open to question, which I will name after the people using them, giving the measurement from the ground to the top of the water, as follows:—Dye's, 32½ feet, near bottom of hill; Melton's, shallow, now replaced by a deeper one, top of hill; Boughen's, 2 feet, bottom of hill; Smith's, 9½ feet, on the fall of the hill.
>
> "Smith's well has been analysed, but neither Boughen's nor Dye's; and if we are to look to the wells for the source of this disease, it would be interesting to know what their analysis would reveal, especially as each comes from a different stratum."

The circumstances connected with the supposed outbreak of diarrhœa and enteric fever among the visitors to Londesborough Lodge have directed public attention to the fertile source of disease in the pollution of air and water by sewer gas, from ill-ventilated drains, and from the ill-arranged inlets of sewers within dwelling houses. I am not without hope that the present report on enteric fever in West Newton will serve an equally beneficial purpose by attracting equal attention to that well-known, but much neglected source of typhoid, diarrhœa, and cholera—the pollution of wells by penetration of foul matter through the soil.

Typhoid fever, it is known, is essentially the fever of the country as typhus is that of great cities. It attacks every year in this country about 100,000 people, of whom it kills from 20,000 to 25,000. They for the most part absorb the poison by drinking water polluted with sewage.

The report concludes with a reference to the great improvements effected in the estate since Sandringham became the property of the Prince of Wales. The large number of new cottages which he has built have every comfort and every provision for health and domestic propriety. They have been built at a considerable expense; they are let at very moderate rents. The rate of earnings has risen considerably meantime, from the increased demand for labour. Every inducement is held out to neatness, cleanliness, order, and good conduct. West Newton has been provided with a school, towards which the Prince and Princess of Wales contribute half the cost of maintenance, besides many little encouragements in the way of school feasts, at which they personally attend and take their share in making the little ones happy, as well as annual gifts of cloaks. The Princess, during her residence at the Hall, comes frequently to the schools and takes a class, and the little ones are well accustomed to her kindly and gracious presence. For the sick there is an organised system, by which doctors and clergy alike can and do draw directly upon the Hall for every comfort which is needed, and for the minor luxuries which alleviate sickness and hasten cure. A spirit of intelligent thoughtfulness and kindness pervades the whole management of the estate. The schools of Sandringham parish are maintained not less liberally than that of Newton. Of the game which is shot upon the estate a large part is presented by the Prince's direction to the county and other hospitals. What is done is carried out merely by the efficient execution by General Knollys and Mr. Beck, and by the rectors of the parishes, of the Prince's general directions. It is done indeed in great measure under his own supervision, by his own wish, and according to his own plans, and the great improvements which have been made on the estate are due to his own active fulfilment of the highest duties of a landed proprietor.

The Week's Work.

DECEMBER 30: *Farm Accounts.*—With the close of the year tradesmen's bills are paid, new inventories made, and the books balanced. The increased expenditure in cake and manure bills, the amount of capital invested in implements and machinery, and the annual outgoings for repairs, as compared with former times, which the balance-sheets of some farmers show, would hardly be credited. The inventory for the ensuing year requires to be carefully made, otherwise the accounts and balance-sheets are worse than useless. The assumed calculations of farm capital actually invested too often lead astray as to the capital required per acre on farms of different sizes, qualities of land, and modes of farming, from a too hurriedly made out inventory. The productive state of the land from cultivation, the quantity of manure on the land, and the tear and wear on implements and machinery, including the tear and wear on the teams, are questions that require a careful solution before anything satisfactory can be arrived at. Two plans in use present an interesting contrast, viz., the fireside calculations of the amateur, and the off-hand estimate of the farmer who keeps no books at all, but who concludes that he is worth so much more or less than he was last year, or he may be worth about the same; and however much the latter is out of date, it, in nine cases out of ten, merits more confidence practically than the former. The contrast evidently shows that were the farmer's books properly kept the conclusion would be the other way.

Trenching and Planting, reclaiming waste land, and deepening shallow, rocky, and stony soils already under the plough, by trenching that cannot be done by steam or horse power, are works favourable for the close of the old year, and commencement of the new, weather permitting. In most places hands are more easily got now than earlier, and wherever such is the case, the works of trenching and deepening should be pressed forward with all the strength at command in places where not frozen out. Large areas of waste land are too full of stones and the like to be broken up by the plough, but may be profitably trenched, and what will not pay for being kept permanently under ordinary crop cultivation may be planted with young trees suitable to the soil and climate, or with Gorse, should such pay better. Shallow rocky soils are deepened, either by trenching out the rock or by carting on fresh soil, and not unfrequently both—the former (trenching) being necessary to remove portions of the rock that crop out to the surface, and the latter (earth) carted on to level and supply soil sufficiently deep for tillage and the roots of plants. In some rocks the roots penetrate freely into crevices, but even in such cases the staple should not be less than from 15 to 18 inches in depth.

Thorn and Beech Hedges plant as soon as the thaw comes. The land, if wet, should have a drain on each side from 6 to 10 feet from the hedge—it should be trenched 2 feet deep, and be well manured with lime compost. The healthiest hedge grows on the flat, but banks and ditches are sometimes necessary to protect them. If planted on a bank between two open ditches, trenching may not be required unless there is moorband; but grown thus the young plants are more exposed, and stand more in need of manure. Some plant two rows vertically on the top, others level the bank when half made, lay two rows of plants horizontally, with the roots to each other, and cover when finishing the bank. The former is the more natural, as the roots will not grow horizontally; but the latter is best for soils that require the roots to spread over a greater surface.

Carting push forward at every opportunity.

Brood Mares.—What was said of *Farm Horses* on the 23d inst., and something more, applies to brood mares, for they often endure enough hardships at this season to kill them, and this happens as frequently to those not worked as to those daily in harness. The fœtus now begins not only to draw largely upon the daily sustenance of the mare, but also to weigh heavily upon her physical energies in a twofold manner when she is in harness. Mares kept for breeding only generally suffer, not more from the changeable nature of the weather than from improper food and household accommodation. Field grazing, with open yards and hovels to go under at night, are out of date; what the brood mare requires is rich but not bulky food, in a well-ventilated and lighted loose-box, with gentle grooming and moderate exercise daily.

Ewe Flocks always require careful attention at this time of the year, and both before and after lambing, in our southern counties. Those out-of-doors will require more hay and corn in the field. Lambing ewes should be fed indoors, and afterwards never allowed a run of the flushy green pastures with an empty stomach.

Obituary.

WE regret to announce the death of Mr. T. E. PAWLETT, of Beeston, Sandy, Beds, in his 72d year. He was a well-known breeder both of cattle and sheep; his Leicester flock not only stood very high in the showyards, but was much sought by breeders, and realised a high average when dispersed 12 years ago. The herd of Shorthorns for which he has since 1860 been well known both at the Royal and county meetings was started with some of Mr. Adkins' Charmers, and animals of Bates blood from Mr. Phillips. These were sold off, and the present herd is bred entirely from two Booth families, the well-known "Mantalini" and "Fame" tribes. As Mr. Pawlett leaves no issue, it is understood his entire effects will come to the hammer during the spring, including, of course, his herd of Shorthorns, containing several prize winners and choice animals by Booth bulls.

Mr. Pawlett was an occasional contributor to our columns, and to the pages of other agricultural periodicals. He was an observant and considerate man, and his thoughtful and careful reports, whether of direct experiment or of past experience, belonged to the very highest class of such writings, being the result of patient and conscientious work by a most trustworthy and practical man.

Notices to Correspondents.

COWS: *Carry.* The cows have been probably already nine months at the pail, and being due to calve in April and May next they are naturally drying off their milk. Some cows will milk on to near calving, but it is not desirable they should. Perhaps if you were to give them brewers' or distillers' grains in place of a portion of the hay, and more Mangel, or other succulent food, they might be less prone to get prematurely dry.

FARMYARD MANURE: *F. W. Arundell.* Dr. Voelcker's writings have corrected the prevalent teaching on this subject. Farmers have always spread manure broadcast over grass land and over arable land without much hurry to cover it in in the latter case, and they had always been blamed by scientific men for the practice. Dr. Voelcker has, however, shown that the process of destruction and evaporation which goes on when manure is spread is very slow indeed, that there is very little loss of ammonia during it, and that the rain washes into the land anything soluble almost as rapidly as it is formed. The process of destruction will be almost entirely suspended during frost, and you may therefore top-dress your land in winter without fear.

STABLE DUNG: *Cheltenham.* Five-fanged dung is very much injured. The best way to save the stable dung is to throw every day's portion on to the end of a ridge-formed heap standing on about 4 yards width of land, and piled up ridgewise as steep as it will lie, covering it up on both sides with earth as it daily lengthens. It keeps the manure of its full original goodness, and saves it from the injury of five-fanging, which is owing to excessive local fermentation.

Markets.

SEED MARKET.

Our markets are now quite of a holiday character, and the business passing is in consequence exceedingly limited. It is quite certain that of English Clover seed the crop is very small, and the quality for the most part unusually poor. From France little or no seed can be expected. Germany has shown her deficiency by her large importations from the States. America will, without doubt, be the chief source of supply during the approaching season. Cable advices just to hand from New York describe the market there as very firm. Alsike, white Clover, and Trefoil seed are held at extreme rates. For winter Tares there is no demand whatever. Foreign Italian and perennial Rye-grasses are steady, at the high rates recently touched. For Hemp and Canary the trade is very quiet. Blue Peas are cheaper. Linseed is in good request. Rape and Mustard are dull.

JOHN SHAW & SONS, Seed Merchants,
37, Mark Lane, London, E.C.

MARK LANE.

WEDNESDAY, Dec. 27.

The grain trade to-day ruled heavy. There was a small show of English Wheat, and from abroad also the supplies were limited. In both red and white produce sales were effected slowly, at about previous currencies. Barley was purchased to a small extent at drooping prices. Malt was dull, and occasionally cheaper. The supplies of Oats on the stands were good. Trade was quiet, and prices in some instances were slightly reduced. Beans and Peas were difficult to dispose of on former terms. For Flour there was scarcely any inquiry, and prices remained nominal.

PRICE PER IMPERIAL QUARTER.	s. s.		s. s.
WHEAT, Essex, Kent, Suffolk . . White	54—59	Red	54—57
— fine selected runs . . . . do.	57—61	Red	56—58
— Talavera	59—63		
— Norfolk	—	Red	—
— Foreign	51—69		
BARLEY, grind. & dist., 26s to 31s . . Chev.	38—40	Malting . .	33—38
— Foreign . . grinding and distilling	28—31	Malting . .	—
OATS, Essex and Suffolk	20—23		
— Scotch and Lincolnshire . . Potato	25—27	Feed	—
— Irish . . . . Potato	24—26	Feed	20—22
— Foreign . . . . . . Poland and Brew	22—26	Feed	14—19
RYE	31—33	Foreign . .	—
RYE-MEAL, Foreign			
BEANS, Mazagan . . . . 33s. to 35s. . . Tick	35—50	Harrow . .	35—50
— Pigeon . . . . 38s. to 59s. . . Winds	—	Longpod .	—
— Foreign . . . . Small	40—44	Egyptian .	33—34
PEAS, White, Essex, and Kent . . Boilers	40—42	Suffolk . .	42—45
— Maple, —s. to —s. . . . . Grey	—	Foreign . .	36—44
MAIZE	—	Foreign . .	32—35
FLOUR, best marks, delivered . . per sack	44—50		
— 2d ditto . . . . ditto	40—42	Country . .	40—42
— Foreign . . . . per barrel	24—28	Per sack . .	38—60

ARRIVALS OF GRAIN, &C., INTO LONDON BY WATER CARRIAGE.

	Wheat.	Barley.	Oats.	Flour.
	Qrs.	Qrs.	Qrs.	Sacks.
English & Scotch . .	—	—	—	—
Irish . .	—	—	—	—
Foreign . .	7610	14,490	23,940	2660 4040 brls.
	7610	14,490	23,940	

AVERAGES.

	Wheat.	Barley.	Oats.
Nov. 18	55s 11d	36s 9d	23s 0d
— 25	55 10	36 8	23 8
Dec. 2	56 7	36 10	23 8
— 9	56 10	37 1	24 2
— 16	56 5	37 1	22 10
— 23	55 8	36 9	23 0
Average . .	56 2	36 10	23 1

METROPOLITAN CATTLE MARKET.

TUESDAY, Dec. 26.

This being Christmas week, the market is held to-day instead of Monday; it is of a very unimportant character. The supply being very short, however, has caused a rise in price in many instances; our top quotations are in some cases exceeded. Our foreign supply consists of 200 Beasts, 590 Sheep, and 31 Calves; from Scotland there are 23 Beasts; from Ireland, 200; from Norfolk and Suffolk, 30; and 97 from the Midland and Home Counties.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. . .	5 6 to 5 8	Best Long-wools	6 4 to 6 6
Best Shorthorns . .	5 4—5 6	Do. Shorn . .	. . — . .
2d quality Beasts	4 0—4 8	Ewes & 2d quality	4 8—5 4
Best Downs and Half-breds . .	6 6—6 8	Do. Shorn . .	. . — . .
Do. Shorn . .	. . — . .	Lambs	. . — . .
		Calves	4 8—6 8
		Pigs	3 8—5 0

Beasts, 550; Sheep and Lambs, 1320; Calves, 42; Pigs, 15.

THURSDAY, Dec. 28.

The supply is usually short on this day, but the numbers this year are smaller than for some years past. The demand for both Beasts and Sheep has exceeded the supply, and consequently prices are higher for all kinds of stock. Our foreign supply consists of 95 Beasts, 700 Sheep, and 27 Calves.

	s. d. s. d.		s. d. s. d.
Best Scots, Herefords, &c. . .	5 8 to 5 10	Best Long-wools	6 4 to 6 8
Best Shorthorns . .	5 6—5 8	Do. Shorn . .	. . — . .
2d quality Beasts	4 0—4 8	Ewes & 2d quality	4 8—5 8
Best Downs and Half-breds . .	6 8—7 0	Do Shorn . .	. . — . .
Do. Shorn . .	. . — . .	Lambs	. . — . .
		Calves	4 8—6 8
		Pigs	3 8—5 0

Beasts, 670; Sheep and Lambs, 2350; Calves, 40; Pigs, 20.

METROPOLITAN MEAT MARKET, Dec. 28.

Best Fresh Butter	19s. per dozen lb.
Second do. do.	17s. ,,

Small Pork, 4s. 4d. to 4s. 8d.; Large Pork, 3s. 4d. to 4s. 0d. per 8 lb.

HAY.—Per Load of 36 Trusses.

SMITHFIELD, Thursday, Dec. 28.

PrimeMeadowHay,	85s. to	95s.	Clover, old	118s.	130s.
Inferior do.	50	70	Inferior do.	50	90
Rowen	40	65	Prime 2d cut do. . .	—	—
Inferior do.	—	—	Inferior do.	—	—
Straw	34	40			

CUMBERLAND MARKET, Thursday, Dec. 28.

Sup. Meadow Hay	92s. to	100s.	Inferior Clover . .	90s. to	110s.
Inferior do.	70	86	Prime 2d cut do. . .	—	—
New do.	—	—	New do.	—	—
Inferior do.	—	—	Straw	40	46
Superior Clover . .	120	130			

JOSHUA BAKER.

HOPS.

BOROUGH MARKET, Dec. 28.

Messrs. Pattenden & Smith report very little business doing this week, but the tone is very firm, and a good consumptive demand is looked forward to in January. Continental markets are all strong, with an upward tendency.

COALS.—Dec. 27.

Buddle's West Hartley, 19s. 3d.; Holywell Main, 21s. 6d.; Tanfield Moor Butes, 18s. 9d.; Brancepeth Cannel, 19s. 6d.—Ships at market, 85; sold, 72; unsold, 13; at sea, 15.

The Patent Imperishable Hothouse.

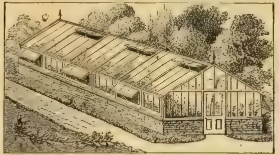
AYRES'S PATENT.

GLASS, IRON, and CONCRETE.

Before building a Plant or Fruit House of any kind, send six stamps, and obtain the Illustrated Prospectus of the

IMPERISHABLE HOTHOUSE COMPANY,
Newark-on-Trent, Notts.
MANAGER—W. P. AYRES, C M R.H.S.,
Imperishable Hothouse Company, Newark-on-Trent.

Plans, Specifications and Estimates supplied upon the shortest notice.



GREENHOUSES from the FINSBURY STEAM JOINERY WORKS, 121, Bunhill Row, London, E.C. W. H. LASCELLES, Proprietor. Lists sent on application.

Prices for Houses, as above, made of best red deal, and sashes 2 inches thick, glazed with 16 oz. good sheet glass, delivered and fixed within 30 miles of London, painted four coats in best oil colour, including locks, gutter, down-pipe, and gearing for opening the ventilators at one time,—heating, staging, brickwork not included :—

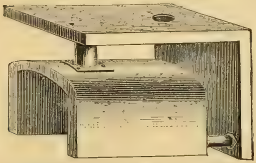
20 ft. by 12 ft.	40 ft. by 16 ft.	60 ft. by 20 ft.	100 ft. by 24 ft.
£40 0 0	£79 0 0	£132 0 0	£238 10 0

GARDEN LIGHTS AND BOXES.

3 ft. by 4 ft. lights, 2 in. thick, unglazed..	3s. each
" " glazed, 16-oz. good sheet glass	6s. "
6 ft. " " 2 in thick, unglazed	5s. "
" " glazed, 16 oz. good sheet glass ..	11s. "
Portable box containing one 6 ft. by 4 ft. light, painted four coats, ready for use	30s. "
Portable box containing two ditto, 6 ft. by 8 ft.	55s. "

Estimates given for Conservatories or Greenhouses to any Design.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements, viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "Patent Double L Saddle Boiler" will do about twice the amount of work with the same quantity of fuel ; the cost of setting is also considerably reduced, and likewise the space occupied ; at the same time these Boilers are simple in construction, and, being made of wrought iron, are not liable to crack. They are made of the following sizes :—

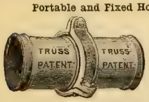
Sizes.			To heat of 4-in Pipe.	Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 in.	18 in.	300	5 0 0
20 "	18 "	24 "	450	6 0 0
20 "	18 "	30 "	600	7 0 0
24 "	24 "	24 "	700	8 0 0
24 "	24 "	30 "	850	10 0 0
24 "	24 "	36 "	1,000	12 0 0
24 "	24 "	48 "	1,400	15 0 0
28 "	28 "	60 "	1,800	20 0 0
30 "	30 "	72 "	2,600	30 0 0
36 "	36 "	96 "	4,500	50 0 0
48 "	48 "	108 "	7,000	75 0 0
48 "	48 "	144 "	10,000	100 0 0

And are kept in Stock and sold only by the Inventors and Patentees, JONES & SONS.

Price Lists of HOT-WATER PIPES and Connections, with Boilers, of all sizes and shapes ; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

Portable and Fixed Hot-water Apparatus



FOR
HEATING
CONSERVATORIES,
HOTHOUSES,
CHURCHES,
PUBLIC BUILDINGS,
PRIVATE RESIDENCES,
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TRUSS' PATENT UNIVERSAL FLEXIBLE and LEAKLESS PIPE JOINT and PATENT CRACKLESS EXPANSION-JOINTED TUBULAR BOILERS, of a VARIETY of FORMS, PORTABLE or for BRICKWORK SETTING. They are the MOST POWERFUL, whilst ONLY CONSUMING HALF the FUEL of OTHER BOILERS. PORTABLE BOILERS, to HEAT ANY LENGTH of PIPING; and ANY PERSON can TAKE these BOILERS, as also the PIPES, APART, and SPEEDILY PUT THEM TOGETHER AGAIN.

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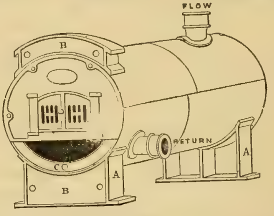

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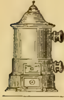

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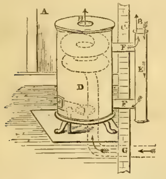

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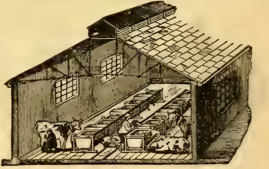

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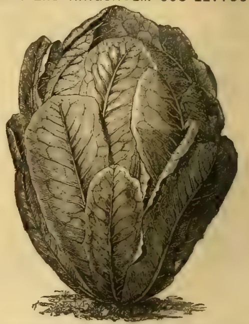
ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

J. C. WHEELER & SON,

SEED GROWERS,
GLOUCESTER and LONDON,
Offer the following interesting Novelties, &c., this season.

WHEELERS' KINGSHOLM COS LETTUCE



This magnificent Lettuce made its appearance three years since in a piece of White Cos. It withstood the summer heat for a long time after all other varieties (with the exception of Wheelers' Tom Thumb) had run to seed, headed-in without tying, and formed one of the most perfect models of a Cos Lettuce ever seen. At length it ran to seed; owing to the late period of the season it had started, the produce was, however, small. The whole stock was carefully preserved for next season's seeding. The crop of seed was again very limited, but the Lettuces were magnificent, many of them weighing 7 lb. each. We are now enabled to offer seed at 1*s.* per packet. It was seen last summer by a gentleman connected with Covent Garden Market, who remarked it was the finest Lettuce he had ever seen, and far superior to anything brought to the London Market. We recommend those who contemplate growing Lettuces for Exhibition to give this variety a trial. Get it sown in a frame, and planted out early in the season, on deeply dug and well-manured land, and we have but little fear such specimens will be produced that will defy competition.

Packets, 1*s.*; Small Packets, 6*d.* each, post free.

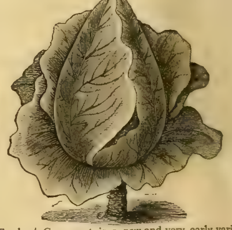
A Packet of this Lettuce will be given gratis with our celebrated Guinea Collection of Garden Seeds.

WHEELERS' TOM THUMB LETTUCE.

This is undoubtedly the best Cabbage Lettuce in cultivation, and a remarkable favourite. It is good both summer and winter. In our Little Book for 1872 are extracts from 13 letters, speaking in the very highest terms of its excellence.

Price 1*s.* per Packet, post free. Small Packets, 6*d.*

WHEELERS' COCOA-NUT CABBAGE.



Wheelers' Cocoa-nut is a new and very early variety, perfectly distinct, of most excellent flavour. It should be planted 18 inches apart: will yield an early and continuous supply. This Cabbage is a decided novelty and a great acquisition.

Owing to the small supply of seed this season, we much regret that we cannot supply the Trade until we have harvested our next crop.

Price 1*s.* per Packet, post free. Small Packet, 6*d.*

WHEELERS' LITTLE BOOK for 1872, Illustrated, will be published on January 1, price 6*d.*, post free, gratis to customers.

J. C. WHEELER AND SON,
SEED GROWERS,
GLOUCESTER; and 59, MARK LANE, LONDON.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, EVANS, & CO., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, December 30, 1871.